

Consensus on a Specialist Clinical Learning and Teaching Framework for Australian Nurse Practitioners

Submitted by

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Statement of Authorship and Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

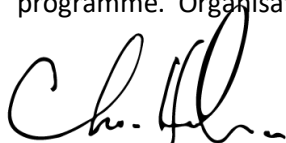
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No other person's work has been used without due acknowledgement in the main text of the thesis.

All research procedures reported in the thesis received the approval of the relevant Human Research Ethics Committee (See Appendices A and B).

I declare that Chapters 1 through 7 of the final thesis draft were externally edited for conventions of grammar, spelling and punctuation by Merran Laver, Eyeline Editing. The main body of Chapters 4 and 7 were published in a peer-reviewed journal, and were edited for conventions of grammar, spelling and punctuation by the *Journal of Advanced Nursing*. Copyediting of the research thesis was done in accordance with the requirements of the *Guidelines on the Preparation and Presentation of a Research or Professional Doctoral Thesis for Examination* (18 February 2015).

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Summary of Financial Assistance

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This body of work is only a piece of the puzzle of what Nursing is, what it was, and its future direction. It aspires to continue the long tradition of excellence in Nursing, and it's my fervent hope that it reflects Truth, howsoever that Truth evolves with time. In part, this research reflects current thought on how Australian nurse practitioners broadly describe and define their clinical practice. We nurses are in a constant state of flux, which may at times lead to uncertainty in how we describe and define ourselves. This uncertainty is further compounded by how others choose to view and define us, using paradigms that are incongruent with the philosophy and science of Nursing. We are just beginning to understand how nurse practitioners describe, define and subsequently prepare ourselves for clinical practice. I wish those future nurse researchers luck and success in picking up the baton after the relevance of this research has passed.

This thesis isn't about me. It's about passion for Nursing, and the philosophy of care underpinning our work. It's about the blood, sweat and tears of those nurse practitioners who set the foundations for, and informed this body of work. It's about people like Helen Gosby, past president of the Australian College of Nurse Practitioners, whose wisdom, vision and determination continues to inspire. It's about nurse practitioners like Anne Graham from Queensland. Despite having grand mal seizures from newly-diagnosed Grade 4 Glioblastoma Multiforme, Anne opted to continue with her contributions to this body of work, because she believed in us and how we can transform the healthcare landscape if given the chance. Anne eventually succumbed to her terminal disease after Delphi Survey 1. May she rest in peace.

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Thesis Abstract

Background

The Australian nurse practitioner (NP) role is represented by over 1,400 endorsed NPs practising in over 50 different specialty areas. Generic standards have broadly supported the role's behavioural, professional and expanded practice expectations since 2006, and have been used for the accreditation of NP Masters programmes nationally.

The need for consistent and flexible specialty clinical education for NP students has been described in the Australian literature. The clinical learning and teaching of Australian NP specialty roles has traditionally occurred in the student's workplace, within a specified area of practice. Jurisdictional differences at state/territory and local levels have influenced how NP students develop and enact their roles once endorsed. Factors such as the student's clinical supervisor, local legislation and policy, role ambiguity, restrictive local clinical guidelines and protocols influence what NP students learn in their clinical learning environments. These factors contribute to a highly differentiated NP workforce, with differing clinical skills, knowledge and abilities noted within the same specialty area. Similar difficulties have led to the development of broad specialty areas in the United States of America. To better complement the generic learning and teaching students receive through their academic programmes, this research aims to validate a specialist clinical learning and teaching framework for Australian nurse practitioners. This framework will not only enhance consistency in their specialty clinical learning and teaching, but create greater workforce flexibility.

A consensus-based research methodology was needed to validate the specialty clinical learning and teaching framework. Delphi Technique is a consensus-based research methodology commonly employed in nursing research to explore solutions to questions that have unclear or indeterminate answers. It aims to achieve a pre-determined level of consensus on a research question, using content experts through an anonymous and iterative process. Critical to the method's validity is the participation of a heterogeneous group of experts with advanced knowledge of the content area, and whose feedback to other panelists is controlled to minimise social influence. Individual participant characteristics, such as experience level and confidence in decision-making, and the influence of these upon consensus are poorly described in the Delphi literature. There was little previous empirical research to inform how to best describe heterogeneity of opinion informing the specialty clinical learning and teaching framework using nurse practitioners.

Aims

1. To validate a specialty clinical learning and teaching framework for Australian NP students.

Specific objectives that addressed this aim were:

- A. To validate a previously developed Australian NP metaspecialty taxonomy.
 - B. To validate supporting clinical practice standards used for the metaspecialty taxonomy.
2. To contribute knowledge of how consensus is achieved when using Reactive Delphi methodology.

Specific questions that addressed this aim were:

- A. Does Reactive Delphi methodology potentiate the negative influence of the bandwagon effect in Delphi panelists?
 - B. What effect does panelist confidence have on decision-making in Delphi panelists?
 - C. How can experience level be objectively demonstrated in individual Delphi panelists?
 - D. What effect does experience level have on decision-making in Delphi panelists?
 - E. Does confidence relate to opinion change in individual Delphi panelists?
 - F. What effect does panel composition have on consensus outcomes?
3. To demonstrate the application of web-based methods in Delphi research.

Specific objectives that addressed this aim were:

- A. Describe the advantages of using a web-based Delphi method.
- B. Describe the risks of using a web-based Delphi method.
- C. Describe how panelist feedback was managed during six concurrent Delphi studies.

Methodology and Methods

This mixed-methods research used Delphi Technique to achieve consensus on, and therefore validate, a NP specialty clinical learning and teaching framework. Two sequential 3-round Reactive Delphi surveys were used to achieve the research aims. The first Delphi survey was designed to validate a proposed broad Australian NP specialty taxonomy previously established by the 2014 CLLEVER (CLinical LEarning goVERNance) study. The second Delphi survey was designed to validate clinical practice standards, which would support and provide definition to the specialty taxonomy. Together, the taxonomy and standards informed the proposed specialty clinical learning and teaching framework. Consensus Development Conference methodology was used to refine the proposed specialty clinical learning and teaching framework. Data collected during the conduct of the first Delphi survey achieved the second research aim. The third research aim was achieved by using metadata, paradata and embedded data in an advanced web-based survey design for both Delphi surveys. Purposive sampling and snowballing techniques were used to recruit from an eligible population of NPs, endorsed by the Nursing and Midwifery Board of Australia, with at least 12 months' post-endorsement experience (N=966). Web-based survey technology was used to collect data. Data were analysed using content analysis, descriptive and inferential statistics. The Content Validity Index

and non-parametric testing using McNemar's Test for Change were used to determine consensus that informed the proposed framework.

Results

Approximately 20% of the eligible Australian NP population contributed to both Delphi surveys. Six broad specialty areas, termed metaspecialties, were validated for the proposed specialty taxonomy. A Consensus Development Conference refined the names of two metaspecialties. The metaspecialties served as a foundation for validated clinical practice standards, which provided substance and definition to the final specialty clinical learning and framework. Heterogeneity of expert NP opinion informing the framework was demonstrated using professional activities representative of advanced practice nursing. There was no indication of negative social influence determining the manner by which panelists achieved consensus on the proposed framework. A novel method of using metadata, paradata and embedded data in web-based surveys was applied, which supported high survey response rates and identified non-response bias. A novel application of web-based surveys allowed the researcher to concurrently conduct six Delphi surveys nested within a larger research project.

Conclusion

This research demonstrates a rigorous approach in validating a proposed specialty clinical learning and teaching framework for Australian NP students. It contributes new knowledge on the internal and external validity of Reactive Delphi methodology.

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Glossary of Terms

Accreditation	A delegated regulatory process to ensure Australian nurse practitioner education programmes have appropriate academic educational governance, which allows graduates of the programme to be eligible for endorsement as a nurse practitioner in Australia.
Adaptive Questioning	An automated process of adapting a web-based survey to display individual questions in a manner dependent upon previous individual participant responses. It may allow certain questions to be displayed, mask others, and display individual questions differently depending on individual answers. In addition, metadata, paradata and/or embedded data can be used to enhance adaptive questioning.
Advanced Practice Nurse	A “registered nurse that has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice” (International Council of Nurses, 2009). In Australia it includes, but is not limited to, the nurse practitioner role and is demonstrated through domains representative of the Strong Model of Advanced Practice (Gardner, Duffield, Doubrovsky, & Adams, 2016).
Authorisation	An Australian state/territory regulatory process detailing an individual nurse practitioner scope of practice in order to account for jurisdictional legislation and policy differences. This requirement exists in addition to formal endorsement processes.
Bandwagon Effect	When an individual demonstrates conformity, after realising their opinions represent those of the minority, and changes those opinions to assimilate with the majority irrespective of their own personal beliefs (Nadeau, Cloutier, & Guay, 1993). In anonymous consensus methodologies it represents a form of informational social influence.

Capability-Based Learning and Teaching	Refers to “learning strategies that include learning contracts, problem- based learning, situated learning, experiential learning, clinical learning environments, flexible and responsive learning pathways, as well as traditional approaches to skills acquisition. It produces nurse practitioners who know how to learn, are creative, have a high degree of self-efficacy, can apply competencies in novel and familiar situations and work well with others” (Gardner, Carryer, Dunn, & Gardner, 2006, p. 13).
Classical Delphi Methodology	A research methodology whose aim is to achieve consensus on a research question using a panel of experts in an iterative, controlled and anonymous survey process.
Clinical Practice Standard	A statement broadly representative of generalist and/or specialist clinical skills, knowledge and/or expertise needed for population groups represented by a particular metaspecialty area. It is supported by practice activities.
Clinical Supervisor	The primary person responsible for oversight of the nurse practitioner student in the clinical learning and teaching environment. This person is an appropriately-qualified person, usually an endorsed nurse practitioner or medical practitioner.
Cohesion	An overall indicator of consensus on a metaspecialty construct that is suggested by the scale-level CVI (see <i>Content Validity Index</i>).
Competence	The “combination of skills, knowledge, attitudes, values and abilities underpinning effective and/or superior performance in a profession or occupational area” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 28).
Competency-Based Education and Training	Reflects learning strategies that establish the minimum requisite level of knowledge to safely and effectively practise within a trade or profession.
Confidence Heuristic	When an experienced expert demonstrates conformity based upon the fact they have a low degree of certainty

	in their opinion, and perceive others as being more certain, and therefore more expert, in their responses. It is a form of informational social influence.
Conformity	A “change in behavior or belief as the result of real or perceived group pressure” (Myers, 2013, p. 188).
Consensus	In the context of Delphi research, is expressed as the majority of panelists agreeing with a statement or construct, and is measured by the CVI (<i>see Content Validity Index</i>). It can also be represented by majority opinion as an expression of agreement, which is stable through separate points in time. It is derived from objective, expert opinion.
Consensus Development Conference	A consensus methodology involving expert panelists who listen to and judge ‘evidence’ presented at a conference or workshop themed upon a specific research question.
Content Validity Index	Used to determine consensus and expressed as the proportion of Delphi panelists rating a metaspécialty or clinical practice standard as ‘relevant’ (as opposed to ‘not relevant’) to the clinical practice of the nurse practitioner role compared to the total number of panelists rating that metaspécialty or standard.
Disruptive Innovation	A theory originally posited by Christensen, Bohmer, and Kenagy (2000), it is the process through which nurse practitioners are eventually viewed by mainstream health consumers as a <i>substitute</i> to health care traditionally offered by medical practitioners.
Dissensus	Represents panelists ‘agreeing to disagree’, and requires stability of generated panelist opinion over successive Delphi rounds. In the context of this research, dissensus is demonstrated as a CVI of <i>less</i> than 85% that is stable through subsequent Delphi rounds.
Divergence of Opinion	When Delphi panelists demonstrate majority opinion in one round, which suddenly shifts in the opposite direction in the subsequent round.

e-Delphi Research	A Delphi research method that involves distributing a printable survey tool electronically to panelists through the use of email. Survey tools can then be returned to the researcher via postal mail, fax, or email.
Egocentric Discounting	When a Delphi panelist demonstrates low opinion change in the absence of demonstrable experience relative to others.
Embedded Data	Data <i>actively</i> generated by participants (e.g. individual responses provided during a web-based survey) or the researcher (e.g. participant names), that can be used to personalise web-based survey email invitations and enhance question logic in future surveys. Data are virtually attached to individual participant profiles in a web-based survey platform.
Endorsement	<p>A regulatory process governed by the NMBA to formally assign the title ‘Nurse Practitioner’ to Australian registered nurses. It requires the following:</p> <ul style="list-style-type: none"> • Current, unrestricted registration as a registered nurse in Australia; • A Master’s degree from an NMBA-approved nurse practitioner education programme, or substantial equivalent; • A minimum of three years’ advanced practice nursing experience; and • Compliance with the NMBA’s <i>Nurse Practitioner Standards for Practice</i> <p>(Nursing and Midwifery Board of Australia, 2014a).</p>
Experience Level	A categorical measure relating to professional expertise, and including ‘proficient’ to ‘experienced’ for this doctoral research. The measure is a combination of years of nurse practitioner experience and the demonstration of activities mirroring the domains of advanced nursing practice.
Expertise	A reflection of advanced “domain or task-specific knowledge” (Snizek, Schrah, & Dalal, 2004, p. 174). It is a multi-faceted composite construct that can be

	subjectively (e.g. through self-rating) and objectively determined (e.g. through reputation, qualifications, education, or other demonstrable performance measures reflecting extensive and quantifiable skills and/or experience).
Focus Group	A means of collating qualitative data about an issue or research question from a small group of interacting participants (McMillan, King, & Tully, 2016).
Heterogeneous Panel	A group of Delphi panelists demonstrating diverse skills, knowledge and expertise relating to the research question. Due to its composition, new knowledge can be generated and novel viewpoints may be offered for panelist consideration.
Heuristic Response	A response “based upon a thinking strategy enabling, quick, efficient judgements of whether something fits in a category” (Myers, 2013, pp. 92-93).
Homogeneous Panel	A group of Delphi panelists demonstrating similar skills, knowledge and expertise relating to the research question. Due to its composition, the panel is unable to generate new knowledge or viewpoints for consideration.
Informational Social Influence	Panelist conformity that “occurs when accepting evidence about reality provided by other panelists because of a desire to be correct” (Myers, 2013, pp. 213-214). The confidence heuristic and bandwagon effect are forms of social influence in this Delphi research.
Integrated Professional Practice	<p>An “integrated learning approach that enables nurse practitioner students to develop and demonstrate the <i>Nurse Practitioner Standards for Practice</i> within the clinical practice setting. Supports the use and generation of theory to enhance emerging and developed knowledge, behaviours, clinical and professional judgement. Also provides a supported learning environment for the development of clinical practice skills including, but not limited, to:</p> <ul style="list-style-type: none"> • comprehensive assessment, diagnosis and management of complete episodes of care

	<ul style="list-style-type: none"> • prescription of medicines • ordering and interpreting of diagnostic tests • initiating and accepting referrals from other health professionals for the purposes of care coordination. <p>The concept includes ‘clinical training’ as embodied in the National Law” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 29).</p>
Internet Protocol (IP) Address	A unique identifier, in the form of a group of numerals separated by full stops (e.g. xxx.xxx.xxx.xxx), indicative of an individual computer or device (e.g. smartphone, tablet router, etc.) connected to a computer network and/or the internet.
Internet Service Provider	A company or organisation providing services facilitating access to the internet. Such services may include access to the internet itself, email, and the provision of a physical storage location for websites.
Macrospecialty	The top-most level in a hierarchy of specialty descriptors for advanced practice nursing, such as the nurse practitioner, clinical nurse consultant, and nurse anaesthetist.
Majority Opinion	A threshold defined by the Delphi researcher indicating the quantum of panelists needed to identify whether a construct or idea is relevant or not relevant. It can be a reflection of group agreement or disagreement on a construct or idea.
Medicare Benefits Schedule	“A listing of the Medicare services subsidised by the Australian Government. The schedule is part of the wider Medicare Benefits Scheme managed by the Department of Health” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 29).
Mentoring	A “mutually voluntary, intense, committed, extended, dynamic, interactive, supportive, trusting relationship between two people, one experienced, and the other a newcomer” (Hayes, 1998, p. 525).

Metadata	Data <i>automatically</i> generated by individual participants at the outset of a web-based survey, that include information such as IP addresses and user-agent strings.
Metaspecialty	A broad grouping of nurse practitioner specialties, with similar skills, knowledge and/or expertise, which comprehensively reflect the diverse health care needs of population groups.
Microspecialty	A focus (e.g. diabetes) of nurse practitioner practice representing a single aspect of a broader specialty area of practice (e.g. endocrinology). It may represent nurse practitioner practice described by a specific geographic scope and/or reflecting distinct population requirements.
Modified Delphi Research	A catch-all phrase to describe any methodologic variation of Delphi research other than the classical form described by Dalkey and Helmer (1962).
Nominal Group Technique	A democratic and iterative idea-generation and prioritisation methodology using a face-to-face approach with a small group of interacting participants (Van de Ven & Delbecq, 1971).
Non-Response Bias	The “degree to which the researcher does not succeed in obtaining co-operation of all potential respondents included in the net sample” (Barriball & While, 1999, p. 678).
Normative Social Influence	Panelist conformity “based upon their desire to fulfill others’ expectations, often to gain acceptance and be liked” (Myers, 2013, p. 213).
Nurse Practitioner	A protected title referring to an advanced practice nurse whose “registration has been endorsed by the NMBA as a Nurse Practitioner under Section 95 of the National Law” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 29).
Online Survey	An “electronic questionnaire administered on the Internet or an Intranet” (Eysenbach, 2004, p. 2), where a participant provides data at a single point in time.

Panelist	An individual member of a group of participants involved in Delphi research.
Paradata	Data <i>passively</i> generated by individual participants as they respond to web-based surveys, such as length of time needed for individual questions, survey completion times, date and hour of day completed.
Pharmaceutical Benefits Scheme	“A scheme ran by the Australian Government to subsidise prescription medicines for Australians who have a Medicare card. If a medicine is subsidised under the scheme, the patient pays a lower price for the medicine, and the Australian Government pays the rest” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 30).
Phishing Email	Emails which may appear to be spam, but are designed to capture personal information for fraudulent use.
Population Foci	Broad areas of specialty practice used for the clinical learning and teaching of nurse practitioners in the USA. They relate to the scientific foundations, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice competencies they need to work within a broadly defined population (APRN Consensus Work Group, 2008).
Practice Activities	Learning outcomes mutually agreed upon by a nurse practitioner student and their clinical supervisor, which the student must demonstrate prior to graduation. They reflect requisite generalist and specialist entry-level skills, knowledge and expertise needed for advanced and expanded clinical practice within the nurse practitioner role.
Practice Drift	The phenomenon of Australian nurse practitioners originally endorsed to practice in a specialty or microspecialty area, expanding their scope of practice to incorporate generalist practice.

Practice Strand	Areas of Australian nursing practice which “do not meet the full criteria for a national specialty” (National Nursing and Nursing Education Taskforce, 2006, p. 49).
Professional Expertise	Advanced knowledge about the NP profession and experience working in the role of the NP, which is recognised by others and demonstrated through leadership, mentorship, representation and publication for the nurse practitioner profession.
RAND Appropriateness Method	An iterative consensus methodology, whose specific purpose is for participants to rate the ‘appropriateness’ of statements relating to the research question. It involves face-to-face, as well as anonymous techniques in the consensus approach.
Reactive Delphi Research	A variation to classical Delphi methodology (<i>see Modified Delphi Research</i>), whereby pre-determined information is provided for panelist consideration in the first round.
Real-Time Delphi Research	A variation to classical Delphi methodology (<i>see Modified Delphi Research</i>) that specifically uses software or the internet in its conduct; there is no distinct ‘iteration’ to the consensus process, and the researcher has limited control of the flow of information amongst panelists (Gordon & Pease, 2006).
Role Transition	The transition from being an RN to working in the NP role. This transition is not necessarily proven by simply holding a qualification, but may be dependent upon other variables.
Scope of Practice	A scope of practice relating to a nurse is “that which the individual is educated, authorised, and competent to perform” (Nursing and Midwifery Board of Australia, 2007, p. 2).
Skill Domain	Areas of Australian nursing practice “with common skill groups and common attributes, but which have varied knowledge bases” (National Nursing and Nursing Education Taskforce, 2006, p. 49).

Spam Email	Individual or large batches of unsolicited emails sent over the internet.
Specialty	A specific patient population defined by unique nursing knowledge, skills and expertise, but informed by its own body of interdisciplinary science.
Teleological Rationale	A considered and analytical response that provides rationale and qualification as an answer to a question.
User-Agent Strings	A type of metadata demonstrating how an individual participant <i>accessed</i> a web-based survey. This might include information such as operating system (e.g. Windows or Mac), web browser (Internet Explorer, Safari, Chrome, etc.), device (e.g. desktop or tablet device) and screen size used.
Web-Based Delphi Survey	The application of an iterative Delphi method where data are aggregated using a commercially-available online survey tool over several rounds.
Work-Integrated Learning	A learning approach enabling students to develop and demonstrate competency within a work setting, in order to prepare them for professional practice.

Acronyms

ACNP	Australian College of Nurse Practitioners
AHPRA	Australian Health Practitioner Regulation Agency
ANMAC	Australian Nursing and Midwifery Accreditation Council
APC	Aged and Palliative Care
APN	Advanced Practice Nurse
CBET	Competency-Based Education and Training
CBLT	Capability-Based Learning and Teaching
CDC	Consensus Development Conference
CDM	Classical Delphi Methodology
CLLEVER	CL inical LE arning & goVER nance
CNS	Clinical Nurse Specialist
CPLTC	Care of Persons with Long Term Conditions
CPS	Clinical Practice Standards
CVI	Content Validity Index
DT	Delphi Technique
HREC	Human Research Ethics Committee
I-CVI	Item-Level Content Validity Index
IP	Internet Protocol
IPP	Integrated Professional Practice
ISP	Internet Service Provider
MBS	Medicare Benefits Schedule
NGT	Nominal Group Technique

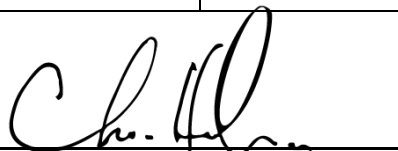
NISI	Normative and/or Informational Social Influence
NMBA	Nursing and Midwifery Board of Australia
NP	Nurse Practitioner
PBS	Pharmaceutical Benefits Scheme
PD	Policy Delphi
RAM	RAND Appropriateness Method
RD	Reactive Delphi
RN	Registered Nurse
RTD	Real-Time Delphi
S-CVI	Scale-Level Content Validity Index
USA	United States of America
WIL	Work-Integrated Learning

Statement of Contribution to Jointly Published Work

Table of Contributions

This doctoral research was nested within a larger national research series funded by the Australian Office for Learning and Teaching and the Australian Research Council. A table of contributions has been provided to clearly differentiate the author's contributions from the larger research series.

Study	Researcher	Contribution
Delphi Survey 1	Christopher Helms	Concept, design, implementation and analysis of data used to validate metaspécialty names established in the CLLEVER (CLinical LEarning & goVERNance) study. Concept, design, implementation and analysis of data used to establish factors affecting consensus in Reactive Delphi research.
	Anne Gardner	Conceptualisation of metaspécialties established in the CLLEVER study. Data analysis verification.
	Elizabeth McInnes	Data analysis verification.
Consensus Development Conference	Christopher Helms	Concept, design, implementation and analysis of data used to validate two remaining metaspécialty names from Delphi Survey 1.
	Anne Gardner	Data analysis verification.
Delphi Survey 2	Anne Gardner	Research design. Established clinical practice standards from Phase 1 of CLLEVER2 (CLinical LEarning, goVERNance & capability) study. Verification of quantitative data. Analysed and verified qualitative data.
	Christopher Helms	Survey design, implementation and analysis of quantitative data used to validate clinical practice standards.



Mr Christopher Helms



Professor Anne Gardner



A/Professor Elizabeth McInnes

Chapter 4 – Delphi Survey 1

Consensus on an Australian Nurse Practitioner Specialty Framework using Delphi methodology: Results from the CLLEVER2 Study. *Journal of Advanced Nursing* (2017), 73(2), 433-447. doi: 10.1111/jan.13109

Christopher Helms

Concept and design of the manuscript

Performed literature search and data extraction

Analysis, verification and interpretation of data

Wrote the manuscript and revised it critically for significant intellectual content

Anne Gardner

Input into the concept and design

Made critical suggestions for data analysis process

Verification and interpretation of data analysis

Made critical revisions to the draft version of the manuscript for important intellectual content

Elizabeth McInnes

Input into the concept and design

Made critical revisions to the draft version of the manuscript for important intellectual content



Mr Christopher Helms



Professor Anne Gardner



A/Professor Elizabeth McInnes

Chapter 7 – The Use of Advanced Web-Based Survey Design in Delphi Research

The Use of Advanced Web-Based Survey Design in Delphi Research. Journal of Advanced Nursing, Accepted for publication 16 June 2017. doi:10.1111/jan.13381

Christopher Helms

Concept and design of the manuscript

Performed literature search and data extraction

Analysis, verification and interpretation of data

Wrote the manuscript and revised it critically for significant intellectual content

Anne Gardner

Input into the concept and design

Made critical suggestions for data analysis process

Made critical revisions to the draft version of the manuscript for important intellectual content

Elizabeth McInnes

Input into the concept and design

Made critical revisions to the draft version of the manuscript for important intellectual content



Mr Christopher Helms



Professor Anne Gardner



A/Professor Elizabeth McInnes

List of Conference Presentations

1. **10th Annual National Conference of the Australian College of Nurse Practitioners**
6-8 September 2015
Melbourne, Victoria (Australia)
Title of Presentation:
“Nurse Practitioner Confidence and Expertise [sic] in a Modified Delphi Study”
2. **11th Annual National Conference of the Australian College of Nurse Practitioners**
30 August – 2 September 2016
Alice Springs, Northern Territory (Australia)
Title of Presentation:
“Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties”
3. **9th Annual International Council of Nurses International Nurse Practitioner/Advanced Practice Nursing Network Conference**
9 – 11 September 2016
Hong Kong, SAR
Title of Presentation:
“Validation of an Australian Nurse Practitioner Specialty Taxonomy using Delphi Methodology”
4. **9th Annual International Council of Nurses International Nurse Practitioner/Advanced Practice Nursing Network Conference**
9 – 11 September 2016
Hong Kong, SAR
Title of Presentation:
“An Exploration of Nurse Practitioner Confidence, Experience and Consensus in Delphi Research”
5. **9th Annual International Council of Nurses International Nurse Practitioner/Advanced Practice Nursing Network Conference**
9 – 11 September 2016
Hong Kong, SAR
Presenters: Anne Gardner, Glenn Gardner, Fiona Coyer, Christopher Helms
Title of Presentation:
“Educating for Health Service Reform: Clinical Learning, Governance and Capability”

Chapter 1 Introduction

Introduction

The Australian nurse practitioner role is quickly approaching maturity. Innovative models of health care provision using nurse practitioners are continually being developed in Australia. Educationalists, regulators and the nursing profession itself should not only celebrate the success of the nurse practitioner role, but reflect upon and look to the future to ensure the role's safety, utility and sustainability. The nurse practitioner role has developed into a multitude of discrete specialties, reflecting its flexibility in meeting dynamic needs within the Australian health system. Despite its success, the development and expansion of the nurse practitioner role has experienced challenges from within the nursing and medical professions. For example, nursing has identified a lack of clarity on how the nurse practitioner role differs from other advanced practice nursing roles, such as the clinical nurse consultant (Hutchinson, East, Stasa, & Jackson, 2014). Only recently have these role differences been explored and clearly defined in the Australian context (Baldwin et al., 2013; G. Gardner et al., 2016). Similarly, robust debate has been led by the medical profession here and elsewhere as to whether nurse practitioners have adequate intellect, and receive appropriate training, to match their expanded roles (Wilson, Pearson, & Hassey, 2002). However, within the Australian context, recent ethnographic research using a small sample of nurse practitioners suggested the nature of such debate is evolving into mutual respect and high regard for the nurse practitioner role by medical practitioners (MacLellan, Higgins, & Levett-Jones, 2015b). One of the remaining challenges now faced in the Australian context is the multitude of specialty descriptors used for nurse practitioner roles. The multitude of descriptors creates uncertainty in requisite learning and teaching outcomes needed by nurse practitioner students working within specialist clinical practice. Clarification of learning and teaching outcomes needed to prepare nurse practitioners to work in specialist clinical practice is required to facilitate continued integration of the nurse practitioner role within the future Australian health workforce.

This doctoral research validates a previously developed taxonomy that broadly described Australian nurse practitioner specialty clinical practice. This taxonomy was used to validate supporting clinical practice standards, which provided clarity on the clinical learning and teaching needs of Australian nurse practitioner students working within their specialty areas. Through the course of conducting this research, new knowledge was generated on how consensus is achieved when using Reactive Delphi methodology. Chapter 1 contextualises the doctoral research reported in this thesis. It begins with a brief overview of the nurse practitioner profession, both locally and internationally. This is followed by background information about myself as a nurse practitioner, and the lens that I bring to this research. Following the researcher background, explanation is given of where this research is

situated within a larger research project. Next, an overview of Australian nurse practitioner education is given, with special focus on features relating to workplace-based clinical learning and teaching. A discussion on the constructs of consensus and expertise and their significance to this research follows. Finally, a discussion on the significance of this doctoral research, as well as the research aims and design will be provided, followed by an overview of the thesis structure in its entirety.

The Nurse Practitioner Role

In this section, the definition and development of the nurse practitioner role in Australia and internationally is briefly detailed to orientate the reader to the role. Nurse practitioners are internationally defined as “registered nurses who have acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice” (International Council of Nurses, 2016a). In Australia, the nurse practitioner title is protected by national legislation, and is defined as a registered nurse holding an educational qualification who has demonstrated advanced clinical experience relevant to endorsement into the profession by the Nursing and Midwifery Board of Australia (NMBA) (Australian Health Practitioner Regulation Agency, 2016; Nursing and Midwifery Board of Australia, 2016b). The ‘expanded practice’ that clearly delineates the clinical role of the Australian nurse practitioner from other advanced practice nurses includes the ability to autonomously prescribe medicines, order and interpret diagnostic tests, and independently refer to medical and allied health specialists (G. Gardner et al., 2016; Nursing and Midwifery Board of Australia, 2014a).

The nurse practitioner role was established in the late 1960s in the United States of America (USA) (Dunn, 1997). Borne from a need to address disparities in the provision of primary health care services in rural America, the profession quickly grew and established itself, developing distinct practice characteristics aligning with medicine, but interpreted and moulded with nursing values and expertise (Ford, 1975). More than 50 years later, the nurse practitioner role has spread to over 70 countries, with each country contextualising the role to meet health care needs of local populations (International Council of Nurses, 2016b). The nurse practitioner role has been viewed by some as a ‘disruptive innovation’: one that provides “cheaper, simpler and more convenient services for markets underserved or undervalued by a sustaining innovation” (Christensen et al., 2000, p. 104; Hwang & Christensen, 2008). In their discursive article on health care innovation, Christensen et al. (2000) asserted nurse practitioners could be viewed as a disruptive innovation, whereas medical practitioners are the sustaining innovation, a system of providers providing mainstream health care. Throughout the world, successful integration of disruptive nurse practitioner models of care appears to be dependent upon nurses working in collaboration with, instead of opposition to, medical practitioners (Schadewaldt, 2015, p. 25; Schadewaldt, McInnes, Hiller, & Gardner, 2013). Perhaps because it challenges traditional role hierarchies within health care, the nurse practitioner role is one of the most

widely studied, evaluated and scrutinised professions in the world (Davidson & Rogers, 2005; Dawood, 2000). Through this scrutiny, the nursing profession has established and justified a record of safety and efficacy with the nurse practitioner role internationally (Donald & McCurdy, 2002; Horrocks, Andersen, & Salisbury, 2002; Latter & Courtenay, 2004; Laurant et al., 2009; Laurant et al., 2005; Martin-Misener et al., 2015; van der Biezen et al., 2016).

Formative Australian research into the nurse practitioner role began in 1991, when an independent taskforce examined the role's place within Australian healthcare reform (NSW Department of Health, 1993). At the time, profound gaps in Australian health service delivery had been identified in emergency departments in rural and remote areas and in marginalised populations, such as the homeless and sex workers (Marlow, 1996). Politicians and nursing leaders internationally had identified the potential for the nurse practitioner role to 'fill healthcare gaps' within such underserved areas and populations, which had been traditionally overseen by medicine (Andersen, 1990). As a result, successive government-funded evaluations of the Australian nurse practitioner role have been performed, which have identified nurse practitioners as safe and effective solutions for gaps in health service delivery (Davey et al., 2016; Foster, 2010; Marlow, 1996; Masso & Thompson, 2014; NSW Department of Health, 1993; Parker, Forrest, Desborough, McRae, & Boyland, 2011).

The Australian nurse practitioner role has matured rapidly since the first two nurse practitioners were authorised to practise in New South Wales over 16 years ago, despite barriers to the role (Australian College of Nurse Practitioners, 2014a). Such barriers include difficulties with role sustainability due to limited funding for nurse practitioner services (Helms, Crookes, & Bailey, 2015; Keating, Thompson, & Lee, 2010), as well as legislative differences amongst Australian jurisdictions, which confuse and restrict the nurse practitioner scope of practice (Scanlon, Cashin, Bryce, Kelly, & Buckely, 2016). Despite these barriers, achievement of several important milestones demonstrates the rapid growth and development of the Australian nurse practitioner workforce, including: legislated title protection for nurse practitioners in 1998 (New South Wales Government, 1998); professional representation in 2003 (Australian College of Nurse Practitioners, 2014a); the development of a curriculum structure for Masters-level educational preparation in 2004 (Gardner, Gardner, & Proctor, 2004); endorsed standards for the accreditation of education programmes in 2005 (Australian Nursing and Midwifery Council, 2006), and government subsidy of nurse practitioner services through the Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS) in 2010 (Australian Government, 2010). It is through such advances that the nurse practitioner role has grown to over 1,400 endorsed practitioners nationally, and is currently the fastest growing regulated health profession in Australia (Halloran, 2016; Nursing and Midwifery Board of Australia, 2016b). Further information detailing the nurse practitioner role, and its development in Australia, will be provided in the literature review chapter.

Researcher Background

In this section, I contextualise the influence of my background within the research reported in this thesis. The research detailed in this doctoral thesis has been influenced by my professional lens, which reflects endorsement as a nurse practitioner both in the USA and Australia. I have been a registered nurse (RN) for 18 years, and have been a practising nurse practitioner clinician for over 15 years. My professional lens is moulded by experience and personal insight into the nurse practitioner role through extensive clinical practice as a nurse practitioner. I am a generalist nurse practitioner with expertise in cardiovascular health, working in private general practice (Helms et al., 2015). I have experience in the clinical supervision, learning and teaching of nurse practitioner students both in the USA and Australia. I have worked extensively with many Australian professional and governance bodies engaged with the nurse practitioner role. For example, I have served as an expert advisor for standards relating to the accreditation of Australian nurse practitioner academic programmes (Australian Nursing and Midwifery Accreditation Council, 2015), standards for nurses working in Australian general practice (Australian Nursing and Midwifery Federation, 2014) and have represented nurses at a national level for innovative reform of chronic disease management in Australian primary health care (Australian Department of Health, 2016). I have worked in clinical practice throughout my doctoral studies, have served on the executive board of the Australian College of Nurse Practitioners, and currently hold a ministerial appointment with the national board of the Nursing and Midwifery Board of Australia.

Context for this Doctoral Research

The research reported here continues the work of a larger project funded through the Australian Office for Learning and Teaching (OLT). One of the primary aims of the OLT-funded project was to develop a broad group of Australian nurse practitioner specialties, which could be used to inform a learning and teaching framework for students working within clinical settings (Gardner et al., 2014). That research project was referred to as the CLLEVER (Clinical Learning and goVernance) study.

There were several outputs from the CLLEVER study relevant to this doctoral research. First, an annotated bibliography was produced after an extensive literature review into specialty frameworks supporting the clinical learning and teaching of nurse practitioner students (Gardner et al., 2013b). At the time the bibliography was published, there were limited nurse practitioner specialty clinical learning and teaching frameworks available for review internationally. The only jurisdictions that had published frameworks originated from the USA and Australia. Further information on these frameworks, and one that has been published since development of the annotated bibliography, will be provided in Chapter 2.

The second major output of the CLLEVER study was the development of a construct referred to as a 'metaspecialty'. The CLLEVER research team conducted a desktop audit of nurse practitioner specialty titles used in Australia. The audit identified that over 50 different specialty titles were in use by Australian nurse practitioners. The specialty titles were consolidated into six broad nurse practitioner specialty groups, termed metaspecialties, through a consensus development process. These metaspecialties would serve as a foundation for a nurse practitioner student clinical learning and teaching framework, which will be further detailed in Chapter 2.

Finally, the CLLEVER study identified existing gaps in the clinical learning and teaching of Australian nurse practitioner students. These gaps were identified by analysing curriculum documents and interview transcripts using a small sample of nurse practitioner students from a single accredited university in the Australian state of Queensland (Gardner et al., 2014). The gaps relevant to this doctoral research, which had been identified by the CLLEVER study were:

- Learning opportunities relating to advanced specialty clinical skills and knowledge were ad-hoc and varied widely amongst students. Such learning opportunities were dependent upon the work context and the nurse practitioner student's clinical supervisor.
- Supervisors and the wider health care team responsible for the clinical learning and teaching of nurse practitioner students demonstrated inconsistent understanding of the advanced clinical skills and knowledge required for the specialist nurse practitioner role.

In part, these findings were used to inform the revision of academic accreditation standards supporting student learning and teaching in Australian nurse practitioner Masters' programmes (Australian Nursing and Midwifery Accreditation Council, 2015). These accreditation standards placed renewed emphasis on principles supporting the clinical learning and teaching of nurse practitioner students. The accreditation standards are further detailed in this chapter under the *Australian Nurse Practitioner Education* section.

The CLLEVER study proposed the need for clinical practice standards for each of the identified metaspecialties. In turn, it was anticipated that greater guidance in clinical learning and teaching outcomes would be provided for nurse practitioner students working within their various specialties. The clinical practice standards would also provide greater transparency and consistency in learning and teaching outcomes required by student clinical supervisors. An external evaluation of the CLLEVER study was supportive of the metaspecialty constructs and clinical practice standards, but confirmed the investigative team's recommendation that the metaspecialties would benefit from further development and wider consultation prior to implementation (Gardner et al., 2014, p. 40).

This doctoral research is nested within a national research series funded by the Australian Research Council (Project Number DP130100769), and referred to as 'CLLEVER2 Phase 2'. Phase 2 continues the work of the CLLEVER study (See Figure 1:1). The national research series is collectively known as the CLLEVER2 research project, titled 'Educating for Health Service Reform: Clinical Learning, goVernance, and capability'. This doctoral research uses Reactive Delphi methodology to achieve consensus on the CLLEVER metaspecialties and supporting clinical practice standards, which have been developed to inform the specialty clinical learning and teaching of nurse practitioner students.

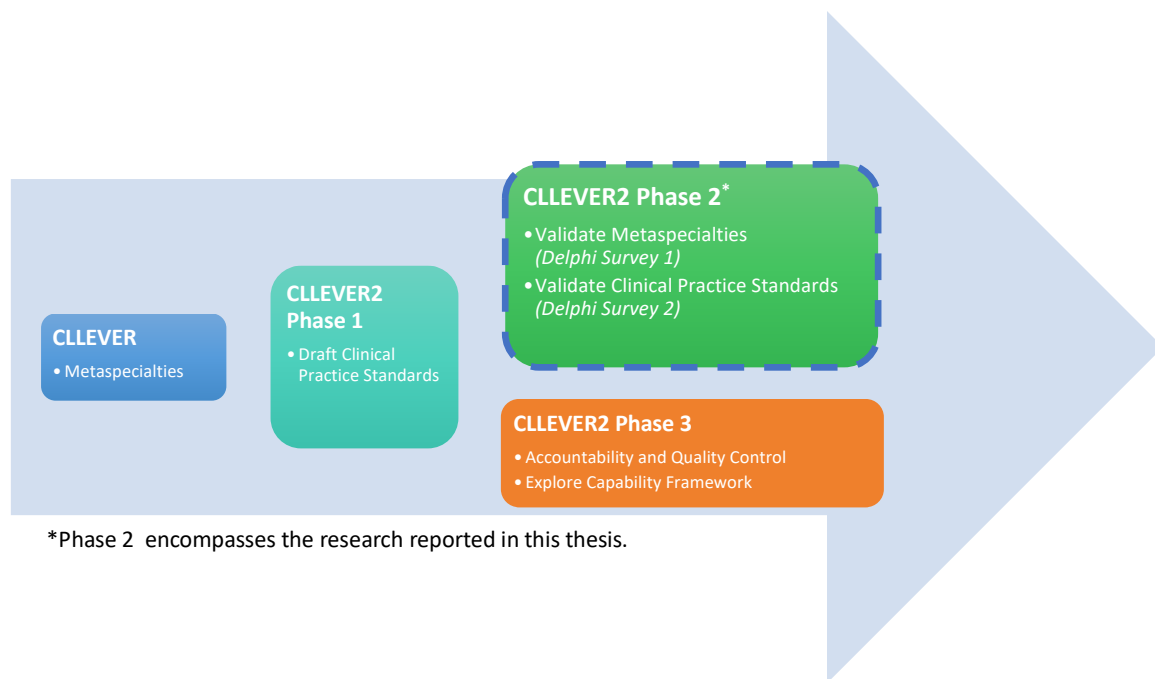


Figure 1:1 Context of this Doctoral Research within CLLEVER and CLLEVER2

The three-phase national research series began with interpretive research conducted by the CLLEVER2 investigative team, which established draft clinical practice standards for the CLLEVER metaspecialties. The second phase, which incorporates the body of work reported in this doctoral research, was designed to validate the draft clinical practice standards using a representative sample of Australian nurse practitioners using a consensus-based research approach. I identified that the CLLEVER metaspecialty names would benefit from wider consultation prior to finalisation, given the external review of the OLT-funded project. Therefore, phase two was modified slightly so that both the metaspecialty names and draft clinical practice standards would be validated using a representative sample of Australian nurse practitioners. The planned primary outcome of phase two was a framework, consisting of validated metaspecialties and their respective clinical practice standards, which could be used to inform a specialty clinical learning and teaching model to be finalised by the CLLEVER2 investigative team. Phase three was conducted by the CLLEVER2 investigative team concurrently with phase two, and used an embedded case study design to explore two objectives. The first objective explored accountability and quality control of clinical education in a university, within

the clinical learning and teaching environments of its nurse practitioner students. The second objective explored how a curriculum based upon capability learning and teaching approaches influenced student learning outcomes (Gardner, Gardner, Coyer, & Gosby, 2016). As a whole, the three-phase CLLEVER2 research project contributed theoretical knowledge to a capability-based clinical learning and teaching model for the health professions, inclusive of Australian nurse practitioner students.

Australian Nurse Practitioner Education

In this section, formal Australian nurse practitioner education is described, to better contextualise the basis for this doctoral research. Generic professional competency standards used for the academic learning and teaching of Australian nurse practitioners were first established in 2006 (Australian Nursing and Midwifery Council, 2006). The 2006 *National Competency Standards for the Nurse Practitioner* provided broad professional practice and behavioural expectations required of Australian nurse practitioners upon completion of a formalised programme of study. These standards were originally developed from research funded by the Australian Nursing and Midwifery and the New Zealand Nursing councils (Gardner, Carryer, Gardner, & Dunn, 2006). The standards were established from inductive analysis of interview and case study data generated by nurse practitioners across Australia and New Zealand. One of the assumptions informing the standards was that they built upon, and did not replace, advanced practice competency standards already used in Australia and New Zealand (Australian Nursing Federation, 1997; Gardner, Carryer, Dunn, & Gardner, 2004). This assumption implies nurse practitioner students must demonstrate domains of advanced practice nursing prior to entry into a nurse practitioner Master's programme. This requirement is perhaps different from other jurisdictions, such as the USA, where demonstration of advanced practice nursing is *the result of* formalised nurse practitioner education programmes (APRN Consensus Work Group, 2008).

Australian nurse practitioner students must demonstrate they are already working at the advanced practice nursing level prior to entry into their Master's degree programmes. Domains of advanced practice nursing have been described and empirically validated in Australia (Chang, Gardner, Duffield, & Ramis, 2010; Chang, Gardner, Duffield, & Ramis, 2012). Chang et al. (2012) conducted a workforce survey that established the construct validity of a tool used to identify discrete activities belonging to five broad domains of advanced practice nursing. Their large sample of 631 nurses purposefully excluded nurse practitioners, as advanced practice nursing activities pertaining to that role had already been defined. The study conducted by Chang et al. (2012) specifically examined advanced practice nursing activities demonstrated by the broader nursing workforce. Forty discrete nursing activities, belonging to five broad domains representative of the Strong Model of Advanced Practice (i.e. publication and professional leadership, direct comprehensive care, support of systems, education and

research), achieved their minimum stated factor analysis threshold. These activities were subsequently used in a large Australian workforce survey of 5,662 nurses, which clearly delineated the advanced practice nursing role from that of the nurse practitioner and other levels of Australian nurses (G. Gardner et al., 2016). Gardner et al. (2016) stated that an empirically-validated definition of advanced practice in Australian nurses would result from their research. Although outside the scope of this doctoral thesis, further work will be required to identify how their findings can be used to demonstrate advanced practice nursing as entry criteria to Australian university nurse practitioner Masters' programmes.

The 2006 *National Competency Standards for the Nurse Practitioner* were revised to the *Nurse Practitioner Standards for Practice* for regulatory purposes in 2014 (Nursing and Midwifery Board of Australia, 2014a). These standards build upon the domains of advanced practice nursing validated by others (Chang et al., 2012; G. Gardner et al., 2016) to reflect the expanded practice of the Australian nurse practitioner. The revised standards identified four domains in which nurse practitioners practice: clinical, education, research and leadership. Interwoven with these broad domains are four standards reflecting the expanded clinical practice of Australian nurse practitioners, comprising: the ability to assess using diagnostic capability; planning care and engaging others; prescribing and implementing therapeutic interventions; and monitoring outcomes of clinical care to evaluate and improve practice (Nursing and Midwifery Board of Australia, 2014a). Within each standard are cues used to explicate how these broad domains and standards are observed in Australian nurse practitioners. A validation exercise was performed on the revised 2014 standards using a sample of 35 nurse practitioners working in diverse practice settings and locations across every Australian state and territory (Cashin, Buckley, et al., 2015). Although the validation exercise demonstrated the revised 2014 standards were highly consistent with the clinical practice of nurse practitioners, the authors did not discuss how the exercise influenced the final regulatory standards in their published paper.

The *Nurse Practitioner Standards for Practice* support a generic curriculum framework referred to as the *Nurse Practitioner Accreditation Standards*, which are used for regulatory approval of academic programmes (Nursing and Midwifery Board of Australia, 2016a). The *Accreditation Standards* stipulate that Australian nurse practitioner academic programmes be at Australian Qualifications Framework (AQF) Level 9, which is a Master's degree (Australian Qualifications Framework Council, 2013). The *Accreditation Standards* also require students be RNs for a minimum of four years, have a post-graduate qualification relevant to clinical practice at AQF Level 8 (post-graduate diploma or equivalent), and demonstrate two years full-time equivalent experience working clinically at the advanced practice nursing level prior to entry into the programme (Australian Nursing and Midwifery Accreditation Council, 2015).

The findings from the CLLEVER and CLLEVER2 studies will be used to better support the *Nurse Practitioner Accreditation Standards*, by providing a specialist clinical learning and teaching framework for nurse practitioner students. Australian nurse practitioner students have traditionally undertaken a generic work-integrated learning approach (Smigiel & Harris, 2007; Smigiel & Macleod, 2008) to their specialist clinical education. With such an approach, the student receives clinical learning and teaching from a clinical supervisor (usually a medical practitioner) in their individual workplaces during the normal course of their duties as an employed registered nurse. Although nurse practitioner academic programmes are responsible for overseeing the clinical learning and teaching of students, they have traditionally focused their efforts in ensuring students meet generic academic requirements needed for the degree testamur. For example, prior to the revision of the *Accreditation Standards*, nurse practitioner academic course curricula focused on foundational knowledge needed for the professional, legal and ethical responsibilities associated with the nurse practitioner role (Ryan, 2009). Until very recently, universities were not required to use any formal frameworks to guide the clinical learning and teaching of nurse practitioner students in their prescribing role (National Prescribing Service, 2012). In addition, universities were not required to stipulate a minimum number of student clinical hours needed to demonstrate the expanded role of the nurse practitioner.

The revised *Accreditation Standards* now require universities to demonstrate that students have a minimum of 300 supernumerary hours for development of clinical knowledge and skills needed for specialist nurse practitioner practice (Australian Nursing and Midwifery Accreditation Council, 2015). These supernumerary hours are intended to serve as protected time for student nurse practitioners, which is outside the normal course of their duties as registered nurses. Previous research examining nurse practitioner students showed they were expected to fulfil their normal duties as employed RNs, whilst also attaining advanced knowledge and skills development required for the nurse practitioner role (Jennings et al., 2008), a practice sometimes known as work-integrated learning. During this new protected time students concentrate on developing skills and knowledge that demonstrate the expanded skillset defining nurse practitioner practice. Instead of being referred to as work-integrated learning, this specialist clinical learning and teaching is specifically referred to as “integrated professional practice (IPP)” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 29). It is expected that formal specialty clinical learning and teaching through IPP is undertaken in the clinical environment with one or more clinical supervisors, most commonly medical practitioners or nurse practitioners. The *Accreditation Standards* (for university programmes) and *Standards for Practice* (for endorsement of individuals for regulatory purposes) work in concert to broadly provide a framework preparing nurse practitioner students for entry-level practice.

Aside from providing general guidance on the requisite 300 hours of IPP, no specific guidance is provided by the *Accreditation Standards* on specialty clinical learning and teaching outcomes needed

by students. Instead, IPP is discussed more generally. For example, the *Accreditation Standards* state students are required to demonstrate clinical experiences that “reflect major health priorities specific to the student’s area of practice,” and that “students are provided with a range of health care experiences supporting knowledge and skills development in patient-centred care consistent with the principles of primary health care, and complement the student’s specialty skills and knowledge” (Australian Nursing and Midwifery Accreditation Council, 2015, p. 25). As the *Accreditation Standards* are generic in nature, there remains a distinct lack of guidance on clinical learning outcomes needed by students working within their respective specialties.

Generally, the scope of specialist clinical learning and teaching has been left to the student and clinical supervisor through mutually-agreed-upon learning agreements (Australian Nursing and Midwifery Accreditation Council, 2015; Ryan, 2009). These agreements have been largely unsupported by knowledge about the specialty clinical learning needs of nurse practitioner students. Only a handful of clinical specialty learning and teaching frameworks have been contextualised to Australian nurse practitioners (Douglas & Bonner, 2011; O’Connell, 2015; Quinn, Glaetzer, Hudson, & Boughey, 2011). Only one of those specialty frameworks was established by empirical research, and focused solely on the clinical learning and teaching needs of the nurse practitioner student (O’Connell, 2015). In 2014 there were over 50 different nurse practitioner specialties identified in Australia (Gardner et al., 2014). There are no further published guidelines or frameworks supporting the specialist clinical learning and teaching needs of the remaining nurse practitioner specialties. Therefore, with few specialty clinical learning and teaching frameworks in existence in Australia, and only generic guidance provided on IPP in the *Accreditation Standards*, further research supporting nurse practitioner student specialist clinical learning and teaching is needed.

The Construct of Consensus

To understand the doctoral aim of validating a clinical learning and teaching framework for Australian nurse practitioner students, the construct of consensus as applied to this research requires explanation. A measure of consensus was used in this doctoral research to demonstrate the level of validation achieved by the proposed framework. Consensus in this doctoral research was measured using Delphi methodology. A detailed explanation of differing consensus methodologies is provided in Chapter 2, with special focus on Delphi methodology. This methodology typically involves a panel of experts who participate in an iterative consensus process anonymously, whilst working in relative isolation to one another (Dalkey & Helmer, 1962). The specific methodology and methods used in this doctoral research will be detailed in Chapter 3.

Research using consensus-based methodologies has described the plethora of statistical tests used to measure consensus, rather than exploring the consensus construct itself. The definition of consensus

in Delphi methodology varies widely. In their literature review of consensus definitions used in Delphi methodology, von der Gracht (2012) demonstrated how subjective researcher criteria, a pre-determined number of rounds, descriptive and inferential statistics have all been used to determine consensus. The researcher concluded his literature review with the assertion that although there was no clear guidance on how consensus should be defined when using Delphi methodology, both a level of agreement (as demonstrated through majority opinion) and stability of panelist opinion across Delphi rounds should be used (von der Gracht, 2012, p. 1533). Other well-cited Delphi researchers have argued the importance of simply using a minimum level of agreement (majority opinion) determined *a priori*, before data are collected in research using Delphi Technique (Keeney, Hasson, & McKenna, 2011, p. 45).

More recently, Diamond et al. (2014) performed a systematic literature review on consensus definitions in research using Delphi Technique. Of the 98 manuscripts that met their inclusion criteria, only 43% provided a consensus definition *a priori*. Of their included manuscripts, a minimum level of 75% agreement was the most commonly used definition for consensus, followed by a proportion of ratings falling within a specified range on a scale (Diamond et al., 2014). The review indicated only 3% of studies using Delphi methodology applied stability of opinion across rounds as a means of determining consensus. Kalaian and Kasim (2012) provided detailed discussion on parametric and non-parametric statistical methods used to demonstrate stability of opinion across rounds when using Delphi methodology. They asserted parametric statistical methods should be used to determine consensus when involving greater than 30 expert panelists in research using Delphi methodology. However, their broad assertion requires a normal distribution of panelists; otherwise, a basic assumption underlying such statistical testing is violated (Allen & Bennett, 2010). Given the relatively small number of panelists typically participating in an expert Delphi panel (8–18 panelists) (Keeney et al., 2011, p. 53; Okoli & Pawlowski, 2004), it is unlikely parametric statistical methods can be appropriately applied to determine consensus in Delphi methodology.

The literature review conducted by Diamond et al. (2014) resulted in proposed quality criteria for reporting research using Delphi methodology. They identified the following quality criteria: the consensus criteria used by panelists are reproducible; the number of rounds to be performed are stated *a priori*; criteria for revising or dropping items in the consensus process are clear; and alternate stopping criteria other than rounds are specified prior to the conduct of the research (Diamond et al., 2014). These quality criteria were used in the determination of consensus in this doctoral research, and will be detailed further in Chapter 3.

The Construct of Expertise

In this section, the construct of expertise and its significance to the research reported in this doctoral thesis is described. Over the years, increasing attention has been placed on the definition of 'experts' involved in consensus-based research methodologies (Baker, Lovell, & Harris, 2006). This doctoral research specifically used 'expert opinion' to validate a specialist clinical learning and teaching framework for nurse practitioner students. The external validity of consensus-based research methodology using expert opinion largely depends upon whether others view those participating in the research as being expert. Likewise, the internal validity of consensus outcomes determined by expert opinion is dependent upon the ability of those experts to influence panel opinion during the consensus process (Hasson & Keeney, 2011). As outcomes from this doctoral research were based upon the sum of individual expert opinions, which may have been informed by objective and/or subjective evidence, a clear operational definition for their expertise was provided.

In research examining the clinical practice of RNs, McHugh and Lake (2010, p. 278) simply define clinical expertise as "a hybrid of practical and theoretical knowledge". The construct of expertise in the nursing literature began with research conducted by Benner (1982) using the 'Dreyfus Model of Skill Acquisition'. Benner conducted interviews with 51 registered nurses working in several hospital settings, who reflected varying degrees of experience. She used the Dreyfus Model to describe the transition from novice to expert clinical practice. Benner identified four key characteristics required for expert nursing practice: intuition; know-how reflected through the application of technical skills; moral-agency as demonstrated through collaborative practice; and the ability to respond quickly and appropriately to subtle changes in patient status due to the high quality of the therapeutic relationship (Benner, Tanner, & Chesla, 2009). Since publication of her works, two literature reviews have identified additional qualities and considerations of expert registered nurses. For example, Adams et al. (1997) reviewed the literature and identified the importance of the consulting role in expert nurses, as well as clearly stating the importance of translating expertise to clinical outcomes. The most recent integrative literature review was performed by Morrison and Symes (2011), who identified 16 studies in North America, Europe and Australia meeting their inclusion criteria. They identified the following themes from their review of expertise in RNs working in hospital to community settings: knowing the patient; reflective practice; intuitive knowledge, including pattern recognition; skilled know-how; and risk-taking. They concluded that expert nursing develops because of reflective practice, whilst gaining experience working in collaboration with colleagues in specialised work settings. Neither the review conducted by Adams et al. (1997) nor by Morrison and Symes (2011) included any studies using advanced practice nurses, such as nurse practitioners. A review of the literature reveals the characteristics of expertise in the nurse practitioner role have not been previously described.

The characteristics of nursing expertise and how these relate to clinical outcomes are poorly described in the literature. Christensen and Hewitt-Taylor (2006, p. 1535) provide insight into this issue: “In many cases there may be no proof that expertise in nurses has a significant effect.” This is largely because the expertise construct is impossible to define. Accordingly, there is much in the published literature relating clinical outcomes to role transition (or *experience level* as demonstrated by being an entry-level or experienced nurse). Arrowsmith et al. (2015) conducted a systematic review of the literature from 1990–2014 to identify the presence of work role transition in nurses. They identified 26 papers meeting their inclusion criteria, and demonstrated two key themes in work role transition: striving for a new professional self (demonstrated through emotional upheaval and identity formation); and know-how (demonstrated through competence and understanding boundaries to practice). Brown & Olshansky (1997) published the first qualitative research demonstrating work role transition, using RNs in the USA transitioning into the nurse practitioner role in their first year of clinical practice. A psychometric scale measuring successful work role transition in nurse practitioners was subsequently developed and validated by Strange (2015). Her scale consisted of four domains: understanding the nurse practitioner role; clinical competence; collegial support, and interpersonal communication (Strange, 2015). Barnes (2015) found successful nurse practitioner role transition relied upon a structured orientation to clinical practice in the first year of practice. Others have demonstrated successful nurse practitioner role transition relied upon the quality of preparatory clinical experiences during nurse practitioner education programmes, and the number of years practising as a RN before becoming a nurse practitioner (Cusson & Strange, 2008).

Australian nurse practitioners, who were the participants in this consensus-based doctoral research, are by definition ‘clinical experts’ within their respective fields of practice (Australian Nursing Federation, Australian Practice Nurses Association, Australian Royal College of Nursing, Australian Nurse Practitioner Association, & Australian College of Mental Health Nurses, 2008). The expanded clinical role of the nurse practitioner requires a qualitatively different level of expertise from that of the registered nurse (G. Gardner et al., 2016). There is no international literature describing experience level in nurse practitioners who have already successfully transitioned into the role. Once there is an empirical measure of experience level in nurse practitioners, then it may be possible to conduct research exploring the correlation of experience level in nurse practitioners with clinical outcomes.

Australian nurse practitioners may be more than clinical experts. Aside from clinical expertise, which is implied through the demonstration of RN to nurse practitioner role transition, other facets of expertise are possible and have been described in the social sciences. Expertise has been defined in the social sciences as a reflection of advanced “domain or task-specific knowledge” (Sniezek et al., 2004, p. 174). Expertise might be implied when individuals are recognised as expert by others. It may

be demonstrated by a comprehensive understanding of knowledge, skills and practice across several domains, which may include clinical, academic and professional performance measures (Boot & Ericsson, 2013). Expertise is a multi-faceted composite construct that can be subjectively (e.g. through self-rating) and objectively (e.g. through reputation, qualifications, education, or other demonstrable performance measures reflecting extensive and quantifiable skills and/or experience) determined. For example, psychometric measurements of expertise have been described in professional managerial environments (Germain & Tejeda, 2012). Therefore, given the depth of advanced practice nursing experience Australian nurse practitioners bring to the role, it is expected they may not only demonstrate clinical expertise, but another facet of expertise such as 'professional expertise.' In the context of this research, the operational definition of professional expertise in Australian nurse practitioner is: 'advanced knowledge about the nurse practitioner profession and experience working in the role of the nurse practitioner, which is recognised by others and demonstrated through leadership, mentorship, representation and publication for the nurse practitioner profession'.

Research Aims and Design

In this section, the research aims and design are given, based upon identified knowledge gaps that exist in the literature. This doctoral research consists of three aims, with detailed questions or objectives used to address each aim:

Research Aim 1

To validate a specialty clinical learning and teaching framework for Australian nurse practitioner students.

Specific objectives that addressed this aim were:

- A. To validate a previously-developed Australian nurse practitioner metaspecialty taxonomy.
- B. To validate supporting clinical practice standards used for the metaspecialty taxonomy.

Research Aim 2

To contribute knowledge of how consensus is achieved when using Reactive Delphi methodology.

Specific questions that addressed this aim were:

- A. Does Reactive Delphi methodology potentiate the negative influence of the bandwagon effect in Delphi panelists?
- B. What effect does panelist confidence have on decision-making in Delphi panelists?
- C. How can experience level be objectively demonstrated in individual Delphi panelists?
- D. What effect does experience level have on decision-making in Delphi panelists?
- E. Does confidence relate to opinion change in individual Delphi panelists?
- F. What effect does panel composition have on consensus outcomes?

Research Aim 3

To demonstrate the application of web-based methods in Delphi research.

Specific objectives that addressed this aim were:

- A. Describe the advantages of using a web-based Delphi method.
- B. Describe the risks of using a web-based Delphi method.
- C. Describe how panelist feedback was managed during six concurrent Delphi studies.

The Research Aims one through three were achieved by conducting two consecutive Reactive Delphi surveys, which represented Phase 2 of the nationally-funded CLLEVER2 research project. Specifically, Delphi Survey 1 (DS1) addressed Aim 1, Objective A (1A). The results of 1A were published in a peer-reviewed journal and form the body of Chapter 4. Research Aim 2 (inclusive of Questions A–F) was addressed with data collected from DS1 and these are reported in Chapter 5. Delphi Survey 2 (DS2) addressed Aim 1, Objective B (1B) and Aim 3, Objective C (3C). A manuscript discussing the results of 1B, of which I am co-author, will be published in a peer-reviewed journal. An abstract of that manuscript can be found in Appendix Z. My unique contributions to the conduct of DS2, as well as a Consensus Development Conference used to refine the proposed clinical learning and teaching framework, will be detailed in Chapter 6. The combined findings from performing DS1 and DS2 addressed Aim 3, Objectives A and B (3A, 3B). These findings were described in a manuscript submitted for publication in a peer-reviewed journal, and form the body of Chapter 7.

Significance

The significance of this doctoral research relates to both the consensus outcomes and the methodology used to achieve the stated research aims. A validated metaspecialty taxonomy and supporting clinical practice standards can be used to inform a contextualised specialty clinical learning and teaching framework for Australian nurse practitioner students. The framework informed by this doctoral research will be validated by a large and representative sample of nurse practitioners, which will increase its generalisability and relevance to Australian nurse practitioners. Together, the metaspecialties and clinical practice standards can serve as a practical tool used by academic education programmes, clinical supervisors and nurse practitioner students for specialty learning and teaching in the clinical learning environment. In turn, this framework will contribute to a clinical learning and teaching model that can be used to promote consistency and flexibility in how specialist clinical education is provided to nurse practitioner students. By promoting both consistency and flexibility in how Australian nurse practitioner students obtain their specialist clinical education, nurse practitioners will have greater capacity and capability to drive Australian health care reform (Centre for International Economics, 2013). As a PhD student embedded within a large, nationally-funded

research programme addressing the need for a specialty clinical learning and teaching framework for nurse practitioner students, I will have made a significant contribution to this programme.

Research Aim 2 and Aim 3 promote greater understanding of the implications of using Delphi methodology and web-based survey methods in nursing research. Together, they will enhance understanding of the internal and external validity of consensus outcomes derived from a specific type of Delphi research called 'Reactive' Delphi methodology. This doctoral research will result in greater understanding of the expertise and consensus constructs when using nurse practitioners in Delphi methodology. This doctoral research will promote greater understanding of the advantages and risks of conducting web-based surveys.

Thesis Structure

This doctoral research continues with Chapter 2, the literature review. I introduce Chapter 2 by broadly discussing the literature regarding the Australian nurse practitioner role. Next, the review describes professional and educational challenges surrounding specialist frameworks, and how they relate to the clinical learning and teaching of Australian nurse practitioner students. This background information will assist the reader in understanding how validation of an Australian clinical learning and teaching framework will better support specialist clinical practice, and result in a more consistent and flexible workforce. I will then critique differing consensus-based research methodologies and present their advantages and disadvantages. That section of the literature review concludes by explaining Reactive Delphi methodology as the most suitable means of conducting this research. The review then describes what influence expertise, the bandwagon effect, panelist confidence and panel composition might have on consensus outcomes. This portion will provide insight into issues pertaining to the internal validity of Delphi methodology. The literature review concludes with a focus on Delphi studies conducted using nurse practitioners.

The remaining chapters are outlined as follows: Chapter 3 will outline the specific methodology and methods used for DS1 and DS2, as well as introduce the main operational definitions used within this doctoral research. Chapter 3 will provide further detail about the rigour of the approaches used to validate the metaspecialties and clinical practice standards. Chapter 4 will begin with an introduction contextualising the published manuscript reporting Research Aim 1A, which provides results from the validation of the metaspecialty taxonomy. Some of the methodology and methods outlined in Chapter 3 are repeated in the main body of Chapter 4, as they were required to ensure the published manuscript was cohesive and encompassing. Chapter 4 concludes with further insight into the published outcomes from that manuscript. Chapter 5 provides results on Research Aim 2, questions A–F. It provides insight into the influence that expertise, the bandwagon effect, panelist confidence and panel composition had on consensus outcomes during DS1. Chapter 6 opens with an explanation

of outcomes determined by DS1, which were then used to inform the conduct of Delphi Survey 2. It then addresses Aim 3C and provides the results of a Consensus Development Conference, which was used to refine the proposed specialist clinical learning and teaching framework. Chapter 6 concludes with the proposed specialist clinical learning and teaching framework. Chapter 7 provides insight into my unique methodological contributions as co-author for a manuscript reporting the results of DS2, in which my doctoral research is nested. A second manuscript submitted to a peer-reviewed journal is then presented, which contributes new knowledge determined from the conduct of both Delphi Surveys 1 and 2. That manuscript will form the main body of Chapter 7, and answers Research Aims 3A and 3B. The thesis concludes with Chapter 8, which serves as a discussion chapter for the thesis in its entirety. In this chapter I discuss the achievement of the research aims within the context of the literature. Following a discussion on the program of research, its strengths and limitations, and recommendations for future policy, practice and research will be presented.

Chapter 2 Literature Review

Introduction

This review of the literature comprises three sections. The first section establishes the need for structures that guide specialty clinical learning and teaching for Australian nurse practitioner students. The second section provides a critique of available consensus-based research methodologies that could be used to validate a specialty clinical learning and teaching framework for Australian nurse practitioner students. Then, gaps in knowledge regarding the validity of the selected methodology used in this doctoral research are identified as relating to nurse practitioners.

This chapter begins with an overview of the clinical role of the Australian nurse practitioner. This provides baseline information supporting rationale for the development of an Australian nurse practitioner specialty clinical learning and teaching framework. Summarised results from previous research informing the framework are provided. Next, an overview of consensus-based research strategies is given, along with their relative advantages and disadvantages. The overview justifies Reactive Delphi methodology as the consensus-based research strategy most appropriate for validating the specialty clinical learning and teaching framework. A discussion is then presented on factors influencing the consensus process when using Delphi Technique, to justify how the internal and external validity of Delphi Technique is established. Special consideration is given to existing gaps in knowledge regarding the demonstration of expertise, the bandwagon effect, panelist confidence, panel composition, and how they influence consensus when using Delphi Technique. Next, the literature review provides insight into questions that remain unanswered with respects to the use of nurse practitioners in Delphi research. Chapter 2 concludes with a summary of gaps identified and questions which remain un-answered, pertaining to the use of Reactive Delphi methodology as a suitable means for achieving consensus on the clinical learning and teaching framework.

Search Strategy

The literature review achieves three broad purposes, which required three separate searches to inform the background of this doctoral research. The purpose of the first search was to provide greater detail on existing clinical learning and teaching frameworks for nurse practitioners, to better contextualise the need for this doctoral research. A recent annotated bibliography reviewed the national and international peer-reviewed and grey literature for specialist clinical learning and teaching frameworks relating to the nurse practitioner role (Gardner et al., 2014), and served as a catalyst for this doctoral research. The second search comprised an evaluation of consensus-based research methodologies, with focus on Delphi Technique and specific factors (i.e. expertise, the bandwagon effect, panelist confidence and panel composition) contributing to its validity. The third search comprised a review of the literature relating to Delphi Technique involving nurse practitioners.

Two principal search strategies were used to inform the literature review. The first strategy identified manuscripts relevant to the research aims that had been published in peer-reviewed journals. The second strategy identified relevant publications in the grey literature that discussed nurse practitioner clinical learning and teaching frameworks as the primary subject matter. The second strategy was applied by conducting a desktop audit of publically-available regulatory and professional association websites based in Australia and internationally. References identified in primary sources, that were relevant to this doctoral research, were also incorporated into the literature review.

A combination of search terms were used to conduct this review of the peer-reviewed and grey literature. The following terms were used in the CINAHL, Google Scholar, PubMed, MEDLINE and ProQuest online publication databases: 'advanc* nurs* practice'; 'advanc* practice nurs*'; 'Australia*'; 'bandwagon effect'; 'clinical'; 'clinical learning'; 'clinical teaching'; 'clinical learning and teaching'; 'confiden*'; 'confidence heuristic'; 'competenc*'; 'composition'; 'consensus'; 'Delphi'; 'egocentric discount*'; 'experience*'; 'expert*'; 'framework'; 'group'; 'informational'; 'normative'; 'nurse practitioner*'; 'opinion change'; 'panel'; 'practi?e'; 'role transition'; 'social'; 'standard*'; 'influence'; and 'valid*'. These search terms were applied to manuscript titles, abstracts, subject headings and keywords in the peer-reviewed literature. In addition, search terms relevant to nurse practitioner clinical learning and teaching frameworks were also applied to publically-available websites, executive summaries, and reports during the desktop audit. All search strategies were limited to the English language. See Table 2:1 to see examples of how search terms were combined to achieve each search for the literature review.

Table 2:1: Examples of Combined Search Terms used for the Literature Review

Literature Review Purpose	Combined Search Terms
<i>To provide greater detail on clinical learning and teaching frameworks for nurse practitioners.</i>	<ul style="list-style-type: none"> • 'advanc* practice nurs*' AND 'clinical learning and teaching' • 'nurse practitioner*' AND 'clinical learning' • 'nurse practitioner*' AND Australia* AND clinical NOT 'clinical nurse consultant'
<i>To evaluate consensus-based research methodologies, with focus on Delphi methodology and specific factors contributing to its validity.</i>	<ul style="list-style-type: none"> • Delphi AND 'egocentric discount*' • Delphi AND 'bandwagon effect' • Consensus AND 'panel composition'
<i>To identify research studies using Delphi methodology that involved nurse practitioners.</i>	<ul style="list-style-type: none"> • Delphi AND 'nurse practitioner*' • Consensus AND 'nurse practitioner*' • Delphi AND 'advanc* practice nurs*'

Each search resulted in a large number of primary sources. These sources were further refined using combinations of the above search terms. The search into existing nurse practitioner clinical learning and teaching frameworks resulted in 6,665 publications between the years 2000–2017. The search evaluating consensus-based research methodologies, with a focus on Delphi methodology, resulted in

20,799 publications between the years 1968–2016. Finally, the search identifying research studies that had used Delphi methodology and involved nurse practitioners as the subject matter resulted in 473 publications between 1970–2014. Abstracts from primary sources were reviewed to ensure relevance to this doctoral research, and duplicates were excluded. The above search strategy resulted in a total of 360 publications informing this doctoral research.

Australian Nurse Practitioners

A brief overview of the nurse practitioner role internationally and in Australia was provided in Chapter 1. In this section, research highlighting the clinical role of the nurse practitioner is provided to better orientate the reader to the Australian context. A recent literature review of published papers between 2000–2013 indicated there were 68 peer-reviewed papers and reports relating to Australian nurse practitioners (Masso & Thompson, 2014). Masso and Thompson (2014) were commissioned by the New South Wales Department of Health to better understand the clinical roles, contexts of practice and outcomes established by Australian nurse practitioner models of care. Their review indicated the largest cohort of published studies examining the clinical role of the Australian nurse practitioner in emergency care contexts in large urban centres (Masso & Thompson, 2014). It reflected findings from multiple workforce surveys that have identified the largest proportion (~30%) of Australian nurse practitioners work in emergency contexts (Australian College of Nurse Practitioners, 2012a; Gardner, Gardner, Middleton, & Della, 2009; Middleton, Gardner, Gardner, & Della, 2011).

All of the studies identified by Masso and Thompson (2014) were conducted at single trial sites, and are therefore difficult to generalise to other Australian contexts. For example, Jennings et al. (2015) conducted a large un-blinded randomised controlled trial using 260 patients who presented with pain to a large metropolitan emergency department in the state of Victoria. The primary aim of their study was to determine whether pain relief was initiated in patients within 30-minutes of presentation to an emergency department. Patients were randomly assigned to one of two groups: standard care using medical practitioners with a minimum of three years' post-graduate specialty training in emergency medicine; or the intervention group, which used nurse practitioners with a maximum of four years' post-endorsement experience. The authors concluded the quality of care was better in the intervention (nurse practitioner) group. Jennings et al. (2015) found 20% more patients received analgesia within the 30-minute target in the intervention (nurse practitioner) group than the standard care (medical practitioner) group. However, the authors indicated their research was only conducted in the 'fast-track' area of a single emergency department, where patients had non-life threatening illnesses or injuries. Their findings could not necessarily be extrapolated to nurse practitioners working in other specialised areas within the emergency department. In addition, they identified their findings may have been determined by the service delivery model used in their study, which may have been unique to that setting. The nurse practitioners in their research conducted complete episodes of care

for emergency patients. A complete episode of care included assessing the need for pain medication, diagnosing, prescribing, dispensing and administering pain relief to the patient. In contrast, the medical practitioners also assessed, diagnosed and prescribed pain relief, but were dependent upon registered nurses for the dispensing and administration of pain relief medications.

There has been little other research examining key clinical performance indicators directly attributable to Australian nurse practitioners in the emergency context. For example, Lee et al. (2014) conducted a prospective comparative study of limb radiograph interpretation by nurse practitioners and senior medical consultants in a single metropolitan hospital emergency department in the state of Victoria. Their study used a consultant radiologist to adjudicate whether there were definitely, possibly or no fractures identified on patients presenting to the emergency department with non-life threatening limb injuries. Two-hundred limb radiographs were independently interpreted by individuals belonging to a panel of senior consultants with up to 35 years' emergency experience, and individuals from a panel of nurse practitioners with up to eight years' experience. The researchers demonstrated a high-degree of inter-rater agreement on x-ray interpretation between the nurse practitioner and senior medical consultant panels. Other research involving Australian nurse practitioners working in the emergency department context with minor illnesses and injuries have found decreased wait-times for patient assessment (Considine, Kropman, & Stergiou, 2010; Dinh, Walker, Parameswaran, & Enright, 2012). For example, Dinh et al. (2012) examined quality of care in 320 patients presenting with minor illnesses and injuries to a large urban emergency department in New South Wales. Patients were randomised to either medical practitioner (n=155) or nurse practitioner (n=165) care over a 1-year period. Although not statistically significant ($p=0.06$), patients waited an average of seven minutes less when seeing the sole nurse practitioner than those patients seen by a group of medical practitioners with differing levels of experience and expertise. It may be argued the shorter wait was clinically significant, as their study was not sufficiently powered to demonstrate statistical significance.

Masso and Thompson (2014) identified there have been 16 papers published about Australian nurse practitioner specialty practice in discrete clinical contexts, other than emergency care. Like Dinh et al. (2012), most of the remaining publications used the experience of a sole nurse practitioner working within a specialty area or context of practice to evaluate the contributions of the role. For example, an evaluation was conducted of a women's health nurse practitioner, which evaluated patient access, safety and clinical efficacy of the service (Elmer & Stirling, 2013). An evaluation of a mental health care nurse practitioner assessed patient access to and acceptability of the service by patients and health practitioners (Wand, White, Patching, Dixon, & Green, 2012). Similar research aims were established for nurse practitioner services in oncology care (Cox, Karikios, Roydhouse, & White, 2013) and an acute pain service (Schoenwald, 2011). Additional Australian nurse practitioner specialty areas identified in the peer-reviewed literature since Masso and Thompson (2014) have indicated highly-specialised

clinical nurse practitioner roles, and include rural and remote aged care (Hungerford, Prosser, Davey, & Clark, 2016) and neurologic care of carpal tunnel syndrome (Scanlon, Perera, Gonzalvo, & Fabinyi, 2015). The research published by Gibb, Edwards, and Gardner (2015) is somewhat different from others. They conducted a scoping study using a cohort of 15 Australian wound care nurse practitioners from an online peer support group to identify common clinical services, decision-support tools, service profiles, models of care and outcomes data collected within that specialty area. They are the only known authors to have used validated tools specifically designed to evaluate service design and clinical practice of Australian nurse practitioners (Gardner, Gardner, Middleton, & Della, 2009). Their online survey revealed 80% of wound care nurse practitioners used clinical pathways and protocols for the management of wounds. In addition, 50% of the wound care nurse practitioner's time was spent in direct patient care, followed by administration and management (17%) and research (13%).

Much of the published Australian literature describes nurse practitioner specialty practice within the context of interdisciplinary care, which makes it difficult to directly attribute results to the nurse practitioners themselves. For example, Murfet, Allen, and Hingston (2014) described maternal and neonatal outcomes in a nurse practitioner-led multidisciplinary health service working with pregnant women with diabetes. The multidisciplinary team included certified diabetes educators, midwives, obstetricians and dietitians. They used a pre-post study design by analysing demographic, maternal and foetal outcomes data obtained before and after the introduction of the nurse practitioner model of care. The researchers found the nurse practitioner model of obstetric care reduced adverse neonatal outcomes by 24%, although there were no statistically-significant decreases in morbidity demonstrated with the mothers in their study (Murfet et al., 2014). Although the success of the model was attributable to a health service designed by a nurse practitioner, the outcomes data reflect best practices in multidisciplinary care (Blumer et al., 2013), as opposed to direct patient clinical care provided by a nurse practitioner. Similarly, Chapman, Johnston, Lovell, Forbat, and Liu (2016) conducted a quasi-experimental study examining the impact of a nurse practitioner-led multidisciplinary approach to palliative care. Data were collected for a 3-year period from 173 aged care residents who had died after receiving general practitioner and/or specialist palliative care services before the intervention was implemented. The intervention took place in four aged care facilities with 104 palliative care patients over a three-month period in the Australian Capital Territory. It consisted of a nurse practitioner-led multidisciplinary needs meeting for palliative care clients in aged care facilities. The authors demonstrate significantly lower hospitalisation stays and significantly higher achievement of the person dying in their preferred location using nurse practitioner-led multidisciplinary care planning.

There have been very few studies demonstrating Australian nurse practitioners working in a 'generalist' primary health care capacity, like that of a general medical practitioner. Studies examining

the generalist primary health care role of the nurse practitioner were performed after the introduction of Australian government reforms, which allowed for financial reimbursement of services performed by nurse practitioners working in the private health sector (Australian Government, 2010). A national membership survey representing 34% of the Australian nurse practitioner population showed 80% work within the public health system (Australian College of Nurse Practitioners, 2012b). Since the introduction of legislated private practice reforms, the largest cohort (26%) of nurse practitioners working in the private sector have stated their specialty area is 'general practice/primary care' (Currie, Chiarella, & Buckley, 2016b).

Australian generalist primary health care is poorly defined, with only three case report studies suggesting what a generalist nurse practitioner role might entail (Bentley et al., 2015; Helms et al., 2015; McMillan & Emmerton, 2013). It is therefore difficult to describe the clinical learning and teaching needs of generalist primary health care nurse practitioner students. The generalist primary health care nurse practitioner role appears to encompass a mixture of preventive health care services, chronic disease management and care for acute minor illness and injuries. For example, McMillan and Emmerton (2013) reported on the generalist role of five nurse practitioners working in pharmacies in metropolitan and rural areas of Western Australia. They reported nurse practitioners working in the generalist primary health care role provided wound management, vaccinations, general health checks, treated minor infections, and provided sick certificates. The authors concluded by stating they were unsure whether nurse practitioners had "the broader knowledge base needed for a primary-care setting" (McMillan & Emmerton, 2013, p. 978). Their conclusion was unsupported, as it was based upon an older study conducted in Australian nurses, before there were national professional and accreditation standards for nurse practitioners (Offredy, 2000).

I published a case report of my generalist primary health care nurse practitioner role in the Australian Capital Territory. It reported the financial viability of employing a nurse practitioner in a single general practice (Helms et al., 2015). The background information revealed I received my formative nurse practitioner education in the USA, and have expertise in cardiovascular conditions. My practice involved preventive health care through lifestyle modification, chronic disease management for common health conditions, diagnostic and therapeutic procedures, and care for minor illnesses and injuries. The last case report of a generalist nurse practitioner role involved the practice of two nurse practitioners working in a single general practice in Tasmania over a 2-year period (Bentley et al., 2015). These nurse practitioners were described as 'aged care' nurse practitioners, but their scope also involved preventive health activities and multi-morbidity disease management in populations aged 29–99 years of age. The findings by Helms et al. (2015) and Bentley et al. (2015) suggest hybridisation of specialist and generalist nurse practitioner roles has occurred in primary health care

contexts of practice. This hybridisation may create unique clinical learning and teaching needs for nurse practitioner students in primary health care contexts.

The majority of Australian nurse practitioner studies to date have demonstrated the ability of nurse practitioners to safely provide autonomous clinical care, but relatively few studies have evaluated the practice of those who had fully implemented their roles (Masso & Thompson, 2016). In their literature review Masso and Thompson (2014) demonstrated 22% (n=15/68) of the studies pertaining to Australian nurse practitioners were not using endorsed nurse practitioners, but used students transitioning into the nurse practitioner role. In addition, research findings regarding Australian nurse practitioners are further complicated by the reporting of combined outcomes data from samples including endorsed nurse practitioners and students. For example, Considine et al. (2010) conducted a retrospective audit of fast-track patients managed in a large metropolitan emergency department in Victoria over a one year period. They determined their results using a combined panel consisting of a nurse practitioner student and an endorsed nurse practitioner (n=2), compared to separate groups of interns (n=34), junior (n=45) and senior (n=38) medical officers, registrars (n=19) and consultant emergency physicians (n=16). They found both the nurse practitioner and consultant physician groups had the shortest length of stay in the emergency department and the nurse practitioner group had the highest compliance with national waiting time targets. Their findings confused benefits ascribed to the nurse practitioner or the student, as their study stated there was no difference in the clinical role of a student versus that of the endorsed nurse practitioner. Their statement might have implied the nurse practitioner student was in an excellent clinical learning and teaching environment where they could learn an expanded skillset preparing them for autonomous nurse practitioner clinical practice. However, it might also be inferred the endorsed nurse practitioner was not be able to fully enact their role as their practice was no different than the student's. This could imply the student was not being taught knowledge and skills differentiating the nurse practitioner role from other nursing roles in the emergency department context. Masso and Thompson (2016, p. 7) confirmed that barriers to enabling role implementation have blunted nurse practitioners from realising their full potential in Australian health system reform. The research conducted by Considine et al. (2010) raised the question of whether nurse practitioners who are clinical supervisors are working to their full potential. If not, students might not obtain the necessary clinical learning and teaching to prepare them for the autonomous role of the nurse practitioner.

In summary, Australian nurse practitioners practise in diverse specialty areas and contexts of practice. The largest cohort of studies using specialty nurse practitioners in Australia have been performed in the emergency context. There are significant differences in how specialty nurse practitioners have defined and operationalised their clinical practice, which creates significant confusion when attempting to compare contextualised nurse practitioner roles. The diverse clinical contexts and

specialty areas in which Australian nurse practitioners practise may have differing clinical learning and teaching requirements. It is unclear whether nurse practitioner students have received their clinical learning and teaching from nurse practitioner supervisors who have fully enacted their roles. If a nurse practitioner student works within a context of practice that poorly differentiates between the RN and nurse practitioner roles, the student may not obtain the necessary clinical learning and teaching required for autonomous practice. Such challenges are easier to overcome, and comparisons across jurisdictions more easily drawn, if role definition, scope of practice and regulatory governance arrangements are clearly explicated when publishing research about nurse practitioners. Once the nurse practitioner role is clearly described, sound strategies can be devised to steer the nurse practitioner profession through challenging educational hurdles, both locally and internationally.

Clinical Learning and Teaching Frameworks

This section provides background information on professional and clinical educational challenges faced by Australian nurse practitioner students working within their specialties. This is provided to orient the reader to issues impacting upon nurse practitioner role development and enactment. Role development refers to establishing a novel nurse practitioner position to meet identified health care needs in a context of practice. Role enactment refers to the “process of [nurse practitioners] familiarising themselves with their roles as collaborating colleagues and performing their specific roles within the team” (Schadewaldt, 2015, p. 125). In response to these identified issues, research informing the formulation of a nurse practitioner clinical learning and teaching framework will be summarised. This will assist the reader in better understanding why a nurse practitioner clinical learning and teaching framework is needed in Australia. This portion of the literature review draws upon both peer-reviewed and grey literature, as there is a paucity of empirical research on clinical learning and teaching frameworks relevant to Australian nurse practitioner specialty practice.

Role Development and Enactment

Ongoing professional challenges have influenced Australian nurse practitioner role development and enactment over its 16-year history, with greater clarity on these challenges articulated over the past six years. For example, Foster (2010) conducted descriptive historical research using published documents and key informant interviews to describe barriers encountered in establishing the first nurse practitioner roles in New South Wales. Foster’s research showed ongoing opposition to the nurse practitioner role by traditional medical hierarchies obstructing Australian nurse practitioner role development. However, the nursing profession itself has served as a significant barrier to nurse practitioner role development. A series of articles based upon a longitudinal critical ethnography using ten nurse practitioners across a range of Australian specialties were recently published. They revealed Australian nurse practitioner students were discouraged in their role development by the nursing profession itself (MacLellan, Higgins, & Levett-Jones, 2015a, 2016; MacLellan, Levett-Jones, & Higgins,

2016). For example, the authors relate the accounts of nurse practitioner students who were failed in formative assessments of clinical acumen by nursing clinicians and/or managers not familiar with the students' specialty areas or contexts of practice (MacLellan et al., 2015a). The authors also describe nurse practitioner 'mentors' who had purposefully withheld information and assistance from the nurse practitioner students because they felt their professional role was being threatened (MacLellan, Levett-Jones, et al., 2016).

Legislation and Policy

Other professional challenges to nurse practitioner role development and enactment are Australian legislative requirements and jurisdictional policies. For example, Schadewaldt (2015) performed mixed-methods research on a small sample of six nurse practitioners practising across five different sites in New South Wales, South Australia, Tasmania and Victoria. She demonstrated that legislated requirements for a collaborative arrangement between a nurse practitioner and a medical practitioner created professional hurdles to role development. Her research reported one nurse practitioner was unable to establish standalone clinical practice because no medical practitioner would engage in the legal requirement for a collaborative arrangement, which made it difficult for that nurse practitioner to develop their role (Schadewaldt, 2015, p. 116). Schadewaldt also found legal requirements for a collaborative arrangement reinforced the misinformed notion that medical practitioners carried the overall medicolegal risk as the lead decision-maker in clinical practice (Schadewaldt, 2015, p. 134). This notion not only negated the study definition of collaboration, but resulted in restricting role enactment of the nurse practitioner to 'simple and straightforward' clinical cases (Schadewaldt, 2015, p. 126). Schadewaldt's findings on collaborative arrangements were supported by an Australian nurse practitioner workforce survey conducted by Currie, Chiarella, and Buckley (2016a), who demonstrated how collaborative arrangements created barriers to nurse practitioner practice. Currie et al. (2016a) conducted a national survey of 73 nurse practitioners working in the private sector and found the legislative requirement for a collaborative arrangement reinforced the idea that the medical practitioner was ultimately responsible for decisions made by the nurse practitioner, which resulted in restriction to nurse practitioner role enactment. At the same time, Scanlon et al. (2016) undertook an analysis of policy and regulatory documents influencing nurse practitioner clinical practice, which had been published by respective state and territory governments across Australia. The authors demonstrated cross-jurisdictional variations in legislation and local policy documents served as significant barriers to nurse practitioner role enactment. For example, they reported that nurse practitioners in Victoria were limited to the prescription of medicines from eight broad medication formularies, but in Tasmania and Western Australia medicine prescribing is only limited to the individual's scope of practice and context of work. Despite the nurse practitioner role being established in Australia for nearly 17 years, many barriers affecting nurse practitioner role development and enactment remain unresolved, with repeated nurse practitioner workforce surveys

revealing more work needs to be done to address such legislative and policy barriers (Middleton et al., 2016).

Recently, the financial reimbursement of nurse practitioner services has been identified as a significant factor contributing to limited nurse practitioner role enactment in the Australian private health sector. Financial reimbursement for nurse practitioner services is determined by policy issued by the Australian Department of Health. Case study research using my role in an Australian general practice found that limited financial reimbursement for nurse practitioner services stymied full role enactment, and resulted in restricting my nurse practitioner scope of practice (Helms et al., 2015). This finding supported earlier work by Currie, Chiarella, and Buckley (2013), who conducted an international literature review of financial reimbursement models for nurse practitioner services throughout Australia, the United Kingdom, Thailand, South Africa and USA. They confirmed inadequate financial reimbursement for nurse practitioner services limited role expansion in private health settings, both in Australia and internationally. Students in such settings may not be allowed to practise critical skills and procedures needed in primary health care if there is no financial reimbursement for such services, once endorsed into the nurse practitioner role.

Clinical Supervisors

Nurse practitioner role development and enactment may be dependent upon a nurse practitioner student's clinical supervisor in the clinical learning environment. In Australia, most nurse practitioner students receive advanced clinical learning and teaching from clinical supervisors who are medical practitioners. The literature review conducted by Masso and Thompson (2014, p. 16) identified 15 studies examining nurse practitioner students transitioning into the nurse practitioner role. Review of those studies identified 67% (n=10/15) of students received their clinical learning and teaching from medical practitioners, who served as their clinical supervisors. The remaining studies in their review did not identify the primary person responsible for nurse practitioner student clinical supervision.

There have been no Australian studies comparing expected clinical learning and teaching outcomes for nurse practitioner students supervised by nurse practitioners, versus outcomes determined by medical practitioners. The provision of clinical learning and teaching by a medical practitioner is not necessarily problematic, as nurse practitioner clinical practice shares commonalities (e.g. prescribing medicines, ordering/interpreting diagnostic tests, autonomous management of complete episodes of care, etc.) with medicine. However, there are significant differences in the philosophies of nursing and medicine that may influence the clinical learning and teaching of nurse practitioner students. Carryer and Adams (2017) recently published an institutional ethnography using 13 nurse practitioners practising across New Zealand. She demonstrated that nurse practitioners describe and perceive their clinical care as qualitatively different from that of medicine. A nurse practitioner's care is informed by a philosophy of nursing that focuses on: comprehensive, person and family-centred care; care

coordination; and collaboration (Carryer & Adams, 2017). The medical and nursing philosophies of care must be carefully balanced in the nurse practitioner student, to ensure students achieve appropriate learning outcomes in the clinical learning environment.

There is published international research indicating medical practitioners serving as clinical supervisors for nurse practitioner students may provide clinical teaching that stunts role development and enactment. This was identified in a Canadian study by Barton (2006), who conducted an ethnography of five medical practitioners providing clinical mentorship to nurse practitioner students. She described a “conflict in values over sharing of knowledge and depth of imparted knowledge” by medical practitioners (Barton, 2006, p. 823). This conflict resulted in withholding skills and knowledge from the clinical learning and teaching of Canadian nurse practitioner students.

In Australia, the conflict in values described by Barton (2006) appears to have affected role development and enactment in nurse practitioner students. This was seen in a retrospective case study using two nurse practitioner students working in the dialysis nursing specialty in Victoria (Stanley, 2005a, 2005b). Content analysis was performed on reflective journals written over a 2-year period by the nurse practitioner students, along with data generated from semi-structured interviews with the students. The case study revealed nurse practitioner students were frequently asked to learn clinical skills with junior medical doctors, which were far below the level of expertise the students brought to their clinical education programmes. The authors found medical supervisors appeared to have a lack of insight or appreciation for nursing experience brought by the nurse practitioner student, and may have reduced the potential for students to fully develop and enact their nurse practitioner roles. Weiland, Mackinlay, and Jelinek (2010) conducted semi-structured interviews with 95 doctors supervising nurse practitioners from 35 emergency departments across every state and territory in Australia. One of the themes identified in their thematic analysis, ‘Separation/Overlap of nurse practitioner Role and Medical Roles,’ identified that medical supervisors experienced conflict in providing clinical supervision for nurse practitioner students. Medical supervisors felt clinical learning and teaching opportunities provided for nurse practitioner students were at the expense of students within their own profession. Weiland et al. (2010) also identified medical supervisors believed nurse practitioners in emergency departments had roles limited to minor illnesses and injuries. The authors found medical supervisors compared the nurse practitioner student’s depth of experience, brought to their clinical learning and teaching environment, to that of a medical intern. Several of the medical supervisor interviewees stated nurse practitioners were not allowed to manage clinical presentations such as chest or abdominal pain, or perform technical skills like the insertion of chest tubes for pneumothoraces. Such belief systems may negatively impact upon role enactment in Australian nurse practitioner students, but has not been otherwise described in the literature. Finally, the study performed by Schadewaldt (2015, p. 127) of nurse practitioners working in Australian general practices

indicated medical practitioners were unsure of the differences between the role of the practice nurse and that of the nurse practitioner. Such uncertainty potentially undermines clinical learning and teaching opportunities for nurse practitioner students.

Guidelines and Protocols

Guidelines and protocols are used by Australian nurses to develop and enact their roles, but it is unclear as to how such guidelines and protocols are used in nurse practitioner student clinical learning and teaching. It is clear many Australian nurses demonstrate advanced practice nursing for entry into a nurse practitioner Master's programme through existing nursing roles, making use of clinical protocols and algorithm-based care. In their discussion paper differentiating between the advanced practice nurse and the nurse practitioner, Cashin et al. (2007) described how standing orders and protocols were frequently used by advanced practice nurses for care provision in Australian emergency departments. In an evaluation report of Australia's first government-sponsored nurse-led clinic, the authors revealed the advanced practice nurses and nurse practitioners in the clinic used the same algorithm-based care in their clinical practice (Parker et al., 2011). It is not clear what role protocols and algorithm-based care play in Australian nurse practitioner student clinical learning and teaching. A recent retrospective exploratory case study used two Australian nurse practitioner students who had received their clinical learning and teaching in urban emergency departments (Lutze, Ratchford, & Fry, 2011). The case study revealed clinical protocols were used for nurse practitioner student clinical decision-making, as well as facilitated the provision of medications and diagnostic tests. Clinical supervision was provided by medical officers and a senior nurse practitioner; however, how that supervision occurred in the context of clinical protocols was not discussed.

In their case study examining the experiences of dialysis nurse practitioner students, the author described how students had to 'find balance' between prescriptive protocols and individuating patient care (Stanley, 2005a). The students in Stanley's case study learned to 'interpret' prescriptive protocols in differing ways, or used 'preferred' senior medical consultants to override the protocols, so clinical care needs determined by students through the course of their clinical practice could be addressed. In their discussion paper on nurse practitioner clinical practice, Carryer, Gardner, Dunn, and Gardner (2007) differentiated between the use of protocols and guidelines in clinical care. They stated protocols *control* practice as opposed to guidelines, which *support* decision-making in nurse practitioner clinical practice (Carryer et al., 2007, p. 111). If protocols and algorithm-based care are ingrained into nurse practitioner student clinical learning and teaching, it may influence how they enact their roles once endorsed into the profession. For example, Gibb et al. (2015) indicated over 80% of endorsed wound care nurse practitioners used protocols for their care. It appears protocol-based clinical learning and teaching approaches determine nurse practitioner role enactment once endorsed into the profession. Further research is needed to determine if protocols or guidelines are

informing nurse practitioner student clinical practice. Guidelines, along with clinical supervision, may be a more appropriate approach to nurse practitioner student clinical learning and teaching.

Role Ambiguity

The final challenge to nurse practitioner role development and enactment relates to a lack of uniform specialty titles and a paucity of standards defining specialty clinical practice, which creates role ambiguity. For example, in their discursive article on curriculum design for a nurse practitioner neonatology programme established in the United Kingdom, Morgan, Barry, and Barnes (2012) described the risk for role ambiguity due to a lack of specialty clinical practice standards. The lack of standards created variability in expected clinical knowledge and skills relating to the neonatology nurse practitioner specialty.

Australian clinical supervisors may impose unnecessary boundaries to student clinical learning and teaching opportunities due to role ambiguity. In Australia, the CLLEVER study identified that there were over 50 different specialty titles used by nurse practitioners (Gardner et al., 2014). The use of diverse specialty titles may lead to uncertainty in clinical learning and teaching outcomes needed by nurse practitioner students working within their specialty areas. For example, a clinical supervisor for a 'diabetes nurse practitioner' student may provide clinical learning and teaching opportunities for the student relating solely to diabetes management, based upon their title. Other clinical supervisors may provide opportunities that not only provide advanced skills and knowledge in the management of diabetes, but additional skills and knowledge from the broader endocrinology specialty. The study by Weiland et al. (2010), that surveyed emergency medical practitioners, revealed this to be case, with medical practitioners limiting the nurse practitioner role to 'minor illnesses and injuries,' as there had been no specialty standards informing emergency nurse practitioner clinical practice at the time their study was conducted. The potential for specialty role ambiguity had been identified since generic professional standards were first established for Australian nurse practitioners (Gardner, Carryer, Dunn, et al., 2006). It is possible that a uniform and more transparent approach to nurse practitioner specialty clinical learning and teaching will remedy many of the educational challenges faced by Australian academic institutions, clinical supervisors, endorsed nurse practitioners and nurse practitioner students. With validated specialty clinical practice standards supporting nurse practitioner student learning and teaching, concerns about role ambiguity may be ameliorated.

There are only two published specialty standards specifically focusing on clinical learning and teaching outcomes needed by Australian nurse practitioner students. O'Connell's *Emergency Nurse Practitioner Clinical Practice Standards* established a learning and teaching framework facilitating broad clinical knowledge and skills acquisition needed by emergency nurse practitioner students (O'Connell, Gardner, & Coyer, 2014). The emergency nurse practitioner standards were empirically-validated using a consensus-based research methodology broadly referred to as Delphi Technique. These

standards are based upon three unique “modes” (rapid, focused and disposition), which are reflective of how emergency nurse practitioners practise clinically (O'Connell, 2015, p. 3). The only other published Australian specialty standards specifically outlining clinical learning and teaching outcomes required by nurse practitioner students relate to the palliative care specialty. The *Palliative Care Nurse Practitioner Candidate Clinical Competencies* were published in the grey literature and were not validated using an empirical consensus-based research approach (Quinn et al., 2011). These standards were based upon a literature review, developed through a working group, and refined using national and international expert opinion.

An additional set of Australian specialty standards was developed and validated for nephrology nurse practitioner students using Delphi methodology, but was not specifically designed to demonstrate clinical learning and teaching outcomes needed by students working within that specialty (Douglas & Bonner, 2011). Inclusive of specialty-specific clinical standards, the standards established by Douglas and Bonner (2011) provided guidance on clinical skills and knowledge required by *all* nurse practitioner students, irrespective of their specialty area of practice. In addition, like the palliative care nurse practitioner standards published by Quinn et al. (2011), they focused on establishing arrangements supporting the student nurse practitioner's clinical education, such as who should be part of the student's clinical support team and how performance assessments should be made.

Other standards designed to demonstrate specialty clinical learning and teaching outcomes for nurse practitioner students have been identified. However, the remaining specialty standards were contextualised for differing academic, legislative and regulatory frameworks governing nurse practitioner clinical practice in international jurisdictions. For example, a curriculum framework for nurse practitioner students working with the frail aged was recently published in the United Kingdom (Goldberg, 2016; Goldberg et al., 2016). They conducted a 3-round Delphi study using a panel of 34 nursing experts, informed health consumers and allied health professionals from professional groups in the United Kingdom. Their competency-based framework established entry-level knowledge and skills required by nurse practitioner students, and included the initial management of delirium, heart failure, stroke and atrial fibrillation. The framework described by Goldberg et al. (2016) is somewhat different from the management of minor illnesses and injuries as described for Australian nurse practitioners working in large urban emergency contexts (Dinh et al., 2012; Jennings, McKeown, O'Reilly, & Gardner, 2013). To my knowledge, the nurse practitioner specialty competency framework established by Goldberg et al. (2016) is the only educational framework that blended learning and teaching expectations from both the medical and nursing professions. Their standards specifically stated student management should be to the standard of Foundation Year 2 medical students:

A Foundation Year 2 student remains under clinical supervision but takes on increasing responsibility for patient care...they begin to make management

decisions as part of their progress towards independent practice...they demonstrate clinical effectiveness, leadership and the decision-making responsibilities that are essential for hospital and general practice specialty training. Satisfactory completion of this year indicates that the foundation doctor is ready to enter a core, specialty or general practice training programme (The UK Foundation Programme, 2016, p. 11).

Canada has specialty education standards for 'primary health care' and 'acute care' nurse practitioners, but are not published and vary according to jurisdictions and educational institutions within Canada. For example, some academic institutions provide nurse practitioner education at the graduate level, whereas others provide education at the post-baccalaureate or post-diploma certificate level (DiCenso & Bryant-Lukosius, 2010). Instead of using published standards, readiness to practise in Canadian specialty areas is assessed through certification examinations (Donald et al., 2010; Kilpatrick et al., 2010). The only other jurisdictions with specialty competency standards for nurse practitioner students come from the USA, where greater transparency is seen in specialty education frameworks for nurse practitioners. For example, Hoyt et al. (2010) conducted a national 3-round Delphi study using 52 endorsed nurse practitioners, which identified entry-level competency standards for emergency nurse practitioners. Their consensus process identified a list of 60 competencies, which included professional expectations, management strategies and procedural skills. For example, their entry-level competencies included assessing and initiating appropriate interventions for violence and neglect, assessing and managing cardiopulmonary arrest, as well as performing emergency thoracostomies and procedural sedation.

There are also published competencies in the USA's grey literature for broad specialty areas referred to as 'population foci' (APRN Consensus Work Group, 2008). Such population foci include specialty learning and teaching required by nurse practitioner students for broad population groups, such as psychiatric-mental health care (National Panel for Psychiatric-Mental Health Nurse Practitioner Competencies, 2003), adult-gerontology acute care and primary care (National Organisation of Nurse Practitioner Faculties, 2016) and family/across the lifespan (National Organisation of Nurse Practitioner Faculties, 2013). It is not known how competency standards within these broad population foci relate to specialty practice in Australian nurse practitioners, if at all. Nurse practitioner clinical practice in the USA may differ from that of Australian nurse practitioners. A literature review compared policy frameworks in the USA and Australia, and demonstrated there are significant differences in professional frameworks governing nurse practitioner clinical practice in each country (Cashin, Theophilos, & Green, 2016). There is a distinct paucity of literature directly comparing the differences in nurse practitioner specialty clinical practice in the USA and Australia. However, differences in clinical practice might be inferred through research analysing nurse practitioner

prescribing behaviours in the USA and Australia. For example, in a survey that examined prescribing behaviours in Australian nurse practitioners, Dunn, Cashin, Buckley, and Newman (2010) showed 32% of Australian nurse practitioners stated prescribing activities represented less than 5% of their practice, whereas only 3% of American nurse practitioners do not write prescriptions on a regular basis. Differences in clinical practice were also implied in a literature review conducted by Fong, Buckley, and Cashin (2015), who confirmed nurse practitioner prescribing patterns differ in the USA and Australia. It is not certain whether clinical practice is different, or simply that Australian nurse practitioners have not fully enacted their clinical roles. Therefore, specialty standards established for nurse practitioners in the USA cannot be reliably applied to the Australian nurse practitioner student, as clinical practice may be different.

In summary, there is a paucity of contextualised clinical learning and teaching frameworks for Australian nurse practitioners within their respective specialties. Existing research reveals: the plethora of specialty role descriptors; use of protocols and algorithm-based clinical care strategies in clinical education; clinical supervisors being unfamiliar with the specialised role of the nurse practitioner; financial reimbursement models for nurse practitioner care, and that legislative and policy frameworks contribute to how Australian nurse practitioners develop and enact their roles. There is opportunity to enhance nurse practitioner student clinical learning and teaching through role development and enactment, if academic programmes and clinical supervisors use contextualised specialty standards that encourage consistency in content and practice level of clinical learning and teaching outcomes. There are few such standards in existence in Australia, and even fewer that have been empirically-validated. To improve consistency in nurse practitioner student clinical learning and teaching, the multitude of Australian specialties identified by Gardner et al. (2014) first require a contextualised specialty taxonomy applicable to all Australian nurse practitioners.

The CLLEVER Study

The CLLEVER study established a broad specialty taxonomy for Australian nurse practitioners using constructs called ‘metaspecialties’ (Gardner et al., 2014). The metaspecialty constructs were defined as ‘a broad grouping of specialties’ (See Figure 2:1).

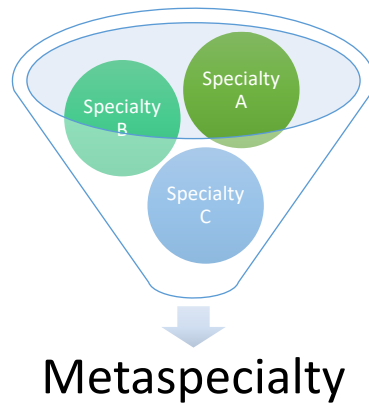


Figure 2:1: The Metaspecialty Construct

The CLLEVER study consolidated over 50 Australian nurse practitioner specialty titles into six metaspecialty names. The approach used to establish these names was a “consensus workshop” (Gardner et al., 2014, p.12). Twelve Australian nurse practitioners representing nine specialties were invited to participate in a focus group that discussed the metaspecialty constructs, existing nurse practitioner specialty titles, and Australian literature relating to specialty taxonomies. Through focus group discussion, six metaspecialty names were agreed upon by workshop participants:

- Mental Health Care
- Aged and Palliative Care
- Care of Long-term Conditions
- Child and Family Health Care
- Primary Health Care
- Emergency and Acute Care

These metaspecialty constructs served as a broad specialty taxonomy upon which a clinical learning and teaching framework consisting of specialty standards could be built. The CLLEVER investigative team and myself identified that additional evidence using broader representation from the nursing profession was needed to support the metaspecialty constructs and supporting standards. Therefore, an empirical consensus approach was needed to first validate the CLLEVER metaspecialty taxonomy. This taxonomy would in turn be used as a firm foundation supporting clinical practice standards, which could be validated through later research. Together, the validated metaspecialty taxonomy and

clinical practice standards would provide depth and meaning to a nurse practitioner specialty clinical learning and teaching framework. It was identified the consensus approach used must not only validate the metaspecialty taxonomy and clinical practice standards, but be robust and generalisable to existing and future Australian nurse practitioner specialties.

An Overview of Consensus Approaches

There are several recognised and accepted approaches suitable for establishing consensus. This section of the literature review describes available research-based consensus approaches, with detailed attention to Delphi Technique.

Consensus approaches described in the literature include nominal group technique (Van de Ven & Delbecq, 1971), consensus development conferences (Hendriks, 2005), Delphi Technique (Dalkey & Helmer, 1962) and the RAND appropriateness method (Brook, Chassin, Fink, Solomon, & Kosecoff, 1986). Focus groups, an approach that might be used to achieve consensus, are not uniquely seen as a consensus methodology but primarily as a means of collating qualitative data about an issue or research question (McMillan et al., 2016). This process “emphasises meaning rather than measurement” of consensus (Doody, Slevin, & Taggart, 2013, p. 16). Therefore, focus groups as a specific consensus-based research methodology have been excluded from this literature review.

There is a great degree of confusion in the literature regarding the differences between consensus-based research methodologies. This confusion may be a result of ‘hybridisation’, or the combination of discrete consensus methodologies to address unique research requirements (Landeta, Barrutia, & Lertxundi, 2011). The following sections review the literature to clearly discern differences in empirically-based consensus methodologies. Ultimately, the choices amongst these methodologies depends upon whether the researcher intends to achieve consensus on an issue using a face-to-face, anonymous or combined means.

Nominal Group Technique

Nominal group technique (NGT) can be described as a manner of organising small group communication for the dual aims of generation and prioritisation of ideas (Delbecq, Van de Ven, & Gustafson, 1975). Campbell and Cantrill (2001) stated they did not feel NGT was a discrete consensus methodology because its primary aim was not consensus, but the generation of ideas to resolve an issue. Although its primary aim is to generate ideas to resolve an issue, consensus naturally occurs because of the group prioritising ideas during the process. Van de Ven and Delbecq (1971, p. 204) described the methodology as follows: a small group of 8–12 participants are asked to independently brainstorm solutions to a particular issue. Then, using a ‘round-robin’ approach, participants briefly (without explanation) contribute their ideas to the group one at a time. These ideas are recorded by the group moderator on a white board or similar. Once participants have contributed each of their

brainstorming ideas, each idea is further explored for group discussion and consideration. Once all ideas have been explored, all discussion stops and participants silently score their preferred solutions in order of priority on individual pieces of paper. The group moderator then collates and anonymously tabulates this information using a simple rank-ordering method, which summarises and prioritises participants' solutions. In this manner consensus is derived by democratically prioritising group solutions in an iterative process during a single point in time.

Nominal group technique has been used in various areas of nursing research but appears less frequently than other consensus methodologies. A recent literature review of consensus methodologies in nursing education revealed NGT was published in less than 10% of studies examined (Foth et al., 2016). Nominal group technique has been used in the academic context to evaluate student nurses' learning and teaching experiences (Chapple & Murphy, 1996). It has also been used to prioritise end-of-life needs in intellectually-disabled persons (Tuffrey-Wijne, Bernal, Butler, Hollins, & Curfs, 2007), and assess the triage of pregnant women in a metropolitan emergency department (Harvey & Holmes, 2012).

Methodological challenges have been identified when using NGT. A distinct disadvantage is that it is ideally performed in small groups, with larger numbers of participants requiring separation into smaller groups to better manage the consensus process. Aspinall, Hughes, Dunkley, and Addington-Hall (2006) noted that separation of larger groups introduced methodological concerns of how differing group priorities are later combined. Likewise, due to its small-group nature, consensus opinion obtained from NGT appears to be only generalisable to the small number of participants involved (Tuffrey-Wijne et al., 2007).

RAND Appropriateness Method

Like NGT, the RAND Appropriateness Method (RAM) is an iterative process using small groups of participants, but classically occurs over three separate moments in time. It was originally designed to rate the 'appropriateness' of interventions relating specifically to surgical procedures. Brook et al. (1986) described the method as follows: during round one participants are provided with information established from a literature review and asked to anonymously rate the appropriateness of discrete items pertaining to a research question on a 9-point scale. These data are collated, quantified using measures of central tendency, and later fed back to the group during round two. During round two participants review and discuss their individual and group ratings for each item at a face-to-face meeting. Amendments can be made to each item to facilitate consensus on the appropriateness ratings, but new items not previously established by the literature review cannot be added during the discussion process. Round three occurs after the meeting has concluded, whereby participants are sent the list of revised items that had been reviewed and amended at the face-to-face meeting.

Participants are again asked to anonymously rate the appropriateness of those items. Quantitative data obtained from the last ratings exercise determines consensus outcomes.

The RAM appears almost exclusively in the medical literature, where consensus on the 'appropriateness' of medical interventions or quality indicators is achieved using a panel of experts. For example, the RAM has been used to assess criteria for performing lumbar spine magnetic resonance imaging (Salari et al., 2013), performing caesarean sections (Ostovar et al., 2010) and to establish quality indicators for safe prescribing in general practice (Avery et al., 2011). A review of the nursing literature reveals the RAM has not been explicitly used in nursing research. However, in their literature review of consensus methods used in nursing education, Foth et al. (2016) describe the RAM as a 'hybrid' of Delphi Technique and NGT, as opposed to a discrete consensus methodology. There were no consensus-based research studies in nursing education meeting their operational definition of the RAM.

The main critique of the RAM, like all consensus-based research methodologies, is that the validity of consensus outcomes are dependent upon the composition of the expert panel (Shekelle et al., 1998). However, the inter-rater reliability of the methodology improves significantly when members of the same discipline rate the appropriateness of items (Shekelle, 2004). Significantly, Brook et al. (1986, p. 63) indicated the methodology is unable to generate new knowledge, as items rated in the process are established purely from the literature. Anecdotal or experiential data generated by participants during the face-to-face round are excluded from appropriateness ratings (Campbell & Cantrill, 2001). In this manner, the RAM is like Consensus Development Conference methodology, which is briefly reviewed in the next section.

Consensus Development Conferences

Consensus Development Conferences (CDC) were developed in 1977 by the United States National Institutes of Health as a means of using an expert panel to 'judge' the quality of presented information. The first CDC established consensus on breast cancer screening strategies (Guston, 1999, p. 453). Jacoby's editorial (1985, pp. 477-478) provided a comprehensive description of a CDC, that can be summarised as: an expert panel of approximately 12 members are viewed as the 'court' who listen and evaluate empirical information presented by 'witnesses' on pre-determined question(s) of controversy over a one to two-day conference. The overall aim of the conference is to establish expert consensus on these questions. Lay members of the audience, as well as the court, are encouraged to participate throughout the various presentations via audience participation and small-group discussion, to lend insight and enrich the evidence presented by witnesses. After all information is presented, the court weighs the evidence at hand and provides a consensus statement on the questions of controversy at the CDC conclusion.

Over time, controversy over a wide range of topics related to medical health care have been reduced through expert consensus opinion using CDC (National Institutes of Health Conference Development Program, 2013). Consensus Development Conferences have also been used in nursing research. Examples include a CDC that established the role of primary health care nurses in cardiovascular disease (Halcomb, Davidson, Yallop, Griffiths, & Daly, 2007), achieved consensus on a nursing code of ethics (Lin et al., 2007) and established a core curriculum for post-graduate specialty training in oncology nurses (European Oncology Nursing Society, 1990).

Consensus Development Conferences are used as a means of deriving consensus using judgement from an expert panel (Jacoby, 1985). However, the methodological approach is controversial because it has been “subject to few formal evaluations” (Guston, 1999, p. 452). Guston (1999, p. 457) identified that, despite their use, there is no systematic manner by which researchers might conduct or evaluate CDC methodology. Researchers such as Guston and others (Chen & Deng, 2007; Hendriks, 2005) have evaluated CDC methodology and found that, despite achieving consensus on controversial topics in health care practice, consensus outcomes were poorly implemented in real-world practice (Kaluzny, 1990). In response, others such as Lomas et al. (1998) have improved implementation of CDC outcomes by hybridising it with the RAM, whose methodology is viewed by some as a more reputable approach to scientific inquiry. In addition, it appears CDC methodology would be logistically difficult and expensive to perform if an entire face-to-face conference were planned solely upon a single research question identified by the researcher. It may be more practical to integrate CDC methodology into larger conferences, as a workshop or concurrent session.

Classical Delphi Technique

Dalkey and Helmer (1962) were the first to describe Delphi Technique (DT), and applied it when no supporting empirical knowledge or technology was available to answer their research question. They facilitated consensus using a panel of experts who predicted the “number of A-bombs needed to reduce munitions by a prescribed amount” (Dalkey & Helmer, 1962, p. 1). Classical DT uses iterative paper-based postal surveys, which are used to conduct an anonymous process lasting three rounds, although several more may be required (Scheffer & Rubinfeld, 2000). In the first round, an ‘expert panel’ is given an open-ended question to elicit solutions and supporting rationale to the research question, which are provided by panelists as qualitative statements. The overall aim of this round is to generate panelist answers to the research question, and trigger teleological (e.g. *“I think X because of Y, given Z”*), as opposed to heuristic (e.g. *“I think X”*) rationale to support panelist claims (Bolger & Wright, 2011, p. 1507). These data are collated by the researcher, anonymised, and distributed back to panelists as summarised statements in round two. During round two, panelists review the statements and rate their relevancy on a 4- or 5-point Likert scale. Round two quantitative data from the Likert scales are summarised through a group statistical consensus measure (e.g. measures of

central tendency), which are used in the next round. During round three individual panelists are reminded of their statement ratings from the previous round. Panelists are asked to consider the group statistical consensus measure for each of the statements and are then asked to re-rate their relevancy. Again, quantitative data are collected and summarised through a group statistical consensus measure. This iterative process continues until either a pre-determined measure of consensus is achieved, or panel attrition and diminishing returns is demonstrated. This can be a time-intensive process, as Keeney, Hasson, and McKenna (2006) have reported each round may last up to eight weeks, and require a total of 3–4 months to complete the entire process.

Delphi Technique is now used extensively throughout business, education, health and social sciences research in a variety of applications (Diamond et al., 2014). In their literature review examining the use of consensus-based research methodologies in nursing research, Foth et al. (2016) demonstrated it is the most widely-used consensus approach in the nursing sciences. Delphi Technique was first used in nursing to determine consensus on research priorities in the mid-1970s (Lindeman, 1975), and has flourished since the mid-1980s (Keeney et al., 2011; Williams & Webb, 1994). Examples of its use include validation of an instrument that identified advanced practice nursing in the general nursing workforce (Chang et al., 2010), development of an education curriculum for nurse practitioners working with the frail aged (Goldberg et al., 2016) and establishing clinical education standards for emergency nurse practitioners (Hoyt et al., 2010). Delphi Technique appears to be the preferred consensus-building methodology when engaging large numbers of participants from diverse locations, as it may be less expensive to conduct than face-to-face methodologies (Donohoe, Stellefson, & Tennant, 2012; Marsden, Dolan, & Holt, 2003; Snyder-Halpern, Thompson, & Schaffer, 2000). For example, Cowman et al. (2012) used DT to identify research and education priorities in wound management using professionals from 24 countries. Instead of using a traditional postal survey, they used a web-based survey method to constrain costs of posting surveys through the mail.

Variations to Delphi Technique

There are many hybrids and variations of classical DT prevalent in the nursing literature. In their literature review of the use of DT in nursing education research, Foth et al. (2016) advised 30% of the studies had modified classically-described DT by either hybridising it with another discrete consensus methodology, or varying the methodology itself. Hybrids have largely been used to cut down on the time and complexity of the DT process (Hsu & Sandford, 2007), whereas variations have been used to conduct methodological research or answer specific research questions not amenable to the classical technique (Keeney, Hasson, & McKenna, 2001). However, the differences between hybridisation and variation creates uncertainty and confusion in research used to determine consensus. This confusion may threaten the rigour of the classically-described methodological approach (Hasson & Keeney, 2011). For example, a summary of discrete consensus approaches was described by Campbell and

Cantrill (2001) in order to justify their use of the RAM in prescribing research. However, they did not describe NGT as a legitimate consensus approach, but as a method of generating ideas and priorities as part of a consensus process. Others have described NGT as a legitimate consensus approach, but confuse it with the RAM, as opposed to clearly differentiating between the two methodologies by calling the RAM a 'hybrid' of NGT and DT (Foth et al., 2016, p. 114).

The variations made to classically-described DT are inconsistently-described in the literature. Such variations are sometimes *methodological*, whereby a central aspect of classically-described DT is changed. For example, some have stated that expertise is not a requirement to be a Delphi panelist, or that consensus is not the desired primary outcome. Sometimes the variations are to *methods* which are the practical operationalisation of the methodology. For example, variations to classically-described DT methods might include using web-based instead of paper-based surveys, or all 'iterations' are conducted at a single point in time. Mullen (2003) provided evidence for this confusion with their extensive list of descriptors found in Delphi research. Confusion is also perpetuated in texts informing the application of DT methodology in nursing research. For example, Keeney et al. (2011, p. 7) differentiated between 'e-Delphi', 'technological Delphi', and 'online Delphi' research, but some of their definitions derived from the literature lacked face validity. When comparing an e-Delphi to an online Delphi they stated an "e-Delphi is a similar process to the classical Delphi but administered by email or online web survey" and an "online Delphi is the same process as a classical Delphi but questionnaires are completed and submitted online" (Keeney et al., 2011, p. 7). These definitions are essentially the same, without clear explanation of how they differ. An e-Delphi uses a survey instrument that is sent to panelists via email (O'Connell et al., 2014), whereas in a web-based Delphi survey, panelists enter data into a survey instrument that is available online (Colton, 2002). Web-based Delphi surveys are increasingly being used to collate Delphi survey data (Donohoe et al., 2012). There are significant gaps in the literature describing what effects such variations to method may have on consensus outcomes and the validity of Delphi Technique. The confusion between methodological approach and applied method is a significant issue and would benefit from clarification through a conceptual framework such as that proposed by myself in Figure 2:2, formulated after I had reviewed the existing Delphi literature.

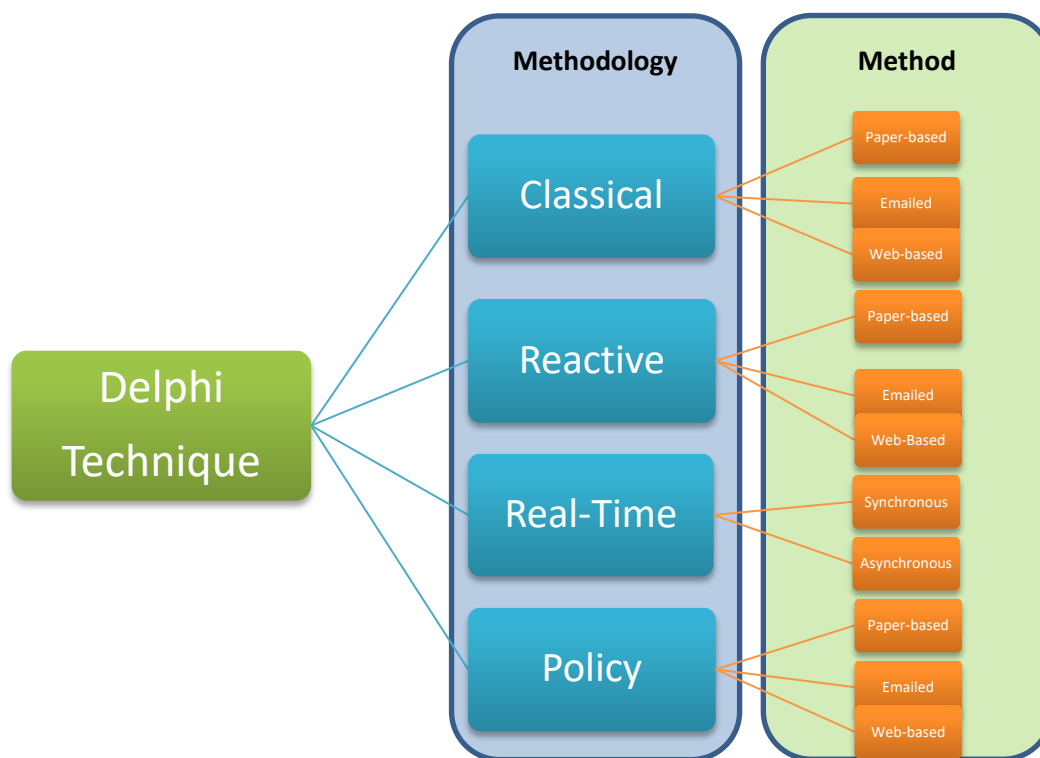


Figure 2:2: Example of Conceptual Delphi Framework

Figure 2:2 demonstrates how the overarching term 'Delphi Technique' can be used to discern between methodological variations, such as the classically-described methodology and common variations in nursing research, such as 'reactive', 'real-time' and 'policy' Delphis. Within each variation differing methods can be employed, such as e-mailed, web-based, paper-based, or synchronous surveys. Other variations to classical Delphi Methodology, such as 'Historic', 'Numerical' and 'Decision' Delphi approaches (Strauss & Zeigler, 1975), are non-existent within the nursing literature; therefore, their description is outside the scope of this literature review.

Reactive Delphi Methodology

A common variation to classical DT in nursing research is the 'modified' or 'reactive' Delphi. 'Reactive' Delphi (RD) methodology was originally described by McKenna (1994, p. 1222), who used it to establish consensus on an appropriate model of nursing care for long-term psychiatric clients. Instead of using an open-ended question in the first round, as seen in classical DT, panelists in a RD study are given pre-determined information relating to the research question from a literature review. This approach is like the first round of the RAM, where participants are provided information that has been derived from the empirical literature to assist in decision-making. The remaining process is the same as classical DT, whereby panelists rate the relevancy of summary statements through iterative rounds (McKenna, 1989). Quite often the descriptor 'modified Delphi' is used to describe studies that have used RD methodology. For example, in their development of a consensus-based protocol to care for pilonidal sinus wounds, Harris and Holloway (2012) refer to their research as a 'modified reactive Delphi', even though it follows the same process as RD methodology. There are many examples of

researchers using the term 'modified' as a synonym for RD methodology (Banayan, Blood, Park, Shahul, & Scavone, 2015; Wong et al., 2014).

Within RD methodology there have been hybrids and differing methods. Two primary methods have been applied in RD studies. For example, Chang et al. (2010) used a web-based survey method, whereas O'Connell (2014) used an e-mailed survey method to collect data for their RD research. Hybrids using RD methodology are prevalent in the literature. These hybrids use discrete consensus-based methodologies other than a literature review to inform the pre-determined information used in the first round. For example, Gill, Leslie, Grech, and Latour (2013) used a literature review and panel workshops to inform the first round of their 3-round RD study. In addition, a hybrid of RD methodology combined with focus groups and NGT methodology has been described in the literature (Landeta et al., 2011). Landeta et al. (2011) asserted focus groups, NGT and RD all pose methodological difficulties when used in isolation. They asserted that focus groups offered a lower chance of distraction from the research topic because of the small numbers of persons involved. However, they identified that NGT and RD methodologies created better capacity to produce new ideas. The first phase of their study used a face-to-face focus group. Data generated from the focus group were used in the second phase of their study, which used NGT methodology. These data informed the third phase of their study, which used the anonymity of a 2-round RD study.

Unlike classical DT, there is little empirical research demonstrating the reliability or validity of RD methodology. Delphi researchers have advised caution with RD use, as the provision of pre-determined information in the first round may bias participant responses or limit the possible outcomes of such research (Hasson, Keeney, & McKenna, 2000). This bias may limit the internal validity of the methodology. In order to address concerns over internal validity, researchers using RD methodology might elicit responses from panelists in the first round using a manner that stimulates analytical processing of the presented information, and provide opportunities for panelists to offer alternate views using teleological rationale (Bolger & Wright, 2011). The only example found of research into RD methodology used two expert panels to establish its inter-observer reliability (Duffield, 1993).

Real-time Delphi Methodology

There are many other methodological variations of classical DT described in the literature. For example, one such variation includes the 'Real-time Delphi' (RTD). Although currently not described in the nursing literature, RTD methodology suggests the future use of DT, given the increasing use of commercially-available web-based survey tools in Delphi research (Chang et al., 2010; Colton, 2002; Hunter, 2012; Marsden et al., 2003; Palermo et al., 2016). Real-time Delphi methodology was originally discussed in the context of using computers to assist in the dissemination of information to panelists during a Delphi process (Price, 1975). It was not until much later, after extensive development of

computer, internet and software technology, that use of computers allowed for true exploration of this methodology. Currently, RTD methodology is viewed as a 'round-less' Delphi, whereby a Delphi survey is made available online and the results of participant responses are immediately known to those taking the survey, allowing for immediate panel feedback (Gordon & Pease, 2006). Unlike classical DT, RTD uses a 10-point scale to compute quantitative panelist feedback using weighted sums and measures of central tendency. Qualitative responses submitted by participants are fed directly back to the group without moderation by the researcher. Panelists can anonymously participate an infinite number of times (e.g. perform several iterations within seconds, minutes, days or a specified time period) by working 'asynchronously' with others panelists, or 'synchronously' with all participants conducting the survey at a single point in time (Gordon & Pease, 2006, p. 322).

Real-time Delphi methodology varies significantly from classical DT, as there is no 'controlled feedback' of participant responses, whereby panelists' responses and rationale are not moderated by the researcher. Therefore, there are also no distinct 'iterations' in RTD methodology. In addition, a RTD can only occur online (through purchased access) or by using an open-source software program for computers connected on a network (Pease, 2016). Gnatzy, Warth, von der Gracht, and Darkow (2011) conducted initial research comparing RTD methodology alongside a classical DT approach and found no differences in consensus outcomes determined by the panelists. The increasing use of commercially-available web-based Delphi survey software suggests this methodology will have widespread applicability in nursing research.

Policy Delphi Methodology

An infrequently used methodological variation in the nursing literature is the Policy Delphi (PD) (Foth et al., 2016; Rayens & Hahn, 2000). A PD is described as a means of "generating the strongest possible opposing views on the potential resolutions of a major policy issue" (Turoff, 2002, p. 80). This methodological variation was introduced by Turoff shortly after publication of the classical approach. It is not a decision-making methodology and consensus is not required for the primary outcome. In addition, Turoff stated panelist expertise is not a requirement; rather, the panel members should be "informed advocates and referees" (Turoff, 2002, p. 80). The only feature consistent with classical DT is that it requires anonymity and controlled feedback of panelists' responses through iterations (Crisp, Pelletier, Duffield, Adams, & Nagy, 1997). A review of the literature indicated PD methodology is infrequently used in the nursing literature. For example, it has been used to improve the care of persons in prisons (Patterson, Newman, & Doona, 2016) and inform nursing regulation (Benton, González-Jurado, & Beneit-Montesinos, 2013). The infrequent use of PD in nursing research, the fact that its aim is usually not consensus, and its use of informed advocates and referees means PD methodology will not be considered further in this literature review.

Forecasting Delphi Methodology

Forecasting Delphi methodology is frequently used in research to ascertain the 'accuracy' of consensus outcomes determined by Delphi panelists (Rowe & Wright, 1999). Although not previously used in nursing research, the importance of forecasting Delphis in research examining DT will become relevant later in this literature review. In a forecasting Delphi, panelists are asked to provide ratings on the likelihood of events occurring in the foreseeable future. Such events are identified by the researcher in the first round of the Delphi process, and might include the likely winners from sporting events occurring over the next four weeks (Bolger, Stranieri, Wright, & Yearwood, 2011), the likelihood of national and international newsworthy events occurring in the next two months (Rowe, Wright, & McColl, 2005) or the likelihood of political and economic events occurring in the next two weeks (Rowe & Wright, 1996). In round one panelists rate the likelihood of those events occurring. During round two, panelists review summarised group feedback from the responses and are then asked to re-rate their forecasts. After this consensus process is finished, the group forecasts are verified against whether the events occurred over the stated period (e.g. by reviewing the reported outcomes from sporting matches published in newspapers). This process is performed to evaluate the 'accuracy' of panelists' round two forecasts, and is frequently used to demonstrate the predictive validity of Delphi research.

Summary of Consensus Approaches

In summary, many of the above research methodologies could be used to achieve consensus on the nurse practitioner specialty clinical learning and teaching framework. However, all methodologies considered in detail (i.e. NGT, RAM, CDC and DT) have significant limitations. They have been subject to hybridisation or modification of the originally-described methods, which threatens their validity. Perhaps the greatest strength of face-to-face methodologies is that they foster open discussion, which lends clarity to issues raised by the research question. However, face-to-face consensus methodologies have greater potential to be influenced by social pressures, which threaten the internal validity of its outcomes (Boje & Murnighan, 1982). In addition, consensus outcomes from CDC have been shown to be poorly implemented once consensus has been established, which suggests CDC outcomes may not have face or external validity. The internal validity of CDC has not been established in the literature, as the methodology has not been clearly or uniformly described. Bringing the discussion back to the focus of this thesis, NGT and RAM require small groups of participants. Consensus results from NGT or RAM may not be generalisable to a significant portion of Australian nurse practitioners, which threatens the external validity of results if such methodologies are used. Finally, the RAM cannot be used to validate a clinical learning and teaching framework as the methodology does not allow for the generation of new knowledge. Although the six metaspecialties established in the CLLEVER study could be validated using RAM, additional metaspecialties not

identified by the CLLEVER research could not be suggested by participants as a requirement of the methodology.

To establish consensus on the Australian metaspecialty taxonomy and clinical practice standards, a rigorous consensus-based research approach was needed. Arguably, the most widely scrutinised consensus-based research methodology has been DT. Delphi Technique has been subject to hybridisation that confounds its rigour, and subsequently the relevance of its consensus outcomes. The next section reviews issues that specifically affect the internal validity of consensus outcomes determined by DT.

Social Influence in Delphi Research

The role of social influence in Delphi research has been subject to recent debate. Social influence plays a role in panelist conformity, which results in “a change in [panelist] behaviour or belief as the result of real or perceived group pressure” (Myers, 2013, p. 188). Conformity from social influence naturally occurs in Delphi research; the alignment of individual panelist opinion to achieve a group consensus opinion would otherwise never occur. It is hoped that consensus in Delphi research is derived from individual panelists providing objective, expert opinion and, in turn, providing equal weight to the opinions of others. However, conformity can be influenced by negative forms of social influence, which may threaten the internal validity of consensus outcomes derived from Delphi research. Conformity occurring during a consensus process because of negative social influence may imply that expert opinion is subjective, and therefore less reliable. How social influence might determine consensus outcomes through conformity when using DT is poorly described in the literature. Few studies inform this aspect of the literature review, as most sources simply describe the potential effect of social influence in group consensus processes, as opposed to describing the ways conformity occurs. Much of the research discussing social influence has taken place within the social and legal sciences. These sciences are informed by differing theories, such as Judge Advisor Decision-Making Systems (Sniezek & Buckley, 1995) and Social Decision Scheme Theory (Davis, 1973). Although relevant to panelist decision-making in Delphi research more broadly, exploration of these theories is outside the scope of this literature review.

There are two different types of social influence that might determine panel conformity: normative and informational. Understanding the differences between these two types assists in interpreting results from the studies detailed in this review. Normative social influence occurs when Delphi panelists demonstrate a change in behaviour “based upon their desire to fulfil others’ expectations, often to gain acceptance and be liked” (Myers, 2013, p. 213). It is an internal process occurring within a person, and is not influenced by objective evidence. On the other hand, informational social influence occurs when Delphi panelists demonstrate a change in behaviour that “occurs when accepting evidence about reality provided by other panelists because of a desire to be correct” (Myers,

2013, pp. 213-214). A review of DT in nursing research asserted that informational social influence is primarily responsible for opinion change in studies employing DT, due to the technique's anonymous nature, and the fact panelist feedback is provided to other panel members across rounds (Powell, 2003).

One of the cited advantages of classical DT is that panelists conduct the process anonymously, and in relative isolation to one another. In their review of DT as a research approach, Mead and Moseley (2001) compared it with face-to-face consensus methodologies. They asserted DT minimised the effects of normative social influence because of anonymity, which purportedly improved the internal validity of consensus outcomes. Others such as Sackman (1974) questioned whether anonymity truly improved the internal validity of consensus outcomes derived from Delphi research. His methodological critique asserted that normative social influence from a face-to-face consensus process improved accountability in decision-making, and was superior to the anonymity offered by DT.

A recent review of social influence in DT integrated the literature from the social and legal sciences (Bolger & Wright, 2011). The authors described how social influence could be *reduced* in DT, but could not be eliminated. To date, few researchers have shown the effect of social influence on consensus outcomes when using DT. Those that have provide conflicting results (Bolger et al., 2011; Rowe & Wright, 1996; Rowe et al., 2005). These studies are discussed in detail below.

The Bandwagon Effect

The role of social influence in Delphi research can be seen through the bandwagon effect, where an individual changes their behaviour after realising their opinions represent those of the minority, and changes those opinions to assimilate with the majority irrespective of their own personal beliefs (Nadeau et al., 1993). When panelists perceive they hold a minority opinion after receiving information from a Delphi panel through objective means (i.e. through statistical group summaries fed back to panelists after each round), which triggers conformance, it is called the bandwagon effect. The bandwagon effect is a form of informational social influence.

The presence of the bandwagon effect has been shown in few Delphi studies. The results of such studies provide evidence that the presence of this form of informational social influence threatens the internal validity of Delphi Technique. Scheibe, Skutsch, and Schofer (2002) conducted a 4-round classical Delphi study whereby participants were asked to develop goals and objectives for a hypothetical community transport facility, which might have had an adverse environmental impact. Although their study was poorly reported (it did not provide location, number of panelists or the expertise qualifying their eligibility for the study), they claimed their results showed the bandwagon effect was strongly exerted when providing two groups of panels with differing feedback through subsequent rounds. They provided the control panel with accurate information about majority opinion

on goals and objectives determined by the two panels in round one. At the same time, the researchers provided misinformation about majority opinion on the transport facility goals and objectives to the experimental panel. The experimental panel shifted their responses to reflect this misinformation, despite generated data from a variable that reflected satisfaction with consensus outcomes indicating they were not happy to do so. The researchers revealed panelists in the experimental panel would deviate from their initial opinions, which reflected those of the control panel, to coincide with the erroneous majority (Scheibe et al., 2002).

The bandwagon effect was recently demonstrated in a 3-round forecasting Delphi study using 39 panelists consisting of university staff and students located in the state of Victoria, Australia (Bolger et al., 2011). Panelists were asked to predict which teams would win a series of Australian Football League (AFL) games occurring over a 2-week period. These predictions were in the form of confidence, whereby panelists supplied a measure of confidence about which teams would win. Panelists were also asked to provide rationale for their responses. These predictions were collated and fed back to the panel over two further rounds before the AFL games began. The accuracy of the panelists' final round forecasts were examined after the 2-week period. The researchers found those panelists who had accurate round one forecasts were in the minority. After the third round, they found those panelists representing accurate round one opinion had statistically-significant measures of opinion change. Those accurate panelists were influenced to change to majority opinion, which was incorrect in determining which teams would win the AFL matches.

Given these studies, the bandwagon effect resulting from informational social influence is viewed somewhat negatively. However, group consensus measures and the provision of summarised panelist rationale is information commonly provided to Delphi panelists across rounds, to facilitate the consensus process. Some authors have suggested withholding as much information as possible from panelists, as it would remove the potential for the bandwagon effect (Bolger & Wright, 2011, p. 1509). However, without the provision of some type of information (e.g. summarised panelist rationale or group consensus measures) iteratively, the process could not be described as a DT. In addition, group consensus would unlikely occur as there would be no new information that could be considered by panelists in their decision-making.

Few methodological studies have examined whether there is a causal link between withholding information from Delphi panelists and reducing the bandwagon effect. Such studies have withheld all information from panelists when iteratively asking them to revise their responses, if desired, across rounds. For example, Rowe and Wright (1996) conducted a 2-round forecasting Delphi study using 60 undergraduate students from an English university. The students were asked to forecast the likelihood of political and economic events occurring in the following two weeks. Two weeks later their forecasts were examined to see if they were accurate or not. One group of students were in the 'iterative'

condition, and received no feedback in round two of the study. The other two groups received some form of feedback. The second group received group consensus measures (through statistical measures of majority opinion) alone, and the third group received both statistical consensus measures and panelist rationale for their round two responses. The students in the iterative condition demonstrated increased accuracy of their forecasts after round two, but less so than the groups who had received some form of feedback. Rowe et al. (2005) repeated the conditions of their 1996 study nine years later, with 90 undergraduate students from an English university. Students were asked to forecast the likelihood of 60 newsworthy events happening at a national or international level in the following two months. Unlike their 1996 study, the forecast accuracy of students in the iterative condition worsened. Given the results of these two studies, it appears important to provide summarised group responses in the form of statistical consensus measures or panelist rationale for their responses across iterations in Delphi research.

Differing forms of feedback (e.g. informational social influence) to panelists across iterations may determine consensus outcomes derived by Delphi research. Feedback can consist purely of group statistical measures of consensus (e.g. measures of central tendency and dispersion). It might also consist of rationale for panelists' responses. The form of the rationale (i.e. teleological or heuristical) may also determine how consensus is achieved by panelists. The provision of panel feedback (i.e. through group statistical measures and/or panelist rationale for their responses) appears to improve the forecast accuracy of consensus outcomes determined by Delphi research. In both Delphi studies performed by Rowe et al., in 1996 and 2005, the researchers examined the accuracy of panelists' forecasts in two panels that had received some form of feedback. One panel received group statistical measures across rounds, whereas the other panel received both group statistical measures and panelist rationale. These panels provided somewhat conflicting results, which appear to have been determined by the quality of feedback provided to Delphi panelists. Rowe and Wright (1996) demonstrated forecast accuracy improved the greatest across rounds in the panel receiving both group statistical measures and panelist rationale, followed by the panel only receiving group statistical measures. However, in the 2005 study, the panel receiving group statistical measures improved in their accuracy, whereas the panel receiving group statistical measures as well as panelist rationale did not achieve a statistically-relevant improvement (Rowe et al., 2005). The authors of the 2005 study argued the reason why the group receiving panelist rationale for their responses did not demonstrate increased accuracy was because panelists provided heuristical responses, as opposed to teleological responses. In turn, the heuristical responses triggered greater disagreement amongst panelists. The authors concluded that if panelists' rationales are provided across rounds they should be in the form of teleological, as opposed to heuristical responses.

A 2-round Delphi study performed by Best (1974) also provided support for the provision of panelist rationale, along with group statistical measures, across iterations of a Delphi study. Best used 28 faculty members from an Oregon business school in the USA to forecast the future demand for a magazine. His small study did not use an iteration group, as seen with others (Rowe & Wright, 1996; Rowe et al., 2005). He demonstrated that the panel receiving statistical consensus measures along with panelist rationale had improved forecast accuracy compared to a panel who only received group statistical measures. The results from these three studies (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005) demonstrate the provision of group statistical measures *in addition* to teleological panelist rationale is an important quality consideration in Delphi research. The provision of such feedback may improve 'accuracy' of consensus outcomes derived from Delphi research, as demonstrated through its predictive validity (Hasson & Keeney, 2011, p. 1700). Therefore, the provision of some form of feedback (e.g. group statistical measures and/or summarised panelist rationale) across rounds appears to improve the internal validity of consensus outcomes derived from Delphi research, without necessarily triggering the negative influence of the bandwagon effect.

Determining the presence of the bandwagon effect is an important quality consideration in research using Reactive Delphi (RD) methodology. In RD research, pre-determined information is provided to panelists during round one. The bandwagon effect could attenuate the internal validity of consensus outcomes because, in this instance, the effect from the pre-determined information may exert a negative social influence on the consensus process. If panelists hold a differing opinion to that which is provided from the pre-determined information, it may pressure them to conform to this information, as opposed to suggesting alternate views for group consideration. The presence of the bandwagon effect in RD research has not been described in the literature. Experts familiar with RD research caution that the bandwagon effect may negatively influence the internal validity of consensus outcomes determined by a RD method (Keeney et al., 2006). In this manner, the importance of gathering teleological rationale in the first round of a RD study may be quite important, in order to enhance the internal validity of consensus outcomes.

Panelist Confidence and Expertise

Delphi research conducted by Best (1974); Rowe and Wright (1996); Rowe et al. (2005) helps to explain why the bandwagon effect can be used to exert positive social influence. It can exert a positive influence when panelists are provided with group statistical consensus measures and teleological panelist rationale for their responses. In that instance, the provision of such feedback potentiates more accurate consensus outcomes derived by Delphi research, through demonstrated improvements in predictive validity (Rowe & Wright, 1996; Rowe et al., 2005). However, the amount of confidence a Delphi panelist has in their opinions may determine how the bandwagon effect exerts its influence.

Despite the provision of panelist rationale and group statistical measures of consensus to their sample, Bolger et al. (2011) showed the bandwagon effect diminished panelist forecast accuracy and threatened the internal validity of Delphi forecasts made on AFL matches. The key difference between the study conducted by Bolger et al. (2011) and studies conducted by others (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005) is that Bolger et al. provided an indication of panelist confidence as a means of feedback across rounds in their Delphi study. As a whole, these researchers have shown panelist confidence might negatively influence the bandwagon effect. In turn, there may be negative consequences for the accuracy of outcomes determined by Delphi research, as demonstrated by the predictive validity in the study conducted by Bolger et al. (2011).

In legal sciences research, it has been shown when court judges are given advice by advisors in a confident manner, they perceive that advice as more reliable, and therefore more accurate (van Swol & Sniezek, 2005). In the instance where an advisor appeared confident in their advice, court judges with low confidence in their initial judgement changed their judgement to reflect the advice of the more confident advisor, even though that advice was incorrect. For the purposes of this doctoral research, low panelist confidence resulting in opinion change, despite demonstrated expertise, is referred to as the 'confidence heuristic'.

The confidence heuristic explains why Bolger et al. (2011) found the negative social influence of the bandwagon effect was not ameliorated by the provision of feedback, unlike studies performed by others (Rowe & Wright, 1996; Rowe et al., 2005). Panelists in the forecasting study performed by Bolger et al. (2011) were aware of the confidence others had in their AFL forecasts, as this information was fed back to panelists across Delphi iterations. In this manner, information presented to panelists about confidence served as a form of informational social influence. Bolger et al. (2011) demonstrated the confidence heuristic was present in their Delphi research when individual panelists with low confidence in their forecasts showed high frequency of opinion change relative to others, despite their AFL forecasts being correct. In contrast, panelist confidence in decisions made were assessed using a 7-point scale in the studies performed by Rowe and Wright (1996) and Rowe et al. (2005), but this information was not provided to panelists across iterations. Rowe and Wright (1996) and Rowe et al. (2005) showed low panelist confidence did not correlate to frequency of opinion change because it was not fed back to panelists. As a result, it was recommended that any indication of panelist confidence be withheld from other panelists during Delphi research, as opinion change may occur as a result of the confidence heuristic (Bolger & Wright, 2011).

The confidence heuristic has never been demonstrated in Delphi research using nurses. In addition, it is unknown what the presence of pre-determined information in the first round of RD research will have on panelist confidence. The provision of pre-determined information may increase confidence

in decisions made, resulting in lower opinion change. An exploration of the confidence heuristic in RD research may lend further support for the internal validity of consensus outcomes.

On the opposite end of the confidence spectrum, being overly-confident introduces the potential for egocentric discounting (Bolger & Wright, 2011). The presence of this threatens the internal validity of consensus outcomes derived from Delphi methodology. Egocentric discounting exists when an individual refuses to change their opinion on a matter, based upon perception or objective evidence that they have greater expertise than others, even when their own opinions may not reflect reality (Snizek et al., 2004). If a Delphi panelist appears to have relatively low frequency of opinion change relative to others when given expert feedback, it may mean they are overly-confident and prone to egocentric discounting. Egocentric discounting was demonstrated in the study performed by Bolger et al. (2011). In their forecasting Delphi study they were able to evaluate the accuracy of panelists forecasts using the results of winning AFL teams after a 2-week period. Those panelists who had high confidence in their forecasts, but were wrong, infrequently changed their opinions despite being given feedback by those who had demonstrated greater expertise in their forecasts.

Alternatively, low frequency of opinion change may mean panelists have access to accurate information that re-affirms their opinion, which increases their confidence. For example, Rowe et al. (2005) demonstrated Delphi panelists with objective evidence of their expertise changed their opinions less frequently. Those panelists with greater objective expertise had access to information that re-affirmed their opinions, resulting in less opinion change. Therefore, the research performed by Rowe et al. (2005) implied panelists had not changed their opinions as a result of egocentric discounting. However, like Bolger et al. (2011), they also demonstrated objective measures of expertise were poorly related to panelist confidence, indicating that confidence is a poor predictor of an objective measure of expertise.

It is difficult to demonstrate overconfidence is a result of egocentric discounting in Delphi research unless the research is conducted as a forecasting study, where the accuracy of opinions can be verified within a short timeframe. Once an objective measure of expertise is verified, opinion change can then be measured to demonstrate whether opinion change was due to re-affirming knowledge, or due to egocentric discounting. Previous researchers have found a self-rated measure of expertise positively correlated to an objective measure of expertise in forecasting Delphi research. Rowe and Wright (1996); Rowe et al. (2005) and Best (1974) have demonstrated that a self-rated measure of expertise correlated to an objective measure of expertise. It is not known how to objectively demonstrate expertise in Delphi research that has not been designed as a forecasting study. In RD research, it is possible that high self-rated or objective measures of expertise might correlate to lower frequencies of opinion change. In that instance, such measures might suggest the absence of egocentric discounting. However, no research using RD methodology has correlated self-rated or objective

measures of expertise to opinion change. It is also not known if subjective measures of expertise can be correlated to objective measures of expertise in RD research, as they are generally viewed as opposites in empirical research. Therefore, the presence of egocentric discounting has never been demonstrated in RD research. As outlined in Chapter 1, there are no known tools which might be used to objectively demonstrate expertise in nurse practitioners. If one were available, the tool could be used to validate whether self-rated measures of expertise in nurse practitioners are indeed accurate.

Panel Composition

A final consideration in those factors that might affect consensus outcomes in Delphi research is panel composition. This refers to the membership of the Delphi panel, which is used to achieve consensus on an issue or research question. Two issues arise when considering panel composition. The first is how expertise is defined to clarify panel eligibility. Defining panel eligibility contextualises the expert opinion informing the research, and demonstrates the internal validity of consensus outcomes derived through the research. The second issue relates to whether Delphi panels should be heterogeneous or homogenous. For example, a Delphi panel can consist of 'experts' and 'laypersons' and be heterogeneous because of the stratification of responses above that of simple demographic data (Hussler, Muller, & Rondé, 2011). However, Delphi panels typically consist solely of informed content experts, to improve the internal validity of consensus outcomes (Baker et al., 2006; Keeney et al., 2006). Therefore, many Delphi studies attempt to generate consensus opinion derived from small, homogeneous panels of experts, which creates difficulty in generalising consensus outcomes to broader populations (Murphy et al., 1998).

Demonstration of heterogeneous expert opinion in Delphi research is just as important as demonstration of expertise itself. Many Delphi researchers have argued that panel heterogeneity improves Delphi research generalisability. For example, Okoli and Pawlowski (2004) argue Delphi panels should be 'stratified' (i.e. heterogeneous). They conducted Delphi research into infrastructure requirements and e-commerce practices needed in Sub-Saharan Africa, which has disparate access to the internet and computer technologies. Although they could have simply used persons in their Delphi study with knowledge of information technology, they wanted to incorporate the diverse views of academics, government officials, non-governmental agencies and end-users. Okoli and Pawlowski (2004) wanted to ensure different 'lenses' were represented in their Delphi research study. Therefore, they created a bespoke tool that was used to identify potential panelists' individual disciplines and skills, representative organisations, and whether they had publications in the peer-reviewed literature relevant to their research study. This tool was used to ensure diverse views were included in their Delphi research, which demonstrated the internal and external validity of derived consensus outcomes.

Panel heterogeneity has also been examined in nursing research. A 2-round RD study conducted by Duffield (1993) used two heterogeneous panels of registered nurses in New South Wales, Australia. Each panel was asked to evaluate and achieve consensus on the competencies needed by front-line nurse unit managers. One panel consisted of 34 members, whereas the smaller panel consisted of 16 members. The primary difference between the panels was the larger one consisted of a larger proportion of nurse managers compared to the smaller one. Along with nurse managers, the remaining membership of the panels consisted of registered nurses from educational, professional and industrial organisations. A very high level of consensus (93%) was achieved on competencies between the two independent panels. Duffield's study has been cited as an indicator of the inter-observer reliability of Delphi Technique (Hasson & Keeney, 2011). It shows the involvement of heterogeneous viewpoints does not appear to overtly change consensus outcomes determined by Delphi research.

The findings from Duffield's study might lead one to question why panel heterogeneity is important, given consensus outcomes were otherwise the same between panels. Few studies provide evidence that heterogeneity of opinion is important in Delphi research. However, those that have provide insight into the importance of panel heterogeneity in improving generalisability of consensus outcomes. A 2-round RD study conducted by Campbell, Hann, Roland, Quayle, and Shekelle (1999) aimed to establish consensus on quality indicators for general practices in the United Kingdom. Campbell et al. used two primary expert panels in his Delphi research: health systems managers and medical practitioners. Each panel was divided into two groups. One group received feedback from their own panel, and the other received combined feedback from their own and the other panel. For example, in one group medical practitioners received Delphi feedback only from other medical practitioners. The other group within that medical practitioner panel not only received feedback from their peers, but from health systems managers as well. Campbell et al. demonstrated health systems managers rated quality indicators significantly higher than medical practitioners, which he attributed to the fact that "managers come from a culture in which performance management is widely advocated" (Campbell et al., 1999, p. 967). When groups received combined feedback from both panels, the opinions of both the health systems managers and medical practitioners were moderated. In effect, the moderation of opinions in the panels of experts with heterogeneous viewpoints created consensus outcomes that reflected the real-world experience of medical practitioners, as well as the expectations of health systems managers. The net result of heterogeneous panelist feedback was consensus outcomes that were relevant and generalisable to a larger population.

Other Delphi research revealed moderation of extremes in opinion when there was demonstrated heterogeneity of expertise. For example, Tichy (2004) conducted a retrospective study examining the outcomes of two Delphi studies using panelists who had self-rated their expertise. He found Delphi panelists could reliably self-rate their expertise, but were prone to an 'over-optimism bias', whereby

top-rated experts underestimated problems posed to them during the Delphi research. In their 2-round forecasting Delphi study, Hussler et al. (2011) demonstrated moderation of opinion voiced by experts with technical expertise in nuclear power projects. They retrospectively analysed data from a large sample of experts from a Delphi survey performed in 1995. It was conducted to determine consensus on the value and timeframes needed to complete several technological projects in France. Their sample consisted of persons who demonstrated expertise in one of 15 domains relating to technological research. The 'experts' in their study were those who had been cross-referenced to a national database of persons with advanced knowledge in the domain of French nuclear energy. The laypersons were those who self-rated their expertise as being high in one of the research domains, but low in the domain of nuclear energy. Hussler et al. demonstrated the experts in nuclear energy were prone to a 'self-serving' bias (Hussler et al., 2011, p. 1651), whereby they overestimated the value of nuclear energy projects compared to laypersons. They found laypersons provided greater diversity of opinion in round one, but were more prone to change their opinion on the subject matter to be in line with expert opinion. Overall the final consensus opinion reflected those of the experts at the termination of their Delphi research. The authors concluded it was nevertheless important to involve laypersons in their research for the ethical reason of giving opportunity to express their views on a controversial subject like nuclear energy.

More recently, Brookes et al. (2016) conducted a 2-round Delphi study to achieve consensus on key performance indicators for health conditions such as breast and oesophageal cancers. Like the study conducted by Campbell et al. (1999), two primary panels were considered: the views of patients and those of health professionals. Brookes et al. (2016) found consensus outcomes were influenced by the panels used, with greater consensus achieved on items when a group received information from both patient and health professional panels. The inclusion of heterogeneous viewpoints appears to be an important quality consideration for Delphi research. Therefore, for the purposes of this research, expertise in nurse practitioners should be defined to demonstrate the internal validity of the clinical learning and teaching framework. Heterogeneity of opinion should also be described within the expert panel to demonstrate the framework is generalisable to diverse clinical settings and areas of practice, facilitate the generation of consensus, as well as ensure those panelists with diverse viewpoints are incorporated into the research.

Nurse Practitioners in Delphi Research

The definition and role of expertise in Delphi research has been reviewed in Chapter 1. In this section, the existing literature will be reviewed to evaluate how expertise and heterogeneity has been defined in Delphi studies relating to nurse practitioners. Nurse practitioners have served as the subject of interest in limited Delphi studies conducted in the USA, United Kingdom and Australia. For example, only two studies have been identified from the USA. Holcomb (2000) performed a 3-round RD study

in the state of Alabama, USA, using 139 nurse practitioners. She conducted her Delphi study to identify clinical activities performed by nurse practitioners working in primary health care. Her only eligibility criteria used to demonstrate expertise was registration as a nurse practitioner (a protected title) by the Alabama State Board of Nursing and current clinical practice as a nurse practitioner. Demographic and professional variables were provided to demonstrate heterogeneity of expert panel opinion. These variables included population focus, years endorsed as a RN and nurse practitioner, and highest degree obtained. Pulcini, Wilbur, Allan, Hanson, and Uphold (2006) used 13 panelists in a 3-round RD study to achieve consensus on criteria demonstrating excellence in nurse practitioner education. They defined panel expertise as those persons being nominated by a national organisation responsible for the educational governance of American nurse practitioner programmes. Their experts consisted of persons who were directors of nurse practitioner programmes, served on national nurse practitioner certification boards, or represented health service industry and governmental agencies. Their study did not indicate whether any of the panel members were nurse practitioners themselves, nor did they provide specific information detailing the exact composition of the panel. Panel members were reported to have represented 11 states across the USA; other demographic or professional variables determining heterogeneity of opinion were not provided.

Four Delphi studies relating to nurse practitioners were identified from the United Kingdom. The RD study conducted by Roberts-Davis and Read (2001) used 49 'key informants' and 169 persons who self-selected from recruitment conducted at nursing conferences in England. The aim of their Delphi study was to establish the differences between the clinical nurse specialist (CNS) and nurse practitioner roles in England. Expertise as a condition for Delphi panel eligibility was not defined in their study. The panelists in their sample demonstrated heterogeneity of expert opinion through representation from diverse clinical activity domains in the CNS and nurse practitioner roles. For example, experts representing the CNS role participated from differing condition-specific domains (e.g. breast, stoma, or diabetic care specialists, etc.) and area-specific domains (e.g. coronary care, neonatal, or medical care units, etc.). In addition, nurse practitioner experts participated from client group-specific domains (e.g. homeless persons, travelers, gerontological specialists, etc.) and community clinical nursing domains (e.g. family, occupational health, and general practice nursing). Demographics of panelists belonging to these domains were not published. No other demographic or professional variables demonstrating expert panel composition were provided in the study conducted by Roberts-Davis and Read (2001). Marsden et al. (2003) conducted a 2-round classical Delphi study examining the barriers and facilitators to the nurse practitioner role in the United Kingdom. Their expert sample consisted of 24 panelists who were nurse practitioners, lecturers in nurse practitioner education, researchers, or involved in non-governmental nurse practitioner policy development. No detailed information about the demographic or professional variables demonstrating heterogeneity of expert opinion were given in their study. McElhinney (2010) conducted a 3-round classical Delphi study in Scotland using 21

panelists to identify factors influencing the ability of nurse practitioners to conduct physical examinations after receiving training. All 21 panelists involved in their research were nurse practitioners. Demographic variables, such as years qualified, work setting, area of practice and highest qualification, were used to demonstrate heterogeneity of expert opinion. The final UK Delphi study involving nurse practitioners was recently reported by Goldberg et al. (2016). They conducted a RD study using 31 experts to develop an educational curriculum for nurse practitioners working with older persons in the hospital environment. Experts were defined as registered clinicians with more than five years' experience working with older persons, or laypersons with interest or experience in older person's health. The clinicians involved in their research demonstrated heterogeneity of opinion as they were members of professional associations representing nurses, occupational therapists, and physiotherapists. The laypersons were representatives from a research collaboration vested in the translation of patient health needs research into clinical practice. No detailed information about other demographic or professional variables demonstrating expertise were given in their study.

The final cohort of Delphi studies focusing on nurse practitioners as the subject focus come from Australia. Three Delphi studies provided insight into how expertise and heterogeneity of opinion were identified in Australian nurse practitioners. Haines and Critchley (2009) conducted a 3-round classical Delphi study in a single rural hospital in the state of Victoria. They used 48 Delphi panelists to identify opportunities, barriers and facilitators to the development of the nurse practitioner role in a small rural hospital. Expertise was identified by the fact that 59% of the panelists in their sample had 20 or more years' experience working in health care. Their heterogeneous panel consisted of nurses, medical practitioners, health care consumers, health service administrators and managers, allied health practitioners, community workers and a midwife. It appears no nurse practitioners were involved in their sample. Chang et al. (2010) conducted a 3-round RD study that validated a tool used to identify the advanced practice nursing role in Australian registered nurses. Their study was conducted in the state of Queensland using 16 RNs who were credible within their profession, understood requirements for the development of a nursing health workforce, and were familiar with professional nursing practice. It appears no nurse practitioners were involved in the study. Demographic and professional variables demonstrating heterogeneity of expertise in their study include position title and highest level of educational qualification. The final, and most recent, Delphi study was conducted using solely Australian nurse practitioners. O'Connell (2014) conducted empirical research into the development of clinical practice standards for Australian emergency nurse practitioners. She piloted a 2-round RD study using 12 endorsed nurse practitioners working in emergency departments in metropolitan to rural areas throughout the state of Queensland. No detailed demographic or professional variables demonstrating heterogeneity of opinion were reported in her pilot study. O'Connell then conducted a national 2-round RD study using 45 endorsed nurse practitioners working in emergency departments

across metropolitan to rural areas of Australia. No detailed demographic or professional variables demonstrating heterogeneity of expert opinion were reported in her national study.

In summary, there are few studies internationally using the nurse practitioner role as the subject matter for a Delphi study. There are even fewer Delphi studies that have been explicitly conducted using nurse practitioners in the Delphi panel. There is only one Delphi study that has used nurse practitioners in a Delphi panel from the Australian context (O'Connell, 2014). However, only endorsement as a nurse practitioner was used to demonstrate expertise in her Delphi studies. No other demographic or professional practice variables were reported to demonstrate panelist heterogeneity in her Delphi research. Therefore, the Delphi panels from O'Connell's research appear quite homogeneous. It is difficult to generalise her findings to a larger population of Australian nurse practitioners working in emergency departments.

Few Delphi studies using nurse practitioners as their focus have demonstrated heterogeneity of expert opinion, other than through demographic variables or educational qualifications. For example, Roberts-Davis and Read (2001) used differing domains of clinical activity represented by the CNS and nurse practitioner roles in England to demonstrate heterogeneity of expert opinion in their Delphi study. Holcomb (2000) used the USA population foci to demonstrate heterogeneity of opinion in her study. Those remaining Delphi studies who have demonstrated heterogeneity in their expert panels have used nurse practitioners in roles poorly comparable to Australia (e.g. the UK where the nurse practitioner role is not regulated), or have used variables such as professional titles or affiliations to demonstrate panel expertise. These variables are poorly reported, and do not necessarily translate into expertise in the nurse practitioner role. No Delphi studies have objectively demonstrated heterogeneity in nurse practitioner expert opinion through variables reflecting characteristics of advanced practice nursing. A meta-summary of 50 manuscripts meeting their inclusion criteria was recently published about the characteristics of advanced practice nursing between 1986–2012 (Hutchinson et al., 2014). Such characteristics include “autonomous or nurse-led extended clinical practice, developing the practice of others, improving systems of care, developing and delivering educational programs, and nursing research and scholarship” (Hutchinson et al., 2014, p. 122). Variables correlating to these characteristics would clearly suggest expertise in the nurse practitioner role, as well as heterogeneity of opinion.

Since much of the scope and direction of the advanced practice nursing profession is driven by Delphi research, an exploration of nurse practitioner expertise as relating to the demonstration of panel heterogeneity would be a valuable addition to the literature, and may contribute to the richness of Delphi solutions and overall validity of the applied methodology.

Summary

In summary, this literature review reveals there are several significant gaps in the literature. There is currently only one validated specialist clinical learning and teaching framework available for nurse practitioners in Australia. It has been contextualised for Australian nurse practitioner students working within the emergency context of practice (O'Connell, 2014). Therefore, a pedagogical model supporting the broad specialist clinical learning and teaching needs of Australian nurse practitioner students is needed. The remaining two frameworks (palliative care and nephrology nursing) have either not been empirically validated, or have not specifically focused on clinical learning and teaching outcomes required by the student (Douglas & Bonner, 2011; Quinn et al., 2011). There are a multitude of specialty areas in which nurse practitioners practise in Australia; their clinical learning and teaching outcomes are highly dependent upon individual contexts of practice. Learning and teaching outcomes are also highly dependent upon clinical supervisors, who might not fully understand the clinical skills and knowledge needed by nurse practitioner students to develop and enact their roles. A broad clinical learning and teaching framework is needed, which accounts for the diversity of Australian nurse practitioner specialties. This framework will contribute to consistency in expected specialty clinical learning and teaching outcomes for nurse practitioner students.

The literature demonstrates there are a plethora of consensus-based research methodologies, which might be used to validate the proposed specialty clinical learning and teaching framework. Some methodologies, such as Delphi Technique, have a greater body of evidence demonstrating their rigour as sound research approaches. However, the literature shows there are many methodological variations, hybrids and differing methods used in Delphi Technique. There is very little research discussing or supporting the rigour of such approaches.

Reactive Delphi methodology is a variation of DT, and has been used in much of the nursing literature. However, little is known about the role of social influence and panel composition in research using RD methodology. The presence of the bandwagon effect in RD research has not been described in the literature. Experts familiar with RD research caution the bandwagon effect may negatively influence the internal validity of consensus outcomes determined by RD methodology (Keeney et al., 2006). The literature shows panelist confidence may result in opinion change as a result of the confidence heuristic (Bolger & Wright, 2011). In turn, the confidence heuristic may negatively influence the internal validity of consensus outcomes determined by RD methodology. There have been no previous attempts at demonstrating the presence or absence of the confidence heuristic in research using RD methodology. Finally, there are no known tools which might be used to objectively demonstrate expertise in Australian nurse practitioners. Such tools could be used to demonstrate heterogeneity of panelist opinion, which would improve the generalisability of consensus outcomes determined by RD methodology (Okoli & Pawlowski, 2004). If such a tool were available, it could then be used to validate

whether self-rated measures of expertise are indeed accurate in nurse practitioners. If there were a manner to demonstrate expertise in nurse practitioners, then the presence of egocentric discounting, which threatens the internal validity of consensus outcomes derived from Delphi research, might be determined. The presence of egocentric discounting has never been explored in research using RD methodology.

This research aims to validate a broad clinical learning and teaching framework for Australian nurse practitioner students working within diverse specialties. It will use Reactive Delphi methodology to validate metaspecialty names and clinical practice standards for the proposed framework. As a result of conducting this doctoral research, greater knowledge will be gained on the internal validity of consensus outcomes determined by RD methodology. Web-based survey methods will be used to gather data from nurse practitioners practising across Australia, to increase the generalisability of consensus outcomes determined by this doctoral research. A novel application of RD methodology will result in greater understanding of the risks and benefits of using web-based survey methods.

Chapter 3 Methodology and Methods

Introduction

Chapter 2 provided evidence of the need for a contextualised pedagogical model supporting the clinical learning and teaching needs of Australian nurse practitioner students working within broad specialty areas. A metaspecialty taxonomy serving as the foundation for this model had been established, but had not been validated across a large sample of endorsed nurse practitioners. Clinical practice standards that support the metaspecialties were needed to provide substance and definition to the taxonomy. Together, the metaspecialties and clinical practice standards would form a specialty clinical learning and teaching framework for Australian nurse practitioner students. Chapter 2 also provided evidence that RD methodology would be an appropriate consensus-based research approach to validate the framework for Australian nurse practitioners. However, there was little Delphi research using nurse practitioners as expert panelists, which might be used to inform the conduct of this research. No measures of expertise for panel composition existed to enhance the internal and external validity this research. Lastly, it was not known what role social influence plays in the formulation of consensus in RD research. Therefore, this research aimed to generate new knowledge by providing evidence for the validity of RD methodology.

Chapter 3 provides an overview of the methodology and methods used to analyse qualitative and quantitative data obtained from four studies informing this doctoral research. First, the philosophical underpinnings of this doctoral research will be provided. Following this discussion, a brief summary of the literature about Reactive Delphi methodology will be given, with a focus on how it was applied to this research. A description of the way rigour was ensured will follow. Next, participant recruitment and sampling will be explained. This is followed by data collection, management and analysis approaches used. Next, a discussion on ethical considerations will be provided, followed by a brief overview of a Consensus Development Conference that was conducted to inform this doctoral research. This chapter concludes with a summary of methodology and methods used in this research.

Philosophical Worldview

The choice of a worldview, or paradigm, is the initial step taken to interpret the ontology, epistemology, axiology, methodology and rhetoric of research (Creswell & Plano-Clark, 2011). A worldview provides the lens through which research is conducted, interpreted and understood. The philosophical paradigm of pragmatism informs the basis of this research.

The philosophy of pragmatism has its origins in the USA in the late 1800s, through the works of James and Dewey (Hookway, 2013). Their philosophical approach of pragmatism established a worldview clarifying the 'practical consequences' of concepts or hypotheses that are in apparent conflict. If there

are no discernable practical consequences in differentiating between conflicting worldviews, and shared meanings exist between the conflicting views, then the conflicting views are unimportant (Capps & Capps, 2004). Over the last decade several researchers have established the utility and appropriateness of pragmatism in mixed-methods research (Johnson & Onwuegbuzie, 2004; Morgan, 2007; Tashakkori & Teddlie, 2010). In this manner, debate over whether Delphi methodology ascribes solely to a positivist paradigm, or shares commonalities with a naturalistic paradigm (Hasson & Keeney, 2011), is unimportant. Delphi methodology is described in this doctoral research as a mixed-methods approach (Tapio, Paloniemi, Varho, & Vinnari, 2011). Both qualitative and quantitative data were collected and analysed in round one of the Delphi studies conducted for this research. Bryman (2006) identifies some methodologists may view the collection of qualitative and quantitative data in the same instrument as not truly adhering to mixed-methods research principles. His large literature review of 232 mixed-methods research articles dating over a 10-year period identified that 27% of the studies meeting his inclusion criteria had collected qualitative and quantitative data in the same research instrument (Bryman, 2006). He asserts if such an approach is used, the qualitative and quantitative data must have distinctly different purposes. In this doctoral research the purpose of qualitative data collection (through use of open-ended questions in the first round of each Delphi study) was to provide specific insight into whether there were additional metaspecialties or clinical practice standards that had not been identified through prior research and, if so, what these might be. Quantitative data were collected to specifically discern those metaspecialties and clinical practice standards that had achieved consensus using expert opinion, and those that had not.

Mixed-methods research uses characteristics of both quantitative and qualitative research principles. The body of knowledge informing mixed-methods research began in the mid-1950s. However, it did not truly begin to amalgamate until the mid-1980s (Johnson & Onwuegbuzie, 2004). Quantitative research principles were borne from the positivist paradigm, where deductive methods recognise a singular reality that is quantifiable and predictable. In contrast, qualitative research principles arose from a naturalistic paradigm. In a naturalistic paradigm, the researcher embraces inductive reasoning and recognises there may be multiple realities and perspectives informing a lived experience or phenomenon. Pragmatism may be used as a foundational philosophical paradigm in mixed-methods research, which is informed by both quantitative and qualitative research principles. Pragmatism accepts that mixtures of quantitative and qualitative research methodologies are beneficial in addressing a research aim. Ultimately, it may be used in mixed-methods research “in ways that offer the best opportunity to answer important research questions” (Johnson & Onwuegbuzie, 2004, p. 16).

Mixed-methods research has suffered from critique in epistemological debates, with practitioners being accused of using a ‘whatever works’ approach (Bryman, 2006, p. 97). Some critics insist mixed-methods research produces results that are vague, with minimal connection to real-world phenomena

(Buchanan, 1992). Others voice concern that mixed-methods research provides advantage to post-positivism, at the expense of naturalistic inquiry (Giddings & Grant, 2007). Giddings and Grant (2007) argue that post-positivism underpins most mixed-methods research, and serves as a 'Trojan horse' for positivism. They feel mixed-methods research, informed by post-positivistic paradigms, is used to win research grants, and results in downplaying the important role of naturalistic inquiry in nursing research. Some argue that how qualitative and quantitative approaches are combined in mixed-methods research remains unclear (Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2012), resulting in debate about the quality of mixed-methods research. Others have cited practical concerns, arguing that it is expensive and time-consuming (Johnson & Onwuegbuzie, 2004).

Bryman (2006) identified 16 reasons for using a mixed-methods research approach. Of those, *completeness* and *enhancement* appeared to be the most applicable to the proposed doctoral research. Completeness refers to the ability of mixed-methods research to create a "more comprehensive accounting" of the research question being studied (Bryman, 2006, p. 106). It was felt that simply asking panelists to rate the relevancy of pre-determined information in the first round of each study was insufficient in assessing for any potential metaspecialties or clinical practice standards not identified by prior research. Therefore, additional open-ended questions were asked, which would ascertain if any novel metaspecialties or clinical practice standards could be identified by a panel of experts. Enhancement refers to the ability of a mixed-methods approach to augment findings. Panelists were not only asked to rate the relevancy of the presented information, but were asked additional questions that triggered them to supply teleological rationale for their responses. Qualitative data from these rationales were then used to expand and build upon quantitative data (see Chapter 4 for details of qualitative data analysis). Therefore, a mixed-methods approach was used in this research, which facilitated integration of data, enhanced the value of collected data, and assisted in understanding of findings (Moran-Ellis et al., 2006).

Pragmatism functioned as the foundational paradigm for this mixed-methods research. High regard was placed upon the knowledge gained from the subjective and diverse thoughts and experiences that expert nurse practitioners brought from their own constructed realities. Pragmatism as a functional paradigm recognises the outcomes of this research are fallible, and could be determined by the current realities of the nurse practitioner profession. Such realities may be influenced by external forces, such as professional hierarchies and political agendas. In turn, these constructed realities provide rich insight into how the nurse practitioner clinical learning and teaching framework might be applied in diverse clinical contexts. This research acknowledges clinical practice may change with time and evolution of the profession, as seen with physiotherapists, dietitians and other allied health professionals (Kersten et al., 2007; McPherson et al., 2006; Palermo et al., 2016). As such, it is expected the constructed realities of future nurse practitioner students will influence the operationalisation of

outcomes determined by this research, to contextualise the framework for individual needs. Participant recruitment, sampling, data collection and analysis have been informed by the research aims and what appeared to be the best fit, given the limited information and data available in the Australian context.

As previously mentioned in Chapter 1, I have considerable professional experience informing this research. This experience would be seen as introducing subjectivity and bias in a purely positivist paradigm. However, the philosophical foundation of pragmatism implies such subjectivity provides rigour to the methodology through researcher reflexivity. Delphi methodology was selected to provide the highest quality information, with the greatest potential for an accurate and relevant nurse practitioner clinical learning and teaching framework. Congruent with the stated claim that consensus outcomes determined by Delphi research have long-term relevancy and accuracy (Parente & Anderson-Parente, 2011), outcomes determined by this research will ensure the framework is not only relevant now, but into the foreseeable future. Accordingly, this research used RD methodology conducted in a convergent, sequential mixed-methods approach, with an emphasis on quantitative data appraisal.

Reactive Delphi Methodology

Reactive Delphi methodology is a variant of the classically-described DT, both of which have been described in detail in the literature review. In brief, in the first round of classically-described DT, the researcher uses an open-ended question to frame a research question or issue. During this round an expert panel provides potential solutions to the question through the provision of teleological responses in a paper-based survey. These responses are compiled by the researcher and then anonymously fed back to panelists for verification in a second round. During round two, panelists anonymously rate the relevancy of each of the compiled responses on a Likert scale. Data obtained from this ratings exercise are collated by the researcher to determine a consensus measurement on each of the responses. Through subsequent rounds panelists individually review their ratings from previous rounds, and compare these to anonymised group consensus measurements. They are then allowed to revise their responses, as required. This iterative process continues until a pre-determined level of consensus is achieved on responses that best answer the research question.

In RD methodology, pre-determined information obtained from a literature review, focus group or other process is used to inform the first round of a Delphi study (See Figure 3:1). The anonymous and iterative consensus process that follows is that of the classically-described Delphi Technique. Two sequential RD surveys were conducted during this doctoral research. The first Delphi survey (DS1) used pre-determined information obtained from the CLLEVER study (Gardner et al., 2014). This information took the form of the six metaspecialty constructs identified from CLLEVER, as well as a

bibliography informing panelists of existing Australian and international clinical learning and teaching frameworks. The second Delphi survey (DS2) used pre-determined information in the form of draft clinical practice standards that had been identified for each of the CLLEVER metaspécialties in Phase 1 of the CLLEVER2 study. This doctoral research represents Phase 2 of the CLLEVER2 research project (Refer to Figure 1:1). Keeney et al. (2001) suggested the provision of pre-determined information in the first round of RD research may create ‘inkblots of the future,’ by biasing participant responses. To simulate classically-described DT, and reduce the risk of such bias, the first round of each study provided panelists the opportunity to offer alternate metaspécialty constructs or clinical practice standards not already identified from prior research.

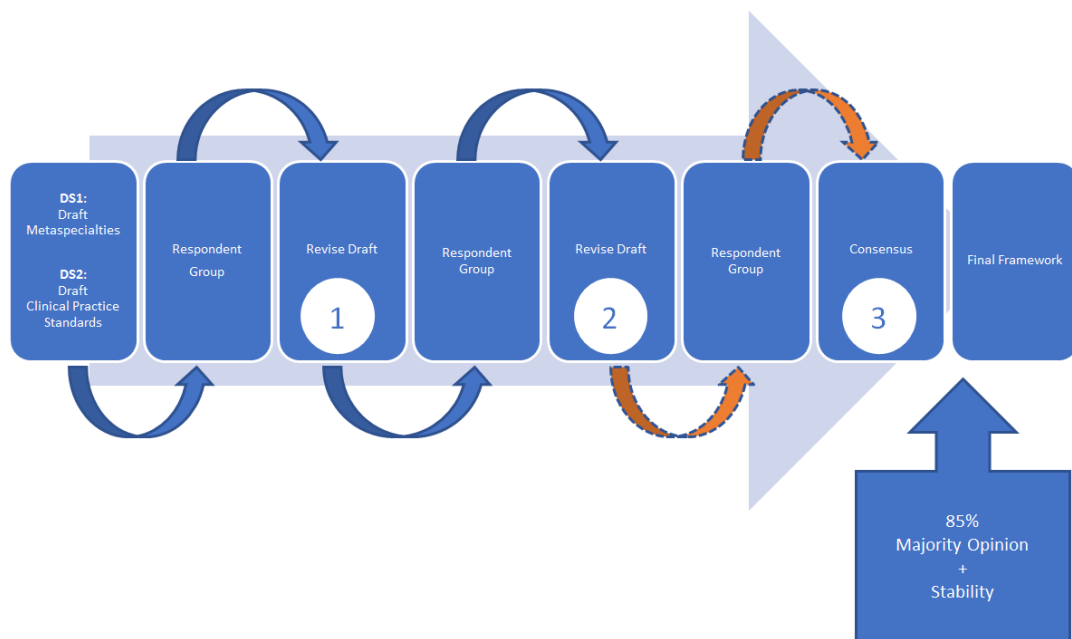


Figure 3:1 Reactive Delphi Methodology¹

Methods

First, this section provides explanation of how consensus was measured to address the first aim of this doctoral research. There is much work to be done to understand how consensus outcomes are determined when using DT (Bolger & Wright, 2011), and so this section includes description of how this research also explored potential ways of measuring factors that influence consensus. Specific variables were developed to explore the bandwagon effect, the confidence heuristic, egocentric discounting and panel composition. Operational definitions are given for two forms of social influence: the bandwagon effect and the confidence heuristic. To provide an operational definition for the confidence heuristic, a definition of experience level was also needed. Therefore, an operational

¹ Arrows with broken lines imply from Round 2 onward it is possible to determine consensus as measured through majority opinion that is stable through time. Those items achieving consensus are removed from further consideration.

definition of this is provided, as relating to expertise. Next, operational definitions for egocentric discounting and panel composition are provided, which were examined in this research. Findings about the bandwagon effect, confidence heuristic, experience level and panel composition are not reported until Chapter 5; however, demonstration of the variables measuring these factors is needed to understand the validity of results. The manner through which feedback was supplied to panelists across rounds of two Delphi surveys, conducted to achieve the aims of this doctoral research, is provided, as the literature review revealed quality of feedback provided to panelists varies across differing Delphi surveys. Next, an overview of four studies resulting from the conduct of both Delphi surveys is described in the context of the aims of this doctoral research. After this section, participant recruitment and sampling for both Delphi surveys will be provided. Following, a description of the survey instruments and data collection is given in the context of the Delphi surveys. Finally, an overview of data management and analysis conducted during this doctoral research is given, followed by an overview of ethical considerations. This section concludes with the chapter summary.

Consensus

Chapter 1 identified the difficulties in defining a complex construct such as consensus. The first aim of this doctoral research was to validate, that is achieve consensus on, a metaspecialty taxonomy and clinical practice standards. Validation was achieved through expert consensus using RD methodology. Consensus was defined in this research as majority opinion greater than 85% over two consecutive rounds, as expressed by the item-level Content Validity Index (i-CVI) (Polit, Beck, & Owen, 2007). As indicated in Chapter 1, consensus may not only be determined by majority opinion, but opinion that is stable through time. In the event that majority opinion had not been achieved through two consecutive rounds on individual metaspecialties or clinical practice standards, a measure of stability of panelists' responses across rounds was used. Stability of panelist responses was measured using McNemar's Test for Change, to ascertain whether panelists were significantly revising their opinions across rounds due to panel feedback. If so, it indicated they were processing new information and further rounds were needed.

The Bandwagon Effect

As described in the literature review, the bandwagon effect is a form of social influence that can have a negative or positive influence in Delphi research. It occurs when an individual changes their behaviour after realising their opinions represent those of the minority, and changes those opinions to assimilate with the majority, irrespective of their own personal beliefs (Nadeau et al., 1993). Without the positive influence of the bandwagon effect, consensus would unlikely be achieved in Delphi research. However, in RD methodology, pre-determined information is presented to panelists that may bias their responses. Panelists may be influenced by the presented information and quickly achieve consensus, without analytical processing of the presented information. Consensus might

either suggest panelists had judged the presented information as relevant, or it may suggest the negative influence of the bandwagon effect. This doctoral research aimed to describe whether there was evidence of negative social influence from the bandwagon effect. It did this by evaluating majority opinion on proposed metaspecialties and clinical practice standards during round one, and comparing this level of consensus to round two majority opinion. If high levels of consensus had been achieved across all metaspecialties and clinical practice standards across rounds, it may suggest the presence of the bandwagon effect. In addition, opportunity was given to panelists to provide teleological rationale for their responses, as well as suggest alternate metaspecialties or clinical practice standards in round one of both Delphi studies. If no rationale or alternatives were provided by panelists, it would also have suggested the negative influence of bandwagon effect.

The Confidence Heuristic

The confidence heuristic was determined in this doctoral research by demonstrating whether panelists had low confidence in their decision-making that resulted in opinion change across Delphi rounds. If opinion change was present, despite a panelist demonstrating a greater experience level relative to others, it suggested the presence of the confidence heuristic. If present, it implied those panelists with a greater level of experience as nurse practitioners had been influenced by less experienced (i.e. proficient) nurse practitioners. If the confidence heuristic was shown to be present, it would threaten the internal validity of consensus outcomes determined by this doctoral research. To determine its presence, an objective means of demonstrating experience level in nurse practitioners was required.

Experience Level

There is no research describing characteristics of an expert nurse practitioner, which might be used to determine experience level. However, a relationship exists between quality of clinical outcomes and years' experience in registered nurses. In a study evaluating quality of care provided by nurses in 39 inpatient units across 11 hospitals over a period of 2.5 years in the USA, those nurses with five or more years' experience made fewer medication errors and had lower rates of patient falls (Blegen, Vaughn, & Goode, 2001). It appears five years' experience had been used to describe experienced nurses in one Delphi study, which was conducted to develop an educational curriculum for nurse practitioners working with the frail aged (Goldberg et al., 2016). Therefore, five or more years' experience was used in this doctoral research to provide an indication of an experienced nurse practitioner.

Experience level cannot solely be determined by length of time practising, as it alone does not reflect the characteristics of advanced practice nursing. Therefore, experience level was determined by creating a composite categorical variable. This variable consisted of years' experience working as an endorsed nurse practitioner, and the demonstration of professional activities suggesting characteristics of advanced practice nursing, as is seen in nurse practitioners. Hutchinson et al. (2014)

conducted a meta-summary describing the characteristics of advanced practice nursing using 50 studies conducted in Australia, the USA and the United Kingdom. They found there were five domains describing the characteristics of advanced practice nursing: autonomous or nurse-led extended clinical practice (Domain 1); developing the practice of others (Domain 2); improving systems of care (Domain 3); developing and delivering educational programmes and activities (Domain 4); and nursing research and scholarship (Domain 5) (Hutchinson et al., 2014). Six variables were created from these domains for the purposes of this doctoral research, to generate a composite categorical variable demonstrating the characteristics of experienced nurse practitioners (See Table 3:1).

Table 3:1 The Composite Experience Level Variable

Domain	Measure	Coding
1	Five or more years practising as a nurse practitioner	Scale 1–14 Years
2	Professional Activity: Mentorship, preceptorship, and/or supervision of nurse practitioner students	Yes/No
3	Professional Activity: Serving on an international, national or state/territory-based committee as a representative of the nurse practitioner profession	Yes/No
4a	Professional Activity: Being an invited speaker at an international, national or state/territory conference regarding clinical practice or professional issues	Yes/No
4b	Professional Activity: Presenting a paper or poster at an international, national or state/territory conference regarding clinical practice or professional issues	Yes/No
5	Professional Activity: Publication of articles in peer-reviewed journals relating to clinical practice or professional issues	Yes/No

Domain 4 represents two variables, as not all nurse practitioners would have had the opportunity to be an invited speaker at a conference. Using these six characteristics, a composite variable determining experience level was determined, which was used to establish whether the confidence heuristic was present in Delphi panelists.

Egocentric Discounting

Once a composite experience level variable had been created, a determination of whether egocentric discounting was present in Reactive Delphi research could be made. Egocentric discounting exists when a Delphi panelist demonstrates low opinion change in the absence of demonstrable experience relative to others (Snizek et al., 2004). It would be difficult to achieve consensus on the metaspecialties and clinical practice standards if expert panelists involved in Delphi research refused to change their opinions. Egocentric discounting would be demonstrated if less experienced (i.e.

proficient) nurse practitioners did not change their opinions, even when provided feedback on the metaspecialties and clinical practice standards by more experienced nurse practitioners. This would threaten the internal validity of consensus outcomes determined by this research. The presence of egocentric discounting was determined in this doctoral research using two means. If a nurse practitioner showed they had a relatively low composite experience level compared to other nurse practitioners, and demonstrated low opinion change, it suggested the presence of egocentric discounting. It was not certain whether the composite variable demonstrating experience level would be valid. Therefore, a self-rated measure of expertise was also used to determine if it correlated with opinion change, as self-rated expertise had been shown by others to be a reliable means of demonstrating expertise (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005). If egocentric discounting were present, those panelists self-rating expertise as low would demonstrate low opinion change across rounds in a Delphi study.

Panel Composition

Finally, it was not known how panel composition determined consensus outcomes in Delphi research using nurse practitioners. It was not known whether experienced nurse practitioners would have differing consensus outcomes than proficient (e.g. inexperienced) nurse practitioners. This doctoral research was designed to examine consensus outcomes between two groups of nurse practitioners in the first round of a Delphi study, before interaction amongst the group occurred through the provision of feedback in round two. Consensus outcomes were also compared in round two between the two different groups (i.e. proficient and experienced), to establish what effect feedback had on the nurse practitioners.

Feedback

There is concern about how feedback should be provided to panelists after the first round of a Delphi study. Both the group statistical consensus measure and summarised panelist rationale determined from round one of a Delphi study can be provided to panelists during round two (Rowe et al., 2005). However, Meijering and Tobi (2016) indicate the provision of group statistical measures in the second round increases panelist attrition, which may affect the generalisability of consensus outcomes. They also found that the provision of summarised panelist rationale may induce disagreement amongst experts, which threatens their ability to achieve consensus on the research question. Paradoxically, Meijering and Tobi (2016) discovered experts involved in their research found the provision of both group statistical measures and panelist rationale helpful in the third round of their Delphi study. Alternatively, others have shown the ongoing collection of qualitative responses across rounds continually generates new information, which increases the number of rounds, and results in diminishing returns and panel attrition (Cole, Donohoe, & Stelfox, 2013).

At the time this doctoral research had been conducted the metaspecialty taxonomy and clinical practice standards were novel and poorly-defined constructs. Therefore, in addition to group statistical measures used to determine consensus, it was necessary to gather teleological rationale in the first round of each Delphi study to determine panelists' understanding of the constructs. Teleological rationale are considered analytical responses that provide justification and qualification as an answer to a question, as opposed to one-dimensional and/or unqualified heuristical responses. Through content analysis, these rationale allowed the researcher to verify if panelist responses were relevant to the primary research aim. If relevant, the teleological rationale were included in the second round, which served as a clarification and verification process for panelists. Teleological rationale were not collected after the second round, to enhance response rates and facilitate the determination of panelist consensus. Group statistical measures were fed back to panelists during round 2, and were the only information provided in subsequent rounds.

Panelist feedback was provided across Delphi rounds by using both summarised qualitative and quantitative data generated by the group. Panelists rated the relevancy of each metaspecialty and clinical practice standard on a 4-point Likert scale to calculate measures of group consensus. These quantitative data were used to provide an indication of majority opinion to panelists in subsequent rounds. An open-ended question followed each relevancy rating, which generated qualitative data. The aim of this open-ended question was to trigger a teleological rationale for panel consideration in the second round. For example, after panelists were provided individual metaspecialties established from the CLLEVER research they were asked: "What is the rationale for your response? *Your considered response is invaluable to the success of this process.*" A free text box was provided so panelists could provide rich and detailed rationale for their relevancy ratings. If panelist ratings from the Likert scale indicated they did not find the CLLEVER metaspecialties relevant, the web-based survey directed them to another question stating: "From your prior answers you have indicated you feel the aforementioned metaspecialties were not entirely relevant. What metaspecialties would you propose? *Please provide rationale for each of your metaspecialty choices.*" Again, open text boxes were provided to facilitate the collection of detailed panelist rationale. To ensure that alternate metaspecialties not already identified by the CLLEVER study were evaluated, panelists were asked a final question whose aim was meant to trigger a teleological rationale for panel consideration during round two. They were asked: "Do you have any further comments regarding the metaspecialties? If so, please provide rationale for your answer(s)." The teleological rationale provided by panelists from open text boxes underwent content analysis for the second round of the Delphi survey. A similar approach was used for the validation of the clinical practice standards. Further information on the questions asked during the surveys are detailed in the *Survey Instruments and Data Collection* section.

In total, four studies were conducted to achieve the aims of this doctoral research. A brief overview of these studies is provided for clarity below:

Study 1: Consensus on an Australian Nurse Practitioner Specialty Framework using Delphi methodology: Results from the CLLEVER2 study

Delphi Survey 1 addressed Objective A of Research Aim 1, which was to validate an Australian nurse practitioner metaspecialty taxonomy, previously developed during the CLLEVER study. A web-based survey method was used to disseminate study information and collect data generated by Delphi panelists. Delphi Survey 1 (DS1) was a 3-round RD study, with the first round informed by metaspecialty names established from the CLLEVER study (Gardner et al., 2014). In addition, panelists were given the opportunity to suggest additional names in the first round of DS1, which allowed for exploration of any metaspecialties not previously identified. Consensus, which led to validation of the metaspecialty names, was defined in this doctoral research as majority opinion greater than 85% over two consecutive rounds, as expressed by the item-level Content Validity Index (i-CVI) (Polit et al., 2007). If a metaspecialty name did not achieve at least 50% majority opinion on one round, it was excluded from further rounds. Those names that had achieved 50% majority opinion, but had not achieved the 85% consensus threshold, were included for panelist review in further rounds. The results of DS1 have been published in a peer-reviewed journal and are detailed in Chapter 4 of this thesis.

Study 2: How do Social Influence, Egocentric Discounting and Panel Composition Determine Consensus in Reactive Delphi Research?

This portion of this research addressed Research Aim 2, which was to contribute new knowledge on how consensus is achieved when using RD methodology. Specifically, how social influence (through the bandwagon effect and the confidence heuristic), egocentric discounting and panel composition determine consensus outcomes were examined relative to RD research. Data collected during DS1 were retrospectively analysed to address Objectives A–F of Research Aim 2. The combined results of Study 2 are detailed in Chapter 5 of this thesis.

Study 3: A Proposed Australian Nurse Practitioner Specialty Clinical Learning and Teaching Framework

This study addressed Research Aims 1B and 3C, whose primary purpose was to validate clinical practice standards for a metaspecialty taxonomy during DS2. A manuscript detailing the results of the validated clinical practice standards and metaspecialty taxonomy from DS2, of which I am co-author, is under development and will be published in a peer-reviewed journal. A draft summary for that manuscript can be found in Appendix Z. Study 3 is detailed in Chapter 6, and provides insight into my unique methodological contributions to the proposed clinical learning and teaching framework. Findings

reported in the first part of Chapter 6 relate to how panel feedback was managed in six Delphi studies that were conducted simultaneously. The second half of Chapter 6 provides findings from a Consensus Development Conference, and concludes with the proposed clinical learning and teaching framework from this doctoral research.

Study 4: Metadata and Advanced Web-Based Survey Design

This study addressed Research Aim 3A–B, which identified the benefits and risks of using web-based survey design in Delphi research. Advanced techniques were used in DS1 and DS2, including the use of metadata, paradata and embedded data. Information and experience gained from the conduct of both Delphi studies is presented as a paper submitted for publication, and forms the body of Chapter 7.

Reliability, Validity and Trustworthiness

There have been several criticisms of the rigour of Delphi methodology (Sackman, 1974; Woudenberg, 1991). These encompass issues surrounding a lack of universal guidelines on how to perform Delphi research, determining the size of the expert panel, the implications of anonymity, determining what constitutes consensus, and the definition of an expert (Keeney et al., 2001; Williams & Webb, 1994). Keeney et al. (2011) provide an excellent summary of issues surrounding, and limitations to, the use of reliability, validity and trustworthiness measures in Delphi research. These constructs have varying definitions and roles in mixed-methods research (Östlund, Kidd, Wengström, & Rowa-Dewar, 2011; Tashakkori & Teddlie, 2010, pp. 38-42). Hasson and Keeney (2011) recommend the use of reliability and validity to discuss Delphi research, whereas others indicate measures of trustworthiness should also be used (Day & Bobeva, 2005). Ultimately, how the rigour of Delphi research is assessed is whether it is purely quantitative or if it involves a mixed-methods approach. In this section, rigour will be discussed separately for qualitative and quantitative research.

Delphi Technique appears to be a rigorous consensus-based research methodology. A recent literature review of research implementing DT was published, and provided a large body of evidence supporting its reliability and validity (Hasson & Keeney, 2011). For example, inter-observer measures of DT reliability have been demonstrated by Duffield (1993). She conducted Delphi research into competencies required by first-line nursing unit managers using two different panels of experts. The two panels demonstrated a high degree of consensus on competencies that were largely the same. In addition, forecasting Delphi studies have been shown to be accurate, with Ono and Wedemeyer (1994) replicating a Delphi study conducted 16 years previously and achieving highly similar consensus results. The demonstration of test–retest measures of reliability within a single study is not relevant to Delphi Technique, as it is anticipated that expert panelists will revise their opinions across iterative rounds of a Delphi study (Okoli & Pawlowski, 2004, p.19).

Establishing the validity of DT may be somewhat more problematic. A recent comprehensive critique of DT was performed by Woudenberg (1991), who asserts DT is no more externally valid than other consensus-based research methodologies. However, the external validity of DT may be improved by increasing the size of the expert panel used in Delphi research, which would improve its generalisability (Wilkes, 2015). There is little evidence to support this assertion (Powell, 2003; Skulmoski, Hartman, & Krahn, 2007). Others have demonstrated the predictive validity of DT. For example, a Delphi study performed in 1981 used a panel of experts to achieve consensus on issues they felt were likely to affect the future of the mental health profession (Anderson, Parenté, & Gordon, 1981). A retrospective study was performed 30 years later to evaluate the accuracy of issues anticipated by the 1981 study (Parente & Anderson-Parente, 2011). The 2011 study demonstrated that the anticipated professional issues identified 30 years prior were highly accurate and relevant. These findings suggest consensus outcomes established from DT remain highly relevant over time, which supports the predictive validity of DT.

The use of expert panels supports the internal validity of consensus-based research methodologies. Expert panels contribute to internal validity because more relevant consensus outcomes are likely to be made via group opinion, as opposed to relying on the opinion of a single person (Jones, Armstrong, & Cuzan, 2007; Stewart, 1987). However, Sackman (1974) argues the internal validity of DT is challenged by the fact there is no universal definition qualifying the expertise required to participate in a Delphi panel. Sackman asserts there is no way to verify the opinions made by experts involved in DT are any more valid than 'non-experts'. Therefore, one of the challenges faced by Delphi researchers is demonstrating the expertise used to inform consensus opinion. Others argue that the internal validity of consensus-based research methodologies is challenged by social pressures exerted on panel members to conform to majority opinion (Bolger & Wright, 2011) or by panelist confidence (Rowe et al., 2005). Despite these criticisms, it appears classical DT remained the best option for validating the metaspecialties and clinical practice standards, as there had been little informing their development prior to the conduct of CLLEVER and CLLEVER2. Given draft metaspecialties and clinical practice standards had been established from prior research, RD methodology was employed, which closely followed the classical description of DT.

Validity and Reliability

Any empirically-based consensus approach must have a high degree of internal and external validity. The internal validity of a consensus-based research approach consists of content, construct, concurrent, face and predictive validity. Content validity is demonstrated by the selection of a large number of panelists whose expertise is clearly defined for eligibility to participate in the research (Hasson & Keeney, 2011). It is better demonstrated by using clear criteria justifying the expertise needed to inform consensus opinion. Content validity was demonstrated in this doctoral research

through four primary means. First, the content validity of the clinical learning and teaching framework was achieved by using a panel of nurse practitioner experts with real-world knowledge of how the framework could be applied in the clinical context. Second, when using a consensus-based research approach, content validity is dependent upon demonstrating that the experts involved can influence the consensus process through a transparent and reliable means. Content validity was demonstrated by allowing a panel of experts to contribute rationale for the metaspecialties and clinical practice standards they felt were relevant. In addition, it was demonstrated because panelists could provide novel metaspecialty constructs and clinical practice standards that had not been identified by prior research. Third, content validity was enhanced because a large panel of experts were used to conduct this research, with multiple perspectives informing the consensus outcomes. Finally, content validity was demonstrated by using a panel of expert clinicians who had received their clinical learning and teaching in Australia, so that outcomes determined by this research were relevant to Australian nurse practitioner students.

Construct validity is assured through the reporting back of data collated and interpreted by the researcher during the initial and subsequent rounds of Delphi research, which is reviewed and validated by panel experts across iterations (Okoli & Pawlowski, 2004). Construct validity was demonstrated through three primary means. First, construct validity of consensus outcomes was established by using prior empirical research to inform the first rounds of both Delphi studies. Second, construct validity of outcomes determined by this research was enhanced because information was provided in the first round of each Delphi survey to ensure panelists understood the research aims. Definitions were provided by the researcher to ensure panelists understood the scope and purview of the constructs being examined. By providing provisional definitions for terminology used in the Delphi surveys, and by establishing 'ground rules' for what defines consensus during Delphi research, participants better understood the process and were more willing to see it through to its completion (Hasson et al., 2000). Third, construct validity was demonstrated in this Delphi research through a panel of experts providing feedback on the metaspecialties and clinical practice standards, which was summarised and validated as being relevant by the researcher. This information was then fed back to the panel of experts for member checking.

Concurrent validity was demonstrated when metaspecialties and clinical practice standards were fed back to the panel, through iterative rounds, who validated the content of feedback provided from previous rounds. Face validity was ensured by piloting the first rounds of each Delphi survey with researchers, content experts and nurse practitioners (Keeney et al., 2001). Predictive validity could only be demonstrated if those metaspecialties and clinical practice standards were demonstrated to be accurate at a later point in time.

External validity relates to the generalisability of the outcomes of the consensus approach. It can be demonstrated through population, environmental and temporal generalisation. External validity is enhanced by using a large panel of experts, and ensuring the Delphi process is conducted smoothly to decrease survey attrition (Hasson et al., 2000). In the context of this research, the clinical learning and teaching framework is required to be relevant to Australian nurse practitioners, clinical supervisors and students, irrespective of the clinical environment. It must also be relevant to a general population of nurse practitioners, irrespective of their specialty area. Demonstration of external validity of the framework was dependent upon the use of a representative sample of nurse practitioners working in diverse specialties across the Australian nurse practitioner profession. When using a consensus-based research approach, external validity is contingent upon using a clear definition of consensus, including the level of agreement on the metaspecialty taxonomy and supporting clinical practice standards.

Although there is limited evidence assuring reliability, it has previously been demonstrated in Delphi research through inter-observer measures (Duffield, 1993). In Study 2, consensus outcomes from two panels of nurse practitioners (proficient and experienced) in DS1 were compared to one another, which might suggest the ability to infer an inter-observer measure of reliability. Although these panels were non-interacting in round one, they interacted in round two, making it difficult to infer inter-observer reliability of any consensus outcomes determined by this doctoral research. It is perhaps important to note that some Delphi practitioners do not believe a measure of reliability is relevant to Delphi research. For example, Okoli and Pawlowski (2004) assert reliability is not relevant because panelists are 'expected' to revise their opinions in a Delphi study, given feedback received from other panelists across each iteration.

Trustworthiness

The remaining discussion on the rigour of the approaches used for the Delphi studies will concentrate on the trustworthiness of consensus outcomes. The sole use of positivistic measures of rigour is not appropriate, as this Delphi research incorporates aspects of both qualitative and quantitative research. Trustworthiness, as a naturalistic measure of rigour in qualitative research, has been previously described in Delphi research. For example, Manizade and Mason (2011) performed Reactive Delphi research into mathematics education and demonstrated trustworthiness by member-checking, debriefing, triangulation through time, detailed reporting of research processes and creating research notes to track decisions made during the process. In research conducted using classical DT, which established research priorities for ICU nurses in Australia and New Zealand, a combination of reliability, validity and trustworthiness measures were used to demonstrate rigour (Ramelet, Gill, & ACCCN Paediatric Intensive Care Special Interest Group, 2012). In that research, trustworthiness was established principally through credibility and dependability. The principal investigators member-

checked analysis of qualitative information from the first round, and provided clear evidence of how consensus was achieved during their research.

Qualitative research establishing the metaspecialty taxonomy and clinical practice standards informed the first round of both Delphi studies reported in this doctoral research (Gardner, Gardner, Coyer, Gosby, & Helms, 2016; Gardner et al., 2014). In addition, qualitative data were collected in the first round of both Delphi studies, to identify if novel metaspecialties and clinical practice standards were identified by panelists. These data underwent content analysis for use in subsequent rounds. How content analysis was performed in DS1 is explained in Chapter 4. Therefore, a naturalistic approach to describing the rigour of this research is relevant. Trustworthiness, in terms of credibility, transformability, dependability and confirmability are acceptable means of demonstrating rigour (Shenton, 2004).

Credibility was demonstrated in this doctoral research through use of RD methodology. Chapter 2 demonstrates RD methodology has been used extensively in nursing, and has a well-established research tradition in nursing since its introduction (McKenna, 1989). In particular, it was used for the validation of emergency nurse practitioner clinical practice standards in both Australia and the USA (Hoyt et al., 2010; O'Connell et al., 2014). Credibility is also supported by the fact the researcher is a nurse practitioner himself, and has a high degree of familiarity with local and international educational frameworks supporting clinical and professional nurse practitioner practice. The anonymous and iterative process of Delphi research fostered honesty and verification of panelist responses, as panelists could provide feedback and 'member-checking' without fear of reprisal from their colleagues (Gupta & Clarke, 1996). Confirmability was demonstrated by using heterogeneous viewpoints amongst experts, which were confirmed by the experts across rounds. These viewpoints included teleological rationale for opinions made, as well as gathering qualitative data identifying any metaspecialty constructs or clinical practice standards that had not been identified from prior research. Finally, transferability was demonstrated by my own journaling and 'reflective commentary,' which informed methods used to validate the final clinical learning and teaching framework (Shenton, 2004). This commentary is reflected in the introduction and summary of each Delphi survey detailed in this thesis. The dependability of this research relied upon detailed reporting of methods used to achieve consensus on the final framework.

Participant Recruitment and Sampling

A large convenience sample of panelists was required throughout all stages of this doctoral research, to optimise generalisability of the findings. Panelist eligibility demonstrating the expertise required to participate in this research included all Australian nurse practitioners holding endorsement with the NMBA for at least 12 months. Given available data published by the national nursing regulator, the total population eligible to participate comprised approximately 966 nurse practitioners at the time

DS1 was conducted, that is between August 2014 – January 2015 (Nursing and Midwifery Board of Australia, 2014b, 2015a). Delphi Survey 2, which validated the clinical practice standards, was conducted approximately 12 months later. During the interval of time between DS1 and DS2, the eligible population grew to 1,210 endorsed nurse practitioners. Practical requirements for all eligible panelists included access to a personal computer, tablet device or smartphone, with a reliable internet connection, as well as private access to a personal email address.

A combination of convenience and snowball sampling was used to recruit eligible panelists for both DS1 and DS2. Every effort was made to ensure a representative sample was obtained for both Delphi surveys. At the time this research was conducted, approximately 51% of endorsed nurse practitioners were members of their representative professional body, the Australian College of Nurse Practitioners (ACNP) (Australian College of Nurse Practitioners, 2014b). An earlier membership survey conducted by the ACNP revealed approximately 80% of endorsed nurse practitioners were working for the public health system (Australian College of Nurse Practitioners, 2012b). Therefore, recruitment emails containing participant information letters were distributed via databases held by Australian state/territory nurse practitioner project leaders working in the public health sector, as well as by the ACNP. During DS2 only, the Australian College of Mental Health Nurses and the Victorian Older Persons Nurse Practitioner Collaborative also agreed to distribute the research. After the conduct of DS1, representatives from these two organisations contacted the researcher to voice concerns they had not been specifically identified as a source of panel recruitment for DS1. Therefore, specific recruitment emails were sent out for DS2 using databases held by these organisations. The NMBA, as well as several other professional organisations, were asked to distribute survey information for DS1 and DS2, but declined to participate. This research did not address the objectives of the national regulatory scheme, which is why the NMBA did not participate. Other organisations declined because they either did not have policies supporting the distribution of recruitment emails from researchers external to their organisation, or required additional human research ethics approval through a separate process, which was not feasible within the doctoral timeline. For copies of all recruitment emails, please see Appendices F, I and K.

In addition to recruitment emails, a 5-minute informational video and webpage were created for casual visitors to the ACNP website for both DS1 and DS2. The video, which could be played through the website, detailed information about the metaspecialty taxonomy and clinical practice standards, and provided information on how the Delphi research was to be conducted. A screenshot of the webpage and a link to the video can be found in Appendix J. Once eligible panelists were identified during the initial recruitment process, a snowballing technique was used to request distribution of survey information to panelist personal networks. For a copy of the email used for snowballing sampling, please see Appendix G.

Survey Instruments and Data Collection

Two web-based survey instruments served as the primary means of data collection during this doctoral research. The initial round of each Delphi survey was piloted using a panel of nurse practitioners, nursing academics and researchers. Due to the rapid conduct of the Delphi rounds, subsequent surveys representing rounds two and three of each study underwent member-checking between investigators from the CLLEVER2 research team and myself only. For further information on piloting undertaken for DS1, please refer to Chapter 4.

Delphi Survey 1 Instrument

The DS1 instrument consisted of three separate data collection instruments, representing each of the three rounds used in DS1. The instruments were constructed to address Research Aims 1A and 2A–E. The round one survey instrument was broken into five sections: introduction, background and consent; eligibility criteria; metaspecialty information and relevancy ratings; further panel feedback; and demographics and personal characteristics. The three survey instruments used for DS1 can be found in Appendices M, N and O.

Confirmation of Eligibility Criteria

At the commencement of DS1 data collection, two questions were used to confirm panelist eligibility for participation in the survey. If potential panelists indicated they were not an NMBA-endorsed nurse practitioner, or had less than one years' post-endorsement experience, they were directed to the end of the survey.

In this section of the survey, data were gathered on years endorsed as a nurse practitioner using an interactive sliding scale based on one year intervals (0–14). Data on years endorsed as a nurse practitioner was used in the determination of the composite experience variable. Panelists could not advance in the survey until all questions were answered in this section.

Introduction, Background and Consent

In the first section of the survey, an introductory page was shown, along with a participant information letter the panelist could download and print from their personal computer, tablet or smartphone device. Contact information for the researcher was provided on the first page. Information regarding Human Research Ethics Committee (HREC) approval was given, along with contact information to the HREC if panelists had any concerns about the conduct of the study. Panelists were given approximate timeframes for completion of the study. They were asked to refrain from discussing this research, or its outcomes, with others.

On the following section of the survey, background information on the CLLEVER study was provided, along with hyperlinks to published information about the study. Panelists were reminded about the

conduct of a Delphi study, and advised they would have the opportunity to provide additional metaspécialties, along with rationale in the first round. They were advised that only those metaspécialties achieving 85% or greater agreement would be included in the final metaspécialty taxonomy. Consent to participate in the survey was implied by successfully advancing to the next page of the survey: Metaspécialty Information and Relevancy Ratings.

The next section of the survey provided background information about the metaspécialty taxonomy as applied to individual nurse practitioners. This information provided graphical representations of how nurse practitioner clinical practice could be informed by a single metaspécialty, or multiple metaspécialties (See Appendix M). Panelists were then asked to think about the metaspécialty names within the context of the many different specialties that might exist in Australia. They were asked to rate the relevancy of each of the proposed metaspécialty names to the metaspécialty construct proposed by the CLLEVER study. Relevancy ratings were in the form of a 4-point Likert scale (Not, Somewhat, Quite and Highly relevant). When using a 4-point Likert scale, ratings can be dichotomized into 'relevant' (e.g. containing all 'Quite' and 'Highly' responses) or 'not relevant' (e.g. containing all 'Not' and 'Somewhat' responses) (Lynn, 1986; Polit, 2016). In this manner, if a panelist rated one metaspécialty name as 'Quite' or 'Highly' relevant, it provided an overall indication that the panelist 'agreed' with the name. Likewise, if a panelist rated one name as 'Not' or 'Somewhat' relevant, it provided an overall indication that the panelist 'disagreed'. Panelists could not advance in the survey until all questions had been answered in this section.

A responsive web-based survey design was used. For example, if panelist responses indicated they overall agreed with the metaspécialty names, they were simply asked to provide detailed rationale for their responses in the *Further Panel Feedback* section described below. However, if a panelist's responses indicated they overall disagreed with 50% or more of the CLLEVER metaspécialty names, two additional questions were shown, noting their responses had indicated disagreement with the proposed taxonomy. These panelists were asked two open-ended questions. The first stated: "From your prior answers you have indicated that you feel the aforementioned metaspécialties were not entirely relevant. What metaspécialties would you propose?" Seven open text boxes were then provided to the panelist, which directed them to "Provide at least four, but no more than seven metaspécialties." The second question provided an open text box, which stated: "Please provide rationale for each of your metaspécialty choices." These questions provided the opportunity for panelists to offer any new metaspécialty constructs, as well as provide rationale for each of their proposed new metaspécialties.

Further Panel Feedback

Embedded data were used in this section of the survey. After panelists provided relevancy ratings for each of the metaspécialties, these data were recorded by the survey and served as reminders of the

panelist's previous responses in this section. For example, the survey would remind the panelist of their relevancy rating of the Mental Health Care metaspecialty name, and then ask the panelist for rationale for their response. It specifically stated: "Your considered response is invaluable to the success of this process," to trigger teleological rationale from panelists. They were then asked to rate the confidence they had in their response for each metaspecialty, by rating confidence on a 3-point Likert scale (Very Unsure; Fairly Confident, but not certain; Very Confident). These data were collected to assist in evaluating whether the confidence heuristic was present in this survey. Panelists could not advance in the survey until all questions regarding confidence level had been answered.

Demographics and Personal Characteristics

The last section of the round one survey instrument comprised personal characteristics and demographic data. The personal characteristics data were collected to evaluate experience level, which was used to determine the confidence heuristic and evaluate for the presence of egocentric discounting. Information relating to professional activities was collected, as per Table 3:1. In addition, data reflecting self-rated clinical expertise on a 9-item bipolar scale (Very high expertise: No expertise at all) were collected.

Validated Questions

The following demographic and professional practice descriptors relating to nursing practice were gathered in this survey: role, area, setting, location, locality and length of time practising as a registered nurse. Questions relating to these descriptors were presented as multiple-choice questions and provided categorical data, except for time practising as a registered nurse, which provided scale-level data from an interactive sliding scale based on one year intervals (0–60 years). These data were used to demonstrate the range of experience informing consensus outcomes in DS1. The other demographic and professional practice descriptors were obtained from validated questions used in a nursing workforce survey performed by Health Workforce Australia (Health Workforce Australia, 2012). Panelists could not advance in the survey until all questions had been answered in this section. At the conclusion of the round one survey instrument, panelists were thanked for their time and advised of the researcher's contact details if they had encountered any issues with the survey.

The round two and three survey instruments were based upon the round one instrument template. However, the following survey sections were not included, as data collected from these had already been gathered in round one: eligibility criteria; and demographics and personal characteristics. Embedded data from the previous round were used in the round two and three survey instruments. These embedded data were used to individually remind panelists of their previous round relevancy ratings for each of the metaspecialties. Panelists were then able to review group statistical measure of consensus as expressed by the i-CVI for each of the metaspecialties. Summarised panelist rationale

for their responses to the round one metaspecialties were also provided. After panelists reviewed the presented information, they were again asked to rate the relevancy of metaspecialty names. In addition, they could rate the relevancy of alternate metaspecialty names suggested by panelists from round one. Again, data were collected on confidence in panelists' responses for each of their metaspecialty ratings.

A responsive survey design was used, which compared individual round one responses to panelist responses in round two. If a panelist changed their initial round one relevancy rating to indicate they felt a metaspecialty name was more or less relevant, they were shown an additional multiple-choice question. This question was used to ascertain the single most important factor influencing their relevancy rating. Upon completion of the round two survey, quantitative data were collected and analysed in preparation for the round three survey instrument. Again, the round three survey instrument was based upon the round two survey instrument template.

Delphi Survey 2 Instrument

The DS2 instrument consisted of three separate data collection instruments, representing each of the three rounds used in DS2. The instruments were constructed to address Research Aims 1B and 3A–3B. The primary aim of DS2 was to validate clinical practice standards established from Phase 1 of CLLEVER2 for each of the metaspecialties (Gardner, Gardner, Coyer, Gosby, et al., 2016). The instrument design and piloting was conducted in the same manner as DS1. The round one survey instrument was broken into five sections: introduction, consent and preamble; eligibility criteria and participant demographics; metaspecialty election; clinical practice standards relevancy ratings; and further panel feedback. The three survey instruments used for DS2 can be found in Appendices Q, R and S.

Introduction, Consent and Preamble

In the first section of the survey, an introductory page was shown, along with a participant information letter the panelist could download and print from their personal computer, tablet or smartphone device. Contact information for the researcher was provided on the first page. Information regarding HREC approval was given, along with contact information to the HREC if panelists had any concerns about the conduct of the study. Panelists were given approximate timeframes for completion of the study. They were asked to refrain from discussing this research, or its outcomes, with others. Consent to participate in the survey was implied by successfully advancing to the next page of the survey.

On the following page of the survey, background information on the metaspecialties was provided, along with hyperlinks to published information about the CLLEVER study. Provisional operational definitions were provided for each of the identified metaspecialties. Panelists were reminded about the conduct of a Delphi study, and advised they would have the opportunity to provide additional

clinical practice standards, along with rationale, in the first round. They were advised that only those clinical practice standards achieving 85% or greater agreement would be included in the final clinical learning and teaching framework. Feedback provided by panelists from DS1 indicated they would like printable copies of the presented background information. A hyperlink was provided so panelists could download and print this information from their personal computer, tablet or smartphone device. See Appendix U for a hard copy of this background information.

Eligibility Criteria and Participant Demographics

Like DS1, at the commencement of DS2 data collection, two questions were used to confirm if panelists were eligible for participation in the survey. If potential panelists indicated they were not an NMBA-endorsed nurse practitioner, or had less than one years' post-endorsement experience, they were directed to the end of the survey.

In addition to the validated questions used in DS1, this section gathered data used to demonstrate the heterogeneity of experience level of the expert nurse practitioner panel (See Table 3:1). In addition, data reflecting self-rated clinical expertise on a 9-item bipolar scale (Very high expertise: No expertise at all) were collected. These data were collected to demonstrate the experience panelists brought to the Delphi survey. Panelists could not advance in the survey until all questions were answered in this section.

Metaspecialty Election

In this section of the survey, panelists were given the opportunity to choose up to two metaspecialties that best described their individual clinical practice. They then rated the relevancy of clinical practice standards belonging to their elected metaspecialties. They were reminded that an individual nurse practitioner's clinical practice could reflect one metaspecialty, or all of the metaspecialties, described in the background section. However, from a practical standpoint it was known that each round of a Delphi survey required a great deal of panelists' time. Therefore, it was decided panelists could only choose up to two metaspecialties to reduce survey fatigue. They were given the option to select from the following metaspecialties:

- Emergency and Acute Care
- Primary Health Care
- Child and Family Health Care
- Mental Health Care
- Aged and Palliative Care
- Care of Persons with Long-Term Conditions.

Panelists were advised they would not be able to go back and choose another metaspecialty once their choices had been made. They could not advance in the survey until they had chosen up to two metaspecialties.

Clinical Practice Standards Relevancy Ratings

In this section of the survey, panelists were asked to rate the relevancy of clinical practice standards for their elected metaspecialty(s) to their own clinical practice in the nurse practitioner role. Embedded data from individual panelist responses in the *Metaspecialty Election* section determined which clinical practice standards they were shown. Panelists provided relevancy ratings for each of the standards for a given metaspecialty. If they had elected a second metaspecialty, embedded data directed them to rate the relevancy of clinical practice standards belonging to that metaspecialty. Relevancy ratings were in the form of a 4-point Likert scale (Not, Somewhat, Quite and Highly relevant). When using a 4-point Likert scale, ratings can be dichotomized into 'relevant' (e.g. containing all 'Quite' and 'Highly' responses) or 'not relevant' (e.g. containing all 'Not' and 'Somewhat' responses) (Lynn, 1986; Polit, 2016). In this manner, if a panelist rated a clinical practice standard as 'Quite' or 'Highly' relevant, it provided an overall indication that the panelist 'agreed' with the standard. Likewise, if panelists rated a clinical practice standard as 'Not' or 'Somewhat' relevant, it provided an overall indication the panelist 'disagreed' with the standard. Panelists could not advance in the survey until all questions relating to relevancy ratings had been answered in this section.

Again, a responsive web-based survey design was used. For example, if panelist responses indicated they overall agreed with a clinical practice standard, they were shown a multiple-choice question of rationale for why they agreed. An open text box was supplied if panelists agreed with the standard, but felt that it needed major rewording. However, if a panelist's responses indicated they overall disagreed with a clinical practice standard, a separate multiple-choice question was shown. This sought rationale for why they did not think the clinical practice standard was relevant. It provided an open text box if panelists felt the statement needed minor rewording.

Further Feedback

After panelists provided relevancy ratings for each of the clinical practice standards for their elected metaspecialty(s), they were asked two additional open-ended questions. The first asked if panelists thought any of the clinical practice standards for their elected metaspecialty could be combined. A printable copy of the proposed standards for their elected metaspecialty(s) was made available to panelists to serve as a reminder, which could be downloaded via hyperlink on their personal computer, tablet device or smartphone. Hard copies of the proposed clinical practice standards from Phase 1 of CLLEVER2 for each of the metaspecialties is available in Appendix V. Panelists were then asked another open-ended question to ascertain whether they had suggestions for additional clinical practice standards for their metaspecialty that had not been identified. They were triggered to supply a

teleological rationale for their response by the statement: “Your considered response is invaluable to the success of this process.” At the conclusion of the round one survey instrument, panelists were thanked for their time and advised of the researcher’s contact details if they had encountered any issues with the survey.

The round two and three survey instruments were based upon the round one instrument template. However, the following sections were not included, as data collected from these had already been gathered in round one: eligibility criteria and participant demographics; metaspecialty election; and further panel feedback. Embedded data from the previous round were used in the round two and three survey instruments. These data were used to ensure only those clinical practice standards for a metaspecialty(s) elected by a panelist in round one were shown. The embedded data were used to individually remind panelists of their previous round relevancy ratings for each of the clinical practice standards for their elected metaspecialties. Panelists were then able to review group statistical measurements as expressed by the i-CVI for each of the clinical practice standards. Summarised panelist rationale for their responses to the round one metaspecialties were provided in graphical format (See Appendix R). Additional investigator feedback regarding each standard was supplied, based upon the qualitative and quantitative data supplied by panelists. Investigator feedback justified why some standards were combined, or why modifications to the standards had been made. After panelists reviewed the presented information, they were again asked to provide relevancy ratings for clinical practice standards, reflecting their elected metaspecialties.

Data Management

All data were collected using Qualtrics, a web-based survey platform that allowed for the responsive survey techniques described in the preceding sections (Qualtrics, 2013). Qualitative data collected in the initial round of DS1 were managed using nVivo 10 software (QSR International, 2014). Qualitative data management for DS2 was outside the scope of this doctoral research, being part of the main study in which this doctoral research was nested. All quantitative data were analysed using IBM SPSS Statistics 22, a platform-based statistical analysis suite (IBM Corporation, 2013).

Data Analysis

Multiple levels of analysis were conducted for data collected during DS1 (See Chapter 4), Study 2 (See Chapter 5) and DS2 (See Chapter 6) reported in this research. The five main data analysis strategies used in these studies can be broadly described as: 1) content analysis, 2) descriptive statistics using measures of central tendency, 3) non-parametric correlations, 4) the Content Validity Index (CVI), and 5) McNemar’s Test for Change. Content analysis, descriptive statistics, the CVI and McNemar’s Test for Change were used in DS1. Content analysis, descriptive statistics and the CVI were used to analyse data generated by panelists during DS2, and used to address Research Aim 1B through Study 3,

detailed in Chapter 6. Descriptive statistics, Mann-Whitney-*U* test and non-parametric correlations were used to analyse data in Study 2. The specific descriptive statistics and non-parametric correlations used are described in relevant chapters.

Content Analysis

A merged data synthesis strategy was used in the first round of both Delphi surveys, in keeping with a mixed-methods approach (Creswell & Plano-Clark, 2011). In the first round of both Delphi surveys panelists were asked to provide teleological rationale for their relevancy ratings. Content analysis on these rationale was conducted using a framework adapted from Graneheim and Lundman (2004). Further information on how this framework was adapted can be found in Chapter 4. Occasionally, rationales provided by panelists were ambiguous. In these instances, quantitative data obtained from the relevancy ratings were used to provide further meaning to their responses. For example, when a panelist stated *'I feel this metaspecialty name is not applicable to other specialty areas because it represents a specialty, as opposed to a metaspecialty,'* one might infer the panelist disagreed with the relevancy of the metaspecialty name. However, a comparison made to the panelist's relevancy rating of the metaspecialty name revealed the opposite, with the panelist rating the metaspecialty as 'Highly' relevant. In that instance, it became clear there was a discrepancy between the qualitative and quantitative data, which indicated uncertainty experienced by the panelist. This information was then summarised to inform panelists of uncertainty around that particular metaspecialty during the second round of the Delphi survey.

The Content Validity Index and McNemar's Test for Change

Consensus was measured in DS1 and DS2 using the content validity index (CVI). The CVI provides the most accurate representation and definition for majority opinion, as outlined in Chapter 1. It represents the proportion of panelists rating a construct as relevant compared to the total number of panelists providing relevancy ratings for the construct (Lynn, 1986).

The CVI was measured at two levels, item-level CVI (i-CVI) and scale-level CVI (s-CVI). When dichotomized, the i-CVI provided an indication of whether panelists agreed or disagreed on individual metaspecialties or clinical practice standards (Lynn, 1986; Polit, 2016). Therefore, the i-CVI was used to determine consensus (i.e. using majority opinion that was stable across two rounds) for individual metaspecialty names and clinical practice standards. A threshold i-CVI of 78% corrects for any chance agreement amongst panelists (Polit et al., 2007). Therefore, to demonstrate a high degree of consensus (i.e. through majority opinion) on individual metaspecialties or clinical practice standards, a threshold i-CVI of 85% was used. If an individual metaspecialty or standard did not achieve this threshold, majority opinion had not been shown and the metaspecialty or standard underwent further rounds for panel consideration. If an i-CVI of greater than 50%, but less than 85%, was demonstrated, McNemar's test for Change was used to determine the stability of panelists' responses across rounds.

This was felt to be an acceptable measure of whether the panel was significantly changing opinion across rounds (Kalaian & Kasim, 2012). If opinion change was significantly different across rounds, it provided evidence that panelists were still deliberating on the presented information, and consensus had not yet been achieved. If a metaspécialty or clinical practice standard had not achieved a minimum 50% i-CVI threshold, it was excluded from further rounds.

In DS2, to demonstrate cohesiveness of the clinical practice standards, the s-CVI was used in addition to the i-CVI. The s-CVI represented the summation of all item-level CVIs for a statement, divided by the total number of statements being measured (Polit et al., 2007). A threshold s-CVI of 90% was chosen to indicate that all clinical practice standards for a metaspécialty were cohesive and had excellent content validity. An s-CVI of greater than 90% is an acceptable standard used to demonstrate the content validity of a construct containing discrete items, and indicates only a few clinical practice standards had modest amounts of disagreement within a metaspécialty (Polit et al., 2007). Therefore, the s-CVI was used to determine whether the standards for a metaspécialty as a whole were cohesive, and representative of the metaspécialty (Polit et al., 2007).

Demonstration of Expertise and Experience Level

One of the requirements used to demonstrate the internal validity of consensus outcomes determined by Delphi research is panelist expertise (Keeney et al., 2006). To demonstrate expertise needed to participate in both Delphi studies, inclusion criteria for this research required panelists be an NMBA-endorsed nurse practitioner with at least 12 months' post-endorsement experience. Given the educational and regulatory frameworks supporting the role, it was considered that endorsement and 12 months' experience as an Australian nurse practitioner were sufficient in demonstrating the expertise required to participate in DS1 and DS2.

However, expertise as detailed in the above participant inclusion criteria is related to, but separate from, a measure of experience level. Expertise in nursing leading to endorsement as a nurse practitioner does not necessarily relate to being an *experienced* nurse practitioner. Therefore, years of post-endorsement experience was used to create a composite variable that related to experience level. The composite variable was established to further explore the internal validity of the Delphi methodology used in this research. Experience level was measured as a composite categorical variable in DS1, and used to address Research Aims 2B–2E. As described in the methods section above, experience level was a composite measure of variables demonstrating the characteristics of advanced practice nursing. To the researcher's knowledge, this is the first and only attempt in creating a composite variable that demonstrates experience level in nurse practitioners internationally. There were two categories of experience level used in this research: 'experienced' and 'proficient'. Experience level was determined by combining years of post-endorsement nurse practitioner

experience (scale-level variable) with the median number of professional activities (dichotomous variables) demonstrated by the DS1 sample. Panelists were categorised as an 'experienced' nurse practitioner if they had five or more years' post-endorsement experience *and* had demonstrated a median number (or more) of professional activities. Those with less than five years' post-endorsement experience *and* less than the median number of demonstrated professional activities were termed 'proficient' nurse practitioners. Those nurse practitioners who had *either* less than five years' experience and more than the median number of professional activities, *or* had more than five years' experience and less than the median number of professional activities, were excluded from analysis using experience level. The outcomes of this analysis are provided in Chapter 5.

Mann-Whitney *U* Test

The Mann-Whitney *U* test was used to address Research Aim 2F, which evaluated the effect panel composition had on consensus outcomes when using Reactive Delphi methodology. Two panels of nurse practitioners (i.e. proficient and experienced) were used to conduct this test in the first and second rounds of Delphi Survey 1. Mann-Whitney *U* was used to compare the level of consensus achieved on the metaspecialties between the two panels, as measured through the i-CVI. Further detail and the results of the comparison between the two panels is discussed in Chapter 5.

Ethical Considerations: Delphi Research

The consideration of ethical issues in human subjects has been informed by *The National Statement on Ethical Conduct in Human Research* in this doctoral research (National Health and Medical Research Council, 2007). The *National Statement* also informed the design and conduct of this research. In addition, although data were not collected which would disclose Indigenous status, this research may have involved persons of Aboriginal and/or Torres Strait Islander heritage. This research endeavoured to meet guidelines on research merit and integrity, justice, beneficence and respect in those populations (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2012). For example, this doctoral research generated data from every state and territory in Australia, ranging from urban to rural and remote areas where Indigenous nurse practitioners might live and work. In this manner, this research attempted to "recognise the diversity and uniqueness of peoples, as well as individuals" (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2012, p. 4). In addition, this Delphi research was conducted upon the principles of "free, prior and informed consent" and consultation, negotiation and mutual understanding (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2012, pp. 9-10). Ethical considerations unique to this doctoral research specifically include issues surrounding informed consent, confidentiality, data management and reimbursement.

Informed Consent

All persons interested in contributing to this research were provided with participant information letters. Those eligible to participate were also provided with invitations to participate. (See Appendices C and D.) Panelists were asked to balance their professional and personal lives with this conduct of the Delphi surveys. A great deal of panelist time and energy was required to conduct each round of a Delphi survey. To decrease panelist burden and time to conduct each Delphi survey, analysis of data was conducted quickly, efficiently and accurately across rounds, so the surveys had minimal impact upon their personal and professional lives. Nurse practitioners belong to a small community of professionals in Australia, and the social and professional impact from their participation in this research could elevate or negatively impact upon their social and/or professional standing. Panelists were strongly discouraged from discussing their participation, or results obtained from this research, with others.

It had been suggested that acknowledgement of expert panelist names in the final publication of Delphi research provides social reward, which contributes to decreasing rates of attrition and increasing investment in the process (Bolger & Wright, 2011; Geist, 2010; Okoli & Pawlowski, 2004; Rowe & Wright, 2011b). To decrease panel attrition, panelists were advised their names would be acknowledged as expert contributors in the final published research. After each Delphi survey, participants completing all requisite rounds were sent a separate confidential online survey asking if they would consent to publication of their names in a peer-reviewed journal. The template used for the consent form can be found in Appendix H. Copies of the online consent forms used in the confidential online survey are provided in Appendices P and T.

Confidentiality

Quasi-anonymity was used in this Delphi research, whereby the researcher knew the panelists but the panelists did not know one another or each other's responses. This allowed for decreased attrition rates through the establishment of rapport, accountability and ongoing communication between participants and the researcher (Keeney et al., 2006). Panelists were informed their responses would be kept in the strictest confidence. Individual relevancy ratings were aggregated as group statistical measures of consensus and rationale summarised and de-identified when fed back for panel consideration. Demographic and personal characteristics data were aggregated to maintain panelist anonymity.

Data Management

Data were securely stored using three primary means:

1. In electronic format on a hard-drive installed in the researcher's password-protected personal computer. The user password meets all criteria for a highly-secure password and the

computer is in a locked room (Chanda, 2016). Upon conferral of the academic testamur from Australian Catholic University, these data will be securely and permanently deleted from the computer's hard-drive.

2. Data collected using Qualtrics are stored on servers owned and securely monitored by Australian Catholic University. These data are stored in a student account with restricted access, which has been protected with a highly-secure password. Upon conferral of the academic testamur from Australian Catholic University this student account, and all data contained within this account, will be securely and permanently deleted from the University servers.
3. The final versions of all data will be in electronic format and stored on a secure, password-protected file server with the Graduate Research Department at Australian Catholic University for the 5-year period consistent with NHMRC guidelines. This file server is securely monitored with restricted access, and is password-protected.

Reimbursement

There was no monetary compensation for panelist time. To create 'buy-in' from panelists (Rowe & Wright, 2011b), certificates attesting to professional development hours required for ongoing registration and endorsement with the NMBA were offered to all panelists completing each Delphi survey. These certificates had the capacity to be individualised by panelists, to ensure all contact hours and learning outcomes resulting from their participation were accounted for. Certificates were distributed after the completion of each Delphi survey. The template used for the certificates is available in Appendix Y.

Ethical approval was granted for DS1 and DS2 of this doctoral research:

Project Title: Educating for health services reform: CLinical LEarning, goVERNance, and capability (CLLEVER2)

Ethics Register Number: 2013 174N

Risk Level: Low Risk

Ethical Considerations: Consensus Development Conference

A CDC was conducted after the conduct of DS2. A summary of the methods and results from the CDC is provided in Chapter 5, to better align with the conduct of this doctoral research. The *National Statement on Ethical Conduct in Human Research* has been considered and informed the design, ethical review and conduct of this research (National Health and Medical Research Council, 2007). Although this CDC had not been planned in the original research design, several issues regarding the names of two metaspecialty constructs appeared after DS1. To generate more data relevant to clinical practice standards determined for those two metaspecialties, a CDC workshop was conducted at the

11th Annual Conference of the Australian College of Nurse Practitioners. This national conference took place in Alice Springs from 30 August – 2 September, 2016. A conference abstract for the CDC is available in Appendix W. Ethics approval was sought for the CDC and granted:

Project Title: Consensus Conference for the Un-Validated Australian Nurse Practitioner

Metaspecialties

Ethics Register Number: 2016 166E

Risk Level: Low Risk

Three ethical considerations were relevant to this research: confidentiality, informed consent and data management.

Confidentiality

All attendees at the CDC workshop were asked to maintain confidentiality after completion of the session. They were informed they could share the general outcomes of the session but should not attribute discussions to individual persons. Those who felt they were not be able to comply with this request were asked to leave without repercussion. All attendees were advised that general discussion and final outcomes from the CDC workshop would be reported in a peer-reviewed publication. All information was de-identified and non-attributable to a single source. Participant data were aggregated to maintain anonymity.

Informed Consent

Informed consent was obtained from eligible participants before completing an online survey, using the Qualtrics web-based survey platform (Qualtrics, 2013). For a copy of the online survey and consent form please see Appendix L. Participants were advised that by completing the online survey they had provided consent to participate in the research. Soft and electronic copies of the voting participant information letter were available at the CDC workshop. For a copy of the participant information letter see Appendix E.

Data Management

Data were securely stored using three primary means:

1. In electronic format on a hard-drive installed in the researcher's password-protected personal computer. The user password meets all criteria for a highly-secure password and the computer is in a locked room (Chanda, 2016). Upon conferral of the academic testamur from Australian Catholic University, these data will be securely and permanently deleted from the computer's hard-drive.
2. Data collected using Qualtrics are stored on servers owned and securely monitored by Australian Catholic University. These data are stored in a student account with restricted

access, which has been protected with a highly-secure password. Upon conferral of the academic testamur from Australian Catholic University this student account, and all data contained within this account, will be securely and permanently deleted from the University servers.

3. The final versions of all data will be in electronic format and stored on a secure, password-protected file server with the Graduate Research Department at Australian Catholic University for the 5-year period consistent with NHMRC guidelines. This file server is securely monitored with restricted access, and is password-protected.

Summary

In summary, a mixed-methods approach informed by pragmatism informed the conduct of this research. Reactive Delphi methodology was used to achieve consensus on metaspecialties and clinical practice standards informing a clinical learning and teaching framework for Australian nurse practitioner students. The conduct of DS1 and DS2 were designed to achieve both objectives of Research Aim 1. The consensus outcomes of DS1 are presented in Chapter 4, whereas the consensus outcomes from DS2 will be published in a peer-reviewed journal as they do not form part of this doctoral research. The abstract for the DS2 manuscript can be found in Appendix Z. The outcomes from Research Aim 2 will be described in Chapter 5. Further insight into the results of DS2, as well as a CDC workshop conducted to refine the proposed clinical learning and teaching framework, will be described in Chapter 6. That chapter will provide further insight into how Research Aims 1B and 3C were addressed. Finally, the advanced web-based survey used to conduct DS1 and DS2 was designed to achieve Objectives A and B of Research Aim 3, and will be addressed in Chapter 7.

Chapter 4 Delphi Survey 1

Introduction

The results obtained from the conduct of DS1 are described in this chapter. Chapter 4 begins with a manuscript that was recently published in a peer-reviewed journal. *Consensus on an Australian Nurse Practitioner Specialty Framework using Delphi methodology: Results from the CLLEVER2 study* begins with an introduction and background information relevant to Australian nurse practitioners and the metaspecialties established by the CLLEVER research. The primary aim of the research reported in this chapter is to provide evidence that the CLLEVER metaspecialties had been validated by achieving profession-wide consensus, using Australian nurse practitioners. The presented manuscript is in its final, accepted form with the exception for references, which are collated at the end of this doctoral thesis. Section headings and layout reflect journal requirements, with all relevant tables and figures included in the body of the manuscript. In addition, the publisher requested the acronym 'ACNP' representing the Australian College of Nurse Practitioners in this doctoral research be instead referred to as the 'Australian College of NP,' to help reduce reader confusion with the 'American College of Nurse Practitioners'. A copy of the published manuscript can be found in Appendix i.

The manuscript presented below addressed Research Aim 1A of this doctoral research, which was to validate an Australian nurse practitioner metaspecialty taxonomy proposed by the CLLEVER investigative team. The aim of the published manuscript appears to differ from that of Research Aim 1A of this doctoral research. The manuscript stated the primary aim was to "achieve profession-wide consensus on an Australian nurse practitioner specialty framework". After peer-review of the manuscript, and in preparation for the conduct of DS2, I realised the 'specialty framework' referenced in the manuscript was actually a 'specialty *taxonomy*', that served as a foundation for the clinical practice standards. Together, a specialty taxonomy and clinical practice standards form a nurse practitioner clinical learning and teaching *framework*. The resulting specialty taxonomy reflected in the published manuscript below addressed Research Aim 1A of this doctoral thesis.

Supplementary, unpublished findings follow the published manuscript. These were not included in the final manuscript due to publisher word limits, and the fact that some findings were not directly relevant to the manuscript's published aim. However, the supplementary findings are relevant to the overall aims of this doctoral thesis. These provide deeper insight into rationale for panelist relevancy ratings, and provide further clarity on the conduct of DS1.

Published Manuscript

Consensus on an Australian Nurse Practitioner Specialty Framework using Delphi methodology: Results from the CLLEVER2 study

Authors

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Abstract

Aim

To achieve profession-wide consensus on an Australian nurse practitioner specialty framework.

Background

Since its introduction in 1998 the Australian nurse practitioner profession has grown to over 1300 endorsed practitioners, representing over 50 different specialties. To complement a generalist learning and teaching framework with specialist clinical education better, prior research proposed a broad framework of Australian nurse practitioner specialty areas termed metaspecialties.

Design

This study employed an online 3-round modified Delphi method.

Method

Recruitment using purposive sampling and snowballing techniques identified an eligible sample from a population of nurse practitioners with at least 12 months' post-endorsement experience (N=966). Data were collected using online survey software from September 2014 – January 2015 and analysed using descriptive statistics and content analysis. The Content Validity Index and McNemar's Test for Change were used to determine consensus on the nurse practitioner metaspecialties.

Results

One fifth of the total eligible population completed the study. Participants achieved high consensus on four metaspecialties, including: Emergency and acute care, primary health care, child and family health care and mental health care. Two metaspecialties did not achieve consensus and require further investigation.

Conclusion

A large sample of nurse practitioners achieved consensus on an Australian metaspecialty framework, increasing the likelihood of widespread acceptance across the profession. This technique may be



appropriate for use in jurisdictions with smaller populations of nurse practitioners. Ongoing research is needed to re-evaluate the metaspécialties as the profession grows.

Introduction

The Australian nurse practitioner (NP) profession has evolved greatly over the last decade. As the profession grows, the language of specialisation and professional standards informing the learning and teaching of Australian NPs has become increasingly complex.

Recent research confirms over 50 different Australian NP specialties and only two have established competencies for clinical training (Douglas & Bonner, 2011; Gardner et al., 2014; Quinn et al., 2011). O'Connell et al. (2014) is the only published empirical research establishing clinical practice standards for an Australian NP specialty. This lack of specialty-specific Australian NP clinical practice standards and diverse practice areas has created difficulties for the tertiary education sector in its effort to deliver specialty-specific clinical learning and teaching.

In 2013, Gardner et al. established an Australian NP taxonomy framework comprising specialties grouped into 'metaspecialty' constructs with similar skillsets, knowledge and expertise (Gardner et al., 2013a). The purpose of the research reported here is to validate the Gardner metaspecialty constructs across the Australian NP profession and contribute to research establishing NP clinical practice standards for each of these constructs.

Background

Nurse practitioners are registered nurses with the expert knowledge base, complex decision-making skills and clinical competency for expanded practice (International Council of Nurses, 2016b). In Australia, the expanded practice of NPs includes the autonomous prescription of medicines, ordering and interpreting of diagnostic tests and independent referral to medical and allied health professionals (Nursing and Midwifery Board of Australia, 2014a). The language used to describe specialist NP practice is complex and varies widely according to context and location of practice, legislation, policy and endorsed professional standards.

The origins of the NP profession began with legislated state-based title protections in the USA in the 1960s (National Council of State Boards of Nursing, 2015). As the profession there grew, competency descriptors were established for broad NP specialty areas (now termed 'population foci'), using a consensus-building method called consensus conference (National Organisation of Nurse Practitioner Faculties, 2013). To date, the USA is the only known jurisdiction with universal endorsement of broad NP population foci. These foci are used for the education, certification and regulation of American NPs who receive generalist training in a broad population. Nurse practitioner students may attain general professional knowledge needed for advanced practice nursing during their formal masters' degree

programs and learning and teaching is focused on generalist knowledge and skills needed for clinical management of common conditions seen in a population focus (National Organisation of Nurse Practitioner Faculties, 2013). The combination of title protection and profession-wide endorsement of these foci contributes to consistency, understanding and acceptance of NPs across the USA (APRN Consensus Work Group, 2008; Institute of Medicine, 2011). In such foci, NPs may also choose to work in specialist practice, such as diabetes care, cardiovascular health and emergency care, whose standards may be determined by the relevant specialty body. They may receive specialty-specific training after their NP education programs through work-based training, formalised certifications and more recently, residency or fellowship programs (American Nurses Credentialing Center, 2015; Flinter, 2011).

In contrast, Australian NPs achieved legislated title protection in 1998 and were designed to 'target marginalised and at-risk populations and provide outreach services to rural and remote communities' (Australian College of Nurse Practitioners, 2014a). A master's degree is the entry-level qualification needed for practice and nurse practitioners are accountable to national standards used for regulation of the profession (Nursing and Midwifery Board of Australia, 2014a). The profession has grown rapidly since the first two NPs were authorised to practice in New South Wales in 2000, with over 1300 NPs currently endorsed to practice in a variety of acute and primary healthcare settings (Nursing and Midwifery Board of Australia, 2015a).

Similar to other European jurisdictions, Australian NP education programs aim to further develop advanced practice nursing knowledge and skills already obtained through experience working as a registered nurse and through formal post-graduate education preparing them to work in a specialty area (Australian Nursing and Midwifery Accreditation Council, 2015; Furlong & Smith, 2005). In the United Kingdom 'right-touch regulation' led to a lack of NP title protection, with inconsistent application of recommended standards for graduates of NP programs, resulting in a range of education levels (NHS Scotland, 2016; Professional Standards Authority, 2015; Royal College of Nursing, 2012). In contrast, all Australian NP programs offer master's degrees and are nationally accredited against a governance framework and curriculum standards approved by the Nursing and Midwifery Board of Australia (NMBA). While all Australian NP students meet generic professional standards approved by the NMBA, students obtain formal specialist clinical learning, such as emergency, system-specific (e.g. cardiac, renal, genitourinary), wound care, pain management or mental health nursing, in their respective clinical settings (Middleton et al., 2011).

Australia's NP educational approach has resulted in the development of many specialties (Gardner et al., 2014). The proliferation of specialty practice resulted in governance and logistical issues faced by the tertiary education sector in the provision of robust workplace-based NP clinical learning and teaching (Jackson & Daly, 2004; Strand, Fox-Young, Long, & Bogossian, 2013). Similar concerns were

identified in the early 1990s in the USA, which in part triggered formulation of the population foci now seen in that jurisdiction (National Organisation of Nurse Practitioner Faculties, 2006). These issues centre on availability, oversight and consistent application of specialised workplace-based clinical training programs tailored to individual, institutional and/or workforce requirements. For example, two emergency NPs attending the same Australian university program may graduate with differences in specialist skills, knowledge and expertise given the individual workplaces where they receive their advanced clinical learning and teaching, whilst sharing the same core learning and teaching required for national endorsement.

These issues are addressed in part by new Australian NP curriculum accreditation standards contributing towards a more robust and consistent clinical learning and teaching framework (Australian Nursing and Midwifery Accreditation Council, 2015) by requiring a minimum number of supernumerary clinical hours. The new curriculum standards promote generalist knowledge and skill acquisition needed for the broader clinical management of conditions seen in a specialty context. A similar learning and teaching approach is currently being explored in New Zealand (Nursing Council of New Zealand, 2015). O'Connell's recent work (2015) complements the new standards by establishing a framework supporting learning and teaching requirements for specialist Australian emergency NP students; however, no such frameworks exist for the remaining Australian NP specialties.

To further support the learning and teaching framework, attention has been directed towards establishing a broad specialty taxonomy for Australian NPs. A specialty taxonomy assists in defining the scope of practice where nurses operate and has wide-reaching implications on the profession's educational governance, sustainability (Buchan, Twigg, Dussault, Duffield, & Stone, 2015) and acceptance by the Australian healthcare consumer (Cashin, Heartfield, Cox, Dunn, & Stasa, 2015; Parker et al., 2013). While a specialty taxonomy for Australian nurses was established by King et al. (2010), its application to NPs is limited given the profession addresses healthcare gaps and marginalised populations, as opposed to representing mainstream Australian nursing practice. Developmental work exploring a broad Australian NP specialty taxonomy was conducted Gardner et al. (2014), grouping specialties into 6 constructs similar in aim (although not focus) to the population foci seen in the USA. These contextualised taxonomy constructs, termed 'metaspecialties', established NP specialties into broad population groups requiring similar knowledge, skills and expertise (Table 4:1).

Table 4:1 Comparison of Metaspecialties and Population Foci

Metaspecialties (Australia) (Gardner, 2014)		Population Foci (United States) (NONPF, 2013)
Definition	<i>A metaspecialty groups nurse practitioner (NP) specialties that have similar skillsets, knowledge and/or expertise, which comprehensively reflects the diverse healthcare needs of population groups.</i>	<i>The scientific foundations, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice competencies needed to work within a defined population.¹</i>
Application	Empirical research in progress for use in a learning and teaching framework for Australian NP students.	Used for professional licensure, accreditation, certification and education of NPs.
Use	Build upon core <i>Standards</i> for Professional Practice	Build upon core <i>Competencies</i> for Professional Practice
Descriptors	<ul style="list-style-type: none"> • Emergency and Acute Care • Mental Health Care • Aged and Palliative Care • Primary Health Care • Child and Family Health Care • Care of Persons with Long-Term Conditions 	<ul style="list-style-type: none"> • Adult-Gerontological Acute Care • Adult-Gerontological Primary Care • Acute Care Pediatric • Primary Care Pediatric • Family/Across the Lifespan • Neonatal • Psychiatric-Mental Health • Women's Health/Gender Related
Clinical Learning & Teaching	<p>Students must demonstrate advanced practice nursing as pre-requisite for entry into NP education program.</p> <p>Students may identify one or several metaspecialties that identify the individual's existing and future planned complement of advanced practice nursing skills, knowledge and expertise.</p>	<p>Students may enter NP education program without previous advanced practice nursing experience.</p> <p>Students generally identify a single population focus to establish and direct the generation of advanced practice nursing skills, knowledge and expertise.</p>
<p>1. No definition is provided by the National Organisation of Nurse Practitioner Faculties or the 2008 <i>Consensus Model for APRN Regulation</i> for the population focus construct as a whole. Individual population foci are defined according to these qualities.</p>		

An external evaluation of Gardner et al. suggested a need for further evidence to support the 'untested [metaspecialty] propositions' (Gardner et al., 2014, p. 40). Therefore, the aim of the study reported here is to achieve profession-wide consensus on the established metaspecialties. Once validated, ongoing research establishing and validating clinical practice standards for each metaspecialty may contribute to better support Australian NP student clinical learning and teaching.

The Study

Aim

To achieve profession-wide consensus on the Australian NP metaspecialties.

Design

Online survey technology was used to conduct a modified three-round Delphi study. A classical Delphi approach seeks expert consensus on a question or issue through iterative rounds using written surveys (Delbecq et al., 1975). The first round of a classical Delphi implements a qualitative approach by virtue of collecting participant responses to an open-ended question. This research used a modified

approach (Keeney et al., 2011), whereby participants in the first round were given an annotated bibliography (Gardner et al., 2013b) that summarised NP specialty clinical competencies publically available at the time, as well as background information on the development of proposed metaspécialties (Australian College of Nurse Practitioners, 2015). This information assisted participants in achieving consensus on the relevancy of proposed metaspécialty constructs, which they rated on a 4-point Likert-scale ('not relevant, somewhat relevant, quite relevant, highly relevant'). Participants suggested re-wording of proposed metaspécialty constructs, as well as provided novel constructs for group consideration. Semi-structured questions triggered participant elaboration on rationale for their responses. Demographic data and individual participant characteristics were also collected.

The remaining rounds followed a classical Delphi approach, with the second round providing collated and anonymous feedback of group qualitative and quantitative panel responses from the first round. Participants were reminded of their individual metaspécialty relevancy ratings for round one and asked to again rate the relevancy of any re-worded or novel round one metaspécialty constructs. Re-worded or novel constructs that did not achieve at least 50% majority opinion were removed from further analysis. This iterative process continued until a majority opinion of 85% or greater on individual constructs was achieved and stable over two consecutive rounds.

Sample/Participants

Participants were recruited between August - September 2014 using convenience and snowball sampling. These techniques have been used extensively in mixed-methods research (Brannen & Halcomb, 2009; Kemper, Stringfield, & Teddlie, 2010) and promote wide distribution of recruitment messages across an eligible population.

In keeping with Delphi methodology principles to recruit experts (Linstone & Turoff, 2002), participant expertise and participant eligibility were defined as current endorsement as an NP by the NMBA for 12 or more months, as endorsed NPs are clinical experts in their respective areas of practice (Australian Nursing Federation et al., 2008). In September 2014 the total population of endorsed NPs was 1,128 (Nursing and Midwifery Board of Australia, 2014b). Available population data published eleven months prior (Nursing and Midwifery Board of Australia, 2013) indicate there were 966 endorsed NPs in Australia, the number used to approximate the eligible population of NPs (that is, those endorsed for 12 or more months in late 2014).

Recruitment was accomplished by four methods. First, emails inviting individuals to participate in the study were sent to the Australian College of NPs' membership. The Australian College of NP is the peak professional body representing 51% of endorsed NPs nationally (Australian College of Nurse Practitioners, 2014b). Two additional reminders were sent over 4 weeks. Second, an information and

recruitment page was constructed on the Australian College of NP website to facilitate recruitment for casual visitors, with a 6-minute online video embedded to provide supplemental information about the Delphi method and study aim. Recruitment emails were sent to state/territory nursing and midwifery offices across Australia for distribution in their networks because 80% of Australian NP employment is managed at state or territory level (Australian College of Nurse Practitioners, 2012b). Finally, all respondents were encouraged to disseminate study recruitment information to other NPs they felt might be eligible or interested in the research.

Data Collection

Data were collected between August 2014 - January 2015 using three survey tools designed with Qualtrics (2013) online survey software. The first round survey tool, which served as a template for subsequent rounds, underwent pilot testing for content and face validity using a 10-member panel comprising nursing researchers, PhD supervisors, NPs and nursing academics. The pilot survey included additional questions about whether the stated study aim was clear, whether sufficient information about study conduct and background information about the metaspecialties was provided, if any relevant questions were missing from the survey and ease of completion. Panel member feedback was collated and minor adjustments made to better define metaspecialty constructs, ensure readability, enhance the likelihood of detailed rationale for responses in open-ended sections and improve survey structure.

Relevancy ratings for re-worded or novel metaspecialty constructs were recorded using Likert-scales and answers to semi-structured questions recorded with open text boxes. Demographic and participant characteristics were collected using validated multiple-choice questions obtained from a Health Workforce Australia survey (2012).

Ethical Considerations

The study protocol was conducted according to the National Health and Medical Research Council (2007) and approved by the Australian Catholic University Human Research Ethics Committee (HREC Register Number 2013 174N). Consent was implied through survey completion. Attrition is a known risk of Delphi research (Keeney et al., 2001) and was mitigated by offering continuing professional development contact hour certificates. Additionally, consenting participants were offered the opportunity to be named as contributors to induce social reward and enhance Delphi completion (Bolger & Wright, 2011). Finally, demographic categories (area, locality, setting and employment location) were aggregated to reduce level of detail to protect individual identity.

Data Analysis

Both qualitative and quantitative data were collected, with the first round being primarily qualitative and subsequent rounds quantitative. nVivo Software Version 10 was used to manage qualitative data obtained from round one. Content analysis was performed to determine overall participant opinion

on construct relevancy, identify re-worded and/or novel metaspecialty constructs and summarise rationale provided for stated opinions. A modified content analysis framework was developed based on Graneheim and Lundman (2004) method of content analysis, for each of the six proposed metaspecialty constructs. Relevancy ratings were matched to rationale provided by individuals from open-ended questions. Manifest (verbatim language) content was condensed into whether participants felt proposed metaspecialties were 'relevant' or 'not relevant'. Manifest and latent (interpreted) content from open-ended responses were then further condensed into themes and sub-themes. Sub-themes were used as qualitative summary information provided to participants during round two. Sub-themes were based on the most representative response for that theme, to preserve original (manifest) participant language as much as possible.

Quantitative analysis was conducted using IBM SPSS Version 22. Demographic variables were analysed using descriptive statistics. Majority opinion was defined by an item-level content validity index (CVI) of 85% or greater. A CVI measures the proportion of participants rating a construct as relevant to the total number of those rating the construct (Lynn, 1986). To calculate the CVI, Likert data were recoded and dichotomized into 'relevant' (comprised of the categories 'quite relevant' and 'highly relevant') and 'not relevant' (the remaining categories). A CVI of 85% was chosen to ensure greater acceptance of the findings across the profession, as a CVI of greater than 78% correlates to 'excellent' agreement amongst any number of experts and appropriately corrects for chance agreement (Polit et al., 2007).

Content validity indices for each construct were calculated and provided as summarised group statistical feedback for group consideration in rounds two and three. Non-parametric testing using McNemar's Test for Change was performed to determine stability of responses through time (Kalaian & Kasim, 2012). Although the CVI alone may be used to determine whether a construct is valid as expressed by majority expert opinion, the McNemar's Test for Change determines whether opinion about the construct changes with each round. Its reporting includes an exact probability using the binomial distribution or, if more than 25 participants change their opinions between rounds, a continuity-corrected Chi-Square statistic (Allen & Bennett, 2010). Consensus can therefore be determined by stable opinion deemed relevant by the majority (in this instance, defined as 85% or greater) of experts (Polit et al., 2007; von der Gracht, 2012).

Validity and Reliability

Safeguards were established to ensure rigour, as reported by Hasson and Keeney (2011). Reliability in this modified Delphi was enhanced as it followed a more traditional Delphi approach, whereby participants were encouraged to revise proposed metaspecialties and/or propose novel constructs for group consideration in round one. Confounding variables known to threaten reliability in consensus-building activities, such as group think (Boje & Murnighan, 1982), dominant personalities (Kerr & Tindale, 2011) and other social and informational influences (Bolger & Wright, 2011) were minimised

by providing anonymised feedback of participant responses. Feedback was provided through summarised group statistical response (through CVIs) and sub-themes obtained from the modified content analysis framework, to minimise loss of depth or richness of individual opinion.

Content validity was enhanced through sample size and variety. Respondents were a large, heterogeneous group of nursing experts whose inclusion had been limited to those holding NP endorsement by a national regulatory body and whose profession had achieved legislated title protection. This contributed a wide range of perspectives relevant to the content of the metaspecialties (Okoli & Pawlowski, 2004). Construct validity was established by achieving consensus amongst nursing experts on four proposed metaspecialties through refinement across several Delphi rounds.

Results

Response Rate

In total, there were 231 study participants at the outset of round 1, representing approximately 24% (n=231/~966 eligible) of the Australian NP population (Nursing and Midwifery Board of Australia, 2013). Figure 4:1 demonstrates 197 participants completed all three rounds. Each round had high response rates, with 92% (n=212/231) completing round 1, 97% (n=205/212) completing round 2 and 96% (n=197/205 invitations) completing round 3. The first round survey tool was designed to identify eligible participants, which resulted in two individuals being excluded.

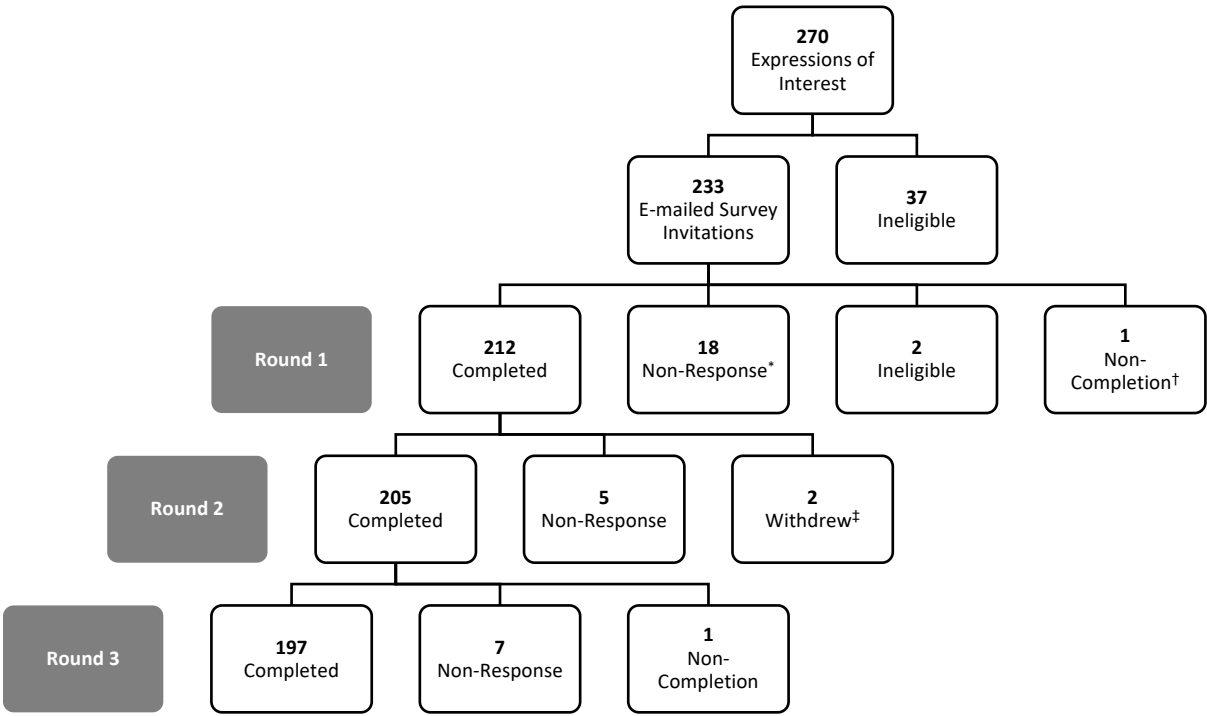


Figure 4:1 Recruitment and Delphi Round Completion

* Represents those participants who did not respond to survey invitations.
† Represents those participants who did not complete all questions in the survey.
‡ Represents those participants who requested to withdraw from the research study.

Demographics

Participants had a mean of 27 years' experience working in nursing and a median of 4 years' post-endorsement experience. Ninety-two percent of eligible participants described their principal role as a clinician. Other participant descriptors for their principal role were 'administrator' (1%), 'teacher or educator' (2%), 'researcher' (2%) or 'other' (3%).

Table 4:2 demonstrates good representation across all Australian states and territories. The most common stated main area of work was 'other' (31.4%) using Health Workforce Australia-validated work categories. Of those participants with five years or less of post-endorsement NP experience, a larger proportion worked in primary healthcare practice and non-admitted care settings (Independent Hospital Pricing Authority, 2015) (49%, n=65/133 vs. 27%, n=17/64) than their colleagues with six or more years' endorsement.

Table 4:2 Participant Demographics

Years Nursing^a	Years Endorsed as a Nurse Practitioner				Total (N=197)	
	≤ 5 Years (n=133)		6+ Years (n=64)		N	%
	n	%	n	%		
5 – 9	1	0.8	0	0.0	1	0.5
10 – 14	9	6.8	1	1.6	10	5.1
15 – 20	28	21.1	14	21.9	42	21.3
21 – 25	22	16.5	10	15.6	32	16.2
26 – 29	13	9.8	6	9.4	19	9.6
30 +	60	45.1	33	51.6	93	47.2
Principal Area of Employment^a	n	%	n	%	N	%
Critical Care and Emergency	23	17.3	17	26.6	40	20.3
General Practice/Medical Practice	19	14.3	4	6.3	23	11.7
Aged Care	13	9.8	5	7.8	18	9.1
Mixed Medical/Surgical	16	12.1	2	3.2	18	9.1
Community Health	11	8.3	5	7.8	16	8.1
Mental Health	13	9.8	3	4.7	16	8.1
Peri-Operative	4	3.0	0	0.0	4	2.0
Other ^h	34	25.6	28	43.7	62	31.4
Primary Employment Location^a	n	%	n	%	N	%
Queensland	32	24.1	19	29.7	51	25.9
New South Wales	26	19.5	13	20.3	39	19.8
Western Australia	19	14.3	16	25.0	35	17.8
Victoria	26	19.5	6	9.4	32	16.2
South Australia	14	10.5	6	9.4	20	10.2
Australian Capital Territory	6	4.5	4	6.3	10	5.1
Tasmania/Northern Territory	10	7.5	0	0.0	10	3.6
Primary Employment Locality^b	n	%	n	%	N	%
RA1 – Major Cities	75	56.4	40	62.5	115	58.4
RA2 – Inner Regional	29	21.8	3	4.7	32	16.2
RA3 – Outer Regional	17	12.8	14	21.9	31	15.7
RA4/RA5 – Remote or Very Remote	12	9.0	7	10.9	19	9.6
Primary Employment Setting^a	n	%	n	%	N	%
Emergency and Admitted Acute Care ^c	55	41.4	34	53.1	89	45.2
Subacute and Non-acute Care ^d	6	4.5	3	4.7	9	4.6
Non-admitted Care ^e	40	30.1	12	18.8	52	26.4
Primary Healthcare Practice ^f	25	18.8	5	7.8	30	15.2
Other ^g	7	5.3	10	15.6	17	8.6
Employment Sector^a	n	%	n	%	N	%
Public	92	69.2	50	78.1	142	72.1
Private (+ non-profit organisations)	41	30.8	14	21.9	55	27.9
a. Validated question from Health Workforce Australia b. Locality according to ASGC-RA Classification c. Includes those participants indicating a hospital was their primary employment setting. d. Includes residential aged care facility or hospice settings. e. Includes outpatient clinics, community mental health service, community drug and alcohol service or other community health care service settings. f. Includes locum private practice, general practitioner practice, other private practice, or Aboriginal health service settings. g. Includes commercial/business service, tertiary educational facility, correctional services, other government department or agency, or other settings. h. Includes those participants indicating paediatrics was their principal area of employment.						

NPs working in non-metropolitan areas of Australia were well represented. Fifty-eight percent of participants stated their principal place of practice was a major city, whereas the remainder worked in regional, remote, or very remote Australia (Australian Bureau of Statistics, 2011). A higher proportion

of NPs with less than or equal to five years' post-endorsement experience worked in inner regional Australia (22%, n=29/133 vs. 5%, n=3/64) and the private employment sector (31%, n=41/133 vs. 22%, n=14/64) than those NPs with six or more years' experience.

Validated Metaspecialties

Table 4:3 shows a high degree of majority opinion on four of six proposed metaspecialty constructs, with no round one participants providing novel constructs for panel consideration. No alternative names achieved the threshold for inclusion after round two. Regarding stability of opinion, a minority (23) of 197 participants changed their relevancy ratings on the Emergency and Acute Care metaspecialty after evaluating group feedback at the beginning of round two. Of these, 19 participants changed in a negative direction (from 'relevant' to 'not relevant'), whilst only four did the reverse. A McNemar test indicated group opinion change was statistically significant ($P=0.003$). Participants did not significantly change their opinions between rounds one and two for the Child and Family Health Care ($P = 0.868$), Mental Health Care ($P = 0.227$) or Primary Health Care ($P = 0.344$) metaspecialty constructs.

Table 4:3 Validated Australian Nurse Practitioner Metaspecialties

	Round 1 CVI%^a	Round 2 CVI%
Emergency and Acute Care	98	94
Child and Family Health Care	86	85
Mental Health Care	95	98
Primary Health Care	95	97
a. A validated metaspecialty construct achieved a stable Content Validity Index (CVI) of 85% or greater across two sequential rounds.		

Un-Validated Metaspecialties

Two proposed metaspecialty constructs did not achieve consensus after three rounds (Table 4:4). Content analysis from round one data indicated participants agreed with the 'Care of Persons with Long Term Conditions' (CPLTC) metaspecialty construct. However, the participant theme 'agree with construct but disagree with name' was illustrated by sub-theme responses: 'the name is too complicated'; was 'too vague in the length of time 'long-term' indicates'; and 'confusing as it could be associated only with those living in chronic rehabilitation or care.'

Table 4:4 Un-Validated Australian Nurse Practitioner Metaspecialty Constructs (N=197)

	Round 1 CVI%	Round 2 CVI%	Round 3 CVI%
Construct 1			
Aged and Palliative Care ^a	97	63	61
Alternative Construct: Aged Care (n=77) ^{b,d}		64	90
Alternative Construct: Palliative Care (n=77) ^{b,d}		46	88
Construct 2			
Care of Persons with Long Term Conditions ^a	91	41	20
Chronic Disease Management ^c		60	64
Chronic and Complex Care ^c		72	80
<p>a. Construct established from prior research and presented to participants in Round 1.</p> <p>b. Alternative construct proposed by participants in Round 1.</p> <p>c. Alternative name proposed by participants for the "Care of Persons with Long Term Conditions" construct in Round 1.</p> <p>d. In Round 3, all participants who rated the "Aged and Palliative Care" construct as not relevant were provided the option of rating two separate constructs, "Aged Care" and "Palliative Care."</p>			

Alternative names were proposed by participants in round 1, such as: 'chronic disease management,' 'chronic care'; and 'chronic and complex care.' Participants were given the opportunity to rate the relevancy of these alternate names in rounds two and three. 'Chronic Care' did not achieve the minimum 85% CVI majority opinion threshold in round two and was removed from further analysis. The remaining names did not achieve the minimum 85% CVI majority opinion threshold in round three.

Just over half (104/197) of participants changed their opinion about the relevancy of the CPLTC metaspecialty after evaluating group feedback at the beginning of round two. Almost all participants (102) changed in a negative direction (from 'relevant' - 'not relevant'). A McNemar test indicated group opinion change regarding the CPLTC construct was statistically significant, $\chi^2(1, N = 197) = 94.24$, $P < 0.001$. Participants continued to change their opinions significantly on the relevancy of this metaspecialty name in a negative direction between rounds 2 and 3, $\chi^2(1, N = 197) = 30.420$, $P < 0.001$.

The second metaspecialty construct not achieving consensus was 'Aged and Palliative Care' (APC). The round one theme: 'agree with name, but as separate constructs' was demonstrated through many participant responses falling in the sub-theme 'inappropriate to group 'aged' and 'palliative' together as it shifts the focus of care from healthy ageing to palliation.' Another theme, 'disagree with construct' provided sub-themes such as: 'palliation occurs across the lifespan and is not unique to the aged' and 'palliation is part of the continuum of care of persons with long-term conditions.' Because participant opinions were divergent on whether the construct was a single, or two distinct entities, the third survey tool was designed to facilitate consensus by first identifying whether participants felt the construct as a sole entity was relevant. If not, they were offered the opportunity to rate the relevancy of two separate constructs, 'Aged Care' and 'Palliative Care.' As a result, APC did not achieve the minimum 85% CVI majority opinion threshold in round three. The minority of participants (n=77) rating the relevancy of the single construct as 'Not' or 'Somewhat' relevant had the additional option

of rating the relevancy of two distinct constructs: 'Aged Care' and 'Palliative Care.' Both (90% and 88%, respectively) achieved high majority opinion in this subgroup.

A minority (n=71) of 197 participants changed their opinion regarding the relevancy of the APC metaspecialty construct after evaluating group feedback at the beginning of round two. Of these, most (69) changed in a negative direction. A McNemar test indicated this change was statistically significant, $\chi^2(1, n = 197) = 61.352, P < 0.001$. Participants did not significantly change their opinions about the relevancy of the APC construct between rounds two and three ($P = 0.688$).

Discussion

This is the first study validating a taxonomy of broad specialty areas, termed metaspecialties, for Australian NPs. To our knowledge, no other empirical research using Delphi methodology exists to establish a health profession specialty framework. Four metaspecialties (Emergency and Acute Care, Primary Health Care, Child and Family Health Care, Mental Health Care) were validated across the NP profession (Figure 4:2) with two others requiring further research to clarify these construct(s) (that is, Care of Persons with Long Term Conditions and Aged and Palliative Care). The Australian NP profession spans only 15 years and it is expected these metaspecialties will evolve as this dynamic profession grows. The metaspecialties provide structure to advanced specialty clinical education and professional development. Indeed, this was seen with the evolution of population foci first established in the USA in the early 2000s (US Department of Health and Human Services, 2002). These foci grew from seven discrete competency areas (Table 4:1). It is hoped the research reported here informs future empirical research considering a consensus-building methodology with a similar scope and aim.



Figure 4:2 The Validated Metaspecialty Taxonomy

The only published example of using a consensus-building method to achieve a comparable aim has been described as a consensus conference and was used to determine the NP population foci in the USA (APRN Consensus Work Group, 2008). There are significant differences between consensus

approaches. The Delphi method has a superior ability to control for social and informational influence of panel members on the consensus-building process because participants conduct the process in relative isolation from other members (Bolger & Wright, 2011; Turoff, 1972). The experts used for consensus in the USA experience were representatives of major nursing organisations, whereas our approach used mostly nursing clinicians working at the profession's vanguard. There are approximately 205,000 NPs in the USA (American Association of Nurse Practitioners, 2015). Given the relative jurisdictional differences, we consider our approach appropriate given the size of the Australian NP population. It is possible the consensus approach described in this study may be more appropriate for use in those jurisdictions with smaller NP populations (e.g. New Zealand, Ireland, Canada), if a similar aim is desired.

The demonstration of expertise is a key aspect of the methodology, which contributes to its internal and external validity (Linstone & Turoff, 2011; Okoli & Pawlowski, 2004). Some might argue 12 months' post-NP endorsement experience is insufficient to demonstrate the expertise required for participation in Delphi research. Our panel consisted of expert clinicians with a mean of 27 years' nursing experience, who as a condition of their NP endorsement were required to demonstrate three years' advanced nursing practice skills, knowledge and expertise. We feel one of the key strengths of this study and of the Australian NP profession, are the years of nursing experience and expertise brought to the profession before achieving endorsement.

It was interesting to note a validated annual nursing registration question used in this survey regarding the principal area of employment resulted in a large proportion of participants choosing 'other.' This may reflect NPs identifying with specialty fields described in the CLLEVER study (Gardner et al., 2014) or reflect difficulties in describing the 'trans-boundary' models where many operate (Bail et al., 2009; Centre for International Economics, 2013). Such models of NP clinical care provision bridge the continuum between hospital and community settings. Data from this research show there is a new and growing NP workforce working outside traditional emergency and admitted care settings. This has health workforce funding and redesign implications and would benefit from further exploration. Refinement of nursing workforce data collected in annual surveys conducted by the NMBA might lend greater insight into these issues.

This metaspecialty taxonomy informs forthcoming research into a specialist learning and teaching framework for Australian NP students. It is anticipated such a framework will provide greater consistency, capability and transportability in the NP profession.

Strengths and Limitations

A major strength of this Delphi study is the large sample size providing good proportional representation from all Australian jurisdictions and high response rate maintained throughout three

rounds. Twenty percent of the total eligible population were represented at the time of completion (n=197/~966). Although convenience and snowball sampling do not ensure a representative sample, the exceptional sample size contributes to reliable participant representation and study rigour. Keeney et al. acknowledge 'no specific guidelines exist for acceptable response rates in Delphi studies,' but suggest that a 70% response rate or greater across the iterations in a traditional Delphi approach ensures study rigour (2011). Gill et al. (2013) published an online Delphi protocol paper conducted similarly to this research, whose response rate was greater than 85% (compared with our greater than 92% response rate) across all iterations. It is possible an online, as opposed to paper-based, Delphi provides superior response rates.

Although some (Keeney et al., 2001; Sackman, 1974) have voiced concern around creating a 'self-fulfilling prophecy' in the first round of a modified Delphi, care was taken to ensure rigour with this approach. The literature review and consensus-building technique used by Gardner et al. (2013a) informed the proposed metaspecialties in the first round of this Delphi study. It approximates Landeta's description of a 'hybrid Delphi' (Landeta et al., 2011), which provides opportunity for improved content and face validity. Our modified Delphi method resulted in two proposed metaspecialties, which initially had high majority opinion, remaining un-validated at the conclusion of this research. This supports our assertion pre-determined information provided in this modified Delphi approach did not impact the ability of participants to influence group opinion. Additionally, a great strength of this study is its extensive reporting of constructs not achieving consensus. Few published Delphi studies report the rationale for items on which there is dissensus, which may adversely affect rigour. Finally, the CVI and McNemar's Test for Change provided a robust definition of consensus by establishing majority opinion and stability of participant response through time.

Although eligibility criteria and recruitment methods for this study were well defined and encompassing, it is possible the Australian College of NP membership were over-represented, as its website and member emails were used as the primary means for recruitment. Unfortunately, this was unavoidable due to restricted access to a national population database of endorsed NPs.

At the outset of round two participants were informed there would be a maximum of three rounds in the study, due to high levels of majority opinion initially seen across all six of the proposed metaspecialty constructs. We did not anticipate there would be instability in majority opinion between rounds two and three for some metaspecialties. Data suggest there may have been better clarity and subsequent consensus surrounding the CPLTC and APC constructs if a fourth round had been performed. It is possible neither of these constructs are in fact, metaspecialties. This discrepancy may be a reflection of the applied method, or simply reflect sample bias.

Conclusion

This was a robust modified Delphi study with a large sample size, high response rates between iterations and broad representation across a diverse array of Australian NP experts. This study validated four of six proposed metaspécialties. The validated metaspécialties provide a framework for improved definition and scope for a generalist and specialist NP role. Combined with forthcoming Delphi research validating clinical practice standards for each metaspécialty, an education framework encompassing both specialist and generalist learning and teaching will be explored. This may provide greater flexibility and transportability of the profession and may enhance opportunities for cross-professional learning, mentorship and consumer understanding.

Supplemental Findings

This Delphi survey demonstrated significant divergence of opinion on two of the metaspécialty names. Divergence of opinion occurs when Delphi panelists demonstrate majority opinion in one round, which suddenly shifts to the opposite direction in a subsequent round. For example, a high degree of majority opinion was demonstrated on all metaspécialties after round one of this Delphi study. However, after the expert panel was given group consensus measures (e.g. i-CVI for each of the metaspécialties) and summarised panelist rationale from round one, two metaspécialties demonstrated significant divergence of opinion after round two. These two metaspécialties (i.e. APC and CPLTC) were the ‘un-validated’ metaspécialties described in the published manuscript. A post-hoc analysis of data obtained from this Delphi survey was undertaken to better understand why divergence of opinion occurred with the un-validated metaspécialties.

During round one, individual metaspécialty relevancy ratings were attached to a virtual survey profile specific to each panelist. The data contained within these virtual profiles are referred to as ‘embedded data.’ During round two, embedded data were used to remind individual panelists of their previous round ratings. Upon commencing round two, panelists were also provided with summarised group responses. After considering the presented information, panelists were asked to re-rate the relevancy of the round one metaspécialties. Given the presented data, some panelists changed their metaspécialty relevancy ratings between rounds one and two after reviewing the presented information. For example, 122 panelists indicated the APC construct was ‘Highly Relevant’ in round one, and after reading the presented information, 69 changed their relevancy rating of the APC construct to ‘Not Relevant.’ Likewise, two panelists changed their relevancy rating of the APC construct from ‘Not Relevant’ in round one, to ‘Highly Relevant’ during round two. Embedded data was used in a similar manner during round three.

The Qualtrics survey platform performed an automated process of comparing a panelist’s embedded data from the previous round with their current relevancy ratings. If this comparison revealed the

panelist had changed their opinion between rounds, an additional multiple-choice question was shown. The primary purpose of this question was to ascertain the single most important factor influencing the panelist's opinion change. The question stated *"You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the [x] metaspecialty. What was the single most important factor which influenced your change of opinion?"* Panelists were limited to one of the following response categories:

- New evidence was presented which provided me with a perspective I had not previously considered
- I feel the evidence presented was given with greater expertise than mine
- I have changed my response to speed up the process
- There were a greater number of compelling arguments presented
- Evidence was presented which re-affirmed and/or strengthened my initial judgement.

Panelists were required to choose one of these response categories before they were automatically forwarded to the next metaspecialty name for relevancy rating. These data were collected in rounds two and three for each of the round one metaspecialties, where panelists changed their minds. De-identified data were exported to Microsoft Excel and underwent further analysis using measures of frequency.

Two-hundred and five panelists provided a combined total of 487 responses to the six metaspecialties during round two. If panelists had changed their minds every time they had been presented with a metaspecialty, the number of responses would have been much higher. After round two, each response category was added together from their corresponding metaspecialties. For example, the response *'I have changed my response to speed up the process'* from each metaspecialty was added together. Results reveal the number one reason why panelists changed their relevancy ratings in round two was because *'New evidence was presented which provided me with a perspective I had not previously considered'* (43%, N=210/487). The least common reason for opinion change was *'I have changed my response to speed up the process'* (2%, N=10/487). Other responses included: *'There were a greater number of compelling arguments presented'* (21%, n=103/487), *'I feel the evidence presented was given with greater expertise than mine'* (18%, n=90/487), and *'Evidence was presented which re-affirmed and/or strengthened my initial judgement'* (15% n=74/487).

During round two, the un-validated metaspecialties (i.e. APC and CPLTC) represented the greatest percentages of panelist opinion change from the total number of responses recorded for the original round one metaspecialties. Care of Persons with Long Term Conditions represented 32% (n=157/487) of total responses, followed by APC (23%, n=113/487), CFH (18%, n=89/487), EAC (11%, n=56/487), PHC (8%, n=39/487) and MHC (7%, n=33/487). When separately analysing the responses from the un-

validated metaspecialties (i.e. APC and CPLTC), the response categories reflected the same pattern as the grouped metaspecialty responses.

Data were collected for the two un-validated metaspecialties only during round three, as the other metaspecialties had been validated. One-hundred ninety-seven panelists provided a combined total of 256 responses to two metaspecialties during round three. The most important factor determining opinion change in the APC metaspecialty was *'New evidence was presented which provided me with a perspective I had not previously considered'* (38%, n=48/127). This was followed by *'Evidence was presented which re-affirmed and/or strengthened my initial judgement'* (32%, n=41/127). The most important factor for the CPLTC metaspecialty was *'Evidence was presented which re-affirmed and/or strengthened my initial judgement'* (35%, n=45/129). This was followed by *'New evidence was presented which provided me with a perspective I had not previously considered'* (28%, n=36/127). During round three very few responses relating to the APC and CPLTC constructs indicated a change in opinion as a result of attempting to 'speed up the process' (4%, n=10/256).

These results have important implications for RD research. First, Delphi researchers have indicated concern previously that provision of pre-determined information during the first round of a RD study may "psychologically pressure [panelists] to alter their views" to align with those of the researcher (Keeney et al., 2006, p. 208). They proposed the result of this pressure would induce conformance to views presented by the researcher, as opposed to expert panelists being allowed to provide novel views for panel consideration. This conformance might threaten the internal validity of consensus outcomes determined by RD research. However, our research does not indicate this to be the case, if panelists can provide alternate views supported by rationale during round one. These alternate views and rationale are then provided for panel consideration during the second round. Data indicate divergence of opinion occurred during the second round of this Delphi study because of the provision of round one summary information. The round one i-CVIs of the un-validated metaspecialties (APC=97%, CPLTC=91%) were like those of the validated metaspecialties (EAC=98%, CFH=86%, MHC=95%, PHC=95%). During round two, summarised group rationale and i-CVIs were given for all round one metaspecialties, resulting in divergence of opinion only with the APC and CPLTC metaspecialties. Given the results from the post-hoc analysis, it appears the primary reason why this divergence occurred was because of the summarised group rationale, as opposed to the i-CVI measures. These findings support those of Meijering and Tobi (2016), who found the provision of panelist rationale triggered disagreement amongst experts in the second round of their Delphi research. These findings provide evidence for the internal validity of consensus outcomes determined by our RD research. If panelists were not able to supply alternate opinions and their rationale in round one, it is likely the un-validated metaspecialty names would have achieved the consensus threshold needed for validation in round two. That outcome would have supported the assertion made by

Keeney et al. (2006), who state Reactive Delphi research pressures panelists to conform to the presented information, which threatens the internal validity of consensus outcomes determined by RD methodology. However, alternate views were sought in round one and fed back to panelists during round two, resulting in two metaspécialty names remaining un-validated after the study.

Second, results demonstrate panelists were highly vested in the outcomes of this research. Keeney et al. (2006, p. 207) cite the importance of maintaining panelist interest as it “encourages ownership [of outcomes] and active participation.” However, Sackman (1974, pp. 46-49) warns Delphi research may perpetuate disinterest, resulting in panelists who cannot reliably work towards authenticity in their opinions. In turn, the internal validity of consensus outcomes would be threatened because of panelist disinterest. Our research demonstrates the overwhelming majority of persons were actively involved with the Delphi study, with very few responses indicating opinion change was merely a function of ‘speeding up the process.’ This finding is reassuring and provides further support for the findings presented in the submitted manuscript.

Summary

This chapter presents findings from the conduct of a 3-round Reactive Delphi study. Background information from an annotated bibliography and summarised findings from the CLLEVER research were presented to panelists during round one. Four of six metaspécialties established from the CLLEVER research were subsequently validated by a large and diverse sample of NP working across Australia. Validated metaspécialty names from DS1 were likely represented by a sufficient number of nurse practitioners who were able to relate those constructs to their own clinical practice. This assertion may partially explain why the APC metaspécialty was not validated by DS1 panelists. The largest cohort of NPs in DS1 were working in emergency and admitted acute care settings (45%), with only 5% of the sample working in aged and hospice care settings. The researcher concludes the lack of individual metaspécialty construct definitions and supporting clinical practice standards likely contributed to disagreement on the un-validated metaspécialty names. The validated metaspécialties serve as a strong foundation for the Australian NP metaspécialty taxonomy. Further research is required to understand whether the two remaining un-validated metaspécialties merit consideration in the final taxonomy. Future Delphi research is planned to validate clinical practice standards established for the CLLEVER metaspécialties (Gardner, Gardner, Coyer, Gosby, et al., 2016), which may shed light on the un-validated metaspécialties.

Chapter 5 Factors Affecting Consensus in Reactive Delphi Research

Introduction

The literature review revealed how factors such as the bandwagon effect, panelist confidence, egocentric discounting, and experience level reflecting expertise and panel composition might affect the internal validity of consensus outcomes determined by Delphi research. Chapter 3 provided operational definitions of how such factors might be measured in Delphi research. Chapter 5 begins by restating Research Aim 2 and its detailed research questions. I then describe how data were gathered from DS1 and analysed to address these questions. A discussion of these results, followed by a summary, will complete this chapter.

Aim

To contribute knowledge of how consensus is achieved when using Reactive Delphi methodology.

Questions

- G. Does Reactive Delphi methodology potentiate the negative influence of the bandwagon effect in Delphi panelists?
- H. What effect does panelist confidence have on decision-making in Delphi panelists?
- I. How can experience level be objectively demonstrated in individual Delphi panelists?
- J. What effect does experience level have on decision-making in Delphi panelists?
- K. Does confidence relate to opinion change in individual Delphi panelists?
- L. What effect does panel composition have on consensus outcomes?

Methods

This section is limited to methods that specifically address Research Aim 2. Details of other aspects of the methods have been presented in detail in Chapter 3 and are summarised here.

Design

Delphi Survey 1 (DS1) was a 3-round Reactive Delphi study, whose primary aim was to validate the names of the Australian nurse practitioner metaspecialties.

Participants

Participant recruitment was conducted via electronic communication through a combination of snowball and convenience sampling between August and September 2014, and has been previously reported (Helms, Gardner, & McInnes, 2017). Study eligibility and expertise was qualified as having a minimum of 12 months' post-endorsement experience as a nurse practitioner by the NMBA.

Data Collection and Analysis

To appropriately analyse data on the bandwagon effect and panel composition, consensus outcomes on round one metaspecialty names were compared to consensus outcomes on those same names in round two. During round one, six metaspecialty names were offered for panelist consideration. After round two, four of those six metaspecialty names had achieved the pre-determined definition of consensus needed for validation, and were removed from further panel consideration. The two remaining un-validated metaspecialty names (i.e. CPLTC and APC) were reviewed by the DS1 panel in a third and final round. The influence of the bandwagon effect and panel composition on consensus outcomes would not be comparable between rounds two and three because validated metaspecialty names from round two had been removed. The remaining factors (i.e. the confidence heuristic and egocentric discounting) used data generated across all three rounds. Data collected for these factors were not dependent upon making direct comparisons to the metaspecialty names, but upon sum opinion change attributed to the presentation of pre-determined information in round one and panelist feedback throughout the remainder of DS1.

As previously described, data were collected using Qualtrics web-based survey software (Qualtrics, 2013) and quantitative analysis was conducted using IBM SPSS Version 23 (IBM Corporation, 2013). Participant demographics were collected using validated multiple-choice questions from a Health Workforce Australia survey (Health Workforce Australia, 2012). Demographic variables were analysed using measures of central tendency and dispersion. Variables related to Research Aim 2 (i.e. self-rated expertise and expertise level) were analysed to demonstrate the confidence heuristic and egocentric discounting. Experience level was used to demonstrate panel heterogeneity. These are all described in the following sections (See also Table 5:1).

Table 5:1 Factors Affecting Consensus in Delphi Research

Research Question	Factor and Variables used to Calculate	Operational Definition of Factor	Expected Outcome
A. Does Reactive Delphi methodology potentiate the negative influence of the bandwagon effect in Delphi panelists?	<p>Factor: Bandwagon Effect</p> <p>Variables: i-CVIs for the following metaspecialty names in rounds one and two:</p> <ul style="list-style-type: none"> • Mental Health Care • Emergency and Acute Care • Aged and Palliative Care • Primary Health Care • Child and Family Health Care 	When an individual demonstrates conformity, after realising their opinions represent those of the minority, and changes those opinions to assimilate with the majority irrespective of their own personal beliefs (Nadeau et al., 1993).	<p>Panelists involved in Reactive Delphi methodology may be pressured to conform to the pre-determined metaspecialties presented in round one, without providing critical analysis of the presented information.</p> <p>The negative influence of the bandwagon effect would be represented by high consensus levels across rounds of a Delphi, despite the provision of panelist feedback.</p>
B. What effect does panelist confidence have on decision-making in Delphi panelists?	<p>Factor: Confidence Heuristic</p> <p>Variables:</p> <ul style="list-style-type: none"> • Panelist confidence • Opinion change • Experience level (<i>composite</i>) • Self-rated expertise (<i>subjective</i>) 	When an experienced expert demonstrates conformity based upon the fact they have a low degree of certainty in their opinion, and perceive others as being more certain, and therefore more expert, in their responses.	<p>Experienced experts with low confidence will demonstrate more opinion change relative to the panel.</p> <p>Proficient experts with high confidence will demonstrate less opinion change relative to the panel.</p> <p>Proficient experts should theoretically demonstrate less confidence and more opinion change, as they have less professional experience than experienced experts. If proficient experts are overly-confident, they may demonstrate less opinion change and undermine the opinions of experts with greater experience.</p>
C. How can experience level be objectively demonstrated in individual Delphi panelists?	<p>Factor: Experience level</p> <p>Variables:</p> <ol style="list-style-type: none"> 1. Composite experience level, including: <ul style="list-style-type: none"> • Years nurse practitioner experience 	<p>Proficient experts will have less than 5 years' experience <i>and less than</i> the median number of the following professional activities¹ demonstrated by the DS1 sample:</p> <ul style="list-style-type: none"> • Publishing • Mentoring 	<p>A self-rated measure of expertise positively correlates to the composite experience level variable.</p> <p>Experienced experts will change their opinions less across Delphi rounds.</p>

	<ul style="list-style-type: none"> • Publishing • Mentoring • Presenting • Invited Speaker • Representative <p>2. Subjective self-rated expertise</p>	<ul style="list-style-type: none"> • Presenting • Invited Speaker • Representative <p>Experienced experts will have more than 5 years' experience and more than or equal to the median number of the above professional activities.</p>	<p>Proficient experts will change their opinions more across Delphi rounds.</p>
D. What effect does experience level have on decision-making in Delphi panelists?	<p>Factor: Egocentric Discounting</p> <p>Variables:</p> <ul style="list-style-type: none"> • Opinion change • Experience level (<i>composite</i>) • Self-rated expertise (<i>subjective</i>) 	<p>When an individual panelist refuses to change their opinion on a matter based upon perception or objective evidence they have greater expertise than others, even when their own opinions may not reflect reality (Sniezek et al., 2004).</p>	<p>Experienced experts would be expected to demonstrate low opinion change relative to the panel across Delphi rounds, as their depth of experience would theoretically lend to greater insight into the metaspecialties, resulting in less opinion change.</p> <p>Proficient experts would be expected to demonstrate high opinion change relative to the panel across Delphi rounds, because of their relative lack of experience. If a proficient expert changes their opinions less, they are exhibiting egocentric discounting.</p>
E. Does confidence relate to opinion change in Delphi panelists?	<p>Factor: Panelist Confidence</p> <p>Variables:</p> <ul style="list-style-type: none"> • Sum confidence in decisions made • Opinion change 	<p>How certain a panelist is in relation to their relevancy ratings of discrete metaspecialties within DS1.</p>	<p>More confident panelists will change their opinions less.</p> <p>Less confident panelists will change their opinions more.</p> <p>These findings would be expected; given a panelist is confident in their opinion they would be unlikely to change it.</p>
F. What effect does panel composition have on consensus outcomes?	<p>Factor: Panel Composition</p> <p>Variables:</p> <ol style="list-style-type: none"> 1. i-CVIs for the following metaspecialty names in rounds one and two: <ul style="list-style-type: none"> • Mental Health Care 	<p>Heterogeneous panels demonstrate diverse skills, knowledge and expertise relating to the research question. Due to its composition, new knowledge can be generated and novel viewpoints may be offered for panelist consideration.</p>	<p>A homogeneous panel consisting only of experienced nurse practitioners will theoretically have differing consensus outcomes on the metaspecialties compared to a panel containing only proficient nurse practitioners in round one.</p> <p>When given feedback from both panels in round two, panelists will have access to new information, resulting in the generation of new knowledge.</p>

	<ul style="list-style-type: none"> • Emergency and Acute Care • Aged and Palliative Care • Primary Health Care • Child and Family Health Care <p>2. Experience level (<i>composite</i>)</p>	<p>Homogeneous panels demonstrate similar skills, knowledge and expertise relating to the research question. Due to its composition, the panel is unable to generate new knowledge or viewpoints for consideration.</p>	<p>Five activities representing differing facets of nurse practitioner professional practice might be used to demonstrate responses from a heterogeneous panel.</p>
<p>1. For a full explanation of these five professional activities, refer to Chapter 3 under the heading <i>Experience Level</i>.</p>			

The Confidence Heuristic

Two approaches were used to measure panelist confidence, enabling evaluation of the potential effect of the confidence heuristic on opinion change in our sample of panelists in DS1. Confidence measures collected during the survey were not fed back to panelists, to reduce the potential for informational social influence. The first approach, termed ‘baseline confidence’ was used to determine if an internal panelist characteristic determined panelist confidence and opinion change. Baseline confidence was measured using a composite variable consisting of seven measures, adapted from a Delphi survey conducted by Scheibe et al. (2002). These measures established the panelists’ reported baseline confidence before embarking in Delphi research (Scheibe et al., 2002). Wording from the original composite variable was not specific to nurse practitioners, so each item within the composite variable was modified slightly to be more relevant to nurse practitioners. The wording of these variables was piloted using a 10-member panel consisting of nurse practitioners, nursing academics and nursing researchers. No additions, deletions or modifications to the wording were requested (See Table 5:2). During Round one each of the seven measures were recorded using a 9-point scale. The mean inter-item correlation was determined to establish the internal validity of the composite baseline confidence variable.

Table 5:2 Variables Measuring Composite Baseline Confidence in Nurse Practitioners

Variable*	
1.	<i>As a nurse practitioner, my clinical expertise would put me about here, relative to other nurse practitioners.</i>
2.	<i>I think my ideas are, in essence, in agreement with the rest of nurse practitioners in my field.</i>
3.	<i>I know most of the nurse practitioners in my field very well.</i>
4.	<i>I have some definite ideas about how nurse practitioner metaspecialties should be defined.</i>
5.	<i>I have been in nursing for longer than most other nurse practitioners.</i>
6.	<i>I have a lot of experience working clinically as an endorsed nurse practitioner.</i>
7.	<i>I am anticipating that this study is going to be a good thing for Australian nurse practitioners.</i>
* Variables adapted from a study conducted by Scheibe, Skutsch & Schofer (2002) to be more relevant to nurse practitioners.	

The second approach measured ‘panelist confidence’ in decisions made while the Delphi study was conducted, that is, over time. Each time a panelist rated the relevancy of the CLLEVER metaspecialties, a 3-point Likert scale (Very Unsure, Fairly Confident but not Certain, Very Confident) was used to establish how confident they were in their opinions. The question used to obtain data on panelist confidence had been reported in prior Delphi research, and was available in the public domain (Adelson & Aroni, 2002). A sum panelist confidence variable was calculated by adding the confidence variables up for each panelist’s metaspecialty ratings across rounds. To facilitate interpretation of data, responses were categorised into ‘Low, Medium and High Panelist Confidence’ relative to the sample, by taking the range of the sample sum panelist confidence and dividing by three. An analysis

of extremes in panelist confidence in decision-making (Low, High) was undertaken. These data were analysed using descriptive statistics.

To determine if the confidence heuristic resulted in increased opinion change for individual experts, sum panelist confidence was correlated with sum opinion change. If a panelist changed their initial round one relevancy rating to a lower rating in round two (e.g. from Highly Relevant to Not Relevant), it indicated opinion change had occurred. Those who had strengthened their initial round one opinions (e.g. Quite Relevant to Highly Relevant) were excluded from analysis, as the confidence heuristic is dependent upon *changing* opinion as opposed to *strengthening* it. The sum number of times a panelist changed their initial opinion to that of less relevance was reflected in a variable called 'sum opinion change'. To facilitate data analysis, the range of sum opinion change (i.e. all those who had *not* strengthened their opinions) was divided by three and categorised as 'Low, Intermediate, and Frequent Opinion Change'. Kendall's tau-b was used to correlate sum panelist confidence with sum opinion change, as it provides "a better estimate of the true population correlation than Spearman rank-order correlation coefficient, as it is not artificially inflated by multiple tied ranks" (Allen & Bennett, 2010, p. 277).

In addition, sum panelist confidence was correlated to self-rated expertise and experience level using Kendall's tau-b. This was done to evaluate whether the study could replicate findings from Rowe and Wright (1996) and Rowe et al. (2005), who demonstrated no relationship between confidence and expertise.

Egocentric Discounting and Panelist Experience

Panelists were asked to self-rate their clinical expertise in round one of DS1 using a 9-point scale (See Chapter 3: *Delphi Survey 1 Instrument*). In addition, during round one of DS1, data were gathered from panelists' responses relating to their experience level (a composite objective measure explained in the sections of Chapter 3 titled: *Experience Level* and *Demonstration of Expertise and Experience Level*). Those panelists who had either less than 5 years' post-endorsement experience, or less than the median number of demonstrated professional activities by the sample, were removed from further analysis. This made the experience level variable a categorical variable, which used 'proficient' and 'experienced' nurse practitioners for data analysis. Both experience level and self-rated expertise were correlated using Rank-Biserial correlations to evaluate whether there was a correlation between these two measures. This analysis was performed because others (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005) have shown a positive correlation between self-rated expertise and objective evidence of expertise.

Sum opinion change was correlated with experience level and self-rated expertise using a Rank-Biserial correlation to determine the presence of egocentric discounting. Egocentric discounting was

demonstrated if experts had low experience relative to others, but had low opinion change. If those panelists had high levels of objective and subjective expertise, but low opinion change, they were not demonstrating egocentric discounting.

Five professional activities of nurse practitioner practice relating to the composite experience level variable (See Table 3:1) were analysed for internal validity, using the mean inter-item correlation, as there were less than ten items representing the five professional activities of nurse practitioner practice (DeVellis, 2003). The optimal range for the mean inter-item correlation should be 0.2–0.4 to demonstrate internal validity (Allen & Bennett, 2010). These professional activities were then used to demonstrate heterogeneity of professional practice experience informing the final specialist clinical learning and teaching framework.

The Effect of Panel Composition on Consensus

The definition of consensus for the purposes of this data analysis was 85% majority opinion using the item-level content validity index (i-CVI). The i-CVI for each of the metaspecialties was the group consensus measure fed back to panelists during round two. The dichotomous ‘experience level’ variable created two groups of experts within the study. These groups were correlated with the i-CVI for each metaspecialty in round one and two, using the Mann-Whitney *U* test to determine if experienced panelists would have had differing consensus outcomes than proficient panelists. Those panelists in the ‘other’ experience level category were excluded from this analysis.

Ethical Considerations

This research was approved by the Australian Catholic University Human Research Ethics Committee (HREC Register Number 2013 174N). Consent was implied through survey completion. Demographic categories (area, locality, setting and location of employment) were aggregated to protect individual identities. For further information regarding ethical considerations, please refer to Chapter 3.

Results

In total, the combination of convenience and snowball sampling in DS1 resulted in 270 expressions of interest, with 73% (197) eligible participants retained across all three rounds of the Delphi study. Detailed reporting of survey response rates, participant demographics and professional characteristics from DS1 have been previously described in Chapter 4 and can be found in the peer-reviewed literature (Helms et al., 2017). The following results are based on a final sample of 197 participants. Panelists stated they performed a median of three nurse practitioner professional practice activities (max. 5, min. 0), with the most commonly-reported activity being a preceptor or mentor for a nurse practitioner or student nurse practitioner (73%; $n=144/197$ responses) and the least common activity reported as publishing in a peer-reviewed journal (38%; $n=75/197$). Table 5:3 provides an overview of participant demographics and characteristics compared to experience level. The composite experience level

separated Delphi panelists into three groups: 'proficient,' 'experienced,' and 'other' experts. Those panelists fitting in the 'other' category were excluded from data analysis. When examining experience level, 60% (n=117/197) of panelists belonged to either the 'proficient' or 'experienced' categories. When examining extremes in panelist confidence, 48% (n=95/197) of panelists belonged to either the 'low' or 'high' categories. The 'other' category of experience level in the table below is included for comparison purposes only.

Table 5:3 Nurse Practitioner (NP) Demographics Relating to Experience Level

	Proficient NP		Experienced NP		Other NPs		Total	
	<5 Years' Endorsement + <3 Professional Activities		≥5 Years' Endorsement + ≥3 Professional Activities		All others			
Years Nursing	n =	%	n =	%	n =	%	N=197	%
	47		70		80			
6-10	2	4.3	0	0.0	1	1.3	3	1.5
11-15	3	6.4	2	2.9	10	12.5	15	7.6
16-20	10	21.3	14	20.0	11	13.8	35	17.8
21-25	4	8.5	12	17.1	16	20.0	32	16.2
26-30	10	21.3	14	20.0	12	15.0	36	18.3
31-35	14	29.8	13	18.6	16	20.0	43	21.8
36-40	4	8.5	12	17.1	8	10.0	24	12.2
41-45	0	0.0	3	4.3	4	5.0	7	3.6
46+	0	0.0	0	0.0	2	2.5	2	1.0
Principal Role in Nursing	n	%	n	%	n	%	N	%
Clinician	44	93.6	63	90.0	74	92.5	181	91.9
Teacher or Educator	1	2.1	1	1.4	2	2.5	4	2.0
Researcher	0	0.0	3	4.3	1	1.3	4	2.0
Administrator	0	0.0	1	1.4	1	1.3	2	1.0
Other	2	4.3	2	2.9	2	2.5	6	3.0
Primary Employment Setting¹	n	%	n	%	n	%	N	%
Emergency and Admitted Acute Care ^a	16	34.0	32	45.7	41	51.2	89	45.2
Non-Admitted Care ^b	12	25.5	21	30.0	19	23.8	52	26.4
Primary Healthcare Practice ^c	14	29.8	5	7.1	11	13.8	30	15.2
Subacute and Non-Acute Care ^d	2	4.3	3	4.3	4	5.0	9	4.6
Other ^e	3	6.4	9	12.9	5	6.3	17	8.6
Employment Sector	n	%	n	%	n	%	N	%
Public	26	55.3	54	77.1	62	77.5	142	72.1
Private	21	44.7	16	22.9	18	22.5	55	27.9
Principal Area of Employment²	n	%	n	%	n	%	N	%
Critical Care and Emergency	9	19.1	17	24.3	14	17.5	40	20.3
General Practice/Medical Practice	10	21.3	4	5.7	9	11.3	23	11.7
Mixed Medical/Surgical ^f	4	8.5	6	8.6	12	15.0	22	11.2
Aged Care	7	14.9	5	7.1	6	7.5	18	9.1
Community Health	4	8.5	6	8.6	6	7.5	16	8.1
Mental Health	3	6.4	7	10.0	6	7.5	16	8.1
Other ^g	10	21.3	25	35.7	27	33.8	62	31.5
<p>1. Responses from a validated Health Workforce Australia (2012) question regarding practice setting were condensed into Independent Hospital Pricing Authority (2015) categories to protect participant identity.</p> <p>a. Includes those working in a hospital setting.</p> <p>b. Includes those working in mental health, drug and alcohol, outpatient or other community settings.</p> <p>c. Includes those working in aboriginal health services or locum private, general practitioner or other practice settings.</p> <p>d. Includes those working in residential aged care, mental health, hospice or other facilities.</p> <p>e. Includes those working in commercial/business service, tertiary education facility, correctional services, other government department or agency or other settings.</p> <p>2. Some responses from a validated Health Workforce Australia (2012) question regarding area of employment were condensed into categories to protect participant identity.</p> <p>f. Includes mixed medical/surgical, perioperative, medical and surgical.</p> <p>g. Includes education, family, maternal and child health, management, midwifery, paediatrics, rehabilitation and disability, research and other.</p>								

Panelist Confidence and the Confidence Heuristic

Baseline confidence measured in round 1 using the mean inter-item correlation was 0.186, indicating the seven measures adapted from prior research were not internally valid as a combined measure. Therefore, the second measure, panelist confidence, was the only measure used for data analysis. Overall there were moderate levels of panelist confidence with respects to their decision-making on the relevancy of the metaspecialty constructs. Thirty-one percent ($n=61/197$) of participants indicated they were 'very confident' of their relevancy ratings. Fifty-two percent ($n=102/197$) were 'fairly confident, but not certain' of their relevancy ratings and 17% ($n=34/197$) were very unsure of their overall ratings.

With respects to sum opinion change, panelists could change their opinions a maximum of eight times over the course of DS1. Most experts in this sample had low opinion change, with 67% ($n=131/197$) changing their opinion three or fewer times after receiving anonymised group feedback. A minority frequently changed their minds (that is, 7 or more times) after being provided group feedback (1%, $n=2/197$).

Across all participants, sum confidence in decisions made was negatively and weakly correlated with sum opinion change ($\tau=-0.234$, $p<0.001$, two-tailed, $N=197$). When examining the extremes in confidence in decision-making, 95 panelists fitted within one of two categories, low or high panelist confidence. There was a moderate and significant negative correlation with sum opinion change ($\tau=-0.342$, $p<0.001$, two-tailed, $n=95$).

When analysing only those categories belonging to the 'experienced' or 'proficient' experience level, there was no significant correlation between panelist confidence and experience level ($r_{rb}=0.085$, $p=0.363$, two-tailed, $n=117$). However, panelist confidence was positively, but weakly, correlated with self-rated expertise ($\tau=0.134$, $p=0.016$, two-tailed, $N=197$).

Professional Activities and Egocentric Discounting

The mean inter-item correlation for the combination of five professional nurse practitioner activities was measured at 0.219, indicating the activities were internally consistent as measures of heterogeneous nurse practitioner professional practice experiences.

When asked to self-rate their clinical expertise relative to other nurse practitioners in their field, the majority (56%, $n=110/197$) rated their expertise as 'High' and a small minority (8%, $n=15/197$) rated it as 'Low'. There was a moderate positive correlation between experience level and self-rated expertise ($r_{rb}=0.308$, $p<0.001$, two-tailed, $n=117$).

There was no significant correlation between experience level and opinion change ($r_{rb}=0.068$, $p=0.466$, two-tailed, $n=117$). There was no significant correlation between self-rated expertise and opinion

change ($\tau=-0.19$, $p=0.786$, two-tailed, $N=197$). No significant correlation was demonstrated between years nursing and composite expertise ($r_{pb}=0.108$, $p=0.248$, two-tailed, $N=117$).

The Bandwagon Effect and Panel Composition

There were high levels of consensus on round one of this Reactive Delphi study (See Table 5:4). Round two showed divergence of opinion from initial high consensus measures on two of the metaspecialties (Aged and Palliative Care, Care of Persons with Long Term Conditions).

A Mann-Whitney U test comparing the relevancy ratings of metaspecialty constructs by ‘proficient’ ($n=47$) and ‘experienced’ ($n=70$) nurse practitioners was performed across rounds one and two. There were no significant differences in relevancy ratings between groups across all metaspecialties in round one. During round two there were again no significant differences between groups, except experienced nurse practitioners ($Mean Rank = 61.86$, $n = 70$) rated the mental health metaspecialty construct higher than proficient nurse practitioners did ($Mean Rank = 54.74$, $n = 47$), $U = 1445.00$, $z = -1.977$ (corrected for ties), $p = 0.048$, two-tailed. Follow-up analysis using Cohen’s conventions revealed the effect size is described as “small” ($r = 0.182$) (Allen & Bennett, 2010, p. 241).

Table 5:4 Consensus on Metaspecialty Constructs through Majority Opinion

Metaspecialty Construct	Round 1 CVI% ^a	Round 2 CVI%
Emergency and Acute Care	98	94
Child and Family Health Care	86	85
Mental Health Care	95	98
Primary Health Care	95	97
Aged and Palliative Care	97	63 ^b
Care of Persons with Long Term Conditions	91	41 ^b
b. A validated metaspecialty construct achieved a stable Content Validity Index (CVI) of 85% or greater across two sequential rounds. c. These two metaspecialties, along with alternative proposed names and constructs, underwent further analysis in a third round.		

Discussion

To my knowledge, this is the first empirical research exploring the bandwagon effect, the confidence heuristic and egocentric discounting in Reactive Delphi research. My review of the literature suggests this is also the first research describing an experience level in nurse practitioners, for the purposes of comparing consensus outcomes using differing groups within a Delphi panel. In addition, this is the first study suggesting how panel heterogeneity could be demonstrated in Delphi research using five activities of nurse practitioner professional practice. In this sample, these professional activities were shown to be internally valid measures of panel heterogeneity in Australian nurse practitioners.

The Bandwagon Effect

There are two possible manners through which the bandwagon effect might have exerted its social influence during DS1: one that confers a negative form of informational social influence, and one that

confers a positive form of informational social influence. As Chapter 3 reveals, not all influence from the bandwagon effect is negative when using Delphi methodology. The bandwagon effect has been shown to increase accuracy of consensus outcomes determined from Delphi research (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005). Alternatively, the bandwagon effect might influence panelists in the first round of Reactive Delphi research to conform to the presented information, as opposed to 'thinking outside the box', and presenting novel metaspecialty constructs for panel consideration (Keeney et al., 2001).

It was anticipated that negative social influence from the bandwagon effect would be present during DS1. During round one of DS1, panelists were asked whether the proposed metaspecialty names were relevant. If panelists felt they were not relevant, they were given opportunity to offer alternate names for panel consideration. They were also asked to propose any additional metaspecialty constructs they thought relevant. It was hypothesised that Reactive Delphi methodology might potentiate the bandwagon effect because pre-determined information was provided to panelists to inform decision-making at the outset of round one, as opposed to panelists critically appraising this information and generating new knowledge, by suggesting alternate metaspecialty names or constructs.

It was anticipated the positive social influence attributable to the bandwagon effect in DS1 would pressure panelists to conform to group majority opinion. Group consensus measures indicating majority opinion were determined by the i-CVI for any of the proposed metaspecialties in DS1. If an individual panelist held a minority opinion regarding a metaspecialty name, they might demonstrate the bandwagon effect by changing their minority opinion to assimilate into majority opinion, once given group consensus measures and summarised panelist rationale. Without this positive form of social influence, the bandwagon effect would not occur and consensus would not otherwise be achieved in Delphi research.

In response to research Question A, the results from DS1 offer evidence the bandwagon effect provided a positive social influence on panelists. There is little evidence for negative social influence from the bandwagon effect in DS1. There was a high degree of consensus observed across all proposed metaspecialties after round one, with no new metaspecialty constructs offered by panelists. This observation alone might suggest negative social influence from the bandwagon effect. Evidence given by Rowe and Wright (1996) and Rowe et al. (2005) suggests that if no form of feedback were provided to panelists, and the rounds were simply 'iteration only' (e.g. by asking panelists to simply consider revising their responses across rounds), the high degree of consensus seen in round one would likely have sustained itself to achieve consensus across all six metaspecialties after round two. However, panelists were asked to provide rationale for their responses. Rationale were summarised and presented to the group at the start of round two, along with group consensus measures. The provision

of round two feedback was associated with the panel losing consensus (i.e. divergence of opinion) on two metaspécialties. This finding refutes the assumption that Reactive Delphi methodology perpetuates a negative form of social influence (Keeney et al., 2006). The same quality of feedback was provided to the Delphi panel on the remaining metaspécialty names, which resulted in those metaspécialties achieving a high degree of consensus. Thus, the positive influence of the bandwagon effect could be postulated to result in validation of four metaspécialties.

It appears the provision of panelist feedback at the beginning of round two was necessary for panelists to critically analyse the information presented during round one. Researchers have shown the provision of panelist rationale stimulates disagreement amongst experts, more so than the provision of group consensus measures or 'iteration only' studies (Bolger et al., 2011; Rowe & Wright, 1996; Rowe et al., 2005). Therefore, if no feedback had been provided to panelists in round two (i.e. iteration only), or if only group consensus measures were provided, it is more likely consensus would have been achieved on all six metaspécialties. These findings suggest the importance of providing panelist rationale, as well as group consensus measures, in Reactive Delphi research.

This research cannot support or refute the question of whether Reactive Delphi methodology potentiates the negative influence of the bandwagon effect. A different study design might answer this question, such as those methods described by Rowe and Wright (1996) and Rowe et al. (2005). Three independent panels conducted concurrently could be examined in a Reactive Delphi study. Each panel would have a differing condition: panel one would receive only iterative feedback; panel two would receive group consensus measures; and panel three a combination of group consensus measures and summarised panelist rationale. This type of study design would provide more robust evidence on whether the provision of pre-determined information in the first round of a Reactive Delphi process negatively influences the process. Such a design might resolve the question if differing feedback determines consensus outcomes, but was not practically feasible within the constraints of a doctoral program.

The Confidence Heuristic

The content and construct validity of Delphi research is dependent upon experienced experts to provide well-supported feedback that is not influenced by their confidence. Unlike other research, where the confidence heuristic was potentiated by informational social influence (Bolger et al. (2011), panelist confidence was not fed back to the Delphi panel during this doctoral research. Therefore, any indication of the confidence heuristic in this doctoral research would have been determined by normative social influence. Normative social influence would reflect an internal characteristic of the panelists, more so than informational social influence (Myers, 2013).

Three measures have been used in forecasting Delphi research to determine whether the confidence heuristic was present: panelist confidence, opinion change, and expertise (Rowe & Wright, 1996; Rowe et al., 2005). In response to research Question E, panelists exhibiting low confidence in their responses demonstrated greater opinion change through subsequent rounds in DS1. A measure of expertise was then needed to correlate with this finding, to establish whether the confidence heuristic was present. Rowe and Wright (1996) and Rowe et al. (2005) objectively demonstrated panelist expertise by measuring the accuracy of panelists' forecasts within a short completion timeframe of their forecasting Delphi research. In Reactive Delphi research, accuracy of opinions cannot be measured to demonstrate expertise. Therefore, two measures of expertise were needed to correlate to panelist confidence and opinion change: self-rated expertise (a subjective measure), and experience level (an objective measure). Self-rated expertise could have been used alone to correlate with panelist confidence and opinion change, but self-rated expertise has been viewed by some Delphi researchers as an unreliable measure (Tichy, 2004). Therefore, a self-rated measure of expertise was correlated to the objective measure (i.e. experience level) to evaluate whether they were positively correlated to one another. This analysis was performed to verify findings by others, which had identified that experts in forecasting Delphi studies were able to reliably self-rate their expertise (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005). In response to Question C, the results from this doctoral research revealed experience level was moderately and positively correlated to self-rated expertise. This finding re-affirms findings by others (Best, 1974; Rowe & Wright, 1996; Rowe et al., 2005; Tichy, 2004), which have demonstrated panelists who thought they were experts were objectively quite experienced.

In response to Question B, it does not appear the confidence heuristic was present during DS1. The results of self-rated expertise correlated to confidence reveal they were positively correlated to one another. This result would imply those panelists who self-rated their expertise as high were more confident in their opinions. Results also showed panelists who were more confident in their opinions demonstrated less opinion change. Therefore, those who self-rated their expertise as high also had high confidence in their opinions, resulting in low opinion change. Data analysis using a self-rated measure of expertise would imply the confidence heuristic was *not* present in this Delphi research. This finding questions Bolger and Wright's modelling (2011), which includes the confidence heuristic as a variable associated with opinion change in Delphi research. However, the results of this doctoral research indicated experience level (an objective measure of expertise) had no significant correlation with panelist confidence. This finding has been shown by other researchers examining panelist confidence and objective measures of expertise in forecasting Delphi research (Bolger et al., 2011; Rowe & Wright, 1996; Rowe et al., 2005). One would have expected a significant positive correlation between experience level and panelist confidence, which would have supported the above assertion

that the confidence heuristic was *not* present during DS1. It is likely additional internal panelist characteristics were captured by the self-rated expertise. Further research is needed to provide clarity on whether a self-rated measure of expertise is a better predictor for determining the presence of the confidence heuristic than an objective measure (such as experience level) of expertise. These findings provide a unique contribution to the literature, and bear consideration with other samples for future research examining the confidence heuristic in Delphi research.

Egocentric Discounting

The presence of egocentric discounting in this sample was defined as panelists demonstrating low opinion change in the *absence* of demonstrable experience relative to others. In response to Question D, analyses of data reveal neither self-rated expertise nor experience level correlated to opinion change in this Reactive Delphi research. This finding supports that of Bolger et al. (2011), who demonstrated there was no significant relationship between expertise and opinion change in their Delphi research, in contrast to Rowe and Wright (1996) and Rowe et al. (2005) who showed there was an inverse relationship between opinion change and expertise. However, both demonstrated egocentric discounting was *not* present in their Delphi studies. It appears the combined findings of this doctoral research and the above studies lends strong support to the statement that egocentric discounting does not occur in Delphi research. This finding supports the internal validity of consensus outcomes determined by Delphi research. For this study, it implies proficient nurse practitioners are therefore reflecting upon feedback provided by more experienced nurse practitioners, and are amending their responses.

Panel Composition

The combined five professional activities were an internally valid indicator of heterogeneous professional practice in Australian nurse practitioners. These activities served as a quick and efficient means of identifying differing facets of expertise that mirror characteristics of advanced practice nursing (Hutchinson et al., 2014). They assisted in demonstrating heterogeneity of experience in a large sample of nurse practitioners. The professional activities combined with panelist demographics demonstrated a diverse range of professional experiences, along with contexts of practice and specialty areas informing the outcomes of DS1. These perspectives greatly enhance the generalisability of DS1 consensus outcomes.

The combination of professional activities with years endorsed as a nurse practitioner created a composite measure of experience level in nurse practitioners. Although Australian nurse practitioners are very experienced clinicians prior to becoming endorsed into the role, their relative lack of experience practising would place them in the 'proficient' category as a newly-endorsed nurse practitioner. Experience level allowed me to establish whether there were differences in consensus

outcomes (e.g. relevancy ratings) between 'proficient' and 'experienced' nurse practitioners. In response to Question F, no significant differences were identified in relevancy ratings provided by proficient or experienced nurse practitioners for any of the metaspecialties identified in round one of DS1. Group consensus measures and summarised panelist rationale from both proficient and experienced groups were combined and given to the groups during round two. During round two, there was a small but statistically significant difference in how experienced and proficient nurse practitioners rated the Mental Health Care metaspecialty name. It is possible this difference was identified because panelists representative of the Mental Health Care metaspecialty were under-represented in the proficient group. The collected data did not allow for this difference to be verified. It is also possible the provision of panelist rationale from the experienced group triggered disagreement amongst the proficient group during round two. This would not be unexpected, as others (Bolger et al., 2011; Rowe et al., 2005) had identified that the provision of rationale triggers disagreement amongst experts. Overall, the results are unclear as to whether there is value in using a heterogeneous or homogeneous panel to determine consensus outcomes in Reactive Delphi research. More research is needed to verify if experience level was an internally valid measure used to establish whether a group was heterogeneous or homogenous.

Delphi purists and critics such as Sackman (1974) have argued that inability to qualify experience and expertise is a major limitation to the validity of the methodology, with only 'true experts' providing valid opinion contributing towards Delphi outcomes. This doctoral research presents compelling evidence that no difference exists in the relevancy ratings (i.e. consensus) of proficient or experienced groups in the first round of a Reactive Delphi survey. High levels of majority opinion (i.e. greater than or equal to 85%) were required to validate the metaspecialty names through subsequent rounds. A significant difference was identified in how proficient and experienced experts rated the Mental Health Care metaspecialty in round two. However, despite these differences, both groups would have achieved consensus on that metaspecialty name given the *de novo* consensus definition. These findings provide an interesting juxtaposition to results published by others (Brookes et al., 2016; Campbell et al., 1999), who have identified significant differences in consensus outcomes when comparing two differing panels. However, those researchers used different research designs in comparison to what was used here. This doctoral research suggests proficient experts may have the same ability to critically analyse information presented to them in the first round of a reactive Delphi as experienced experts. It is possible a differing research design would facilitate the ability to draw comparisons to findings published by Brookes et al. (2016) and Campbell et al. (1999).

Strengths and Limitations

As previously reported, this was a large, heterogeneous and robust Delphi survey representing 20% of the total eligible nurse practitioner population, with low panel attrition and strong representation

demonstrated across all Australian states and territories, practice settings, locations, rurality and work areas (Helms et al., 2017). By not only reporting demographic information, but using an experience level, I demonstrated panel heterogeneity and provided face validity to these and previously reported results (Helms et al., 2017).

Although I aimed to establish baseline participant confidence prior to conducting the Delphi study, the composite measure of baseline confidence proposed by previous research revealed it was not internally valid and could not be used. Another measure of baseline participant confidence, perhaps through the measurement of self-esteem (Blascovich & Tomaka, 2013) or other psychometric measures, might lend insight into the conflicting confidence heuristic results.

There are factors contributing to opinion change other than those reported in this doctoral research. For example, the *degree* of opinion adjustment was not measured in this study. Opinion adjustment and its effect on consensus, known as the anchoring and adjustment heuristic (Yaniv & Choshen-Hillel, 2012), is unknown in this research. In addition, it is not known if both qualitative and quantitative feedback is required across *each* iteration of a reactive Delphi study to enhance its validity. An approach whereby panelists provide teleological rationale after each round may be problematic, as it may not encourage consensus but rather perpetuate disagreement.

Summary

This was the first study exploring how factors such as the bandwagon effect, confidence heuristic, egocentric discounting and panel composition might influence consensus outcomes determined by Reactive Delphi research. This is also the first research describing such factors in Delphi research using nurses. Findings suggest the negative social influence of the bandwagon effect in Reactive Delphi research is mitigated for by the provision of panelist rationale across rounds. Therefore, the provision of panelist rationale in Reactive Delphi research is an important quality consideration to enhance the internal validity of consensus outcomes. This research suggests the confidence heuristic and egocentric discounting are *not* present in Reactive Delphi research, which supports the internal validity of consensus outcomes determined by this research. Further research is needed to provide clarity on whether a self-rated measure of expertise is a better predictor for determining the presence of the confidence heuristic than an objective measure (such as experience level) of expertise. This doctoral research questions the requirement for only 'experienced experts' as panelists in Reactive Delphi research. It appears that proficient and experienced nurse practitioners would have established the same consensus outcomes on the metaspecialty names, although a differing research design would have lent clarity to this question. Keeney et al. (2006), as well as others, have voiced concern that a Reactive Delphi Technique, where participants are given pre-determined information in round one, would bias and limit available options. Reassuringly, the research reported here suggests this is not

the case when using Reactive Delphi methodology, if appropriate precautions are taken. Such precautions would include: eliciting teleological rationale for individual opinion in the first round; providing ample opportunity to suggest alternative approaches to the research question; the structured reporting of both qualitative and quantitative feedback to participants during the second round, and ensuring panel heterogeneity is safeguarded.

An important and unexpected benefit of ensuring panel heterogeneity in this Delphi research has revealed a manner by which expertise might be quantified in Australian nurse practitioners. Expertise might be quantified by using the composite experience level variable. This research suggests the transition from being a proficient to an experienced nurse practitioner is a measureable construct, and may be useful for ongoing research into the profession. Future research correlating role transition in nurse practitioners to clinical outcome data may be of interest.

Chapter 6 Proposed Australian Nurse Practitioner Specialty Clinical Learning and Teaching Framework

Introduction

Chapter 6 addresses Research Aim 1, and in particular Research Aim 1B, which was to validate supporting clinical practice standards for the metaspecialty taxonomy. This chapter provides results from DS2 and a small additional study (CDC) that informed the proposed clinical learning and teaching framework for Australian nurse practitioners. The primary aim of DS2 was to validate clinical practice standards established for each of the metaspecialties during Phase 1 of CLLEVER2. The results of DS2 are a key part of a nationally funded study in which this doctoral research was embedded. The main results will be published in a manuscript external to this thesis, of which I am a co-author. The draft summary for that manuscript can be found in Appendix Z.

Chapter 6 begins with background information from DS1 that informed the conduct of DS2. It then focuses on my three primary contributions to DS2 and the proposed clinical learning and teaching framework. First, it discusses my contributions to the conduct of DS2. Additional results not provided in the manuscript mentioned above will be presented in this section of the chapter. Second, it discusses my contribution as a co-convener for a Consensus Development Conference. Results from the CDC will be presented in that section of Chapter 6. Third, a synthesis of findings from DS1, DS2 and the CDC will be presented. This chapter concludes with presentation of a proposed clinical learning and teaching framework for Australian nurse practitioner students.

The Validated and Un-Validated Metaspecialties

The CLLEVER study originally defined a metaspecialty as a 'broad grouping of specialties'. However, before DS1 had been conducted I identified the need for an expanded definition of the metaspecialty construct, to inform DS1 panelists of the construct's breadth and depth. I proposed the wording for this expanded definition, which was refined by the CLLEVER2 investigative team as follows: "A metaspecialty groups nurse practitioner specialties that have similar skillsets, knowledge and/or expertise, which comprehensively reflect the diverse healthcare needs of population groups."

The results of DS1 have been described in Chapter 4. In brief, DS1 used a large sample of Australian nurse practitioners working across diverse specialty areas, roles, contexts and locations of practice to validate the six CLLEVER metaspecialties (Helms et al., 2017). Four metaspecialties were validated after the second round of DS1. Two metaspecialties remained 'un-validated' after the third and final round: '*Aged and Palliative Care*' (APC) and '*Care of Persons with Long Term Conditions*' (CPLTC). From qualitative feedback, it appeared as if the DS1 expert panel did not agree with the *names* of the un-validated metaspecialties (i.e. APC and CPLTC), as opposed to the constructs they represented. It was

also unclear whether panelists thought the APC metaspecialty represented one or two distinct metaspecialty constructs.

It was hoped further insight could be gained from validation of clinical practice standards belonging to each of the un-validated metaspecialties. The CLLEVER2 investigative team and I determined provisional operational definitions for each metaspecialty, informed by draft clinical practice standards established in unpublished work from Phase 1 of CLLEVER2. These provisional definitions were given as background information to panelists at the beginning of Delphi Survey 2 (See Appendix U for provisional definitions for individual metaspecialties).

Based upon the robust panelist response and retention rates from DS1, I anticipated a large sample would result from panelist recruitment for DS2. I designed DS2 to conduct six concurrent Delphi surveys, which were nested within a larger study. Each Delphi survey was representative of one of the six metaspecialties previously identified in the CLLEVER study; four of which were validated in DS1. The six concurrent Delphi studies were conducted quickly and efficiently, to minimise panelist burden and decrease survey attrition rates. To prepare for the volume of generated qualitative data expected from panelists during round one of DS2, an efficient means of quantifying rationale for panelists' responses was needed, which would supplement qualitative data generated by panelists.

Objective

To describe how panelist feedback was managed during six concurrent Delphi studies.

Methods

Given panelists may have not understood the scope and definition of the un-validated metaspecialty constructs, and to provide insight into whether APC was a single or two distinct metaspecialty constructs, the CLLEVER2 investigative team elected to use both the validated and un-validated metaspecialty names during DS2. Panelists were given the opportunity to provide feedback on clinical practice standards on up to two metaspecialties during DS2, which included the four validated and two un-validated metaspecialties identified from DS1. Advanced web-based survey techniques were required so each panelist had, in effect, an individualised survey. Embedded data (See Chapter 3) were used so panelists could choose amongst six different Delphi studies nested within a single research project. Once an individual panelist chose up to two metaspecialties corresponding to the relevant Delphi study(s), they were only shown information relevant to that study(s) in subsequent rounds. The use of embedded data focused relevant feedback to individual panelists, and reduced the reading each panelist had to complete before progressing to the next stage of the survey.

The web-based survey tool used in DS2 used a responsive design. Panelists were able to rate the relevancy of each clinical practice standard for their elected metaspecialty(s) during DS2 using a 4-point Likert scale. The 4-point Likert scale used to calculate the i-CVI for each clinical practice standard

dichotomises responses into 'relevant' and 'not relevant' (Polit, 2016). When a panelist identified overall disagreement with a clinical practice standard (i.e. they stated 'Not' or 'Somewhat Relevant'), they were shown a question that asked them to identify one or more 'pre-prepared' rationale for their relevancy rating. Pre-prepared rationale were based upon content analysis of responses obtained from panelists during DS1 (See Table 6:1). An open text box was provided if the pre-prepared rationale were not relevant to individual panelists. If a panelist identified overall agreement with a clinical practice standard (i.e. they stated 'Quite' or 'Highly Relevant'), they were shown a different question, which asked them to identify different pre-prepared rationale for their response. Again, an open text box was provided if the pre-prepared rationale were not relevant to individual panelists. During round two, quantitative data generated by panelists' responses to the pre-prepared rationale were summarised in graphical format for each clinical practice standard (See Appendix R), to see how this appeared to panelists.

Table 6:1 Pre-Prepared Rationale Based Upon 'Relevant' or 'Not Relevant' Responses by Panelists

Relevant	Not Relevant
<ul style="list-style-type: none"> • Reflective of generalist skillset in metaspecialty • Will have increasing relevancy as role evolves • Broadly reflects Skills, Knowledge and Expertise for metaspecialty • Applies to wide range of specialties in metaspecialty • Needs minor rewording 	<ul style="list-style-type: none"> • Not relevant to metaspecialty definition • Statement belongs in a different metaspecialty • Statement too specific • Is relevant to specialty, not metaspecialty • Too advanced for entry-level practice • Too aspirational for the profession • Needs major rewording

Two additional semi-structured questions were provided at the end of each metaspecialty construct, before advancing to clinical practice standards relevant to the next metaspecialty (if they had elected to provide feedback on more than one). Data were collected using open text boxes. Panelists were asked to consider whether there were additional clinical practice standards for the metaspecialty that had not been previously identified. They were also asked to identify if any clinical practice standards relevant to that metaspecialty could be combined. These data were recorded, summarised and fed back as 'Investigator Feedback' specific for each clinical practice standard.

Results

A high degree of consensus was achieved across all clinical practice standards representative of the six metaspecialties in Delphi Survey 2 (See Appendix Z). The results in this section relate to the conduct of six Delphi studies conducted simultaneously, and how rationale supplied by panelists informed the clinical practice standards resulting from the conduct of DS2. Results presented below are based upon round two data for DS2 only. Although DS2 consisted of three rounds, results presented from round three would not be representative of the entire sample. One clinical practice standard from the

Emergency and Acute Care (EAC) metaspecialty required an additional round after receiving feedback from panelists during round two. Only those nurse practitioners providing feedback on clinical practice standards for the EAC metaspecialty construct (n=75) could provide feedback during round three.

Table 6:2 provides a complete summary of panelist demographics and characteristics from round two of DS2 for each metaspecialty. Two hundred and five panelists completed round two. Most DS2 panelists worked in the public health sector (71%; n=146/205), whereas 28% (n=57/205) worked in the private sector. There was a total of 317 recorded responses across all metaspecialties. Therefore, 55% of round two panelists had elected to provide feedback on two metaspecialties (n=112/205).

The following analysis is provided, based upon 55% of panelists contributing to two metaspecialties, whereas the remaining sample contributed feedback on one of the DS2 metaspecialties. Differences were identified in the elected metaspecialty(s) and panelist demographics. The *Primary Health Care* (PHC) metaspecialty construct had the most panelists (n=84) providing feedback on its clinical practice standards. Of the metaspecialties, those who had elected to provide feedback on clinical practice standards for PHC had the largest proportion working in the private health sector (43%; n=36/84). The largest proportion of nurse practitioners who had elected the *Care of Persons with Long Term Conditions* (CPLTC) metaspecialty worked in the public health sector (82%; n=60/73). Those that had elected to provide feedback on the *Mental Health Care* (MHC) metaspecialty clinical practice standards had been RNs for the longest duration of time (median 33 years). Panelists were well-represented across all Australian states and territories. The largest proportion of nurse practitioners providing feedback on the PHC (31%, n=26/84), EAC (28%, n=21/75), CPLTC (33%, n=24/73), and *Child and Family Health* (CFH) metaspecialties (44%, n=10/23) were from Queensland. The largest proportion of nurse practitioners providing feedback on the *Aged and Palliative Care* (APC) metaspecialty were from Victoria (30%, n=12/40). The largest proportion of respondents for the MHC metaspecialty clinical practice standards were tied between Victoria and New South Wales (32%, n=7/22).

An analysis of clinical specialty area according to elected metaspecialties was performed. This analysis revealed 'Other' was the most frequently used descriptor, with the exception of the *Emergency and Acute Care* metaspecialty. In that metaspecialty, the largest cohort of nurse practitioners stated they were working in the 'Critical Care and Emergency' specialty area (53%; n=40/75).

In DS2 individual nurse practitioners were asked if they had demonstrated one or more of the five heterogeneous activities representative of nurse practitioner professional practice. Those nurse practitioners who had elected to provide feedback on the CPLTC metaspecialty clinical practice standards had the highest proportion of activities relating to the following: serving on an international, national or state/territory-based committee as a representative of the nurse practitioner profession (52%, n=38/73); publishing in a peer-reviewed journal on topics relating to clinical practice or

professional issues (48%, n=35/73); being an invited speaker at an international, national or state/territory conference, regarding clinical practice or professional issues (73%, n=53/73); and presenting a poster at an international, national or state/territory conference regarding clinical practice or professional issues (74%, n=54/73).

Those nurse practitioners who had provided feedback on the MHC clinical practice standards included the highest proportion stating they had served as a supervisor, preceptor or mentor for a nurse practitioner or student nurse practitioner (86%, n=19/22). Across all metaspecialties and professional activities, those who had elected to provide feedback on clinical practice standards for the APC metaspecialty had the lowest proportion of panelists who stated they had published in a peer-reviewed journal on topics relating to clinical practice or professional issues (28%, n=11/40).

Table 6:2 Demographic and Professional Profile of Delphi Survey 2 Round 2 Respondents by Metaspecialty

Respondent Characteristic	PHC (%)	EAC (%)	CPLTC (%)	APC (%)	CFH (%)	MH (%)	Total (%)
Number of Respondents	84 (41.0)	75 (36.6)	73 (35.6)	40 (19.5)	23 (11.2)	22 (10.7)	205 (100.0)
Employment Sector							
Public Sector	46 (54.8)	61 (81.3)	60 (82.2)	24 (60.0)	14 (60.9)	16 (72.7)	146 (71.2)
Private Sector	36 (42.9)	14 (18.7)	13 (17.8)	15 (37.5)	8 (34.8)	6 (27.3)	57 (27.8)
Not Employed or Retired	2 (2.4)	0 (0.0)	0 (0.0)	1 (2.5)	1 (4.3)	0 (0.0)	2 (1.0)
Years as a Nurse Practitioner (median)	4.5	5.0	5.0	4.0	4.0	5.0	5.0
Years as a Registered Nurse (median)	31.0	28.0	31.0	30.0	28.0	32.5	30.0
Principal Area of Main Nursing Job							
Critical Care & Emergency	10 (11.9)	40 (53.3)	3 (4.1)	0 (0.0)	4 (17.4)	0 (0.0)	40 (19.5)
Community Health	18 (21.4)	3 (4.0)	12 (16.4)	2 (5.0)	3 (13.0)	0 (0.0)	24 (11.7)
GP	21 (25.0)	5 (6.7)	2 (2.7)	0 (0.0)	5 (21.7)	2 (9.1)	22 (10.7)
Mental Health	6 (7.1)	0 (0.0)	4 (5.5)	0 (0.0)	1 (4.3)	17 (77.3)	19 (9.3)
Other*	29 (34.5)	27 (36.0)	52 (71.2)	38 (95.0)	10 (43.5)	3 (13.6)	100 (48.8)
State or Territory							
QLD	26 (31.0)	21 (28.0)	24 (32.9)	9 (22.5)	10 (43.5)	2 (9.1)	55 (26.8)
NSW	19 (22.6)	12 (16.0)	16 (21.9)	11 (27.5)	4 (17.4)	7 (31.8)	45 (22.0)
VIC	10 (11.9)	14 (18.7)	12 (16.4)	12 (30.0)	5 (21.7)	7 (31.8)	40 (19.5)
WA	17 (20.2)	13 (17.3)	6 (8.2)	1 (2.5)	3 (13.0)	1 (4.5)	26 (12.7)
SA	7 (8.3)	10 (13.3)	6 (8.2)	4 (10.0)	0 (0.0)	3 (13.6)	22 (10.7)
ACT, TAS & NT	5 (6.0)	5 (6.7)	9 (12.3)	3 (7.5)	1 (4.3)	2 (9.1)	17 (8.29)
Have served on state committees (% yes)	38 (45.2)	35 (46.7)	38 (52.1)	19 (47.5)	9 (39.1)	10 (45.5)	94 (45.9)
Have published in peer-reviewed journals	27 (32.1)	33 (44.0)	35 (47.9)	11 (27.5)	9 (39.1)	8 (36.4)	79 (38.5)
Have been invited speaker at conference	48 (57.1)	40 (53.3)	53 (72.6)	25 (62.5)	12 (52.2)	11 (50.0)	122 (59.5)
Have presented paper or poster at conference	53 (63.1)	47 (62.7)	54 (74.0)	27 (67.5)	15 (65.2)	15 (68.2)	139 (67.8)
Have served as supervisor for nurse practitioner or nurse practitioner student	58 (69.0)	62 (82.7)	55 (75.3)	28 (70.0)	17 (73.9)	19 (86.4)	157 (76.6)
APC: Aged and Palliative Care; CFH: Child and Family Health; CPLTC: Care of People with Long Term Conditions; EAC: Emergency and Acute Care; MH: Mental Health; PHC: Primary Health Care							
* Includes aged care; education; family, maternal and child health; management; medical; midwifery; mixed medical/surgical; paediatrics; peri-operatives; rehabilitation and disability; research; surgical; other.							

Revision of Clinical Practice Standards

Panelists provided feedback on round one clinical practice standards for their elected metaspecialties. Feedback consisted of relevancy ratings, pre-prepared rationale for their ratings, and qualitative feedback from open text boxes. Quantitative data from the pre-prepared rationale were provided to panelists at the beginning of round two in graphical format (See Appendix R). Table 6:3 provides an example of pre-prepared rationale, with the greatest frequencies for clinical practice standards belonging to the PHC metaspecialty. For additional frequency tables, please refer to Appendix ii. The shaded areas represent the highest frequencies for pre-prepared rationale for those who had overall rated an individual clinical practice standard as relevant or not relevant. Those clinical practice standards with multiple shaded boxes in the relevant or not relevant areas represent equal frequencies. Standard 8 of the PHC metaspecialty did not have any panelists who overall rated that clinical practice standard as not relevant.

Table 6:3 Round 1 Pre-Prepared Rationale for Panelists' Responses to the Primary Health Care Metaspecialty Clinical Practice Standards

Primary Health Care Metaspecialty															
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Relevant															
Reflective of generalist skill set in metaspecialty															
Will have increasing relevancy as role evolves															
Reflects KSE ¹ required of this metaspecialty															
Applies to a wide range of specialty areas															
Needs minor rewording															
Not Relevant															
Not relevant to metaspecialty definition															
Statement belongs in different metaspecialty															
Statement too specific															
Is relevant to specialty, not entire metaspecialty															
Statement not unique to metaspecialty															
Too advanced for entry-level practice															
Too aspirational for the profession															
Needs major rewording															
1. Knowledge, Skills and Expertise															

After panelists provided round one feedback, these data were collated, analysed and summarised for panelists for the start of round two. Table 6:4 provides an example of summaries given at the start of DS2 round two for individual clinical practice standards for a given metaspecialty. After round two, all clinical practice standards for each metaspecialty had been validated, except for one clinical practice standard from the EAC metaspecialty. Panelists who had elected to contribute to the EAC metaspecialty were then invited to provide feedback on the one remaining un-validated clinical practice standard in a third and final round. Each panelist received a personalised message after the

clinical practice standards for their elected metaspecialty(s) had achieved consensus. It informed them all standards had been validated (See Appendix iii).

Table 6:4 Excerpts of Summaries of Delphi Survey 2 Round 1 Feedback and Proposed Changes to Standards for Panelist Review*

Round 1 Feedback	Excerpts of summaries	Example of changed wording for specific standards *	Rationale for changed wording
Child and Family Care	There were very high relevancy ratings for all proposed standards in this metaspecialty so very few changes have been made and no new standards added. A small number of respondents suggested that the terms 'neonate', 'infant' and 'adolescent' be added in several places where the term 'child' is used in specific standards. The addition of these terms to each standard would make them very lengthy, and the general feedback has been that brevity is preferred across the standards in all metaspecialties. The other general note was that the place of the father is often forgotten in this area of healthcare delivery. The research team agree and have used the term 'family' to be interpreted broadly for all significant carers.	<i>Standard 10</i> Demonstrates a high level of ability to convey information about complex health issues and provide comprehensive, individualised health education to child/family/carers including where there are linguistic, literacy, comprehension or other barriers to understanding	Phrase deleted to increase the distinction between Standards 9 & 10
Primary Health Care	There were very high relevancy ratings for most proposed standards in this metaspecialty so very few changes have been made and no new standards added. Standards 13 and 14 have been combined. Some suggested changes could be used to develop activities under each standard. For example, advice about travel health could be included as an activity under Standard 7.	<i>Standard 13</i> Collates and analyses assessment and treatment data that inform discharge plan or long term management plan <u>and initiates primary health care management plan based on latest evidence and person's lifestyle and social context</u>	12% of respondents suggested combining 13 & 14 and so Standard 13 now incorporates some details from Standard 14
Care of Persons with Long Term Conditions	There were very high relevancy ratings for most proposed standards in this metaspecialty so few changes have been made, no standards were combined and no new standards added. While there were several suggestions for combining standards there was no consistency about which standards should be combined and feedback was used to improve the exclusivity of each standard. In this metaspecialty, several respondents specifically argued that all standards were unique, for example, the	<i>Standard 4</i> In collaboration with person <u>and carers</u> , formulates plan for care and rehabilitation that addresses the whole person including facilitation of avenues for expression of grief regarding lost opportunities <u>where needed</u> and	Minor rewording to address two points of feedback: first about the important contribution of carers and second, about

	standards 'are reflective of what's necessary and subtle differences exist to highlight their individual importance'.	support to maintain maximum potential for independent living	'grief', that 'not all people feel this way'
Mental Health Care	There was a very high level of support for all proposed standards with very few recommendations for rewording. There were no consistent recommendations for combining standards or for new standards to be added, so none were deleted or added. There was feedback to suggest we include psychotherapy but we consider that this can be incorporated in the metaspecialty at the level of specific activities under some standards.	<i>Standard 4</i> Develops person centred, comprehensive care plan with person requiring mental health care <u>and their carer where appropriate</u>	Minor addition to address respondent feedback to acknowledge role of 'carer in some circumstances'
Emergency and Acute Care	The relevancy of several proposed standards was questioned by some respondents. It is important to remember this metaspecialty includes standards for nurse practitioners who are not emergency nurse practitioners, so some standards focus on acute inpatient care responsibilities. The majority of respondents for this metaspecialty were emergency nurse practitioners and the research team do not envisage that all nurse practitioners drawing on standards in this metaspecialty need to be able to demonstrate every standard. Please also remember that we intend these metaspecialty standards to complement the existing emergency nurse practitioner specialty standards (web link to O'Connell et al). No new standards have been added and two standards have been combined (Standard 5 and Standard 9 so the latter has been removed). A few respondents proposed other combinations and feedback has been used to clarify the uniqueness of each standard rather than combine.	<i>Standard 1</i> Conducts advanced physical assessment in <u>of people with emergencies emergency presentations or acute admissions</u>	Added phrase differentiates between this and Standard 2 in response to 10% who also suggested combining this with Standard 2
* An abbreviated version of this table will appear in the manuscript submitted from the ARC project research team.			

Discussion on Delphi Survey 2 Results

Delphi Survey 2 was a robust consensus-based research study that resulted in validation of clinical practice standards for their respective metaspécialties. It also resulted in a finalised metaspécialty taxonomy consisting of six validated constructs. The original taxonomy had consisted of six metaspécialty names, and had been partially validated during DS1 (Helms et al., 2017). Four metaspécialty names (i.e. EAC, PHC, MHC and CFH) had achieved the *a priori* consensus definition at the end of DS1, and were validated. Two other metaspécialty names, CPLTC and APC, had remained un-validated after DS1. The use of both the i-CVI (to establish consensus on the clinical practice standards) and the s-CVI (to establish the internal validity of standards informing a metaspécialty) provided robust evidence for six validated constructs informing the final metaspécialty taxonomy. Further evidence to support that conclusion will be provided in a manuscript, of which I am co-author, in a peer-reviewed journal. (See Appendix Z).

A representative sample of Australian nurse practitioners informed the results of DS2. The distribution of nurse practitioners across all Australian states and territories in DS2 was representative of published health workforce data at the time it was conducted (Nursing and Midwifery Board of Australia, 2016c). The sample representativeness across states and territories was also comparable to published data in DS1 (Helms et al., 2017). In addition, the specialty areas represented by nurse practitioners in both DS1 and DS2 are comparable.

There was good distribution of feedback on clinical practice standards across all metaspécialties. The results of DS2 indicate that the largest proportion of nurse practitioners who had elected to provide feedback on the CPLTC metaspécialty worked in the public health sector. The largest proportion of nurse practitioners providing feedback on the PHC metaspécialty worked in the private health sector. These results imply the final clinical learning and teaching model should be based upon the principle that clinical learning and teaching should be universal in its approach, to accommodate differing learning and teaching contexts. The results demonstrated an interesting pattern of distribution of elected metaspécialties across Australian states and territories. The largest proportion of nurse practitioners whose clinical practice included that of the APC metaspécialty were from Victoria. The largest proportion of nurse practitioners whose clinical practice included that of the MHC metaspécialty were from New South Wales. Further research is required to evaluate whether clinical learning and teaching in those states respectively facilitates clinical practice representative of the APC and MHC metaspécialties. Those nurse practitioners who had elected to provide feedback on the CPLTC metaspécialty had demonstrated the highest number and proportion of professional activities. This finding has face value, as a national workforce survey had shown the largest proportion of Australian nurse practitioners work in clinical fields encompassing the CPLTC metaspécialty (Middleton et al., 2011). The finding that these nurse practitioners reported the highest proportion of professional

activities reflects a growing maturity in clinical practice in that area. Nurse practitioners electing the MHC metaspecialty demonstrated the highest proportion who had mentored or supervised another nurse practitioner or nurse practitioner student. This finding suggests further research is needed to examine how mentoring and supervision is done for nurse practitioners whose clinical practice reflects that of the MHC metaspecialty, to perhaps replicate their success in different metaspecialty areas.

Strengths and Limitations

The use of metadata in DS2 indicated these data can be successfully used to conduct six concurrent Delphi studies. Their use facilitated individualised surveys in a large sample of nurse practitioners, and allowed the research to be conducted quickly and efficiently. The pre-determined rationale provided to panelists appears to have been successful in cutting down the amount of content analysis required for six concurrent Delphi studies. There was a limitation to the use of metadata, in that it created a level of complexity in analysing and reporting two levels of responses; that is, those nurse practitioners who had elected to provide feedback on one versus two metaspecialties. If such an approach is used in the future, it is advisable that the researcher limit the number of studies a panelist can participate in, as I did, because the more studies they participate in, the more complex data analysis and reporting becomes.

Conclusion

Delphi Survey 2 resulted in the validation of a metaspecialty taxonomy and supporting clinical practice standards. A large, representative sample of Australian nurse practitioners contributed to DS2, which consisted of six Delphi studies conducted concurrently. The use of metadata and pre-prepared rationale facilitated the quick and efficient turnaround of feedback across Delphi iterations.

Consensus Development Conference Workshop

Clinical practice standards validated in DS2 provided definition and substance to the metaspecialty constructs from DS1. The culmination of DS2 resulted in validation of all metaspecialty constructs informing the final taxonomy used for the nurse practitioner clinical learning and teaching framework. Delphi Survey 1 served to validate the *names* of the metaspecialty constructs, resulting in two metaspecialty names (APC and CPLTC) remaining un-validated. To provide clarity on the un-validated metaspecialty *names* from DS1, a CDC workshop was planned for the 11th Annual Conference of the Australian College of Nurse Practitioners, which took place on 2 September 2016. Please see Appendix W for the abstract used for this CDC workshop.

Aims

To further explore and establish consensus on the name(s) of the un-validated metaspecialties.

The specific questions addressed in the CDC workshop were:

1. Does the *Aged and Palliative Care* draft metaspecialty contain a single construct, or two distinct constructs?
2. If the *Aged and Palliative Care* metaspecialty encompasses a single construct, what is the correct name for this construct?
3. If the *Aged and Palliative Care* metaspecialty contains two distinct metaspecialty constructs, what are their names?
4. What is the correct name of the draft metaspecialty *Care of Persons with Long Term Conditions*?

Design and Methods

This study was conducted using CDC methodology, which involves primarily quantitative methods and elements of qualitative methodology (Hendriks, 2005). It was conducted at a 90-minute workshop, that had been accepted as a concurrent session during the 2016 national ACNP conference in Alice Springs. The workshop consisted of two parts. Part one comprised a panel discussion and open debate with the audience, and part two was the consensus component, open only to eligible nurse practitioners that were endorsed as nurse practitioners for a minimum of 12 months.

Population

The population included all registered nurses endorsed by the Nursing and Midwifery Board of Australia (NMBA) as a nurse practitioner. At the time the CDC workshop was conducted, there were 1,287 NMBA-endorsed nurse practitioners in Australia (Nursing and Midwifery Board of Australia, 2015b).

Sample Recruitment and Inclusion Criteria

Part one of the workshop was open to anyone attending the conference who wished to listen and contribute to the debate. Attendees did not need to be endorsed nurse practitioners, nor were they required to actively participate in panel discussion or small-group work to attend the workshop. Due to delays in ethics approval for the CDC, there was no formal recruitment for part two of the workshop. Recruitment for part two (i.e. the consensus component) occurred through the dissemination of information about the workshop via the conference website and snowball recruitment that occurred during the conference. An email targeting eligible nurse practitioners was sent to the general membership of the Australian College of Nurse Practitioners one week prior to the conference. All NMBA-endorsed nurse practitioners with at least 12 months' post-endorsement experience were invited to participate. It was anticipated that a convenience sample of all eligible and consenting nurse practitioners attending the conference workshop would result in a sample size of 50–100 eligible participants. All contact with eligible participants took place at the workshop.

Data Collection Methods

The CDC workshop was organised by first providing all attendees with a 'warm-up' web-based survey. The purpose of this survey was to orient them to the web-based survey technology used to collect quantitative data during part two of the CDC workshop. The survey required a smart phone or tablet device connected to the internet. Access to the internet was provided free of charge. Several tablet devices were available on loan for those attendees who did not have a device. Real-time results from the warm-up survey were provided to attendees before part one, to serve as an 'ice breaker' and engage attendees in the CDC process.

Part one of the CDC workshop included facilitated expert panel discussion and small-group work, open to all attendees. A PowerPoint presentation was used as a tool to facilitate information exchange and attendee dialogue. This was facilitated by the lead researcher from the CLLEVER2 investigative team. It contained background information specifically-relating to the APC and CPLTC constructs. Attendees were given summarised information on the conduct and outcomes from DS1 and DS2. Open forum discussion was actively encouraged at all times during the presentation and attendees were informed that de-identified notes would be taken during the discussion, to assist with summarising the CDC. I served as a scribe, and recorded general ideas and concepts generated during the discussion in written format, without attribution to individual attendees.

Part two required eligible participants (*'voting participants'*) attending the session to complete an anonymous, confidential and secure web-based survey using Qualtrics (2013). The argument could be made that persons already involved in either or both DS1 and DS2 had achieved stability in their opinions, and the CDC workshop served to only reinforce opinions they had previously made. Therefore, for the purposes of this study, analysis of quantitative data was undertaken to only examine responses from those eligible participants not previously involved in either DS1 or DS2. Participation in the web-based survey was voluntary. The survey was only active during the workshop, and was presented to participants at the conclusion of part one. Attendees were given 10 minutes to complete the survey, and were informed they would not be able to access it upon completion of the workshop.

Survey Instrument

The survey instrument was broken into two sections: eligibility and demographic information; and research questions.

The survey first identified if attendees were eligible voting participants, whose responses would be included in the final results. This was accomplished by asking if attendees were NMBA-endorsed nurse practitioners with at least 12 months' post-endorsement experience. If not, attendees were still able to complete the survey, but their results would not be included in the final analysis. Next, validated multiple-choice questions were used to provide insight into the demographics (e.g. work setting, area

of practice, etc.) of CDC workshop attendees (Health Workforce Australia, 2012). Limited demographic data were collected to provide a summary description of the sample, for comparison with participants of DS1 and DS2, for subsequent publication. These data were aggregated to a level that maintained participant anonymity.

The second section of the survey instrument identified if voting participants had participated in either/both DS1 and DS2. These data were collected in the format of dichotomous yes/no items and multiple-choice answers. The remainder of the survey addressed the research questions for the CDC workshop. Voting participants were asked to evaluate whether the APC metaspecialty represented a single construct or two distinct constructs using a multiple-choice question. If they indicated APC was a single construct they were then directed to provide feedback on the CPLTC metaspecialty name. If they indicated the APC metaspecialty represented two separate constructs, they were asked two multiple-choice questions. Data from round three of DS1 indicated most panelists who had thought APC represented two separate constructs thought 'Aged Care' and 'Palliative Care' were relevant names for those two constructs. The first multiple-choice question asked panelists if 'Aged Care' was a relevant name. Other options included an open text box where they could provide an alternate name for 'Aged Care,' as well as an option indicating they felt it was not a metaspecialty name, but indicative of a specialty name. The second question was posed in a similar manner, but asked if 'Palliative Care' was a relevant metaspecialty name. After completing this question, panelists who felt the APC metaspecialty name represented two constructs were then directed to a question on the CPLTC metaspecialty name.

Data obtained from round three of DS1 indicated the CPLTC metaspecialty name was not relevant to panelists. Two alternate metaspecialty names were proposed by panelists in round one of DS1: 'Chronic and Complex Care' and 'Chronic Disease Management'. By round three of DS1 both alternate names were significantly trending towards relevance, whereas it was clear panelists felt the CPLTC metaspecialty name was not relevant. In the final question of the CDC workshop, attendees were asked what the name for the CPLTC construct should be, using a multiple-choice question. Panelists had the choice of 'Chronic and Complex Care', 'Chronic Disease Management', and an open text box for alternate metaspecialty names identified by participants, which had not been identified in the survey. For a hard copy of the survey, please see Appendix L.

Data Management and Analysis

Both qualitative data recorded by the researcher in written format from part one, and quantitative data from the online survey, were analysed and compared to findings from DS1 and DS2. Microsoft Excel software (Version 14.0) was used to manage generated qualitative data. Qualitative data were

analysed using a content analysis framework (Graneheim & Lundman, 2004) using Microsoft Excel. Quantitative data were managed and analysed using descriptive statistics using Microsoft Excel.

Ethical Considerations

Ethical considerations have been reviewed in Chapter 3. Please refer to that chapter for further information.

Results

A total of 29 persons attended the CDC workshop. Qualitative analysis of attendee dialogue recorded from the workshop revealed overall support for the APC and CPLTC constructs as two, distinct metaspecialty constructs. Specifically, attendees felt APC represented a single construct that should be named '*Ageing and Palliative Care*', as opposed to '*Aged and Palliative Care*'. In addition, there was wide-ranging verbal support for the CPLTC construct to be renamed '*Chronic and Complex Care*'. However, analysis of quantitative data obtained from the second web-based survey revealed a different picture.

A total of 24 responses were collected from the part two survey. Responses from those ineligible attendees or incomplete surveys were excluded, leaving 19 voting participants. Forty-seven percent of eligible participants stated they had participated in DS1 (n=9/19), 53% in DS2 (n=10/19), and 42% in both DS1 and DS2 (n=8/19). Forty-two percent (n=8/19) of eligible participants had not participated in either DS1 or DS2, whose data were used to inform the final results of this study. When asked the principal area of their main job in nursing, the largest cohort indicated 'other' (38%, n=3/8). There was an equal weighting of the remaining eligible participants in specialty areas, including '*Aged Care*', '*Critical Care and Emergency*', '*Mental Health Care*', '*Paediatrics*' and '*General Practice*'. When asked about the principal work setting, the largest cohort stated 'hospital' (38%, n=3/8). The remaining work settings are not reported to maintain participant confidentiality.

Of those who had not participated in either DS1 or DS2, 75% felt APC represented two separate metaspecialty constructs (n=6/8). Of those, 67% (n=4/6) used the free text box to indicate one of the constructs should be renamed to '*Ageing*'. In addition, all the participants who believed APC represented two constructs (n=8) felt the other construct should be named '*Palliative Care*'.

Of those who had not participated in either DS1 or DS2, 75% felt the CPLTC metaspecialty should be renamed to '*Chronic and Complex Care*' (n=6/8), whereas the remaining sample were split between naming it '*Chronic Disease Management*' and '*Long Term Conditions*'. No alternate names for the CPLTC metaspecialty were suggested by eligible participants.

Discussion

The results of the CDC are informed by a small sample (n=8) of eligible voting participants attending the workshop, and are not generalisable. In sum, it appears the majority of voting participants from

the CDC workshop felt the APC metaspecialty represented two separate constructs: 'Ageing' and 'Palliative Care'. In addition, the majority of eligible participants indicated the CPLTC construct should be renamed to 'Chronic and Complex Care'. The lack of generalisability of these results contrasts heavily with those robust results obtained from DS1 and DS2.

Those attending the CDC workshop rated it quite highly in a post-conference evaluation, with 70% of rating it as 'good' or 'very good' (Davies, 2016). Therefore, it is assumed the attendees found the session valuable. The sample may have been skewed due to the conference location (Alice Springs), and low attendance numbers attributed to competing workshops conducted at the same time of the CDC workshop. The organisers of the CDC workshop were not responsible for the overall conference organisation. A competing workshop, focused specifically on nurse practitioners who had an interest in Aged Care, was conducted at the same time of the CDC workshop. It is not known what the outcomes of the CDC would have been if there had been no competing workshops at the time it was conducted. Unfortunately, the number of attendees providing unique perspective (i.e. those who had not participated in either DS1 or DS2) for the APC and CPLTC constructs were too small to generalise the findings.

Synthesis of Findings from DS1, DS2 and the CDC

The synthesis of findings informs the remaining portion of this chapter. A final Australian metaspecialty taxonomy has been informed using a multi-stage approach, by conducting a synthesis of findings from DS1, DS2 and the CDC workshop. In the following section, the contributions of each consensus approach will be reviewed, which results in the proposed specialty clinical learning and teaching framework for Australian nurse practitioners.

The results of DS1 revealed no novel metaspecialty constructs were offered by panelists for group consideration. However, panelists did offer alternate names for each of the constructs informing the metaspecialty taxonomy. After round two, four of six metaspecialty names achieved high levels of majority opinion that was stable across rounds, and were subsequently validated. These include: Emergency and Acute Care, Primary Health Care, Child and Family Health Care and Mental Health Care. Two metaspecialty names from DS1 remained un-validated at its conclusion, which were the Care of Persons with Long Term Conditions (CPLTC) and Aged and Palliative Care (APC) names. Delphi Survey 1 panelists could not achieve consensus on whether one or both of these proposed metaspecialties represented a single or several metaspecialty constructs. In addition, they could not achieve consensus on what the names of those constructs might be. At the time DS1 was conducted, only a single overarching definition for the metaspecialty constructs was available for panelist consideration. As indicated in the Chapter 4 summary, nurse practitioners representing the CPLTC and APC metaspecialties may have been under-represented in the sample used in DS1. This may have created

difficulty for DS1 panelists to validate the names of the CPLTC and APC constructs, because they had limited knowledge of the scope and purview of those metaspécialties.

Coinciding with the timing of DS1, the six metaspécialty names used in round one were pre-emptively implemented in a widely-publicised state-based policy to describe the nurse practitioner scope of practice in the Australian state of Queensland (Queensland Government, 2014). Nurse practitioners from Queensland represented the highest proportion of panelists (26%) in DS1, which is consistent with published health workforce data (Nursing and Midwifery Board of Australia, 2014b). The definition and operationalisation of a professional scope of practice is related to, but entirely separate from, the intent of the metaspécialty taxonomy and clinical practice standards. The taxonomy and supporting standards are intended to serve as a tool for the spécialty clinical learning and teaching of nurse practitioner students. A scope of practice relates to the accumulation of education, training and demonstrated competence to practise within the profession. In Australia, a scope of practice is informed by safety and quality guidelines published by the national nursing regulatory body, as well as registration standards and standards for practice (Nursing and Midwifery Board of Australia, 2015c). It is likely the policy published by the Queensland Government contributed to panelist confusion about the intent of the metaspécialty taxonomy. In turn, it is possible this policy contributed to dissensus on the un-validated metaspécialty names due to a high proportion (26%) of DS1 panelists being from Queensland (Helms et al., 2017).

Accordingly, further clarification on the un-validated metaspécialty constructs and their names (APC and CPLTC) was needed prior to finalisation of the metaspécialty taxonomy. Two approaches were designed to seek clarification on these constructs. The first approach (DS2) determined that ‘APC’ and ‘CPLTC’ represented two distinct metaspécialty constructs. The second approach (CDC) used DS1 data to *refine the names* of those metaspécialty constructs.

The primary objective of DS2 was to achieve consensus on individual clinical practice standards representing each metaspécialty construct from DS1. A large and representative sample of nurse practitioners was involved in Delphi Survey 2. While it was feasible for panelists to contribute expert opinion on every metaspécialty presented in DS2, from a practical perspective, the time needed for critical review and consideration of clinical practice standards for every metaspécialty would have been a time-intensive and onerous task for busy clinicians. The conduct of DS1 allowed me to realise the full potential of how metadata could be used in a Delphi survey. Therefore, advanced web-based survey design was used in DS2 so each panelist could contribute to a consensus process on clinical practice standards relating to one or two metaspécialties of primary interest.

Clinical practice standards representative of both the validated and un-validated metaspécialty names from DS1 were used in round one of DS2. These clinical practice standards had been established from

prior unpublished research for each of the six metaspecialty names identified in round one of DS1 (Gardner, Gardner, Coyer, Gosby, et al., 2016). It was made clear to panelists that clinical practice standards from the un-validated metaspecialties were being included in DS2, to provide clarification from issues raised in DS1. It was hoped this inclusion would generate data by panelists on whether the APC and CPLTC metaspecialties represented two unique constructs, and were cohesive in their purview. The content validity index was used to generate these data.

The i-CVI was used to determine consensus using majority opinion on individual clinical practice standards for each metaspecialty in DS2. Analysis of i-CVI results obtained from DS2 indicated that individual clinical practice standards unique to the APC metaspecialty achieved very high levels of consensus. Likewise, a high level of consensus was shown for all clinical practice standards representative of the CPLTC metaspecialty.

In addition to the i-CVI, the s-CVI was used to analyse data from the clinical practice standards for the APC and CPLTC metaspecialties. By measuring both the i-CVI of individual clinical practice standards, and the s-CVI representing standards from each metaspecialty, a different picture of consensus on the un-validated metaspecialties became apparent. The s-CVI for clinical practice standards belonging to each of the CPLTC and APC metaspecialties was greater than 90%, indicating that each of the un-validated metaspecialties were cohesive, and highly representative of two unique constructs (e.g. APC and CPLTC). Although both the APC and CPLTC metaspecialty names themselves did not achieve consensus in DS1, when given clinical practice standards contextualising the scope and purview of each un-validated metaspecialty, panelists demonstrated overwhelming consensus that each was cohesive, as defined by their individual clinical practice standards. Similarly, a high degree of cohesion using the s-CVI was seen for clinical practice standards relating to each of the remaining four validated metaspecialties. Given the i-CVI and s-CVI analysis, it was determined that both APC and CPLTC represented singular and unique metaspecialty constructs, as defined by cohesion in their clinical practice standards.

Given the un-validated metaspecialties were indeed unique metaspecialty constructs, the problem of how their names should be refined was addressed. It was felt that a CDC workshop would provide the best means of refining the names of the un-validated metaspecialty constructs. The CDC workshop provided evidence on points of disagreement occurring during DS1 on the APC and CPLTC metaspecialty names. Unfortunately, consensus was not achieved on the names using this approach, despite workshop attendee dialogue indicating wide-ranging agreement on revising the un-validated metaspecialty names. Specifically, attendee dialogue suggested the APC name should be revised to state '*Ageing and Palliative Care*' instead of '*Aged and Palliative Care*'. Attendee dialogue also suggested widespread agreement in revising the CPLTC name from '*Care of Persons with Long Term*

Conditions’ to ‘Chronic and Complex Care’. The findings from the CDC workshop were not generalisable, due to the small number of eligible participants that had not previously contributed to either DS1 or DS2. Despite attendee dialogue, quantitative data generated by eligible nurse practitioners completing the survey at the CDC workshop were unable to achieve consensus on the metaspécialty names. Although qualitative data obtained from the CDC workshop suggested amendment of the un-validated metaspécialty names was warranted, taken in isolation there was insufficient data to justify revising the APC and CPLTC names.

When examining the results from DS1, it appears the reason why the APC and CPLTC metaspécialties had not been validated was primarily because panelists could not achieve consensus on their *names*. Reassuringly, results from DS2 demonstrated high levels of cohesion on two metaspécialty constructs represented by the two un-validated metaspécialty names. The high levels of cohesion on those two constructs had been achieved through very high levels of consensus of their representative clinical practice standards. Although not all metaspécialty *names* had been validated in DS1, DS2 provided robust evidence that there were six validated metaspécialty constructs (consisting of four validated and two un-validated *names*) underlying the proposed Australian nurse practitioner metaspécialty taxonomy. The validated clinical practice standards relating to each metaspécialty construct otherwise remained unchanged. Therefore, a synthesis of results obtained from DS1, DS2 and the CDC was conducted, resulting in refinement of the APC and CPLTC metaspécialty names to ‘Ageing and Palliative Care’ and ‘Chronic and Complex Care’. The validated constructs belonging to the final metaspécialty taxonomy are:

- Emergency and Acute Care
- Mental Health Care
- Chronic and Complex Care
- Ageing and Palliative Care
- Primary Health Care
- Child and Family Health Care.

The synthesis of findings from DS1, DS2 and the CDC workshop provide robust evidence for a validated metaspécialty taxonomy and supporting clinical practice standards that is highly relevant to Australian nurse practitioners (See Figure 6:1). Together, they can be used as an operational framework for the clinical learning and teaching of Australian nurse practitioner students.



Figure 6:1 Proposed Australian Nurse Practitioner Clinical Learning and Teaching Framework

This framework is complementary to professional standards (Nursing and Midwifery Board of Australia, 2014a), which are used for the academic learning and teaching of Australian nurse practitioner students.

Summary

Chapter 6 provides a summary of how the proposed specialty clinical learning and teaching framework was validated using a large sample of Australian nurse practitioners. The first section of Chapter 6 provides evidence of how panelists feedback was managed during six concurrent Delphi studies comprising DS2. The findings from that section of Chapter 6 provide evidence for the rigour of results identified from DS2. The second section of Chapter 6 establishes how the names of the CPLTC and APC metaspecialty constructs were refined. Three consensus approaches were required to validate the proposed clinical learning and teaching framework. Two Reactive Delphi surveys and a CDC workshop were conducted, which provide sufficient empirical evidence that the framework is robust and generalisable to Australian nurse practitioners.

Chapter 7 Metadata and Advanced Web-Based Survey Design

Introduction

The purpose of Chapter 7 is to describe the web-based survey methods used to conduct DS1 and DS2, and to better understand the benefits and risks associated with using web-based surveys in Delphi research. This chapter begins with background information briefly explaining how DS2 was conducted. This background information led to the decision to use both the validated and un-validated metaspecialties from DS1 to serve as the underlying taxonomy for the supporting clinical practice standards in DS2. What follows is a methodology discussion paper accepted for publication on 16 June 2017. The presented manuscript is in its final form with the exception for references, which are collated at the end of this doctoral thesis. Section headings and layout reflect journal requirements, with a relevant table included in the body of the manuscript. The manuscript describes the web-based methods used for DS1 and DS2, with a focus on the conduct of DS2, given that DS1 has already been described in detail in Chapter 4.

Operational definitions were determined by the CLLEVER2 investigative team and myself for each metaspecialty given the clinical practice standards established for each of the metaspecialties during Phase 1 of CLLEVER2. These operational definitions were provided as background information for panelists at the beginning of DS2. Panelists were given the opportunity to provide feedback on clinical practice standards on up to two metaspecialties, in order to decrease panelist burden and reduce panel fatigue. This would have required making individualised surveys for each panelist. Therefore, advanced web-based survey techniques were required for DS2.

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The Use of Advanced Web-Based Survey Design in Delphi Research

Authors

Christopher Helms, Anne Gardner and Elizabeth McInnes

Abstract

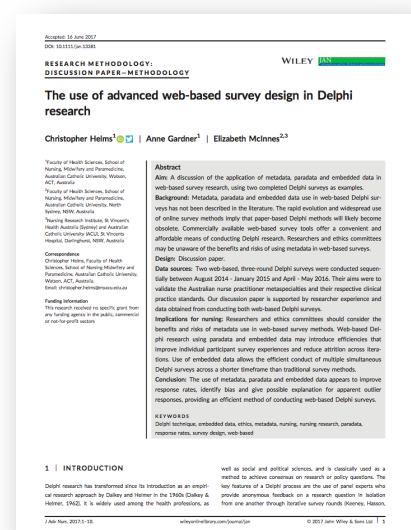
Aim

A discussion of the application of metadata, paradata and embedded data in web-based survey research, using two completed Delphi surveys as examples.

Background

Metadata, paradata, and embedded data use in web-

based Delphi surveys has not been described in the literature. The rapid evolution and widespread



use of online survey methods imply paper-based Delphi methods will likely become obsolete. Commercially-available web-based survey tools offer a convenient and affordable means of conducting Delphi research. Researchers and ethics committees may be unaware of the benefits and risks of using metadata in web-based surveys.

Design

Discussion paper.

Data Sources

Two web-based, three-round Delphi surveys were conducted sequentially between August 2014 – January 2015 and April – May 2016. Their aims were to validate the Australian nurse practitioner metaspecialties and their respective clinical practice standards. Our discussion paper is supported by researcher experience and data obtained from conducting both web-based Delphi surveys.

Implications for Nursing

Researchers and ethics committees should consider the benefits and risks of metadata use in web-based survey methods. Web-based Delphi research using paradata and embedded data may introduce efficiencies that improve individual participant survey experiences and reduce attrition across iterations. Use of embedded data allows the efficient conduct of multiple simultaneous Delphi surveys across a shorter timeframe than traditional survey methods.

Conclusion

The use of metadata, paradata and embedded data appear to improve response rates, identify bias and give possible explanation for apparent outlier responses, providing an efficient method of conducting web-based Delphi surveys.

INTRODUCTION

Delphi research has transformed since its introduction as an empirical research approach by Dalkey and Helmer in the 1960s (Dalkey & Helmer, 1962). It is widely used among the health professions, as well as social and political sciences, and is classically used as a method to achieve consensus on research or policy questions. The key features of a Delphi process are the use of panel experts who provide anonymous feedback on a research question in isolation from one another through iterative survey rounds (Keeney et al., 2011). Many methodological variations have been applied, from the classical form aiming to achieve consensus using an open-ended question posed in the first round (Dalkey & Helmer, 1962), to the Reactive Delphi (McKenna, 1994) where information obtained through a prior structured process informs panelist decision-making, to the Policy Delphi, which promotes the generation of divergent ideas (Turoff, 2002).

The emergence of the internet and refinement of survey technology has changed the application of Delphi methodology. Postal survey distribution is quickly being replaced by emailed surveys, and online surveys are now being used to collate data to constrain costs, as well as to improve time taken to undertake subsequent rounds (Donohoe et al., 2012; Snyder-Halpern et al., 2000). Online surveys can now be seen changing the iterative Delphi process itself, with 'real-time' Delphi methods providing immediate online feedback to panelists without demarcated rounds (Cates et al., 2015; Gordon & Pease, 2006). Delphi research conducted using online surveys has been shown to reduce costs, assist with data analysis, and potentially improve panelist attrition across rounds (Bromley, 2015; Gill et al., 2013). Overall, the use of online surveys has been shown to be an effective method for conducting Delphi research (Colton, 2002), and is gaining popularity to the point that administration of paper-based formats will likely become obsolete (Hunter, 2012).

There are advantages of conducting Delphi research using online survey methods that are not yet fully described in the literature. This discussion paper begins with background information contextualising the current online survey environment. It then illustrates various applications of metadata, paradata and embedded data used in two web-based Delphi surveys informing the Australian nurse practitioner metaspecialties and associated clinical practice standards (Gardner, Gardner, Coyer, Gosby, et al., 2016; Helms et al., 2017). The observations and experiences reported here about web-based Delphi surveys may assist in planning future research using online survey tools.

Background

Whether online or paper-based, many researchers experience problems associated with poorly-designed surveys. Such problems include the introduction of sampling or non-sampling errors through non-response resulting in poor representativeness of the study population, poorly-worded questions resulting in erroneous panelist responses, and panel attrition as a result of response fatigue (Bautista, 2012; Whitehead, 2007). There is an entire body of literature dedicated to the appropriate development and application of survey design, which assists in safeguarding reliable solutions to a particular research question (Edwards et al., 2009; Spector, 2013). Numerous web-based survey tools (e.g. Qualtrics, SurveyMonkey, Google Forms and SurveyGizmo) are now commercially available. More complex versions (usually requiring additional payment) tend to provide enhanced data analysis, allow for an unrestricted number of survey participants, offer diverse survey distribution options, are able to export data in multiple formats, and provide a more customised participant survey experience (Holloway, 2012).

General Considerations for Online Surveys

Although such online survey tools are helpful, they do not negate the need for thoughtful and informed application of survey methodology. The CHERRIES guidelines were published to assist researchers in

reporting results of online surveys, which may better account for sample representativeness and ethical reporting requirements (Eysenbach, 2004). Importantly, there are under-acknowledged ethical risks associated with the rapid evolution of online surveys. Ethics committees may be under-prepared for additional privacy and off-shore data storage considerations not seen in traditional paper-based survey design (Buchanan & Hvizdak, 2009). In addition, the literature suggests that there are unique survey design and non-response considerations if targeting participants who are nurses or other healthcare professionals (Cho, Johnson, & VanGeest, 2013). For example, personalisation of survey invitations appears to increase response rates in physicians (VanGeest, Johnson, & Welch, 2007), whereas it appears to have no effect in nurses (VanGeest & Johnson, 2011). Finally, a well-cited concern of online surveys is the verified identity of participants providing responses cannot be guaranteed, as opposed to face-to-face techniques such as focus groups (Brüggen, 2009). Such risks might be mitigated through the use of individualised survey links and passwords, but such options require a level of technical expertise that may be beyond casual researchers or survey participants themselves.

Web-Based Delphi Surveys

For the purposes of this discussion paper, we use the term 'web-based Delphi survey' to describe an iterative method whereby data are aggregated using a commercially-available online survey tool over several rounds (See Table 7:1).

Table 7:1 Technical Definitions¹

Adaptive Questioning	An automated process of adapting a web-based survey to display individual questions in a manner dependent upon previous individual participant responses. It may allow certain questions to be displayed, mask others, and display individual questions differently depending on individual answers. In addition, metadata, paradata and/or embedded data can be used to enhance adaptive questioning.
Embedded Data	Data <i>actively</i> generated by participants (e.g. individual responses provided during a web-based survey) or the researcher (e.g. participant names), that can be used to personalise web-based survey email invitations and enhance question logic in future surveys. Data are virtually attached to individual participant profiles in a web-based survey platform.
Internet Protocol (IP) Address	A unique identifier, in the form of a group of numerals separated by full stops (e.g. xxx.xxx.xxx.xxx), indicative of an individual computer or device (e.g. smartphone, tablet, router) connected to a computer network and/or the internet.
Internet Service Provider (ISP)	A company or organisation providing services facilitating access to the internet. Such services may include access to the internet itself, email, and the provision of a physical storage location for websites.
Metadata	Data <i>automatically</i> generated by individual participants at the outset of a web-based survey, which include information such as IP addresses and user-agent strings.
Online Survey	An “electronic questionnaire administered on the Internet or an Intranet” (Eysenbach, 2004), where a participant provides data at a single point in time.
Paradata	Data <i>passively</i> generated by individual participants as they respond to web-based surveys, such as length of time needed for individual questions, survey completion times, date and hour of day completed.
Phishing Email	Emails which may appear to be spam, but are designed to capture personal information for fraudulent use.
Spam Email	Individual or large batches of unsolicited emails sent over the internet.
User-Agent Strings	A type of metadata demonstrating how an individual participant <i>accessed</i> a web-based survey. This might include information such as which operating system (e.g. Windows or Mac), web browser (Internet Explorer, Safari, Chrome, etc.), device (e.g. desktop or tablet device) and screen size used.
Web-based Delphi Survey	The application of an iterative Delphi method where data are aggregated using a commercially-available online survey tool over several rounds.
1. Several definitions exist for the above terms, and may vary slightly depending on their application (Kreuter, 2013, p.3). These definitions have been adapted specifically for the methodology discussion paper presented here.	

The use of computer and web-based survey technologies to support the application of Delphi research is well described (Donohoe et al., 2012; Holloway, 2012). Computers have been used to conduct Delphi research as “a method for structuring group communication processes” since the mid-1970s (Turoff & Hiltz, 1996, p. 57). However, it was not until much later that Delphi research using a web-based survey method was first described by Colton (2002), who validated an instrument supporting adult learning principles in distance education. Since her introduction of the method, web-based Delphi surveys have increasingly been used as a means for collating data (Chang et al., 2010; Marsden et al., 2003; Palermo et al., 2016).

Panel Response in Web-Based Delphi Surveys

Research suggests that panel attrition across Delphi iterations due to panel fatigue is one of the biggest contributors to bias seen in the methodology, especially in studies with larger participant numbers (Foth et al., 2016; Williams & Webb, 1994). With the evolution of web-based Delphi surveys, a fresh look at reducing panel attrition may be needed. It is quite possible the benefits seen with web-based Delphi survey methods decrease panel fatigue and subsequent attrition. A recent meta-analysis of online surveys (exclusive of web-based Delphi surveys) indicates that paper-based surveys continue to demonstrate better response rates than online surveys (Cho et al., 2013). These findings contrast with the more recent observation that online surveys tend to have a higher percentage of questions answered completely and correctly compared with mailed surveys (Dykema, Jones, Piché, & Stevenson, 2013). This finding likely reflects the increasing use of online survey designs that force participants to respond to each survey question before advancing to the next, which is referred to as a “completeness check” (Eysenbach, 2004, p. 4). Overall response rates for online surveys in nurses are typically lower than 60% (VanGeest & Johnson, 2011). However, in general Delphi research Keeney et al. (2011) state a response rate of 70% or greater is acceptable irrespective of the survey mode, which is higher than for online surveys. Recently-conducted research using web-based Delphi surveys demonstrate response rates far in excess of these numbers (Gill et al., 2013; Helms et al., 2017). The higher response rates seen in web-based Delphi surveys, versus the lower online survey response rates in nurses and that quoted by Keeney et al. (2011), may be explained by methods Delphi researchers implement to reduce panel fatigue. Such methods may relate to ensuring participants are well-informed of the process, a personalised approach is used to create buy-in, and the fact Delphi panelists generally have a vested interest in the outcome and are more likely to be engaged with the research (Keeney et al., 2006; Landeta, 2006; McKenna, 1989). Finally, the use of social reward by publishing the names of consenting expert panel members at the end of a Delphi study is suggested to enhance survey response rates and decrease panel attrition across rounds (Rowe & Wright, 2011a).

In addition to the above strategies that moderate for low response rates and panel attrition, what may be under-appreciated is the opportunity offered by implementing a web-based Delphi survey that tips the balance in favour of using the method over a paper-based approach. Many findings supporting informed general survey design (Hunter, 2012) should be replicated in web-based Delphi research. As a result of applying proven design principles to web-based Delphi surveys, additional benefits may be seen, including a wider reach of expert participants contributing to the process, a shorter timeframe to study completion, and cheaper study costs than a mailed pen-and-paper approach (Cowman et al., 2012; Gill et al., 2013). In addition, advanced web-based survey design allows for the embedding of explanatory videos and other multimedia in the survey. This may be useful in engaging participants by acknowledging differing learning approaches to explain the Delphi research process, and facilitating

feedback of information across rounds (Stellefson, Alber, Paige, Castro, & Singh, 2015). Such benefits may be counterbalanced by the fact some participants have limited confidence with information technology (IT) platforms, experience technical 'glitches' (Guise, Chambers, Välimäki, & Makkonen, 2010), and have poor access to technology, with outdated hardware, software or unreliable internet access (Donohoe et al., 2012).

Metadata, Paradata and Embedded Data

Additional considerations for improving web-based Delphi survey response merit exploration given the survey design literature. The use of reminder systems through emailed notifications, and offering alternate means of survey completion (e.g. using both a web-based and alternate format such as fax, e-mail or postal surveys) may enhance response rates and should be considered when using a web-based Delphi survey (Guise et al., 2010). In addition, there is a distinct lack of nursing literature relating to how metadata, paradata and embedded data can be used during a web-based Delphi survey to identify bias and enhance online response and completion rates. Although there may be inconsistencies regarding the proper usage of the term, metadata broadly refers to "data generated about data" (Kreuter, 2013, p. 2). Metadata is an umbrella term that includes information generated at the outset of an online survey. It identifies participant internet-protocol (IP) addresses (helping to identify participant location), and information about the software and operating system (referred to as user-agent strings) used to access the survey (Callegaro, 2013). None of this information is directly entered into the online survey by the individual, but is passively generated at the outset of a participant beginning the survey. Researchers using common commercially-available web-based survey tools have the ability to record such metadata, and it has been a source of considerable concern from ethical and privacy perspectives in the telecommunications arena, for example (Buchanan & Hvizdak, 2009; Clarke, 2015).

A subset of metadata, paradata, is subtly different and refers to information passively generated by participants as they respond to online surveys (Dykema et al., 2013). For example, paradata might reflect response times or completion rates for individual items in a survey, and is generally used as a strategy to improve questions in a survey and better understand the participant experience, whereas metadata might address the overall survey design (Kreuter, 2013).

Finally, embedded data are individual participant characteristics and/or prior participant choices, which can be used to generate an individual participant profile informing a customised survey experience (Qualtrics, 2016b). Characteristics such as age, sex or other demographic variables can be virtually attached to a participant prior to them taking an online survey to influence "adaptive questioning" (Eysenbach, 2004, p. 4). Although there may be differing names for adaptive questioning depending on the web-based survey provider, all essentially work the same way. Adaptive questioning

complements embedded data by automating how and which survey questions are shown. The subsequent flow of questions is influenced by participant responses to questions asked *during* the process of taking the survey. Embedded data becomes increasingly useful in web-based Delphi research because of the way it personalises and shortens the iterative process by embedding prior responses into subsequent survey rounds.

The purpose of this discussion paper is to disseminate observations from the conduct of two web-based Delphi surveys, and demonstrate how metadata, paradata and embedded data were used to improve the quality of the survey and the overall participant experience. Through their use, the researchers were able to identify survey bias, enhance data quality, and possibly contribute to enhanced participant engagement that lead to decreased attrition. A novel method for simultaneously conducting multiple web-based Delphi surveys nested under a single research project is also presented. Although our surveys were not looking to directly measure the impact of metadata, paradata and embedded data, we suggest the discussion below might springboard future research into how these data enhance web-based Delphi surveys.

Data Sources

Two web-based, three-round Delphi surveys were conducted sequentially between August 2014 – January 2015 and April – May 2016. These surveys were used in a larger project whose aim was to validate the Australian nurse practitioner metaspecialties and clinical practice standards, and their methods and results have been previously described (Gardner, Gardner, Coyer, Gosby, et al., 2016; Helms et al., 2017). Recruitment for both surveys was accomplished using a website and emailed invitations, with a combination of convenience and snowball sampling. Participants were eligible to participate in either survey if they held endorsement as a nurse practitioner by the Nursing and Midwifery Board of Australia for a minimum of 12 months. In both surveys Qualtrics, a commercially-available web-based survey tool, was used. Surveys were piloted on the most recent versions of common web-browsers (e.g. Internet Explorer, Safari, Chrome), as well as on desktop, tablet and smartphone devices. Participants were aware their responses would be confidential to the researcher, but anonymous to others participating in the surveys. There was a 95% weighted response rate across rounds during the first Delphi survey (DS1) and a 92% weighted response rate during the second Delphi survey (DS2). Our findings are supported by researcher experience and data obtained from the conduct of both Delphi surveys. Paradata and embedded data from DS1 were used to inform the conduct of DS2. During DS2, metadata, paradata, and embedded data were used to their fullest capacity to design and conduct six simultaneous web-based Delphi surveys nested under the umbrella of a single research project.

Paradata

During DS1, paradata were collected reflecting survey start times, time needed to complete each iteration, and date of survey start and completion. Data were downloaded to Microsoft Excel and analysed using frequencies and averages. Analysis revealed each iteration of DS1 required less participant time than the preceding round. This was expected, given the first round of a Delphi survey is generally qualitative in nature and frequently requires the greatest degree of analytical processing by participants (Powell, 2003). In addition, time required to conduct each round decreased because items achieving a pre-determined level of consensus were removed prior to the next round. The negative impact of time-poor clinicians on survey response rates has been described (Keeney et al., 2006; VanGeest & Johnson, 2011). Paradata from DS1 were used to inform participants in DS2 of the expected time needed to complete each round. We felt that this information was important for participants for planning purposes, due to the fact most participants were busy clinicians.

Metadata

Metadata enables researchers to track non-responses and outlier responses with a level of detail not possible with paper-based surveys. During DS1 we noted a discrepancy between the number of persons expressing interest in the study after reviewing the participant information letter, and those actually participating in the first round of the study once survey invitations were sent. This observation was replicated at the outset of DS2 and has been noted elsewhere (Cole et al., 2013). In addition, during DS1 a significant portion of researcher time was spent on sending individualised reminder emails containing survey links to participants. This was the primary reason (other than the intersection of a large public holiday with our research) for delays between each round, and contributed significantly to the length of time it took to conduct DS1.

The Qualtrics survey tool can identify whether individual survey invitation emails have been successfully sent and delivered to an email address. However, after follow-up due to non-response, many round one DS1 participants indicated that they had either never received the survey invitation email or, in a minority of cases, the email was delivered to the participant's 'spam' email inbox. During round one of DS2, it again became apparent that survey invitation emails were not being received by some participants, thereby increasing the risk for non-response bias. Interestingly, the Qualtrics survey platform indicated that no emails had 'bounced' when sent to participants in either DS1 or DS2, which suggests the email addresses supplied by participants had been entered correctly. The research team identified it was possible that many of the initial survey invitation emails from DS1 and DS2 had been blocked by the participants' internet service providers (ISP).

During DS2, participants were presented with clinical practice standards and asked to rate the relevancy of each against a 4-point Likert scale (Not, Somewhat, Quite, or Highly Relevant). During

round one we noted outliers in sample data, whereby individual participants indicated *all* of the clinical practice standards for their elected metaspecialties were 'Not' relevant. Given that most of the participants had some variance in their individual relevancy ratings during DS2, and outliers had no variance, a follow-up email was carefully constructed and targeted to outlier participants to assess perceived quality of the survey experience. The follow-up email was constructed in a manner ensuring outlier participants did not perceive their expert judgement was being questioned. In 100% of the cases, participants indicated they had only seen one or two possibilities ('Not' or 'Somewhat' relevant) on the survey Likert scale, with the remaining options, 'Quite' or 'Highly' relevant not visible on their computer screens.

To verify why survey invitation emails had not been received, and identify issues surrounding outlier responses, metadata were collected in the form of IP addresses and user-agent strings (e.g. web-browser and operating system used) during DS2. Metadata from outlier responses were de-identified from individual participant names and analysed using a suite of commercially-available websites. IP addresses were analysed using a website (<http://mxtoolbox.com>) to identify which city and state participants had conducted the survey, as well as the ISP server identity of participants. This was done to verify if public sector ISPs were blocking survey invitation emails and contributing to survey response bias. Analysis of IP address metadata of those participants stating they had not received survey invitation emails through the Qualtrics mailing system revealed this phenomenon occurred almost exclusively when the email addresses supplied belonged to large public sector or corporate email servers.

User-agent strings were analysed using a different website (<https://browscap.org/ua-lookup>) to identify the hardware operating system (e.g. Microsoft Windows, Apple OS or smartphone-based operating systems), internet browser used (e.g. Internet Explorer, Safari or Chrome), and screen size used by participants. This information was used to identify if outlier survey responses were due to user error resulting from issues relating to operating system, survey design, internet browser or screen size. In all cases where participants appeared to have entered outlier relevancy rating data, analysis revealed it was related to use of outdated versions of the Internet Explorer web browser on the Microsoft Windows operating system.

Embedded Data

Careful application of embedded data facilitates personalised responses and saves time for the researcher. A feature of classically-described Delphi research is reminding individual participants of their ratings from previous rounds to assist in their deliberations (Keeney et al., 2006). This may be important where there are significant time gaps between Delphi rounds, and serves as a helpful reminder of their prior responses compared with group responses. It may be an easy manual exercise

to confidentially remind individual participants of prior responses with smaller survey samples, but in both DS1 and DS2 our sample sizes exceeded 200 participants. During DS1 we attached participant names and previous relevancy ratings virtually to individual survey profiles. These embedded data were used to create personalised survey invitation emails prior to each round using Qualtrics' mail merge function, which correlates names to individual survey invitations. Embedded data reflecting prior individual participant responses were correlated in the same manner through subsequent rounds. This confidential procedure, along with adaptive questioning, was used to determine how and which survey questions were shown depending on an individual's previous answers, rather than requiring participants to skip questions manually. A highly-individualised web-based survey experience was created by only showing questions relevant to the individual.

Due to the success of the applied embedded data procedure in DS1, the same approach was used in DS2. In addition, a novel method of simultaneously conducting six nested web-based Delphi surveys under a single research project was implemented based on our prior success of using embedded survey data. During DS2 participants were asked to choose a maximum of two metaspecialties. These data were embedded into individual survey profiles so that subsequent iterations of our web-based Delphi survey only showed their elected metaspecialties. Their responses were used to automatically determine which clinical practice standards were validated by the individual participant.

DISCUSSION

Overall, the use of paradata, metadata and embedded data appears to be important sources of information that improve quality of web-based Delphi surveys, and their role in the method has not been previously described. Lessons learnt from DS1 informed our application of the Delphi method in DS2, and contributed to an enhanced survey experience for participants resulting in very high response rates, the identification of non-response bias and identified rationale for outlier data. The use of embedded data to conduct, simultaneously, six nested web-based Delphi surveys under the umbrella of a single research project has never been described in the Delphi literature, and was an effective means to quickly and efficiently conduct Delphi research. However, we also uncovered some significant issues that require consideration when conducting online surveys more generally.

When conducting any online survey, our findings suggest large corporate and public sector ISPs may accept emailed survey invitations, but flag them as spam emails instead of bouncing them back to the sender. In this manner, neither the researcher nor the participant would be aware of failed survey invitation delivery. We surmised this was a large contributing factor to non-response seen with initial survey invitations to our web-based Delphi surveys, and may contribute significantly to non-response bias seen in online surveys. It is well-known that mass email distribution using an automated process may never reach a participant's email inbox if flagged by an ISP as potential spam (Qualtrics, 2016a;

SurveyGizmo, 2016; SurveyMonkey, 2016). It is important to understand that local ISP policies may implement server settings that poorly discriminate between spam (inclusive of junk and malicious phishing emails), and legitimate research invitation emails. The reason why some emails are flagged as spam and not bounced is because the automated process of replying to suspected phishing activity flags that email address as authentic. Such email addresses can then be sold by those conducting phishing activity to a third party, or use the email for other nefarious purposes.

Local ISP spam policies are heavily influenced by international laws regarding mass email communications, to which researchers are accountable and of which ethics committees should be aware (Australian Communications and Media Authority, 2016). Although certain exemptions from Australian spam laws for educational institutions exist, our survey invitation emails were sent through automated Qualtrics server facilities not associated with an '.edu.au' domain name. Given approximately 80% of participants in both DS1 and DS2 worked in the Australian public health care sector, the majority of blocked survey invitation emails were associated with the public sector, contributing to sampling error in that population. Analysis of IP addresses gained from participant metadata during DS2 verified survey invitation emails adhering to bulk email limits (generally less than 50 emails) sent from the researcher's '.edu.au' email address were not blocked by public sector or corporate ISPs because they were recognised as being from an educational institution. This cut down significantly on researcher time used to follow up non-response across rounds in DS2. We consider it one of the primary reasons for the short length of time needed to conduct the research, and partly responsible for low panel attrition across iterations. Planning for the collection and analysis of metadata, along with reporting the number of emailed, started and completed survey invitations in Delphi research, appears to be an important quality consideration when using online survey methods (Eysenbach, 2004). It may flag the issue of failed delivery of survey invitations and provide better understanding of the impact sampling bias has during web-based Delphi surveys. If the researcher is aware participants are using email addresses belonging to the public sector or large corporations, it may prove beneficial to ask they nominate a personal email address, or approach their ISP to have the online survey domain name added to a 'safe sender' list.

Regarding the application of online surveys to Delphi research specifically, although we did not directly measure the impact of embedded data on participant survey experience, anecdotal data provided by participants lead us to reason an individualised approach was highly effective in enhancing survey engagement in large samples using web-based Delphi surveys. The use of embedded data automated the process of personalising survey invitation emails, provided reminders of individual participants' previous responses across rounds, and facilitated the use of adaptive questioning to create an individualised flow of survey questions. This assertion is supported by the high response rates in our web-based Delphi surveys (Gardner, Gardner, Coyer, Gosby, et al., 2016; Helms et al., 2017), with 88%

or greater response rates seen across rounds in both DS1 and DS2. These response rates far surpass rates in general Delphi research (Keeney et al., 2011). Interestingly, it appears the expected 60% response rate quoted by others in general online surveys (Guise et al., 2010; VanGeest & Johnson, 2011) underestimates what is optimum for well-designed web-based Delphi surveys. Our response rate may be a reflection of embedded data use, although the importance of having expert panelists involved with interest in the subject matter should not be undervalued (McKenna, 1994). However, we suggest our embedded data approach is superior in creating personalised Delphi experiences, and mirrors advice stating an important aspect of improving Delphi survey response rates is a “personal touch” with Delphi participants (McKenna, 1989, p. 769). Perhaps an important aspect of using embedded data and adaptive questioning for web-based surveys is informing participants they are using a ‘smart survey’. Feedback from our DS2 pilot survey indicated that panelists were not aware questions and multiple-choice responses would change, depending on previous answers. These findings suggest that panelists using a web-based survey method are accustomed to static surveys, which do not evolve with answers supplied by panelists. Providing information on smart survey design at the outset of web-based Delphi surveys using embedded data and adaptive questioning may be important information required in participant information letters.

Regarding the use of web-based Delphi surveys in nurse practitioners, our use of paradata, in combination with IP metadata analysis, identified a significant portion of panelists completed surveys during normal weekday business hours at their respective workplaces. These findings, and the fact that most participants in both DS1 and DS2 indicated they were clinicians, underline the importance of creating web-based surveys that can be saved, and returned to later if faced with workplace distractions. Information about the expected survey response times for each round is needed by busy clinicians planning involvement, as they require protected time to facilitate analytical, as opposed to heuristical, decision-making that enriches Delphi research. The first round of a Delphi survey generally requires the greatest amount of analytical thought and time to complete; we argue the importance of participants understanding the process generally gets easier with each round. Providing evidence each Delphi round requires shorter amounts of time may be an important psychological effect in motivating participants and reducing attrition.

The use of web-based Delphi surveys provided an unexpected benefit in clarifying rationale for outlier data through user-agent strings obtained from survey metadata. User-agent strings identified the diverse means by which participants accessed our surveys (e.g. through differing operating systems, web-browsers and screen sizes). Outlier data were identified in DS2 through individual participants demonstrating non-variance in their responses, which contrasted heavily with the remaining expert panel. When participant surveys were correlated with user-agent strings, we discovered that outlier data were exclusively related to the use of outdated web-browsers. Despite pilot testing and in-built

survey tools that reduced the risk of surveys being displayed incorrectly (depending on device or web-browser used), inappropriate survey display was still a source of frustration for a minority of Delphi participants. Advising the use of up-to-date web browsers is highly recommended for online surveys.

Our outlier data findings paired with participant metadata identified most were contributing to surveys whilst in the workplace. This created an interesting ethical conundrum. We identified some participants were using outdated web-browsers in their workplaces. Our research indicated 90% of participants were clinicians, which implies a minority were accessing our surveys using outdated web-browsers in their clinical workplaces. In general, the use of outdated web-browsers may expose sensitive information held by organisations through known security vulnerabilities (Keizer, 2016; Microsoft, 2016). When planning future research using a web-based survey method, researchers should be aware that the use and analysis of metadata and paradata may identify such security vulnerabilities and pose significant ethical considerations on how this information is relayed back to participants and/or organisations.

Implications for Nursing

Researchers and ethics committees should consider the benefits and risks of metadata use in web-based survey methods. Web-based Delphi surveys using paradata and embedded data may introduce efficiencies that improve individual participant survey experiences and reduce attrition across iterations. These data may also be used to explain outlier responses and can be used to identify non-response bias. Use of embedded data allows the researcher to conduct multiple web-based Delphi surveys nested in a single research project simultaneously, across a shorter timeframe than traditional survey methods.

CONCLUSION

The use of metadata, paradata and embedded data merit further investigation of their role in enhancing survey response rates, identifying non-response bias and decreasing panel attrition when using a web-based survey design. There are significant ethical considerations when recording and using metadata that require further examination. Advanced web-based survey design using embedded data may assist in novel applications of the Delphi method, which may reduce the time taken to conduct rounds and improve the participant experience.

Summary

This chapter provides evidence of how the untapped potential of web-based surveys permitted a novel application of Delphi Technique, which allowed multiple Delphi surveys nested within a larger research project to be conducted simultaneously. The use of metadata, paradata and embedded data created

individualised survey experiences for Delphi panelists, and allowed for greater transparency in how the proposed framework was validated.

Chapter 8 Discussion Chapter

Introduction

This doctoral research presents findings from the conduct of two consecutive RD surveys and a CDC with Australian nurse practitioners. This research validates a proposed specialist clinical learning and teaching framework for nurse practitioner students. It adds to the existing literature on the validity of Delphi methodology by exploring the rigour of the methods used, and provides evidence for the conduct of future Delphi surveys using nurse practitioners. The findings from this doctoral research may potentially assist in demonstrating the rigour of RD research across the health professions. This research sought to systematically address each of the following aims and objectives:

Research Aim 1

To validate a specialty clinical learning and teaching framework for Australian nurse practitioner students.

Specific objectives that addressed this aim were:

- A. To validate an Australian nurse practitioner metaspecialty taxonomy.
- B. To validate supporting clinical practice standards used for the metaspecialty taxonomy.

Research Aim 2

To contribute knowledge of how consensus is achieved when using Reactive Delphi methodology.

Specific questions that addressed this aim were:

- A. Does Reactive Delphi methodology potentiate the negative influence of the bandwagon effect in Delphi panelists?
- B. What effect does panelist confidence have on decision-making in Delphi panelists?
- C. How can experience level be objectively demonstrated in individual Delphi panelists?
- D. What effect does experience level have on decision-making in Delphi panelists?
- E. Does confidence relate to opinion change in individual Delphi panelists?
- F. What effect does panel composition have on consensus outcomes?

Research Aim 3

To demonstrate the application of web-based methods in Delphi research.

Specific objectives that addressed this aim were:

- A. Describe the advantages of using a web-based Delphi method.
- B. Describe the risks of using a web-based Delphi method.
- C. Describe how panelist feedback was managed during six concurrent Delphi studies.

Research Aim 1 was part of a nationally funded research study, within which my doctoral topic was embedded. This is the first empirical research validating broad nurse practitioner metaspecialty constructs and clinical practice standards for learning and teaching of nurse practitioner students in Australia. These constructs and standards were first established from prior empirical research (Gardner, Gardner, Coyer, Gosby, et al., 2016; Gardner, Gardner, Coyer & Gosby, 2016). The methods used to validate the nurse practitioner metaspecialty taxonomy and clinical practice standards are unique, and have not been described in the empirical literature. Together, the metaspecialty taxonomy and clinical practice standards are a robust framework that proposes to inform the clinical learning and teaching of Australian nurse practitioner students. Given the review of the literature, this research may also be the first to describe and evaluate the internal validity of RD methodology, by searching for indicators of the bandwagon effect, confidence heuristic and egocentric discounting and examining their effect upon the consensus process. It is also the first research internationally to develop and validate an objective composite measure of experience level in Australian nurse practitioners, which can be used to demonstrate the role of panel composition on consensus outcomes in RD research. The measure of experience level in nurse practitioners led to an innovative means of demonstrating panel heterogeneity, which may lead to greater generalisability of consensus outcomes determined by Delphi research. This doctoral work provides rich insight into how the roles of metadata and advanced web-based survey design contribute to improved survey response. Finally, this research offers a novel method of conducting multiple nested Delphi studies within a single research project.

In this chapter I examine each of the research aims and objectives to evaluate whether they have been achieved through this doctoral research. The research aims are then situated within the broader literature to contextualise results. An analysis of the strengths and limitations of this research will be reviewed, followed by recommendations for future policy, research and framework development that supports the clinical learning and teaching of nurse practitioner students.

Achievement of Research Aims

The following section systematically describes the achievement of the above research aims and objectives, which are then contextualised and integrated within the broader literature. It begins by discussing the final outcomes of Research Aim 1, which were determined from a multi-stage validation process using RD methodology and a CDC. This process was described in Chapters 4 and 6. The Australian nurse practitioner taxonomy and standards are then contextualised and integrated within the existing literature. Next, it describes the outcomes of Research Aims 2 and 3, as described in Chapters 5 and 7. Again, these findings will be contextualised and integrated within the existing literature. This section will conclude with a summary of findings.

Validation of the Australian Metaspecialties and Clinical Practice Standards

As part of the larger national study, I contributed to the validation of a specialty clinical learning and teaching framework for Australian nurse practitioner students, which achieves Research Aim 1. Delphi Survey 1 was conducted to achieve the first objective of validating the Australian metaspecialty names used for the taxonomy. It was a robust Delphi study using a large sample of nurse practitioners working in diverse specialty areas across many Australian health sectors, contexts of practice and geographic areas. The results of this objective have been published in the peer-reviewed literature (Helms et al., 2017). Four of six metaspecialties used for the taxonomy were validated using this approach; however, two metaspecialty names remained un-validated and required further work to ensure they were well-placed within the metaspecialty taxonomy.

The second objective of Research Aim 1, which was to validate clinical practice standards for each of the metaspecialties, was accomplished through the conduct of DS2. Again, DS2 was a robust Delphi survey using a large, representative sample of Australian nurse practitioners to validate clinical practice standards for each of the metaspecialty constructs examined in DS1. The main results will be published in a manuscript external to this thesis, of which I am a co-author. The draft summary for that manuscript can be found in Appendix Z. Research Aim 3C was achieved by describing my role in managing DS2, which significantly contributed to its rigour by ensuring panelist feedback was efficiently and effectively managed whilst conducting six concurrent Delphi studies. The findings from DS2 identified that the un-validated metaspecialties names were representative of unique, cohesive constructs. Clinical practice standards defining each un-validated metaspecialty name were shown to have high content validity at the scale level. A CDC was conducted to refine the names of those metaspecialty constructs, but the results were not generalisable due to the very small sample size. A synthesis of findings from DS1, DS2 and the CDC identified that the most likely reason why the un-validated metaspecialties did not achieve consensus in DS1 was because panelists did not agree on their names, as opposed to the constructs they represented. The CDC revised the final names of the 'un-validated' metaspecialties. Therefore, the validated metaspecialty taxonomy and clinical practice standards are represented by Figure 8:1 (repeated below from Chapter 6 for ease of reference), which represents a proposed Australian nurse practitioner specialty clinical learning and teaching framework. This proposed framework will inform the outcomes of the nationally funded research in which this doctorate is embedded.



Figure 8:1 Proposed Australian Nurse Practitioner Clinical Learning and Teaching Framework (Copy from Figure 6:1)

Integration of Findings

The proposed framework complements existing and future specialty clinical learning and teaching frameworks. It provides structure for the clinical learning and teaching of nurse practitioner students within their individual specialties. The metaspecialties and their clinical practice standards are built upon capability theory (Gardner, Carryer, Dunn, et al., 2006; Hase & Davis, 1999). This is highly appropriate, given Australian nurse practitioner students are already working at the advanced practice nursing level prior to their enrolment in their Master's degree programmes (Australian Nursing and Midwifery Accreditation Council, 2015; G. Gardner et al., 2016). Capability theory requires learning and teaching approaches be individualised and flexible in establishing skills and knowledge development in students. The theory builds upon competency-driven learning and teaching approaches, and supports students who can competently and effectively apply existing skills and knowledge to novel and unfamiliar situations.

The only other clinical learning and teaching framework in existence at the metaspecialty level is that of the nurse practitioner population foci in the USA (National Organisation of Nurse Practitioner Faculties, 2013). It is curious to note that both the USA and Australia have developed a similar number of metaspecialties and population foci (see Table 8:1 below, repeated from Chapter 4 for ease of reference).

Table 8:1: Comparison of Metaspecialties and Population Foci (Copy from Table 4:1)

Metaspecialties (Australia) (Gardner et al., 2014)		Population Foci (United States) (NONPF, 2013)
Definition	<i>A metaspecialty groups nurse practitioner (nurse practitioner) specialties that have similar skillsets, knowledge and/or expertise, which comprehensively reflects the diverse healthcare needs of population groups.</i>	<i>The scientific foundations, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice competencies needed to work within a defined population.¹</i>
Application	Empirical research in progress for use of the learning and teaching framework in Australian nurse practitioner students.	Used for professional licensure, accreditation, certification and education of nurse practitioners.
Use	Build upon core <i>Standards</i> for Professional Practice	Build upon core <i>Competencies</i> for Professional Practice
Descriptors	<ul style="list-style-type: none"> • Emergency and Acute Care • Mental Health Care • Aged and Palliative Care • Primary Health Care • Child and Family Health Care • Care of Persons with Long-Term Conditions 	<ul style="list-style-type: none"> • Adult-Gerontological Acute Care • Adult-Gerontological Primary Care • Acute Care Pediatric • Primary Care Pediatric • Family/Across the Lifespan • Neonatal • Psychiatric-Mental Health • Women's Health/Gender Related
Clinical Learning & Teaching	<p>Students must demonstrate advanced practice nursing as pre-requisite for entry into nurse practitioner education program.</p> <p>Students may identify one or several metaspecialties that identify the individual's existing and future planned complement of advanced practice nursing skills, knowledge and expertise.</p>	<p>Students may enter nurse practitioner education program without previous advanced practice nursing experience.</p> <p>Students generally identify a single population focus to establish and direct the generation of advanced practice nursing skills, knowledge and expertise.</p>
<p>1. No definition is provided by the National Organisation of Nurse Practitioner Faculties or the 2008 <i>Consensus Model for APRN Regulation</i> for the population focus construct as a whole. Individual population foci are defined according to these qualities.</p>		

On the surface, it appears the only metaspecialty/population focus the two countries have in common relates to mental health. In the USA, population foci do not appear to be based upon capability theory. Population foci are mutually exclusive, and learning and teaching is focused on students demonstrating competencies from a single population focus before graduation. This may be appropriate for the USA, considering their nurse practitioner students bring fewer years of nursing experience to their education programmes than Australian nurse practitioner students (Goolsby, 2011; Helms et al., 2017). It is not known whether the USA approach to nurse practitioner student learning and teaching results in a restricted scope of practice, or if it limits workforce development. When the Australian clinical learning and teaching framework is operationalised, it would be useful for future research to draw comparison with the USA student experience.

In Australia and the USA, the metaspecialties and population foci have been contextualised to their respective jurisdictions with differing academic, legislative and regulatory structures. Both frameworks are used to promote consistency in the education of the profession, are presented at the same level in a specialty hierarchy (see explanation below), and are used to supplement core educational competencies or standards underpinning nurse practitioner education and practice in each country. For example, the USA population foci are supported by the *Nurse Practitioner Core Competencies* and the Australian nurse practitioner metaspecialties are supported by the *Nurse Practitioner Accreditation Standards* in learning and teaching programmes (Australian Nursing and Midwifery Accreditation Council, 2015; National Organisation of Nurse Practitioner Faculties, 2012). In addition, the USA and Australian nurse practitioner learning and teaching frameworks are further supported by regulatory and/or professional standards in each country (American Association of Nurse Practitioners, 2013; Nursing and Midwifery Board of Australia, 2014a), which are reflected in education programmes.

There are significant differences between the USA and Australian nurse practitioner learning and teaching frameworks. First, the USA population foci do not focus solely on clinical learning and teaching outcomes. They are also used for state-based regulation of a nurse practitioner's professional scope of practice (Rounds, Zych, & Mallery, 2013). The Australian metaspecialty framework has not been designed for regulation of the profession, as an individual nurse practitioner's scope of practice is not regulated by the Nursing and Midwifery Board of Australia (Nursing and Midwifery Board of Australia, 2015c). Although the metaspecialties had been used for a legislated prescribing framework in one Australian jurisdiction (Queensland Health, 2014), prior to publication of this doctoral research the metaspecialties held no formal definition and had not been validated. The metaspecialty framework has been designed solely as a means of supporting clinical learning and teaching of nurse practitioner students. Second, a USA nurse practitioner is registered to practise only according to the population focus they studied during their tertiary education programmes (Melander et al., 2008). Nurse practitioner students in the USA usually elect *a single* population focus during their education programmes, as few programmes allow a dual-focus (Hamric, Hanson, Tracy, & O'Grady, 2014, p. 565). If a USA nurse practitioner wishes to expand their focus once practising, they must first undergo further post-graduate education (Melander et al., 2008). The Australian metaspecialties and clinical practice standards are not mutually exclusive. As the framework had been built upon capability theory, they can be 'mixed and matched' to meet individual student learning and teaching needs in the clinical environment. A nurse practitioner student working within a particular specialty area may be required to demonstrate some, or all of the clinical practice standards within a metaspecialty to meet their individual learning needs. The framework is intended for students to draw clinical practice standards

from as many metaspecialties that are needed to anticipate their future scope of practice in their chosen specialties.

The final difference between the population foci and metaspecialty frameworks is that they were developed using differing consensus methodologies. The USA population foci were developed using CDC methodology, through the use of an expert panel representing lead nursing organisations across the USA (APRN Consensus Work Group, 2008). In contrast, in Australia the metaspecialty framework was validated using Reactive Delphi methodology, using a large sample comprising approximately one fifth of all Australian nurse practitioners who were working predominantly in clinical roles. The implications of these methodological differences remain uncertain.

Of note, clinical practice standards established for the 'Emergency and Acute Care' metaspecialty complement specialty-level capability-based standards established for Australian emergency nurse practitioners using similar methods (O'Connell, 2015). Specialty-level competencies established for Australian palliative care nurse practitioner students (Quinn et al., 2011) might be considered for use with clinical practice standards from the 'Ageing and Palliative Care' metaspecialty. However, the palliative care competencies appear to be based upon competency learning and teaching approaches, as opposed to a capability framework. Palliative care nurse practitioner students may not only need to demonstrate specialty competencies from Quinn et al. (2011), but use capability-based standards from differing metaspecialties to reflect their future planned clinical practice. Not all specialty standards will be based upon capability-theory, or specifically reflect learning outcomes for nurse practitioner students themselves. For example, the competencies for nephrology nurse practitioner students identified by Douglas and Bonner (2011) included broad requirements for the clinical education of students working within that specialty. It is hoped that as the Australian nurse practitioner profession expands, future specialty-level standards focusing on clinical learning and teaching outcomes for students will consider capability-based learning and teaching approaches. Such approaches will maximise the usefulness of the clinical learning and teaching framework.

Context of the Metaspecialties

In the following section, the proposed metaspecialty taxonomy described above is situated within a hierarchy of specialty practice. The significance of clarifying where the metaspecialties sit in a hierarchy becomes apparent when comparing the Australian metaspecialty construct with like constructs in differing jurisdictions. For example, as discussed above, the term 'population focus' relates to broad specialty areas used for the learning and teaching of nurse practitioner students in the USA (Rounds et al., 2013).

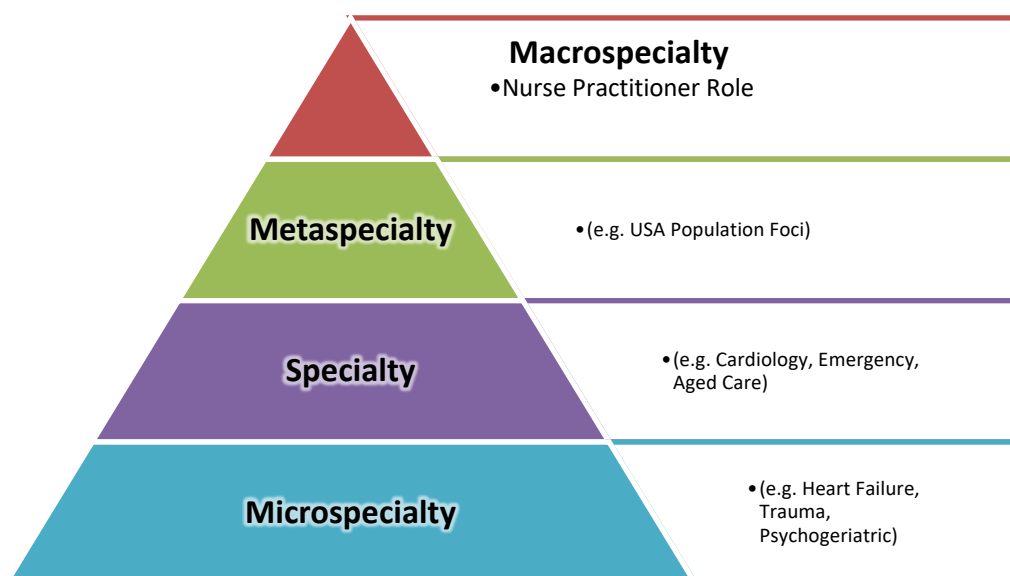


Figure 8:2 A Conceptual Hierarchy of Nurse Practitioner Specialties

Figure 8:2 is a proposed conceptual specialty hierarchy resulting from this doctoral research that can be described as follows. First, at the macrospecialty level is the nurse practitioner as a unique advanced practice nursing role supported by professional and/or regulatory standards, as seen in Australia and the USA (American Association of Nurse Practitioners, 2013; Nursing and Midwifery Board of Australia, 2014a). In this conceptual hierarchy, the macrospecialty refers solely to the role of the Australian nurse practitioner.

At the metaspecialty level, a nurse practitioner role can be broadly described, as seen with the nurse practitioner-specific ‘population foci’ in the USA. For example, at this level, population foci in the USA relate to the scientific foundations, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice competencies that nurse practitioners need to work within a broadly defined population (APRN Consensus Work Group, 2008). Population foci are used to define learning outcomes for USA nurse practitioner academic programmes, where the student may choose a focus of study such as Adult-Gerontologic Acute Care, Adult-Gerontologic Primary Care or Family/Across the Lifespan. With the exception of Canada, no other international jurisdictions had established nurse practitioner specialty practice constructs at the metaspecialty level until 2013, when the need for a broad specialty clinical learning and teaching framework for Australian nurse practitioner students was identified (Canadian Nurses Association, 2009; Gardner et al., 2013a). The research reported in this doctoral research primarily concerns itself with nurse practitioner specialty practice at the metaspecialty level, although it explores a differing construct from that of the USA population foci, which has been contextualised for Australian nurse practitioners.

Finally, at the specialty and microspecialty levels, populations seen by the nurse practitioner are defined by their own body of science. The body of science informing the nurse practitioner specialties is not only informed by nursing, but may be informed by other professions such as medicine and the allied health sciences. King et al. published the only Australian research that categorised nursing specialties, and specifically defined specialty practice as having a unique body of knowledge, specific geographic scope, and/or reflecting distinct population requirements (King et al., 2010). It is important to note King et al. designed their specialty definition and framework for enrolled nurses and RNs, and was not specific to advanced practice nurses such as the nurse practitioner. Arguably, as nurse practitioners encapsulate a different role to that of the RN, the specialty definition and framework proposed by King et al. are not appropriate for application to the nurse practitioner. It is only at the microspecialty level where one might see nurse practitioner practice described by a specific geographic scope and/or reflecting distinct population requirements. For example, a nurse practitioner working as a cardiology specialist might have a microspecialty in heart failure. Likewise, an aged care nurse practitioner might have a microspecialty in psychogeriatrics.

Contributions to Reactive Delphi Methodology

Research Aims 2 and 3 were achieved by conducting two sequential RD surveys. Research Aim 2 generated new knowledge by demonstrating the application of RD methodology in two web-based surveys. Research Aim 3 generated new knowledge on how consensus is achieved when using RD methodology.

This doctoral research achieved the objectives of Research Aim 2 by describing the advantages and risks of using web-based surveys in nursing research. This research demonstrated that advanced web-based survey techniques can be used to create efficiencies in survey flow, which may reduce panel attrition and increase investment in the Delphi process. In DS2 embedded data were used to conduct six different Delphi surveys simultaneously, that were nested within a single research project. This technique had never been described in the literature, and resulted in efficient use of resources and eased panelist and researcher burden. The use of metadata to identify outlier responses, as well as identify non-response bias, has not been previously described in the empirical literature. Also, this research identified issues with the use of metadata that ethics committees may want to consider when researchers are conducting web-based survey research.

There were several objectives used to demonstrate achievement of Research Aim 3, which contributed new knowledge on how consensus was achieved when using RD methodology. This doctoral research raised the important issue of how panel feedback is provided during RD methodology, to reduce the potential for negative social influence from the bandwagon effect. Panel feedback across Delphi rounds may take the form of group consensus measures as statistical summaries, but may also take

the form of panelist rationale for their responses. My findings suggested the internal validity of consensus outcomes determined by RD methodology was enhanced by providing not only group consensus measures, but teleological panelist rationale. Also, the findings from this doctoral research suggested the confidence heuristic and egocentric discounting were not present in RD research. Therefore, the internal validity of consensus outcomes determined by RD methodology was not influenced by individual characteristics, such as panelist confidence or their perceived experience level relative to others. These findings further support the assertion that RD research is a robust consensus-based research methodology. Finally, as opposed to expertise more generally, panel composition as determined by experience level may not be an important consideration in determining consensus outcomes in Delphi research. Proficient and experienced nurse practitioners provided equivalent relevancy ratings on the metaspecialties identified in DS1.

Integration of Findings

There is a plethora of consensus methodologies and methods published in the literature. Delphi research has suffered from a lack of consistency in the application of terminology by researchers when describing these (refer to Figure 2:2 in Chapter 2). These inconsistencies contribute to difficulties in establishing the validity of the approach used, and therefore interpreting research rigour. Although there is a small body of literature demonstrating the internal validity of consensus outcomes determined by Delphi research more generally, prior to this doctoral work there had been no research specifically describing the internal validity of consensus outcomes determined by RD methodology. An even smaller body of literature informs how individual characteristics inherent to panelists might determine consensus outcomes in Delphi research (Bolger et al., 2011; Rowe & Wright, 1996; Rowe et al., 2005). Reactive Delphi methodology has been used throughout the nursing literature. Therefore, a description was needed of how the internal characteristics of nurses involved in RD research may determine the internal validity of consensus outcomes.

The generalisability of consensus outcomes is infrequently described in Delphi research. All Delphi research evaluated in the literature review relating to nurse practitioners had poorly described how heterogeneity in opinion contributed to the generalisability of results. Greater attention is needed to demonstrate how opinions from an apparently homogenous panel of experts are in fact, quite heterogeneous. The use of demographic measures alone may not be sufficient in demonstrating heterogeneity of opinion. This should instead be demonstrated through more direct means. For example, Okoli and Pawlowski (2004) published a tool they used to ensure consensus opinion determined by the panel of experts was informed by diverse perspectives. This doctoral research used a tool to demonstrate heterogeneity of opinion through professional practice activities. By demonstrating heterogeneity of opinion, greater generalisability can be inferred from consensus outcomes determined by Delphi research. In addition, it appears survey response rates are much

higher in Delphi methodology compared to other survey research methodologies. The expected 60% response rate quoted by others in general web-based surveys (Guise et al., 2010; VanGeest & Johnson, 2011) underestimates what is optimum for well-designed web-based Delphi research. It is possible that the use of metadata, paradata and embedded data improved survey response rates, resulting in reduced panel attrition. The use of advanced web-based survey design may therefore improve the generalisability of consensus outcomes derived by Delphi research.

Strengths and Limitations

There were several strengths and limitations identified in this doctoral research. To begin, this was the largest Delphi study ever conducted using Australian nurse practitioners, and may have been one of the largest Delphi studies using nurse practitioners internationally. A direct means, other than demographic data, was used to demonstrate heterogeneity of experience informing consensus opinion. I did this by ascertaining whether nurse practitioners had previously undertaken five activities indicative of professional nurse practitioner practice. Both Delphi surveys demonstrated low attrition, with excellent survey response rates across rounds. The sample profile was broadly representative of the Australian nurse practitioner population. Therefore, the consensus outcomes determined by this research were robust and generalisable to Australian nurse practitioners. The findings may also be useful to other health professions with advanced practice roles, both nationally and internationally.

This doctoral research is rigorous, as evidenced through its detailed reporting of methods. Both Boulkedid, Abdoul, Loustau, Sibony, and Alberti (2011) and Diamond et al. (2014) provided key indicators used to establish quality in the conduct of Delphi research. Their key quality indicators were used as a guide to establish the quality of the Delphi surveys conducted in this research. This doctoral research met all their key quality indicators, and include:

- Detailed reporting of the study objectives and panelist eligibility ensured this research is reproducible.
- The number of rounds were stated, and reasons for stopping the Delphi process was not solely based upon a pre-determined number of rounds.
- The criteria for the addition, modification and/or removal of metaspecialties and clinical practice standards were well-defined.
- The definition of consensus for each Delphi study was unambiguous.
- The composition of the panels, as well as heterogeneity of opinion informing consensus opinion, was clearly described.
- Detailed reporting of the survey instruments was provided.
- The type and quality of feedback provided to panelists was clearly described.

Rigour was supported by demonstrating that the confidence heuristic and egocentric discounting were not significantly associated with opinion change during this research. Each panelist in DS1 and DS2 provided their responses in relative isolation, as their responses were anonymised, and panelists were discouraged from discussing this research with others. While the Delphi surveys were conducted, panelists were not aware of the identities of others participating in this research, so the negative effects of social influence were minimised. In addition, multiple surveys (DS1, DS2 and the CDC) were used to inform the final proposed clinical learning and teaching framework. Each survey built upon data obtained from the previous survey, to ensure the framework would be relevant to Australian nurse practitioners. Finally, the use of panelists with clinical expertise, who would be most informed of the clinical requirements of nurse practitioner students, were used to inform the clinical learning and teaching framework.

This doctoral research had several limitations. First, the research design used to establish the presence of the bandwagon effect, confidence heuristic and egocentric discounting could have been extended but was limited by the timeframe and requirements of a doctoral degree. It may have been better to replicate the research designs used by Rowe and Wright (1996) and Rowe et al. (2005), whereby one panel was provided group consensus measures, whereas the other panel was provided group consensus measures and panelist rationale. Clearer comparisons with that research then might have been made. The research design also did not assist in clearly determining whether proficient or experienced nurse practitioners would have had differing consensus outcomes. A three-panel parallel randomized controlled trial research design, simulating that of Brookes et al. (2016), may have provided clearer results. The primary purpose of this doctoral research was to validate a clinical learning and teaching framework for Australian nurse practitioner students. However, this research serves as a starting point that adds to the nursing literature on the validity of consensus outcomes determined from Reactive Delphi research. Finally, the ACNP membership database served as the primary means of participant recruitment in this research. The use of that database introduces the possibility of selection bias. Unfortunately, this was unavoidable due to restricted access to a national population database of endorsed nurse practitioners. Selection bias was somewhat moderated by using a snowballing approach to recruitment, whereby participants were asked to distribute recruitment information within their networks.

The cause of unexplained responses in DS1 became clear during DS2 through the use of metadata. Some response bias was promptly identified and minimised in Delphi Survey 2. This problem was attributable to the fact that survey invitation emails were blocked by corporate internet service providers. It is likely this response bias was present in DS1, but had not been identified at that point. Due to our enhanced understanding of these issues, future research using web-based survey methods will employ techniques that mitigate for the issue of response bias resulting from corporate internet

service providers blocking survey invitation emails. For example, in future-planned survey research, individual public health services will be approached to ask for clearance of emails sent from the Qualtrics email server. Alternatively, survey invitation emails will be sent solely from an 'edu.au' domain name.

Recommendations

This doctoral research has triggered several recommendations for policy and research involving nurse practitioners, based upon findings. The findings also inform suggestions for those researchers conducting Delphi research.

Recommendations for Research into the Learning and Teaching of Students

The following recommendations are for research involving Australian nurse practitioner students:

1. Operational definitions for each metaspecialty construct should be finalised by the CLLEVER2 investigative team. Metaspecialty constructs in DS2 were validated using provisional definitions. A review of those provisional definitions should be undertaken now that clinical practice standards for those metaspecialties have been validated. Once finalised operational definitions are identified for the metaspecialties, the framework is ready for finalisation by the CLLEVER2 investigative team.
2. Further research is needed to establish how the clinical learning and teaching framework can be applied by academic institutions, nurse practitioner students and their clinical supervisors. Once this research has been conducted, a learning package can then be developed, which can be implemented in clinical learning and teaching environments.
3. The CLLEVER2 investigative team should incorporate the finalised framework into a model of clinical learning and teaching for Australian nurse practitioner students. Consideration should be given as to how the model complements the existing *Nurse Practitioner Accreditation Standards* and *Nurse Practitioner Standards for Practice*.

Recommendations for Policy Relating to Nurse Practitioners

The following recommendations are for policy involving Australian nurse practitioners:

1. Research should be conducted to evaluate whether the proposed clinical learning and teaching framework improves consistency and flexibility in the Australian nurse practitioner workforce. This will require in-depth analysis of how clinical supervisors operationalise the framework in the clinical context, and should be conducted in a minimum of five years, to ensure the framework has been appropriately and universally applied to students.
2. Consideration should be given to how the clinical learning and teaching framework might be used in conjunction with the Australian *Nurse Practitioner Research Toolkit* (G. Gardner et al.,

2009). The research toolkit assists in the clinical audit and research of Australian nurse practitioners. The clinical learning and teaching framework may provide depth in understanding how nurse practitioners operationalise their roles.

3. Consideration should be given to how the clinical learning and teaching framework might be applied to those nurse practitioners wanting to expand or change their scope of practice. The NMBA's *Decision Making Framework* (Nursing and Midwifery Board of Australia, 2007) may be used in conjunction with the clinical learning and teaching framework to inform role expansion and actualisation. Further research will be needed to see how this might occur.
4. Consideration should be given to repeating the design of this doctoral research in five years. A period of five years will provide sufficient time to evaluate the reliability of consensus outcomes determined by the Delphi surveys in this research.
5. Research is needed to see how specialty-level standards integrate with the framework. Future specialty-level standards should base clinical learning and teaching outcomes upon the overarching structure of the clinical learning and teaching framework.
6. Once the clinical learning and teaching model is operationalised, research should be conducted to better understand differences in clinical learning and teaching outcomes between USA and Australian nurse practitioner students. Such research might assist in the mutual recognition and transferability of nurse practitioner qualifications between the two countries. In addition, such research might springboard insight into differences in role transition and role actualisation in nurse practitioners between countries. There is a validated tool measuring role transition in nurse practitioners (Strange, 2015), which could be used to compare two samples of students from the USA and Australia.
7. Further research validating the experience level variable is needed to identify if it relates to clinical outcomes (e.g. patient satisfaction, resource utilisation, morbidity/mortality outcomes, time spent with patient, etc.) or other measures relevant to the Australian nurse practitioner role. For example, identifying if experience level relates to litigation or issues of regulatory interest.

Recommendations for Researchers Applying Delphi Technique

This section provides recommendations about processes and methods, followed by recommendations for research questions pertaining to Delphi methodology.

Processes and Methods

1. Elicit rationale for a panelist's round one responses in a Reactive Delphi study, and provide that rationale as feedback during round two. The provision of pre-determined information in round one of a Reactive Delphi study may potentiate the negative form of the bandwagon effect. The provision of summarised panelist rationale in round two appears to trigger greater

panel consideration of the presented information from round one, and mitigate the negative form of the bandwagon effect.

2. Use means of demonstrating panel heterogeneity other than by simple demographics or other commonly used methods (such as highest qualification obtained or years' experience). This will enhance the generalisability of consensus outcomes determined by Delphi research.
3. Clearly define the constructs the Delphi researcher is trying to achieve consensus on. The less defined and less that is known about a construct, the more methods that will be required to validate findings. In this instance, two Delphi surveys and a CDC were required to produce the final framework because there had been no previous metaspecialty constructs, which were defined by clinical practice standards.
4. Use advanced web-based survey design and metadata to identify non-response bias and decrease panel attrition. Consider the implications of non-response bias and panel attrition when using web-based surveys with respects to metadata, paradata and embedded data.

Further Research is Needed To:

1. Understand the differences in self-rating expertise and objective measures of expertise (i.e. experience level), and which is better for identifying the presence of the confidence heuristic.
2. Identify if experience level results in differing outcomes in Reactive Delphi research.
3. Identify if there are other means of demonstrating the presence of egocentric discounting in Delphi research, other than by correlating self-rated expertise or experience level to opinion change. It may be these measures are insufficient in identifying egocentric discounting in Delphi research.
4. Identify if the bandwagon effect exerts a negative social influence in Reactive Delphi research. The use of two independent panels would facilitate the answer to this research question.
5. Understand that a 'Delphi of Delphis' is needed to provide consensus on the taxonomy used to describe the methodology and methods associated with Delphi research. This would provide a uniform means of describing the methodology in nursing research.

Conclusion

Overall the findings presented in this doctoral research provide robust evidence for the validation of a proposed clinical learning and teaching framework for Australian nurse practitioner students. The proposed framework can be used in an education model for nurse practitioners in the clinical learning environment. The methods used to inform the framework can be applied to jurisdictions and professions with similar clinical learning and teaching needs. This doctoral research provides evidence that Reactive Delphi methodology is a robust consensus-based research approach, and that consensus outcomes determined by this methodology are internally and externally valid. This research identifies

the un-tapped potential of web-based Delphi surveys, and how they might be applied to enhance rigour and reduce researcher, as well as panelist, burden.

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Appendix A – Ethics Approval for CLLEVER2

From: **Kylie Pashley** Kylie.Pashley@acu.edu.au
Subject: 2013 174N Modification
Date: 11 November 2013 at 4:39 pm
To: Prof Anne Gardner Anne.Gardner@acu.edu.au, Christopher Helms cchelm001@myacu.edu.au
Cc: Kylie Pashley Kylie.Pashley@acu.edu.au



Dear Pamela,

Ethics Register Number : 2013 174N
Project Title : Educating for health service reform: CLinical LEarning,
goVERNance, and capability (CLLEVER 2)
End Date : 29/08/2014

Thank you for submitting the request to modify form for the above project.

The Chair of the Human Research Ethics Committee has approved the following modification(s):

1. Addition of PhD student Mr Christopher Helms.

We wish you well in this ongoing research project.

Kind regards,
Kylie Pashley

Ethics Officer | Research Services
Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
PO Box 456, Virginia, QLD, 4014
T: 07 3623 7429 F: 07 3623 7328

THIS IS AN AUTOMATICALLY GENERATED RESEARCHMASTER EMAIL

Appendix B – Ethics Approval for Consensus Development Conference

From: [Pratigya Pozniak](#) on behalf of [Res Ethics](#)
To: [Anne Gardner](#)
Cc: [Res Ethics; Christopher Helms](#)
Subject: 2016-166E Ethics application approved!
Date: Friday, 19 August 2016 2:35:05 PM

Dear Applicant,

Principal Investigator: Prof Pamela Gardner
Student Researcher: Christopher Helms (HDR Student)
Ethics Register Number: 2016-166E
Project Title: Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties
Risk Level: Low Risk
Date Approved: 19/08/2016
Ethics Clearance End Date: 31/08/2017

This email is to advise that your application has been reviewed by the Australian Catholic University's Human Research Ethics Committee and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research.

The data collection of your project has received ethical clearance but the decision and authority to commence may be dependent on factors beyond the remit of the ethics review process and approval is subject to ratification at the next available Committee meeting. The Chief Investigator is responsible for ensuring that outstanding permission letters are obtained, interview/survey questions, if relevant, and a copy forwarded to ACU HREC before any data collection can occur. Failure to provide outstanding documents to the ACU HREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research. Further, this approval is only valid as long as approved procedures are followed.

If your project is a Clinical Trial, you are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry <http://www.anzctr.org.au/>) as a condition of ethics approval.

If you require a formal approval certificate, please respond via reply email and one will be issued.

Researchers who fail to submit a progress report may have their ethical clearance revoked and/or the ethical clearances of other projects suspended. When your project has been completed a progress/final report form must be submitted. The information researchers provide on the security of records, compliance with approval consent procedures and documentation and responses to special conditions is reported to the NHMRC on an annual basis. In accordance with NHMRC the ACU HREC may undertake annual audits of any projects considered to be of more than low risk.

It is the Principal Investigators / Supervisors responsibility to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC with 72 hours.
2. Any changes to the protocol must be reviewed by the HREC by submitting a Modification/Change to Protocol Form prior to the research commencing or continuing. <http://research.acu.edu.au/researcher-support/integrity-and-ethics/>
3. Progress reports are to be submitted on an annual basis. <http://research.acu.edu.au/researcher-support/integrity-and-ethics/>
4. All research participants are to be provided with a Participant Information Letter and consent form, unless otherwise agreed by the Committee.
5. Protocols can be extended for a maximum of five (5) years after which a new application must be submitted. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

Researchers must immediately report to HREC any matter that might affect the ethical acceptability of the protocol eg: changes to protocols or unforeseen circumstances or adverse effects on participants.

Appendix C – Participant Information Letter: Delphi Survey 1

ACU Ethics Application ID: 0000017479

Educating for health service reform: CLinical LEarning, goVERnance, and capability (CLLEVER 2)

**PARTICIPANT INFORMATION LETTER
(Phase 2: Delphi Studies)**

Australian Catholic University Limited
ABN 15 050 192 660
CRICOS registered provider:
00004G, 00112C, 00873F, 00885B

PARTICIPANT INFORMATION LETTER (Phase II: Delphi Studies)

PROJECT TITLE: Educating for health service reform: CLinical LEarning, goVERNance, and capability (CLEVER 2)

PRINCIPAL INVESTIGATOR: Prof Anne Gardner

STUDENT RESEARCHER: Mr Chris Helms

STUDENT'S DEGREE: Doctor of Philosophy

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

You know that the nurse practitioner (NP) is a rapidly growing advanced practice nursing role with excellent client acceptability. This research will consist of two separate studies. The first will validate broad groupings of Australian NP specialty areas, called meta-specialties. The second study will validate clinical practice standards for each of the meta-specialties. The information gained from these two studies will assist in the development of a clinical learning and teaching framework that will be relevant for both nurses and other health professionals.

Who is undertaking the project?

This research project is being conducted by the Australian Catholic University in collaboration with Queensland University of Technology, Queensland Health and the Australian College of Nurse Practitioners (ACNP). Prof Anne Gardner is the Primary Investigator of this project, which will also form the basis for Mr Chris Helms to undertake the degree of Doctor of Philosophy under her supervision.

Are there any risks associated with participating in this project?

The study will involve no foreseeable risk. The study participants will need to spare some of their valuable time for the study. Confidentiality for study participants will be strictly maintained.

Participants will be offered the choice to have their names acknowledged as participants in the final published research. For those participants wishing to opt-in to this choice, individual views, opinions or responses will not be identifiable from the information generated by these studies.

What will I be asked to do?

In the first study you will be asked to take part as a member of an expert panel. Each of the members of the expert panel will undertake several rounds of a review of proposed meta-specialties. In each of the rounds, a revised version of the meta-specialties will be shared with you along with the summary of the feedback from the previous round. We will use email communication and an online survey tool for this purpose. This process will continue until 85% consensus is achieved based upon feedback from the expert panel members on the meta-specialties. We expect that it will need 3 rounds to achieve this level of consensus. You will be able to perform this review at your own convenience within a structured time-frame for each of the rounds.

In the second study you will be asked to choose an expert panel, which corresponds to the one meta-specialty that best reflects your NP scope of practice. Each of the members of this expert

Australian Catholic University Limited
ABN 15 050 192 660
CRICOS registered provider:
00004G, 00112C, 00873F, 00885B

panel will again undertake several rounds of review of a set of draft clinical practice standards for the chosen meta-specialty. In each of the rounds, a revised version of the clinical practice standards will be shared with you along with the summary of the feedback from the previous round. We will use email communication for this purpose. The process will continue until 85% consensus is achieved based upon feedback from the expert panel members on the draft clinical practice standards. We expect that it will need 3 rounds to achieve this level of consensus. You will be able to perform this review at your own convenience within a structured time-frame for each of the rounds.

How much time will the project take?

We estimate that the whole process of reviewing the meta-specialties and draft clinical practice standards will take up to 6 months. In each of the rounds, the amount of time that each of the expert panel members will need to spend will be between 15 and 30 minutes. As mentioned above, we expect to have 3 rounds for each study, with 6 rounds in total.

What are the benefits of the research project?

Being a participant, you will not derive any immediate direct benefit from the study. However, upon completion of both studies you will be given the opportunity to be listed as a contributing panel member in the final published research and be given a certificate of continuing professional development, which will assist you in meeting your requirements for ongoing professional development with the Nursing and Midwifery Board of Australia. The findings of the study will benefit nurse practitioners as a professional group and the people for whom they care. The clinical practice standards that will be developed based on the findings from the study will help to standardize the clinical training and education of nurse practitioners. This will optimise the health care that nurse practitioners will provide to the community.

Can I withdraw from the study?

Your participation in these studies as a member of the expert panel is completely voluntary. After participation, you can withdraw your participation from the studies without adverse consequences until we finalise analysis when data are aggregated and will be de-identified. Non-participation or withdrawal from the study will not affect your employment or your relationship with your professional organization.

Will anyone else know the results of the project?

The findings of this study will be disseminated through presentations and publications. In any dissemination, the study investigators will make sure that the data are non-identifiable. Only the research staff will have access to the non-identified data. They will ensure that these identifiers are not shared with anyone outside the study. The results from the study will be de-identified and summarized before presentation or publication. All the feedback on the meta-specialties and draft clinical practice standards from the expert panel members will be kept confidential and only the research staff will have access to them. When summarizing, feedback from the expert panel members will be aggregated and no identifying information will be included.

Will I be able to find out the results of the project?

We will not directly get back to you with the results or a summary of the results. A summary of the results will be posted on the ACNP website. Also the study findings will be presented at conferences and published in peer-reviewed journals that you will be able to access.

Who do I contact if I have questions about the project?

If you have any questions about the project please contact Mr Chris Helms or Prof Anne Gardner, the Primary Investigator of this project. Their contact details are:

Chris Helms, PhD Candidate
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Email: cchelm001@myacu.edu.au

Professor Anne Gardner
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Ph: +61(0)2 6209 1330
Email: anne.gardner@acu.edu.au

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at Australian Catholic University (approval number 2013 174N). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Chair, HREC
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
Melbourne Campus
Locked Bag 4115
FITZROY, VIC, 3065
Ph: 03 9953 3150
Fax: 03 9953 3315
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I sign up?

If you agree to participate in the study please let the student researcher, Mr Chris Helms know about your interest by emailing him at cchelm001@myacu.edu.au. If you participate in the online Delphi surveys, that will be considered as an indication of your informed consent.

Yours sincerely,

Prof Anne Gardner

Appendix D – Participant Information Letter: Delphi Survey 2

PARTICIPANT INFORMATION LETTER (Phase II: Delphi Study)

PROJECT TITLE: Educating for health service reform: CLinical LEarning, goVERnance, and capability (CLLEVER 2)

PRINCIPAL INVESTIGATOR: Prof Anne Gardner

STUDENT RESEARCHER: Mr Chris Helms

STUDENT'S DEGREE: Doctor of Philosophy

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

You know that the nurse practitioner (NP) is a rapidly growing advanced practice nursing role with excellent client acceptability. This research will validate clinical practice standards for each of the NP metaspecialties. Information gained from these two studies will assist in the development of a clinical learning and teaching framework that will be relevant for both nurses and other health professionals.

Who is undertaking the project?

This research project is being conducted by the Australian Catholic University in collaboration with Queensland University of Technology, Queensland Health and the Australian College of Nurse Practitioners (ACNP). Prof Anne Gardner is the Primary Investigator of this project, which will also form the basis for Mr Chris Helms to undertake the degree of Doctor of Philosophy under her supervision.

Are there any risks associated with participating in this project?

The study will involve no foreseeable risk. The study participants will need to spare some of their valuable time for the study. Confidentiality for study participants will be strictly maintained.

Participants will be offered the choice to have their names acknowledged as participants in the final published research. For those participants wishing to opt-in to this choice, individual views, opinions or responses will not be identifiable from the information generated by these studies.

What will I be asked to do?

In this study you will be asked to choose an expert panel, which corresponds to one or two metaspecialties that best reflect your NP scope of practice. Each of the members of this expert panel will undertake several rounds of review of a set of draft clinical practice standards for each chosen metaspecialty. In each of the rounds, a revised version of the clinical practice standards will be shared with you along with the summary of the feedback from the previous round. We will use email communication for this purpose. The process will continue until 85% consensus is achieved based upon feedback from the expert panel members on the draft clinical practice standards. We expect that it will need 3 rounds to achieve this level of consensus. You will be able to perform this review at your own convenience within a structured time-frame for each of the rounds.

How much time will the project take?

We estimate that the whole process of reviewing the metaspecialty clinical practice standards will take up to 4-6 weeks. In each of the three rounds, the amount of time that each of the expert panel members will need to spend will be between 15 and 45 minutes.

What are the benefits of the research project?

Being a participant, you will not derive any immediate direct benefit from the study. However, upon completion of this study you will be given the opportunity to be listed as a contributing panel member in the final published research and be given a certificate of continuing professional development, which will assist you in meeting your requirements for ongoing professional development with the Nursing and Midwifery Board of Australia. The findings of the study will benefit nurse practitioners as a professional group and the people for whom they care. The clinical practice standards that will be developed based on the findings from the study will help to standardize the clinical learning and teaching of nurse practitioners. This will optimise health care that nurse practitioners provide to the community.

Can I withdraw from the study?

Your participation in these studies as a member of the expert panel is completely voluntary. After participation, you can withdraw your participation without adverse consequences until we finalise analysis, when data are aggregated and will be de-identified. Non-participation or withdrawal from the study will not affect your employment or your relationship with your professional organization.

Will anyone else know the results of the project?

The findings of this study will be disseminated through presentations and publications. In any dissemination, the study investigators will make sure that the data are non-identifiable. Only the research staff will have access to the non-identified data. They will ensure that these identifiers are not shared with anyone outside the study. The results from the study will be de-identified and summarized before presentation or publication. All the feedback on the draft metaspecialty clinical practice standards from the expert panel members will be kept confidential and only the research staff will have access to them. When summarizing, feedback from the expert panel members will be aggregated and no identifying information will be included.

Will I be able to find out the results of the project?

We will not directly get back to you with the results or a summary of the results. A summary of the results will be posted on the ACNP website. Also the study findings will be presented at conferences and published in peer-reviewed journals that you will be able to access.

Who do I contact if I have questions about the project?

If you have any questions about the project please contact Mr Chris Helms or Prof Anne Gardner, the Primary Investigator of this project. Their contact details are:

Chris Helms, PhD Candidate
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Email: Christopher.helms@myacu.edu.au

Professor Anne Gardner
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Ph: +61(0)2 6209 1330
Email: anne.gardner@acu.edu.au

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at Australian Catholic University (approval number 2013 174N). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Chair, HREC
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
Melbourne Campus
Locked Bag 4115
FITZROY, VIC, 3065
Ph: 03 9953 3150
Fax: 03 9953 3315
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I sign up?

If you agree to participate in the study please let the student researcher, Mr Chris Helms know about your interest by emailing him at Christopher.helms@myacu.edu.au. If you participate in the online Delphi survey, that will be considered as an indication of your informed consent.

Yours sincerely,

Prof Anne Gardner

Appendix E – Participant Information Letter: Consensus Development
Conference



PARTICIPANT INFORMATION LETTER

PROJECT TITLE: Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties

PRINCIPAL INVESTIGATOR: Professor Anne Gardner

STUDENT RESEARCHER: Mr Christopher Helms

STUDENT'S DEGREE: PhD

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

Since achieving legislated title protection in 1998 the nurse practitioner (NP) profession has grown to over 1200 NPs nationally, working in over 50 identified specialty areas. Generic standards have been used for NP student *professional* learning and teaching since 2006. However, despite the proliferation of specialties only one *clinical specialty* learning and teaching framework exists, and was developed for emergency NP students. This presents difficulties for NP students when identifying clinical learning and teaching needs in other specialty areas.

Prior research identified existing NP specialties with similar skills, knowledge and expertise and condensed them into six broad specialty areas termed *metaspecialties*. A *metaspecialty* groups NP specialties that have similar skillsets, knowledge and expertise, which comprehensively reflect the diverse healthcare needs of population groups. With the metaspecialty framework a NP student may draw upon standards from one or two primary metaspecialties, and may find their individual roles encompass other metaspecialties, depending on existing and developing individual skills, knowledge and expertise.

The identified metaspecialties underwent further study using a consensus method. Four of six Australian NP metaspecialty names were validated across a large sample (n=197) of endorsed nurse practitioners: *Emergency and Acute Care*, *Child and Family Health Care*, *Mental Health Care*, and *Primary Health Care*. Two metaspecialties, "*Care of Persons with Long-Term Conditions*," and "*Aged and Palliative Care*," did not achieve consensus and remain un-validated.

After dissemination of this information at a national conference in 2015, key stakeholders voiced a desire to further explore and establish consensus on the un-validated metaspecialties. A second Delphi study, CLLEVER Delphi 2, identifying the clinical standards across all metaspecialties, was recently

completed by over 200 NPs with preliminary data analysis demonstrating very high consensus for all standards across all metaspécialties at completion of the Delphi study, despite two titles not being validated.

The aim of this research is to use an alternative technique called "Consensus Conference" to contribute to consensus on the remaining un-validated metaspécialty names.

Who is undertaking the project?

This project is being conducted by Australian Catholic University. Professor Anne Gardner is the Primary Investigator of this project with Mr Christopher Helms.

Are there any risks associated with participating in this project?

The study will involve no foreseeable risk. Consenting participants (referred to as voting participants) will need to allocate valuable time for the study. Anonymity for voting participants will be maintained by not reporting participant identities unless they specifically wish to be acknowledged.

While the consensus conference is an open forum within the ACNP national conference allowing initial participation by conference delegates who do not meet eligibility criteria (such as NP students and associate College members), eligible NPs will be the only voting participants and will be offered the opportunity to have their names acknowledged as contributors in the final published research. For those voting participants wishing to opt-in to this choice, individual views, opinions or responses will not be identifiable from the information generated by this study.

What will I be asked to do?

You will be asked to attend a one-hour workshop at the 11th Annual National Australian College of Nurse Practitioners conference. This session will include facilitated expert panel discussion and small-group work. If you are an NMBA-endorsed NP with a least 1 years' post endorsement experience, you are eligible to participate, as a voting participant, in a short online survey prior to the end of the education session. This secure, anonymous and confidential online survey will be accessible via personal devices (such as smartphones, tablets, or laptop computers) carried with you during the session. Additional devices will be provided for those eligible survey participants who are not carrying an internet-capable device with them.

How much time will the project take?

It is anticipated your involvement in this project will take an hour of your time. There is no further commitment needed on your part.

What are the benefits of the research project?

Being a voting participant, you will not derive any immediate direct benefit from the study. However, upon completion of this study you will be given the opportunity to be listed as a contributing member in the final published research.

Findings from the study will benefit nurse practitioners as a professional group and the people for whom they care. The metaspécialties and subsequent clinical practice standards that will be developed based on the findings from the study will help standardize the clinical learning and teaching of nurse practitioners. This will optimise health care that nurse practitioners provide to the community.

Can I withdraw from the study?

Your participation in this study is completely voluntary. You will be able to withdraw up until the time you submit the completed survey. Non-participation or withdrawal from the study will not affect your employment or your relationship with your professional organization.

Will anyone else know the results of the project?

The findings of this study will be disseminated through presentations and publications. In any dissemination, the study investigators will make sure that the data are non-identifiable. Only the research staff will have access to the non-identified data. They will ensure that these identifiers are not shared with anyone outside the study. The results from the study will be de-identified and summarized before presentation or publication. When summarizing, discussion and feedback will be aggregated and no identifying information will be included.

Will I be able to find out the results of the project?

We will not get back to you directly with the results or a summary of the results. One data analysis is finalised, it will be posted on the ACNP website. Also the study findings will be presented at conferences and published in peer-reviewed journals that you will be able to access.

Who do I contact if I have questions about the project?

If you have any questions about the project please contact Mr Chris Helms or Prof Anne Gardner, the Primary Investigator of this project. Their contact details are:

Chris Helms, PhD Candidate
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Email: Christopher.helms@myacu.edu.au

Professor Anne Gardner
School of Nursing, Midwifery and Paramedicine
Canberra Campus (Signadou)
Australian Catholic University
223 Antill Street
Watson, ACT 2602
Ph: +61(0)2 6209 1330
Email: anne.gardner@acu.edu.au

What if I have a complaint or any concerns?

The study has been reviewed by the Human Research Ethics Committee at Australian Catholic University (review number 2016 166E). If you have any complaints or concerns about the conduct of the project, you may write to the Manager of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
Ph.: 02 9739 2519
Fax: 02 9739 2870
Email: resethics.manager@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I sign up?

If you participate in the online survey presented at the Consensus Conference, then that will be considered as an indication of your informed consent.

Yours sincerely,

Prof Anne Gardner

Appendix F – Delphi Survey 1: Recruitment Email

Subject: Participation in NP meta-specialty and Clinical Practice Standards Delphi studies

To Whom it May Concern:

We are conducting two Delphi studies to validate nurse practitioner (NP) meta-specialties and develop clinical practice standards for NPs. This is part of a major study titled: "Educating for health service reform: clinical learning, governance, and capability (CLLEVER2)". The study is being conducted by the Australian Catholic University in collaboration with Queensland University of Technology, Queensland Health and the Australian College of Nurse Practitioners. The study has been funded by the Australian Research Council (ARC). Ethics committees of the Australian Catholic University and Queensland University of Technology have approved the study.

The first phase of the study involved in-depth interviews of NPs. Based on the findings from those interviews we have developed draft clinical practice standards for NPs. In the second phase of the study we will apply a Delphi technique to obtain agreement on meta-specialties and further develop draft clinical practice standards for each meta-specialty.

We are currently working on the formation of a panel comprised of experts in the field of nurse practitioner work. Each of the members of the expert panel will undertake several rounds of review of the draft competencies. As you are an expert in this domain, we would like to invite you to participate in this study as a member of the Delphi Panels. Please find attached the Information Letter detailing the Delphi study and your role as an expert panel member.

If you are interested in participating in the study could you send an email to the Primary Investigator Prof Anne Gardner (anne.gardner@acu.edu.au) with a copy to Mr Chris Helms (cchelm001@myacu.edu.au). Also please provide your best contact details when you write to us. We've designed a website and informational video which provides further information on the CLLEVER2 study. You can find this information [HERE](#).

Yours sincerely,

Anne Gardner RN PhD

Professor of Nursing and Director of Research, School of Nursing, Midwifery and Paramedicine (Signadou Campus), Australian Catholic University
Research Associate, National Centre for Clinical Outcomes Research (NaCCOR), Australian Catholic University

Postal address and contact details:

PO Box 256 Dickson ACT 2602

Email: anne.gardner@acu.edu.au

T: +61(0)262091330 F: +61(0)262091113 W: www.acu.edu.au

Appendix G – Delphi Survey 1 and 2: Snowballing Email

Dear All –

Thank you for agreeing to participate in the CLLEVER2, Phase 2 research project!

You'll be receiving an email shortly with your *individualised* survey link to participate in the first phase of the research project. Please ensure you do not forward this survey link (or subsequent emails containing survey links) to other email addresses as it may potentially invalidate the link.

We've made a brief 6-minute video which explains a bit about the CLLEVER2 study and the two phases of this project. If you haven't had the opportunity to watch it, please click [HERE](#). (<http://vimeo.com/106359028>). We've also provided a participant information letter, which you can download [HERE](#).

Do you know of anyone else who might be interested in this study?

We are continuing participant enrolment for the next few weeks.

If you know of anyone who is an AHPRA-endorsed nurse practitioner with at least 1 years' post-endorsement experience, could you please advise them of this study?

They can find out more about the CLLEVER2 study, as well as sign up to participate by clicking [HERE](#). (<http://acnp.org.au/form/clever2-study-phase-2>)

As always, if you ever have any questions or concerns, please feel free to contact myself or Anne Gardner via the details listed below. I'm truly looking forward to seeing the outcomes of this exciting research and am glad that you've agreed to participate!

Kind Regards,
Chris

Chris Helms, RN MSN(NP) APN-BC FACNP

PhD Candidate - School of Nursing, Midwifery and Paramedicine
Faculty of Health Sciences
Australian Catholic University

M: 0416 096 179 T: 02 6209 1165 F: 02 6209 1113 E: cchelm001@myacu.edu.au W: www.acu.edu.au

Anne Gardner, RN PhD

Professor of Nursing and Director of Research
School of Nursing, Midwifery and Paramedicine (Signadou Campus)
Australian Catholic University

Postal address and contact details:

PO Box 256 Dickson ACT 2602

Email: anne.gardner@acu.edu.au

T: +61(0)262091330 F: +61(0)262091113 W: www.acu.edu.au

Appendix H – Delphi Survey 1 and 2: Consent Form

CONSENT FORM
(CLLEVER 2, Phase 2: Consent to publish name of panel member)

Copy for Researcher / Copy for Participant to Keep

TITLE OF PROJECT:

**Educating for health service reform: CLinical LEarning, goVERNance, and capability
(CLLEVER 2)**

NAME OF PRINCIPAL INVESTIGATOR: **Prof Anne Gardner**

NAME OF STUDENT RESEARCHER: **Mr Chris Helms**

I *(the participant)* have read and understood the information provided in the Participant Information Letter. Any questions I have asked have been answered to my satisfaction. I voluntarily elect to have my name listed as a contributing panel member in the final published research.

I understand that I can withdraw this consent at any time up to 1 month after completion of the study.

NAME OF PARTICIPANT:

SIGNATURE DATE

SIGNATURE OF PRINCIPAL INVESTIGATOR DATE:.....

SIGNATURE OF STUDENT RESEARCHER DATE:.....

Australian Catholic University Limited
ABN 15 050 192 660
CRICOS registered provider:
00004G, 00112C, 00873F, 00885B

Appendix I – Delphi Survey 2: Recruitment Email

Subject: Participation in NP meta-specialty and Clinical Practice Standards Delphi studies

To Whom it May Concern:

We are conducting two Delphi studies to validate nurse practitioner (NP) meta-specialties and develop clinical practice standards for NPs. This is part of a major study titled: "Educating for health service reform: clinical learning, governance, and capability (CLLEVER2)". The study is being conducted by the Australian Catholic University in collaboration with Queensland University of Technology, Queensland Health and the Australian College of Nurse Practitioners. The study has been funded by the Australian Research Council (ARC). Ethics committees of the Australian Catholic University and Queensland University of Technology have approved the study.

The first phase of the study involved in-depth interviews of NPs. Based on the findings from those interviews we have developed draft clinical practice standards for NPs. In the second phase of the study we will apply a Delphi technique to obtain agreement on meta-specialties and further develop draft clinical practice standards for each meta-specialty.

We are currently working on the formation of a panel comprised of experts in the field of nurse practitioner work. Each of the members of the expert panel will undertake several rounds of review of the draft competencies. As you are an expert in this domain, we would like to invite you to participate in this study as a member of the Delphi Panels. Please find attached the Information Letter detailing the Delphi study and your role as an expert panel member.

If you are interested in participating in the study could you send an email to the Primary Investigator Prof Anne Gardner (anne.gardner@acu.edu.au) with a copy to Mr Chris Helms (cchelm001@myacu.edu.au). Also please provide your best contact details when you write to us. We've designed a website and informational video which provides further information on the CLLEVER2 study. You can find this information [HERE](#).

Yours sincerely,

Anne Gardner RN PhD

Professor of Nursing and Director of Research, School of Nursing, Midwifery and Paramedicine (Signadou Campus), Australian Catholic University
Research Associate, National Centre for Clinical Outcomes Research (NaCCOR), Australian Catholic University

Postal address and contact details:

PO Box 256 Dickson ACT 2602

Email: anne.gardner@acu.edu.au

T: +61(0)262091330 F: +61(0)262091113 W: www.acu.edu.au

Appendix J – Sample Recruitment Webpage for Delphi Surveys



Educating for Health Service Reform: Clinical Learning, Governance and Capability (CLLEVER2) Study: Phase 2 Delphi Studies

We are conducting a Delphi study to validate nurse practitioner (NP) metaspecialty clinical practice standards. This is part of a major study titled: "Educating for health service reform: clinical learning, governance, and capability (CLLEVER2)". The study is being conducted by the Australian Catholic University in collaboration with Queensland University of Technology, Queensland Health and the Australian College of Nurse Practitioners. The study has been funded by the Australian Research Council (ARC). Ethics committees of the Australian Catholic University and Queensland University of Technology have approved the study.

The first phase of the study involved in-depth interviews of NPs. Based on the findings from those interviews we have developed draft NP metaspecialty clinical practice standards. In this phase of the study we will apply a Delphi technique to further develop the draft clinical practice standards for each metaspecialty and obtain consensus on each.

We are currently working on the formation of an expert panel comprised of NPs who have been endorsed as NPs by the Australian Nursing and Midwifery Board for at least 1 year.

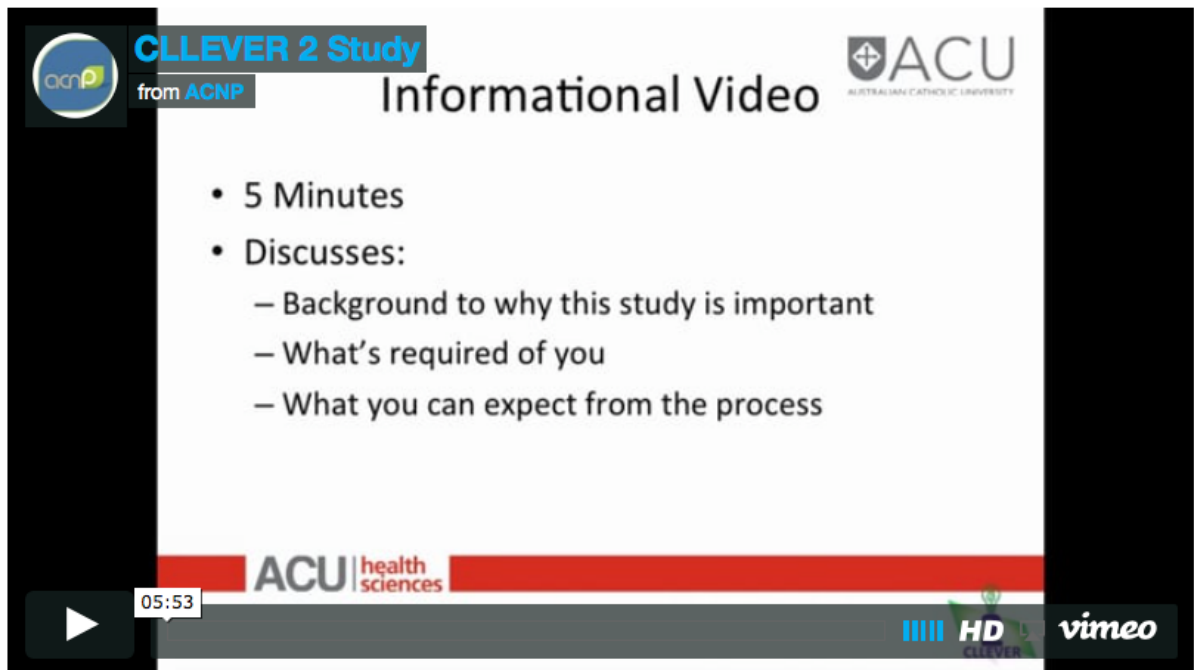
Each of the members of the expert panel will undertake several rounds of review of the draft clinical practice standards. As you are an expert in this domain, we would like to invite you to participate in this study as a member of the Delphi Panels. Please find attached the Information Letter detailing the Delphi study and your role as an expert panel member.

Recruitment for Phase 2, Delphi Survey 2 is CLOSED!

If you have any questions or concerns, please send an email to us using the contact form below.

Interested in Hearing More?

For an information kit, click [HERE](#). When recruiting participants for Delphi Survey 1 we developed a brief video which may provide helpful background information for Delphi Survey 2:



To view this video, please type the following URL into your web-browser:
<https://vimeo.com/106359028>

Participant Contact Form:



Metro South Health

*First Name **

*Surname **

*Best Contact Number **

Please include area code, if appropriate.

Email Information

The email you provide here will be used to send invitations to participate in Delphi Survey 2. NOTE: Many institutions have spam filters which block access to emails sent from our survey provider. It's highly recommended a personal email address (e.g. gmail or yahoo email) is used.

*Email Address **

*Confirm Email Address **

*Preferred Contact **

Do you prefer to be contacted by email or telephone/mobile?

Submit ➤

Appendix K – Consensus Development Conference: Recruitment Email

Email Subject: Participation in Consensus Conference at the 11th Annual ACNP Conference

Email Body:

Dear X,

We are conducting “consensus conference” research at the 2016 Australian College of Nurse Practitioner (ACNP) conference in Alice Springs. The aim of this research is to achieve consensus on the remaining un-validated nurse practitioner metaspecialties, “*Aged and Palliative Care*” and “*Care of Persons with Long Term Conditions*.” This research has ethics committee approval from the Australian Catholic University.

Six proposed metaspecialties were identified in earlier research using consensus methodology. Four of six Australian NP metaspecialty names were validated across a large sample (n=197) of endorsed nurse practitioners: *Emergency and Acute Care*, *Child and Family Health Care*, *Mental Health Care*, and *Primary Health Care*. Two metaspecialties, “*Care of Persons with Long-Term Conditions*,” and “*Aged and Palliative Care*,” did not achieve consensus and remain un-validated.

Since dissemination of this information at the 2015 national ACNP conference, key stakeholders have voiced a desire to further explore and establish consensus on the un-validated metaspecialties. The aim of this research is to use an alternative technique called “Consensus Conference” to further explore and achieve consensus on the remaining un-validated metaspecialty names.

If you are an NMBA-endorsed NP with at least 1 years’ post-endorsement experience you will be eligible to take part in this research. In order to participate, you will need to register and attend the education session being offered at this year’s conference in Alice Springs. Please find attached the Information Letter detailing the Delphi study and your role as an expert panel member.

I look forward to seeing you at this year’s conference!

Yours sincerely,

Anne Gardner RN PhD

Professor of Nursing and Director of Research, School of Nursing, Midwifery and Paramedicine (Signadou Campus), Australian Catholic University
Research Associate, National Centre for Clinical Outcomes Research (NaCCOR), Australian Catholic University

Postal address and contact details:

PO Box 256 Dickson ACT 2602

Email:anne.gardner@acu.edu.au

T: +61(0)262091330 F: +61(0)262091113 W:www.acu.edu.au

Appendix L – Consensus Development Conference: Consent Form and Survey

CONSENT FORM (Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties)

Copy for Researcher / Copy for Participant to Keep

TITLE OF PROJECT:

Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties

(NAME OF) PRINCIPAL INVESTIGATOR: **Prof Anne Gardner**

I (*the participant*) have read and understood the information provided in the Participant Information Letter. Any questions I have asked have been answered to my satisfaction. I voluntarily agree to participate in the Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties realising that I can withdraw my participation from the study without adverse consequences until the investigators commence analysis when data are aggregated and will be de-identified. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way.

NAME OF PARTICIPANT:

SIGNATURE DATE

SIGNATURE OF PRINCIPAL INVESTIGATOR DATE:.....



Default Question Block

Welcome to the Consensus Conference!

The purpose of this research method is to **achieve consensus** on the *names and scope* of the remaining un-validated Australian Nurse Practitioner metaspecialties. This page provides you with important information on how this research study will be conducted and what to expect from a consensus conference.

This survey should take approximately 5 minutes of your time.

- For a copy of the *Participant Information Letter*, click below:
[Participant Information Letter - Download](#)

Information required to complete this study will be provided at its outset. If you have any questions or concerns for this study, please contact:

Prof Anne Gardner, Chief investigator CLLEVER2 study
Email: anne.gardner@acu.edu.au
Phone: (02) 6209 1330

Mr Chris Helms, PhD Candidate
Email: Christopher.helms@myacu.edu.au
Phone: (02) 6209 1355

This material may form part of my PhD.

***Please treat this survey confidentially and do not share or discuss
information contained with others.***

**This research project has received Human Research Ethics Committee
Approval from Australian Catholic University. Approval Number 2016 166E.**

**By clicking the button below you will begin the Consensus Conference and
are consenting to take part in this research:**

Do you hold endorsement as a nurse practitioner through the Nursing and
Midwifery Board of Australia/AHPRA?

- ☐ Yes
☐ No

How many year(s) have you been endorsed as a nurse practitioner in Australia?

What is the principal area of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

- | | |
|--|--|
| <input type="radio"/> Aged Care | <input type="radio"/> Midwifery |
| <input type="radio"/> Community Health | <input type="radio"/> Mixed Medical/Surgical |

- | | |
|---|---|
| <input type="radio"/> Critical Care and Emergency | <input type="radio"/> Paediatrics |
| <input type="radio"/> Education | <input type="radio"/> Peri-Operative |
| <input type="radio"/> Family, Maternal and Child Health | <input type="radio"/> Rehabilitation and Disability |
| <input type="radio"/> General Practice/Medical Practice | <input type="radio"/> Research |
| <input type="radio"/> Management | <input type="radio"/> Surgical |
| <input type="radio"/> Medical | <input type="radio"/> Other |
| <input type="radio"/> Mental Health | |
-

What is the work setting of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

- | | |
|--|--|
| <input type="radio"/> Locum private practice | <input type="radio"/> Hospice |
| <input type="radio"/> General practitioner (GP) practice | <input type="radio"/> Other residential health care facility |
| <input type="radio"/> Other private practice | <input type="radio"/> Commercial/business service |
| <input type="radio"/> Aboriginal health service | <input type="radio"/> Tertiary educational facility |
| <input type="radio"/> Community mental health service | <input type="radio"/> School |
| <input type="radio"/> Community drug and alcohol service | <input type="radio"/> Other educational facility |
| <input type="radio"/> Other community health care service | <input type="radio"/> Correctional services |
| <input type="radio"/> Hospital | <input type="radio"/> Defence forces |
| <input type="radio"/> Outpatient service | <input type="radio"/> Other government department or agency |
| <input type="radio"/> Residential aged care facility | <input type="radio"/> Other |
| <input type="radio"/> Residential mental health care service | |
-

Were you a participant in any of the prior CLLEVER2 Delphi studies?
(Click all that apply)

- ☐ Delphi Survey 1: Establishing the Metaspecialty Names
- ☐ Delphi Survey 2: Validating the Metaspecialty Clinical Practice Standards
- ☐ I did not participate in either Delphi study.

Consensus Conference - Aged and Palliative Care

Does the *Aged and Palliative Care* metaspecialty contain a *single*, or *two distinct* constructs?

- ☐ It contains a SINGLE construct.
- ☐ It contains TWO DISTINCT constructs.

If the *Aged and Palliative Care* metaspecialty contains TWO DISTINCT constructs, what should be the *Aged Care* construct name?

- ☐ Aged Care
- ☐ Other
- ☐ None of the above; it is a specialty and not a metaspecialty.

If the *Aged and Palliative Care* metaspecialty contains TWO DISTINCT constructs, what should be the *Palliative Care* construct name?

- ☐ Palliative Care
- ☐ Other
- ☐ None of the above; it is a specialty and not a metaspecialty.

Consensus Conference - Care of Persons with Long Term Conditions

What is the correct metaspecialty name for *Care of Persons with Long Term Conditions*?

- ☐ Chronic and Complex Care
- ☐ Chronic Disease Management

☐ Other

Powered by Qualtrics

Appendix M – Delphi Survey 1, Round 1



Preamble

Welcome to the CLLEVER2, Phase 2 research study!

For this study you will be taking part in Delphi research. The purpose of this research method is to achieve consensus on issues affecting the education and training of nurse practitioners. This page provides you with important information on how this research study will be conducted and what to expect from a Delphi survey.



A single Delphi survey consists of approximately 3 rounds. You will take part in two Delphi surveys, each lasting approximately 8 weeks, for a **total of 6 rounds and 16 weeks**. The expected outcome of each survey is reviewed in brief below:

- **Delphi Survey 1:** To validate Australian nurse practitioner metaspecialties.
- **Delphi Survey 2:** To establish clinical practice standards for each metaspecialty.

Information required to complete each survey will be provided at its outset. If you have any questions or concerns for either survey, please contact:

Chris Helms, PhD Candidate

Email: cchelm001@myacu.edu.au

Phone: (02) 6209 1355 or (02) 6209 1330

This material forms part of my PhD.

Please treat this survey confidentially and do not share or discuss information contained with others.

This research project has received Human Research Ethics Committee Approval from Australian Catholic University. Approval Number 2013 174N.

Delphi Survey 1: Metaspecialties

Information for Delphi Survey 1:

In this survey you will be asked to validate metaspecialties established by the [CLLEVER](#) study.

A metaspecialty groups nurse practitioner (NP) specialties that have similar skillsets, knowledge and/or expertise, which comprehensively reflect the diverse healthcare needs of population groups.

An NP will belong to *one* primary metaspecialty, but may find that their individual roles encompass elements of other metaspecialties.

The CLLEVER study established the following metaspecialties:

- Mental Health Care
- Aged & Palliative Care
- Care of People with Long Term Conditions
- Child & Family Health Care
- Primary Health Care
- Emergency and Acute Care

In this Delphi survey you will be asked if these metaspecialties are an accurate representation of the Australian nurse practitioner profession, as a whole.

The purpose of this study is to ensure there is widespread agreement across the entire profession on these metaspecialties.

Information submitted will be anonymously fed back to participants. The rounds will occur as follows:

First Round:

You will be shown the CLLEVER metaspecialties and asked to rate the relevance of each as representative of the Australian NP profession, as a whole. You will be asked for the rationale for your answers.

During this round, you will be given the opportunity to provide *revised and/or additional* metaspecialties which you consider relevant for the nurse practitioner profession, as a whole. Please provide rationale for your responses so others might understand the implications of the metaspecialties you've identified.

Second Round:

As soon as all responses from the first round have been collated they will be fed back to the group for review.

In the second round you will be given the opportunity to see the group's responses relating to the relevancy of each CLLEVER metaspecialty. You will see the rationale participants have provided for their answers. This will give you the opportunity to reflect on the metaspecialties and amend whether or not you feel a metaspecialty is relevant, if deemed appropriate.

Any *revised and/or additional* metaspecialties identified in the first round will be summarised during the second round. You will be able to rate the relevancy of

each of these metaspecialties and provide rationale for your responses.

Third Round:

In the third and final round you will be given the opportunity to see the group's responses relating to the relevancy of the CLLEVER and *revised* metaspecialties. You will also see any rationale provided by participants. This will give you the opportunity to reflect on these metaspecialties and revise whether or not you feel a metaspecialty is relevant, if deemed appropriate.

An additional round may be considered if there is sufficient disagreement amongst participants.

Other Important Information:

- **Metaspecialties will only be included if there is 85% or greater agreement within the group.**
- The first round of each Delphi survey requires the most thought and work; subsequent rounds are shorter in duration. Information provided in the first round will assist in subsequent rounds.
- For each response provided you will be given a confidence scale. This scale rates how sure you feel about your answers. This information will not be used to determine the metaspecialties, but will be used to examine the use of Delphi method in nursing research.
- Baseline demographics, personal characteristics, and nursing activities will be collected. This information will not be used to determine the metaspecialties, but will be used to examine the use of Delphi method in nursing research.
- Please refrain from discussing this research with others as you may unknowingly influence others involved in the study.
- Please complete your survey as soon as possible.
- Running out of time? No worries, you can save your progress and return later.

By taking part in this survey you are consenting to take part in this research.

NP vs Other

Do you hold endorsement as a nurse practitioner through the Australian Health Practitioner Regulation Agency (AHPRA)?

- ☐ Yes
☐ No
-

How many year(s) have you been endorsed as a nurse practitioner in Australia?

Include years regardless of full-time or part-time status in whole years only.

0 1 2 3 4 5 6 8 9 10 11 12 13 14

Years endorsed as a
nurse practitioner in
Australia

Years Worked in Nursing

In total, how many years have you worked in nursing ?

Include years regardless of full-time or part-time status in whole years only.

Exclude time spent not working and unpaid leave.

Include years practicing as a nurse practitioner, as well as any managerial, education and research positions related to the nursing profession.

0 5 10 15 20 25 30 35 40 45 50 55 60

Years working in
nursing:

In total, how many years have you worked in a clinical position requiring you to be a nurse practitioner?

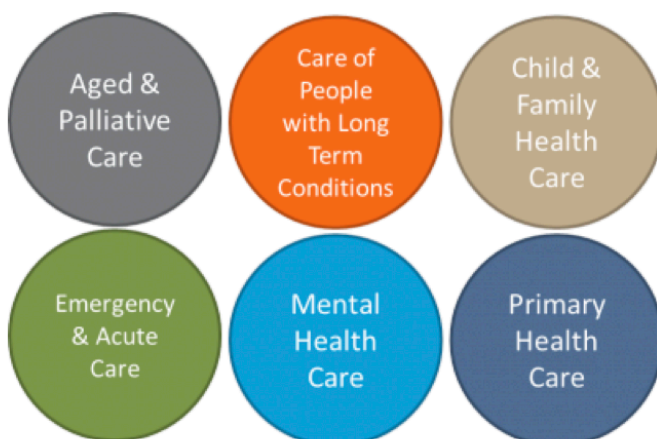
*Include years regardless of full-time or part-time status in whole years only.
Exclude time spent not working and unpaid leave.*

0 5 10 15 20 25 30 35 40 45 50 55 60

Years working as a
nurse practitioner in
a clinical position

Metaspecialties: ROUND 1

Metaspecialties are specialties which have similar skillsets, knowledge and/or expertise, which comprehensively reflect the diverse healthcare needs of population groups. The following metaspecialties have been proposed through prior research from the [CLLEVER](#) study:

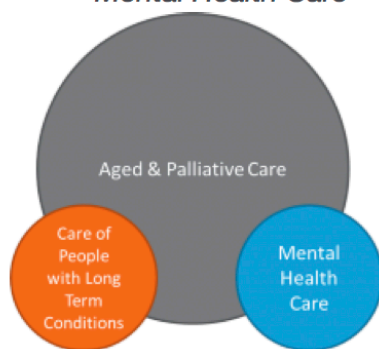


Specialty areas will sit predominately within one metaspecialty area, but **may** be shared amongst other metaspecialty areas. Ideally, there should be no more than 6-7 metaspecialties. The following are examples of how this might look like in an individual NP. An individual NP can have any number/combination of the metaspecialties which are validated from this Delphi research project.

Example 1: Aged Care Nurse Practitioner

Aged and Palliative Care Metaspecialty

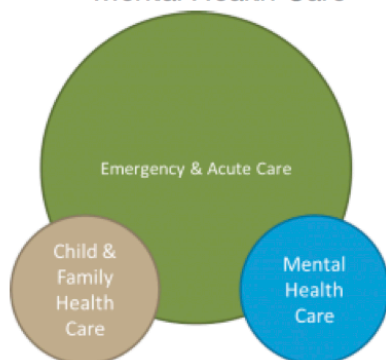
- *Care of Persons with Long Term Conditions*
- *Mental Health Care*



Example 2: Emergency Department Nurse Practitioner

Emergency & Acute Care Metaspecialty

- *Child & Family Health Care*
- *Mental Health Care*



When answering the following question, think of all the different nurse practitioner specialties that might exist in Australia.

How relevant are the following metaspecialties in representing Australian nurse practitioners as a whole?

	Not relevant	Somewhat relevant	Quite relevant	Highly relevant
Mental Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged & Palliative Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Care of People with Long-Term Conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Child & Family Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Primary Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency and Acute Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

From your prior answers you have indicated that you feel the aforementioned metaspecialties were not entirely relevant.

What metaspecialties would you propose?

Provide at least 4 but no more than 7 metaspecialties.

Metaspecialty 1	<input type="text"/>
Metaspecialty 2	<input type="text"/>
Metaspecialty 3	<input type="text"/>

Metaspecialty 4	<input type="text"/>
Metaspecialty 5	<input type="text"/>
Metaspecialty 6	<input type="text"/>
Metaspecialty 7	<input type="text"/>

Please provide rationale for each of your metaspecialty choices:

You have stated you feel Mental Health Care is
\${q://QID48/ChoiceGroup/SelectedAnswers/1} as a representative metaspecialty
for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Mental Health Care?

*Rate how sure you feel about your responses to the mental health care
metaspecialty.*

Very Unsure	Fairly confident, but not certain	Very Confident
1	2	3

Confidence



You have stated you feel Aged & Palliative Care is

$\{q://QID48/ChoiceGroup/SelectedAnswers/2\}$ as representative metaspecialty for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Aged & Palliative Care?

Rate how sure you feel about your responses to the aged and palliative care metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have stated you feel Care of People with Long Term Conditions is

$\{q://QID48/ChoiceGroup/SelectedAnswers/3\}$ as a representative metaspecialty for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Care of People with Long Term Conditions?

Rate how sure you feel about your responses to the care of long term conditions metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have stated Child & Family Health Care is
\${q://QID48/ChoiceGroup/SelectedAnswers/4} as a representative metaspecialty
for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Child & Family Health Care?

Rate how sure you feel about your responses to the child and family health care

metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have stated Primary Health Care is
\${q://QID48/ChoiceGroup/SelectedAnswers/5} as a representative metaspecialty
for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Primary Health Care?

*Rate how sure you feel about your responses to the primary health care
metaspecialty.*

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have stated Emergency and Acute Care is
\${q://QID48/ChoiceGroup/SelectedAnswers/6} as a representative metaspecialty
for the Australian NP profession.

What is your rationale for your response?

Your considered response is invaluable to the success of this process.

How confident are you in your responses regarding Emergency and Acute Care?

*Rate how sure you feel about your responses to the emergency and acute care
metaspecialty.*

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any further comments regarding the metaspecialties?
If so, please provide rationale for your answer(s).

Personal Characteristics

You're **almost** done! The next part is easy. Keep up the good work!

As a nurse practitioner, my clinical expertise would put me about here, relative to other nurse practitioners in my field:

Very high expertise ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No expertise at all

I think my ideas are, in essence, in agreement with the rest of nurse practitioners in my field:

"Ideas" refers to the views and beliefs that support your professional and clinical practice.

Yes, absolutely ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No, not at all

I know most of the nurse practitioners in my field very well:

Yes, pretty much ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No, none at all

I have some definite ideas about how nurse practitioner metaspecialties should be defined:

Yes, lots ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No, none

I have been in nursing for longer than most other nurse practitioners:

Yes ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No

I have a lot of experience working clinically as an endorsed nurse practitioner:

Yes ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No

I am anticipating that this study is going to be a good thing for Australian nurse practitioners:

Yes, I think it will be ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ No, I think it may be a waste of time

Demographics

What is your principal role in your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

- ☐ Clinician
 - ☐ Administrator
 - ☐ Teacher or educator
 - ☐ Researcher
 - ☐ Other
-

What is the principal area of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

- ☐ Aged Care
- ☐ Midwifery

- | | |
|---|---|
| <input type="radio"/> Community Health | <input type="radio"/> Mixed Medical/Surgical |
| <input type="radio"/> Critical Care and Emergency | <input type="radio"/> Paediatrics |
| <input type="radio"/> Education | <input type="radio"/> Peri-Operative |
| <input type="radio"/> Family, Maternal and Child Health | <input type="radio"/> Rehabilitation and Disability |
| <input type="radio"/> General Practice/Medical Practice | <input type="radio"/> Research |
| <input type="radio"/> Management | <input type="radio"/> Surgical |
| <input type="radio"/> Medical | <input type="radio"/> Other |
| <input type="radio"/> Mental Health | |
-

What is the work setting of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

- | | |
|--|--|
| <input type="radio"/> Locum private practice | <input type="radio"/> Hospice |
| <input type="radio"/> General practitioner (GP) practice | <input type="radio"/> Other residential health care facility |
| <input type="radio"/> Other private practice | <input type="radio"/> Commercial/business service |
| <input type="radio"/> Aboriginal health service | <input type="radio"/> Tertiary educational facility |
| <input type="radio"/> Community mental health service | <input type="radio"/> School |
| <input type="radio"/> Community drug and alcohol service | <input type="radio"/> Other educational facility |
| <input type="radio"/> Other community health care service | <input type="radio"/> Correctional services |
| <input type="radio"/> Hospital | <input type="radio"/> Defence forces |
| <input type="radio"/> Outpatient service | <input type="radio"/> Other government department or agency |
| <input type="radio"/> Residential aged care facility | <input type="radio"/> Other |
| <input type="radio"/> Residential mental health care service | |
-

Where is the location of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.



What term best describes the locality of your main job in nursing? (ASGC-RA Classification)

Not sure? You can check [HERE](#) by putting in your work address.

- ☐ RA1 - Major Cities of Australia
 - ☐ RA2 - Inner Regional Australia
 - ☐ RA3 - Outer Regional Australia
 - ☐ RA4 or RA5 - Remote or Very Remote Australia
-

Which employment sector best describes your primary job in nursing?

Answer for the sector in which you worked the most hours in the last six months.

Public sector employment is employment with an establishment run by the government sector. A public sector establishment:

- operates from the public accounts of a Commonwealth, state or territory government or is part of the executive, judicial or legislative arms of government,
- is part of the general government sector or is controlled by some part of the general government sector,
- provides government services free of charge or at nominal prices, and
- is financed mainly from taxation.

Private sector employment is employment by an establishment that may receive some government funding but is run by the non-government sector. Private sector establishments are not controlled by government, are directed by a group of officers, an executive committee or a similar body elected by a majority of

members, and may be an income tax exempt charity. Private sector employment include self-employed and/or contractors.

- ☐ Public Sector
 - ☐ Private Sector (Including non-profit organisations)
 - ☐ Not employed or am retired
-

Nursing Activities

Please tell us about your activities relating to nursing practice:

I have served on an international, national or state/territory-based committee as a representative of the NP profession.

- ☐ Yes
 - ☐ No
-

I have published in a peer-reviewed journals on topics relating to clinical practice or professional issues.

- ☐ Yes
 - ☐ No
-

I have been an invited speaker at an international, national or state/territory conference regarding clinical practice or professional issues.

- ☐ Yes
 - ☐ No
-

I have presented a paper or poster at an international, national or state/territory conference regarding clinical practice or professional issues.

- ☐ Yes
☐ No
-

I have served as a supervisor, preceptor or mentor for an NP or NP student.

- ☐ Yes
☐ No
-

Thank You!

Thank you for being a part our survey!

This completes **Round 1** of Delphi Survey 1, which is the longest and most complex in this study. You will be receiving another invite to participate in **Round 2** of Delphi Survey 1 in the near future.

If you have any questions or concerns, please contact:

Chris Helms, PhD Candidate

Email: cchelm001@myacu.edu.au

Mobile: (02) 6209 1355 or (02) 6209 1330

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Appendix N – Delphi Survey 1, Round 2



Introduction

Hi \${m://FirstName} -

Welcome to Delphi Survey 2 – **Round 1!** We have had an incredible response thus far, with 212 respondents representing many diverse specialties, professional experiences, practice locations and settings from across Australia. Your responses have been finalised and are presented here.

In Round 1, you were asked to rate whether or not you felt a metaspecialty (MS) name was relevant.



A relevant MS name represents a broad grouping of specialties with similar skillsets, knowledge and/or expertise, which comprehensively reflect the diverse healthcare needs of population groups.

IMPORTANT:

During Survey 1 - Round 2 you will be shown the following:

- A summary of participant feedback for each MS
- Your individual rating from Round 1 for each proposed MS

You must then do the following:

1. Carefully read and consider the presented information; then
2. Compare and rate the original MS with any proposed name refinements (if applicable)

PLEASE NOTE:

- There will be a total of 3 rounds for this survey (Survey 1). Round 3 of this survey will be presented in a similar, but much abbreviated format
- Remember, we are only establishing MS names in Survey 1. In Survey 2, we will establish clinical practice standards for each MS
- There can be only one name for each of the six MS areas. Round 2 has been designed to help you prioritise your relevancy ratings.
- Please record your responses within 2 weeks of your email invitation

If you have any questions or concerns, please contact Chris Helms at christopher.helms@myacu.edu.au

Executive Summary

In Round 1, participants demonstrated high consensus regarding the names of the six proposed MS. Participants were asked to provide a rationale for their responses, which have been summarised here for your review. Almost all (99%) participants provided a rationale for at least one of their MS responses, which indicates a high degree of engagement with Round 1.

Amongst those who **agreed** with the proposed MS, there were recurring themes across all six MS, as shown in the participant response summary below:

- The proposed MS fulfil their purpose as they represents broad specialty areas, and each contains a unique set of advanced skills, knowledge, and/or expertise
- The proposed MS represents a defined population group(s)

- Each MS represents care across diverse practice settings, health statuses and established area(s) of need, whether targeting groups known to be at risk for hospitalisation, those who are vulnerable and/or those who are marginalised
- Each MS reflect areas where NPs are currently established and have demonstrated positive outcomes
- Each MS allows for and demonstrates the unique contributions nursing makes to the health of the defined population

Amongst those who **disagreed with or were uncertain** regarding the proposed MS, there were recurring themes across all six MS, as indicated in the following participant response summary:

- The proposed MS are too broad in their scope and none contain a unique set of knowledge, skills and/or expertise that unifies it and clearly differentiate itself from others
- The MS represent nursing skills, knowledge and expertise that all nurse practitioners should aspire to incorporate into their practice, irrespective of specialty practice
- Some participants had no exposure to NPs who work in specialty fields relevant to the proposed MS, and were uncertain about the characteristics of practice one or more MS implied, which created ambivalence in their MS relevancy ratings
- There is concern regarding those NPs who work across inpatient to outpatient settings, and where they fit in the proposed MS
- It is understood that establishing metaspecialties will assist in future education and training of NP students, but there is concern regarding currently endorsed specialist NPs and whether they “fit” within a single MS area.

Only those statements which assist in helping participants validate the relevant MS names will be included in the following pages. **Some MS titles have been suggested which, although commonly used in healthcare, imply a framework based in medicine as opposed to one whose origins have grown from nursing. Please carefully consider this in your decision-making.** Additional information gathered from your responses in the first round were very relevant and will be extremely helpful in the design of Delphi Survey 2.

Options for refinement in the wording of the MS have been provided in the following sections, as well as a

summary of supporting and refuting responses unique to each MS.

Please read the instructions in the following sections carefully.

Answer choices are randomised and may appear differently on each page of the survey.

Metaspecialty 1

Proposed Name of Metaspecialty:

Emergency and Acute Care

Your Response:

You rated this MS as ***{e://Field/EAC1}***

Summary of Group Rationale:

The following responses are in addition to those provided on page 2.

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

- Reflects care exclusively performed in the hospital environment, which is at the other end of the spectrum from *Primary Health Care*
- Broadly applicable to NPs who have specialised expertise and skills in acute medical and/or surgical interventions in the context of stabilising the episodic complaint in the deteriorating or unstable patient
- Reflects the largest group of NPs
- The two terms complement one another
- NPs in this area are often proceduralists, which is a growth area for NPs
- Encompasses care across the lifespan

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- Confusing, as it separates out one specialty (Emergency) and groups the others together in a hospital

environment; therefore believe it should simply state “acute care” or “acute and supportive care”

- Not certain what acute care means (setting vs illness state) and how its duration is defined
- Uncertain if this MS encompasses critical care and perioperative services, as they seem to be quite different in approach

Please note:

1. You can only rate **ONE** of the MS names below as Somewhat, Quite or Highly Relevant.
2. Be aware that the **lower** you rate the MS name or any of its alternatives, the **lower** the likelihood that name(s) will be represented in the final list of MS.

Given the above information, consider the following options and rate how relevant each might be in representing the ***name of this metaspécialty***.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Emergency and Acute Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acute Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acute and Supportive Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspécialty?

Rate how sure you feel about your responses to this metaspécialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Emergency and Acute Care metaspecialty.

What was the single most important factor which influenced your change in opinion?

- ☐ New evidence was presented which provided me with a perspective I had not previously considered.
 - ☐ I have changed my response to speed up the process.
 - ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
 - ☐ I feel the evidence presented was given with greater expertise than mine.
 - ☐ There were a greater number of compelling arguments presented.
-

Metaspecialty 2

Proposed Name of Metaspecialty:
Aged and Palliative Care

Your Response:

In Round 1 you rated this MS as **#{e://Field/APC1}**

Summary of Group Rationale:

The following responses are in addition to those provided on page 2.

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

- Reflects general skills and expertise that complement one another for end of life care
- Relevant because it reflects an area with great potential for future growth in Australia
- Reflects a broad area of practice requiring unique advanced knowledge and skills in:
 - The pathophysiology, pharmacology and pharmacotherapeutics in these populations, including an emphasis on appropriate de-prescribing
 - The assessment and treatment of cognitive decline and/or impairment
 - The application of specialised management strategies that focus on enhancing quality of life and the promotion of independence
 - Case management across community, sub-acute and hospital sectors
 - The application of legal and legislative frameworks unique to these populations

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- It is inappropriate to group palliation with aged care as it shifts the focus of care from the promotion of healthy ageing to that of terminal illness, death and dying
- Palliation has a different focus of care; comfort not cure
- Palliation should be separated as it occurs across the lifespan
- Palliation is part of the continuum of the *Care of People with Long Term Conditions*

Please note:

1. You can only rate **ONE** of the MS names below as Somewhat, Quite or Highly Relevant.
2. Be aware that the **lower** you rate the MS name or any of its alternatives, the **lower** the likelihood that name(s) will be represented in the final list of MS.

Given the above information, consider the following options and rate how relevant each might be in representing the **name of this metaspecialty**.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Aged and Palliative Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palliative Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Aged and Palliative Care metaspecialty.

What was the single most important factor which influenced your change in opinion?

- ☐ New evidence was presented which provided me with a perspective I had not previously considered.
- ☐ I feel the evidence presented was given with greater expertise than mine.
- ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
- ☐ There were a greater number of compelling arguments presented.
- ☐ I have changed my response to speed up the process.

Metaspecialty 3

Proposed Name of Metaspecialty:
Mental Health Care

Your Response:

In Round 1 you rated this MS as **5** (e://Field/MHC1)

Summary of Group Rationale:

The following responses are in addition to those provided on page 2

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

-
- Relevant across the lifespan and all comorbidities
- Encompasses extensive knowledge, skills and expertise distinct from other areas, because the root cause(s) of mental illness, and how it is diagnosed and managed is unique from other areas
- Intersects with all other MS yet has its own specialised skillset
- Represents an entire spectrum of illnesses and specialties, much like the

other MS

- The MS is unique in that it includes not only the marginalised populations seen in other MS, but represents an entire spectrum of specialties which focuses on a population group that is stigmatised
- Reflects a broad area of practice requiring unique advanced knowledge and skills in the application of legal frameworks which support and protect the mental health client

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- Mental health in itself is a long-term condition and could be integrated into *Care of People with Long Term Conditions*
- The MS represents a skillset broadly applicable to all nursing specialties

Please note:

1. You can rate the MS names below as Not, Somewhat, Quite or Highly Relevant.
2. Be aware that the **lower** you rate the MS name, the **lower** the likelihood this name will be represented in the final list of MS.

Given the above information, consider the following option and rate how relevant it might be in representing the **name of this metaspecialty**.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Mental Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Mental Health Care metaspecialty.

What was the single most important factor which influenced your change in opinion?

- ☐ I have changed my response to speed up the process.
 - ☐ New evidence was presented which provided me with a perspective I had not previously considered.
 - ☐ I feel the evidence presented was given with greater expertise than mine.
 - ☐ There were a greater number of compelling arguments presented.
 - ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
-

Metaspecialty 4

Proposed Name of Metaspecialty:
Primary Health Care

Your Response:

In Round 1 you rated this MS as **{e://Field/PHC1}**

Summary of Group Rationale:

The following responses are in addition to those provided on page 2

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

- A MS area which broadly addresses the social determinants of health through a primary emphasis on community-based health promotion and disease prevention strategies
- Reflects only those specialty areas which exclusively focus their care in the community setting
- Reflects those specialty areas which ideally serve as the first point of contact in the community
- Reflects a greater capacity for the provision of generalist practice, which is especially seen in rural and remote areas, and is care provided across the lifespan, irrespective of disease state or illness
- Reflects collaborative, contemporary practice in general practice, community health centre and aboriginal health centre environments
- Reflects greater scope for NPs to provide those living in the community an alternative to medically-directed care

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- There is uncertainty about the differences in definition of *primary health care* and *primary care* and what is implied in the MS title

Please note:

1. You can only rate **ONE** of the MS names below as Somewhat, Quite or Highly Relevant.
2. Be aware that the **lower** you rate the MS name or any of its alternatives, the **lower** the likelihood that name(s) will be represented in the final list of MS.

Given the above information, consider the following options and rate how relevant each might be in representing the **name of this metaspécialty**.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Primary Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Primary Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspécialty?

Rate how sure you feel about your responses to this metaspécialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Primary Health Care metaspécialty.

What was the single most important factor which influenced your change in opinion?

- ☐ New evidence was presented which provided me with a perspective I had not previously considered.
 - ☐ I have changed my response to speed up the process.
 - ☐ I feel the evidence presented was given with greater expertise than mine.
 - ☐ There were a greater number of compelling arguments presented.
 - ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
-

Metaspecialty 5

Proposed Name of Metaspecialty:
Care of People with Long Term Conditions

Your Response:

In Round 1 you rated this MS as **#{e://Field/CDM1}**

Summary of Group Rationale:

The following responses are in addition to those provided on page 2

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

- Allows greater scope for specialists in a particular chronic disease to broaden their ability to care for concomitant disease relating to their specialty area
- Increasing burden of chronic illnesses in Australia and the diversity of specialties this represents makes this a relevant MS area
- Is a more relevant term than “Chronic Disease” [no rationale provided]

- Is different from disease management in the *Aged and Palliative Care* MS, as priorities shift in this population
- Differentiates itself from the *Mental Health Care* MS and its implied chronic nature, as priorities, approaches in care and language used are different in mental health

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- The MS name is complicated and should be reworded to “Chronic and Complex Care” as it is easier to say, and better understood by other clinicians and specialties. Include chronic because not all conditions are complex in their diagnosis and/or management (eg: osteoarthritis vs. lupus)
- “Chronic disease management” is preferred as there is no implication that an individual will live for a long time with their illnesses
- The MS name can be confused with disabled people or those in chronic rehabilitation
- All MS have elements of chronic illness, therefore this MS is actually a skill that all MS should have
- Feel there is too much vagueness in the term “long term condition” and the length of time this entails. For example, where do wound care NPs or people who have disabilities belong in this?
- Feel the MS should be incorporated into another MS area such as *Primary Health Care*

Please note:

1. You can only rate *ONE* of the MS names below as *Somewhat, Quite or Highly Relevant*.
2. Be aware that the **lower** you rate the MS name or any of its alternatives, the

lower the likelihood that name(s) will be represented in the final list of MS.

Given the above information, consider the following options and rate how relevant each might be in representing the **name of this metaspecialty**.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Care of People with Long Term Conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic and Complex Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic Disease Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Care of People with Long Term Conditions metaspecialty.

What was the single most important factor which influenced your change in opinion?

- ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
- ☐ New evidence was presented which provided me with a perspective I had not previously considered.
- ☐ There were a greater number of compelling arguments presented.
- ☐ I feel the evidence presented was given with greater expertise than mine.
- ☐ I have changed my response to speed up the process.

Metaspecialty 6

Proposed Name of Metaspecialty:
Child and Family Health Care

Your Response:

In Round 1 you rated this MS as **{e://Field/CFH1}**

Summary of Group Rationale:

The following responses are in addition to those provided on page 2

Rationale provided by participants who voiced overall agreement with the proposed MS name includes:

- Requires extensive knowledge and skills in screening for and identifying normal from abnormal growth and development in early life
- Addresses how health and wellness, as well as how disease of the individual, affects the family unit
- Allows for a clear focus of care on the opposite side of the lifespan continuum from the *Aged and Palliative Care* MS
- Acute and chronic conditions frequently have unique presentations in

children, making this a unique MS

- Has a strong preventative focus involving the child, but focuses treatment plans on carer(s) who are critical for implementing prevention and treatment strategies, making this a unique MS
- Provides a clear focus for those NPs who are also midwives

Rationale provided by participants who voiced uncertainty or disagreement about the MS name includes:

- This name represents an existing registered nursing workforce specialty area, as opposed to representing a MS area specific to nurse practitioners
- Should be reworded to "Paediatrics," as this would clearly define the MS
- Children belong within a family unit; this MS should therefore be called "Family Health Care"
- The MS name would be strengthened if reworded to "Child and Maternal Healthcare"
- Both "child" and "family" groups within this MS could easily be incorporated into the *Primary Health Care* MS
- Uncertain if neonates would fit within this MS
- Blurs the professional lines between antenatal and midwifery practitioners

Please note:

1. *You can only rate ONE of the MS names below as Somewhat, Quite or Highly Relevant.*
2. *Be aware that the **lower** you rate the MS name or any of its alternatives, the **lower** the likelihood that name(s) will be represented in the final list of MS.*

Given the above information, consider the following options and rate how relevant

each might be in representing the ***name of the metaspecialty***.

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Child and Family Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Child and Maternal Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paediatrics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family Health Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your initial Round 1 response regarding the relevancy of the Child and Family Health Care metaspecialty.

What was the single most important factor which influenced your change in opinion?

- ☐ There were a greater number of compelling arguments presented.
- ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
- ☐ New evidence was presented which provided me with a perspective I had not

previously considered.

- ☐ I feel the evidence presented was given with greater expertise than mine.
- ☐ I have changed my response to speed up the process.

Thank you!

Thank you!

This completes **Round 2** of Delphi Survey 1. You will be receiving another invite to participate in **Round 3** of Delphi Survey 1 in the near future. Round 3 will be the *last* round of Survey 1.

If you anticipate having difficulties accessing your emails over the holiday period, please ensure you let us know. We'd be happy to modify your details as appropriate.

If you have any questions or concerns, please contact:

Chris Helms, PhD Candidate

Email: cchelm001@myacu.edu.au

Mobile: (02) 6209 1355 or (02) 6209 1330

Remember to click "Save and Continue" below to save your survey response!

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Appendix O – Delphi Survey 1, Round 3



Introduction

Hi \${m://FirstName} -

Welcome to Delphi Survey 1 – **Round 3!** This is the **final round of Delphi Survey 1**, which validates the names for each of the Australian nurse practitioner metaspecialties (MS). In Delphi Survey 2, which will begin in late February/early March 2015, we will then establish clinical practice standards for each of the validated MS.



In Round 2 you were given participant rationale for each of the MS names and given the opportunity to rate the relevancy of these names, as well as any proposed refinements to these names. As you might recall, a MS name will only be included in the final list if there is a consensus of 85% or more amongst the participants.

The following metaspecialties achieved group consensus in Round 2:

- Mental Health Care: 98% consensus
- Primary Health Care: 97% consensus
- Emergency and Acute Care: 90% consensus
- Child and Family Health Care: 85% consensus

As these MS have already achieved a high level of consensus, they are now validated and are included in the final list of MS.

The remaining MS did not achieve group consensus. **You will be voting for the most relevant name for the remaining MS in this round.**

A relevant MS name represents a broad grouping of specialties with similar skillsets, knowledge and/or expertise, which comprehensively reflect the diverse healthcare needs of population groups.

IMPORTANT:

During Survey 1 - Round 3 you will be shown the following:

- Your Round 2 ratings for each proposed MS name
- The group's median relevancy rating for the MS name

You must then do the following:

1. Carefully read and consider the presented information; then
2. Choose the most appropriate name which represents that MS

PLEASE NOTE:

- Round 3 has been designed to help you prioritise your relevancy ratings. Your choices during this round will determine the remaining MS and their names.

- Please record your responses within 2 weeks of your email invitation
- **Please read the following pages carefully**

If you have any questions or concerns, please contact Chris Helms at cchelm001@myacu.edu.au.

Metaspecialty A

Metaspecialty A

Your Response:

In Round 2 you rated the following alternative names for this MS as:

Aged and Palliative Care: **`{e://Field/APC2}`**

Aged Care: **`{e://Field/Aged_Care}`**

Palliative Care: **`{e://Field/Palliative_Care}`**

Group Response:

The group median was recorded on the following scale:

1 = Not Relevant

2 = Somewhat Relevant

3 = Quite Relevant

4 = Highly Relevant

If a participant rated a name as “Not Relevant” it received 1 point, “Somewhat Relevant,” 2 points and so on. Participants in Round 2 rated the median relevancy of the following names as follows:

Aged and Palliative Care was rated 2.95 out of 4

Aged Care was rated 2.75 out of 4

Palliative Care was rated 2.41 out of 4

Important Key Points:

From the previous Delphi rounds it appears that participants responses fall into the following three groups:

- "Aged and Palliative Care" is representative of a single MS;
- "Aged and Palliative Care" should be separated into two distinct MS;
- One or both of "Aged" or "Palliative" should not be included in the MS name.

In considering your responses to this round, please be aware that:

- If you rate the "Aged and Palliative Care" name as "Quite" or "Highly" relevant, you think "aged" and "palliative" care belong together and represent the name of a **single MS**
- If you rate **both** "Aged Care" and "Palliative Care" as "Quite" or "Highly" relevant, you think **both** represent the names of **two distinct MS**
- If you rate either "Palliative Care" or "Aged Care" as "Not" or "Somewhat" relevant, you think one or both are not MS, and should be absorbed under the umbrellas of other MS
- If **none** of the alternatives MS names meet the 85% consensus level, it implies you believe none represent the name of a MS area, and all specialties relating to "Aged" and "Palliative" care should be absorbed under the umbrellas of other MS

Given the above information, consider the following option and rate how relevant it might be in representing the name of the MS:

Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
--------------	----------------------	-------------------	--------------------

Aged and Palliative
Care

☐☐☐☐

You have indicated you think "Aged and Palliative Care" is not a MS name.

Please rate whether you think "Aged Care" and/or "Palliative Care" are relevant MS names:

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Aged Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palliative Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Metaspecialty A Further Information

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your Round 2 responses regarding the relevancy of this MS name.

What was the single most important factor which influenced your change in opinion?

- ☐ I feel the evidence presented was given with greater expertise than mine.
- ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
- ☐ I have changed my response to speed up the process.
- ☐ There were a greater number of compelling arguments presented.
- ☐ New evidence was presented which provided me with a perspective I had not previously considered.

Metaspecialty B

Metaspecialty B

Your Response:

In Round 2 you rated the following alternative names for this MS as:

Care of People with Long Term Conditions: **`{e://Field/CPLTC2}`**

Chronic and Complex Care: **`{e://Field/Chronic_Complex}`**

Chronic Disease Management: **`{e://Field/CDM2}`**

Chronic Care: **`{e://Field/Chronic_Care}`**

Group Response:

The group median was recorded on the following scale:

1 = Not Relevant

2 = Somewhat Relevant

3 = Quite Relevant

4 = Highly Relevant

If a participant rated a name as “Not Relevant” it received 1 point, “Somewhat Relevant,” 2 points and so on. Participants in Round 2 rated the median

relevancy of the following names as follows:

Chronic and Complex Care was rated 3.00 out of 4

Chronic Disease Management was rated 2.74 out of 4

Care of People with Long Term Conditions was rated 2.24 out of 4

“Chronic Care” received so few respondents in support during round 2 that this MS name has been excluded from this round.

Important Key Points:

1. There can only be ONE name for this MS
2. The **lower** you rate **any** of the alternatives, the **lower** the chance that alternative name will be in the final MS list
3. If **none** of the alternatives MS names meet the 85% consensus level, it implies none represent the name of a MS area, and this MS will be absorbed under the umbrellas of other MS

Given the above information, consider the following options and rate how relevant each might be in representing the name of this MS:

	Not Relevant	Somewhat Relevant	Quite Relevant	Highly Relevant
Chronic and Complex Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic Disease Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Care of People with Long Term Conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Metaspecialty B Further Information

How confident are you in your responses regarding this metaspecialty?

Rate how sure you feel about your responses to this metaspecialty.

	Very Unsure	Fairly confident, but not certain	Very Confident
	1	2	3
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You've indicated a change in opinion from your Round 2 responses regarding the relevancy of this MS name.

What was the single most important factor which influenced your change in opinion?

- ☐ There were a greater number of compelling arguments presented.
 - ☐ I feel the evidence presented was given with greater expertise than mine.
 - ☐ Evidence was presented which re-affirmed and/or strengthened my initial judgement.
 - ☐ I have changed my response to speed up the process.
 - ☐ New evidence was presented which provided me with a perspective I had not previously considered.
-

Thank you!

Thank you!

This completes **Round 3** of Delphi Survey 1. Delphi Survey 1 is now complete!

You will receive an invitation to participate in Delphi Survey 2, which establishes the clinical practice standards for each validated metaspécialty, in approximately 3-4 weeks.

If you anticipate having difficulties accessing your emails over the period of the study, please ensure you let us know. We'd be happy to modify your details as appropriate.

If you have any questions or concerns, please contact:

Chris Helms, PhD Candidate

Email: cchelm001@myacu.edu.au

Mobile: (02) 6209 1355 or (02) 6209 1330

Remember to click "Save and Continue" below to save your survey response!

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Appendix P – Delphi Survey 1: Online Consent



Consent for Publication of Name in CLLEVER2, Phase 2 Research

Dear \${m://FirstName}:

Thank you for your participation in Delphi Survey 1 (DS1)! On behalf of Anne Gardner and the CLLEVER2 investigative team, we sincerely appreciate your ongoing contribution to nurse practitioner metaspecialty research.



The publication of the results from DS1 is nearing completion. As promised, you have the option of having your name published in a list of those participants who had contributed to and completed DS1. Pending acceptance by the journal publisher, this list will be published along with the final results of DS1 in a peer-reviewed journal.

\${m://FirstName}, do you want your first and surname to be included in the list of contributing participants?

If so, read and complete the consent below:

CONSENT FORM

(CLLEVER 2, Phase 2: Consent to Publish Name of Panel Member)

TITLE OF PROJECT:

Educating for health service reform: CLinical LEarning, goVERNance, and capability (CLLEVER 2)

NAME OF PRINCIPAL INVESTIGATOR: Prof Anne Gardner

NAME OF STUDENT RESEARCHER: Mr Chris Helms

I, \${m://FirstName} \${m://LastName} have read and understood the information provided in the Participant Information Letter. Any questions I have asked have been answered to my satisfaction. I voluntarily elect to have my name listed as a contributing panel member in the final published research.

I understand that I can withdraw this consent at any time up to 1 month after completion of the study.

By typing your **First**
and **Surname** you are
indicating on
02/01/2017 you have
provided consent to
have your first and
surname listed as a
contributing panel
member in Delphi
Survey1:

Would you like a Certificate of Continuing Professional Development for your involvement in DS1? If so, please indicate below:

- ☐ Yes, please email me a CPD certificate.
- ☐ I don't need one, thanks!

Please confirm you are not a

robot:



Type the text

Privacy & Terms

Please indicate below whether you would like to participate in Delphi Survey 2:

- ☐ I wish to continue participation in Delphi Survey 2
- ☐ I wish to withdraw from Delphi Survey 2
-

We're Recruiting...

If you know of anyone who:

- Is an AHPRA-endorsed nurse practitioner, and
- Has at least 12 months' post-endorsement experience, and
- Is interested in contributing to Delphi Survey 2,

Please feel free to provide our contact details.

As always, please feel free to contact us with any questions or concerns you might have.

Chris Helms, RN MSN(NP) APN-BC FACNP

PhD Candidate - School of Nursing, Midwifery and Paramedicine

Faculty of Health Sciences

Australian Catholic University

E: christopher.helms@myacu.edu.au

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PO Box 256 Dickson ACT 2602

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T: +61(0)262091330 F: +61(0)262091113 W: www.acu.edu.au

Please click on the button below to complete your submission.

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Appendix Q – Delphi Survey 2, Round 1



Introduction

Dear \${m://FirstName}:

Welcome to the CLLEVER2, Phase 2, Delphi Study 2 research study!

For this study you will be taking part in Delphi research. The purpose of this research method is to **achieve consensus** on issues affecting the learning and teaching of nurse practitioner (NP) students. This page provides you with important information on how this research study will be conducted and what to expect from a Delphi study.

A single Delphi study consists of approximately **3 rounds**. Each round will last approximately **1 week**, with completion of all 3 rounds of this Delphi study within approximately **4-6 weeks**. You will be required to complete each round within 7 days of receipt of your survey link.

The expected outcome of this Delphi study is to **establish clinical practice standard statements for the NP metaspecialties**.

- For a copy of the *Participant Information Letter*, click below:
[20160323 Participant Information Letter for CLLEVER2, Phase 2, Delphi Survey 2](#)

Information required to complete this study will be provided at its outset. If you have any questions or concerns for this study, please contact:

Prof Anne Gardner, Chief investigator CLLEVER2 study

Email: anne.gardner@acu.edu.au

Phone: (02) 6209 1330

Mr Chris Helms, PhD Candidate

Email: Christopher.helms@myacu.edu.au

Phone: (02) 6209 1355

This material forms part of my PhD.

Please treat this survey confidentially and do not share or discuss information contained with others.

This research project has received Human Research Ethics Committee Approval from Australian Catholic University. Approval Number 2013 174N.

By clicking the button below you will begin Delphi Study 2 and are consenting to take part in this research:

Preamble for Delphi Survey 2 (DS2), Round 1

\$(m://FirstName), thank you for agreeing to participate in DS2!

We understand your time is valuable, so we're providing the following information to help guide you as quickly and efficiently through the process.

Please carefully review the below information, which will provide you with important study instructions, as well as background information on the CLLEVER2 Study and the Australian Nurse Practitioner (NP) metaspecialties:

IMPORTANT Survey Instructions:

1. ***The first round of a Delphi survey is the most time-intensive and requires the greatest thought; subsequent rounds are shorter in duration. Information provided in the first round assists in determining consensus in subsequent rounds.***
2. Please ***rate the relevancy*** of the proposed clinical practice standards now, as well as their ***future relevancy*** as the NP profession ***grows and evolves***.
3. The purpose of DS2 is to achieve consensus on the proposed clinical practice standard statements. You will be able to propose alternative wording, as well as novel clinical practice standard statements ***in the first round only***, so that you may evaluate any proposed re-wording, novel statements, and their relevancy in subsequent rounds.
4. ***In reviewing these standards think broad, not narrow. Clinical practice standards are not the same as representative activities*** within the standard.
5. Final clinical practice standard statements will only be included if they've achieved an 85% relevancy rating (by rating the item quite or highly relevant) by the end of the final round.
6. Please refrain from discussing this research with others as you may unknowingly influence the judgement of others involved in the study.
7. Please provide responses ***within 1 week of receiving your survey link***. Otherwise, this may create unnecessary delays and frustration for others involved in the study.
8. Be aware this is a ***smart survey***. Your options will change, depending on answers given so read each question carefully.
9. ***Running out of time? No worries, you can save your progress and return later using the hyperlink in your survey invitation email!***

To obtain a hard copy of this information for your consideration, please click [HERE: Hard Copy of Delphi Survey 2 Instructions and Preamble](#). Please remember to keep this information confidential.

Background:

A metaspecialty groups NP specialties that have similar skillsets, knowledge and expertise, which comprehensively reflect the diverse healthcare needs of population groups. Most NPs will draw upon standards from one or two primary metaspecialties, but may find their individual roles encompass other metaspecialties, depending on existing and developing individual skills, knowledge and expertise.

Four metaspecialty (MS) titles achieved consensus amongst a large sample (n=197) of NPs in Delphi Survey 1, to which you may have contributed. These four validated titles were:

- Mental Health Care
- Child and Family Health Care
- Acute and Emergency Care
- Primary Health Care

Two MS titles did not achieve consensus in Delphi Survey 1 (DS1). These un-validated MS titles were 'aged and palliative care' and 'care of persons with long term conditions'. The feedback about these two titles during DS1 was important in informing the research team about the strengths and limitations of the proposed titles. The researchers concluded that more work needs to be completed to resolve the titles and scope of the un-validated MS, and that this should take place separate to the online Delphi study. Information gathered from [this survey](#) (Delphi Survey 2 - DS2) may be important for those NPs whose practice may reflect the un-validated MS areas, as data from this study may help inform future discussions and research in this area.

The aim of DS2 is to confirm standard statements used for the clinical component of NP MS practice. As you are aware, *generic* practice standards exist

for NPs through the NMBA [Nurse Practitioner Standards for Practice](#). These **MS clinical** practice standard statements will assist in guiding NP student [clinical](#) education in specific specialty/clinical fields and may inform professional development for endorsed NPs. (**Not** for NP endorsement with the Nursing and Midwifery Board of Australia.)

For individual NPs, MS clinical practice standards from one or several MS may be relevant, depending on their existing and planned clinical roles. However, for practical analytical reasons you will be asked to select and consider a maximum of two MS at the beginning of this study (DS2).

You will see the structure of this Delphi retains the titles of the original six MS.

This has been done so that we can continue to collect consistent information which assists in future work that further examines and encapsulates the un-validated metaspecialty titles.

For further information regarding the CLLEVER study, please click [HERE](#).

Validated Metaspecialty Provisional Definitions

NOTE: These definitions were compiled from participant responses from Phase 1 of CLLEVER2, and will be finalised pending completion of the CLLEVER2 study.

Mental Health Care

This MS focuses on the psychological and emotional well-being of a person. This MS title recognises that good mental health is not just the absence of mental illness, but is a 'state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' ([WHO, 2007](#)). This MS incorporates care for people with mental health problems and recognises the importance of recovery-orientated mental health practice across the short and long-term care of the client. This MS may extend across community and tertiary

care contexts of practice.

Emergency and Acute Care

This MS incorporates health care delivery for the acute phase of episodic illness, which may commence with the need for early, rapid and resuscitative treatment for an undifferentiated health condition. This MS scope can include both life-threatening and non-urgent care. Its context is situated in an environment established for this service, be it an emergency department, critical care unit, perioperative unit, acute hospital facility or other emergency care context, such as an ambulance or field hospital. This MS assumes a care continuum from resuscitation to follow-up. (Extended from [O'Connell, 2014](#)).

Child and Family Health Care

This MS focusses on the health and well-being of the child in the short and/or intermediate term, and within the broader context of the family unit, however defined by the client themselves. In particular, it includes care of a mother's health and well-being, recognising that a woman may seek healthcare during or soon after pregnancy outside the specific context of midwifery care. Its scope includes all children and adolescents and may encapsulate primary to tertiary care contexts of practice. The intersection between the individual and family unit facilitates a case management framework within this MS.

Primary Health Care

This MS focusses on healthcare that is delivered as the first point of contact, and is solely based in the community context of practice. This may include primary care contexts such as community-based clinics, general practices, schools, custodial/detention facilities, occupational settings, pharmacies and/or patient's homes. NPs working in this area have a strong focus on the care of the individual across the lifespan, and practice across the short and long-term care of the client. They emphasise primary and secondary health promotion and disease prevention strategies in their care through case management approaches, and have a thorough understanding of the social determinants of health and their impact on care planning and delivery. They require extensive knowledge of population and public

health strategies, and provide expert linkages from the community to tertiary and long-term care contexts.

Un-Validated Metaspecialty Provisional Definitions

NOTE: These definitions were informed by participant responses from Phase 1 of CLLEVER2. The CLLEVER2 team will continue to work separately with the NP profession on these un-validated metaspecialty titles.

Aged and Palliative Care

This MS title focusses on a diverse client group that are nearing or surpassing their anticipated life expectancy. The limitation on life expectancy influences the person's management goals for acute and chronic illnesses, and the degree and type of health intervention most appropriate for them. This population group includes those needing supportive or end of life care, but also targets interventions that promote healthy ageing. A common thread is that health promotion goals are moderated by a limited life expectancy, with care occurring in community, to aged care and tertiary care contexts of practice.

Care of Persons with Long-Term Conditions

This MS title focusses on those population groups with chronic or complex illness. This MS encompasses the diagnosis and management of common long-term conditions. It emphasises tertiary health promotion and disease prevention strategies and recognises the fact that many long-term conditions intersect. Therefore, an NP drawing on standards from this MS may manage several common chronic conditions related to their primary area of interest. The metaspecialty includes those in the rehabilitation phase of an acute or chronic illness and spans primary to tertiary care contexts across the lifespan.

The phrase 'long term conditions' is preferred to 'chronic illness' or 'chronic disease' by health care consumers because it suggests it is possible to control health care conditions, and also voices their preference to not be defined by one's illness. The phrase recognises that, whilst a person may have a chronic disease, the trajectory

of their life will include periods of wellness as well as periods of illness.

Participant Demographics

In order to provide us with current demographic and practice information please complete the following:

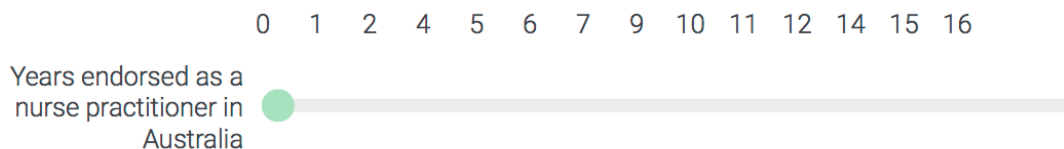
Do you hold endorsement as a nurse practitioner through the Nursing and Midwifery Board of Australia/AHPRA?

Yes

No

How many year(s) have you been endorsed as a nurse practitioner in Australia?

Include years regardless of full-time or part-time status in whole years only.



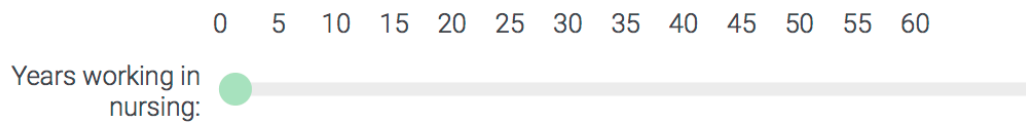
In total, how many years have you worked in nursing ?

Include years regardless of full-time or part-time status in whole years only.

Exclude time spent not working and unpaid leave.

Include years practicing as a nurse practitioner, as well as any managerial,

education and research positions related to the nursing profession.



What is your principal role in your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

Clinician
Administrator
Teacher or educator
Researcher
Other

What is the principal area of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

Aged Care	Midwifery
Community Health	Mixed Medical/Surgical
Critical Care and Emergency	Paediatrics
Education	Peri-Operative
Family, Maternal and Child Health	Rehabilitation and Disability
General Practice/Medical Practice	Research
Management	Surgical
Medical	Other
Mental Health	

What is the work setting of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.

Locum private practice	Hospice
General practitioner (GP) practice	Other residential health care facility
Other private practice	Commercial/business service
Aboriginal health service	Tertiary educational facility
Community mental health service	School
Community drug and alcohol service	Other educational facility
Other community health care service	Correctional services
Hospital	Defence forces
Outpatient service	Other government department or agency
Residential aged care facility	Other
Residential mental health care service	

Where is the location of your main job in nursing?

Answer for the job in which you worked the most hours in the last six months.



What term best describes the locality of your main job in nursing? (ASGC-RA Classification)

Not sure? You can check [HERE](#) by putting in your work address.

- RA1 - Major Cities of Australia
- RA2 - Inner Regional Australia
- RA3 - Outer Regional Australia
- RA4 or RA5 - Remote or Very Remote Australia

Which employment sector best describes your primary job in nursing?

Answer for the sector in which you worked the most hours in the last six months.

Public sector employment is employment with an establishment run by the government sector. A public sector establishment:

- operates from the public accounts of a Commonwealth, state or territory government or is part of the executive, judicial or legislative arms of government,
- is part of the general government sector or is controlled by some part of the general government sector,
- provides government services free of charge or at nominal prices, and
- is financed mainly from taxation.

Private sector employment is employment by an establishment that may receive some government funding but is run by the non-government sector. Private sector establishments are not controlled by government, are directed by a group of officers, an executive committee or a similar body elected by a majority of members, and may be an income tax exempt charity. Private sector employment include self-employed and/or contractors.

Public Sector

Private Sector (Including non-profit organisations)

Not employed or am retired

Please indicate your **job title and specialty area** in the free text boxes below. Answer for the job in which you worked the most hours in the last six months. If currently unemployed as a nurse practitioner, please indicate so under "Job Title."

Job Title

Specialty Area of
Practice

Please tell us about your activities relating to nursing practice:

I have served on an international, national or state/territory-based committee as a representative of the NP profession.

Yes

No

I have published in a peer-reviewed journals on topics relating to clinical practice or professional issues.

Yes

No

I have been an invited speaker at an international, national or state/territory conference regarding clinical practice or professional issues.

Yes

No

I have presented a paper or poster at an international, national or state/territory conference regarding clinical practice or professional issues.

Yes

No

I have served as a supervisor, preceptor or mentor for an NP or NP student.

Yes

No

Metaspecialty Election

Please elect **one or two primary** metaspecialties (MS) that best describe your individual scope of practice.

N.B. The research team understands an individual nurse practitioner may belong to several metaspecialties. In order to streamline your responses and decrease the amount of time required to complete this survey, your choices have been limited to one or two maximum primary metaspecialties.

Your choice(s) will determine the MS clinical practice standards to which you will contribute throughout Delphi Survey 2.

IMPORTANT: You will be establishing metaspecialty clinical practice standards which will not only be relevant now, but will be relevant when you think of how our profession evolves and grows over the next 10 years.

WARNING: Choose carefully, as you will not be able to go back after submitting your answers on this page.

Emergency and Acute Care

Primary Health Care

Child and Family Health Care

Mental Health Care

Aged and Palliative Care

Care of Persons with Long-Term Conditions

Metaspecialty Clinical Practice Standards - Care of Persons Long Term Conditions

You have chosen to validate the clinical practice standards for the **Care of Persons with Long Term Conditions metaspecialty**.

There are **fourteen (14) proposed clinical practice standards** in this metaspecialty. If desired, you may download the [Care of Persons with Long Term Conditions Clinical Practice Standards here](#).

You will be given the opportunity to provide additional suggested clinical practice standards for group consideration at the end of this section.

Provisional Definition:

This MS title focusses on those population groups with chronic or complex illness. This MS encompasses the diagnosis and management of common long-term conditions. It emphasises tertiary health promotion and disease prevention strategies and recognises the fact that many long-term conditions intersect. Therefore, an NP drawing on standards from this MS may manage several common chronic conditions related to their primary area of interest. The metaspecialty includes those in the rehabilitation phase of an acute or chronic illness and spans primary to tertiary care contexts across the lifespan.

The phrase 'long term conditions' is preferred to 'chronic illness' or 'chronic disease' by health care consumers because it suggests it is possible to control health care conditions, and also voices their preference to not be defined by one's illness. The phrase recognises that, whilst a person may have a chronic disease, the trajectory of their life will include periods of wellness as well as periods of illness.

REMEMBER:

Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.

Care of Persons with Long Term Conditions - Standard 1

Not
Relevant

Undertakes a comprehensive and expert assessment of person with chronic and/or complex illness, including rehabilitation needs and potential for self-management



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 2Not
Relevant

Demonstrates advanced understanding of variation in physiology and pathophysiology and can adapt care in population groups at high risk of specific chronic diseases.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 3

Not
Releva

Orders/completes appropriate diagnostic tests for person with requiring long term and complex care and interprets results.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

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Statement needs **minor rewording**:

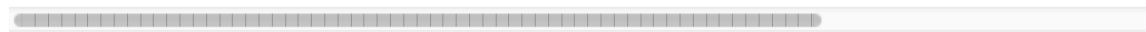
Care of Persons with Long Term Conditions - Standard 4

Not
Releva

In collaboration with person, formulates plan for care and rehabilitation that addresses the whole person including facilitation of avenues for expression of grief



regarding lost opportunities and support to maintain maximum potential for independent living.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

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Statement needs **major rewording**:

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 5

Not
Releva

Ensures provision of timely and appropriate access to treatment for the person with chronic or complex illness, demonstrating high level of clinical confidence and proficiency.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 6

Not
Releva

Demonstrates autonomy and expertise to deliver complex care coordination and case manage through use of outpatient and outreach facilities.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this**

Statement is too **broad** and is not unique to

metaspecialty.

Statement belongs to a **different** metaspecialty.

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Statement needs **major rewording**:

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 7

Not
Relevant

Anticipates and expertly manages specific complications and adverse events specific to people with long term conditions.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

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Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Care of Persons with Long Term Conditions - Standard 8

Not
Relevant

Undertakes complex medication titration for chronic and complex illnesses in partnership with the person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 9

Not
Relevant

Builds and works in partnership to develop expertise of the person to manage their own health.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Care of Persons with Long Term Conditions - Standard 10

Not
Releva

Demonstrates advanced ability to convey complex health issues, develop health literacy and provide comprehensive, individualised health education about chronic disease including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

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Care of Persons with Long Term Conditions - Standard 11

Not
Releva

Identifies and refers when needed to healthcare team with other expertise including potential for telehealth and videoconferencing with the multidisciplinary team.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

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Statement needs **minor rewording:**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice

for this metaspécialty.

Care of Persons with Long Term Conditions - Standard 12

Not
Releva

Models the role of the nurse practitioner as leader of the multidisciplinary team in management of person requiring long term and complex care.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different metaspécialty**.

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Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 13

Not
Releva

Demonstrates strategies to maintain follow-up for chronic and complex illness including for specific populations at high risk of loss to follow-up.



Please select one or more rationale to support your above response, if desired:

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Care of Persons with Long Term Conditions - Standard 14

Not
Releva

Advocates as clinical leader for improved access for people and groups at risk of



chronic disease.

Please select one or more rationale to support your above response, if desired:

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Statement is too **specific**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Do you feel any of the Care of Persons with Long Term Conditions clinical practice standards could be combined? If so, which?

If needed, please download the [Care of Persons with Long Term Conditions Clinical Practice Standards here](#).

Do you have further suggestions for ADDITIONAL clinical practice standards for group consideration of the Care of Persons with Long Term Conditions metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Aged and Palliative Care

You have chosen to validate the clinical practice standards for the **Aged and Palliative Care metaspecialty**.

There are **fourteen (14) proposed clinical practice standards** in this metaspecialty.

If desired, you may download the [Aged and Palliative Care Clinical Practice Standards here](#).

You will be given the opportunity to provide additional suggested clinical practice standards for group consideration at the end of this section.

Provisional Definition:

This MS title focusses on a diverse client group that are nearing or surpassing their anticipated life expectancy. The limitation on life expectancy influences the person's management goals for acute and chronic illnesses, and the

degree and type of health intervention most appropriate for them. This population group includes those needing supportive or end of life care, but also targets interventions that promote healthy ageing. A common thread is that health promotion goals are moderated by a limited life expectancy, with care occurring in community, to aged care and tertiary care contexts of practice.

REMEMBER:

Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.

Aged and Palliative Care - Standard 1

Not
Relevant

Performs an expert and comprehensive physical, social and psychological assessment to identify areas of risk or need, including identification of potential differential diagnoses, for people nearing or surpassing anticipated life expectancy.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

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Statement needs **major rewording**:

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 2

Not
Relevant

Conducts complex assessment of cognition, using evidence based assessment and screening and assessment tools specific to this population.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

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Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Aged and Palliative Care - Standard 3

Not
Releva

Conducts advanced symptom-led assessment that is comprehensive and appropriate for supportive or end of life care.



Please select one or more rationale to support your above response, if desired:

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Statement is too **broad** and is not unique to this metaspécialty.

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Aged and Palliative Care - Standard 4Not
Releva

Orders/completes appropriate diagnostic tests for person nearing or surpassing anticipated life expectancy and interprets results.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 5

Not
Releva

Demonstrates advanced knowledge of effects of aging on response to medications.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.Statement belongs to a **different** metaspecialty.Statement is too **specific**.Is **relevant to a specialty** area, but not the entire metaspecialty.Statement is too **broad** and is not unique to this metaspecialty.Statement is **too advanced** for entry-level NP practice.Statement is **too aspirational** for the profession.Statement needs **major rewording**:

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Releva

Demonstrates specific communication skills that enable early discussion about quality of life and death with people nearing or surpassing anticipated life expectancy and their families.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 7

Not
Relevant

Develops lifestyle and/or shared treatment plan, including for advanced care directives, for the person nearing or surpassing anticipated life expectancy that balances prevention, resuscitation or palliation.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 8

Not
Releva

Initiates treatments to provide expert preventative and/or supportive aged and palliative care, based on findings from comprehensive assessment, interpretation of diagnostic tests and treatment plan.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 9

Not
Relevant

Anticipates and expertly manages complications and adverse events specific to people nearing or surpassing anticipated life expectancy.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

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Reflective of a **generalist skill set** within this metaspecialty.

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Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Aged and Palliative Care - Standard 10

Not
Relevant

Influences healthcare system processes to ensure that person with life limiting illness has early and appropriate access to palliative care.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

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Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 11

Not
Relevant

Educates person and carers about the correct use of opioids in aged and palliative care.



Please select one or more rationale to support your above response, if desired:

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Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

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Applies to a **wide range of specialty areas**

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Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

belonging to this metaspecialty.

Statement needs **minor rewording:**

Aged and Palliative Care - Standard 12

Not
Releva

Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life limiting factors including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

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Aged and Palliative Care - Standard 13

Not
Releva

Demonstrates ability to refer to other health disciplines with a focus on coordination of allied health care provision.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a spécialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of spécialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Aged and Palliative Care - Standard 14Not
Relevant

Demonstrates expert, compassionate judgment and knowledge of legal implications of end of life care for person and family.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Do you feel any of the Aged and Palliative clinical practice standards could be combined? If so, which?

If needed, please download the [Aged and Palliative Care Clinical Practice Standards here](#).

Do you have further suggestions for ADDITIONAL clinical practice standards for group consideration of the Aged and Palliative Care metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Mental Health Care

You have chosen to validate the clinical practice standards for the **Mental Health Care metaspecialty**.

There are **eleven (11) proposed clinical practice standards** in this metaspecialty. If desired, you may download the [Mental Health Care Clinical Practice Standards here](#).

You will be given the opportunity to provide additional suggested clinical practice standards for group consideration at the end of this section.

Provisional Definition:

This MS focuses on the psychological and emotional well-being of a person. This MS title recognises that good mental health is not just the absence of mental illness, but is a 'state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO, 2007). This MS incorporates care for people with mental health problems and recognises the importance of recovery-orientated mental health practice across the short and long-term care of the client. This MS may extend across community and tertiary care contexts of practice.

REMEMBER:

*Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.*

Mental Health Care - Standard 1Not
Relevant

Undertakes expert and comprehensive assessment related to the psychological and physical well-being of person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Applies to a **wide range of specialty areas** belonging to this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Mental Health Care - Standard 2

Not
Relevant

Conducts advanced assessment of lifestyle factors, social and cultural history relevant to mental health care of person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement is too **broad** and is not unique to this metaspécialty.

Statement belongs to a **different** metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Mental Health Care - Standard 3

Not
Releva

Engages in high level clinical reasoning to organise and interpret comprehensive assessments relevant to mental health care of person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this

Applies to a **wide range of specialty areas**

metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

belonging to this metaspecialty.

Statement needs **minor rewording:**

Mental Health Care - Standard 4

Not
Relevant

Develops person centred, comprehensive care plan with person requiring mental health care.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

expertise needed for entry-level NP practice for this metaspécialty.

Mental Health Care - Standard 5

Not
Releva

Delivers expert treatment and support for person with mental health problems.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty.**

Statement belongs to a **different metaspécialty.**

Statement is too **specific.**

Is **relevant to a spécialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of spécialty areas** belonging to this metaspécialty.

Statement needs **minor rewording:**

Mental Health Care - Standard 6

Not
Releva

Demonstrates a high level of confidence and clinical proficiency in managing person with both physical and mental illness, including referral when needed.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Mental Health Care - Standard 7

Not
Releva

Demonstrates advanced application of psychopharmacology in collaboration with



person and other members of the multidisciplinary health care team.

Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Mental Health Care - Standard 8

Not
Releva

Provides expert support for person and family where there is actual or potential conflict arising from mental health care needs, including negotiation and de-escalation.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Mental Health Care - Standard 9

Not
Releva

Anticipates and expertly manages complications and adverse events specific to people requiring mental health care.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Mental Health Care - Standard 10

Not
Relevant

Demonstrates expert ability to convey complex health issues and provide comprehensive, individualised health education about mental health care including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Mental Health Care - Standard 11

Not
Relevant

Initiates long term or discharge management plan that includes ongoing monitoring of the Recovery Journey.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Statement needs **minor rewording:**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Do you feel any of the Mental Health Care clinical practice standards could be combined? If so, which?

If needed, please download the [Mental Health Care Clinical Practice Standards here.](#)

Do you have further suggestions for ADDITIONAL clinical practice standards for group consideration of the Mental Health Care metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Child and Family Health Care

You have chosen to validate the clinical practice standards for the **Child and Family Health Care metaspecialty**.

There are **twelve (12) proposed clinical practice standards** in this metaspecialty. If desired, you may download the [Child and Family Health Care Clinical Practice Standards here](#).

You will be given the opportunity to provide additional suggested clinical practice standards for group consideration at the end of this section.

Provisional Definition:

This MS focusses on the health and well-being of the child in the short and/or intermediate term, and within the broader context of the family unit, however defined by the client themselves. In particular, it includes care of a mother's health and well-being, recognising that a woman may seek healthcare during or soon after pregnancy outside the specific context of midwifery care. Its scope includes all children and adolescents and may encapsulate primary to tertiary care contexts of practice. The intersection between the individual and family unit facilitates a case management framework within this MS.

REMEMBER:

*Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.*

Child and Family Health - Standard 1

Not
Relev

Conducts holistic and advanced assessment of the child and family caring for the

child, including social and cultural history using in-depth knowledge of child development.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 2

Not
Releva

Demonstrates advanced understanding of variation in physiology and pathophysiology, particularly related to neonatal, paediatric and adolescent milestones.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 3

Not
Relevant

Demonstrates expert knowledge and a high level of confidence and clinical proficiency in management of the child with pain.

☐

Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 4

Not
Relevant

Rapidly diagnoses and manages common childhood presentations that require prompt treatment.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of specialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 5

Not
Relev

Develops a comprehensive plan of care for the child in collaboration with family/carer, based on advanced assessment and diagnostics.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 6

Not
Relevant

Prescribes and titrates medications at doses and using routes appropriate to child age and family/carer circumstances.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Child and Family Health - Standard 7

Not
Relevant

Expertly delivers age-specific treatment to child and involves family/carer where appropriate.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Child and Family Health - Standard 8

Not
Releva

Anticipates and expertly manages complications and adverse events specific to children.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of specialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 9

Not
Releva

Provides comprehensive, individualised education for family/child/carer that is appropriate and context specific for all.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 10

Not
Releva

Demonstrates a high level of ability to convey information about complex health issues and provide comprehensive, individualised health education to child/family/carer including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 11

Not
Relevant

Takes leadership role to ensure multidisciplinary approach to care of child and family/carer where appropriate.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Child and Family Health - Standard 12

Not
Relevant

Identifies and initiates care when child and family/carer require follow-up beyond treatment for acute presentation, including consideration of economic and environmental determinants of health.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Do you feel any of the Child and Family Health Care clinical practice standards could be combined? If so, which?

If needed, please download the [Child and Family Health Care Clinical Practice Standards here](#).

Do you have further suggestions for ADDITIONAL clinical practice standards for

group consideration of the Child and Family Health Care metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Primary Health Care

You have chosen to validate the clinical practice standards for the **Primary Health Care metaspecialty**.

There are **fourteen (14) proposed clinical practice standards** in this metaspecialty. If desired, you may download the [Primary Health Care Clinical Practice Standards here](#).

You will be given the opportunity to provide additional suggested clinical practice standards for group consideration at the end of this section.

Provisional Definition:

This MS focusses on healthcare that is delivered as the first point of contact, and is solely based in the community context of practice. This may include primary care contexts such as community-based clinics, general practices, schools, custodial/detention facilities, occupational settings, pharmacies and/or patient's homes. NPs working in this area have a strong focus on the care of the individual across the lifespan, and practice across the short and long-term care of the client. They emphasise primary and secondary health

promotion and disease prevention strategies in their care through case management approaches, and have a thorough understanding of the social determinants of health and their impact on care planning and delivery. They require extensive knowledge of population and public health strategies, and provide expert linkages from the community to tertiary and long-term care contexts.

REMEMBER:

Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.

Primary Health Care - Standard 1

Not
Relevant

Conducts advanced primary health care assessment of the person, including social and cultural history, screening and lifestyle, taking account of the social determinants of health, community and economic resources.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Primary Health Care - Standard 2

Not
Relevant

Demonstrates advanced understanding of variation in physiology and pathophysiology across the lifespan and varied population groups.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Primary Health Care - Standard 3

Not
Releva

Orders/completes and interprets appropriate diagnostic tests for person in the community care context.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Primary Health Care - Standard 4

Not
Relevé

Demonstrates expert ability to modify management strategies in response to a range of cultural contexts and vulnerable groups using a primary health care framework.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a spécialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of spécialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 5Not
Relevant

Develops and executes a comprehensive plan of primary health care in collaboration with person and demonstrating high level of confidence and expertise.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 6Not
Relevant

Prescribes pharmacological and non-pharmacological therapy for primary health care setting appropriate to the person's domestic, community and self or carer capacity for treatment in the home.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 7

Not
Releva

Manages immunisation status of the person in collaboration with person and based on the latest evidence and the person's lifestyle.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 8

Not
Relevant

Demonstrates ability to refer widely and appropriately to all other health disciplines.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 9

Not
Relevant

Anticipates and expertly manages complications and adverse events specific to delivery of care in the primary health care setting.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Primary Health Care - Standard 10

Not
Relevant

Provides primary and secondary comprehensive, individualised preventative health education to persons of all ages within areas of NP expertise and where appropriate to person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 11

Not
Releva

Demonstrates advanced ability to convey primary health care issues and promote health literacy including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this

Applies to a **wide range of specialty areas**

metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

belonging to this metaspecialty.

Statement needs **minor rewording:**

Primary Health Care - Standard 12

Not
Releva

Takes a leadership and care coordination role for the person in the primary health care multidisciplinary team.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

expertise needed for entry-level NP practice for this metaspécialty.

Primary Health Care - Standard 13

Not
Releva

Collates and analyses assessment and treatment data that inform discharge plan or long term management plan for person.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of specialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Primary Health Care - Standard 14Not
Relevant

Initiates discharge or long term primary health care management plan based on latest evidence and person's lifestyle and social context.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Do you feel any of the Primary Health Care clinical practice standards could be combined? If so, which?

If needed, please download the [Primary Health Care Clinical Practice Standards here](#).

Do you have further suggestions for ADDITIONAL clinical practice standards for group consideration of the Primary Health Care metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Emergency and Acute Care

Recent research by Dr Jane O'Connell has already identified [clinical practice standards](#) relevant to Emergency NPs. You are being asked to establish clinical practice standards for those NPs working in an acute care setting, who draw upon the standards of the Emergency and Acute Care MS, but do not work within the emergency specialty.

Therefore, ten (10) standards will be broadly applicable to all nurse practitioners working within the definition of the Emergency and Acute Care Metaspecialty:

This MS incorporates health care delivery for the acute phase of episodic

illness, which may commence with the need for early, rapid and resuscitative treatment for an undifferentiated health condition. This MS scope can include both life-threatening and non-urgent care. Its context is situated in an environment established for this service, be it an emergency department, critical care unit, perioperative unit, acute hospital facility or other emergency care context, such as an ambulance or field hospital. This MS assumes a care continuum from resuscitation to follow-up. (Extended from [O'Connell, 2014](#)).

If desired, you may download a copy of the [Emergency and Acute Care Clinical Practice Standards here](#).

REMEMBER:

Please rate the **relevancy** of the proposed clinical practice standards **now**, as well as their **future relevancy** as the NP profession **grows and evolves**.

Emergency and Acute Care - Standard 1

Not
Releva

Conducts advanced physical assessment in emergencies.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

entire metaspecialty.

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Emergency and Acute Care - Standard 2

Not
Relevant

Conducts advanced physical assessments to identify potential deterioration of persons in non ICU or ED settings.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Emergency and Acute Care - Standard 3

Not
Releva

Assesses risk for sequelae of immobilisation due to surgery and/or intensive care therapy and initiates pharmacological and non-pharmacological preventative therapies.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement is too **broad** and is not unique to this metaspecialty.

Statement belongs to a **different** metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Emergency and Acute Care - Standard 4

Not
Relevant

Synthesises best evidence in response and treatment decision for person in acute and urgent situation.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty.**

Statement belongs to a **different** metaspecialty.

Statement is too **specific.**

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording:**

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves.**

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording:**

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Emergency and Acute Care - Standard 5

Not
Releva

Delivers advanced resuscitation care, including the ability to work beyond basic and advanced life support algorithms.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspécialty**.

Statement belongs to a **different** metaspécialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspécialty.

Statement is too **broad** and is not unique to this metaspécialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspécialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspécialty.

Applies to a **wide range of specialty areas** belonging to this metaspécialty.

Statement needs **minor rewording**:

Emergency and Acute Care - Standard 6Not
Releva

Anticipates and expertly manages complications and adverse events specific to acute and emergency care situations.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Emergency and Acute Care - Standard 7Not
Releva

Manages subtle and/or rapid changes in status of acutely and critically ill persons to prevent deterioration.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Emergency and Acute Care - Standard 8

Not
Releva

Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life threatening conditions including where there are linguistic, literacy, comprehension or other barriers to understanding.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Emergency and Acute Care - Standard 9

Not
Relevant

Leads and participates in medical emergency team.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **specific**.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is **too aspirational** for the profession.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Statement needs **minor rewording**:

Emergency and Acute Care - Standard 10

Not
Relevant

Takes a leadership role in follow-up of persons following acute and emergency admissions.



Please select one or more rationale to support your above response, if desired:

Not relevant to the **definition of this metaspecialty**.

Statement belongs to a **different** metaspecialty.

Statement is too **broad** and is not unique to this metaspecialty.

Statement is **too advanced** for entry-level NP practice.

Statement is too **specific**.

Statement is **too aspirational** for the profession.

Is **relevant to a specialty** area, but not the entire metaspecialty.

Statement needs **major rewording**:

Please select one or more rationale to support your above response, if desired:

Reflective of a **generalist skill set** within this metaspecialty.

Applies to a **wide range of specialty areas** belonging to this metaspecialty.

Will have increasing relevancy **as the profession evolves**.

Statement needs **minor rewording**:

Broadly reflects knowledge, skills and/or expertise needed for entry-level NP practice for this metaspecialty.

Do you feel any of the Emergency and Acute Care clinical practice standards could be combined? If so, which?

If needed, please download the [Emergency and Acute Care Clinical Practice Standards here](#).

Do you have further suggestions for ADDITIONAL clinical practice standards for group consideration of the Emergency and Acute Care metaspecialty? If so, please provide rationale for each ADDITIONAL proposed clinical practice standard.

Your considered response is invaluable to the success of this process.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

End of Delphi Survey 2 - Round 1

Whew! You did it! Great work and thank you!

This completes **Round 1** of Delphi Survey 2. You will be receiving another invite to participate in **Round 2** of Delphi Survey 2 in the near future. **As a reminder, there will likely be a maximum of 3 rounds in Delphi Survey 2.**

What you should expect from Round 2:

1. You will be fed back the group average relevancy ratings for each standard for the MS you elected.
2. You will be provided with anonymised responses for rationale provided for the relevancy ratings.
3. Wording for Standards may change between rounds given group feedback.

If you anticipate having difficulties accessing your email invites, please ensure you let me know. I'd be happy to modify your details as appropriate.

If you have any questions or concerns, please contact:

Chris Helms, PhD Candidate

Email: christopher.helms@myacu.edu.au

Phone: (02) 6209 1355 or (02) 6209 1330

Remember to click "Save and Continue" below to save your survey response!

Powered by Qualtrics

Appendix R – Delphi Survey 2, Round 2



Introduction

Dear \${m://FirstName}:

Welcome back to the CLLEVER2, Delphi Study 2 research study!

Congratulations on getting the hardest part done!



We've had an incredible response thus far, with 221 validated respondents representing diverse specialties, professional experiences, practice settings and locations across Australia. As you know, the Delphi Study 2 is being conducted by the CLLEVER2 research team, led by Prof Anne Gardner. We are very grateful to Chris Helms who continues to work with us as part of his doctoral studies.

Delphi Study 2 is developing clinical practice standards (CPS) for a clinical learning and teaching framework, primarily for nurse practitioner (NP) students. You have provided great feedback to inform changes, additions and merging of proposed CPS. Importantly, the rich and constructive qualitative data provided in the open text boxes from Round 1 will inform the broad framework within which these CPS will be placed. The CLLEVER2 research team intend to bring the results together in a publically available document that will be released before the end of 2016.

There were very high relevancy ratings for most proposed CPS in most metaspecialties (MS). Based on your qualitative feedback, we have proposed quite a few minor modifications, but only a small number of CPS have been combined or removed, and no new CPS have been developed.

Some feedback was very detailed and at the level of specific practice activities, rather than at the broader level of a CPS. Whilst listing specific practice activities is

beyond the scope of this Delphi study, the suggestions will provide useful examples that we can incorporate in the final publically available document. Then it will be up to the NP student and their educators to build upon these examples.

Other feedback related to the NP role generically, such as the 'acceptance of referrals' and the 'importance of safety and quality'. This feedback will inform the broader learning and teaching framework within which these standards will be placed.

In Round 1, you were asked to choose 1-2 metaspecialties (MS) and then rate the relevancy of proposed MS CPS established from prior research. In addition, you were given the opportunity to propose alternate CPS for the MS you selected.

During Round 2, you will be shown the following:

- A short overview of general respondent feedback, including the number of NPs who responded
- Each original Statement and your Round 1 relevancy ratings against each of the proposed MS CPS
- The proportion of respondents rating the Standard as "Quite" or "Highly" Relevant
- A graph summarising the group feedback (note that the 'Count' refers to the number of respondents who ticked that option, and will vary between MS)
- Explanation of any changes made to that Standard, based on analysis of respondent feedback

You must then do the following:

1. Carefully read and consider the presented information; then
2. Compare and rate the original proposed CPS against any proposed refinements
3. Rate the relevancy of the revised (or unchanged) CPS

PLEASE NOTE: If the proportion of respondents rating the Standard as "Quite" or "Highly" Relevant is 85% or greater across Rounds 1 and 2 the CPS will be considered validated.

If you have any questions or concerns for this study, please contact:

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This material forms part of Chris Helms' PhD.

Please treat this survey confidentially and do not share or discuss information contained with others.

This research project has received Human Research Ethics Committee Approval from Australian Catholic University. Approval Number 2013 174N.

Browser Meta Info

This question will not be displayed to the recipient.

Browser: **Safari**

Version: **10.0.3**

Operating System: **Macintosh**

Screen Resolution: **2560x1440**

Flash Version: **-1**

Java Support: **1**

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Metaspecialty Clinical Practice Standards - Emergency and Acute Care

Preamble - Emergency and Acute Care Metaspecialty - Clinical Practice Standards

Total Number of Delphi Participants: 82

In Round 1, participants were asked to rate the relevancy of proposed clinical practice standards (CPS) for the Emergency and Acute Care (EAC) metaspecialty (MS). Research already conducted by Dr Jane O'Connell has established CPS for nurse practitioners (NP) working in the Emergency specialty. Therefore, you were asked to rate the relevancy of the proposed CPS for those NPs working in an acute care setting, who draw upon the standards of the EAC MS, but do not work within the emergency specialty.

As a reminder, the provisional definition of the EAC MS is:

This MS incorporates health care delivery for the acute phase of episodic illness, which may commence with the need for early, rapid and resuscitative treatment for an undifferentiated health condition. This MS scope can include both life-threatening and non-urgent care. Its context is situated in an environment established for this service, be it an emergency department, critical care unit, perioperative unit, acute hospital facility or other emergency care context, such as an ambulance or field hospital. This MS assumes a care continuum from resuscitation to follow-up. (Extended from O'Connell, 2014).

The relevancy of several proposed CPS were questioned by some respondents. Over half of respondents for this metaspecialty identified as Emergency NPs. Remember this MS includes CPS for NPs who are not Emergency NPs, so some standards focus on acute inpatient care responsibilities. Please also remember that we intend these MS Standards to complement the existing [Emergency NP Specialty Standards](#) published by Dr Jane O'Connell. No new CPS have been added and two CPS have been combined (Standard 5 and Standard 9, so the latter has been

removed). A few respondents proposed other combinations and this feedback has been used to clarify the uniqueness of each CPS, rather than remove any CPS.

Emergency and Acute Care - Standard 1

Original Statement:

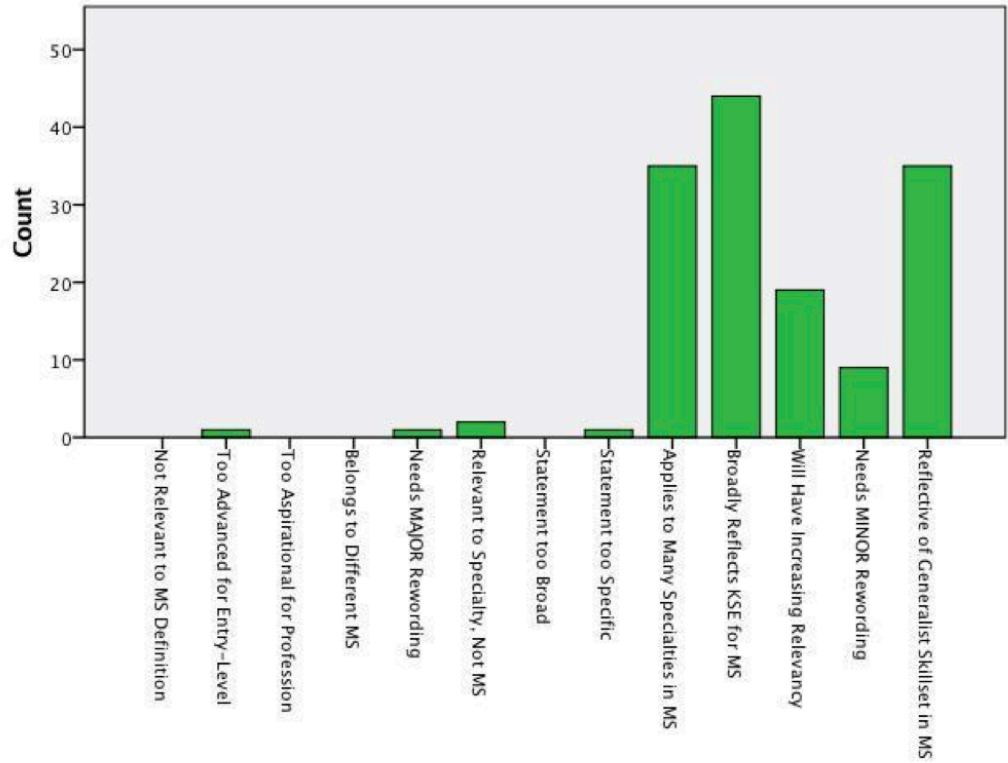
Conducts advanced physical assessment in emergencies.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 1 Rationale: EAC

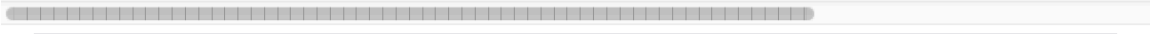
Investigator Feedback Specific to Standard:

Added phrase which differentiates between this and Standard 2 in response to 10% who also suggested combining this with Standard 2.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Conducts advanced physical assessment of people with emergency presentations or acute admissions.

Not
Releva



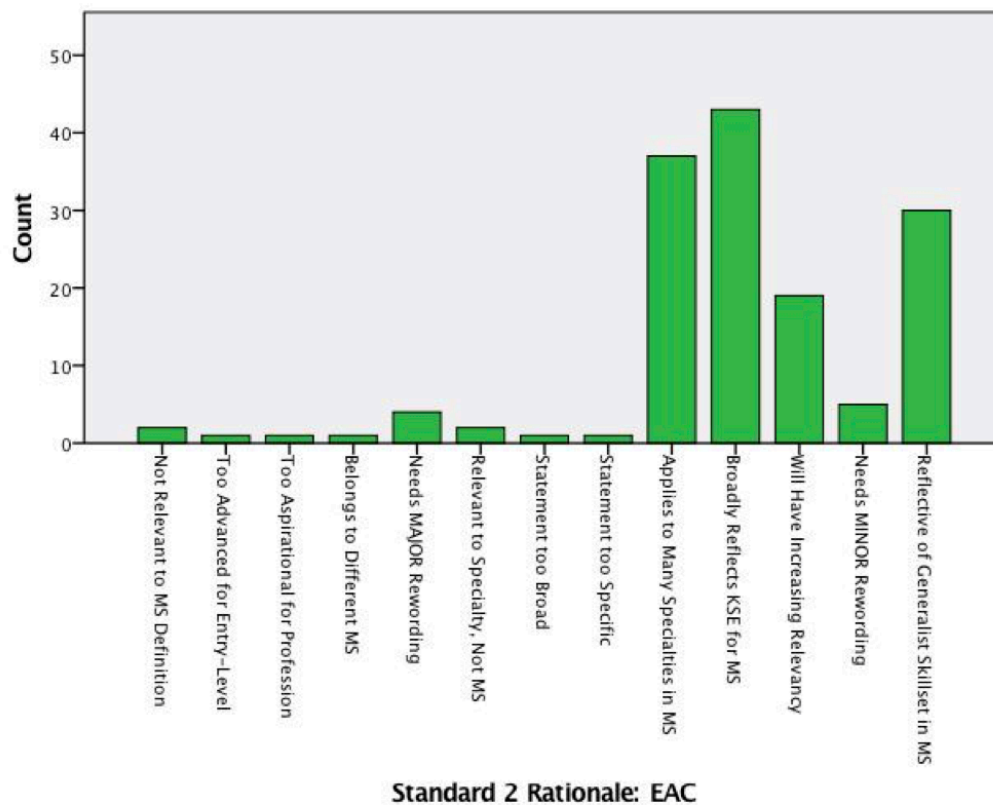
Emergency and Acute Care - Standard 2**Original Statement:**

Conducts advanced physical assessments to identify potential deterioration of persons in non ICU or ED settings.

Your Round 1 Response:

You rated this MS as $\{e://Field/EAC2RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 89%

Group Feedback:**Investigator Feedback Specific to Standard:**

Amended in response to several suggestions for deleting 'non ICU or ED settings'.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Conducts advanced physical assessments in person who is acutely unwell or rapidly deteriorating.



Emergency and Acute Care - Standard 3

Original Statement:

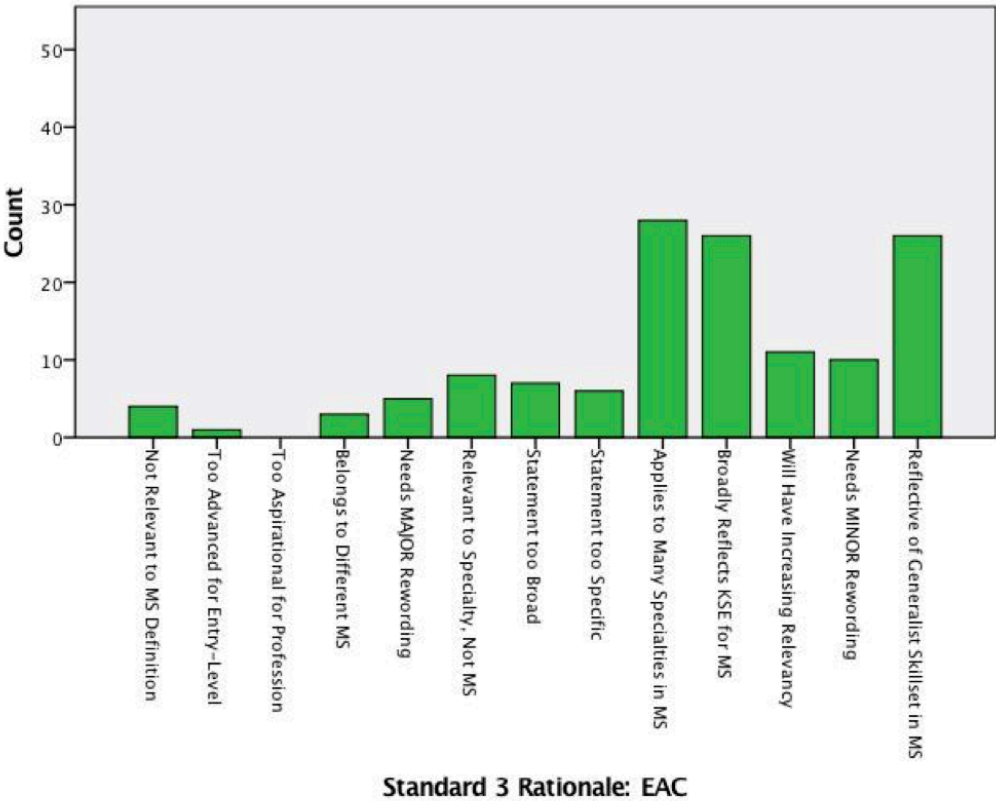
Assesses risk for sequelae of immobilisation due to surgery and/or intensive care therapy and initiates pharmacological and non-pharmacological preventative therapies.

Your Round 1 Response:

You rated this MS as **\$(e://Field/EAC3RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 72%

Group Feedback:



Investigator Feedback Specific to Standard:
Wording refined in response to feedback that suggests standard hard to read.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not Relevant

Assesses risk and initiates pharmacological and non-pharmacological preventative therapies for sequelae of immobilisation due to surgery and/or intensive care therapy.

Emergency and Acute Care - Standard 4

Original Statement:

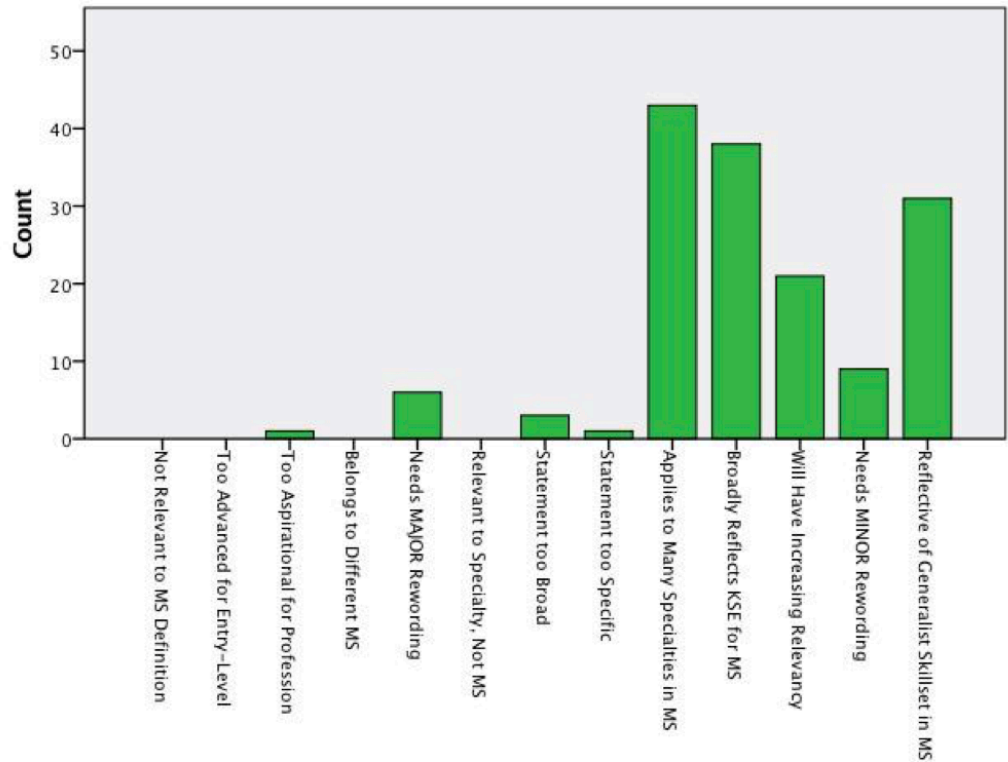
Synthesises best evidence in response and treatment decision for person in acute and urgent situation.

Your Round 1 Response:

You rated this MS as $\{e://Field/EAC4RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 4 Rationale: EAC

Investigator Feedback Specific to Standard:

Standard changed to incorporate suggested rewording.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Synthesises and utilises best evidence in response and treatment decision for person in acute and urgent situation.



Emergency and Acute Care - Standard 5

Original Statement:

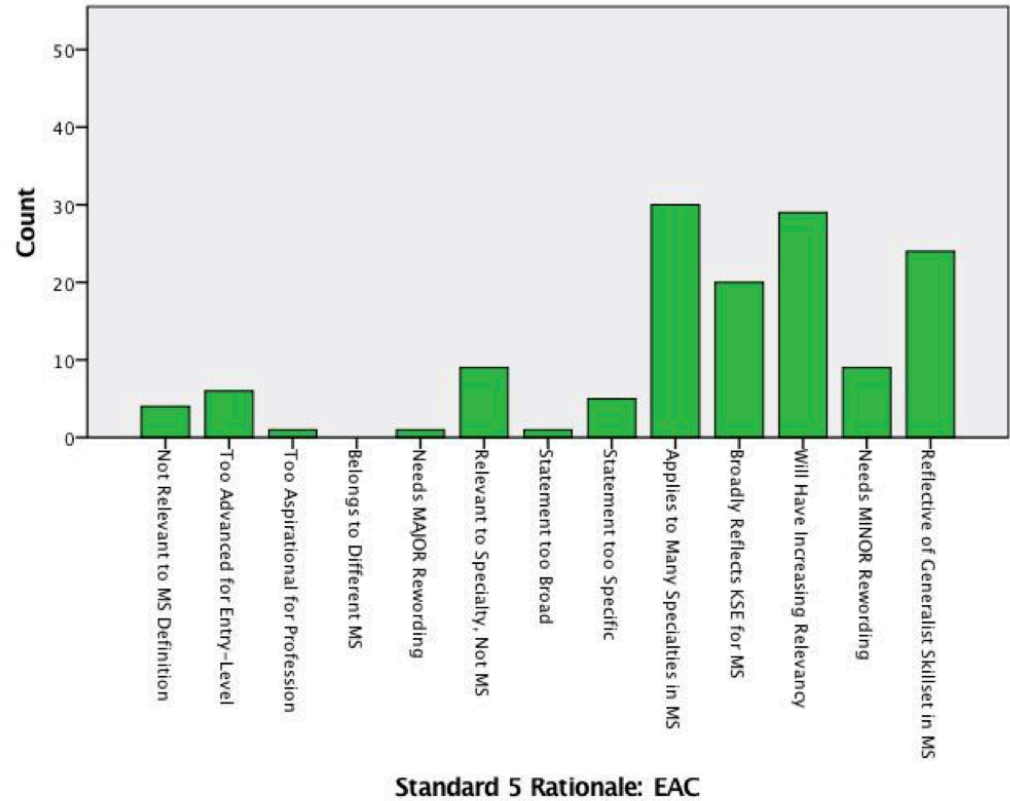
Delivers advanced resuscitation care, including the ability to work beyond basic and advanced life support algorithms.

Your Round 1 Response:

You rated this MS as $\{e://Field/EAC5RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 78%

Group Feedback:



Investigator Feedback Specific to Standard:
This standard now combined with Standard 9 by adding highlighted phrases.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Delivers advanced resuscitation and post-resuscitation care, including the ability to work beyond basic and advanced life support algorithms, and leading or participating in urgent response/medical emergency team.

Not
Releva



Emergency and Acute Care - Standard 6

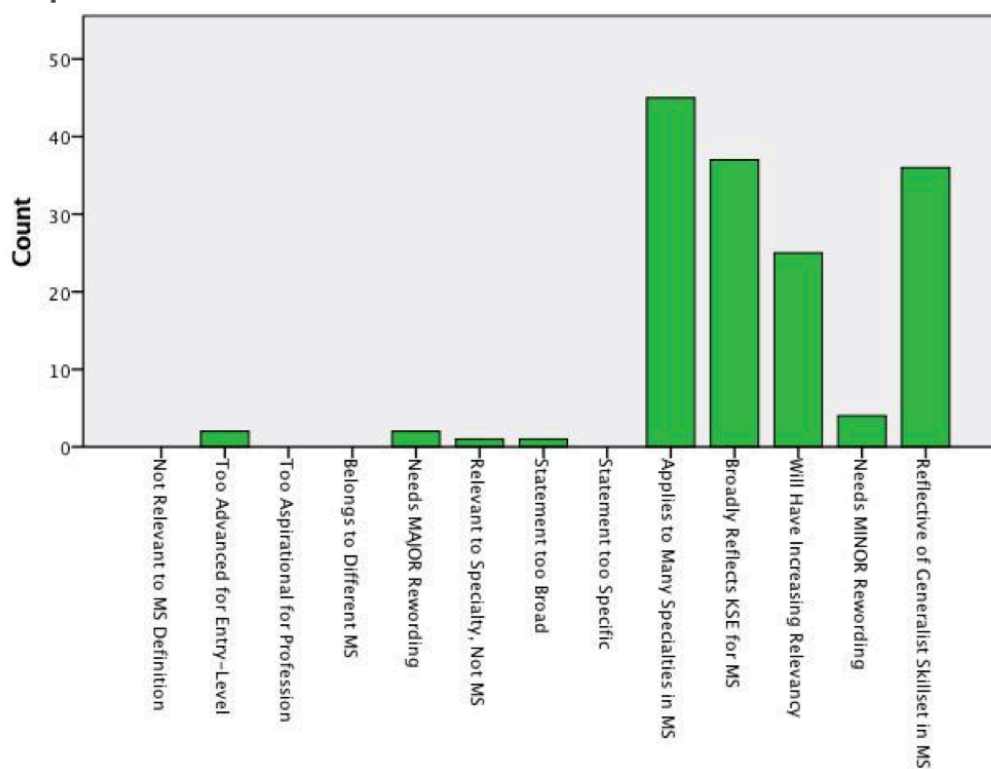
Original Statement:

Anticipates and expertly manages complications and adverse events specific to acute and emergency care situations.

Your Round 1 Response:

You rated this MS as $\{e://Field/EAC6RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:

Standard 6 Rationale: EAC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Anticipates and expertly manages complications and adverse events specific to acute and emergency care situations.



Emergency and Acute Care - Standard 7

Original Statement:

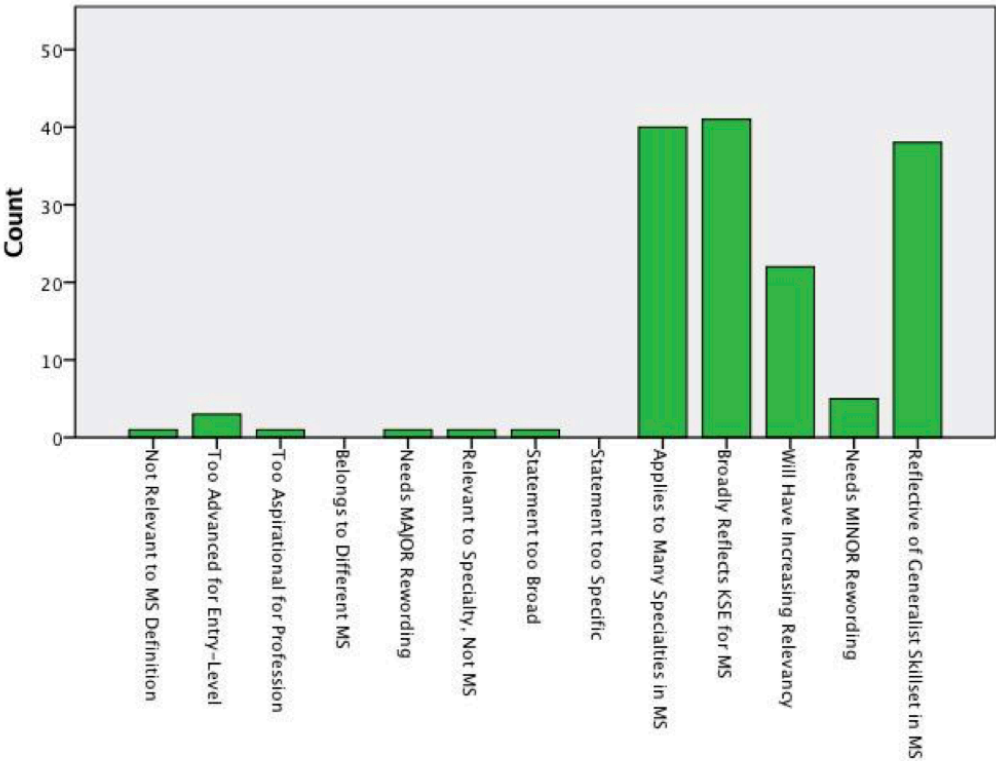
Manages subtle and/or rapid changes in status of acutely and critically ill persons to prevent deterioration.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 7 Rationale: EAC

Investigator Feedback Specific to Standard:
Wording clarification to improve distinction between this Standard and Standard 6.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Recognises and appropriately manages subtle and/or rapid changes in status of acutely and critically ill persons to promote stabilisation and prevent deterioration where possible.

Not
Releva



Emergency and Acute Care - Standard 8

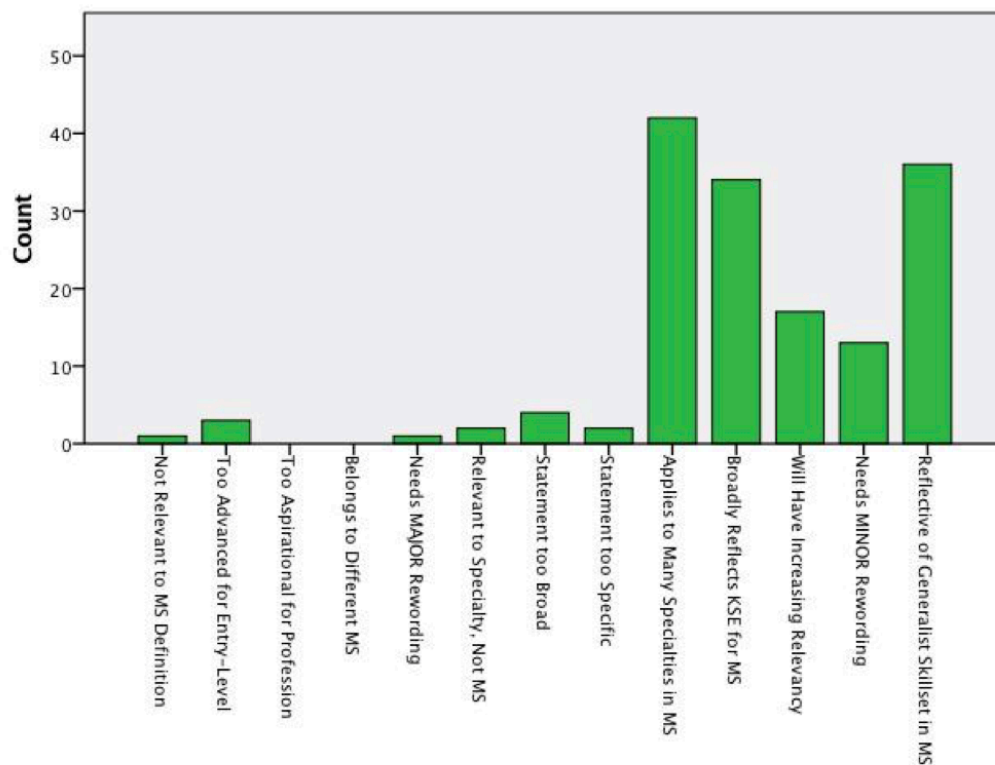
Original Statement:

Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life threatening conditions including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as $\{e://Field/EAC8RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 90%

Group Feedback:

Standard 8 Rationale: EAC

Investigator Feedback Specific to Standard:

Minor wording changes to improve flow.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Demonstrates advanced ability to **express** complex health issues and provide comprehensive, individualised health education **including** life threatening conditions, where there are linguistic, literacy, comprehension or other barriers to understanding.



Emergency and Acute Care - Standard 9

Original Statement:

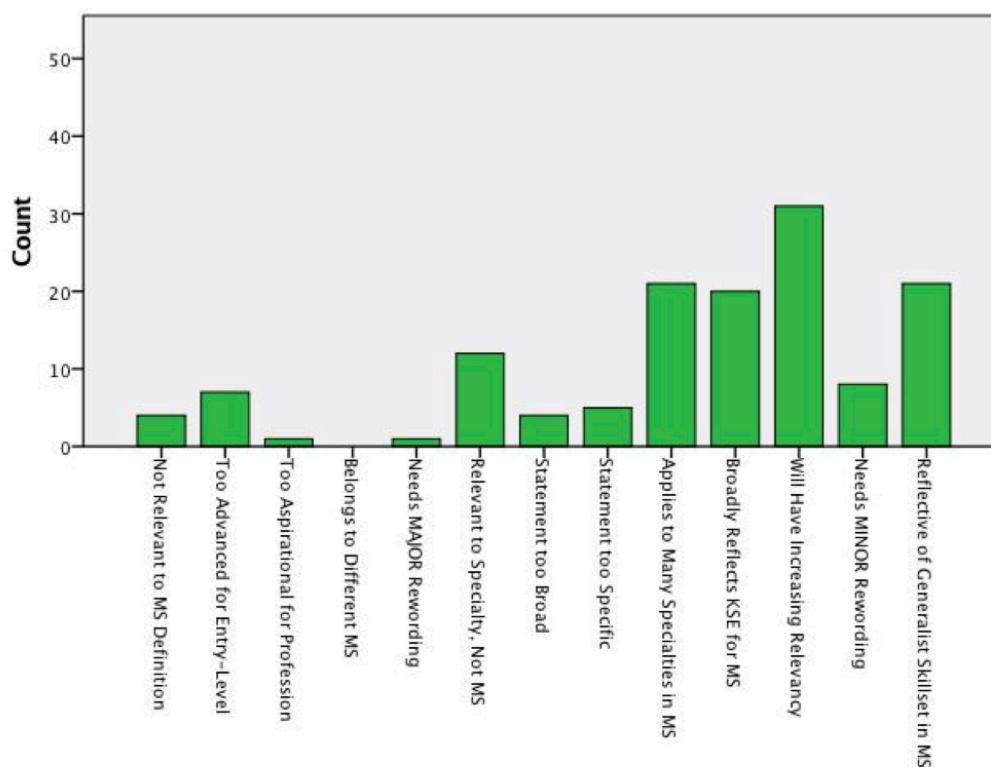
Leads and participates in medical emergency team.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 71%

Group Feedback:



Standard 9 Rationale: EAC

Investigator Feedback Specific to Standard:

Standard 9 removed because combined with Standard 5.

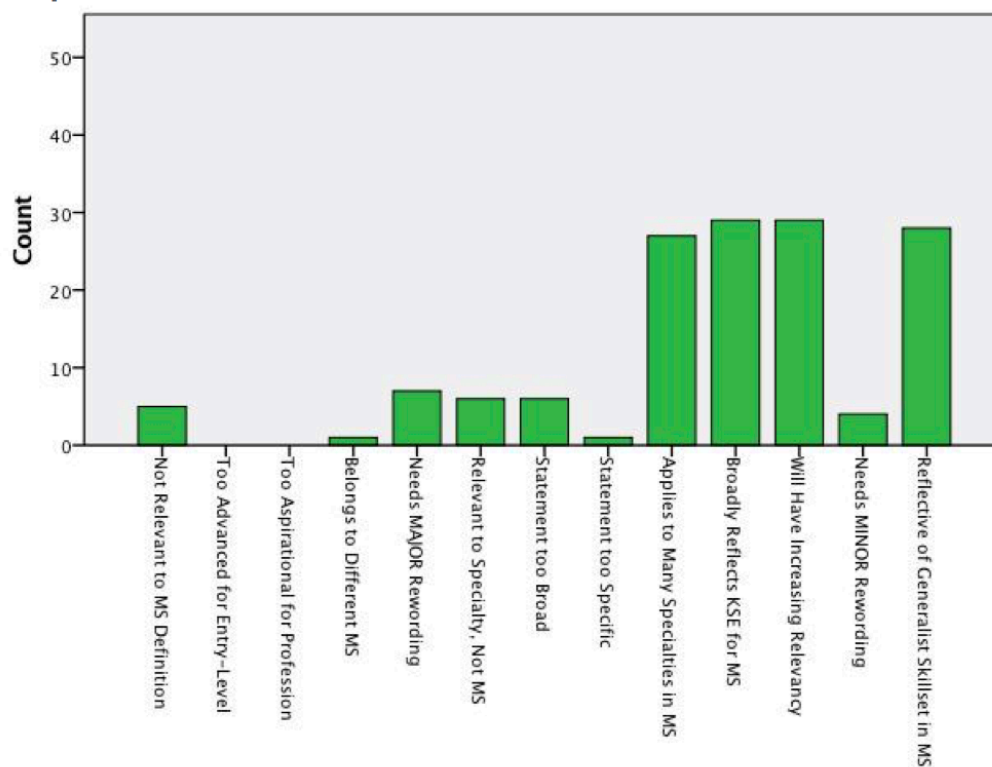
Emergency and Acute Care - Standard 10**Original Statement:**

Takes a leadership role in follow-up of persons following acute and emergency admissions.

Your Round 1 Response:

You rated this MS as **\$(e://Field/EAC10RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 80%

Group Feedback:**Standard 10 Rationale: EAC****Investigator Feedback Specific to Standard:**

Added phrase as suggested by few respondents.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Takes a leadership role in follow-up or transfer of care of persons following acute and emergency admissions.



WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Child and Family Health Care

Preamble - Child and Family Health Care - Clinical Practice Standards

Total Number of Delphi Participants = 27

Provisional Definition:

This MS focusses on the health and well-being of the child in the short and/or intermediate term, and within the broader context of the family unit, however defined by the client themselves. In particular, it includes care of a mother's health and well-being, recognising that a woman may seek healthcare during or soon after pregnancy outside the specific context of midwifery care. Its scope includes all children and adolescents and may encapsulate primary to tertiary care contexts of practice. The intersection between the individual and family unit facilitates a case management framework within this MS.

There were very high relevancy ratings for all proposed CPS in this MS so very few changes have been made and no new standards added. A small number of respondents suggested that the terms 'neonate', 'infant' and 'adolescent' be added in several places where the term 'child' is used in specific standards. The addition of these terms to each standard would make them very lengthy, and the general feedback has been that brevity is preferred across the standards in all MS! The research team will incorporate this important point in the standards framework that will be included in the final publically available document. The other general note was that the place of the father is often forgotten in this area of healthcare delivery. The research team agree and have used the term 'family' to be interpreted broadly for all significant carers. Again this will be made clear in the framework of the final document.

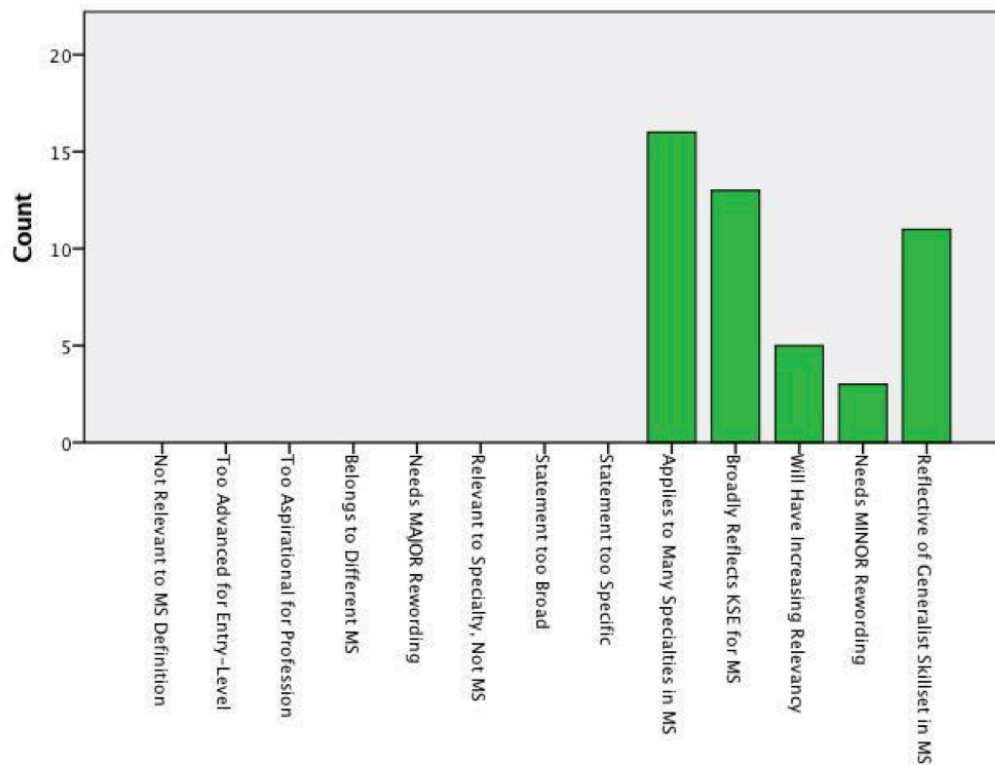
Child and Family Health - Standard 1**Original Statement:**

Conducts holistic and advanced assessment of the child and family caring for the child, including social and cultural history using in-depth knowledge of child development.

Your Round 1 Response:

You rated this MS as $\{e://Field/CFH1RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:

Standard 1 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Conducts holistic and advanced assessment of the child and family caring for the child, including social and cultural history using in-depth knowledge of child development.



Child and Family Health - Standard 2

Original Statement:

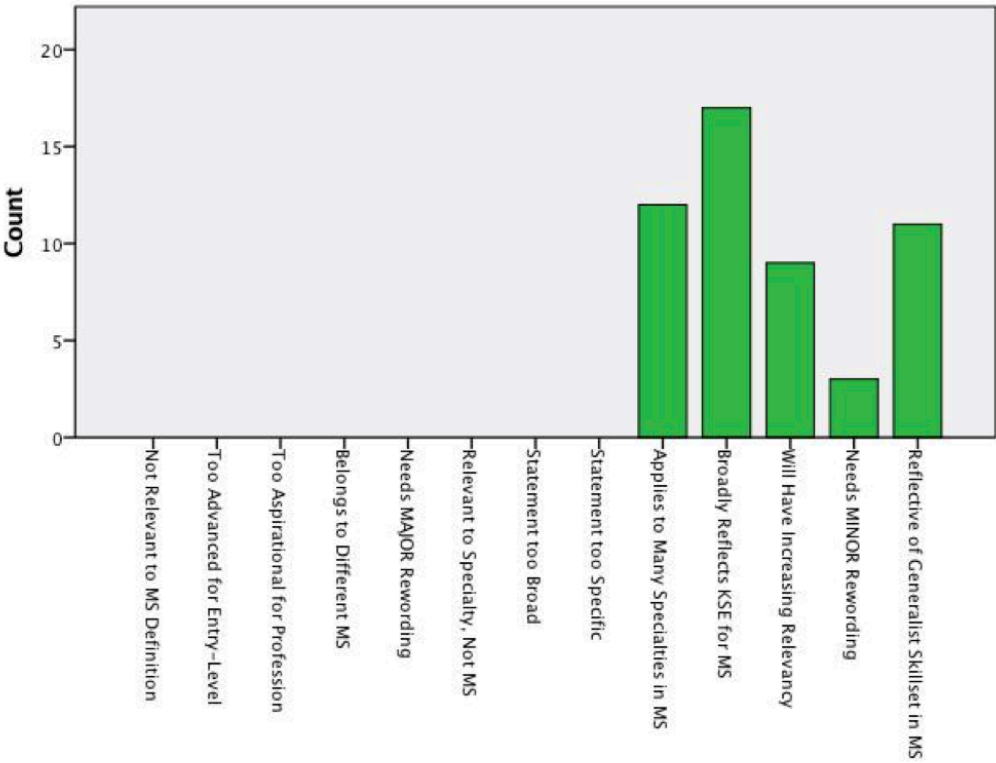
Demonstrates advanced understanding of variation in physiology and pathophysiology, particularly related to neonatal, paediatric and adolescent milestones.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:



Standard 2 Rationale: CFH

Investigator Feedback Specific to Standard:
No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not Relevant

Demonstrates advanced understanding of variation in physiology and pathophysiology, particularly related to neonatal, paediatric and adolescent milestones.

Child and Family Health - Standard 3

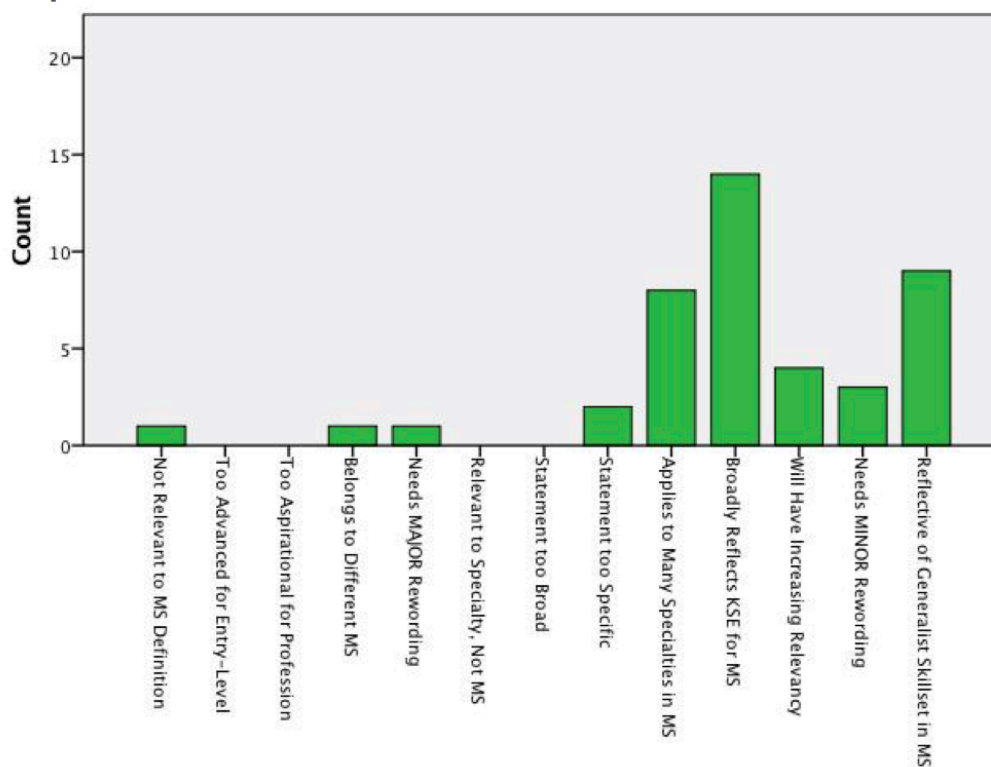
Original Statement:

Demonstrates expert knowledge and a high level of confidence and clinical proficiency in management of the child with pain.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CFH3RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 89%

Group Feedback:

Standard 3 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Demonstrates expert knowledge and a high level of confidence and clinical proficiency in management of the child with pain.



Child and Family Health - Standard 4

Original Statement:

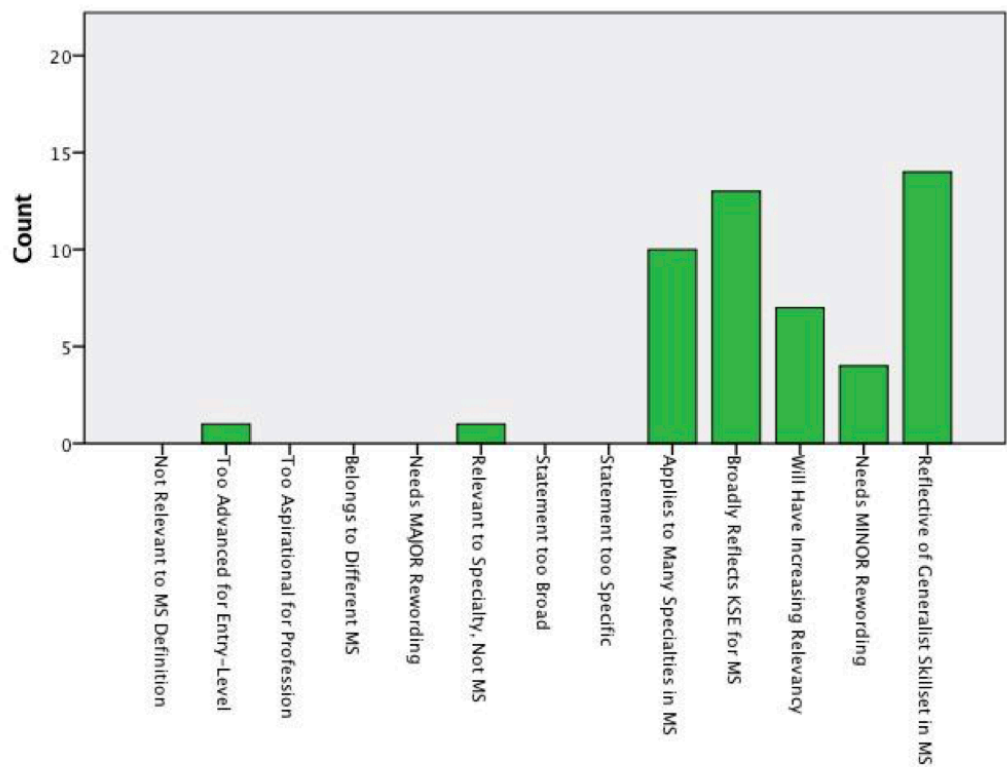
Rapidly diagnoses and manages common childhood presentations that require prompt treatment.

Your Round 1 Response:

You rated this MS as $\$ \{e://Field/CFH4RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 4 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Rapidly diagnoses and manages common childhood presentations that require prompt treatment.



Child and Family Health - Standard 5

Original Statement:

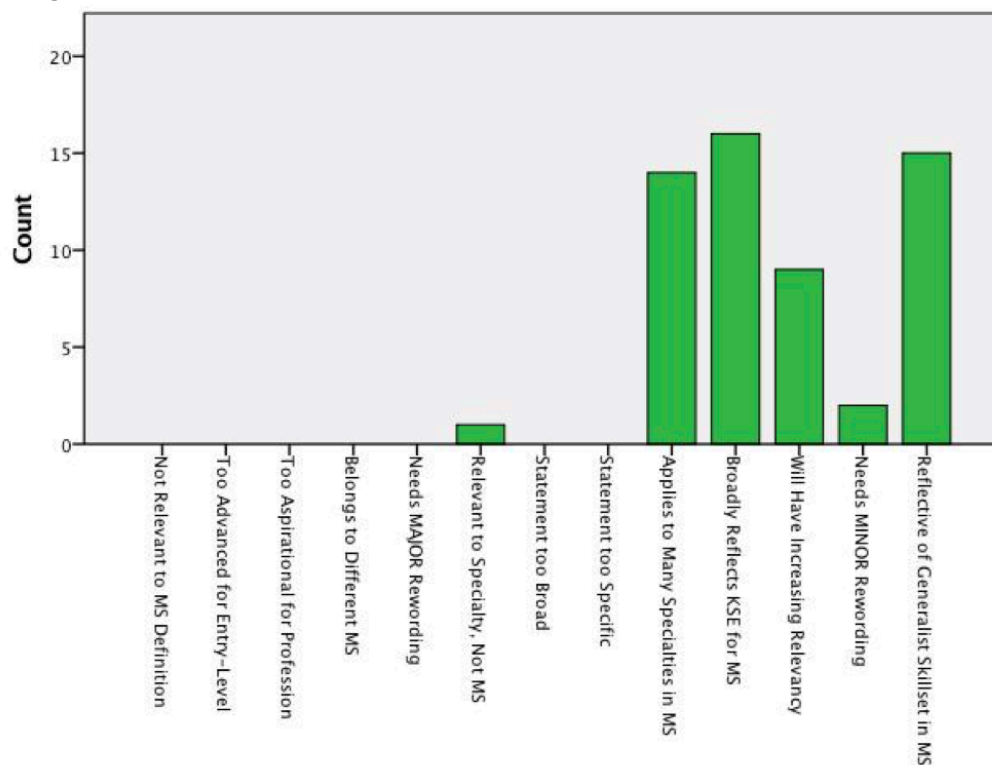
Develops a comprehensive plan of care for the child in collaboration with family/carer, based on advanced assessment and diagnostics.

Your Round 1 Response:

You rated this MS as **Relevant to Specialty, Not MS**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 5 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not

Releva

Develops a comprehensive plan of care for the child in collaboration with family/carer, based on advanced assessment and diagnostics.



Child and Family Health - Standard 6

Original Statement:

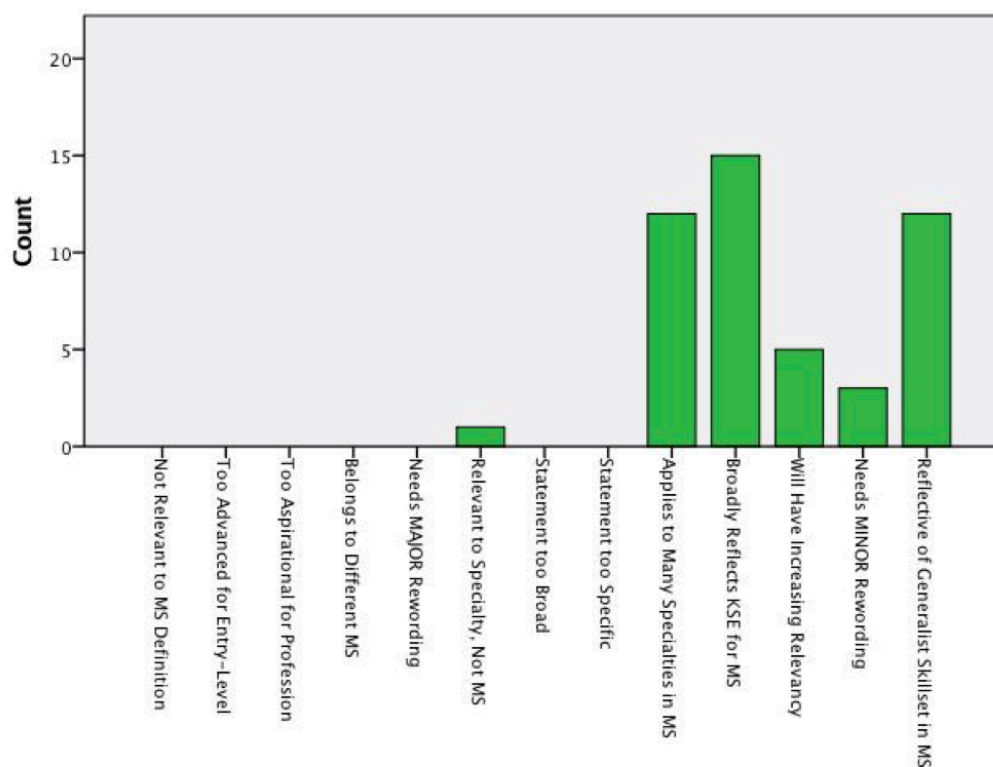
Prescribes and titrates medications at doses and using routes appropriate to child age and family/carer circumstances.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 6 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Prescribes and titrates medications at doses and using routes appropriate to child age and family/carers circumstances.



Child and Family Health - Standard 7

Original Statement:

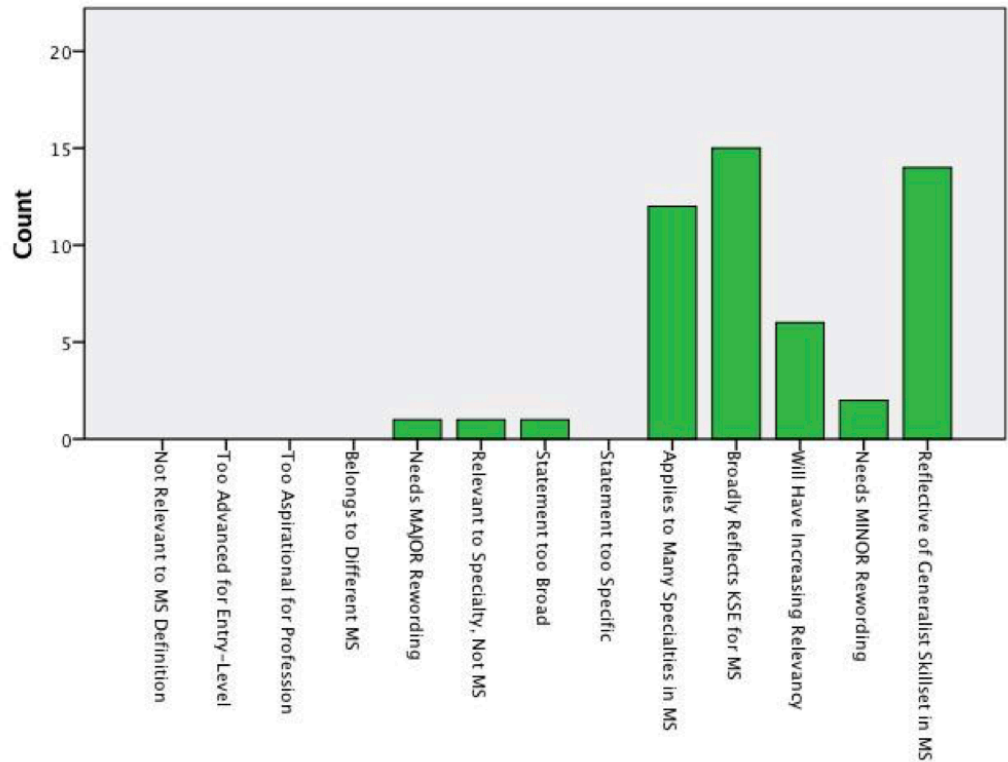
Expertly delivers age-specific treatment to child and involves family/carer where appropriate.

Your Round 1 Response:

You rated this MS as $\$(e://Field/CFH7RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 7 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not

Releva

Expertly delivers age-specific treatment to child and involves family/carer where appropriate.



Child and Family Health - Standard 8

Original Statement:

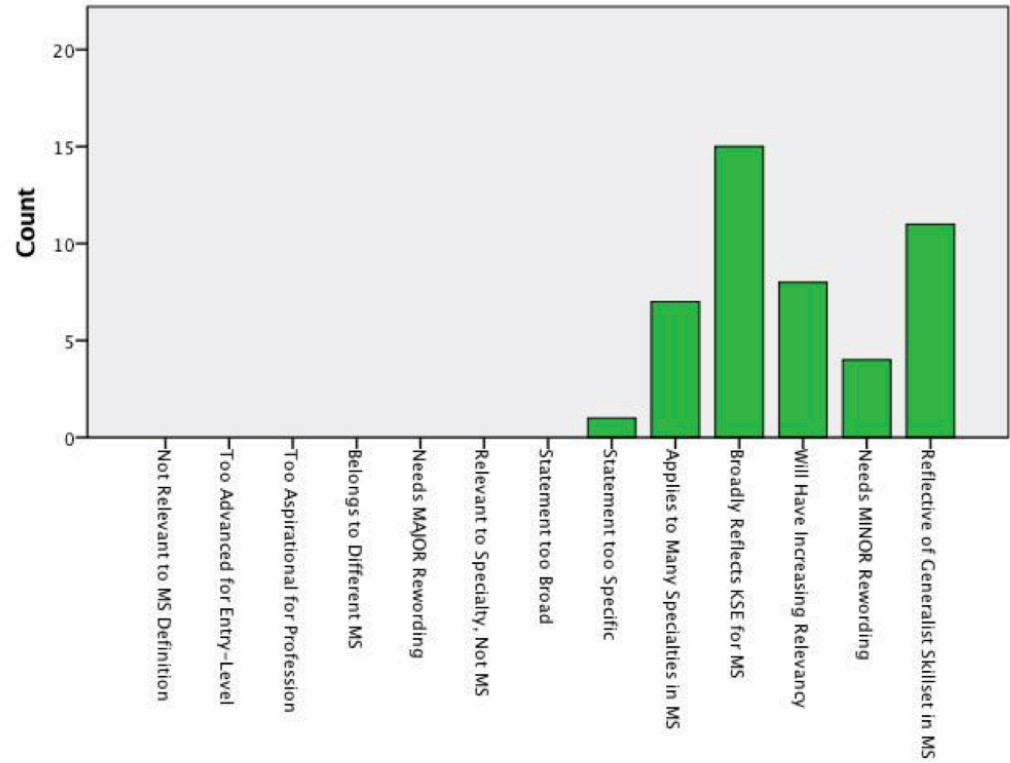
Anticipates and expertly manages complications and adverse events specific to children.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 8 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Anticipates and expertly manages complications and adverse events specific to children.



Child and Family Health - Standard 9

Original Statement:

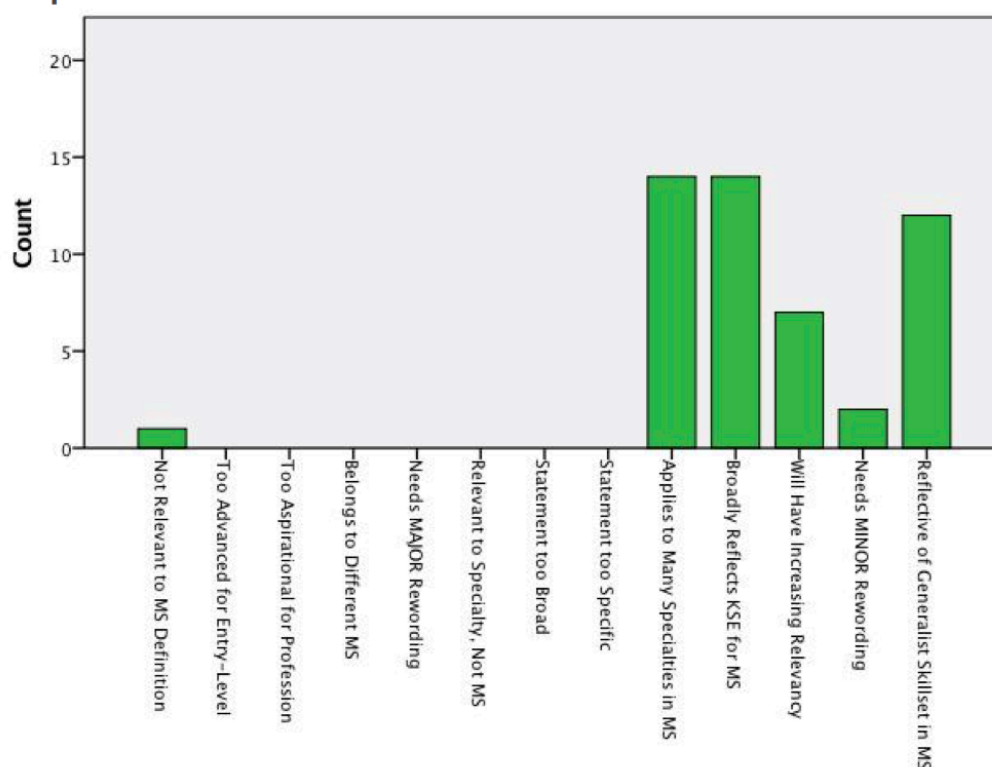
Provides comprehensive, individualised education for family/child/carer that is appropriate and context specific for all.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 9 Rationale: CFH

Investigator Feedback Specific to Standard:

A few respondents suggested combining Standards 9 & 10 but the original data on which these draft Standards are based strongly suggested that these issues needed to be identified separately. No change has been made to this Standard but we have modified Standard 10 to increase the distinction between Standards 9 and 10.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Provides comprehensive, individualised education for family/child/carer that is appropriate and context specific for all.



Child and Family Health - Standard 10

Original Statement:

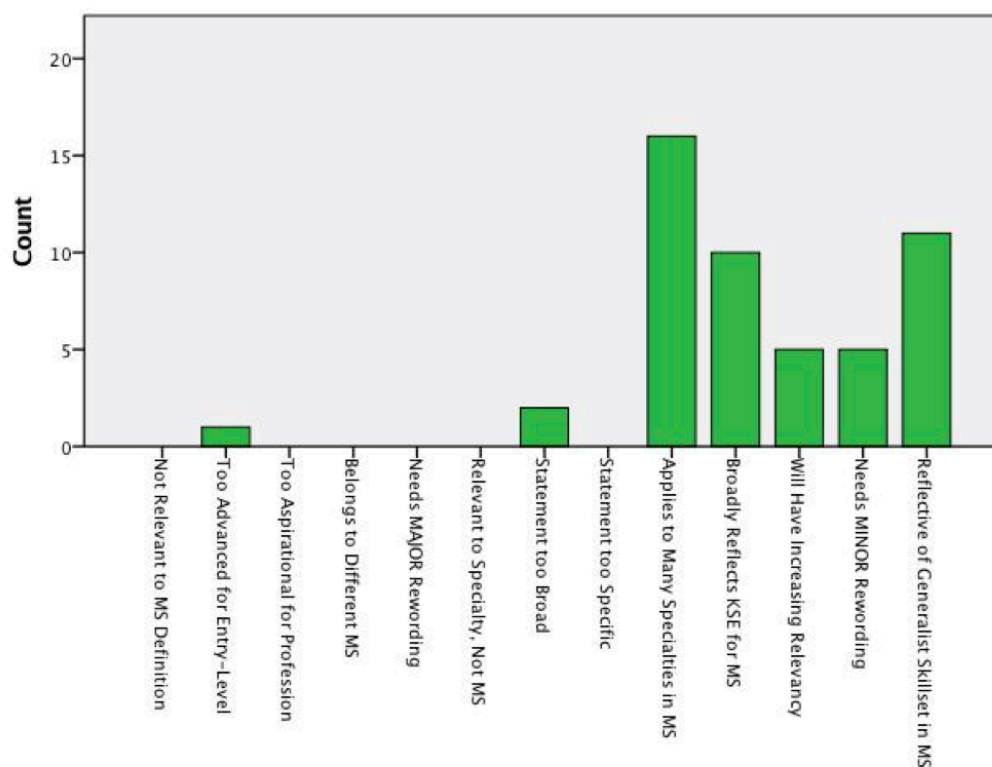
Demonstrates a high level of ability to convey information about complex health issues and provide comprehensive, individualised health education to child/family/carer including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 10 Rationale: CFH

Investigator Feedback Specific to Standard:

Phrase deleted to increase the distinction between Standards 9 & 10.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Demonstrates a high level of ability to convey information about complex health issues to child/family/carer including where there are linguistic, literacy, comprehension or other barriers to understanding.

**Child and Family Health - Standard 11**

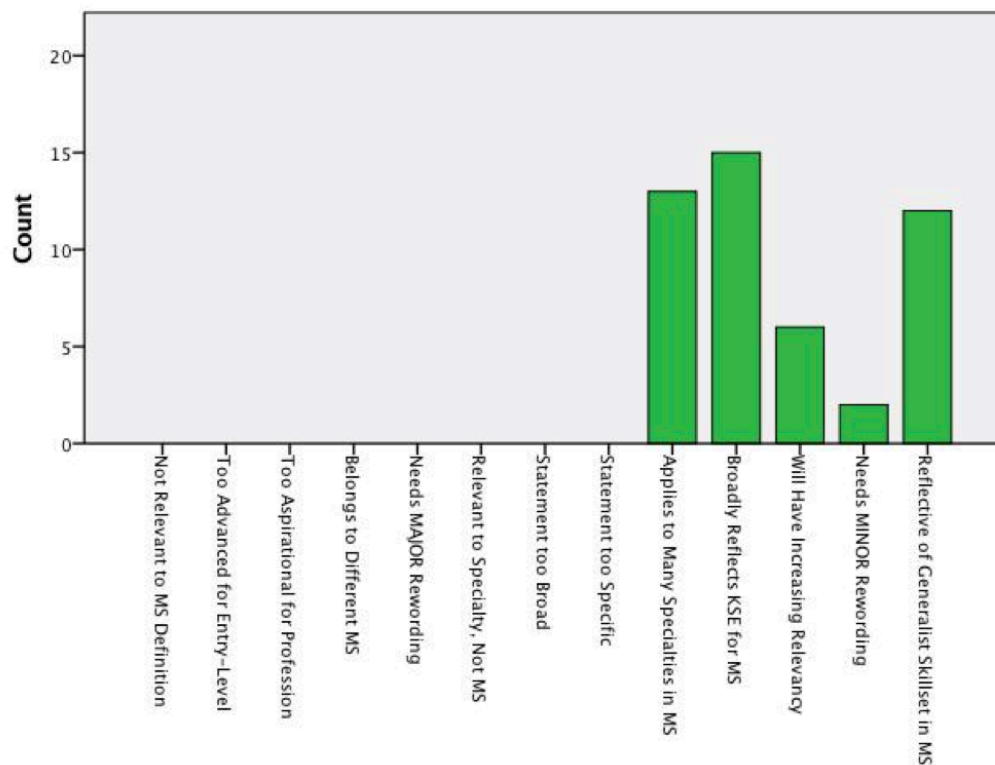
Original Statement:

Takes leadership role to ensure multidisciplinary approach to care of child and family/carers where appropriate.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CFH11RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:

Standard 11 Rationale: CFH

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Takes leadership role to ensure multidisciplinary approach to care of child and family/carer where appropriate.



Child and Family Health - Standard 12

Original Statement:

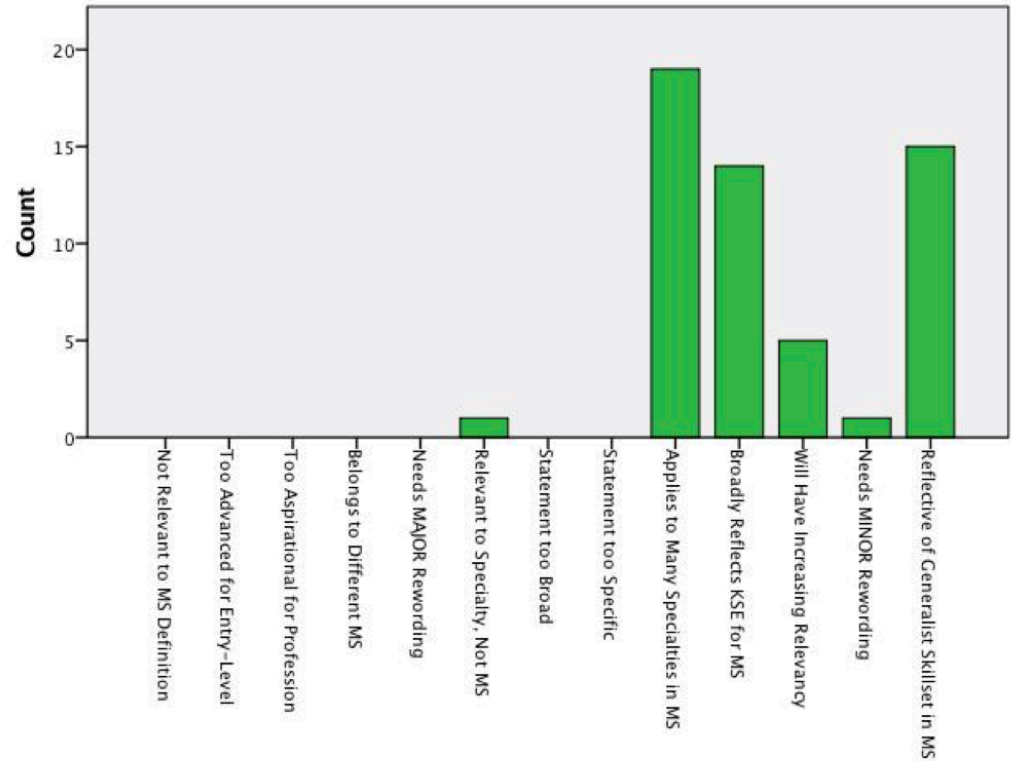
Identifies and initiates care when child and family/carer require follow-up beyond treatment for acute presentation, including consideration of economic and environmental determinants of health.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CFH12RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 12 Rationale: CFH

Investigator Feedback Specific to Standard:
No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Identifies and initiates care when child and family/carer require follow-up beyond treatment for acute presentation, including consideration of economic and environmental determinants of health.



WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Primary Health Care

Preamble - Primary Health Care - Clinical Practice Standards

Total Number of Delphi Participants = 93

Provisional Definition:

This MS focusses on healthcare that is delivered as the first point of contact, and is solely based in the community context of practice. This may include primary care contexts such as community-based clinics, general practices, schools, custodial/detention facilities, occupational settings, pharmacies and/or patient's homes. NPs working in this area have a strong focus on the care of the individual across the lifespan, and practice across the short and long-term care of the client. They emphasise primary and secondary health promotion and disease prevention strategies in their care through case management approaches, and have a thorough understanding of the social determinants of health and their impact on care planning and delivery. They require extensive knowledge of population and public health strategies, and provide expert linkages from the community to tertiary and long-term care contexts.

There were very high relevancy ratings for most proposed standards in this MS so very few changes have been made and no new standards added. Standards 13 and 14 have been combined. Some suggested changes could be used to develop activities under each standard. For example, advice about travel health could be included as an activity under Standard 7. This feedback will be used as examples in the final publically available document.

Primary Health Care - Standard 1

Original Statement:

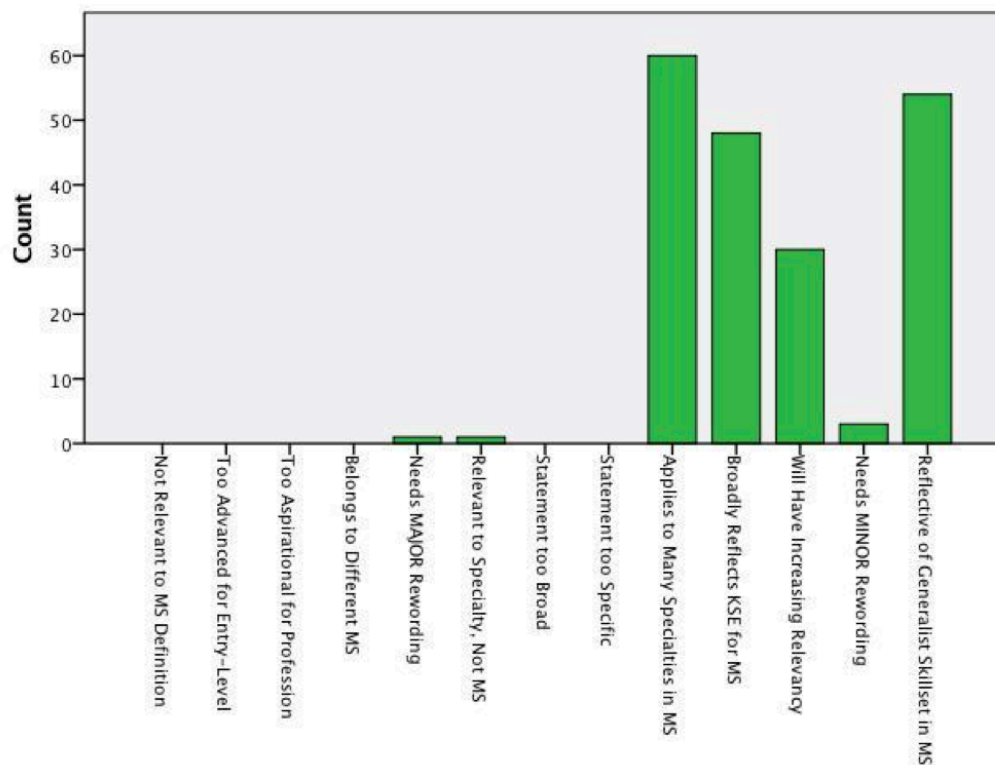
Conducts advanced primary health care assessment of the person, including social and cultural history, screening and lifestyle, taking account of the social determinants of health, community and economic resources.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC1RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 1 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Conducts advanced primary health care assessment of the person, including social and cultural history, screening and lifestyle, taking account of the social determinants of health, community and economic resources.



Primary Health Care - Standard 2

Original Statement:

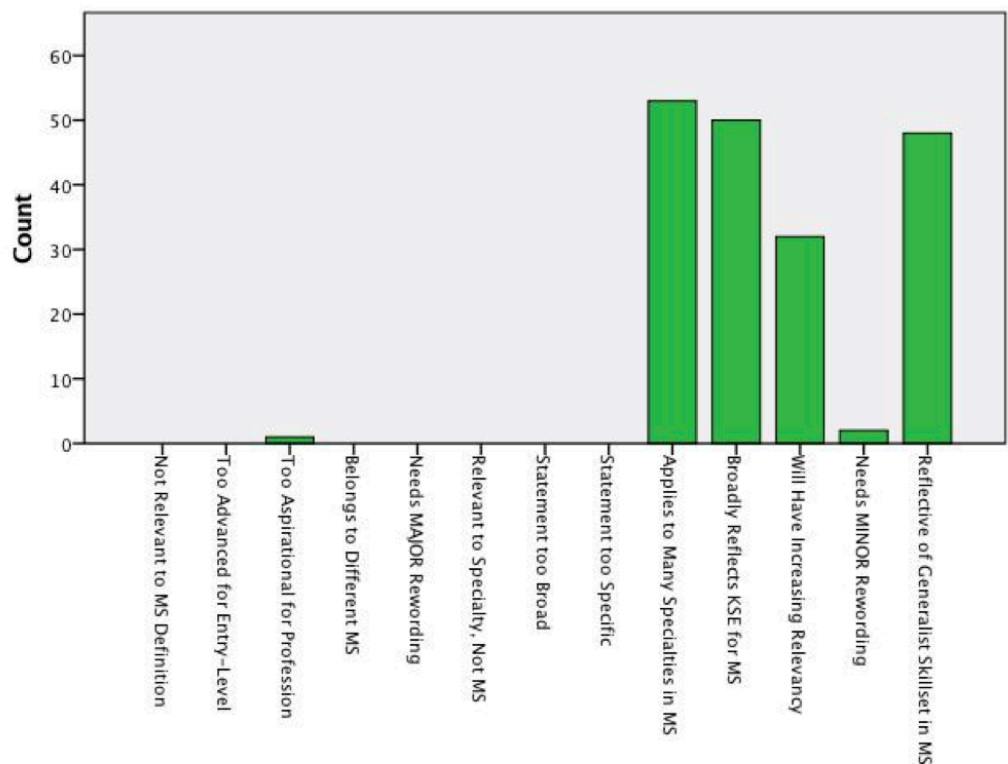
Demonstrates advanced understanding of variation in physiology and pathophysiology across the lifespan and varied population groups.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC2RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 2 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Demonstrates advanced understanding of variation in physiology and pathophysiology across the lifespan and varied population groups.

Not
Releva



Primary Health Care - Standard 3

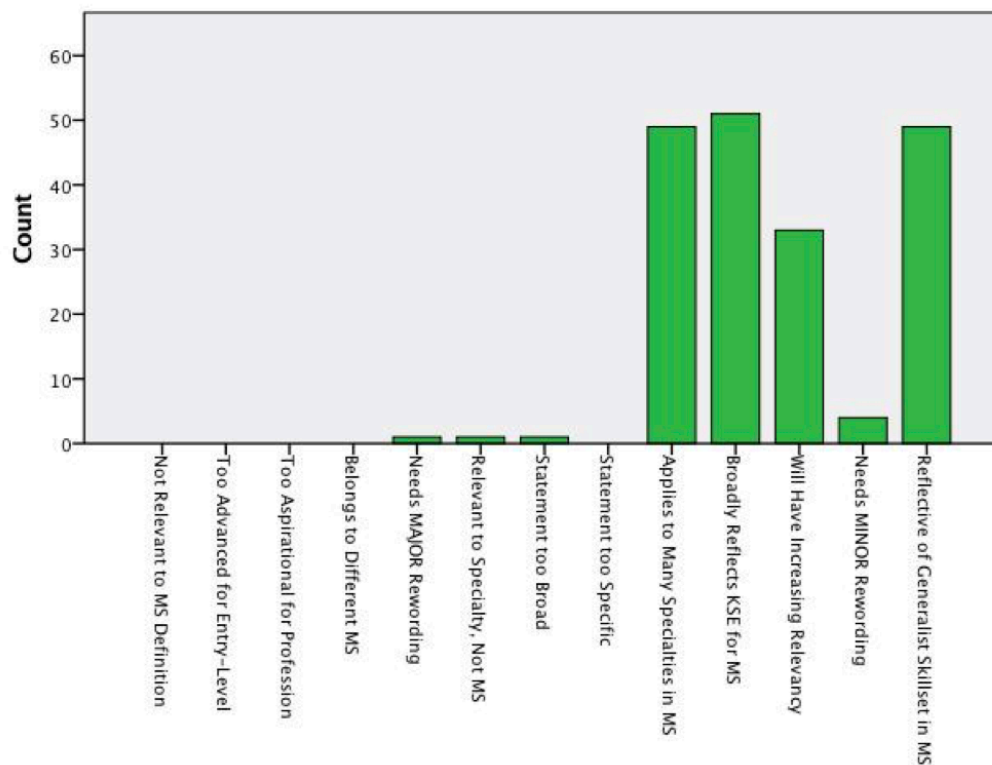
Original Statement:

Orders/completes and interprets appropriate diagnostic tests for person in the community care context.

Your Round 1 Response:

You rated this MS as $\{e://Field/PHC3RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 98%

Group Feedback:

Standard 3 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Orders/completes and interprets appropriate diagnostic tests for person in the community care context.



Primary Health Care - Standard 4

Original Statement:

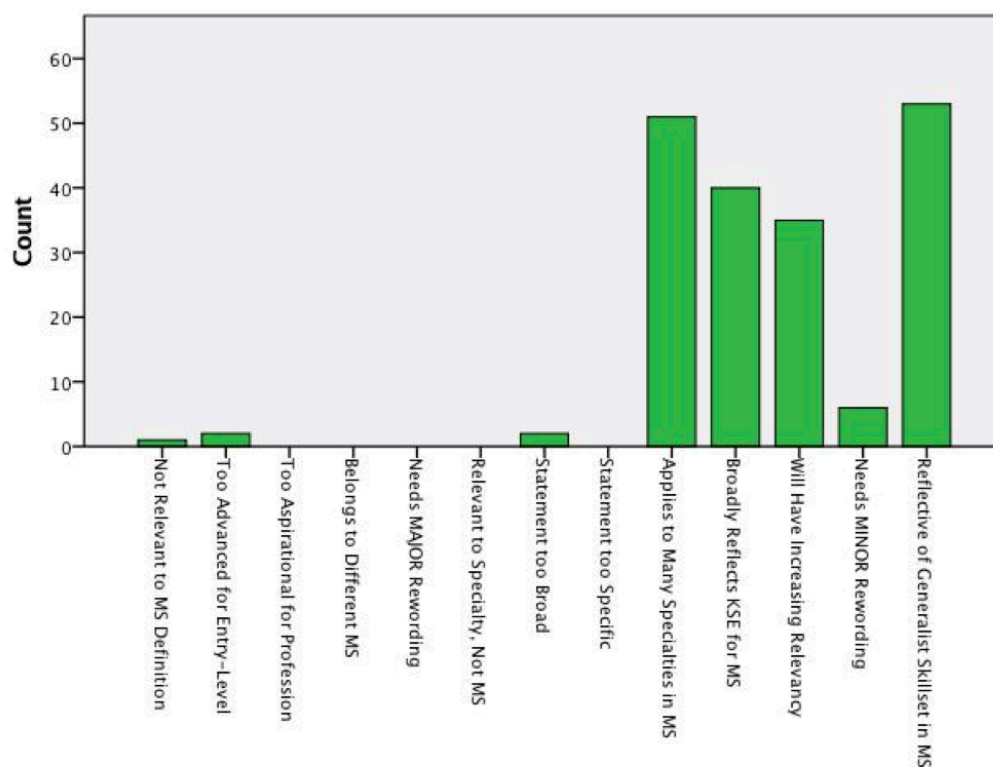
Demonstrates expert ability to modify management strategies in response to a range of cultural contexts and vulnerable groups using a primary health care framework.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC4RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 97%

Group Feedback:



Standard 4 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Demonstrates expert ability to modify management strategies in response to a range of cultural contexts and vulnerable groups using a primary health care framework.



Primary Health Care - Standard 5

Original Statement:

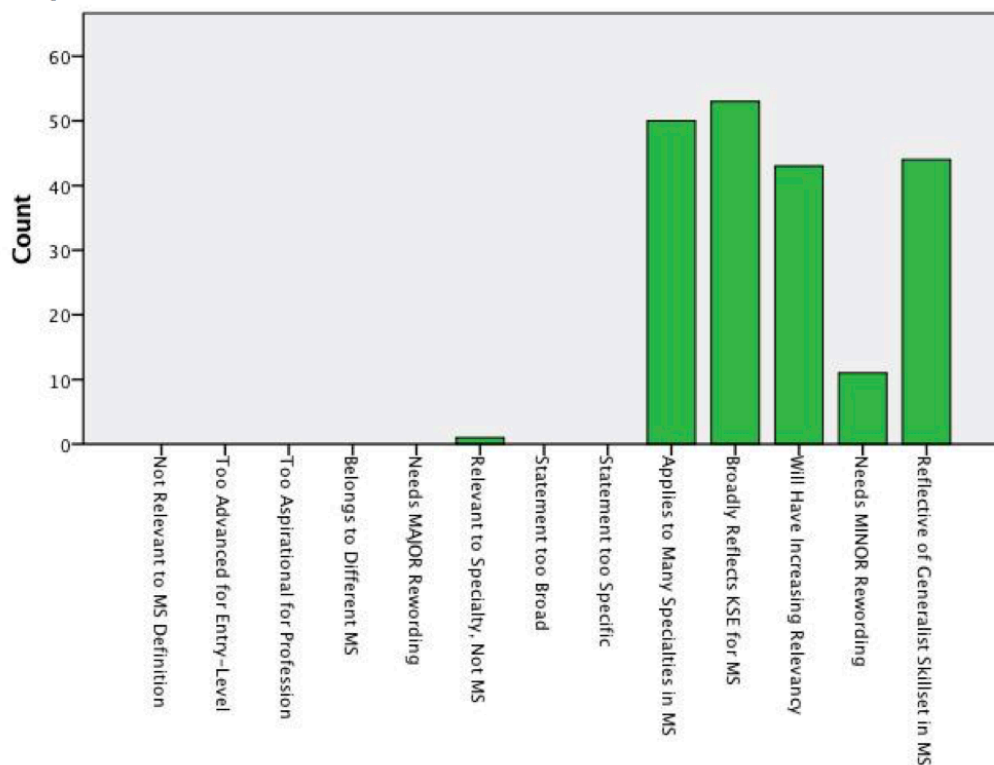
Develops and executes a comprehensive plan of primary health care in collaboration with person and demonstrating high level of confidence and expertise.

Your Round 1 Response:

You rated this MS as $\{e://Field/PHC5RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 5 Rationale: PHC

Investigator Feedback Specific to Standard:

Minor grammatical change.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Develops and executes a comprehensive plan of primary health care in collaboration with person whilst demonstrating high level of confidence and expertise.



Primary Health Care - Standard 6

Original Statement:

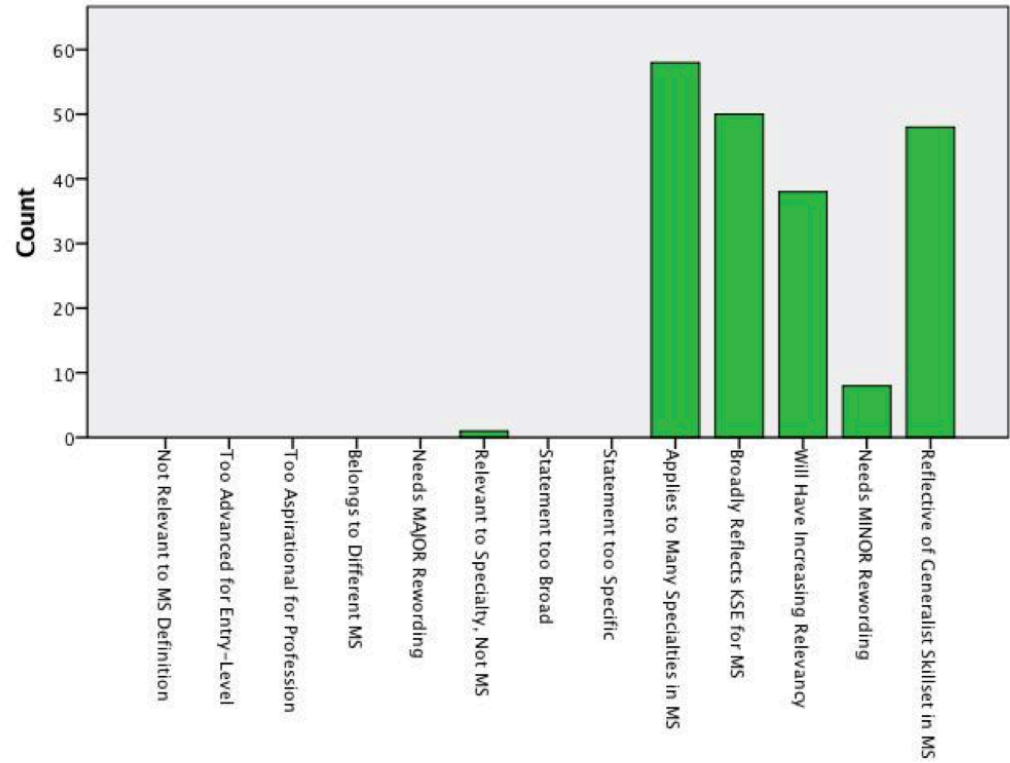
Prescribes pharmacological and non-pharmacological therapy for primary health care setting appropriate to the person's domestic, community and self or carer capacity for treatment in the home.

Your Round 1 Response:

You rated this MS as \${e://Field/PHC6RR}

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 6 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Prescribes pharmacological and non-pharmacological therapy for primary health care setting appropriate to the person’s domestic, community and self or carer capacity for treatment in the home.



Primary Health Care - Standard 7

Original Statement:

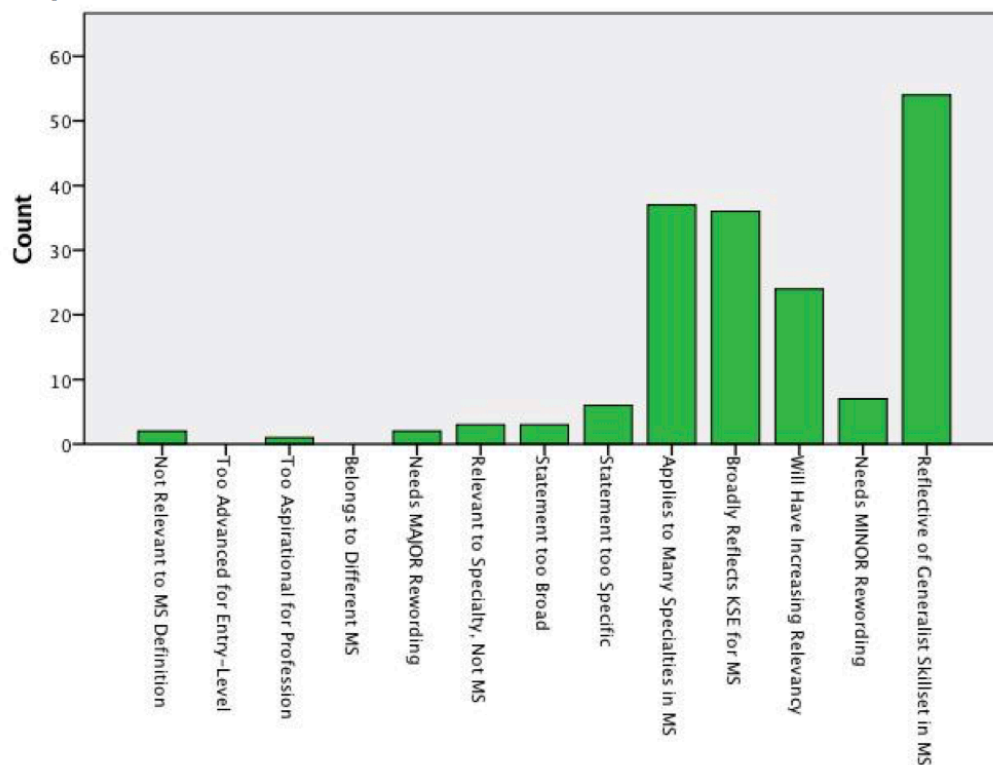
Manages immunisation status of the person in collaboration with person and based on the latest evidence and the person's lifestyle.

Your Round 1 Response:

You rated this MS as $\{e://Field/PHC7RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 86%

Group Feedback:



Standard 7 Rationale: PHC

Investigator Feedback Specific to Standard:

Wording change to reduce potential for interpretation of paternalism.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Collaborates with person to manage their immunisation status based on best evidence and the person's lifestyle.



Primary Health Care - Standard 8

Original Statement:

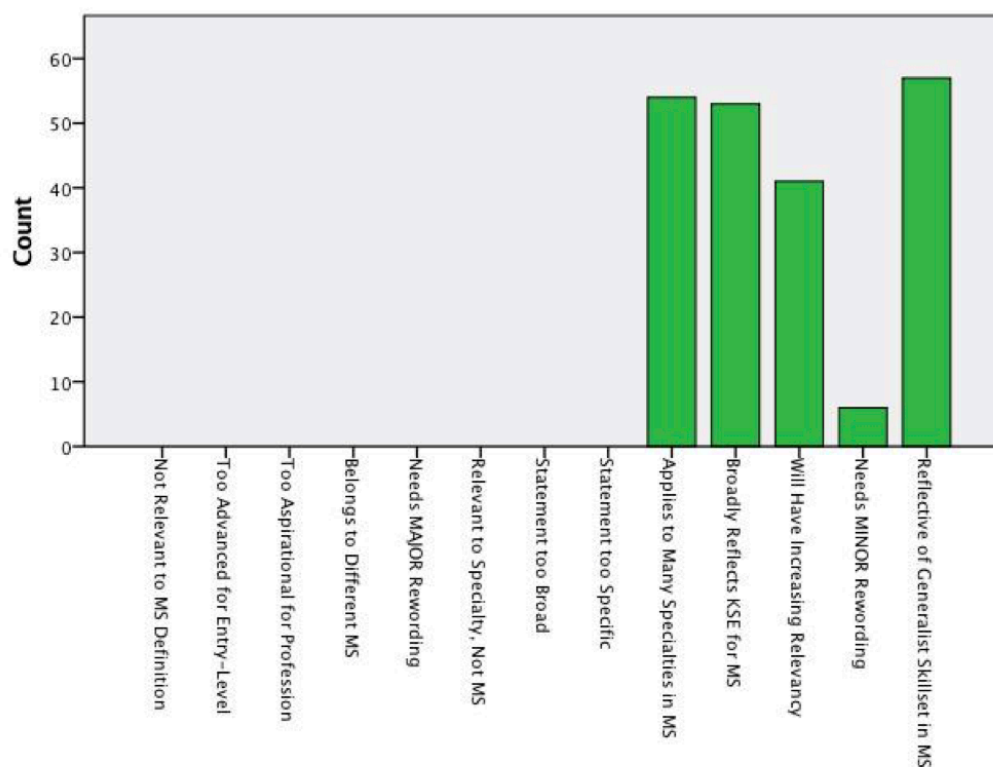
Demonstrates ability to refer widely and appropriately to all other health disciplines.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:



Standard 8 Rationale: PHC

Investigator Feedback Specific to Standard:

Addresses consistent message for minor changes.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev:

Demonstrates ability to refer widely and appropriately to other health disciplines and agencies.



Primary Health Care - Standard 9

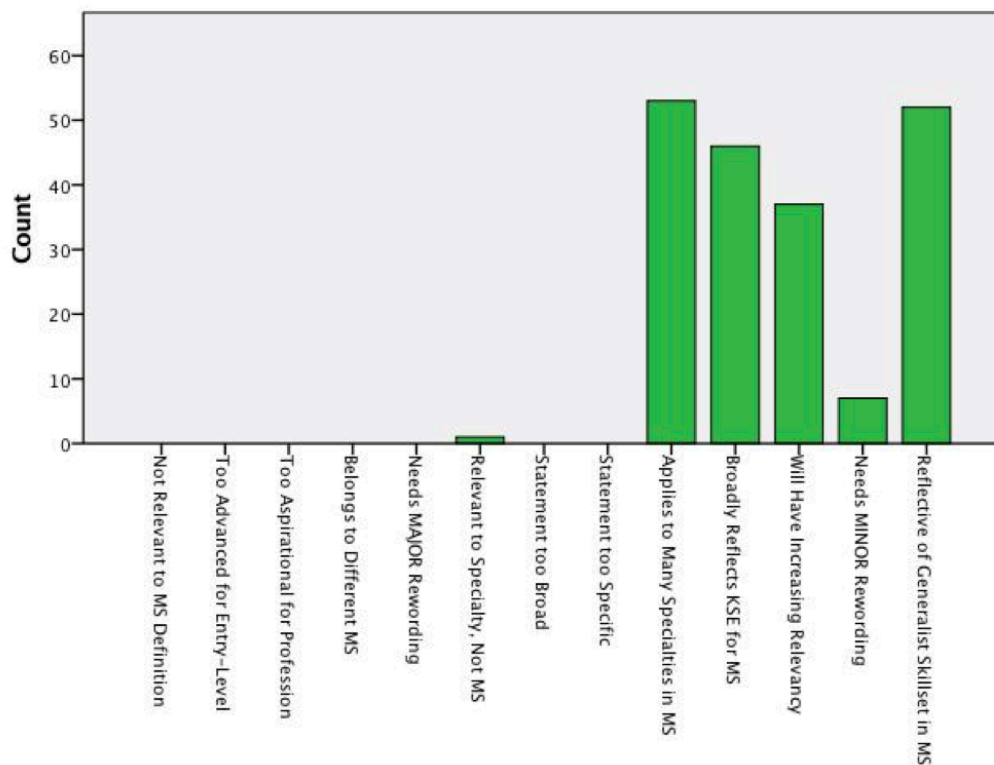
Original Statement:

Anticipates and expertly manages complications and adverse events specific to delivery of care in the primary health care setting.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC9RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:

Standard 9 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Anticipates and expertly manages complications and adverse events specific to delivery of care in the primary health care setting.



Primary Health Care - Standard 10

Original Statement:

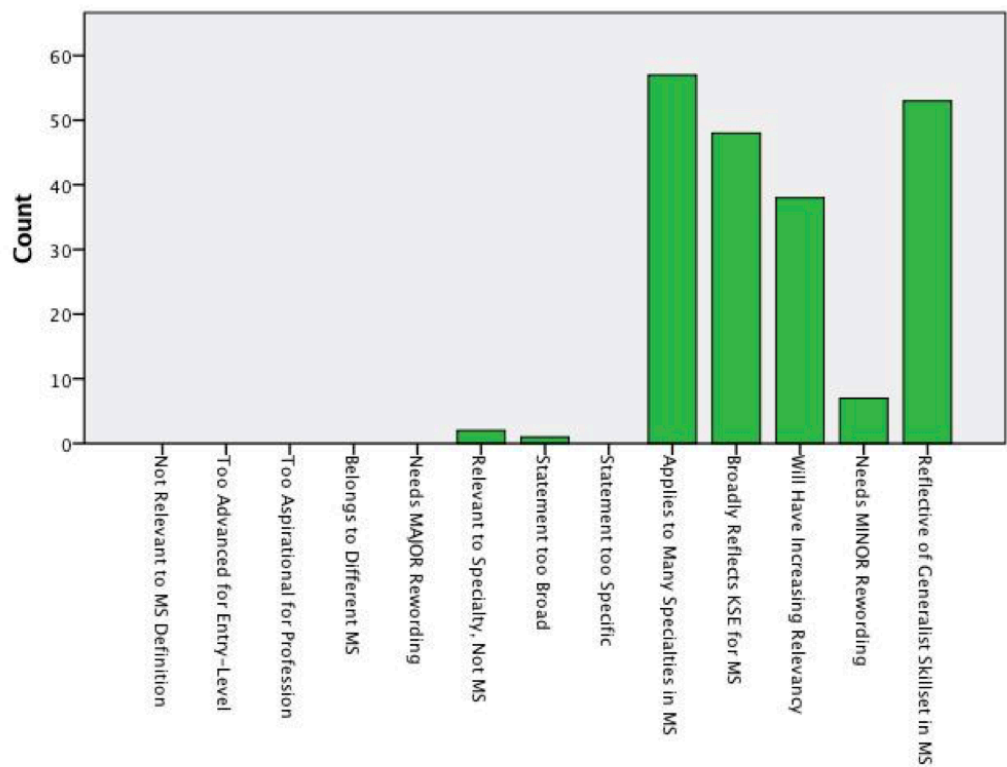
Provides primary and secondary comprehensive, individualised preventative health education to persons of all ages within areas of NP expertise and where appropriate to person.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC10RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 10 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Provides primary and secondary comprehensive, individualised preventative health education to persons of all ages within areas of NP expertise and where appropriate to person.



Primary Health Care - Standard 11

Original Statement:

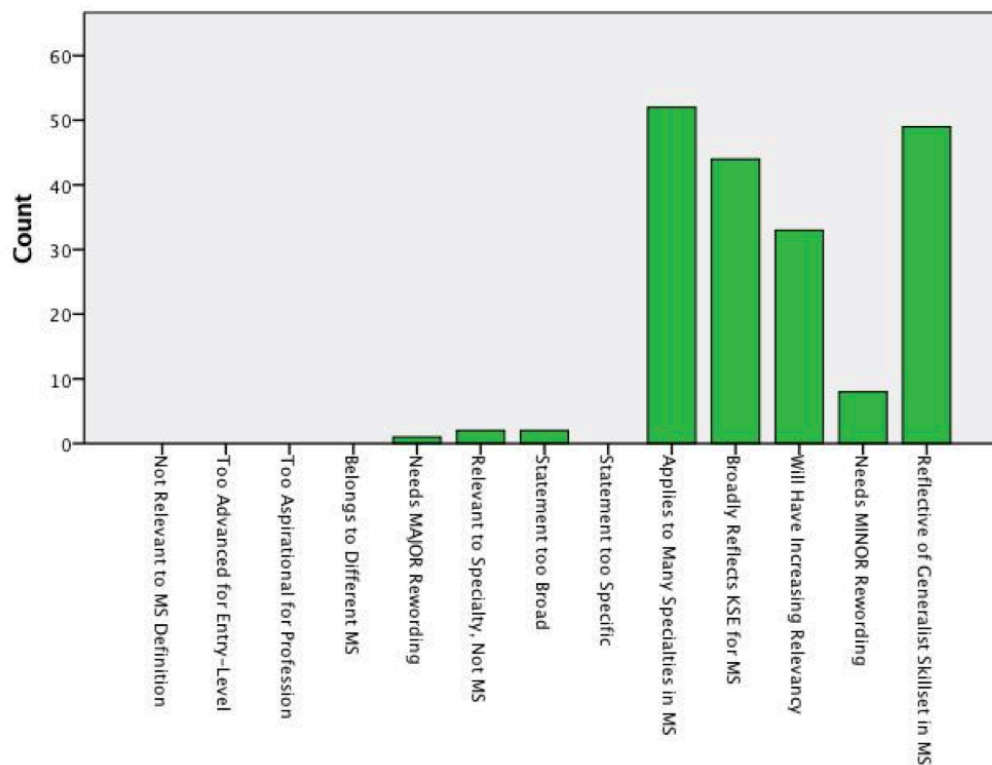
Demonstrates advanced ability to convey primary health care issues and promote health literacy including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as $\{e://Field/PHC11RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 11 Rationale: PHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Demonstrates advanced ability to convey primary health care issues and promote health literacy including where there are linguistic, literacy, comprehension or other barriers to understanding.



Primary Health Care - Standard 12

Original Statement:

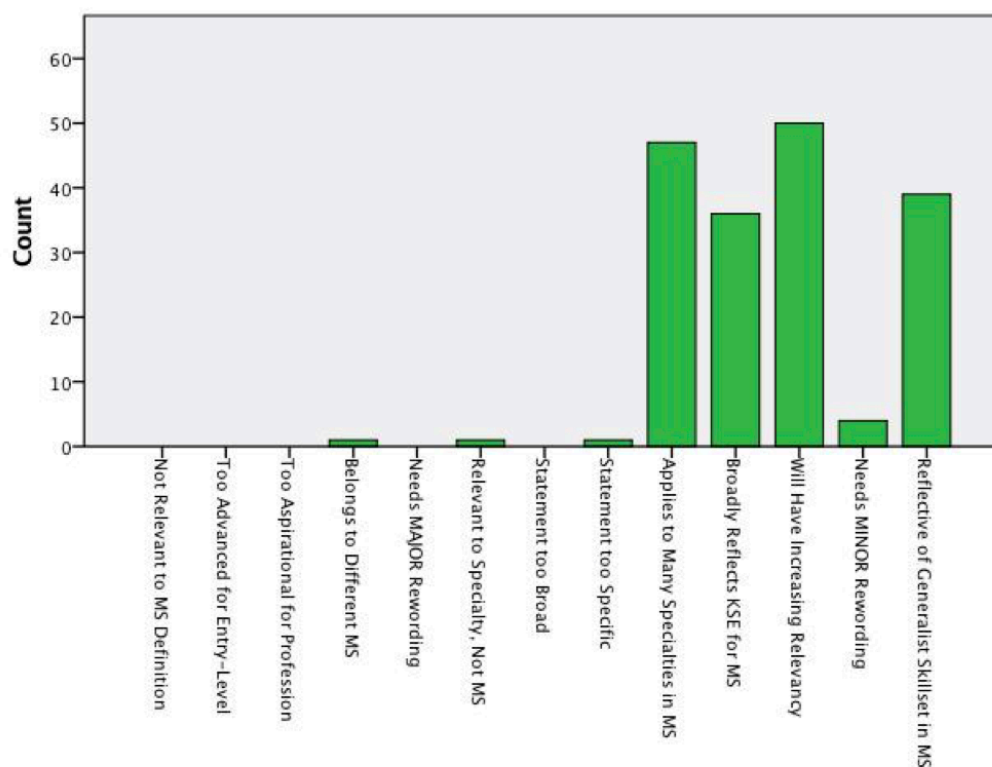
Takes a leadership and care coordination role for the person in the primary health care multidisciplinary team.

Your Round 1 Response:

You rated this MS as $\$(e://Field/PHC12RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 97%

Group Feedback:



Standard 12 Rationale: PHC

Investigator Feedback Specific to Standard:

Minor improvement in wording to address feedback about inclusion of potential for multiple providers.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Takes a leadership and care coordination role for the person **under the care of** the primary health care multidisciplinary team.

**Primary Health Care - Standard 13**

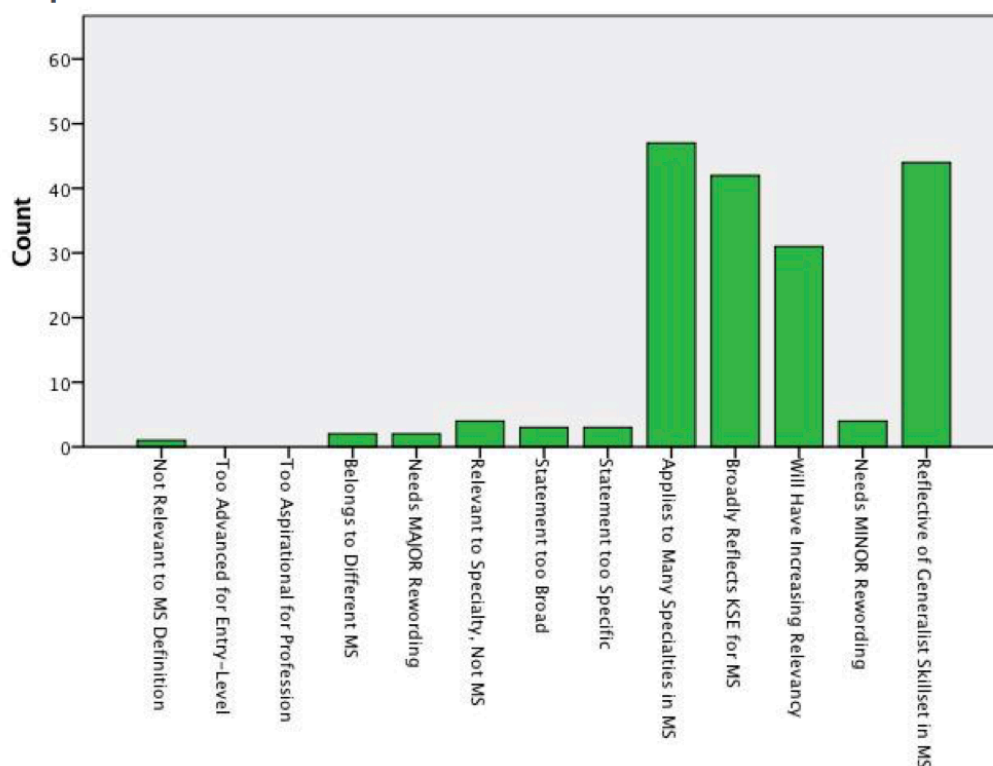
Original Statement:

Collates and analyses assessment and treatment data that inform discharge plan or long term management plan for person.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 92%

Group Feedback:

Standard 13 Rationale: PHC

Investigator Feedback Specific to Standard:

12% of respondents suggested combining Standards 13 & 14. Standard 13 now incorporates some details from Standard 14 and Standard 14 has been deleted.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Collates and analyses assessment and treatment data that inform discharge plan or long term management plan and initiates primary health care management plan based on latest evidence and person's lifestyle and social context.



Primary Health Care - Standard 14

Original Statement:

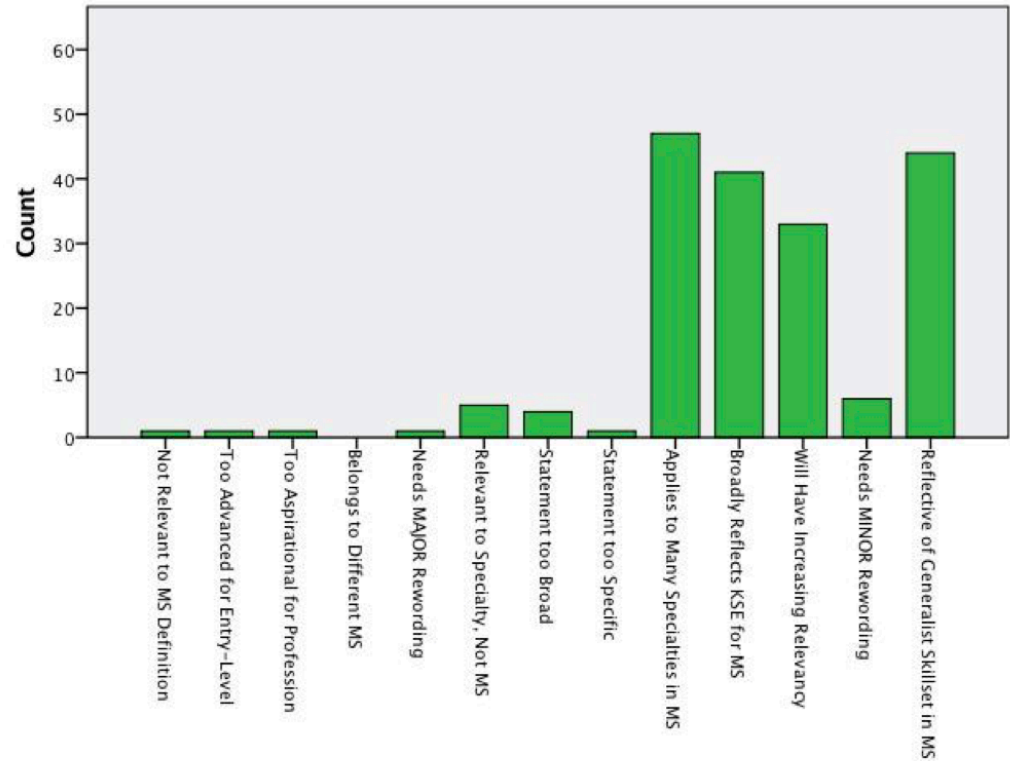
Initiates discharge or long term primary health care management plan based on latest evidence and person's lifestyle and social context.

Your Round 1 Response:

You rated this MS as **\$(e://Field/PHC14RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 94%

Group Feedback:



Standard 14 Rationale: PHC

Investigator Feedback Specific to Standard:

Deleted and merged with Standard 13.

WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Mental Health Care

Preamble - Mental Health Care - Clinical Practice Standards

Total Number of Delphi Participants = 22

Provisional Definition:

This MS focuses on the psychological and emotional well-being of a person. This MS title recognises that good mental health is not just the absence of mental illness, but is a 'state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO, 2007). This MS incorporates care for people with mental health problems and recognises the importance of recovery-orientated mental health practice across the short and long-term care of the client. This MS may extend across community and tertiary care contexts of practice.

There was a very high level of support for all proposed standards with very few recommendations for rewording. There were no consistent recommendations for combining standards or for new standards to be added, so none were deleted or added. There was feedback to suggest we include psychotherapy but we consider that this can be incorporated in the MS at the level of specific activities under some standards. This and other feedback will also inform the framework for the standards in the final publically available document.

PLEASE NOTE: The following graphs should be interpreted with caution due to the relatively small sample of participants providing rationale in this metaspecialty. The smallest bars equate to one response and the tallest bars equate to 12 responses.

Mental Health Care - Standard 1

Original Statement:

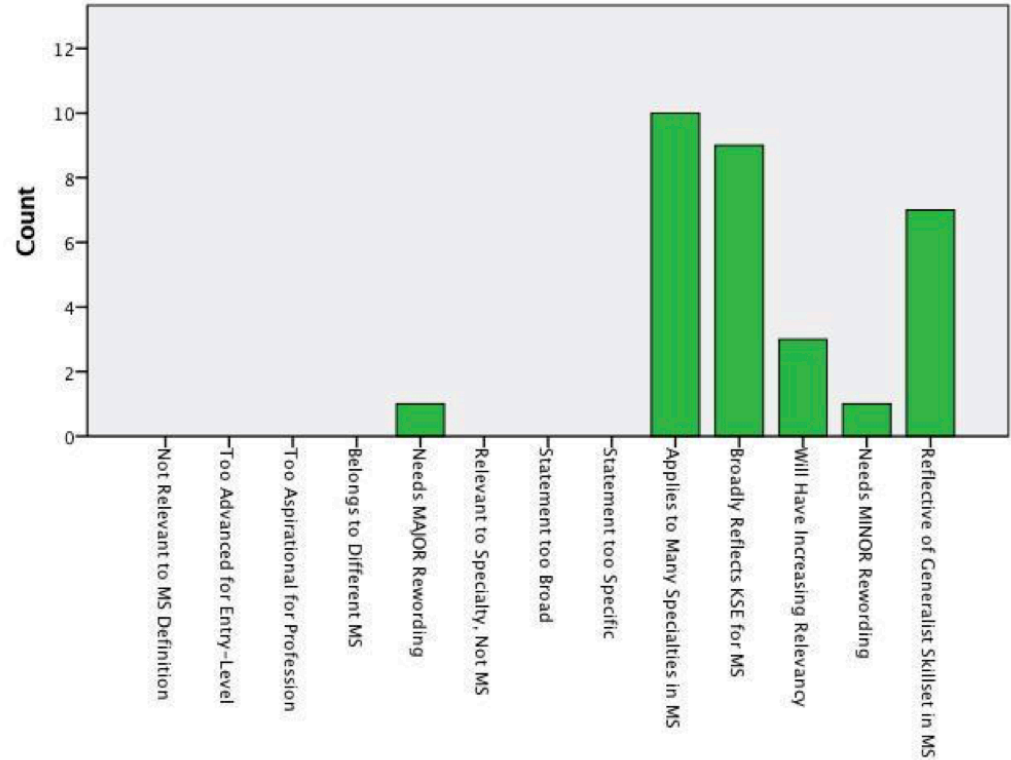
Undertakes expert and comprehensive assessment related to the psychological and physical well-being of person.

Your Round 1 Response:

You rated this MS as **\$(e://Field/MHC1RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 1 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Undertakes expert and comprehensive assessment related to the psychological and physical well-being of person.



Mental Health Care - Standard 2

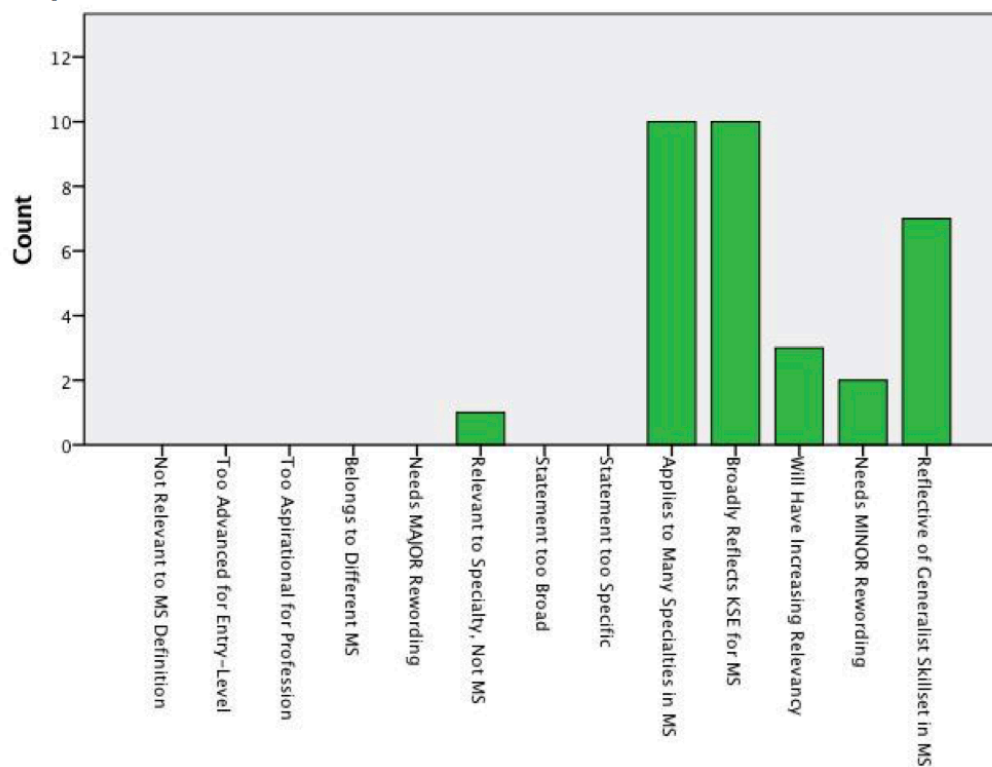
Original Statement:

Conducts advanced assessment of lifestyle factors, social and cultural history relevant to mental health care of person.

Your Round 1 Response:

You rated this MS as **\$(e://Field/MHC2RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:

Standard 2 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Conducts advanced assessment of lifestyle factors, social and cultural history relevant to mental health care of person.



Mental Health Care - Standard 3

Original Statement:

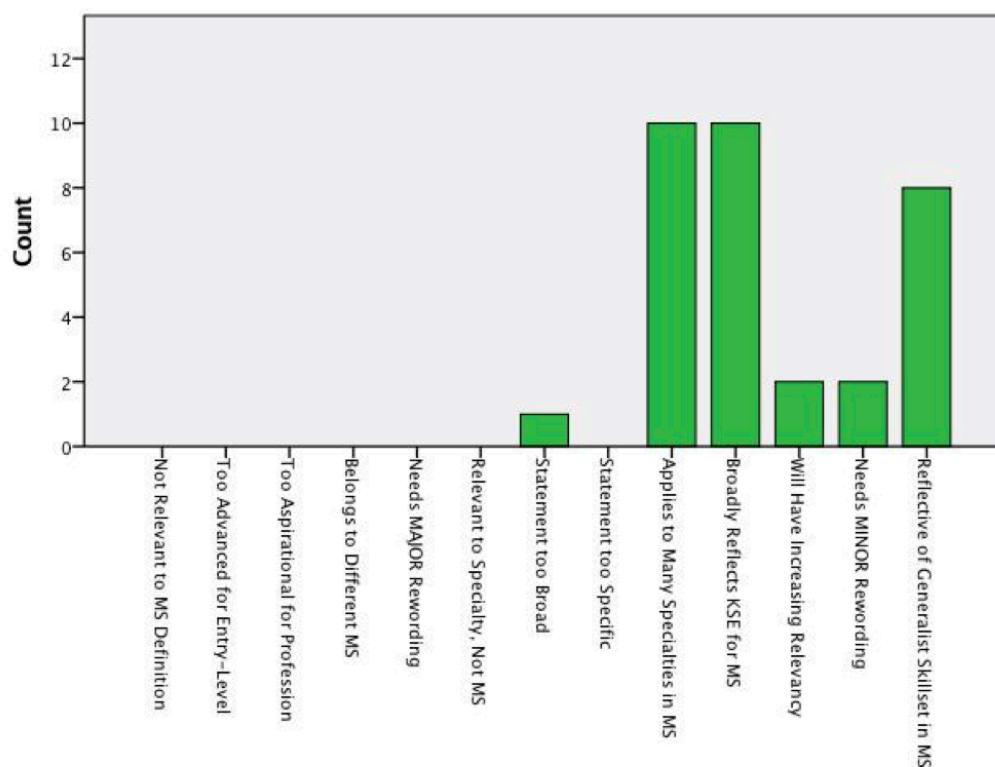
Engages in high level clinical reasoning to organise and interpret comprehensive assessments relevant to mental health care of person.

Your Round 1 Response:

You rated this MS as $\$(e://Field/MHC3RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 3 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Engages in high level clinical reasoning to organise and interpret comprehensive assessments relevant to mental health care of person.



Mental Health Care - Standard 4

Original Statement:

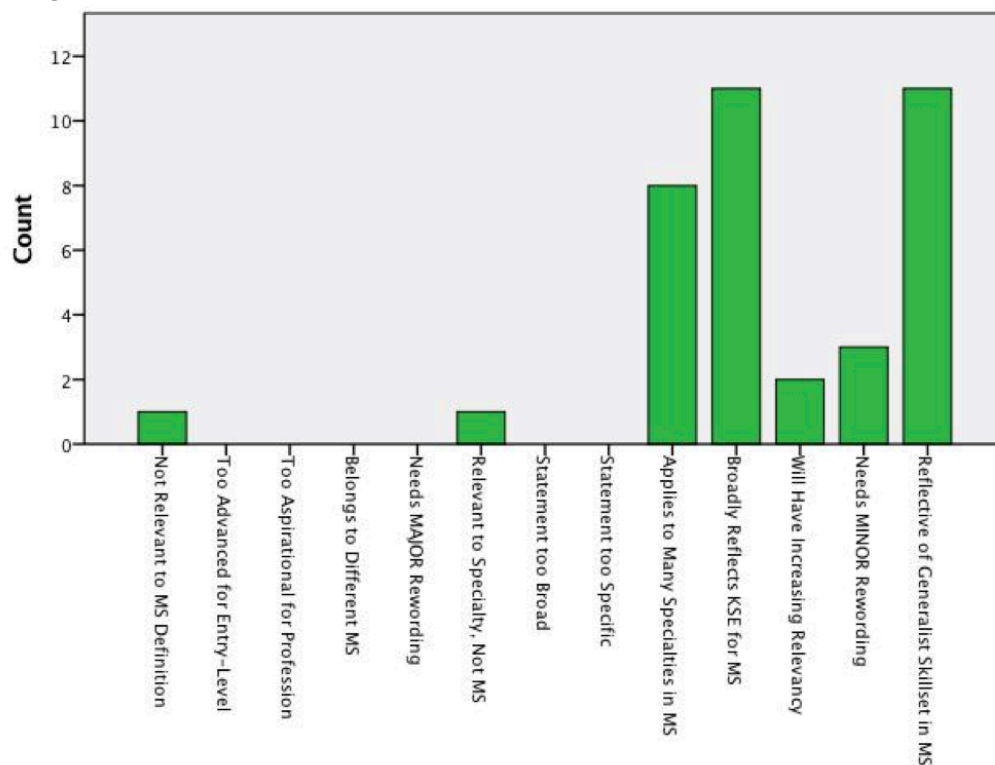
Develops person centred, comprehensive care plan with person requiring mental health care.

Your Round 1 Response:

You rated this MS as $\$(e://Field/MHC4RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 4 Rationale: MHC

Investigator Feedback Specific to Standard:

Minor addition to address respondent feedback to acknowledge role of 'carer in some circumstances'.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Develops person centred, comprehensive care plan with person requiring mental health care and their carer where appropriate.



Mental Health Care - Standard 5

Original Statement:

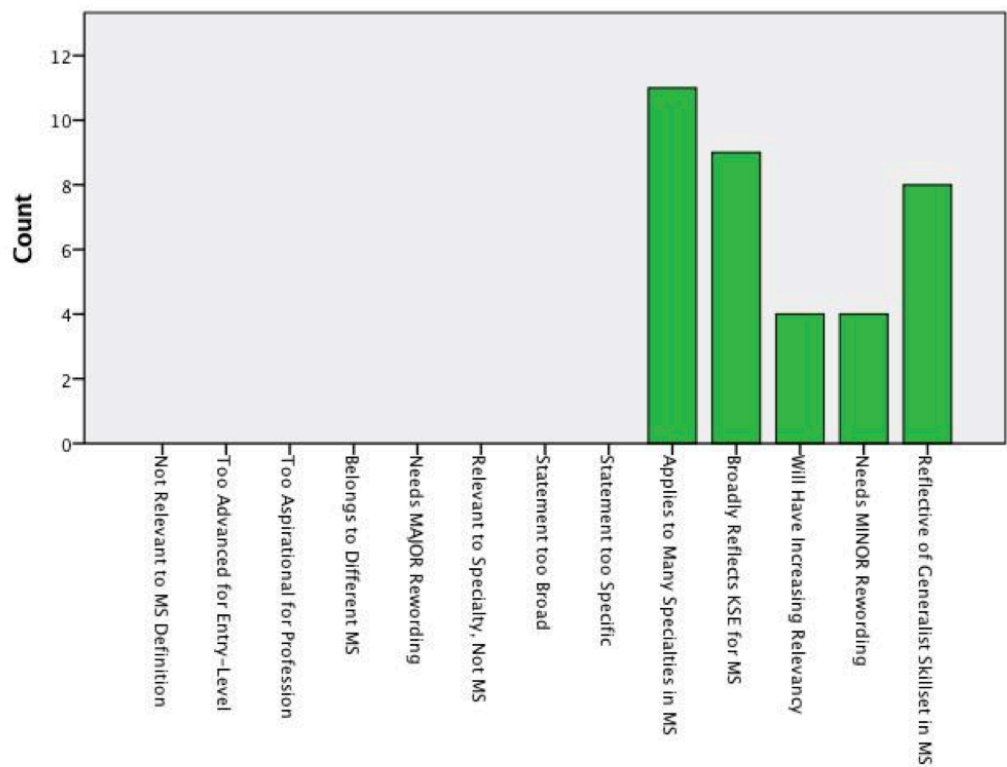
Delivers expert treatment and support for person with mental health problems.

Your Round 1 Response:

You rated this MS as $\{e://Field/MHC5RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:



Standard 5 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Delivers expert treatment and support for person with mental health problems.



Mental Health Care - Standard 6

Original Statement:

Demonstrates a high level of confidence and clinical proficiency in managing person

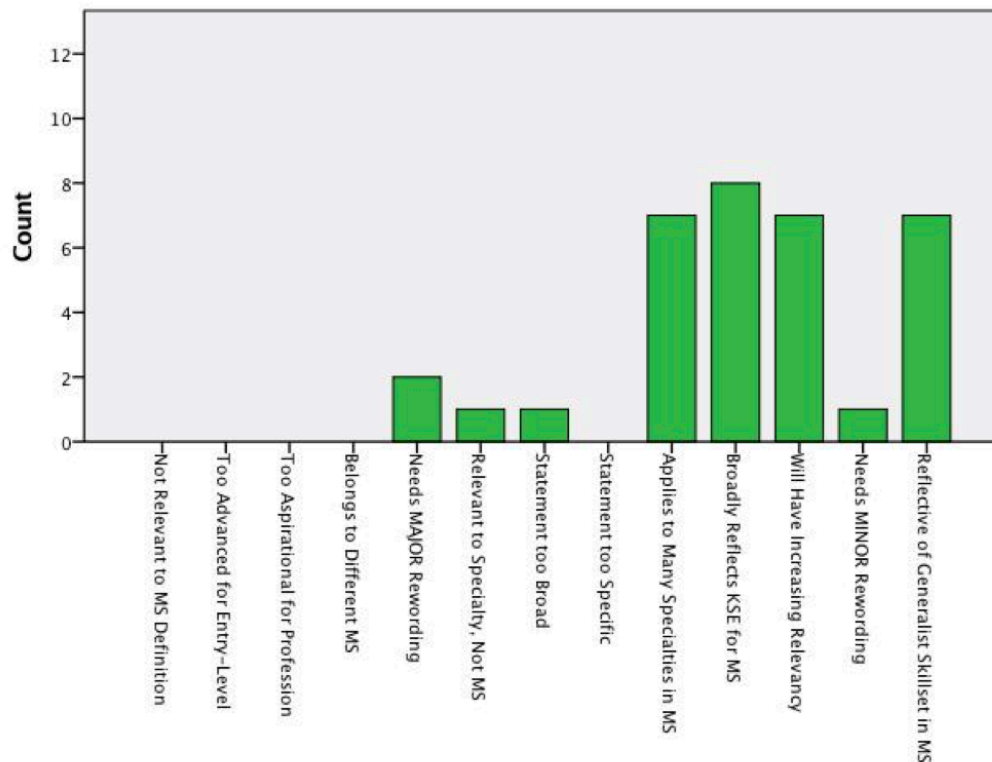
with both physical and mental illness, including referral when needed.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 91%

Group Feedback:



Standard 6 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Demonstrates a high level of confidence and clinical proficiency in managing person with both physical and mental illness, including referral when needed.



Mental Health Care - Standard 7

Original Statement:

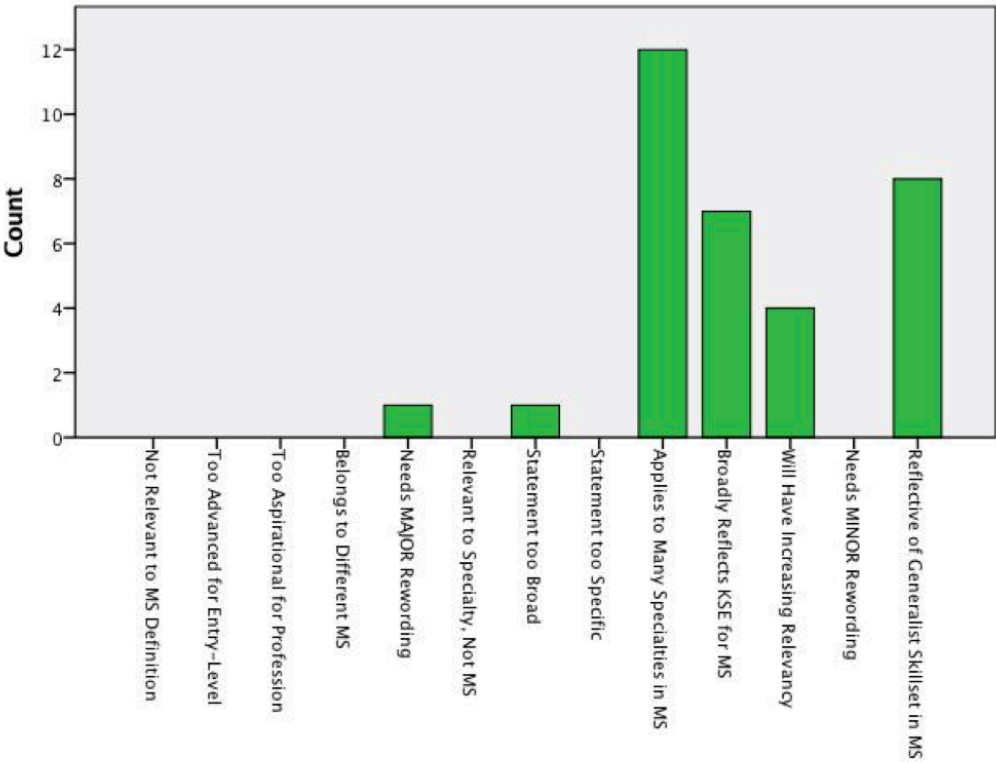
Demonstrates advanced application of psychopharmacology in collaboration with person and other members of the multidisciplinary health care team.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 7 Rationale: MHC

Investigator Feedback Specific to Standard:
No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not Relevant

Demonstrates advanced application of psychopharmacology in collaboration with person and other members of the multidisciplinary health care team.

☐

Mental Health Care - Standard 8

Original Statement:

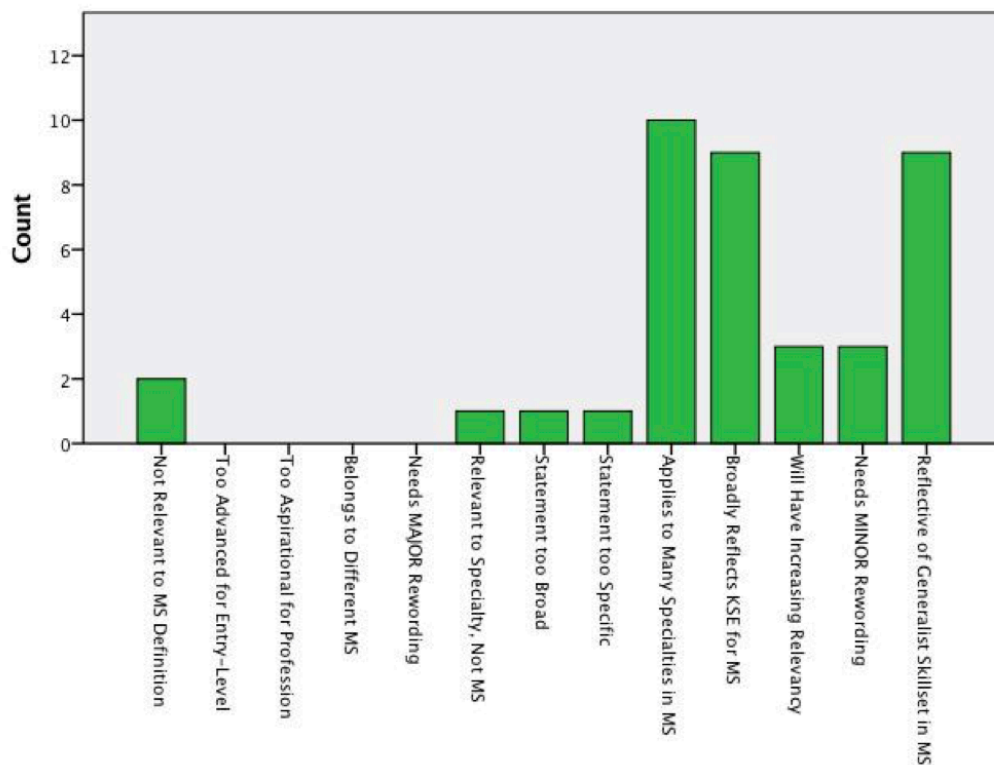
Provides expert support for person and family where there is actual or potential conflict arising from mental health care needs, including negotiation and de-escalation.

Your Round 1 Response:

You rated this MS as $\{e://Field/MHC8RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 91%

Group Feedback:



Standard 8 Rationale: MHC

Investigator Feedback Specific to Standard:

Minor addition to address respondent suggestions.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Provides expert support for person and family where there is actual or potential conflict arising from mental health care needs, including advocacy, negotiation and de-escalation.



Mental Health Care - Standard 9

Original Statement:

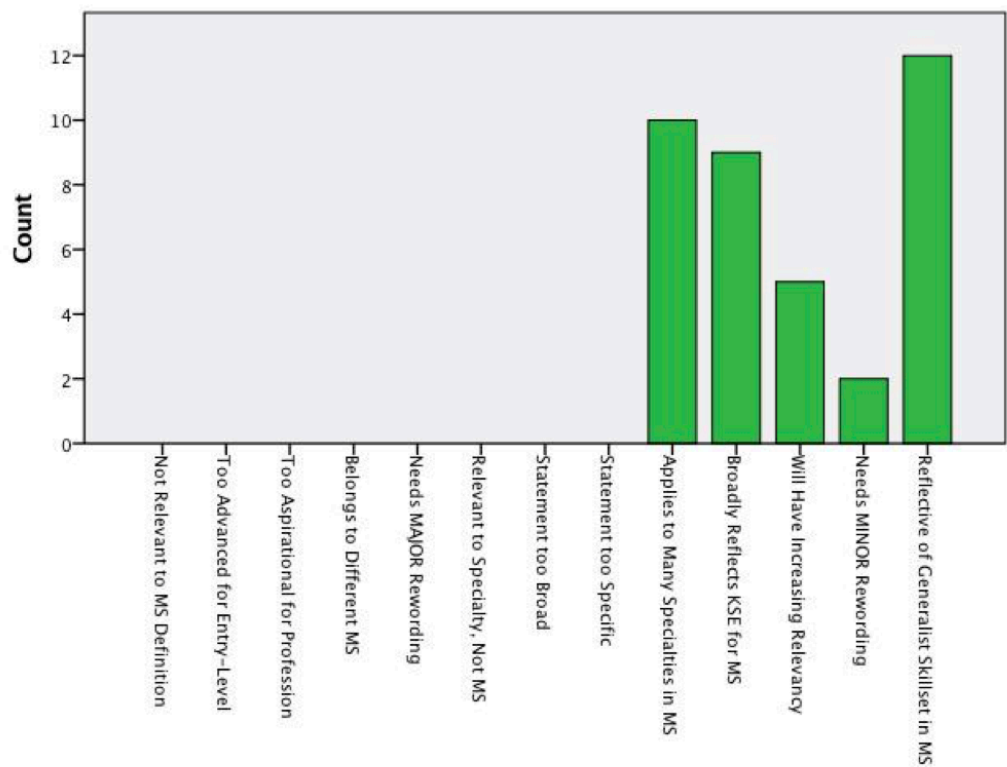
Anticipates and expertly manages complications and adverse events specific to people requiring mental health care.

Your Round 1 Response:

You rated this MS as $\{e://Field/MHC9RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:



Standard 9 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Anticipates and expertly manages complications and adverse events specific to people requiring mental health care.



Mental Health Care - Standard 10

Original Statement:

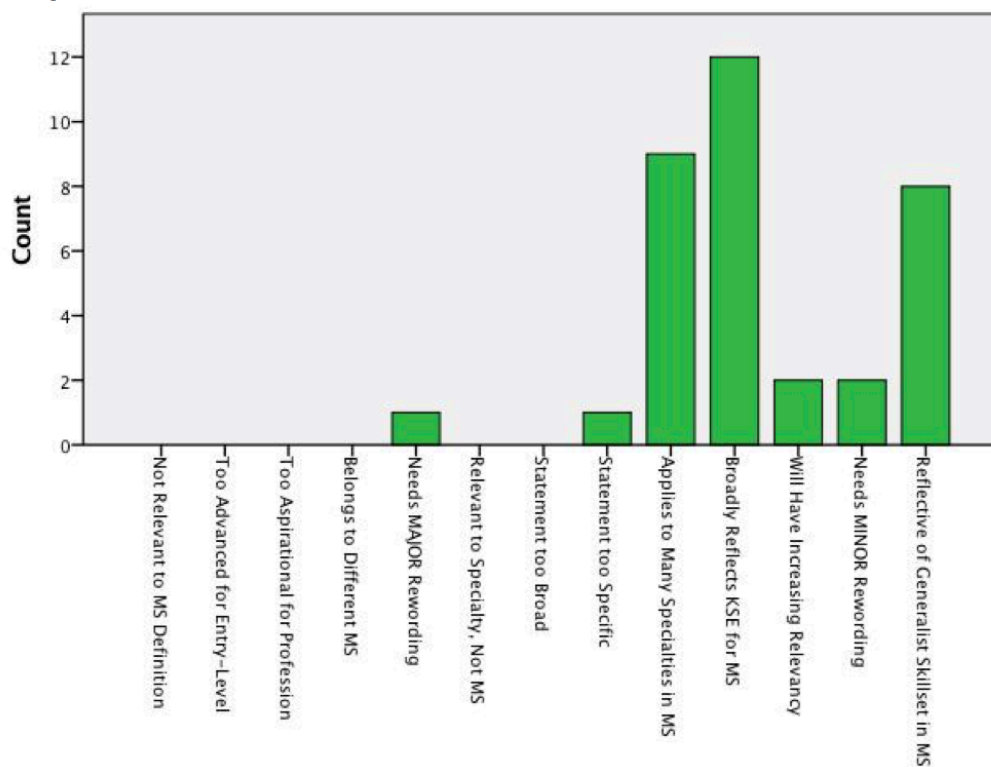
Demonstrates expert ability to convey complex health issues and provide comprehensive, individualised health education about mental health care including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as $\{e://Field/MHC10RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 10 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Demonstrates expert ability to convey complex health issues and provide comprehensive, individualised health education about mental health care including where there are linguistic, literacy, comprehension or other barriers to understanding.



Mental Health Care - Standard 11

Original Statement:

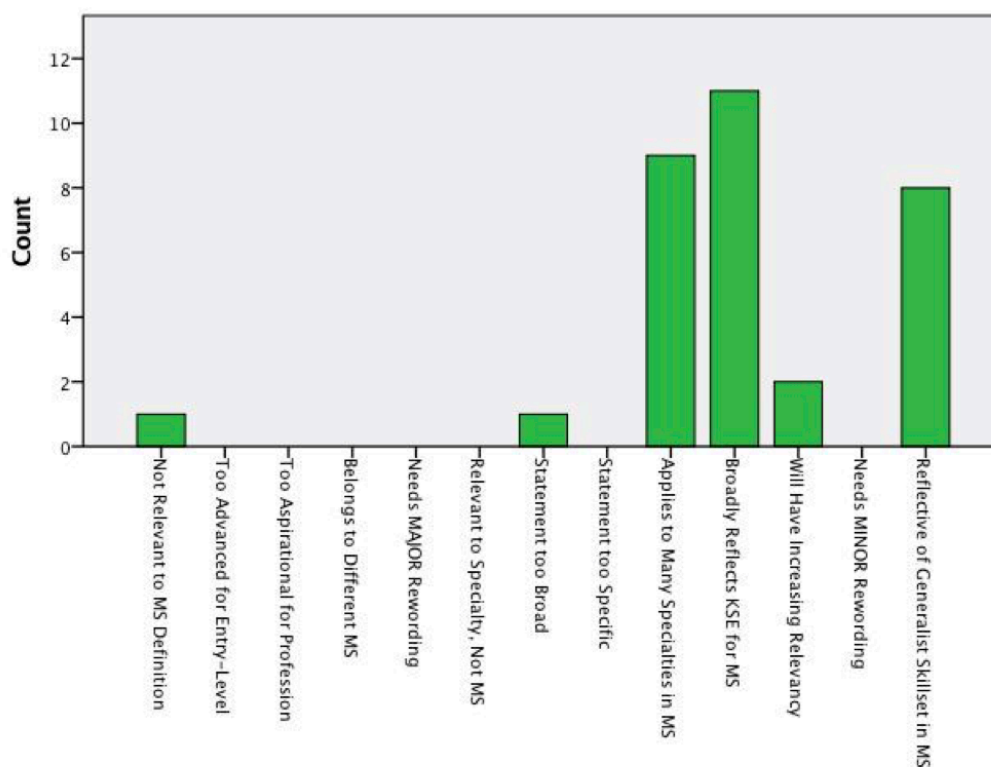
Initiates long term or discharge management plan that includes ongoing monitoring of the Recovery Journey.

Your Round 1 Response:

You rated this MS as $\$(e://Field/MHC11RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 11 Rationale: MHC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Initiates long term or discharge management plan that includes ongoing monitoring of the Recovery Journey.



WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Aged and Palliative Care

Preamble - Aged and Palliative Care - Clinical Practice Standards

Total Number of Delphi Participants: 45

Provisional Definition:

This MS title focusses on a diverse client group that are nearing or surpassing their anticipated life expectancy. The limitation on life expectancy influences the person's management goals for acute and chronic illnesses, and the degree and type of health intervention most appropriate for them. This population group includes those needing supportive or end of life care, but also targets interventions that promote healthy ageing. A common thread is that health promotion goals are moderated by a limited life expectancy, with care occurring in community, to aged care and tertiary care contexts of practice.

Whilst the combination of aged and palliative care in the MS requires resolution external to this Delphi study, the general feedback for all standards grouped here was very positive. There were very high relevancy ratings for most proposed standards so only minor wording changes have been made, no standards were combined and no new standards were added. The phrase 'nearing or surpassing anticipated life expectancy' was challenged by a small number of respondents usually reflecting a specific palliative care focus or a specific healthy aging focus. However, the standards that included this phrase were very highly validated and so we have concluded that the phrase should be retained. We consider that this phrase encompasses people's 'goals and anticipated life expectancy'.

Feedback will be used to inform future work, beyond the scope of this Delphi study, to clarify how aged and palliative care scopes of practice can be included in the metaspecialty framework.

Aged and Palliative Care - Standard 1

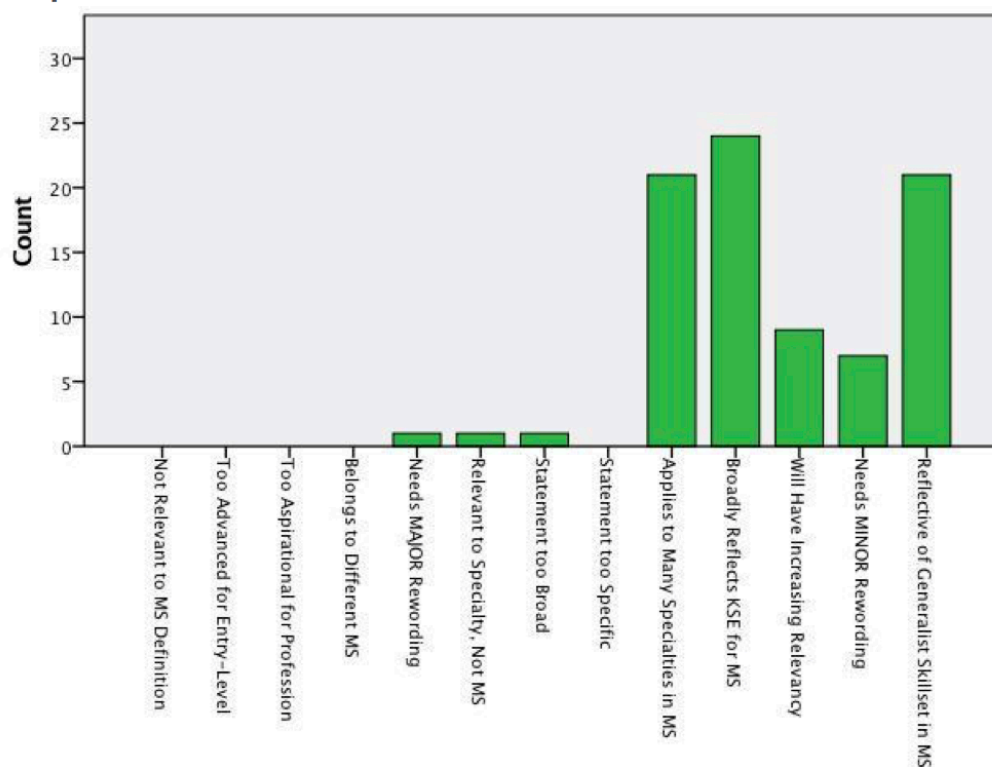
Original Statement:

Performs an expert and comprehensive physical, social and psychological assessment to identify areas of risk or need, including identification of potential differential diagnoses, for people nearing or surpassing anticipated life expectancy.

Your Round 1 Response:

You rated this MS as $\{e://Field/APC1RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:

Standard 1 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Performs an expert and comprehensive physical, social and psychological assessment to identify areas of risk or need, including identification of potential differential diagnoses, for people nearing or surpassing anticipated life expectancy.



Aged and Palliative Care - Standard 2

Original Statement:

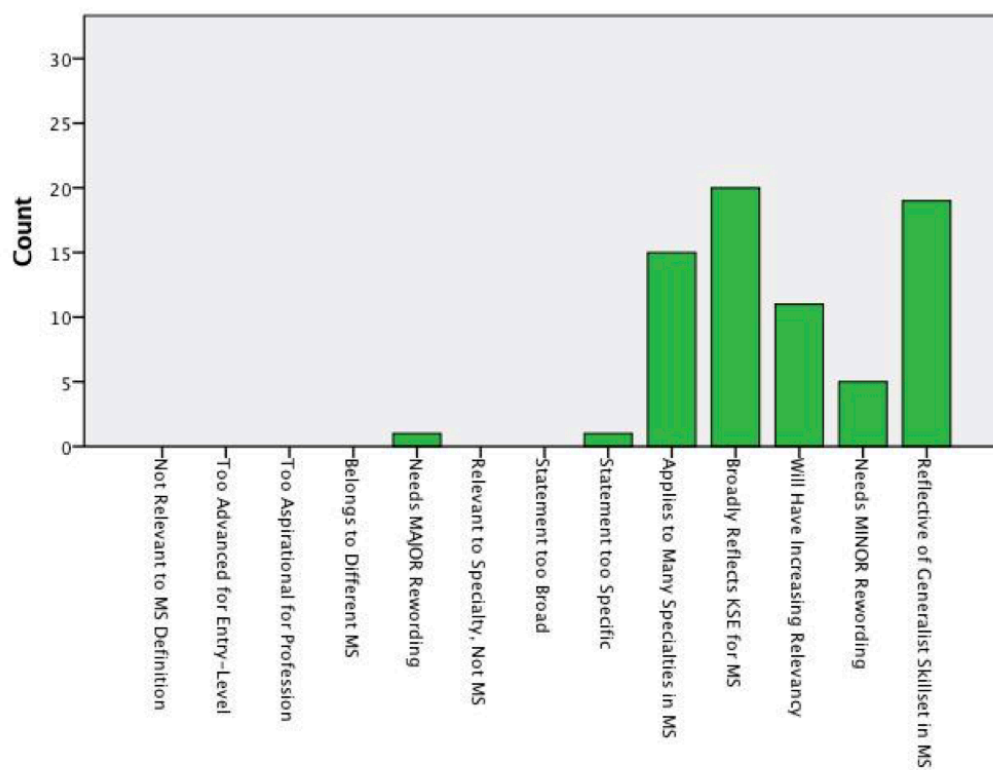
Conducts complex assessment of cognition, using evidence based assessment and screening and assessment tools specific to this population.

Your Round 1 Response:

You rated this MS as **4**

Proportion of Persons Rating as Quite or Highly Relevant: 98%

Group Feedback:



Standard 2 Rationale: APC

Investigator Feedback Specific to Standard:*No change.***Given this information, please rate the relevancy of the clinical practice standard:**Not
Releva

Conducts complex assessment of cognition, using evidence based assessment and screening and assessment tools specific to this population.

**Aged and Palliative Care - Standard 3**

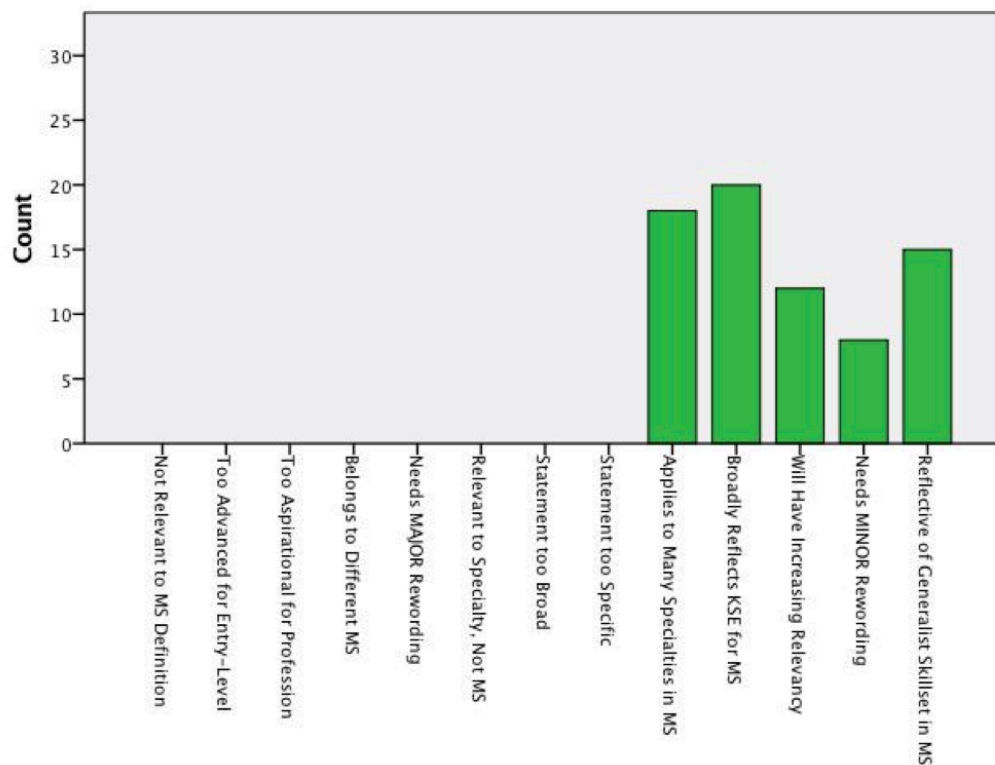
Original Statement:

Conducts advanced symptom-led assessment that is comprehensive and appropriate for supportive or end of life care.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC3RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:

Standard 3 Rationale: APC

Investigator Feedback Specific to Standard:

Minor change in response to suggestion for improved flow of wording.

Given this information, please rate the relevancy of the re-worded clinical

practice standard:Not
Relev

Conducts advanced symptom-led assessment that is comprehensive and appropriate for facilitating supportive or end of life care.

**Aged and Palliative Care - Standard 4****Original Statement:**

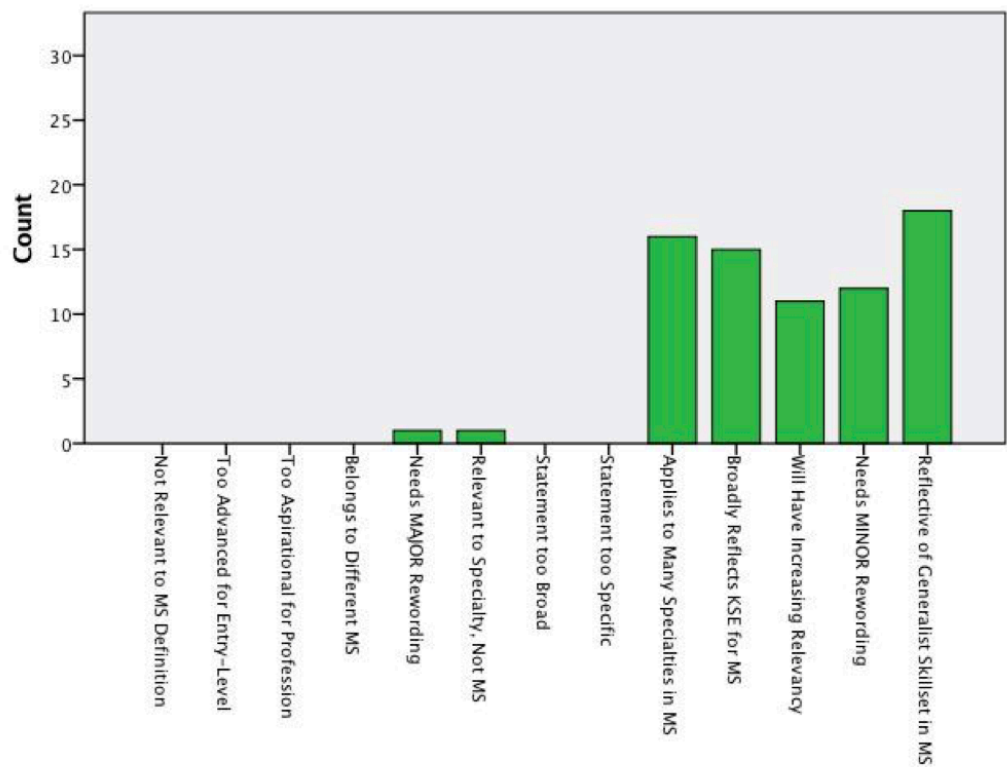
Orders/completes appropriate diagnostic tests for person nearing or surpassing anticipated life expectancy and interprets results.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC4RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 4 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Orders/completes appropriate diagnostic tests for person nearing or surpassing anticipated life expectancy and interprets results.



Aged and Palliative Care - Standard 5

Original Statement:

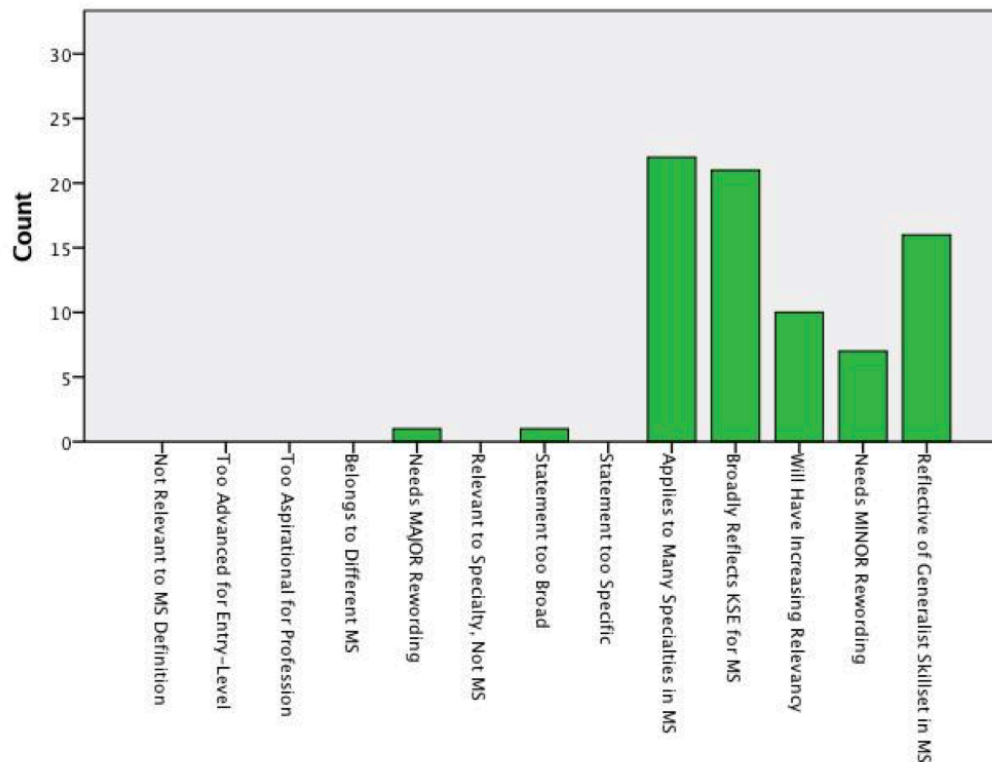
Demonstrates advanced knowledge of effects of aging on response to medications.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC5RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 5 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Demonstrates advanced knowledge of effects of aging on response to medications.



Aged and Palliative Care - Standard 6

Original Statement:

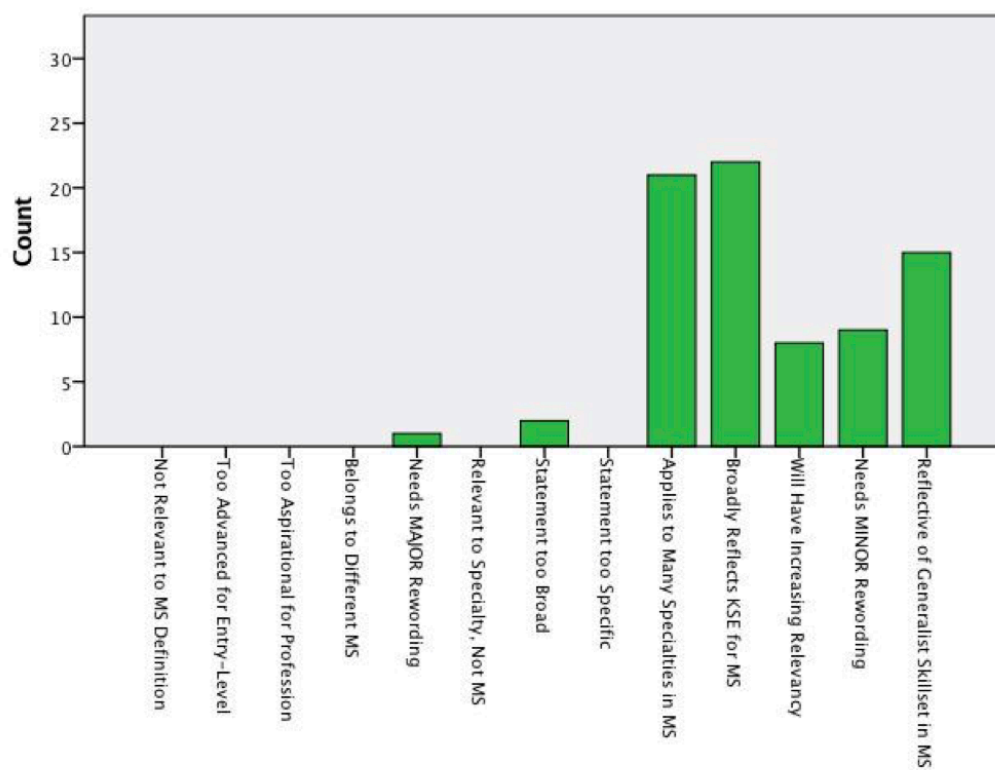
Demonstrates specific communication skills that enable early discussion about quality of life and death with people nearing or surpassing anticipated life expectancy and their families.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC6RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 6 Rationale: APC

Investigator Feedback Specific to Standard:

Phrase removed here because some respondents suggest it is redundant in this standard.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Demonstrates specific communication skills that enable early discussion about quality of life and death with people and their families.



Aged and Palliative Care - Standard 7

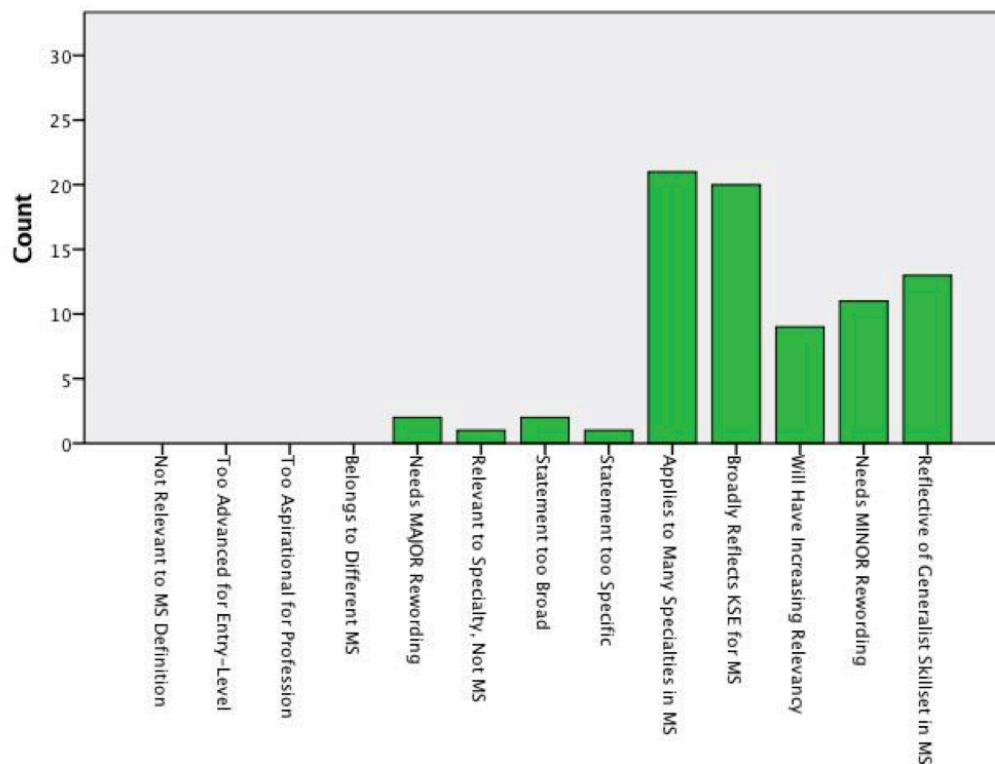
Original Statement:

Develops lifestyle and/or shared treatment plan, including for advanced care directives, for the person nearing or surpassing anticipated life expectancy that balances prevention, resuscitation or palliation.

Your Round 1 Response:

You rated this MS as $\{e://Field/APC7RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 91%

Group Feedback:

Standard 7 Rationale: APC

Investigator Feedback Specific to Standard:

Minor spelling correction made.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Develops lifestyle and/or shared treatment plan, including for advance care directives, for the person nearing or surpassing anticipated life expectancy that balances prevention, resuscitation or palliation.



Aged and Palliative Care - Standard 8

Original Statement:

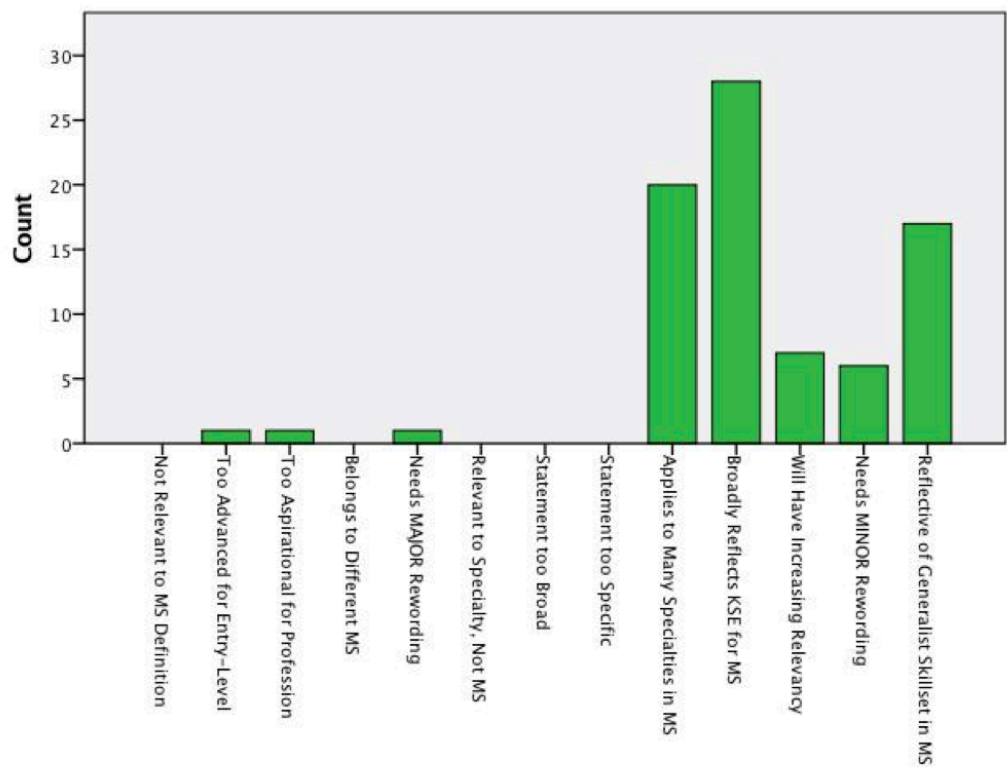
Initiates treatments to provide expert preventative and/or supportive aged and palliative care, based on findings from comprehensive assessment, interpretation of diagnostic tests and treatment plan.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC8RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 98%

Group Feedback:



Standard 8 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Initiates treatments to provide expert preventative and/or supportive aged and palliative care, based on findings from comprehensive assessment, interpretation of diagnostic tests and treatment plan.



Aged and Palliative Care - Standard 9

Original Statement:

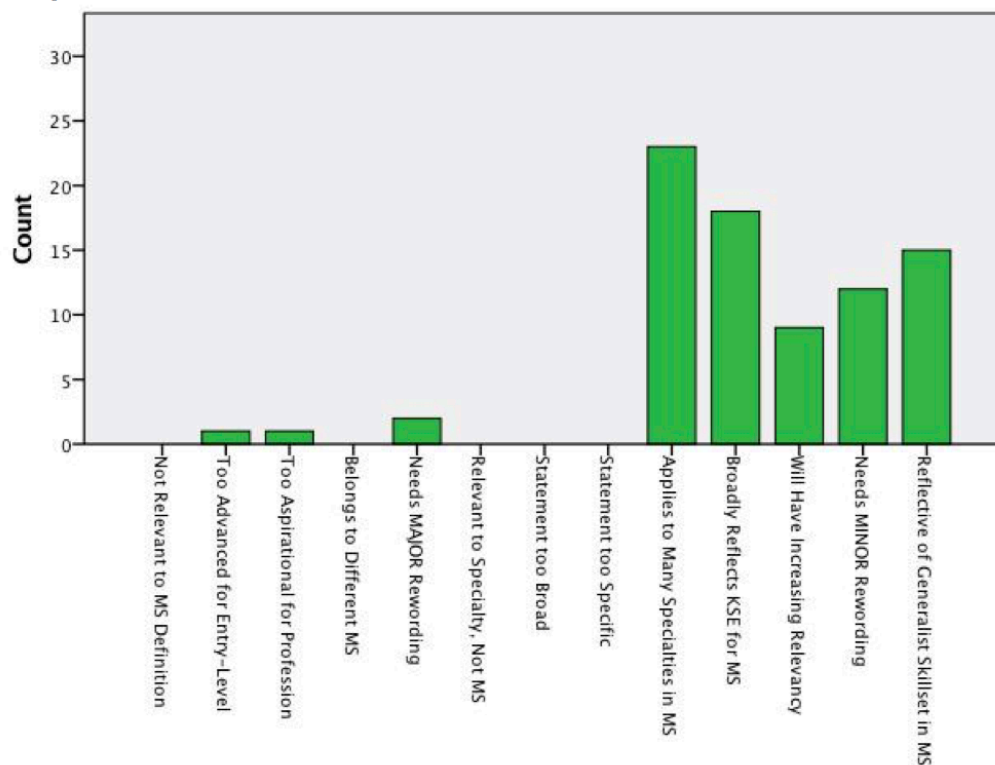
Anticipates and expertly manages complications and adverse events specific to people nearing or surpassing anticipated life expectancy.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC9RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 9 Rationale: APC

Investigator Feedback Specific to Standard:

Addition of word in response to several respondents' feedback.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Anticipates, identifies and expertly manages complications and adverse events specific to people nearing or surpassing anticipated life expectancy



Aged and Palliative Care - Standard 10

Original Statement:

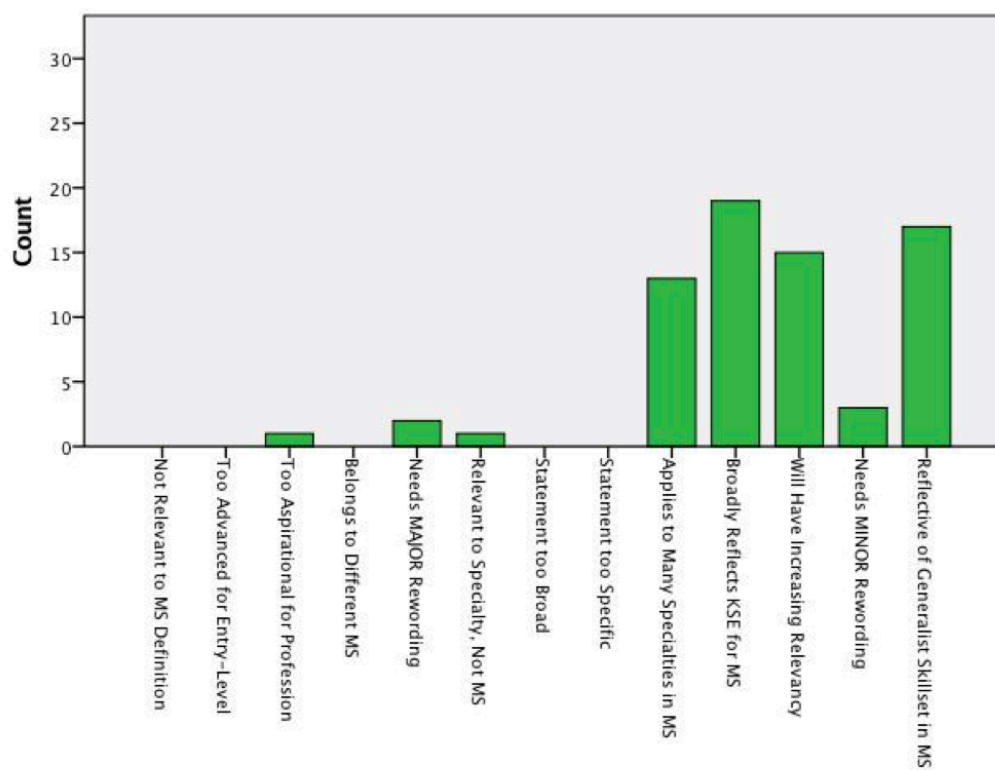
Influences healthcare system processes to ensure that person with life limiting illness has early and appropriate access to palliative care.

Your Round 1 Response:

You rated this MS as \${e://Field/APC10RR}

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 10 Rationale: APC

Investigator Feedback Specific to Standard:*No change.***Given this information, please rate the relevancy of the clinical practice standard:**Not
Relev

Influences healthcare system processes to ensure that person with life limiting illness has early and appropriate access to palliative care.

**Aged and Palliative Care - Standard 11****Original Statement:**

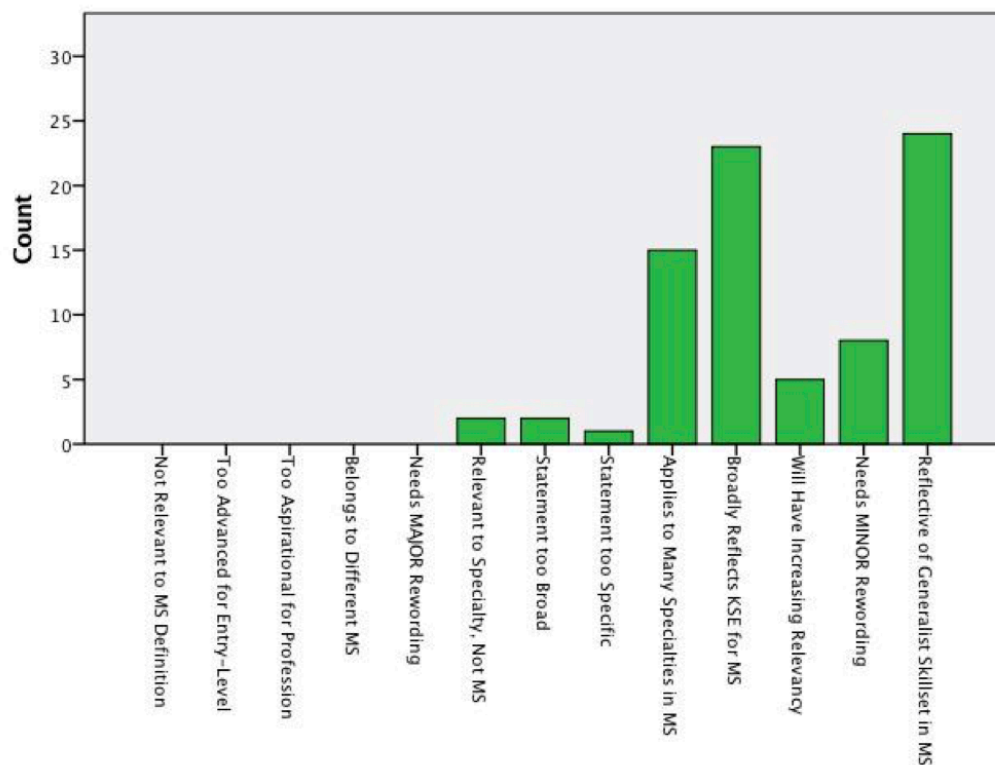
Educates person and carers about the correct use of opioids in aged and palliative care.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC11RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 93%

Group Feedback:



Standard 11 Rationale: APC

Investigator Feedback Specific to Standard:

A small number of respondents suggested that the focus on opioids was too specific so the phrase 'and other medications' has been added.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Educates person and carers about the correct use of opioids and other medications in aged and palliative care.



Aged and Palliative Care - Standard 12

Original Statement:

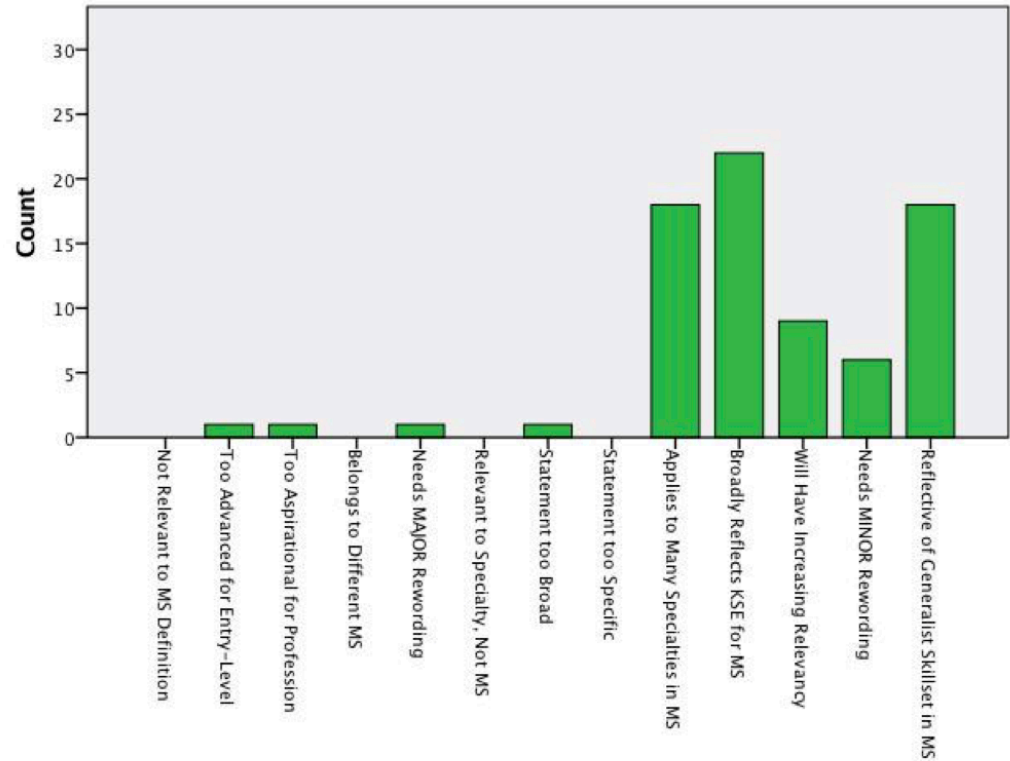
Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life limiting factors including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as $\$(e://Field/APC12RR)$

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 12 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life limiting factors including where there are linguistic, literacy, comprehension or other barriers to understanding.



Aged and Palliative Care - Standard 13

Original Statement:

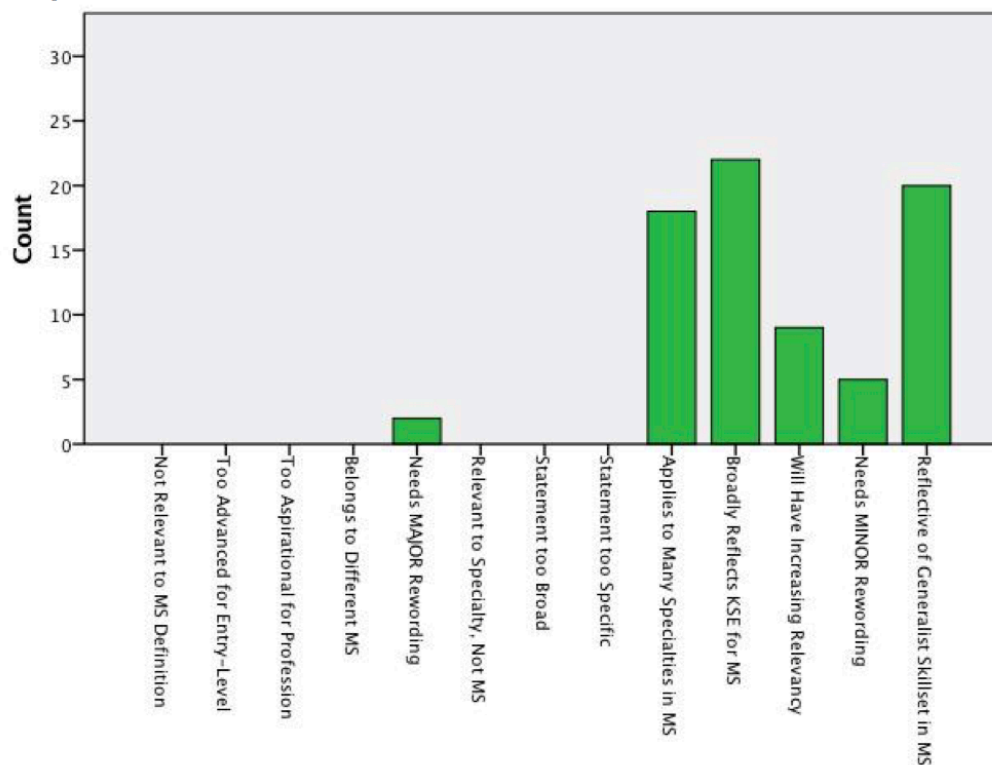
Demonstrates ability to refer to other health disciplines with a focus on coordination of allied health care provision.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC13RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:



Standard 13 Rationale: APC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not

Releva

Demonstrates ability to refer to other health disciplines with a focus on coordination of allied health care provision.



Aged and Palliative Care - Standard 14

Original Statement:

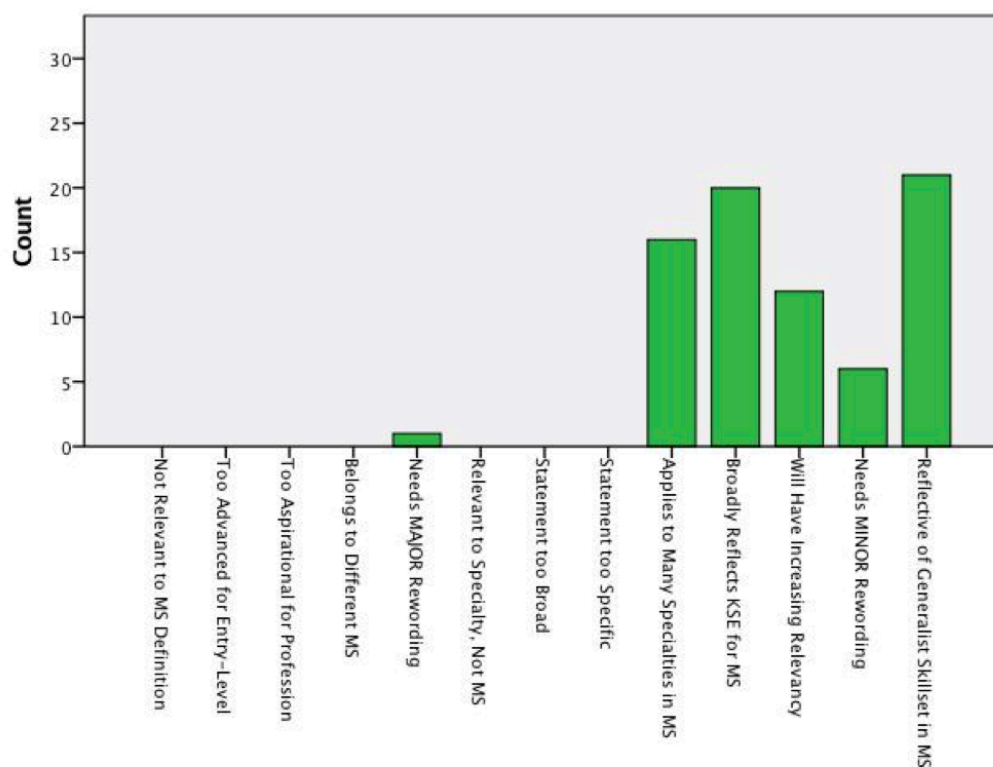
Demonstrates expert, compassionate judgment and knowledge of legal implications of end of life care for person and family.

Your Round 1 Response:

You rated this MS as **\$(e://Field/APC14RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 98%

Group Feedback:



Standard 14 Rationale: APC

Investigator Feedback Specific to Standard:*No change.***Given this information, please rate the relevancy of the clinical practice standard:**Not
Relev

Demonstrates expert, compassionate judgment and knowledge of legal implications of end of life care for person and family.



WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

Metaspecialty Clinical Practice Standards - Care of Persons Long Term Conditions

Preamble - Care of Persons with Long Term Conditions - Clinical Practice Standards

Total Number of Delphi Participants = 76

Provisional Definition:

This MS title focusses on those population groups with chronic or complex illness. This MS encompasses the diagnosis and management of common long-term conditions. It emphasises tertiary health promotion and disease prevention strategies and recognises the fact that many long-term conditions intersect. Therefore, an NP drawing on standards from this MS may manage several common chronic conditions related to their primary area of interest. The metaspecialty includes those in the rehabilitation phase of an acute or chronic illness and spans primary to tertiary care contexts across the lifespan.

Whilst the title of this MS requires resolution external to this Delphi study, the general feedback for all standards grouped here was very positive. There were very high relevancy ratings for most proposed standards in this MS, so few changes have been made, no standards were combined, and no new standards added. While there were several suggestions for combining standards, there was no consistency about which standards should be combined, and feedback was used to improve the exclusivity of each standard. In this MS, several respondents specifically argued that all standards were unique, for example, the standards 'are reflective of what's necessary and subtle differences exist to highlight their individual importance'.

General feedback from Round 1 will be used to inform future work, beyond the scope of this Delphi study, to clarify the MS name.

Care of Persons with Long Term Conditions - Standard 1

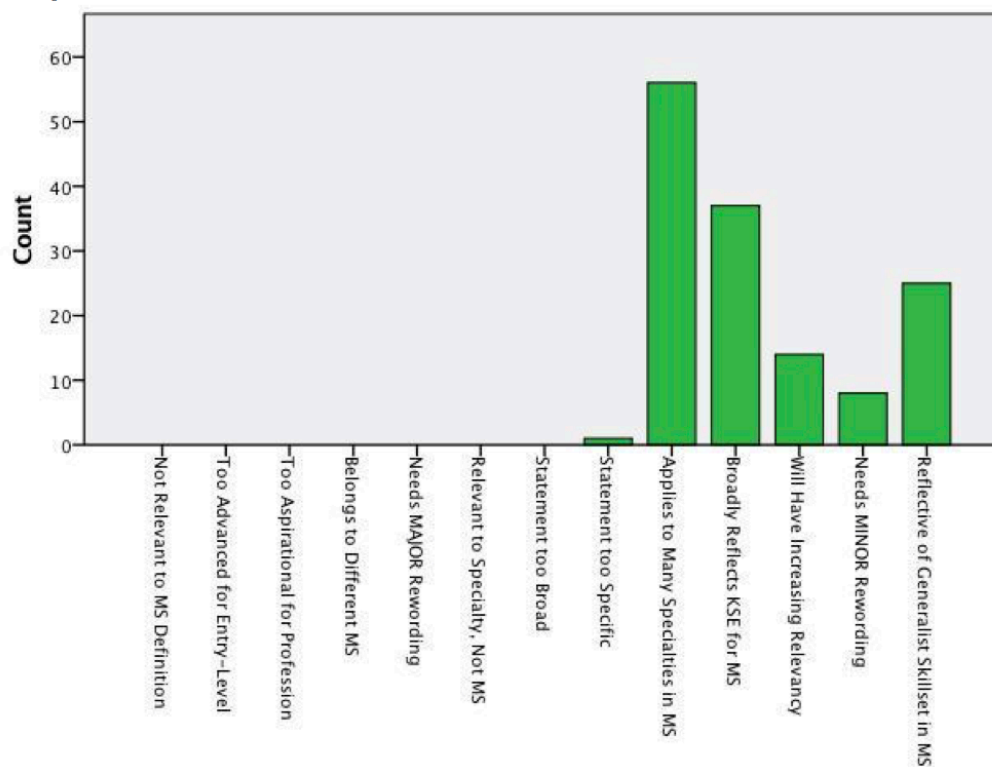
Original Statement:

Undertakes a comprehensive and expert assessment of person with chronic and/or complex illness, including rehabilitation needs and potential for self-management.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC1RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:

Standard 1 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Undertakes a comprehensive and expert assessment of person with chronic and/or complex illness, including rehabilitation needs and potential for self-management



Care of Persons with Long Term Conditions - Standard 2

Original Statement:

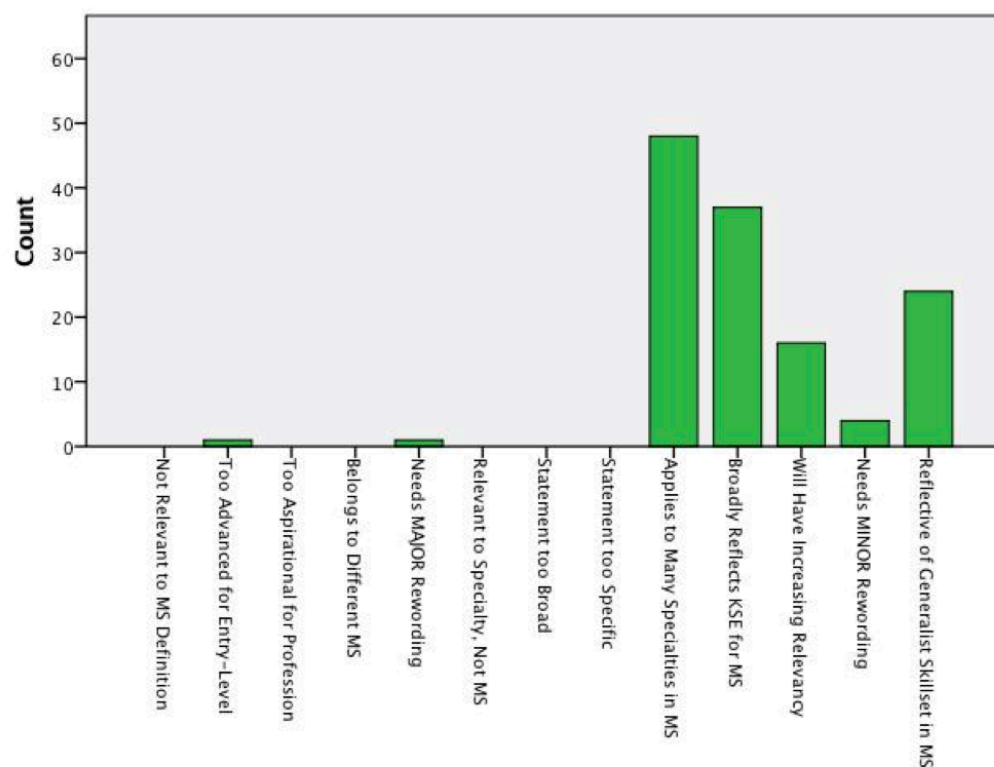
Demonstrates advanced understanding of variation in physiology and pathophysiology and can adapt care in population groups at high risk of specific chronic diseases.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CPLTC2RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 2 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Demonstrates advanced understanding of variation in physiology and pathophysiology and can adapt care in population groups at high risk of specific chronic diseases.



Care of Persons with Long Term Conditions - Standard 3

Original Statement:

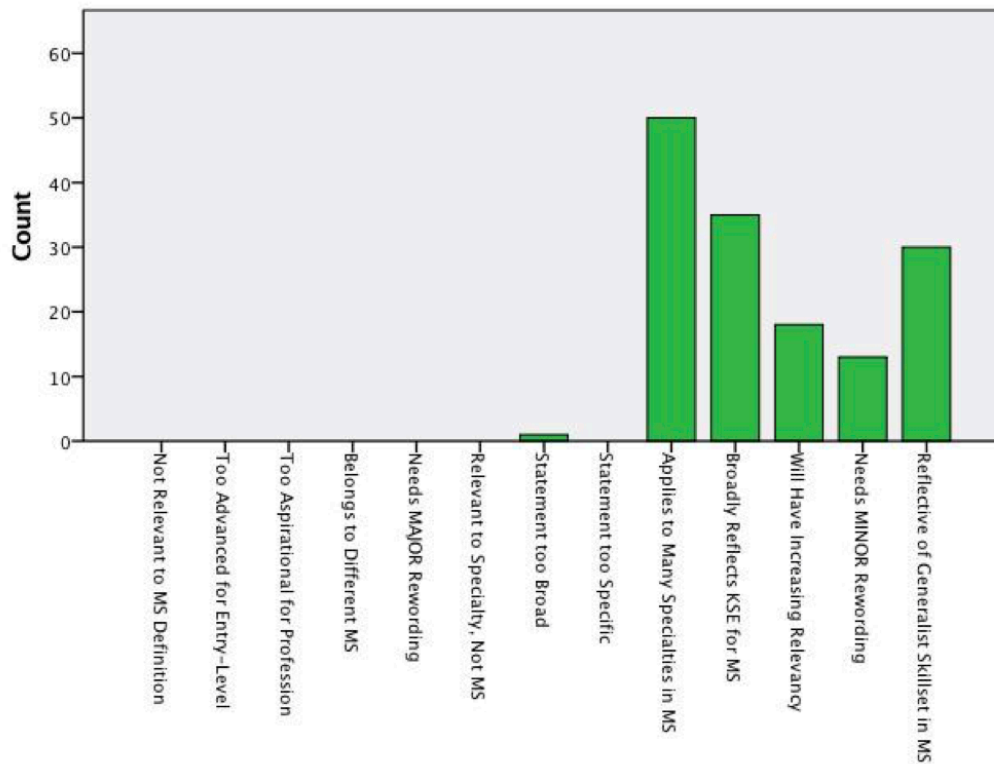
Orders/completes appropriate diagnostic tests for person with requiring long term and complex care and interprets results.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC3RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 3 Rationale: CPLTC

Investigator Feedback Specific to Standard:

Minor rewording to improve flow, based on respondent feedback.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relev

Orders/completes and interprets results from appropriate diagnostic tests for person with long term and complex care needs.



Care of Persons with Long Term Conditions - Standard 4

Original Statement:

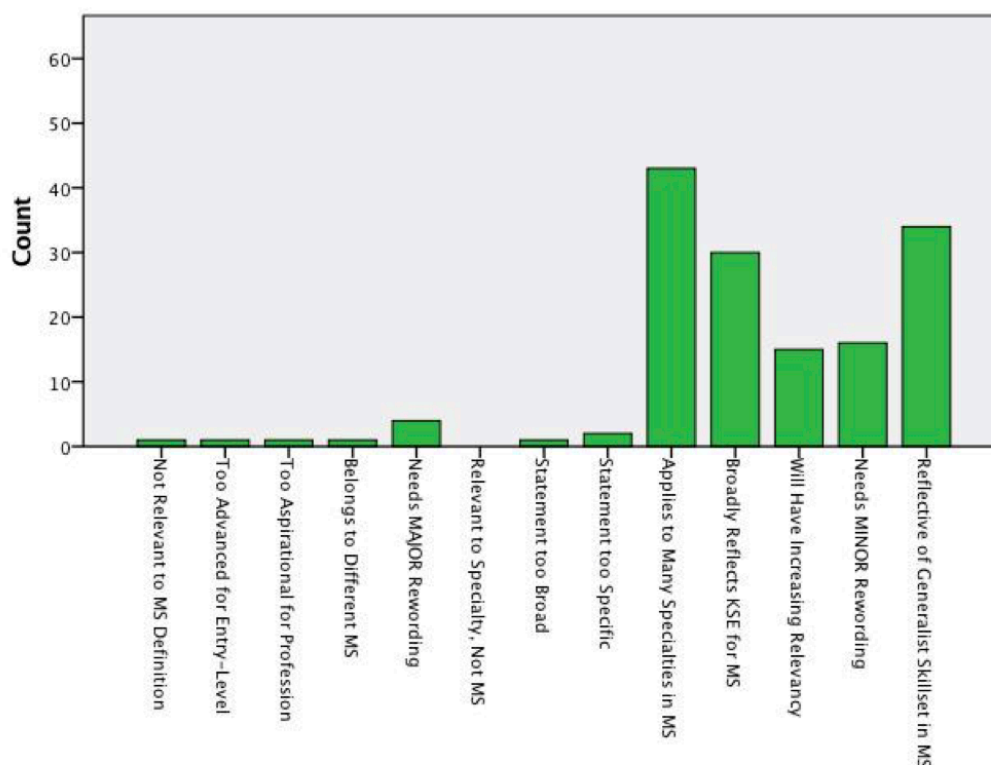
In collaboration with person, formulates plan for care and rehabilitation that addresses the whole person including facilitation of avenues for expression of grief regarding lost opportunities and support to maintain maximum potential for independent living.

Your Round 1 Response:

You rated this MS as \${e://Field/CPLTC4RR}

Proportion of Persons Rating as Quite or Highly Relevant: 91%

Group Feedback:



Standard 4 Rationale: CPLTC

Investigator Feedback Specific to Standard:

Minor rewording to address 2 points of feedback: first about the important contribution of carers and second, about 'grief', that 'not all people feel this way'.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

In collaboration with person **and carers**, formulates plan for care and rehabilitation that addresses the whole person including facilitation of avenues for expression of grief regarding lost opportunities **where needed** and support to maintain maximum potential for independent living.



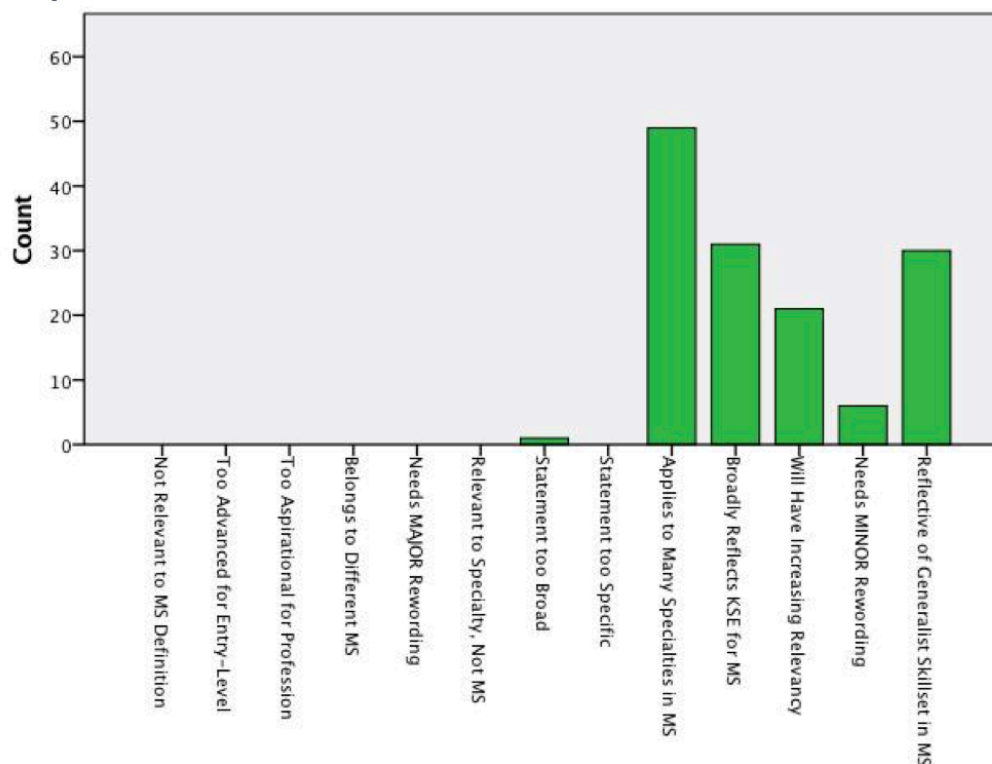
Care of Persons with Long Term Conditions - Standard 5**Original Statement:**

Ensures provision of timely and appropriate access to treatment for the person with chronic or complex illness, demonstrating high level of clinical confidence and proficiency.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CPLTC5RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:

Standard 5 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Ensures provision of timely and appropriate access to treatment for the person with chronic or complex illness, demonstrating high level of clinical confidence and proficiency.



Care of Persons with Long Term Conditions - Standard 6

Original Statement:

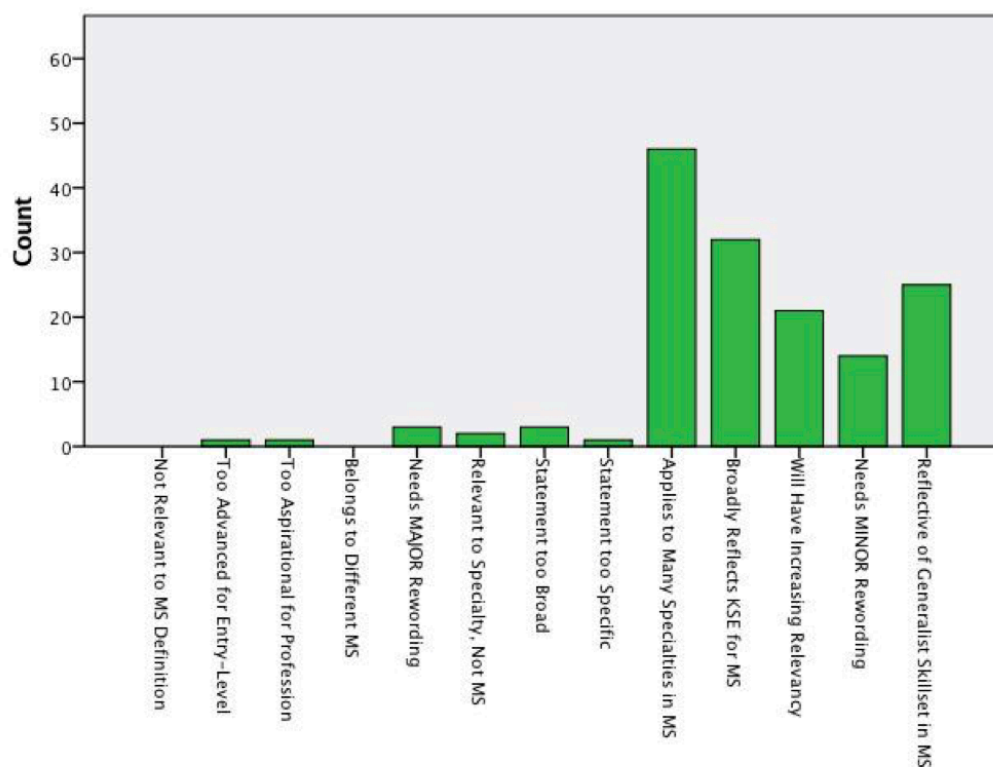
Demonstrates autonomy and expertise to deliver complex care coordination and case manage through use of outpatient and outreach facilities.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CPLTC6RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 92%

Group Feedback:



Standard 6 Rationale: CPLTC

Investigator Feedback Specific to Standard:

Minor wording change to correct typographical error identified by several respondents.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Relevant

Demonstrates autonomy and expertise to deliver complex care coordination and case management through use of outpatient and outreach facilities.



Care of Persons with Long Term Conditions - Standard 7

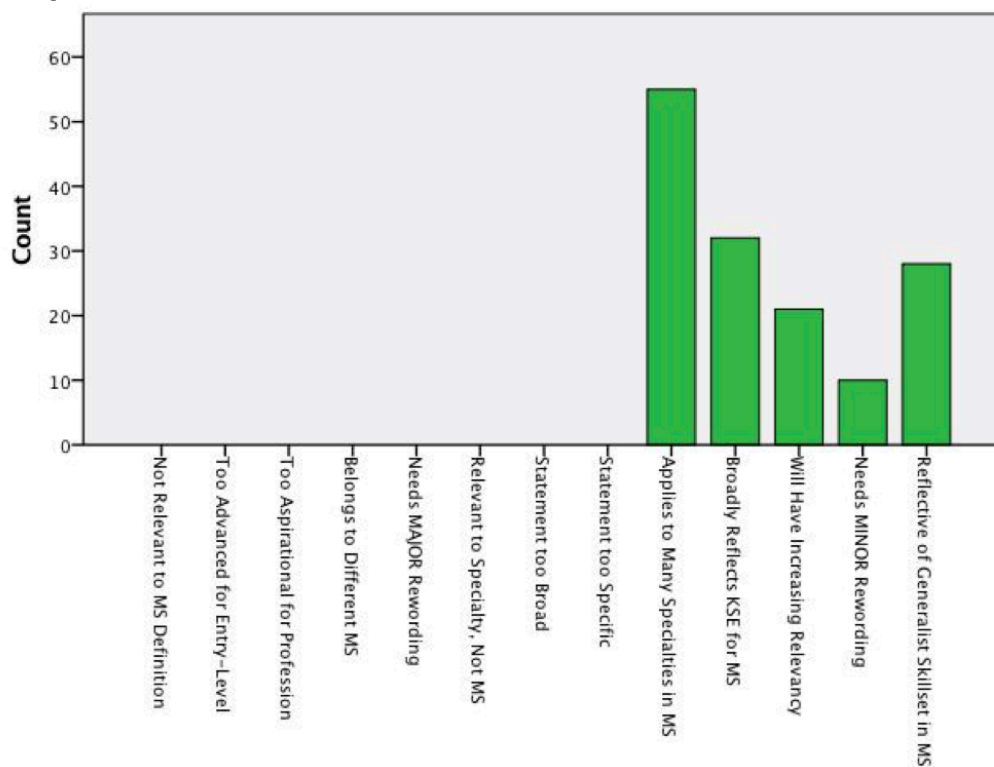
Original Statement:

Anticipates and expertly manages specific complications and adverse events specific to people with long term conditions.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC7RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:

Standard 7 Rationale: CPLTC

Investigator Feedback Specific to Standard:

Minor change in response to 3 respondent suggestions to include 'identifies'.

Given this information, please rate the relevancy of the re-worded clinical

practice standard:Not
Releva

Anticipates, identifies and expertly manages specific complications and adverse events specific to people with long term conditions.

**Care of Persons with Long Term Conditions - Standard 8****Original Statement:**

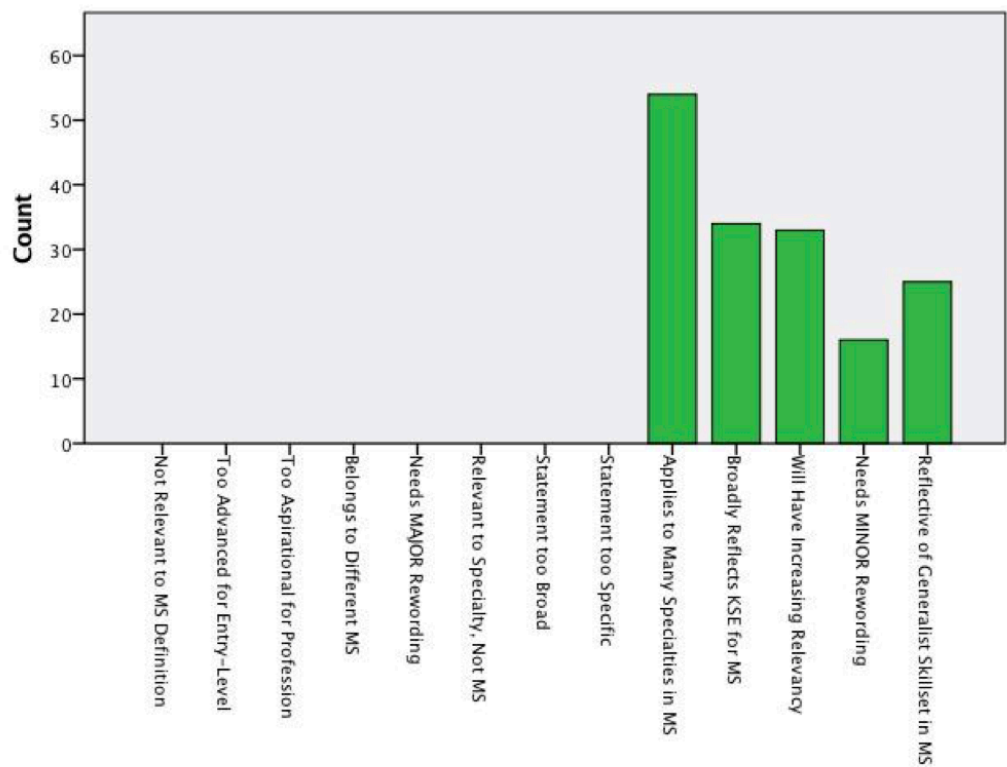
Undertakes complex medication titration for chronic and complex illnesses in partnership with the person.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC8RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 100%

Group Feedback:



Standard 8 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Undertakes complex medication titration for chronic and complex illnesses in partnership with the person.



Care of Persons with Long Term Conditions - Standard 9

Original Statement:

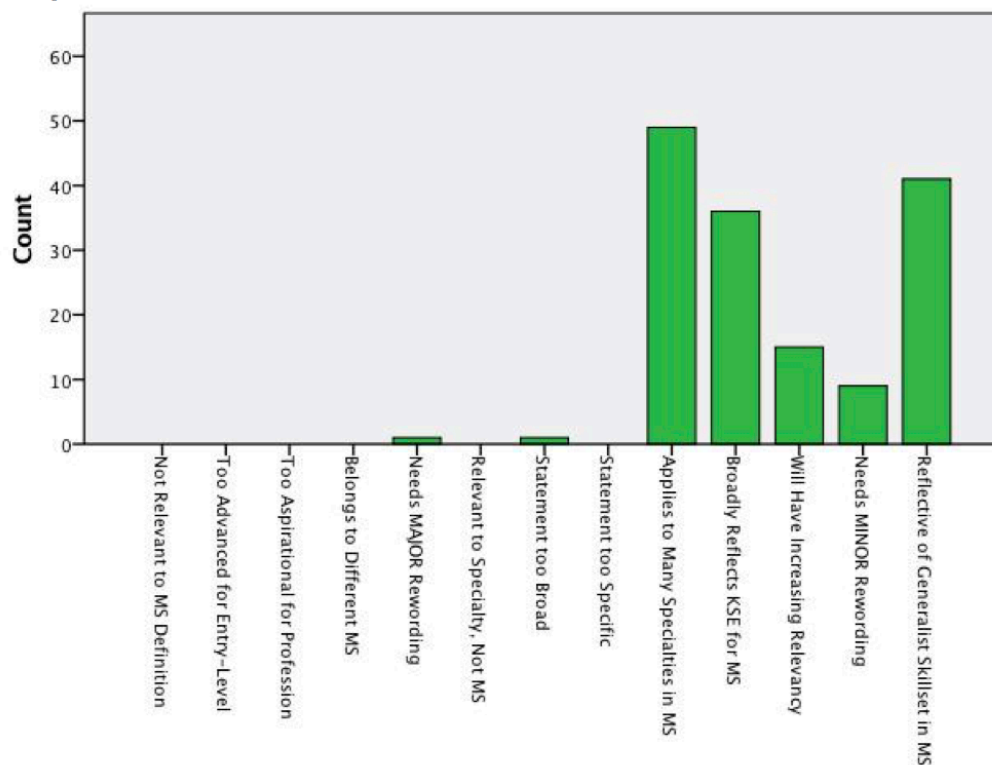
Builds and works in partnership to develop expertise of the person to manage their own health.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC9RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 97%

Group Feedback:



Standard 9 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change. The CVI is high although a few respondents (6%) suggested this standard be combined with Standard 4. Some respondents suggested including carers in wording of this standard. However, the emphasis is on self-management here so no change has been made.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Releva

Builds and works in partnership to develop expertise of the person to manage their own health.



Care of Persons with Long Term Conditions - Standard 10

Original Statement:

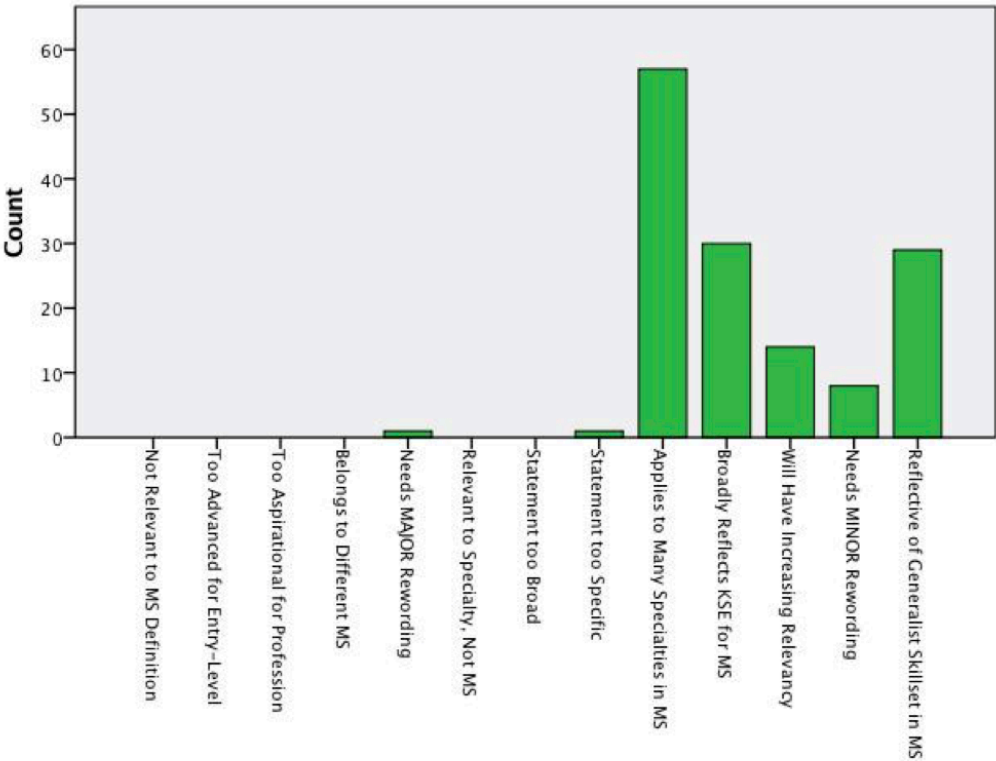
Demonstrates advanced ability to convey complex health issues, develop health literacy and provide comprehensive, individualised health education about chronic disease including where there are linguistic, literacy, comprehension or other barriers to understanding.

Your Round 1 Response:

You rated this MS as **5**

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:



Standard 10 Rationale: CPLTC

Investigator Feedback Specific to Standard:
No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not Relevant

Demonstrates advanced ability to convey complex health issues, develop health literacy and provide comprehensive, individualised health education about chronic disease including where there are linguistic, literacy, comprehension or other barriers to understanding.

☐

Care of Persons with Long Term Conditions - Standard 11

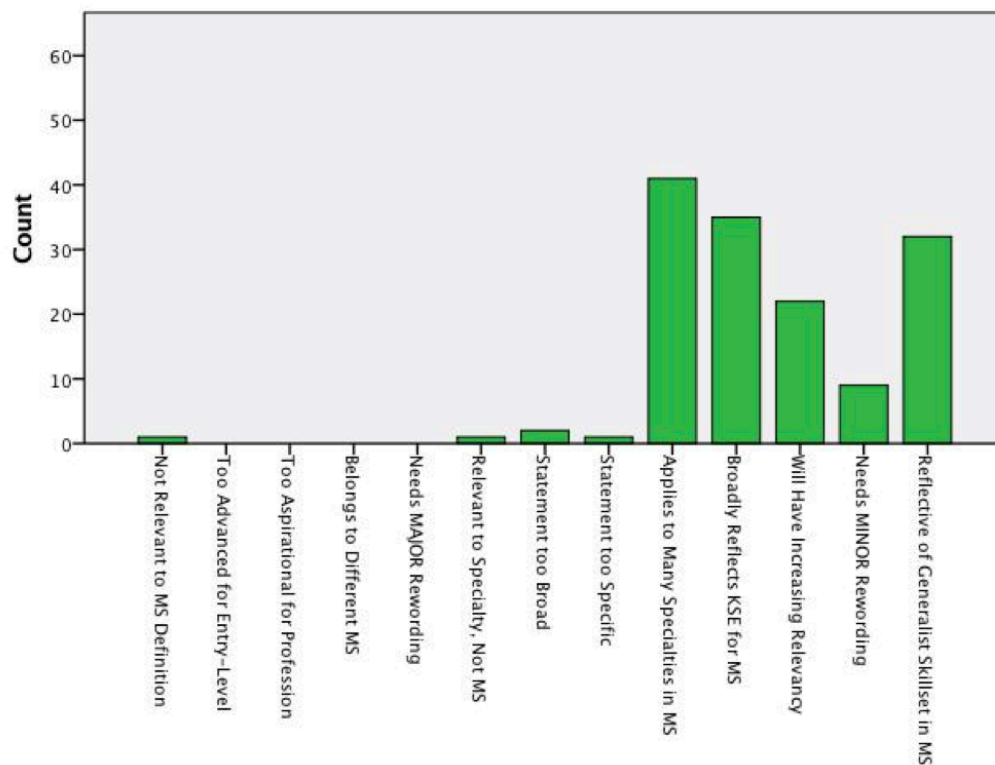
Original Statement:

Identifies and refers when needed to healthcare team with other expertise including potential for telehealth and videoconferencing with the multidisciplinary team.

Your Round 1 Response:

You rated this MS as **\$(e://Field/CPLTC11RR)**

Proportion of Persons Rating as Quite or Highly Relevant: 96%

Group Feedback:

Standard 11 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relev

Identifies and refers when needed to healthcare team with other expertise including potential for telehealth and videoconferencing with the multidisciplinary team.



Care of Persons with Long Term Conditions - Standard 12

Original Statement:

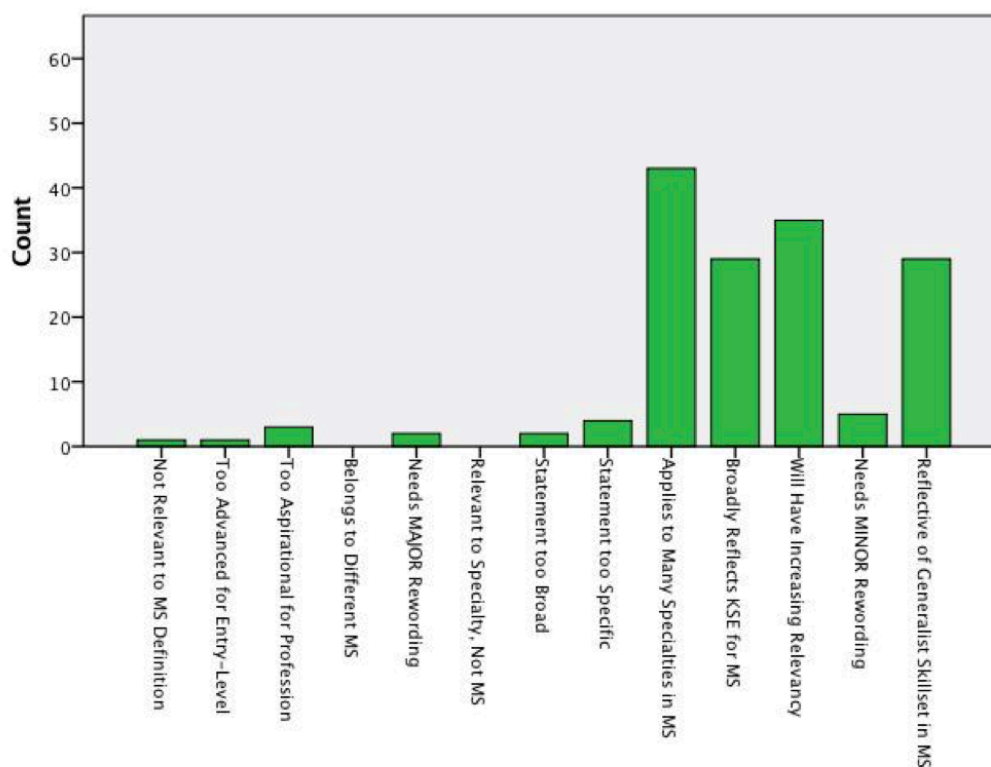
Models the role of the nurse practitioner as leader of the multidisciplinary team in management of person requiring long term and complex care.

Your Round 1 Response:

You rated this MS as $\$ \{e://Field/CPLTC12RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 91%

Group Feedback:



Standard 12 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change. Some feedback suggests that NP is not always the leader but standard retained because NP students need to demonstrate they're able to lead.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Models the role of the nurse practitioner as leader of the multidisciplinary team in management of person requiring long term and complex care.



Care of Persons with Long Term Conditions - Standard 13

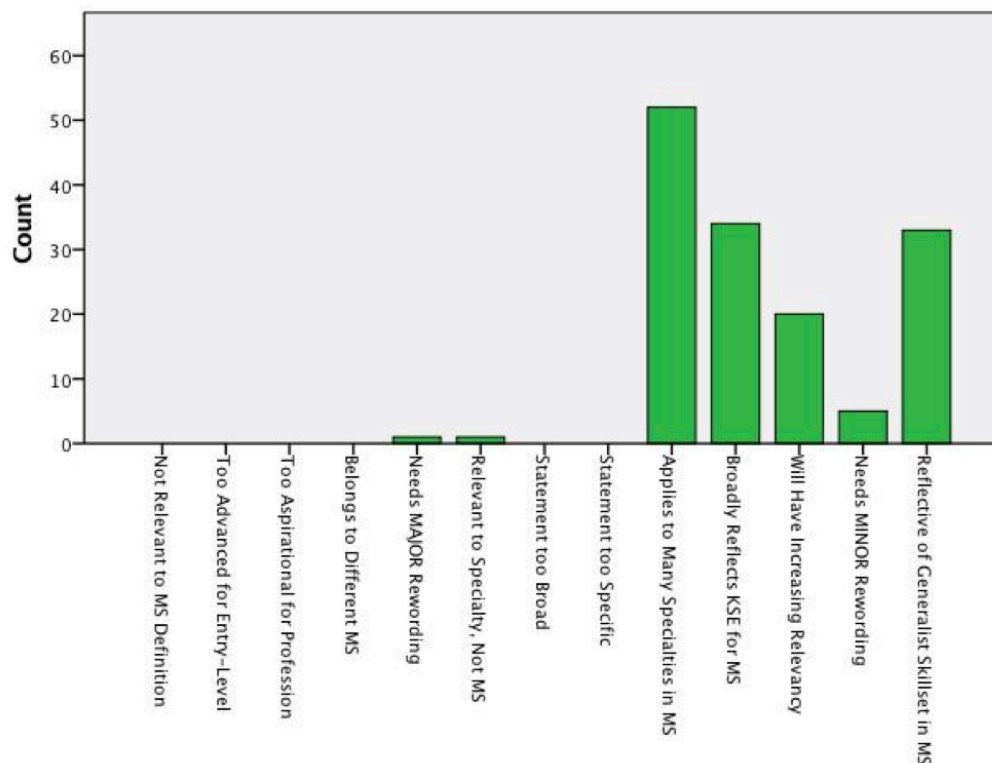
Original Statement:

Demonstrates strategies to maintain follow-up for chronic and complex illness including for specific populations at high risk of loss to follow-up.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC13RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 99%

Group Feedback:

Standard 13 Rationale: CPLTC

Investigator Feedback Specific to Standard:

No change.

Given this information, please rate the relevancy of the clinical practice standard:

Not
Relevant

Demonstrates strategies to maintain follow-up for chronic and complex illness including for specific populations at high risk of loss to follow-up.



Care of Persons with Long Term Conditions - Standard 14

Original Statement:

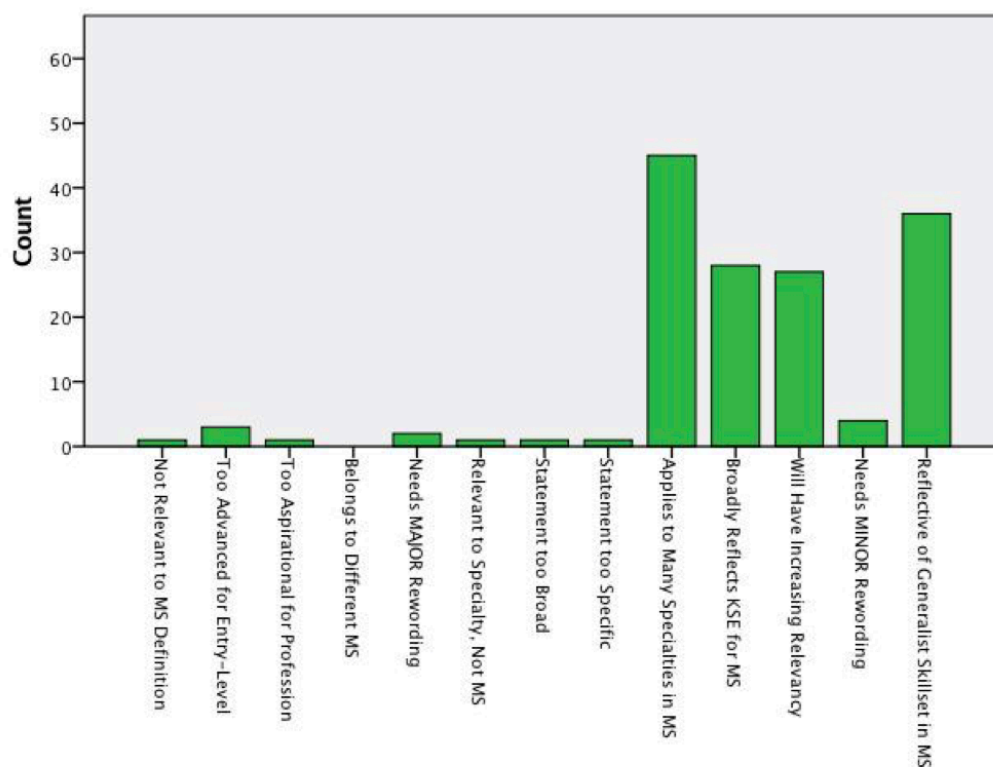
Advocates as clinical leader for improved access for people and groups at risk of chronic disease.

Your Round 1 Response:

You rated this MS as $\{e://Field/CPLTC14RR\}$

Proportion of Persons Rating as Quite or Highly Relevant: 95%

Group Feedback:



Standard 14 Rationale: CPLTC

Investigator Feedback Specific to Standard:

Phrase added in response to suggestion by small number of respondents.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Advocates as clinical leader for improved access for people and groups at risk of chronic disease with a particular focus on vulnerable or marginalised populations.



WARNING: You will not be able to go back and change your answers for this metaspecialty after submitting your answers on this page.

End of Delphi Survey 2 - Round 2

Whew! You did it! Great work and thank you!

This completes **Round 2** of Delphi Survey 2. You ***might*** receive another invite to participate in **Round 3** of Delphi Survey 2 in the near future if any of the Clinical Practice Standards in your elected MS did not achieve consensus after Round 2. **As a reminder, there will likely be a maximum of 3 rounds in Delphi Survey 2.**

What you should expect if invited to participate in Round 3:

1. You will be given the group relevancy ratings for each standard not achieving consensus in your elected MS.
2. You will be asked to rate the relevancy for each standard not yet achieving consensus
3. You may be asked to provide further feedback on the proposed clinical practice standards within your elected MS.

If you anticipate having difficulties accessing your email invites, please ensure you let us know. We would be happy to modify your details as appropriate.

If you have any questions or concerns, please contact:

Prof Anne Gardner, Chief investigator CLLEVER2 study

Email: anne.gardner@acu.edu.au

Phone: (02) 6209 1330

Mr Chris Helms, PhD Candidate

Email: Christopher.helms@myacu.edu.au

Phone: (02) 6209 1355

Remember to click "Save and Continue" below to save your survey response!

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Appendix S – Delphi Survey 2, Round 3



Introduction

Dear \${m://FirstName}:

Welcome back to the CLLEVER2, Delphi Study 2 research study!

You're almost there!



We've had a great response thus far, with 221 validated respondents completing Round 1 and 205 completing Round 2.

In Round 1, participants were asked to choose 1-2 metaspecialties (MS) and then rate the relevancy of proposed MS clinical practice standards (CPS) established from prior research. In addition, participants were given the opportunity to propose alternate CPS for MS they selected. Although no additional CPS were suggested by participants in Round 1, there were several great examples given of practice activities which demonstrate how the CPS will operationalise. These will serve as great exemplars to support the CPS and MS framework in the final publically available document.

During Round 2, participants were given a short overview of general respondent feedback (provided in both graphical and statistical format) for their selected MS, as well as explanations for any changes proposed for each CPS based upon group feedback. Participant were then asked to rate the relevancy of the proposed and revised CPS.

After analysis of the Round 2 data, the following MS achieved consensus across all of their CPS, and have now been validated:

- Mental Health Care
- Primary Health Care
- Child and Family Health Care
- Aged and Palliative Care
- Care of Persons with Long Term Conditions

Therefore, if you had elected to provide feedback on one of the above validated MS CPS, we thank you for your contributions!

Now, during **Round 3**, the research team will concentrate on the **one** remaining CPS from the **Emergency and Acute Care (EAC) MS** that has not yet achieved consensus. Only those who had provided feedback during Rounds 1 and 2 for the EAC MS will need to do the following:

1. Carefully read and consider the presented information; then
2. Compare the CPS which did not achieve consensus against a proposed refinement
3. Rate the relevancy of the revised CPS

If you have any questions or concerns for this study, please contact:

Prof Anne Gardner, Chief investigator CLLEVER2 study

Email: anne.gardner@acu.edu.au

Phone: (02) 6209 1330

Mr Chris Helms, PhD Candidate

Email: Christopher.helms@myacu.edu.au

Phone: (02) 6209 1355

This material forms part of Chris Helms' PhD.

Please treat this survey confidentially and do not share or discuss information contained with others.

This research project has received Human Research Ethics Committee Approval from Australian Catholic University. Approval Number 2013 174N.

Browser Meta Info

This question will not be displayed to the recipient.

Browser: **Safari**

Version: **10.0.3**

Operating System: **Macintosh**

Screen Resolution: **2560x1440**

Flash Version: **-1**

Java Support: **1**

User Agent: **Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebKit/602.4.3 (KHTML, like Gecko) Version/10.0.3 Safari/602.4.3**

Metaspecialty Clinical Practice Standards - Emergency and Acute Care

Preamble - Emergency and Acute Care Metaspecialty - Clinical Practice Standards

Total Number of Delphi Participants Completing Round 2: 75

As a reminder, the provisional definition of the EAC MS is:

This MS incorporates health care delivery for the acute phase of episodic illness, which may commence with the need for early, rapid and resuscitative treatment for an undifferentiated health condition. This MS scope can include both life-threatening and non-urgent care. Its context is situated in an environment established for this service, be it an emergency department, critical care unit, perioperative unit, acute hospital facility or other emergency

care context, such as an ambulance or field hospital. This MS assumes a care continuum from resuscitation to follow-up. (Extended from O'Connell, 2014).

The following Standards Achieved Consensus:

- **Standard 1:** Conducts advanced physical assessment of people with emergency presentations or acute admissions.
- **Standard 2:** Conducts advanced physical assessments in person who is acutely unwell or rapidly deteriorating.
- **Standard 3: See below**
- **Standard 4:** Synthesises and utilises best evidence in response and treatment decision for person in acute and urgent situation.
- **Standard 5:** Delivers advanced resuscitation and post-resuscitation care, including the ability to work beyond basic and advanced life support algorithms, and leading or participating in urgent response/medical emergency team.
- **Standard 6:** Anticipates and expertly manages complications and adverse events specific to acute and emergency care situations.
- **Standard 7:** Recognises and appropriately manages subtle and/or rapid changes in status of acutely and critically ill persons to promote stabilisation and prevent deterioration where possible.
- **Standard 8:** Demonstrates advanced ability to express complex health issues and provide comprehensive, individualised health education including life threatening conditions, where there are linguistic, literacy, comprehension or other barriers to understanding.
- **Standard 9:** *Standard removed because combined with Standard 5.*
- **Standard 10:** Takes a leadership role in follow-up or transfer of care of persons following acute and emergency admissions.

The following Standard did not Achieve Consensus:

- **Standard 3:** Assesses risk and initiates pharmacological and non-pharmacological preventative therapies for sequelae of immobilisation due to surgery and/or intensive care therapy.

Therefore, this **final round of Delphi Survey 2** pertains solely to Standard 3. More information is presented regarding this Standard on the following page.

Emergency and Acute Care - Standard 3

Original Statement:

Assesses risk for sequelae of immobilisation due to surgery and/or intensive care therapy and initiates pharmacological and non-pharmacological preventative therapies.

Your Round 1 Response:

You rated this MS as **\$(e://Field/EAC3RR)**

Round 1 Proportion of Persons Rating as Quite or Highly Relevant: 72%

Round 2 Revised Statement:

Assesses risk and initiates pharmacological and non-pharmacological preventative therapies for sequelae of immobilisation due to surgery and/or intensive care therapy.

Your Round 2 Response:

You rated this MS as **\$(e://Field/EAC3RR3)**

Round 2 Proportion of Persons Rating as Quite or Highly Relevant: 80%

Investigator Feedback Specific to Standard:

60% of those who rated this standard as 'not or somewhat relevant' had a position

title that indicated they did not work solely as emergency nurse practitioners. The phrase 'due to surgery and/or intensive care therapy' has been replaced by 'during the acute phase of illness'. This change acknowledges that the standard previously excluded the acutely ill who had not needed surgery or ICU care.

Given this information, please rate the relevancy of the re-worded clinical practice standard:

Not
Releva

Assesses risk and initiates pharmacological and non-pharmacological preventative therapies for the sequelae of immobilisation **during the acute phase of illness.**



End of Delphi Survey 2 - Round 3

Whew! You did it! Great work and thank you!

This completes **Round 3** of Delphi Survey 2. Thank you very much for your time and consideration!

If you anticipate having difficulties accessing your email invites, please ensure you let us know. We would be happy to modify your details as appropriate.

If you have any questions or concerns, please contact:

Prof Anne Gardner, Chief investigator CLLEVER2 study

Email: anne.gardner@acu.edu.au

Phone: (02) 6209 1330

Mr Chris Helms, PhD Candidate

Email: Christopher.helms@myacu.edu.au

Phone: (02) 6209 1355

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Appendix T – Delphi Survey 2: Online Consent



Consent for Publication of Name in CLLEVER2, Phase 2 Research

Dear \${m://FirstName}:

Thank you for your participation in Delphi Survey 2 (DS2)! On behalf of Anne Gardner and the CLLEVER2 investigative team, we sincerely appreciate your ongoing contribution to nurse practitioner metaspecialty research.



The publication of the results from DS2 will be available near the end of 2016. As promised, you have the option of having your name published in a list of those participants who had contributed to and completed DS2. Pending acceptance by the journal publisher, this list will be published along with the final results of DS2 in a peer-reviewed journal.

\${m://FirstName}, do you want your first and surname to be included in the list of contributing participants?

If so, read and complete the consent below:

CONSENT FORM

(CLLEVER 2, Phase 2: Consent to Publish Name of Panel Member)

TITLE OF PROJECT:

Educating for health service reform: CLinical LEarning, goVERNance, and capability (CLLEVER 2)

NAME OF PRINCIPAL INVESTIGATOR: Prof Anne Gardner

NAME OF STUDENT RESEARCHER: Mr Chris Helms

I, \${m://FirstName} \${m://LastName} have read and understood the information provided in the Participant Information Letter. Any questions I have asked have been answered to my satisfaction. I voluntarily elect to have my name listed as a contributing panel member in the final published research.

I understand that I can withdraw this consent at any time up to 1 month after completion of the study.

By typing **YOUR First**
and **Surname** you are
indicating on
02/01/2017 you have
provided consent to
have your first and
surname listed as a
contributing panel
member in Delphi
Survey 2:

Would you like a Certificate of Continuing Professional Development for your involvement in DS2? If so, please indicate below:

- ☐ Yes, please email me a CPD certificate.
- ☐ I don't need one, thanks!

Please confirm you are not a

robot:



[Privacy & Terms](#)

Thank you!

As always, please feel free to contact us with any questions or concerns you might have.

Chris Helms, RN MSN(NP) APN-BC FACNP

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Faculty of Health Sciences
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Please click on the button below to complete your submission.

Powered by Qualtrics

Appendix U – Delphi Survey 2 Preamble for Panelists

Preamble for Delphi Study 2 (DS2), Round 1

Thank you for agreeing to participate in DS2! We understand your time is valuable, so we're providing the following information to help guide you as quickly and efficiently through the process.

Please carefully review the below information, which will provide you with important study instructions, as well as background information on the CLLEVER2 Study and the Australian Nurse Practitioner (NP) metaspécialties:

IMPORTANT Survey Instructions:

1. ***The first round of a Delphi survey is the most time-intensive and requires the greatest thought; subsequent rounds are shorter in duration. Information provided in the first round assists in determining consensus in subsequent rounds.***
2. Please ***rate the relevancy*** of the proposed clinical practice standards ***now***, as well as their ***future relevancy*** as the NP profession ***grows and evolves***.
3. The purpose of DS2 is to achieve consensus on the proposed clinical practice standard statements. You will be able to propose alternative wording, as well as novel clinical practice standard statements ***in the first round only***, so that you may evaluate any proposed re-wording, novel statements, and their relevancy in subsequent rounds.
4. ***In reviewing these standards think broad, not narrow. Clinical practice standards are not the same as representative activities*** within the standard.
5. Final clinical practice standard statements will only be included if they've achieved an 85% relevancy rating (by rating the item quite or highly relevant) by the end of the final round.
6. Please refrain from discussing this research with others as you may unknowingly influence the judgement of others involved in the study.
7. Please provide responses ***within 1 week of receiving your survey link***. Otherwise, this may create unnecessary delays and frustration for others involved in the study.
8. Be aware this is a ***smart survey***. Your options will change, depending on answers given so read each question carefully.
9. ***Running out of time? No worries, you can save your progress and return later using the hyperlink in your survey invitation email!***

Background

A metaspécialty groups NP specialties that have similar skillsets, knowledge and expertise, which comprehensively reflect the diverse healthcare needs of population groups. Most NPs will draw upon standards from one or two primary metaspécialties, but may find their individual roles encompass other metaspécialties, depending on existing and developing individual skills, knowledge and expertise.

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CLLEVER2 Study, Phase 2
Professor Anne Gardner | Ph: 02 6209 1330 | E: anne.gardner@acu.edu.au



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Four metaspecialty (MS) titles achieved consensus amongst a large sample (n=197) of NPs in Delphi Survey 1, to which you may have contributed. These four validated titles were:

- Mental Health Care
- Child and Family Health Care
- Acute and Emergency Care
- Primary Health Care

Two MS titles did not achieve consensus in Delphi Survey 1 (DS1). These un-validated MS titles were 'aged and palliative care' and 'care of persons with long term conditions'. The feedback about these two titles during DS1 was important in informing the research team about the strengths and limitations of the proposed titles. The researchers concluded that more work needs to be completed to resolve the titles and scope of the un-validated MS, and that this should take place separate to the online Delphi study. Information gathered from [this survey](#) (Delphi Survey 2 - DS2) may be important for those NPs whose practice may reflect the un-validated MS areas, as data from this study may help inform future discussions and research in this area.

The aim of DS2 is to confirm standard statements used for the clinical component of NP MS practice. As you are aware, *generic* practice standards exist for NPs through the NMBA [Nurse Practitioner Standards for Practice](#). These *MS clinical* practice standard statements will assist in guiding NP student *clinical* education in specific specialty/clinical fields and may inform professional development for endorsed NPs. (**Not** for NP endorsement with the Nursing and Midwifery Board of Australia.)

For individual NPs, MS clinical practice standards from *one or several* MS may be relevant, depending on their existing and planned clinical roles. However, for practical analytical reasons you will be asked to select and consider a maximum of two MS at the beginning of this study (DS2).

You will see the structure of this Delphi retains the titles of the original six MS. This has been done so that we can continue to collect consistent information which assists in future work that further examines and encapsulates the un-validated metaspecialty titles.

For further information regarding the CLLEVER study, please click [HERE](#).

Now that you've read the background MS information, and have learned how this Delphi will work, let's take a closer look at how each of the MS have been defined:

Validated Metaspecialty Provisional Definitions

NOTE: These definitions were compiled from participant responses from Phase 1 of CLLEVER2, and will be finalised pending completion of the CLLEVER2 study.

Mental Health Care

This MS focuses on the psychological and emotional well-being of a person. This MS title recognises that good mental health is not just the absence of mental illness, but is a 'state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' ([WHO, 2007](#)). This MS incorporates care for people with mental health problems and recognises the importance of recovery-orientated mental health

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practice across the short and long-term care of the client. This MS may extend across community and tertiary care contexts of practice.

Acute and Emergency Care

This MS incorporates health care delivery for the acute phase of episodic illness, which may commence with the need for early, rapid and resuscitative treatment for an undifferentiated health condition. This MS scope can include both life-threatening and non-urgent care. Its context is situated in an environment established for this service, be it an emergency department, critical care unit, perioperative unit, acute hospital facility or other emergency care context, such as an ambulance or field hospital. This MS assumes a care continuum from resuscitation to follow-up. (Extended from [O'Connell, 2014](#)).

Child and Family Health Care

This MS focusses on the health and well-being of the child in the short and/or intermediate term, and within the broader context of the family unit, however defined by the client themselves. In particular, it includes care of a mother's health and well-being, recognising that a woman may seek healthcare during or soon after pregnancy outside the specific context of midwifery care. Its scope includes all children and adolescents and may encapsulate primary to tertiary care contexts of practice. The intersection between the individual and family unit facilitates a case management framework within this MS.

Primary Health Care

This MS focusses on healthcare that is delivered as the first point of contact, and is solely based in the community context of practice. This may include primary care contexts such as community-based clinics, general practices, schools, custodial/detention facilities, occupational settings, pharmacies and/or patient's homes. NPs working in this area have a strong focus on the care of the individual across the lifespan, and practice across the short and long-term care of the client. They emphasise primary and secondary health promotion and disease prevention strategies in their care through case management approaches, and have a thorough understanding of the social determinants of health and their impact on care planning and delivery. They require extensive knowledge of population and public health strategies, and provide expert linkages from the community to tertiary and long-term care contexts.

Un-validated Metaspecialty Provisional Definitions

NOTE: These definitions were informed by participant responses from Phase 1 of CLLEVER2. The CLLEVER2 team will continue to work separately with the NP profession on these un-validated metaspecialty titles

Aged and Palliative Care

This MS title focusses on a diverse client group that are nearing or surpassing their anticipated life expectancy. The limitation on life expectancy influences the person's management goals for acute and chronic illnesses, and the degree and type of health intervention most appropriate for them. This population group includes those needing supportive or end of life care, but also targets interventions that promote healthy ageing. A common thread is that health promotion goals are moderated by a limited life expectancy, with care occurring in community, to aged care and tertiary care contexts of practice.

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Care of Persons with Long-Term Conditions

This MS title focusses on those population groups with chronic or complex illness. This MS encompasses the diagnosis and management of common long-term conditions. It emphasises tertiary health promotion and disease prevention strategies and recognises the fact that many long-term conditions intersect. Therefore, an NP drawing on standards from this MS may manage several common chronic conditions related to their primary area of interest. The metaspécialty includes those in the rehabilitation phase of an acute or chronic illness and spans primary to tertiary care contexts across the lifespan.

The phrase 'long term conditions' is preferred to 'chronic illness' or 'chronic disease' by health care consumers because it suggests it is possible to control health care conditions, and also voices their preference to not be defined by one's illness. The phrase recognises that, whilst a person may have a chronic disease, the trajectory of their life will include periods of wellness as well as periods of illness.



Appendix V – Delphi Survey 2 Clinical Practice Standards for Panelists



Aged and Palliative Care

- 1) Performs an expert and comprehensive physical, social and psychological assessment to identify areas of risk or need, including identification of potential differential diagnoses, for people nearing or surpassing anticipated life expectancy
- 2) Conducts complex assessment of cognition, using evidence based assessment and screening and assessment tools specific to this population
- 3) Conducts advanced symptom-led assessment that is comprehensive and appropriate for supportive or end of life care
- 4) Orders/completes appropriate diagnostic tests for person nearing or surpassing anticipated life expectancy and interprets results
- 5) Demonstrates advanced knowledge of effects of aging on response to medications
- 6) Demonstrates specific communication skills that enable early discussion about quality of life and death with people nearing or surpassing anticipated life expectancy and their families
- 7) Develops lifestyle and/or shared treatment plan, including for advanced care directives, for the person nearing or surpassing anticipated life expectancy that balances prevention, resuscitation or palliation
- 8) Initiates treatments to provide expert preventative and/or supportive aged and palliative care, based on findings from comprehensive assessment, interpretation of diagnostic tests and treatment plan
- 9) Anticipates and expertly manages complications and adverse events specific to people nearing or surpassing anticipated life expectancy
- 10) Influences healthcare system processes to ensure that person with life limiting illness has early and appropriate access to palliative care
- 11) Educates person and carers about the correct use of opioids in aged and palliative care
- 12) Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life limiting factors including where there are linguistic, literacy, comprehension or other barriers to understanding
- 13) Demonstrates ability to refer to other health disciplines with a focus on coordination of allied health care provision
- 14) Demonstrates expert, compassionate judgment and knowledge of legal implications of end of life care for person and family

Proposed Summary Metaspecialty Standard Statements | CLLEVER2 Study, Phase 2
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Child and Family Health Care



- 1) Conducts holistic and advanced assessment of the child and family caring for the child, including social and cultural history using in-depth knowledge of child development
- 2) Demonstrates advanced understanding of variation in physiology and pathophysiology, particularly related to neonatal , paediatric and adolescent milestones
- 3) Demonstrates expert knowledge and a high level of confidence and clinical proficiency in management of the child with pain
- 4) Rapidly diagnoses and manages common childhood presentations that require prompt treatment
- 5) Develops a comprehensive plan of care for the child in collaboration with family/carer, based on advanced assessment and diagnostics
- 6) Prescribes and titrates medications at doses and using routes appropriate to child age and family/carer circumstances
- 7) Expertly delivers age-specific treatment to child and involves family/carer where appropriate
- 8) Anticipates and expertly manages complications and adverse events specific to children
- 9) Provides comprehensive, individualised education for family/child/carer that is appropriate and context specific for all
- 10) Demonstrates a high level of ability to convey information about complex health issues and provide comprehensive, individualised health education to child/family/carer including where there are linguistic, literacy, comprehension or other barriers to understanding
- 11) Takes leadership role to ensure multidisciplinary approach to care of child and family/carer where appropriate
- 12) Identifies and initiates care when child and family/carer require follow-up beyond treatment for acute presentation, including consideration of economic and environmental determinants of health

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Care of Persons with Long Term Conditions

- 1) Undertakes a comprehensive and expert assessment of person with chronic and/or complex illness, including rehabilitation needs and potential for self-management
- 2) Demonstrates advanced understanding of variation in physiology and pathophysiology and can adapt care in population groups at high risk of specific chronic diseases
- 3) Orders/completes appropriate diagnostic tests for person with requiring long term and complex care and interprets results
- 4) In collaboration with person, formulates plan for care and rehabilitation that addresses the whole person including facilitation of avenues for expression of grief regarding lost opportunities and support to maintain maximum potential for independent living
- 5) Ensures provision of timely and appropriate access to treatment for the person with chronic or complex illness, demonstrating high level of clinical confidence and proficiency
- 6) Demonstrates autonomy and expertise to deliver complex care coordination and case manage through use of outpatient and outreach facilities
- 7) Anticipates and expertly manages specific complications and adverse events specific to people with long term conditions
- 8) Undertakes complex medication titration for chronic and complex illnesses in partnership with the person
- 9) Builds and works in partnership to develop expertise of the person to manage their own health
- 10) Demonstrates advanced ability to convey complex health issues, develop health literacy and provide comprehensive, individualised health education about chronic disease including where there are linguistic, literacy, comprehension or other barriers to understanding
- 11) Identifies and refers when needed to healthcare team with other expertise including potential for telehealth and videoconferencing with the multidisciplinary team
- 12) Models the role of the nurse practitioner as leader of the multidisciplinary team in management of person requiring long term and complex care
- 13) Demonstrates strategies to maintain follow-up for chronic and complex illness including for specific populations at high risk of loss to follow-up
- 14) Advocates as clinical leader for improved access for people and groups at risk of chronic disease

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Emergency and Acute Care

- 1) Conducts advanced physical assessment in emergencies
- 2) Conducts advanced physical assessments to identify potential deterioration of persons in non ICU or ED settings
- 3) Assesses risk for sequelae of immobilisation due to surgery and/or intensive care therapy and initiates pharmacological and non-pharmacological preventative therapies
- 4) Synthesises best evidence in response and treatment decision for person in acute and urgent situation
- 5) Delivers advanced resuscitation care, including the ability to work beyond basic and advanced life support algorithms
- 6) Anticipates and expertly manages complications and adverse events specific to acute and emergency care situations
- 7) Manages subtle and/or rapid changes in status of acutely and critically ill persons to prevent deterioration
- 8) Demonstrates advanced ability to convey complex health issues and provide comprehensive, individualised health education about life threatening conditions including where there are linguistic, literacy, comprehension or other barriers to understanding
- 9) Leads and participates in medical emergency team
- 10) Takes a leadership role in follow-up of persons following acute and emergency admissions

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Mental Health Care

- 1) Undertakes expert and comprehensive assessment related to the psychological and physical well-being of person
- 2) Conducts advanced assessment of lifestyle factors, social and cultural history relevant to mental health care of person
- 3) Engages in high level clinical reasoning to organise and interpret comprehensive assessments relevant to mental health care of person
- 4) Develops person centred, comprehensive care plan with person requiring mental health care
- 5) Delivers expert treatment and support for person with mental health problems
- 6) Demonstrates a high level of confidence and clinical proficiency in managing person with both physical and mental illness, including referral when needed
- 7) Demonstrates advanced application of psychopharmacology in collaboration with person and other members of the multidisciplinary health care team
- 8) Provides expert support for person and family where there is actual or potential conflict arising from mental health care needs, including negotiation and de-escalation
- 9) Anticipates and expertly manages complications and adverse events specific to people requiring mental health care
- 10) Demonstrates expert ability to convey complex health issues and provide comprehensive, individualised health education about mental health care including where there are linguistic, literacy, comprehension or other barriers to understanding
- 11) Initiates long term or discharge management plan that includes ongoing monitoring of the Recovery Journey

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Primary Health Care

- 1) Conducts advanced primary health care assessment of the person, including social and cultural history, screening and lifestyle, taking account of the social determinants of health, community and economic resources
- 2) Demonstrates advanced understanding of variation in physiology and pathophysiology across the lifespan and varied population groups
- 3) Orders/completes and interprets appropriate diagnostic tests for person in the community care context
- 4) Demonstrates expert ability to modify management strategies in response to a range of cultural contexts and vulnerable groups using a primary health care framework
- 5) Develops and executes a comprehensive plan of primary health care in collaboration with person and demonstrating high level of confidence and expertise
- 6) Prescribes pharmacological and non-pharmacological therapy for primary health care setting appropriate to the person's domestic, community and self or carer capacity for treatment in the home
- 7) Manages immunisation status of the person in collaboration with person and based on the latest evidence and the person's lifestyle
- 8) Demonstrates ability to refer widely and appropriately to all other health disciplines
- 9) Anticipates and expertly manages complications and adverse events specific to delivery of care in the primary health care setting
- 10) Provides primary and secondary comprehensive, individualised preventative health education to persons of all ages within areas of NP expertise and where appropriate to person
- 11) Demonstrates advanced ability to convey primary health care issues and promote health literacy including where there are linguistic, literacy, comprehension or other barriers to understanding
- 12) Takes a leadership and care coordination role for the person in the primary health care multidisciplinary team
- 13) Collates and analyses assessment and treatment data that inform discharge plan or long term management plan for person
- 14) Initiates discharge or long term primary health care management plan based on latest evidence and person's lifestyle and social context

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Appendix W – Consensus Development Conference Abstract

Consensus Conference for the Un-Validated Australian Nurse Practitioner Metaspecialties
**CHRISTOPHER HELMS MSN¹, ANNE GARDNER PhD¹, GLENN GARDNER PhD², FIONA COYER PhD²,
HELEN GOSBY MN³**

1. Australian Catholic University, Canberra, Australia

2. Queensland University of Technology, Brisbane, Australia

3. The Children's Hospital at Westmead, Sydney, Australia

Objective - Establish consensus on the titles and scope of the remaining un-validated metaspecialties.

Since achieving legislated title protection in 1998 the nurse practitioner (NP) profession has grown to over 1200 NPs nationally, working in over 50 identified specialty areas. Professional standards have been used for program accreditation and regulation of the profession since 2006; however, despite the proliferation of specialties only one empirically-validated specialty learning and teaching framework exists. This presents difficulties in defining clinical learning needs for NP students in other specialty areas.

One aim the CLLEVER2 study, a national Australian Research Council funded project, was to validate a broad specialty framework for the clinical learning and teaching of NP students. Four of six broad specialty areas, termed metaspecialties, were validated earlier using consensus methodology. Two metaspecialties, *"Care of Persons with Long-Term Conditions,"* and *"Aged and Palliative Care,"* did not achieve consensus and remain un-validated.

Design – Consensus conference

Methods – A one-hour facilitated education session using expert panel discussion, small-group work and online survey technology will be used to establish consensus on the remaining un-validated metaspecialties. A convenience sample of NPs with at least 1 years' post-endorsement experience attending the 2016 National Australian College of Nurse Practitioners' conference will be invited to directly participate, but the session will also be open to all attendees.

Conclusion: An alternate consensus technique may generate better understanding of the Australian NP metaspecialties, and provide scope for integration of the un-validated metaspecialties into future planned clinical learning and teaching approaches for NP students.

Funding: Christopher Helms is supported by an Australian Postgraduate Scholarship

Appendix X – Continuing Professional Development Certificates for
Delphi Surveys

This certifies that



has completed **a minimum of 2 Continuing Professional Development Hours** by contributing to the development of a metaspéciality framework to enhance the clinical learning and teaching of Nurse Practitioner students through the

Clinical Learning Education and goVERNance (CLLEVER2) Study

Conducted September 2014 – January 2015

Signed this 18th day of December, 2015

Anne Gardner, RN BA MPH PhD MACN HFACNP

Chief Investigator

Chris Helms, RN NP MSN ANP-BC FACNP

PhD Candidate



CLLEVER2, Phase 2: Delphi Survey 1

Documentation of Continuing Professional Development (CPD) through Service to the Profession

This record is provided for your convenience for the purposes of meeting the documentation requirements needed to meet the CPD standard required by the Nursing & Midwifery Board of Australia. It should be modified to suit individual needs.

Individually-Claimed CPD Hours: (Minimum of 2 Hours for this activity)	
Identified Learning Needs: (Mark a <input checked="" type="checkbox"/> for each identified need) Other Identified Needs: <hr/> <hr/> <hr/> <hr/> <hr/>	Nurse Practitioner (NP) Standards for Practice <i>Standard 2: Plans Care and Engages Others</i> <input type="checkbox"/> Translates and integrates evidence into planning care by being proactive and analytical in acquiring new knowledge related to NP practice. <i>Standard 4: Evaluates Outcomes and Improves Practice</i> <input type="checkbox"/> Evaluates the outcomes of own practice by implementing research-based innovations for improving care. <input type="checkbox"/> Evaluates the outcomes of own practice by contributing to research that addresses identified gaps in the provision of care and/or services. <input type="checkbox"/> Participates in systems that support safe care, partnership and professional growth by articulating and promoting the NP role in professional contexts. <input type="checkbox"/> Advocates for systems that support safe care, partnership and professional growth by acting as an educator to nursing colleagues.
Action Plan: (Mark a <input checked="" type="checkbox"/> for each activity accomplished to achieve above needs) Other activities: <hr/> <hr/> <hr/>	<input type="checkbox"/> Participation in a research project informing the development of validated NP metaspecialties. <input type="checkbox"/> Reflecting on current scope of practice, analysing relevant objective information and others' professional views to promote consensus amongst colleagues. <input type="checkbox"/> Reflecting upon and contributing to a framework informing the clinical learning and teaching of NP students.
Type of Activity: Research project participant, Reading and Reflection	
Description of Topics Covered: A greater understanding of NP student clinical learning and teaching frameworks. A metaspecialty groups NP specialties that have similar skillsets, knowledge and or/expertise, which comprehensively reflect the diverse healthcare needs of population groups. The CLLEVER study established 6 metaspecialties (Mental Health Care, Aged & Palliative Care, Care of People with Long Term Conditions, Child & Family Health Care, Primary Health Care, Emergency & Acute Care). The purpose of this Delphi study was to validate the names of these metaspecialties amongst participants involved in the research project. A Delphi study is an iterative process which aims to achieve consensus amongst participants with expertise in an area. Two of the metaspecialties did not achieve consensus and will be further examined in the future.	

Reflection:



This certifies that



has completed **a minimum of 2 Continuing Professional Development Hours** by contributing to the development of a metaspacially framework to enhance the clinical learning and teaching of Nurse Practitioner students through the

Clinical Learning Education and goVERNance (CLEVER2) Study

Conducted April 2016 – May 2016



Signed this 31st day of May, 2016

Anne Gardner, RN BA MPH PhD MACN HFACNP

Chief Investigator

Chris Helms, RN NP MSN ANP-BC FACNP

PhD Candidate

CLLEVER2, Phase 2: Delphi Survey 2

Documentation of Continuing Professional Development (CPD) through Service to the Profession

This record is provided for your convenience for the purposes of meeting the documentation requirements needed to meet the CPD standard required by the Nursing & Midwifery Board of Australia. It should be modified to suit individual needs.

Individually-Claimed CPD Hours: (Minimum of 2 Hours for this activity)	
Identified Learning Needs: (Mark a <input checked="" type="checkbox"/> for each identified need) Other Identified Needs: <hr/> <hr/> <hr/> <hr/> <hr/>	Nurse Practitioner (NP) Standards for Practice <i>Standard 2: Plans Care and Engages Others</i> <input type="checkbox"/> Translates and integrates evidence into planning care by being proactive and analytical in acquiring new knowledge related to NP practice. <i>Standard 4: Evaluates Outcomes and Improves Practice</i> <input type="checkbox"/> Evaluates the outcomes of own practice by implementing research-based innovations for improving care. <input type="checkbox"/> Evaluates the outcomes of own practice by contributing to research that addresses identified gaps in the provision of care and/or services. <input type="checkbox"/> Participates in systems that support safe care, partnership and professional growth by articulating and promoting the NP role in professional contexts. <input type="checkbox"/> Advocates for systems that support safe care, partnership and professional growth by acting as an educator to nursing colleagues.
Action Plan: (Mark a <input checked="" type="checkbox"/> for each activity accomplished to achieve above needs) Other activities: <hr/> <hr/> <hr/>	<input type="checkbox"/> Participation in a research project informing the development of validated NP metaspecialties. <input type="checkbox"/> Reflecting on current scope of practice, analysing relevant objective information and others' professional views to promote consensus amongst colleagues. <input type="checkbox"/> Reflecting upon and contributing to a framework informing the clinical learning and teaching of NP students.
Type of Activity: Research project participant, Reading and Reflection	
Description of Topics Covered: A greater understanding of NP student clinical learning and teaching frameworks. A metaspecialty groups NP specialties that have similar skillsets, knowledge and or/expertise, which comprehensively reflect the diverse healthcare needs of population groups. The CLLEVER study established 6 metaspecialties (Mental Health Care, Aged & Palliative Care, Care of People with Long Term Conditions, Child & Family Health Care, Primary Health Care, Emergency & Acute Care). Phase 1 of the CLLEVER2 study then established clinical practice standards for each of the metaspecialty areas. The purpose of <u>this</u> Delphi study was to validate the clinical practice standards identified in Phase 1 of the CLLEVER2 study for each of the metaspecialties. These clinical practice standards were validated by using NMBA-endorsed nurse practitioners with a minimum of 12 months' post-endorsement experience. A Delphi study is an iterative process which aims to achieve consensus amongst participants with expertise in an specific area.	

Reflection:



Appendix Y – Delphi Survey 2 Results Draft Abstract

DRAFT TITLE OF MANUSCRIPT: Clinical standards for nurse practitioners: an Australian Delphi study reporting on standards for educational and professional development

AUTHORS: Professor Anne Gardner, Mr Christopher Helms, Professor Glenn Gardner, Professor Fiona Coyer, Ms Helen Gosby

DRAFT ABSTRACT: CONFIDENTIAL SUMMARY OF WORK IN PROGRESS – ONLY FOR USE IN CHRISTOPHER HELMS' PHD THESIS

Background: The nurse practitioner is a rapidly expanding clinical role in Australia, with specialty areas emerging through identification of unmet healthcare needs. However, limited attention has been directed towards consistency of specialty clinical learning and teaching of these Masters' level students. A broad specialty taxonomy comprising constructs termed 'metaspecialties' covering similar knowledge, skills and expertise has been partially validated and required development of clinical standards for each metaspecialty to guide clinical learning teaching and practice at this advanced professional specialty level.

Objectives: This study aimed to achieve profession-wide consensus on clinical standards for each of six Australian nurse practitioner metaspecialties.

Design: Two-phase study with initial interpretive phase followed by modified 3-round Delphi study, using an online survey format.

Setting: Australia, all States and Territories.

Participants: Participants were recruited primarily through the national nurse practitioner professional body. The main eligibility criterion was current endorsement as a nurse practitioner for 12 or more months.

Methods: Phase 1 comprised in-depth interviews of a purposeful sample of nurse practitioners to elicit vignettes demonstrating the complexity of care delivered to clients. Vignettes were deconstructed to identify skills, knowledge and expertise for six sets of draft clinical standards. These formed the basis for Round 1 of Phase 2 (six nested Delphi surveys - one per metaspecialty). In Round 1, draft clinical standards were reviewed by participants. Responses comprised quantitative scoring using Likert-scales and qualitative responses to explain rationale for decision-making. Content validity indexes (CVI) were calculated for each standard. Individualised and summarised group feedback was provided to each participant at commencement of Rounds 2 and 3. Participants rated relevancy of original or revised standards after consideration of feedback.

Results: Sixteen nurse practitioners were interviewed for Phase 1. Seventy-five draft standards were developed. For Phase 2, 221 nurse practitioners completed Round 1, comprising one fifth of the eligible Australian nurse practitioner population at the time. There was 93% (205/221) retention in Round 2. A single standard in one metaspecialty required validation in Round 3, with 88% (66/75) completing responses. Seventy-three standards across six metaspecialties were validated, with final item level CVIs of 92- 100%. All final scale level CVIs were 98%, providing strong validation for the metaspecialty taxonomy.

Discussion: The profile of respondents was similar to demographic and professional data available for all Australian nurse practitioners so the sample is considered representative of the currently endorsed Australian nurse practitioner population. To our knowledge, this is the first comprehensive national suite of clinical standards for nurse practitioner student learning and teaching encompassing all facets of care delivery across all specialties that has been developed in close collaboration with the clinicians themselves. A high degree of consensus was achieved across all clinical practice standards representative of the six metaspecialties. The use of both item level CVIs (to establish consensus on

the clinical practice standards) and the scale level CVI (to establish the internal validity of standards informing a metaspécialty) provided robust evidence for six validated constructs informing the final metaspécialty taxonomy. This proposed structure of national nurse practitioner clinical learning and teaching framework comprising a metaspécialty taxonomy and clinical standards is complementary to other Australian work and contributes to international understanding about spécialty clinical learning and teaching for nurse practitioner students and those of other health professions.

Conclusions: In-depth interviewing to provide content for modified Delphi study and novel application of metadata and other web-based techniques enabled six nested Delphi surveys, managed through a single survey structure, to be conducted concurrently. Spécialty clinical standards for six metaspécialties were developed to guide Australian nurse practitioner student clinical learning and teaching. The research-derived clinical standards and metaspécialty taxonomy will support and strengthen nurse practitioner clinical education and professional development nationally and internationally.

FUNDING STATEMENT

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Appendix Z – Published Manuscript from Delphi Survey 1

ORIGINAL RESEARCH: EMPIRICAL RESEARCH – MIXED METHODS

Consensus on an Australian Nurse practitioner specialty framework using Delphi methodology: results from the CLLEVER 2 study

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Abstract

Aim. The aim of this study was to achieve profession-wide consensus on an Australian nurse practitioner specialty framework.

Background. Since its introduction in 1998, the Australian nurse practitioner profession has grown to over 1300 endorsed practitioners, representing over 50 different specialties. To complement better a generalist learning and teaching framework with specialist clinical education, prior research proposed a broad framework of Australian nurse practitioner specialty areas termed metaspecialties.

Design. This study employed an online three-round modified Delphi method.

Method. Recruitment using purposive sampling and snowballing techniques identified an eligible sample from a population of nurse practitioners with at least 12 months' postendorsement experience ($n = 966$). Data were collected using online survey software from September 2014–January 2015 and analysed using descriptive statistics and content analysis. The Content Validity Index and McNemar's Test for Change were used to determine consensus on the nurse practitioner metaspecialties.

Results. One-fifth of the total eligible population completed the study. Participants achieved high consensus on four metaspecialties, including: Emergency and acute care, primary health care, child and family health care and mental health care. Two metaspecialties did not achieve consensus and require further investigation.

Conclusion. A large sample of nurse practitioners achieved consensus on an Australian metaspecialty framework, increasing the likelihood of widespread acceptance across the profession. This technique may be appropriate for use in jurisdictions with smaller populations of nurse practitioners. Ongoing research is needed to re-evaluate the metaspecialties as the profession grows.

Keywords: Australia, consensus, Delphi, framework, metaspecialty, nurse practitioner, nursing, specialty

Why is this research needed?

- To validate a broad specialist framework that contributes to robust clinical learning and teaching approaches for Australian nurse practitioner students.

What are the key findings?

- Delphi methodology can be used to validate a professional specialty framework.
- Four Australian metaspécialties have been validated.
- There is a growing cohort of newly endorsed nurse practitioners working in primary healthcare.

How should findings be used?

- Clinical practice standards can be validated using the metaspécialty framework.
- Education professionals may benefit from incorporating the metaspécialty framework into their clinical learning and teaching approaches.

Introduction

The Australian nurse practitioner (NP) profession has evolved greatly over the last decade. As the profession grows, the language of specialization and professional standards informing the learning and teaching of Australian NPs has become increasingly complex.

Recent research confirms over 50 different Australian NP specialties and only two have established competencies for clinical training (Douglas & Bonner 2011, Quinn *et al.* 2011, Gardner *et al.* 2014). O'Connell's (2015) work is the only published empirical research establishing clinical practice standards for an Australian NP specialty. The lack of specialty-specific Australian NP clinical practice standards and diverse practice areas have created difficulties for the tertiary education sector in its effort to deliver specialty-specific clinical learning and teaching.

In 2013, Gardner *et al.* established an Australian NP taxonomy framework comprising specialties grouped into 'metaspécialty' constructs with similar skillsets, knowledge and expertise (Gardner *et al.* 2013a). The purpose of the research reported here was to validate the Gardner metaspécialty constructs across the Australian NP profession and contribute to research establishing NP clinical practice standards for each of these constructs.

Background

Nurse Practitioners are registered nurses with the expert knowledge base, complex decision-making skills and

clinical competency for expanded practice (International Council of Nurses 2014). In Australia, the expanded practice of NPs includes the autonomous prescription of medicines, ordering and interpreting of diagnostic tests and independent referral to medical and allied health professionals (Nursing and Midwifery Board of Australia 2014a). The language used to describe specialist NP practice is complex and varies widely according to context and location of practice, legislation, policy and endorsed professional standards.

The origins of the NP profession began with legislated state-based title protections in the USA in the 1960s (National Council of State Boards of Nursing 2015). As the profession there grew, competency descriptors were established for broad NP specialty areas (now termed 'population foci'), using a consensus-building method called consensus conference (National Organisation of Nurse Practitioner Faculties 2013). To date, the USA is the only known jurisdiction with universal endorsement of broad NP population foci. These foci are used for the education, certification and regulation of American NPs who receive generalist training in a broad population. Nurse practitioner students may attain general professional knowledge needed for advanced practice nursing during their formal masters' degree programmes and learning and teaching is focused on generalist knowledge and skills needed for clinical management of common conditions seen in a population focus (National Organisation of Nurse Practitioner Faculties 2013). The combination of title protection and profession-wide endorsement of these foci contributes to consistency, understanding and acceptance of NPs across the USA (APRN Consensus Work Group 2008, Institute of Medicine 2011). In such foci, NPs may also choose to work in specialist practice, such as diabetes care, cardiovascular health and emergency care, whose standards may be determined by the relevant specialty body. They may receive specialty-specific training after their NP education programmes through work-based training, formalized certifications and more recently, residency or fellowship programmes (Flinter 2011, American Nurses Credentialing Center 2015).

In contrast, Australian NPs achieved legislated title protection in 1998 and were designed to 'target marginalised and at-risk populations and provide outreach services to rural and remote communities' (Australian College of Nurse Practitioners 2014a). A master's degree is the entry-level qualification needed for practice and NPs are accountable to national standards used for regulation of the profession (Nursing and Midwifery Board of Australia 2014a). The profession has grown rapidly since the first two NPs were authorized to practice in New South Wales in 2000, with

over 1300 NPs currently endorsed to practice in a variety of acute and primary healthcare settings (Nursing and Midwifery Board of Australia 2015).

Similar to other European jurisdictions, Australian NP education programmes aim to further develop advanced practice nursing knowledge and skills already obtained through experience working as a RN and through formal postgraduate education preparing them to work in a specialty area (Furlong & Smith 2005, Australian Nursing and Midwifery Accreditation Council 2015). In the UK, 'right-touch regulation' led to a lack of NP title protection, with inconsistent application of recommended standards for graduates of NP programmes, resulting in a range of education levels (Royal College of Nursing 2012, Professional Standards Authority 2015, NHS Scotland 2016). In contrast, all Australian NP programmes offer master's degrees and are nationally accredited against a governance framework and curriculum standards approved by the Nursing and Midwifery Board of Australia (NMBA). While all Australian NP students meet generic professional standards approved by the NMBA, students obtain formal specialist clinical learning, such as emergency, system-specific (e.g. cardiac, renal, genitourinary), wound care, pain management or mental health nursing, in their respective clinical settings (Middleton *et al.* 2011).

Australia's NP educational approach has resulted in the development of many specialties (Gardner *et al.* 2014). The proliferation of specialty practice resulted in governance and logistical issues faced by the tertiary education sector in the provision of robust workplace-based NP clinical learning and teaching (Jackson & Daly 2004, Strand *et al.* 2013). Similar concerns were identified in the early 1990s in the USA, which in part triggered formulation of the population foci now seen in that jurisdiction (National Organisation of Nurse Practitioner Faculties 2006). These issues centre on availability, oversight and consistent application of specialized workplace-based clinical training programmes tailored to individual, institutional and/or workforce requirements. For example, two emergency NPs attending the same Australian university programme may graduate with differences in specialist skills, knowledge and expertise given the individual workplaces where they receive their advanced clinical learning and teaching, while sharing the same core learning and teaching required for national endorsement.

These issues are addressed in part by new Australian NP curriculum accreditation standards contributing towards a more robust and consistent clinical learning and teaching framework (Australian Nursing and Midwifery Accreditation Council 2015) by requiring a minimum number of supernumerary clinical hours. The new curriculum

standards promote generalist knowledge and skill acquisition needed for the broader clinical management of conditions seen in a specialty context. A similar learning and teaching approach is currently being explored in New Zealand (Nursing Council of New Zealand 2015). O'Connell's recent work (2015) complements the new standards by establishing a framework supporting learning and teaching requirements for specialist Australian emergency NP students; however, no such frameworks exist for the remaining Australian NP specialties.

To support further the learning and teaching framework, attention has been directed towards establishing a broad specialty taxonomy for Australian NPs. A specialty taxonomy assists in defining the scope of practice where nurses operate and has wide-reaching implications on the profession's educational governance, sustainability (Buchan *et al.* 2015) and acceptance by the Australian healthcare consumer (Parker *et al.* 2013, Cashin *et al.* 2015). While a specialty taxonomy for Australian nurses was established by King *et al.* (2010), its application to NPs is limited given the profession addresses healthcare gaps and marginalized populations, as opposed to representing mainstream Australian nursing practice. Developmental work exploring a broad Australian NP specialty taxonomy was conducted by Gardner *et al.* (2014), grouping specialties into six constructs similar in aim (although not focus) to the population foci seen in the USA. These contextualized taxonomy constructs, termed 'metaspecialties', established NP specialties into broad population groups requiring similar knowledge, skills and expertise (Table 1).

An external evaluation of Gardner *et al.* suggested a need for further evidence to support the 'untested [metaspecialty] propositions' (Gardner *et al.* 2014, p. 40). Therefore, the aim of the study reported here was to achieve profession-wide consensus on the established metaspecialties. Once validated, ongoing research establishing and validating clinical practice standards for each metaspecialty may contribute to better support Australian NP student clinical learning and teaching.

The study

Aim

The aim of this study was to achieve profession-wide consensus on the Australian nurse practitioner metaspecialties.

Design

Online survey technology was used to conduct a modified three-round Delphi study. A classical Delphi approach seeks

Table 1 Comparison of metaspécialties and population foci.

	Metaspécialties (Australia) (Gardner, 2014)	Population foci (United States) (NONPF, 2013)
Definition	<i>A metaspécialty groups nurse practitioner (NP) specialties that have similar skillsets, knowledge and/or expertise, which comprehensively reflects the diverse healthcare needs of population groups.</i>	<i>The scientific foundations, leadership, quality, practice inquiry, technology and information literacy, policy, health delivery system, ethics, and independent practice competencies needed to work within a defined population.*</i>
Application	Empirical research in progress for use in a learning and teaching framework for Australian NP students.	Used for professional licensure, accreditation, certification and education of NPs.
Use	Build upon core <i>Standards</i> for Professional Practice	Build upon core <i>Competencies</i> for Professional Practice
Descriptors	<ul style="list-style-type: none"> • Emergency and Acute Care • Mental Health Care • Aged and Palliative Care • Primary Health Care • Child and Family Health Care • Care of Persons with Long-Term Conditions 	<ul style="list-style-type: none"> • Adult-Gerontological Acute Care • Adult-Gerontological Primary Care • Acute Care Pediatric • Primary Care Pediatric • Family/Across the Lifespan • Neonatal • Psychiatric-Mental Health • Women's Health/Gender Related
Clinical Learning and Teaching	Students must demonstrate advanced practice nursing as pre-requisite for entry into NP education programme. Students may identify one or several metaspécialties that identify the individual's existing and future planned complement of advanced practice nursing skills, knowledge and expertise.	Students may enter NP education programme without previous advanced practice nursing experience. Students generally identify a single population focus to establish and direct the generation of advanced practice nursing skills, knowledge and expertise.

*No definition is provided by the National Organization of Nurse Practitioner Faculties or the 2008 *Consensus Model for APRN Regulation* for the population focus construct as a whole. Individual population foci are defined according to these qualities.

expert consensus on a question or issue through iterative rounds using written surveys (Delbecq *et al.* 1975). The first round of a classical Delphi implements a qualitative approach by virtue of collecting participant responses to an open-ended question. This research used a modified approach (Keeney *et al.* 2011), whereby participants in the first round were given an annotated bibliography (Gardner *et al.* 2013b) that summarized NP specialty clinical competencies publically available at the time, as well as background information on the development of proposed metaspécialties (Australian College of Nurse Practitioners 2015). This information assisted participants in achieving consensus on the relevancy of proposed metaspécialty constructs, which they rated on a four-point Likert-scale ('not relevant, somewhat relevant, quite relevant, highly relevant'). Participants suggested re-wording of proposed metaspécialty constructs, as well as provided novel constructs for group consideration. Semi-structured questions triggered participant elaboration on rationale for their responses. Demographic data and individual participant characteristics were also collected.

The remaining rounds followed a classical Delphi approach, with the second round providing collated and anonymous feedback of group qualitative and quantitative

panel responses from the first round. Participants were reminded of their individual metaspécialty relevancy ratings for round 1 and asked to again rate the relevancy of any re-worded or novel round 1 metaspécialty constructs. Re-worded or novel constructs that did not achieve at least 50% majority opinion were removed from further analysis. This iterative process continued until a majority opinion of 85% or greater on individual constructs was achieved and stable over two consecutive rounds.

Sample/participants

Participants were recruited between August–September 2014 using convenience and snowball sampling. These techniques have been used extensively in mixed methods research (Brannen & Halcomb 2009, Kemper *et al.* 2010) and promote wide distribution of recruitment messages across an eligible population.

In keeping with Delphi methodology principles to recruit experts (Linstone & Turoff 2002), participant expertise and participant eligibility were defined as current endorsement as an NP by the NMBA for 12 or more months, as endorsed NPs are clinical experts in their respective areas of practice (Australian Nursing Federation *et al.* 2008).

In September 2014, the total population of endorsed NPs was 1,128 (NMBA 2014b). Available population data published eleven months prior (NMBA 2013) indicate there were 966 endorsed NPs in Australia, the number used to approximate the eligible population of NPs (that is, those endorsed for 12 or more months in late 2014).

Recruitment was accomplished by four methods. First, emails inviting individuals to participate in the study were sent to the Australian College of Nurse Practitioners' membership. The Australian College of NP is the peak professional body representing 51% of endorsed NPs nationally (Australian College of Nurse Practitioners 2014b). Two additional reminders were sent over 4 weeks. Second, an information and recruitment page was constructed on the Australian College of NP website to facilitate recruitment for casual visitors, with a 6-minute online video embedded to provide supplemental information about the Delphi method and study aim. Recruitment emails were sent to state/territory nursing and midwifery offices across Australia for distribution in their networks because 80% of Australian NP employment is managed at state or territory level (Australian College of Nurse Practitioners 2012). Finally, all respondents were encouraged to disseminate study recruitment information to other NPs they felt might be eligible or interested in the research.

Data collection

Data were collected between August 2014–January 2015 using three survey tools designed with Qualtrics (2013) online survey software. The first round survey tool, which served as a template for subsequent rounds, underwent pilot testing for content and face validity using a 10-member panel comprising nursing researchers, PhD supervisors, nurse practitioners and nursing academics. The pilot survey included additional questions about whether the stated study aim was clear, whether sufficient information about study conduct and background information about the metaspécialties was provided, if any relevant questions were missing from the survey and ease of completion. Panel member feedback was collated and minor adjustments made to better define metaspécialty constructs, ensure readability, enhance the likelihood of detailed rationale for responses in open-ended sections and improve survey structure.

Relevancy ratings for re-worded or novel metaspécialty constructs were recorded using Likert-scales and answers to semi-structured questions recorded with open text boxes. Demographic and participant characteristics were collected using validated multiple-choice questions obtained from a Health Workforce Australia (2012) survey.

Ethical considerations

The study protocol was conducted according to the National Statement on Ethical Conduct in Human Research (2007) and approved by the Australian Catholic University Human Research Ethics Committee (HREC Register Number 2013 174N). Consent was implied through survey completion. Attrition is a known risk of Delphi research (Keeney *et al.* 2001) and was mitigated by offering continuing professional development contact hour certificates. In addition, consenting participants were offered the opportunity to be named as contributors to induce social reward and enhance Delphi completion (Bolger & Wright 2011). Finally, demographic categories (area, locality, setting and employment location) were aggregated to reduce level of detail to protect individual identity.

Data analysis

Both qualitative and quantitative data were collected, with the first round being primarily qualitative and subsequent rounds quantitative. NVivo Software Version 10 was used to manage qualitative data obtained from round 1. Content analysis was performed to determine overall participant opinion on construct relevancy, identify re-worded and/or novel metaspécialty constructs and summarize rationale provided for stated opinions. A modified content analysis framework was developed based on Graneheim and Lundman (2004) method of content analysis, for each of the six proposed metaspécialty constructs. Relevancy ratings were matched to rationale provided by individuals from open-ended questions. Manifest (verbatim language) content was condensed into whether participants felt proposed metaspécialties were 'relevant' or 'not relevant'. Manifest and latent (interpreted) content from open-ended responses were then further condensed into themes and sub-themes. Sub-themes were used as qualitative summary information provided to participants during round 2. Sub-themes were based on the most representative response for that theme, to preserve original (manifest) participant language as much as possible.

Quantitative analysis was conducted using IBM SPSS Version 22. Demographic variables were analysed using descriptive statistics. Majority opinion was defined by an item-level content validity index (CVI) of 85% or greater. A CVI measures the proportion of participants rating a construct as relevant to the total number of those rating the construct (Lynn 1986). To calculate the CVI, Likert data were recoded and dichotomized into 'relevant' (comprised of the categories 'quite relevant' and 'highly relevant') and 'not relevant' (the remaining categories). A CVI of 85%

was chosen to ensure greater acceptance of the findings across the profession, as a CVI of greater than 78% correlates to 'excellent' agreement among any number of experts and appropriately corrects for chance agreement (Polit *et al.* 2007).

Content validity indices for each construct were calculated and provided as summarized group statistical feedback for group consideration in rounds two and three. Non-parametric testing using McNemar's Test for Change was performed to determine stability of responses through time (Kalaian & Kasim 2012). Although the CVI alone may be used to determine whether a construct is valid as expressed by majority expert opinion, the McNemar's Test for Change determines whether opinion about the construct changes with each round. Its reporting includes an exact probability using the binomial distribution or, if more than 25 participants change their opinions between rounds, a continuity-corrected Chi-Square statistic (Allen & Bennett 2010). Consensus can therefore be determined by stable opinion deemed relevant by the majority (in this instance, defined as 85% or greater) of experts (Polit *et al.* 2007, von der Gracht 2012).

Validity and reliability

Safeguards were established to ensure rigour, as reported by Hasson and Keeney (2011). Reliability in this modified Delphi was enhanced as it followed a more traditional Delphi approach, whereby participants were encouraged to revise proposed metaspecialties and/or propose novel constructs for group consideration in round 1. Confounding variables known to threaten reliability in consensus-building activities, such as group think (Boje & Murnighan 1982), dominant personalities (Kerr & Tindale 2011) and other social and informational influences (Bolger *et al.* 2011) were minimized by providing anonymized feedback of participant responses. Feedback was provided through summarized group statistical response (through CVIs) and sub-themes obtained from the modified content analysis framework, to minimize loss of depth or richness of individual opinion.

Content validity was enhanced through sample size and variety. Respondents were a large, heterogeneous group of nursing experts whose inclusion had been limited to those holding NP endorsement by a national regulatory body and whose profession had achieved legislated title protection. This contributed a wide range of perspectives relevant to the content of the metaspecialties (Okoli & Pawlowski 2004). Construct validity was established by achieving consensus among nursing experts on four proposed metaspecialties through refinement across several Delphi rounds.

Results

Response rate

In total, there were 231 study participants at the outset of round 1, representing approximately 24% ($n = 231/966$ eligible) of the Australian NP population (Nursing and Midwifery Board of Australia 2013). Figure 1 demonstrates 197 participants completed all three rounds. Each round had high response rates, with 92% ($n = 212/231$) completing round 1, 97% ($n = 205/212$) completing round 2 and 96% ($n = 197/205$ invitations) completing round 3. The first round survey tool was designed to identify eligible participants, which resulted in two individuals being excluded.

Demographics

Participants had a mean of 27 years' experience working in nursing and a median of 4 years' postendorsement experience. Ninety-two per cent of eligible participants described their principal role as a clinician. Other participant descriptors for their principal role were 'administrator' (1%), 'teacher or educator' (2%), 'researcher' (2%) or 'other' (3%).

Table 2 demonstrates good representation across all Australian states and territories. The most common stated main area of work was 'other' (31.4%) using Health Workforce Australia-validated work categories. Of those participants with 5 years or less of postendorsement NP experience, a larger proportion worked in primary healthcare practice and non-admitted care settings (Independent Hospital Pricing Authority 2015) (49%, $n = 65/133$ vs. 27%, $n = 17/64$) than their colleagues with six or more years' endorsement.

Nurse practitioners working in non-metropolitan areas of Australia were well represented. Fifty-eight per cent of participants stated their principal place of practice was a major city, whereas the remainder worked in regional, remote or very remote Australia (Australian Bureau of Statistics 2011). A higher proportion of NPs with less than or equal to five years' postendorsement experience worked in inner regional Australia (22%, $n = 29/133$ vs. 5%, $n = 3/64$) and the private employment sector (31%, $n = 41/133$ vs. 22%, $n = 14/64$) than those NPs with six or more years' experience.

Validated metaspecialties

Table 3 shows a high degree of majority opinion on four of six proposed metaspecialty constructs, with no round 1 participants providing novel constructs for panel consideration. No alternative names achieved the threshold for inclusion after round 2. Regarding stability of opinion, a minority

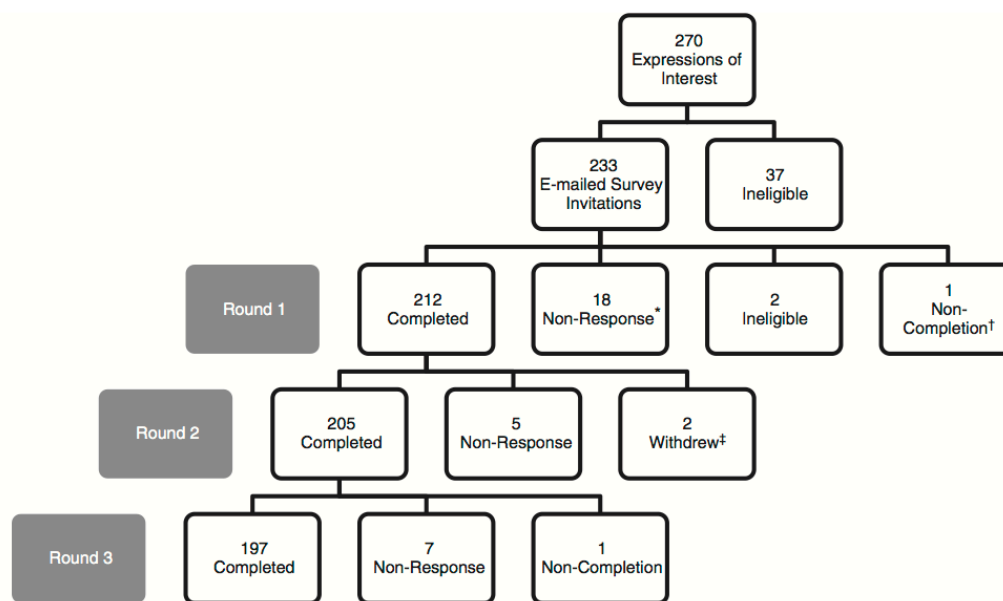


Figure 1 Recruitment and Delphi round completion. *Represents those participants who did not respond to survey invitations. †Represents those participants who did not complete all questions in the survey. ‡Represents those participants who requested to withdraw from the research study.

(23) of 197 participants changed their relevancy ratings on the Emergency and Acute Care metaspecialty after evaluating group feedback at the beginning of round 2. Of these, 19 participants changed in a negative direction (from 'relevant' to 'not relevant'), while only four did the reverse. A McNemar test indicated group opinion change was significant ($P = 0.003$). Participants did not significantly change their opinions between rounds one and two for the Child and Family Health Care ($P = 0.868$), Mental Health Care ($P = 0.227$) or Primary Health Care ($P = 0.344$) metaspecialty constructs.

Unvalidated metaspecialties

Two proposed metaspecialty constructs did not achieve consensus after three rounds (Table 4). Content analysis from round 1 data indicated participants agreed with the 'Care of Persons with Long Term Conditions' (CPLTC) metaspecialty construct. However, the participant theme 'agree with construct but disagree with name' was illustrated by sub-theme responses: 'the name is too complicated'; was 'too vague in the length of time 'long-term'

indicates' and 'confusing as it could be associated only with those living in chronic rehabilitation or care.'

Alternative names were proposed by participants in round 1, such as: 'chronic disease management,' 'chronic care' and 'chronic and complex care.' Participants were given the opportunity to rate the relevancy of these alternate names in rounds 2 and 3. 'Chronic Care' did not achieve the minimum 85% CVI majority opinion threshold in round 2 and was removed from further analysis. The remaining names did not achieve the minimum 85% CVI majority opinion threshold in round 3.

Just over half (104/197) of participants changed their opinion about the relevancy of the CPLTC metaspecialty after evaluating group feedback at the beginning of round 2. Almost all participants (102) changed in a negative direction (from 'relevant'-'not relevant'). A McNemar test indicated group opinion change regarding the CPLTC construct was significant, $\chi^2 (1, N = 197) = 94.24, P < 0.001$. Participants continued to change their opinions significantly on the relevancy of this metaspecialty name in a negative direction between rounds 2 and 3, $\chi^2 (1, N = 197) = 30.420, P < 0.001$.

Table 2 Participant demographics.

	Years endorsed as a nurse practitioner				Total	
	≤ 5 years ($n = 133$)		6 + years ($n = 64$)		(N = 197)	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Years nursing*						
5-9	1	0.8	0	0.0	1	0.5
10-14	9	6.8	1	1.6	10	5.1
15-20	28	21.1	14	21.9	42	21.3
21-25	22	16.5	10	15.6	32	16.2
26-29	13	9.8	6	9.4	19	9.6
30+	60	45.1	33	51.6	93	47.2
Principal area of employment*						
Critical care and emergency	23	17.3	17	26.6	40	20.3
General practice/medical practice	19	14.3	4	6.3	23	11.7
Aged care	13	9.8	5	7.8	18	9.1
Mixed medical/surgical	16	12.1	2	3.2	18	9.1
Community health	11	8.3	5	7.8	16	8.1
Mental health	13	9.8	3	4.7	16	8.1
Peri-operative	4	3.0	0	0.0	4	2.0
Other††	34	25.6	28	43.7	62	31.4
Primary employment location*						
Queensland	32	24.1	19	29.7	51	25.9
New South Wales	26	19.5	13	20.3	39	19.8
Western Australia	19	14.3	16	25.0	35	17.8
Victoria	26	19.5	6	9.4	32	16.2
South Australia	14	10.5	6	9.4	20	10.2
Australian Capital Territory	6	4.5	4	6.3	10	5.1
Tasmania/Northern Territory	10	7.5	0	0.0	10	3.6
Primary employment locality†						
RA1 – Major Cities	75	56.4	40	62.5	115	58.4
RA2 – Inner Regional	29	21.8	3	4.7	32	16.2
RA3 – Outer Regional	17	12.8	14	21.9	31	15.7
RA4/RA5 – Remote or Very Remote	12	9.0	7	10.9	19	9.6
Primary employment setting*						
Emergency and admitted acute care‡	55	41.4	34	53.1	89	45.2
Subacute and non-acute care§	6	4.5	3	4.7	9	4.6
Non-admitted care¶	40	30.1	12	18.8	52	26.4
Primary health care practice**	25	18.8	5	7.8	30	15.2
Other††	7	5.3	10	15.6	17	8.6
Employment sector*						
Public	92	69.2	50	78.1	142	72.1
Private (+ non-profit organizations)	41	30.8	14	21.9	55	27.9

*Validated question from Health Workforce Australia.

†Locality according to ASGC-RA Classification.

‡Includes those participants indicating a hospital was their primary employment setting.

§Includes residential aged care facility or hospice settings.

¶Includes outpatient clinics, community mental health service, community drug and alcohol service or other community healthcare service settings.

**Includes locum private practice, general practitioner practice, other private practice, or Aboriginal health service settings.

††Includes commercial/business service, tertiary educational facility, correctional services, other government department or agency, or other settings.

‡‡Includes those participants indicating paediatrics was their principal area of employment.

The second metaspecialty construct not achieving consensus was 'Aged and Palliative Care' (APC). The round 1 theme: 'agree with name, but as separate constructs' was

demonstrated through many participant responses falling in the sub-theme 'inappropriate to group 'aged' and 'palliative' together as it shifts the focus of care from healthy ageing to

Table 3 Validated Australian Nurse practitioner metaspecialties.

	Round 1 CVI%*	Round 2 CVI%
Emergency and Acute Care	98	94
Child and Family Health Care	86	85
Mental Health Care	95	98
Primary Health Care	95	97

*A validated metaspecialty construct achieved a stable Content Validity Index (CVI) of 85% or greater across two sequential rounds.

Table 4 Unvalidated Australian Nurse practitioner metaspecialty constructs (N = 197).

	Round 1 CVI%	Round 2 CVI%	Round 3 CVI%
Construct 1			
Aged and palliative care*	97	63	61
Alternative construct: aged care (n = 77) ^{†,§}		64	90
Alternative construct: palliative care (n = 77) ^{†,§}		46	88
Construct 2			
Care of persons with long-term conditions*	91	41	20
Chronic disease management [‡]		60	64
Chronic and complex care [‡]		72	80

*Construct established from prior research and presented to participants in Round 1.

[†]Alternative construct proposed by participants in Round 1.

[‡]Alternative name proposed by participants for the 'Care of Persons with Long-Term Conditions' construct in Round 1.

[§]In Round 3, all participants who rated the 'Aged and Palliative Care' construct as not relevant were provided the option of rating two separate constructs, 'Aged Care' and 'Palliative Care.'

palliation.' Another theme, 'disagree with construct' provided sub-themes such as: 'palliation occurs across the lifespan and is not unique to the aged' and 'palliation is part of the continuum of care of persons with long-term conditions.' As participant opinions were divergent on whether the construct was a single, or two distinct entities, the third survey tool was designed to facilitate consensus by first identifying whether participants felt the construct as a sole entity was relevant. If not, they were offered the opportunity to rate the relevancy of two separate constructs, 'Aged Care' and 'Palliative Care.' As a result, APC did not achieve the minimum 85% CVI majority opinion threshold in

round 3. The minority of participants (n = 77) rating the relevancy of the single construct as 'Not' or 'Somewhat' relevant had the additional option of rating the relevancy of two distinct constructs: 'Aged Care' and 'Palliative Care.' Both (90% and 88%, respectively) achieved high majority opinion in this subgroup.

A minority (n = 71) of 197 participants changed their opinion regarding the relevancy of the APC metaspecialty construct after evaluating group feedback at the beginning of round 2. Of these, most (69) changed in a negative direction. A McNemar test indicated this change was significant, χ^2 (1, n = 197) = 61.352, $P < 0.001$. Participants did not significantly change their opinions about the relevancy of the APC construct between rounds 2 and 3 ($P = 0.688$).

Discussion

This is the first study validating a taxonomy of broad specialty areas, termed metaspecialties, for Australian NPs. To our knowledge, no other empirical research using Delphi methodology exists to establish a health profession specialty framework. Four metaspecialties (Emergency and Acute Care, Primary Health Care, Child and Family Health Care, Mental Health Care) were validated across the NP profession (Figure 2) with two others requiring further research to clarify these construct(s) (that is, Care of Persons with Long Term Conditions and Aged and Palliative Care). The Australian NP profession spans only 15 years and it is expected these metaspecialties will evolve as this dynamic profession grows. The metaspecialties provide structure to advanced specialty clinical education and professional development. Indeed, this was seen with the evolution of population foci first established in the USA in the early 2000s (US Department of Health and Human Services 2002). These foci grew from seven discrete competency areas (Table 1). It is hoped the research reported here informs future empirical research considering a consensus-building methodology with a similar scope and aim.

The only published example of using a consensus-building method to achieve a comparable aim has been described as a consensus conference and was used to determine the NP population foci in the USA (APRN Consensus Work Group 2008). There are significant differences between consensus approaches. The Delphi method has a superior ability to control for social and informational influence of panel members on the consensus-building process because participants conduct the

Table 5 Australian Nurse practitioners contributing to the validation of the metaspecialty framework*.

Abel, Jenny	Farrelly, Julie	Linacre, Lorraine	Preston, Donna
Adams, Marg	Finley, Anne	Linke, Louise	Pridding, Andrew
Allen, Jodie	Fleming, Rosanne	Linton, Kerry	Proper, Melanie
Andersson-Noorgard, Kurt	Fonceca, Clinton	Louw, Deirdre	Raeburn, Toby
Baker, Glory	Ford, Elaine	Lutze, Matthew	Ramsey, Lani
Bancroft, Libby	Fort, Andrew	Mackie, Tracey	Reid, Sue
Bardsley, Kimberly	Foskett, Deb	Madahar, Mack	Rheault, Haunna
Barker, Judith	Fox, Karen	Maddicks-Law, Jo	Rogers, Mark
Bawden, Jamie	Furness, Jenny	Mah, Alicia	Russell, Joanne
Behm, Christine	Garden, Ann	Markocic, Sonia	Ryan, Cassandra
Bell, Sandra	Gardner, Rebecca	Mason, Karen	Sabaratham, Virginia
Berlund, Lois	Garvey, Debbie	Maw, Michael	Sanderson, Sue
Bezzant, Annette	Gascard, Debra	McCrohan, Rose	Sandford, Monique
Blacklaws, Helen	Gaughan, Jan	McCutcheon, Catherine	Savage, Karen
Boase, Leanne	Glaetzer, Karen	McGee, Pam	Sawyer, Barbie
Bourne, Debra	Gower, Karen	McGoldrick, Colleen	Sawyer, Brad
Brown, Leisha	Gresham, Robert	McKenna, Keren	Schoppe, Shirley
Brownlie, Julia	Hadley-Barrett, Melissa	McLeod, Vicki	Shah, Mark
Bucher, Hazel	Hains, Toni	Miles, Nick	Simpson, Toni
Buelens, Odette	Hampel, Sally	Mills, Dianne	Sims, Kery
Bullock, Katherine	Hansen, Leah	Mitchell, Kathryn	Smith, Catherine
Bulten, Jude	Harrison, Jason	Moehead, Anne	Smith, Melanie
Burdack, Leone	Harvey, Michele	Moon, Robin	Spencer, Lucy
Burge, Deanne	Harvey, Tammy	Morey, Pam	Spokes, Leigh
Carroll, Sean	Harvie, Barbara	Morey, Suzanne	Spurgeon, Deb
Christofis, Luke	Heppner, Doune	Mudie, Kari	Summers, Anthony
Clifford, Stu	Hills, Jacqueline	Mullen, Glenda	Swanson, Terry
Cole, Kim	Horn, Sharon	Muller, Chris	Taylor, Anita
Comyn, Gayle	Horton, Christine	Murfet, Giuliana	Taylor, Ronnie
Conte, Karen	Hsiung, Tony	Murphy, Louise	Thurecht, Sonia
Cooney, Michael	Hughes, Pauline	Obersteller, Elizabeth	Totney, Andrea
Corliss, Wendy	Jamieson, Susan	O'Connell, Jane	Trotter, Sue
Cotter, Jane	Jenkin, Peter	O'Kane, Carmel	Truscott, Jane
Day, Lynne	Jennings, Natasha	O'Keefe, Elissa	Turner, Barbara
Dicker, Gill	Jones, Lynne	O'Maley, Tim	Wallis, Suzanne
Dickson, Lorraine	Jones, Mark	O'Toole, Kathryn	Walsh, Nicole
Dohrmann, Jayne	Joyce, Sheree	Panek-Hudson, Yvonne	Wendt, Kim
Douglas, Bettina	Keast, Keryn	Panizza, Natalie	Williams, Suzanne
Duggan, Kerrie	Kotz, Jayne	Parle, Niki	Wilson, Jane
duKamp, Adele	Langman, Diane	Patterson, Wendy	Woodward, Shannon
Dwyer, Kariene	Laurie, Leanne	Perks, Jo	Wright, Leanne
Edwards, Julie	Lee, Anna	Pollock, Kym	York, Jane
Edwards, Tracy	Lee, Fran	Poole, Lee	
Everett, Iain	Leidel, Stacy	Pratt, Mark	

*This list is comprised of individuals who completed this research and provided a valid consent to have their names published as contributors to the validated Australian metaspecialties.

process in relative isolation from other members (Turoff 1972, Bolger & Wright 2011). The experts used for consensus in the USA experience were representatives of major nursing organizations, whereas our approach used mostly nursing clinicians working at the profession's vanguard. There are approximately 205,000 NPs in the USA (American Association of Nurse Practitioners 2015). Given the relative jurisdictional differences, we consider

our approach appropriate given the size of the Australian NP population. It is possible the consensus approach described in this study may be more appropriate for use in those jurisdictions with smaller NP populations (e.g. New Zealand, Ireland, Canada), if a similar aim is desired.

The demonstration of expertise is a key aspect of the methodology, which contributes to its internal and external



Figure 2 The validated Australian nurse practitioner metaspécialties.

validity (Okoli & Pawlowski 2004, Linstone & Turoff 2011). Some might argue 12 months' post-NP endorsement experience is insufficient to demonstrate the expertise required for participation in Delphi research. Our panel consisted of expert clinicians with a mean of 27 years' nursing experience, who as a condition of their NP endorsement were required to demonstrate three years' advanced nursing practice skills, knowledge and expertise. We feel one of the key strengths of this study and of the Australian NP profession, are the years of nursing experience and expertise brought to the profession before achieving endorsement.

It was interesting to note a validated annual nursing registration question used in this survey regarding the principal area of employment resulted in a large proportion of participants choosing 'other.' This may reflect NPs identifying with specialty fields described in the CLLEVER study (Gardner *et al.* 2014) or reflect difficulties in describing the 'trans-boundary' models where many operate (Bail *et al.* 2009, Centre for International Economics 2013). Such models of NP clinical care provision bridge the continuum between hospital and community settings. Data from this research show there is a new and growing NP workforce working outside traditional emergency and admitted care settings. This has health workforce funding and redesign implications and would benefit from further exploration. Refinement of nursing workforce data collected in annual surveys conducted by the NMBA might lend greater insight into these issues.

This metaspécialty taxonomy informs forthcoming research into a specialist learning and teaching framework for Australian NP students. It is anticipated such a framework will provide greater consistency, capability and transportability in the NP profession.

Strengths and limitations

A major strength of this Delphi study is the large sample size providing good proportional representation from all Australian jurisdictions and high response rate maintained throughout three rounds. Twenty percent of the total eligible population were represented at the time of completion ($n = 197/966$). Although convenience and snowball sampling do not ensure a representative sample, the exceptional sample size contributes to reliable participant representation and study rigour. Keeney *et al.* acknowledge 'no specific guidelines exist for acceptable response rates in Delphi studies,' but suggest that a 70% response rate or greater across the iterations in a traditional Delphi approach ensures study rigour (2011). Gill *et al.* (2013) published an online Delphi protocol paper conducted similarly to this research, whose response rate was greater than 85% (compared with our greater than 92% response rate) across all iterations. It is possible an online, as opposed to paper-based, Delphi provides superior response rates.

Although some (Sackman 1974, Keeney *et al.* 2001) have voiced concern around creating a 'self-fulfilling prophecy' in the first round of a modified Delphi, care was taken to ensure rigour with this approach. The literature review and consensus-building technique used by Gardner *et al.* (2013a) informed the proposed metaspécialties in the first round of this Delphi study. It approximates Landeta *et al.*'s (2011) description of a 'hybrid Delphi', which provides opportunity for improved content and face validity. Our modified Delphi method resulted in two proposed metaspécialties, which initially had high majority opinion, remaining unvalidated at the conclusion of this research. This supports our assertion pre-determined information provided in this modified Delphi approach did not impact the ability of participants to influence group opinion. In addition, a great strength of this study is its extensive reporting of constructs not achieving consensus. Few published Delphi studies report the rationale for items on which there is dissensus, which may adversely affect rigour. Finally, the CVI and McNemar's Test for Change provided a robust definition of consensus by establishing majority opinion and stability of participant response through time.

Although eligibility criteria and recruitment methods for this study were well defined and encompassing, it is possible the Australian College of NP membership were over-represented, as its website and member emails were used as the primary means for recruitment. Unfortunately, this was unavoidable due to restricted access to a national population database of endorsed NPs.

At the outset of round 2 participants were informed there would be a maximum of three rounds in the study, due to high levels of majority opinion initially seen across all six of the proposed metaspécialty constructs. We did not anticipate there would be instability in majority opinion between rounds two and three for some metaspécialties. Data suggest there may have been better clarity and subsequent consensus surrounding the CPLTC and APC constructs if a fourth round had been performed. It is possible neither of these constructs are in fact, metaspécialties. This discrepancy may be a reflection of the applied method, or simply reflect sample bias.

Conclusion

This was a robust modified Delphi study with a large sample size, high response rates between iterations and broad representation across a diverse array of Australian NP experts. This study validated four of six proposed metaspécialties. The validated metaspécialties provide a framework for improved definition and scope for a generalist and specialist NP role. Combined with forthcoming Delphi research validating clinical practice standards for each metaspécialty, an education framework encompassing both specialist and generalist learning and teaching will be explored. This may provide greater flexibility and transportability of the profession and may enhance opportunities for cross-professional learning, mentorship and consumer understanding.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (<http://www.icmje.org/recommendations/>)]:

- substantial contributions to conception and design, acquisition of data or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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Appendix i – Published Manuscript from Chapter 7

The use of advanced web-based survey design in Delphi research

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Abstract

Aim: A discussion of the application of metadata, paradata and embedded data in web-based survey research, using two completed Delphi surveys as examples.

Background: Metadata, paradata and embedded data use in web-based Delphi surveys has not been described in the literature. The rapid evolution and widespread use of online survey methods imply that paper-based Delphi methods will likely become obsolete. Commercially available web-based survey tools offer a convenient and affordable means of conducting Delphi research. Researchers and ethics committees may be unaware of the benefits and risks of using metadata in web-based surveys.

Design: Discussion paper.

Data sources: Two web-based, three-round Delphi surveys were conducted sequentially between August 2014 - January 2015 and April - May 2016. Their aims were to validate the Australian nurse practitioner metaspecialties and their respective clinical practice standards. Our discussion paper is supported by researcher experience and data obtained from conducting both web-based Delphi surveys.

Implications for nursing: Researchers and ethics committees should consider the benefits and risks of metadata use in web-based survey methods. Web-based Delphi research using paradata and embedded data may introduce efficiencies that improve individual participant survey experiences and reduce attrition across iterations. Use of embedded data allows the efficient conduct of multiple simultaneous Delphi surveys across a shorter timeframe than traditional survey methods.

Conclusion: The use of metadata, paradata and embedded data appears to improve response rates, identify bias and give possible explanation for apparent outlier responses, providing an efficient method of conducting web-based Delphi surveys.

KEYWORDS

Delphi technique, embedded data, ethics, metadata, nursing, nursing research, paradata, response rates, survey design, web-based

1 | INTRODUCTION

Delphi research has transformed since its introduction as an empirical research approach by Dalkey and Helmer in the 1960s (Dalkey & Helmer, 1962). It is widely used among the health professions, as

well as social and political sciences, and is classically used as a method to achieve consensus on research or policy questions. The key features of a Delphi process are the use of panel experts who provide anonymous feedback on a research question in isolation from one another through iterative survey rounds (Keeney, Hasson,

& McKenna, 2011). Many methodological variations have been applied, from the classical form aiming to achieve consensus using an open-ended question posed in the first round (Dalkey & Helmer, 1962) to the Reactive Delphi (McKenna, 1994), where information obtained through a prior structured process informs panelist decision-making, to the Policy Delphi, which promotes the generation of divergent ideas (Turoff, 2002).

The emergence of the Internet and refinement of survey technology has changed the application of Delphi methodology. Postal survey distribution is quickly being replaced by emailed surveys, and online surveys are now being used to collate data to constrain costs, as well as to improve time taken to undertake subsequent rounds (Donohoe, Stelfox, & Tennant, 2012; Snyder-Halpern, Thompson, & Schaffer, 2000). Online surveys can now be seen changing the iterative Delphi process itself, with "real-time" Delphi methods providing immediate online feedback to panelists without demarcated rounds (Cates et al., 2015; Gordon & Pease, 2006). Delphi research conducted using online surveys has been shown to reduce costs, assist with data analysis and potentially improve panelist attrition across rounds (Bromley, 2015; Gill, Leslie, Grech, & Latour, 2013). Overall, the use of online surveys has been shown to be an effective method for conducting Delphi research (Colton, 2002) and is gaining popularity to the point that administration of paper-based formats will likely become obsolete (Hunter, 2012).

There are advantages of conducting Delphi research using online survey methods that are not yet fully described in the literature. This discussion paper begins with background information contextualizing the current online survey environment. It then illustrates various applications of metadata, paradata and embedded data used in two web-based Delphi surveys informing the Australian nurse practitioner metaspécialties and associated clinical practice standards (Gardner, Gardner, Coyer, Gosby, & Helms, 2016; Helms, Gardner, & McInnes, 2017). The observations and experiences reported here about web-based Delphi surveys may assist in planning future research using online survey tools.

1.1 | Background

Whether online or paper based, many researchers experience problems associated with poorly designed surveys. Such problems include the introduction of sampling or non-sampling errors through non-response resulting in poor representativeness of the study population, poorly worded questions resulting in erroneous panelist responses and panel attrition as a result of response fatigue (Bautista, 2012; Whitehead, 2007). There is an entire body of literature dedicated to the appropriate development and application of survey design, which assists in safeguarding reliable solutions to a particular research question (Edwards et al., 2009; Spector, 2013). Numerous web-based survey tools (e.g. Qualtrics, SurveyMonkey, Google Forms and SurveyGizmo) are now commercially available. More complex versions (usually requiring additional payment) tend to provide enhanced data analysis, allow for an unrestricted number of survey participants, offer diverse survey distribution options, are able to

Why is this research or review needed?

- Paper-based surveys are becoming obsolete and are being replaced with online methods.
- The rapid evolution and widespread use of online survey methods is due to their affordability, features and flexibility compared with paper-based formats.
- No known nursing research describes the role, implications for use, or comprehensively defines metadata, paradata and/or embedded data as applied to web-based Delphi surveys.

What are the key findings?

- The use of metadata can be used to identify survey bias through non-response and provide rationale for outlier responses in web-based Delphi surveys.
- The use of paradata and embedded data appears to improve the survey experience for Delphi participants and potentially reduces panel attrition.
- A novel method of efficiently conducting six concurrent Delphi surveys under the umbrella of a single research project is presented.

How should the findings be used to influence research?

- Researchers and ethics committees should consider the benefits and risks of using metadata for web-based survey methods.
- Further study is required to determine the impact metadata, paradata and embedded data use have on Delphi methodology and provide clarification on acceptable response rates for web-based Delphi surveys.

export data in multiple formats and provide a more customized participant survey experience (Holloway, 2012).

1.1.1 | General considerations for online surveys

Although such online survey tools are helpful, they do not negate the need for thoughtful and informed application of survey methodology. The CHERRIES guidelines were published to assist researchers in reporting results of online surveys, which may better account for sample representativeness and ethical reporting requirements (Eysenbach, 2004). Importantly, there are under-acknowledged ethical risks associated with the rapid evolution of online surveys. Ethics committees may be under-prepared for additional privacy and off-shore data storage considerations not seen in traditional paper-based survey design (Buchanan & Hvizdak, 2009). In addition, the literature suggests that there are unique survey design and non-response considerations if targeting participants who are nurses or other

healthcare professionals (Cho, Johnson, & VanGeest, 2013). For example, personalization of survey invitations appears to increase response rates in physicians (VanGeest, Johnson, & Welch, 2007), whereas it appears to have no effect in nurses (VanGeest & Johnson, 2011). Finally, a well-cited concern of online surveys is the verified identity of participants providing responses cannot be guaranteed, as opposed to face-to-face techniques such as focus groups (Brüggen, 2009). Such risks might be mitigated through the use of individualized survey links and passwords, but such options require a level of technical expertise that may be beyond casual researchers or survey participants themselves.

1.1.2 | Web-based Delphi surveys

For the purposes of this discussion paper, we use the term: "web-based Delphi survey" to describe an iterative method whereby data are aggregated using a commercially available online survey tool over several rounds (Table 1). The use of computer and web-based survey technologies to support the application of Delphi research is well described (Donohoe et al., 2012; Holloway, 2012). Computers have been used to conduct Delphi research as: "a method for structuring group communication processes" since the mid-1970s (Turoff & Hiltz, 1996, p. 57). However, it was not until much later that Delphi research using a web-based survey method was first described by Colton (2002), who validated an instrument supporting

adult learning principles in distance education. Since her introduction of the method, web-based Delphi surveys have increasingly been used as a means for collating data (Chang, Gardner, Duffield, & Ramis, 2010; Marsden, Dolan, & Holt, 2003; Palermo et al., 2016).

1.1.3 | Panel response in web-based Delphi surveys

Research suggests that panel attrition across Delphi iterations due to panel fatigue is one of the biggest contributors to bias seen in the methodology, especially in studies with larger participant numbers (Foth et al., 2016; Williams & Webb, 1994). With the evolution of web-based Delphi surveys, a fresh look at reducing panel attrition may be needed. It is quite possible that the benefits seen with web-based Delphi survey methods decrease panel fatigue and subsequent attrition. A recent meta-analysis of online surveys (exclusive of web-based Delphi surveys) indicates that paper-based surveys continue to demonstrate better response rates than online surveys (Cho et al., 2013). These findings contrast with the more recent observation that online surveys tend to have a higher percentage of questions answered completely and correctly compared with mailed surveys (Dykema, Jones, Piché, & Stevenson, 2013). This finding likely reflects the increasing use of online survey designs that force participants to respond to each survey question before advancing to the next, which is referred to as a "completeness check" (Eysenbach,

TABLE 1 Technical definitions^a

Adaptive questioning	An automated process of adapting a web-based survey to display individual questions in a manner dependent on previous individual participant responses. It may allow certain questions to be displayed, mask others and display individual questions differently depending on individual answers. In addition, metadata, paradata and/or embedded data can be used to enhance adaptive questioning
Embedded data	Data <i>actively</i> generated by participants (e.g. individual responses provided during a web-based survey) or the researcher (e.g. participant names) that can be used to personalize web-based survey email invitations and enhance question logic in future surveys. Data are virtually attached to individual participant profiles in a web-based survey platform
Internet protocol (IP) address	A unique identifier, in the form of a group of numerals separated by full stops (e.g. . . .), indicative of an individual computer or device (e.g. smartphone and tablet router) connected to a computer network and/or the Internet
Internet service provider (ISP)	A company or organization providing services facilitating access to the Internet. Such services may include access to the Internet itself, email and the provision of a physical storage location for websites
Metadata	Data <i>automatically</i> generated by individual participants at the outset of a web-based survey, which include information such as IP addresses and user-agent strings
Online survey	An "electronic questionnaire administered on the Internet or an Intranet" (Eysenbach, 2004), where a participant provides data at a single point in time
Paradata	Data <i>passively</i> generated by individual participants as they respond to web-based surveys, such as length of time needed for individual questions, survey completion times, date and hour of day completed
Phishing email	Emails which may appear to be spam, but are designed to capture personal information for fraudulent use
Spam email	Individual or large batches of unsolicited emails sent over the Internet
User-agent strings	A type of metadata demonstrating how an individual participant <i>accessed</i> a web-based survey. This might include information such as which operating system (e.g. Windows or Mac), web browser (Internet Explorer, Safari, Chrome, etc.), device (e.g. desktop or tablet device) and screen size used
Web-based Delphi survey	The application of an iterative Delphi method where data are aggregated using a commercially available online survey tool over several rounds

^aSeveral definitions exist for the above terms and may vary slightly depending on their application (Kreuter, 2013, p. 3). These definitions have been adapted specifically for the methodology discussion paper presented here.

2004). Overall response rates for online surveys in nurses are typically lower than 60% (VanGeest & Johnson, 2011). However, in general Delphi research, Keeney et al. (2011) state a response rate of 70% or greater is acceptable irrespective of the survey mode, which is higher than for online surveys. Recently conducted research using web-based Delphi surveys demonstrate response rates far in excess of these numbers (Gill et al., 2013; Helms et al., 2017). The higher response rates seen in web-based Delphi surveys, versus the lower online survey response rates in nurses and that quoted by Keeney et al. (2011), may be explained by methods Delphi researchers implement to reduce panel fatigue. Such methods may relate to ensuring participants are well-informed of the process, a personalized approach is used to create buy-in, and the fact Delphi panelists generally have a vested interest in the outcome and are more likely to be engaged with the research (Keeney, Hasson, & McKenna, 2006; Landeta, 2006; McKenna, 1989). Finally, the use of social reward by publishing the names of consenting expert panel members at the end of a Delphi study is suggested to enhance survey response rates and decrease panel attrition across rounds (Rowe & Wright, 2011).

In addition to the above strategies that moderate for low response rates and panel attrition, what may be under-appreciated is the opportunity offered by implementing a web-based Delphi survey that tips the balance in favour of using the method over a paper-based approach. Many findings supporting informed general survey design (Hunter, 2012) should be replicated in web-based Delphi research. As a result of applying proven design principles to web-based Delphi surveys, additional benefits may be seen, including a wider reach of expert participants contributing to the process, a shorter timeframe to study completion and cheaper study costs than a mailed pen-and-paper approach (Cowman et al., 2012; Gill et al., 2013). In addition, advanced web-based survey design allows for the embedding of explanatory videos and other multimedia in the survey. This may be useful in engaging participants by acknowledging differing learning approaches to explain the Delphi research process and facilitating feedback of information across rounds (Stellefson, Alber, Paige, Castro, & Singh, 2015). Such benefits may be counterbalanced by the fact some participants have limited confidence with information technology (IT) platforms, experience technical "glitches" (Guise, Chambers, Välimäki, & Makkonen, 2010) and have poor access to technology, with outdated hardware, software or unreliable Internet access (Donohoe et al., 2012).

1.1.4 | Metadata, paradata and embedded data

Additional considerations for improving web-based Delphi survey response merit exploration given the survey design literature. The use of reminder systems through emailed notifications and offering alternate means of survey completion (e.g. using both a web-based and alternate format such as fax, email or postal surveys) may enhance response rates and should be considered when using a web-based Delphi survey (Guise et al., 2010). In addition, there is a distinct lack of nursing literature relating to how metadata, paradata

and embedded data can be used during a web-based Delphi survey to identify bias and enhance online response and completion rates. Although there may be inconsistencies regarding the proper usage of the term, metadata broadly refers to: "data generated about data" (Kreuter, 2013, p. 2). Metadata is an umbrella term that includes information generated at the outset of an online survey. It identifies participant Internet protocol (IP) addresses (helping to identify participant location) and information about the software and operating system (referred to as user-agent strings) used to access the survey (Callegaro, 2013). None of this information is directly entered into the online survey by the individual, but is passively generated at the outset of a participant beginning the survey. Researchers using common commercially available web-based survey tools have the ability to record such metadata, and it has been a source of considerable concern from ethical and privacy perspectives in the telecommunications arena (e.g. Buchanan & Hvizdak, 2009; Clarke, 2015).

A subset of metadata, paradata, is subtly different and refers to information passively generated by participants as they respond to online surveys (Dykema et al., 2013). For example, paradata might reflect response times or completion rates for individual items in a survey and is generally used as a strategy to improve questions in a survey and better understand the participant experience, whereas metadata might address the overall survey design (Kreuter, 2013).

Finally, embedded data are individual participant characteristics and/or prior participant choices, which can be used to generate an individual participant profile informing a customized survey experience (Qualtrics 2016b). Characteristics such as age, sex or other demographic variables can be virtually attached to a participant prior to them taking an online survey to influence "adaptive questioning" (Eysenbach, 2004, p. 4). Although there may be differing names for adaptive questioning depending on the web-based survey provider, all essentially work the same way. Adaptive questioning complements embedded data by automating how and which survey questions are shown. The subsequent flow of questions is influenced by participant responses to questions asked *during* the process of taking the survey. Embedded data become increasingly useful in web-based Delphi research because of the way it personalizes and shortens the iterative process by embedding prior responses into subsequent survey rounds.

The purpose of this discussion paper is to disseminate observations from the conduct of two web-based Delphi surveys and demonstrate how metadata, paradata and embedded data were used to improve the quality of the survey and the overall participant experience. Through their use, the researchers were able to identify survey bias, enhance data quality and possibly contribute to enhanced participant engagement that lead to decreased attrition. A novel method for simultaneously conducting multiple web-based Delphi surveys nested under a single research project is also presented. Although our surveys were not looking to directly measure the impact of metadata, paradata and embedded data, we suggest the discussion below might springboard future research into how these data enhance web-based Delphi surveys.

1.2 | Data sources

Two web-based, three-round Delphi surveys were conducted sequentially between August 2014 - January 2015 and April to May 2016. These surveys were used in a larger project whose aim was to validate the Australian nurse practitioner metaspécialties and clinical practice standards, and their methods and results have been previously described (Gardner et al., 2016; Helms et al., 2017). Recruitment for both surveys was accomplished using a website and emailed invitations, with a combination of convenience and snowball sampling. Participants were eligible to participate in either survey if they held endorsement as a nurse practitioner by the Nursing and Midwifery Board of Australia for a minimum of 12 months. In both surveys, Qualtrics, a commercially available web-based survey tool, was used. Surveys were piloted on the most recent versions of common web browsers (e.g. Internet Explorer, Safari, Chrome), as well as on desktop, tablet and smartphone devices. Participants were aware their responses would be confidential to the researcher, but anonymous to others participating in the surveys. There was a 95% weighted response rate across rounds during the first Delphi survey (DS1) and a 92% weighted response rate during the second Delphi survey (DS2). Our findings are supported by researcher experience and data obtained from the conduct of both Delphi surveys. Paradata and embedded data from DS1 were used to inform the conduct of DS2. During DS2, metadata, paradata and embedded data were used to their fullest capacity to design and conduct six simultaneous web-based Delphi surveys nested under the umbrella of a single research project.

1.2.1 | Paradata

During DS1, paradata were collected reflecting survey start times, time needed to complete each iteration and date of survey start and completion. Data were downloaded to Microsoft Excel and analysed using frequencies and averages. Analysis revealed each iteration of DS1 required less participant time than the preceding round. This was expected, given the first round of a Delphi survey is generally qualitative in nature and frequently requires the greatest degree of analytical processing by participants (Powell, 2003). In addition, time required to conduct each round decreased because items achieving a pre-determined level of consensus were removed prior to the next round. The negative impact of time-poor clinicians on survey response rates has been described (Keeney et al., 2006; VanGeest & Johnson, 2011). Paradata from DS1 were used to inform participants in DS2 of the expected time needed to complete each round. We felt that this information was important for participants for planning purposes, due to the fact most participants were busy clinicians.

1.2.2 | Metadata

Metadata enables researchers to track non-responses and outlier responses with a level of detail not possible with paper-based surveys. During DS1, we noted a discrepancy between the number of

persons expressing interest in the study after reviewing the participant information letter and those actually participating in the first round of the study once survey invitations were sent. This observation was replicated at the outset of DS2 and has been noted elsewhere (Cole, Donohoe, & Stellefson, 2013). In addition, during DS1, a significant portion of researcher time was spent on sending individualized reminder emails containing survey links to participants. This was the primary reason (other than the intersection of a large public holiday with our research) for delays between each round and contributed significantly to the length of time it took to conduct DS1.

The Qualtrics survey tool can identify whether individual survey invitation emails have been successfully sent and delivered to an email address. However, after follow-up due to non-response, many round 1 DS1 participants indicated that they had either never received the survey invitation email or, in a minority of cases, the email was delivered to the participant's "spam" email inbox. During round 1 of DS2, it again became apparent that survey invitation emails were not being received by some participants, thereby increasing the risk for non-response bias. Interestingly, the Qualtrics survey platform indicated that no emails had "bounced" when sent to participants in either DS1 or DS2, which suggests the email addresses supplied by participants had been entered correctly. The research team identified it was possible that many of the initial survey invitation emails from DS1 and DS2 had been blocked by the participant's Internet service provider (ISP).

During DS2, participants were presented with clinical practice standards and asked to rate the relevancy of each against a 4-point Likert scale (Not, Somewhat, Quite or Highly Relevant). During round 1, we noted outliers in sample data, whereby individual participants indicated *all* of the clinical practice standards for their elected metaspécialties were "Not" relevant. Given that most of the participants had some variance in their individual relevancy ratings during DS2 and outliers had no variance, a follow-up email was carefully constructed and targeted to outlier participants to assess perceived quality of the survey experience. The follow-up email was constructed in a manner ensuring outlier participants did not perceive their expert judgement was being questioned. In 100% of the cases, participants indicated that they had only seen one or two possibilities ("Not" or "Somewhat" relevant) on the survey Likert scale, with the remaining options, "Quite" or "Highly" relevant not visible on their computer screens.

To verify why survey invitation emails had not been received and identify issues surrounding outlier responses, metadata were collected in the form of IP addresses and user-agent strings (e.g. web browser and operating system used) during DS2. Metadata from outlier responses were de-identified from individual participant names and analysed using a suite of commercially available websites. IP addresses were analysed using a website (<http://mxtoolbox.com>) to identify which city and state participants had conducted the survey, as well as the ISP server identity of participants. This was done to verify if public sector ISPs were blocking survey invitation emails and contributing to survey response bias. Analysis of IP address metadata of those participants stating they had not

received survey invitation emails through the Qualtrics mailing system revealed this phenomenon occurred almost exclusively when the email addresses supplied belonged to large public sector or corporate email servers.

User-agent strings were analysed using a different website (<https://browscap.org/ua-lookup>) to identify the hardware operating system (e.g. Microsoft Windows, Apple OS or smartphone-based operating systems), Internet browser used (e.g. Internet Explorer, Safari or Chrome) and screen size used by participants. This information was used to identify if outlier survey responses were due to user error resulting from issues relating to operating system, survey design, Internet browser or screen size. In all cases where participants appeared to have entered outlier relevancy rating data, analysis revealed it was related to use of outdated versions of the Internet Explorer web browser on the Microsoft Windows operating system.

1.2.3 | Embedded data

Careful application of embedded data facilitates personalized responses and saves time for the researcher. A feature of classically described Delphi research is reminding individual participants of their ratings from previous rounds to assist in their deliberations (Keeney et al., 2006). This may be important where there are significant time gaps between Delphi rounds and serves as a helpful reminder of their prior responses compared with group responses. It may be an easy manual exercise to confidentially remind individual participants of prior responses with smaller survey samples, but in both DS1 and DS2, our sample sizes exceeded 200 participants. During DS1, we attached participant names and previous relevancy ratings virtually to individual survey profiles. These embedded data were used to create personalized survey invitation emails prior to each round using Qualtrics' mail merge function, which correlates names to individual survey invitations. Embedded data reflecting prior individual participant responses were correlated in the same manner through subsequent rounds. This confidential procedure, along with adaptive questioning, was used to determine how and which survey questions were shown depending on an individual's previous answers, rather than requiring participants to skip questions manually. A highly individualized web-based survey experience was created by only showing questions relevant to the individual.

Due to the success of the applied embedded data procedure in DS1, the same approach was used in DS2. In addition, a novel method of simultaneously conducting six nested web-based Delphi surveys under a single research project was implemented based on our prior success of using embedded survey data. During DS2, participants were asked to choose a maximum of two metaspécialties. These data were embedded into individual survey profiles so that subsequent iterations of our web-based Delphi survey only showed their elected metaspécialties. Their responses were used to automatically determine which clinical practice standards were validated by the individual participant.

2 | DISCUSSION

Overall, the use of paradata, metadata and embedded data appears to be important sources of information that improve quality of web-based Delphi surveys and their role in the method has not been previously described. Lessons learnt from DS1 informed our application of the Delphi method in DS2 and contributed to an enhanced survey experience for participants resulting in very high response rates, the identification of non-response bias and identified rationale for outlier data. The use of embedded data to conduct, simultaneously, six nested web-based Delphi surveys under the umbrella of a single research project has never been described in the Delphi literature and was an effective means to quickly and efficiently conduct Delphi research. However, we also uncovered some significant issues that require consideration when conducting online surveys more generally.

When conducting any online survey, our findings suggest large corporate and public sector ISPs may accept emailed survey invitations, but flag them as spam emails instead of bouncing them back to the sender. In this manner, neither the researcher nor the participant would be aware of failed survey invitation delivery. We surmised this was a large contributing factor to non-response seen with initial survey invitations to our web-based Delphi surveys and may contribute significantly to non-response bias seen in online surveys. It is well-known that mass email distribution using an automated process may never reach a participant's email inbox if flagged by an ISP as potential spam (Qualtrics 2016a, SurveyGizmo 2016, SurveyMonkey 2016). It is important to understand that local ISP policies may implement server settings that poorly discriminate between spam (inclusive of junk and malicious phishing emails) and legitimate research invitation emails. The reason why some emails are flagged as spam and not bounced is because the automated process of replying to suspected phishing activity flags that email address as authentic. Such email addresses can then be sold by those conducting phishing activity to a third party, or use the email for other nefarious purposes.

Local ISP spam policies are heavily influenced by international laws regarding mass email communications, to which researchers are accountable and of which ethics committees should be aware (Australian Communications and Media Authority 2016). Although certain exemptions from Australian spam laws for educational institutions exist, our survey invitation emails were sent through automated Qualtrics server facilities not associated with an ".edu.au" domain name. Given approximately 80% of participants in both DS1 and DS2 worked in the Australian public healthcare sector, the majority of blocked survey invitation emails were associated with the public sector, contributing to sampling error in that population. Analysis of IP addresses gained from participant metadata during DS2 verified survey invitation; emails adhering to bulk email limits (generally less than 50 emails) sent from the researcher's ".edu.au" email address were not blocked by public sector or corporate ISPs because they were recognized as being from an educational institution. This cut down significantly on researcher time used to follow up non-

response across rounds in DS2. We consider it one of the primary reasons for the short length of time needed to conduct the research and partly responsible for low panel attrition across iterations. Planning for the collection and analysis of metadata, along with reporting the number of emailed, started and completed survey invitations in Delphi research appears to be an important quality consideration when using online survey methods (Eysenbach, 2004). It may flag the issue of failed delivery of survey invitations and provide better understanding of the impact sampling bias has during web-based Delphi surveys. If the researcher is aware participants are using email addresses belonging to the public sector or large corporations, it may prove beneficial to ask they nominate a personal email address, or approach their ISP to have the online survey domain name added to a "safe sender" list.

Regarding the application of online surveys to Delphi research specifically, although we did not directly measure the impact of embedded data on participant survey experience, anecdotal data provided by participants lead us to reason an individualized approach was highly effective in enhancing survey engagement in large samples using web-based Delphi surveys. The use of embedded data automated the process of personalizing survey invitation emails, provided reminders of individual participants' previous responses across rounds and facilitated the use of adaptive questioning to create an individualized flow of survey questions. This assertion is supported by the high response rates in our web-based Delphi surveys (Gardner et al., 2016; Helmes et al., 2017), with 88% or greater response rates seen across rounds in both DS1 and DS2. These response rates far surpass rates in general Delphi research (Keeney et al., 2011). Interestingly, it appears the expected 60% response rate quoted by others in general online surveys (Guise et al., 2010; VanGeest & Johnson, 2011) underestimates what is optimum for well-designed web-based Delphi surveys. Our response rate may be a reflection of embedded data use, although the importance of having expert panelists involved with interest in the subject matter should not be undervalued (McKenna, 1994). However, we suggest our embedded data approach is superior in creating personalized Delphi experiences and mirrors advice stating an important aspect of improving Delphi survey response rates is a "personal touch" with Delphi participants (McKenna, 1989, p. 769). Perhaps, an important aspect of using embedded data and adaptive questioning for web-based surveys is informing participants they are using a "smart survey." Feedback from our DS2 pilot survey indicated that panelists were not aware questions and multiple-choice responses would change, depending on previous answers. These findings suggest that panelists using a web-based survey method are accustomed to static surveys, which do not evolve with answers supplied by panelists. Providing information on smart survey design at the outset of web-based Delphi surveys using embedded data and adaptive questioning may be important information required in participant information letters.

Regarding the use of web-based Delphi surveys in nurse practitioners, our use of paradata, in combination with IP metadata analysis, identified a significant portion of panelists completed surveys during normal weekday business hours at their respective

workplaces. These findings and the fact that most participants in both DS1 and DS2 indicated they were clinicians underline the importance of creating web-based surveys that can be saved and returned to later if faced with workplace distractions. Information about the expected survey response times for each round is needed by busy clinicians planning involvement, as they require protected time to facilitate analytical, as opposed to heuristical, decision-making that enriches Delphi research. The first round of a Delphi survey generally requires the greatest amount of analytical thought and time to complete; we argue the importance of participants understanding the process generally gets easier with each round. Providing evidence each Delphi round requires shorter amounts of time may be an important psychological effect in motivating participants and reducing attrition.

The use of a web-based Delphi surveys provided an unexpected benefit in clarifying rationale for outlier data through user-agent strings obtained from survey metadata. User-agent strings identified the diverse means by which participants accessed our surveys (e.g. through differing operating systems, web browsers and screen sizes). Outlier data were identified in DS2 through individual participants demonstrating non-variance in their responses, which contrasted heavily with the remaining expert panel. When participant surveys were correlated with user-agent strings, we discovered that outlier data were exclusively related to the use of outdated web browsers. Despite pilot testing and in-built survey tools that reduced the risk of surveys being displayed incorrectly (depending on device or web browser used), inappropriate survey display was still a source of frustration for a minority of Delphi participants. Advising the use of up-to-date web browsers is highly recommended for online surveys.

Our outlier data findings, paired with participant metadata, identified most were contributing to surveys whilst in the workplace. This created an interesting ethical conundrum. We identified some participants were using outdated web browsers in their workplaces. Our research indicated 90% of participants were clinicians, which implies a minority were accessing our surveys using outdated web browsers in their clinical workplaces. In general, the use of outdated web browsers may expose sensitive information held by organizations through known security vulnerabilities (Keizer, 2016; Microsoft 2016). When planning future research using a web-based survey method, researchers should be aware that the use and analysis of metadata and paradata may identify such security vulnerabilities and pose significant ethical considerations on how this information is relayed back to participants and/or organizations.

2.1 | Implications for nursing

Researchers and ethics committees should consider the benefits and risks of metadata use in web-based survey methods. Web-based Delphi surveys using paradata and embedded data may introduce efficiencies that improve individual participant survey experiences and reduce attrition across iterations. These data may also be used to explain outlier responses and can be used to identify non-response bias. Use of embedded data allows the researcher to

conduct multiple web-based Delphi surveys nested in a single research project simultaneously, across a shorter timeframe than traditional survey methods.

3 | CONCLUSION

The use of metadata, paradata and embedded data merit further investigation of their role in enhancing survey response rates, identifying non-response bias and decreasing panel attrition when using a web-based survey design. There are significant ethical considerations when recording and using metadata that require further examination. Advanced web-based survey design using embedded data may assist in novel applications of the Delphi method, which may reduce the time taken to conduct rounds and improve the participant experience.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (<http://www.icmje.org/recommendations/>)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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Appendix ii – Frequency Tables of Panellist’s Rationale for Responses
in Delphi Survey 2

Care of Persons with Long Term Conditions														
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Relevant														
Reflective of generalist skill set in metaspecialty														
Will have increasing relevancy as role evolves														
Reflects KSE ¹ required of this metaspecialty														
Applies to a wide range of specialty areas														
Needs minor rewording														
Not Relevant														
Not relevant to metaspecialty definition														
Statement belongs in different metaspecialty														
Statement too specific														
Is relevant to specialty, not entire metaspecialty														
Statement not unique to metaspecialty														
Too advanced for entry-level practice														
Too aspirational for the profession														
Needs major rewording														
1. Knowledge, Skills and Expertise														

Aged and Palliative Care														
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Relevant														
Reflective of generalist skill set in metaspecialty														
Will have increasing relevancy as role evolves														
Reflects KSE ¹ required of this metaspecialty														
Applies to a wide range of specialty areas														
Needs minor rewording														
Not Relevant														
Not relevant to metaspecialty definition														
Statement belongs in different metaspecialty														
Statement too specific														
Is relevant to specialty, not entire metaspecialty														
Statement not unique to metaspecialty														
Too advanced for entry-level practice														
Too aspirational for the profession														
Needs major rewording														
1. Knowledge, Skills and Expertise														

Mental Health Care											
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11
Relevant											
Reflective of generalist skill set in metaspecialty											
Will have increasing relevancy as role evolves											
Reflects KSE ¹ required of this metaspecialty											
Applies to a wide range of specialty areas											
Needs minor rewording											
Not Relevant											
Not relevant to metaspecialty definition											
Statement belongs in different metaspecialty											
Statement too specific											
Is relevant to specialty, not entire metaspecialty											
Statement not unique to metaspecialty											
Too advanced for entry-level practice											
Too aspirational for the profession											
Needs major rewording											
1. Knowledge, Skills and Expertise											

Child and Family Health Care												
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11	12
Relevant												
Reflective of generalist skill set in metaspecialty												
Will have increasing relevancy as role evolves												
Reflects KSE ¹ required of this metaspecialty												
Applies to a wide range of specialty areas												
Needs minor rewording												
Not Relevant												
Not relevant to metaspecialty definition												
Statement belongs in different metaspecialty												
Statement too specific												
Is relevant to specialty, not entire metaspecialty												
Statement not unique to metaspecialty												
Too advanced for entry-level practice												
Too aspirational for the profession												
Needs major rewording												
1. Knowledge, Skills and Expertise												

Primary Health Care														
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Relevant														
Reflective of generalist skill set in metaspecialty														
Will have increasing relevancy as role evolves														
Reflects KSE ¹ required of this metaspecialty														
Applies to a wide range of specialty areas														
Needs minor rewording														
Not Relevant														
Not relevant to metaspecialty definition														
Statement belongs in different metaspecialty														
Statement too specific														
Is relevant to specialty, not entire metaspecialty														
Statement not unique to metaspecialty														
Too advanced for entry-level practice														
Too aspirational for the profession														
Needs major rewording														
1. Knowledge, Skills and Expertise														

Emergency and Acute Care										
Clinical Practice Standard:	1	2	3	4	5	6	7	8	9	10
Relevant										
Reflective of generalist skill set in metaspecialty										
Will have increasing relevancy as role evolves										
Reflects KSE ¹ required of this metaspecialty										
Applies to a wide range of specialty areas										
Needs minor rewording										
Not Relevant										
Not relevant to metaspecialty definition										
Statement belongs in different metaspecialty										
Statement too specific										
Is relevant to specialty, not entire metaspecialty										
Statement not unique to metaspecialty										
Too advanced for entry-level practice										
Too aspirational for the profession										
Needs major rewording										
1. Knowledge, Skills and Expertise										

Appendix iii – Delphi Survey 2 Completion Email

Dear \${m://FirstName}:

Thank you for successfully completing Delphi Survey 2!

We've had a great response, with 221 validated respondents completing Round 1 and 205 completing Round 2. In Round 1, participants were asked to choose 1-2 metaspecialties (MS) and then rate the relevancy of proposed MS clinical practice standards (CPS) established from prior research. In addition, participants were given the opportunity to propose alternate CPS for MS they selected. Although no additional CPS were suggested by participants in Round 1, there were several great examples given of practice activities which demonstrate how the CPS will operationalise. These will serve as great exemplars to support the CPS and MS framework in the final publically available document.

During Round 2, participants were given a short overview of general respondent feedback (provided in both graphical and statistical format) for their selected MS, as well as explanations for any changes proposed for each CPS based upon group feedback. Participant were then asked to rate the relevancy of the proposed and revised CPS.

After analysis of the Round 2 data, the following MS achieved consensus across **all** of their CPS, and have now been validated:

- Mental Health Care
- Primary Health Care
- Child and Family Health Care
- Aged and Palliative Care
- Care of Persons with Long Term Conditions

You had elected to provide feedback on one or two of the above validated MS CPS. Thank you for your contributions!

The research team will now concentrate on the **one** remaining CPS from **the Emergency and Acute Care (EAC) MS** that has not yet achieved consensus. Only those who had provided feedback during Rounds 1 and 2 for the EAC MS will continue on to a third round.

As a final note, we would like you to complete a brief 1-min online form to let us know if:

1. You consent to having your name published in the final published research
2. You would like a Continuing Professional Development Certificate

To Access the Form Click the Link Below:

[\\${!://SurveyLink?d=Consent and CPD Certificate}](#)

Or copy and paste the URL below into your internet browser:

[\\${!://SurveyURL}](#)

If you have any questions or concerns for this study, please contact:

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