# Compliance with Australian Orthopaedic Association guidelines does not reduce the risk of venous thromboembolism after total hip and knee joint arthroplasty: an observational study

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**SUPPLEMENTARY FILE 1**

**Supplementary Table 1: Additional description of prophylaxis up to 90 days**

| **VTE prophylaxis** | **Description**  | **N (%) or****Median (IQR)** |
| --- | --- | --- |
| Clexane (Enoxaparin) (N=1047/1837)Median (IQR) | ReceivedFirst dose  20mg 40mg 60-80mg 100-200mgDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 1047 (57.0%)51 (2.8%)980 (53.4%)10 (0.5%)4 (0.4%)42 (2.3%)0 (0,1)11 (5.0, 20.0)2 (1,3)63 (3.4%) |
| Fragmin (Dalteparin) Median (IQR) | ReceivedFirst dose (International Unit, IU)2500 IU5000 IU10000 IUDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 392 (21.3%)124 (6.7%)265 (14.4%)1 (0.1%)7 (0.4%)0 (0,1)10 (5.0, 19.0)2 (1,2)22 (1.2%) |
| Aspirin (acetylsalicylic acid)Median (IQR) | ReceivedFirst dose<100mg100mg150mg200mg / 250mg300mg>300 mgDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 869 (47.3%)13 (0.7%)532 (28.9%)29 (1.6%)3 (0.1%)273 (14.9%)1 (0.1%)23 (1.3%)2 (1,7)42 (34,90)2 (2,5)29 (1.6%) |
| Rivaroxaban Median (IQR) | ReceivedFirst dose10mg15mg20mgDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 160 (8.7%)129 (7.0%)5 (0.3%)13 (0.7%)20 (1.1%)6 (4,8)19.5 (13,30)0.5 (0.2,0.8)2 (0.1%) |
| Dabigatran etexilate Median (IQR) | ReceivedFirst dose110mg / 125mg150mg220mg / 300mgDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 11 (.6%)3 (0.2%)4 (0.2%)4 (0.2%)1 (0.1%)3 (1.0, 6.5)90 (90,90)NA0 |
| Warfarin (Vitamin K antagonist)Median (IQR) | Received (doses variable)Day commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis Recommenced preoperative medication  | 77 (4.2%)2 (1,6)90 (90,90)3 (2,4)3 (0.2%)69 (3.8%) |
| Unfractionated heparin Median (IQR) | ReceivedFirst dose (N=71)1500U /1600U5000U10000UvariableDose changed after 1st doseDay commenced Duration (days) Days break in prophylaxis  Number with disrupted prophylaxis  | 74 (3.9%)42 (2.5%)17 (0.8%)9 (0.8%)1 (0.1%)3 (0.2%)0 (0,1)1 (1,6)0 (0,1)1 (0.1%) |
| ApixabanMedian (IQR) | ReceivedFirst dose2.5mg5mg10mgDose changed after 1st doseDay commenced Duration (days)Days break in prophylaxis  Number with disrupted prophylaxis  | 10 (0.5%)6 (0.3%)2 (0.1%)2 (0.1%)08 (7,10)15 (15,90)NA0 (0%) |
| Sequential compression devices: ICP  | ReceivedDay commenced Duration (days) | 1410 (76.8%)0 (0,0)3 (2,4) |
| Sequential compression devices: Foot pumps  | Received Day commenced Duration (days) | 277 (15.0%)0 (0,0)4 (3,5) |
| Graduated compression stockings  | ReceivedDay commenced Duration (days)  | 1400 (76.2%)0 (0,0)23 (14,42) |

Supplementary Table 2: Prevalence of bleeding complications up to 90 days post-surgery

|  |  |  |
| --- | --- | --- |
| **Highest type of bleeding complications 1**  | **Joint related bleeding** †† | **Non-joint related bleeding** |
| Type 1 (no healthcare action) | 9 (0.5%) | 1 (0.1%) |
| Type 2 (overt bleed, healthcare provided) | 35 (1.9%) | 8 (0.4%) |
| Type 3 (major intervention, ICU admission / readmission / reoperation)  | 7 (0.4%) | 10 (0.5%) |
| Type 5 (Fatal) | 0 | 0 |
| TOTALS | 51 (2.8%) | 19 (1.0%) |
| **Time period of bleeding complications**  | **Joint related bleeding** | **Non-joint related bleeding** |
| During acute admission | 36 (1.9%) | 8 (0.4%) |
| Between acute discharge and 35 days | 14 (0.8%) | 11 (0.6%) |
| Between 36-90 days | 1  | N/A |
| TOTALS | 51 (2.8%) | 20\* (1.1%) |

†† Included one person who experienced two bleeding events: one during acute admission and another between acute discharge and 35 days (type 1 and 3)

Supplementary Table 3: Unadjusted associations between compliance with AOA VTE prevention clinical guidelines and symptomatic 90-day VTE

| **Variables** | **Total** | **No VTE,** **N (%)****(N=1789)** | **Symptomatic 90-day VTE, N (%) (N=48)** | **p-value** |
| --- | --- | --- | --- | --- |
| **AOA noncompliance**  |  |  |  |  |
| 1. Risk-stratified recommended prophylaxis

Non-compliant Compliant | 258 (14.0%)1579 (86.0%) | 252 (97.7%)1537 (97.3%) | 6 (2.3%)42 (2.7%) | 1.00 |
| 1. Recommended duration

Non-compliant  Compliant | 668 (36.4%)1169 (63.6%) | 665 (99.6%)1124 (96.2%) | 3 (0.4%)45 (3.8%) | <0.0001 |
| 1. Other general recommendations

Non-compliant Compliant | 1245 (67.8%)592 (32.2%) | 1207 (96.9%) 582 (98.3%) | 38 (3.1%)10 (1.7%) | 0.12 |
| AOA recommended prophylaxis (Compliant with i., ii & iii)Non-compliant Compliant | 1570 (85.5%)267 (14.5%) | 1529 (97.4%)260 (97.4%) | 41 (2.6%)41 (2.6%) | 1.00 |
| **Other factors** |  |  |  |  |
| VTE risk\* (N=1784)RoutineHigh  | 1554 (87.1%)230 (12.91%) | 1515 (97.5%)222 (96.5%) | 39 (2.5%)8 (3.5%) | 0.40 |
| Joint THATKA | 807 (43.9%)1030 (56.1%) | 797 (98.8%)991 (96.3%) | 10 (1.2%)38 (3.7%) | 0.001 |
| Routine DUS (N=1810)NoYes | 1467 (81.0%)343 (19.0%) | 1433 (97.7%)329 (95.9%) | 34 (2.3%)14 (4.1%) | 0.09 |
| History of previous VTE (N=1835)NoYes | 1690 (92.1%)145 (7.9%) | 1649 (97.6%)138 (95.2%) | 41 (2.4%)7 (4.8%) | 1.00 |
| Cement fixationNoYes | 664 (36.2%)1172 (63.8%) | 656 (98.8%)1132 (96.6%) | 8 (1.2%)40 (3.4%) | 0.004 |
| Neuraxial anaesthesia (N=1836)NoYes | 657 (35.8%)1179 (64.2%) | 645 (98.2%)1143 (96.9%) | 12 (1.8%)36 (3.1%) | 0.13 |
| Sequential compression device NoYes | 154 (8.4%)1683 (91.6%) | 151 (98.1%)1638 (97.3%) | 3 (1.9%)45(2.7%) | NA\*\* |
| Aspirin- 100-300mg per day NoYes | 1003 (54.6%)834 (45.4%) | 972 (96.9%)817 (98.0%) | 31 (3.1%)17 (2.0%) | 0.18 |
| Potent anticoagulation (LMWH, Warfarin, DOAC)NoYes | 355 (19.3%)1482 (80.7%) | 349 (98.3%)1440 (97.2%) | 6 (1.7%)42 (2.8%) | 0.3 |
| Early mobilisation (N=1834)NoYes | 458 (25.0%)1376 (75.0%) | 437 (95.4%)1349 (98.0%) | 21 (4.6%)27 (2.0%) | 0.004 |
| Tranexamic acid (N=1833)NoYes | 718 (39.2%)1115 (60.8%) | 700 (97.5%)1085 (97.3%) | 18 (2.5%)30 (2.7%) | 0.9 |
| **Continuous variables** |  | Mean | Mean | Mean |
| Age (years) |  | 67.2  | 68.8 | 0.22 |
| BMI |  | 30.7 | 33.3 | 0.05 |
| Surgical duration (hours) |  | 1.6 | 1.8 | 0.22 |

\*Excluding 53 people at high bleeding risk \*\*Chi square not performed due to low cell count

**Supplementary Table 4: Eligible factors included in the initial adjusted model**

|  |  |
| --- | --- |
| Type of factor | Description  |
| Compliance factors | * AOA non-compliance
 |
| Patient factors  | * Age
* Sex
* ASA score
* Presence of comorbid conditions (previous VTE, previous THA, heart disease)
* Current smoker
 |
| Surgical and care factors | * THA/TKA
* Public or private hospital
* Cement fixation
* Surgical drain
* Routine doppler performed
* Surgical duration
 |

1 Mehran, R. *et al.* Standardized bleeding definitions for cardiovascular clinical trials. *Circulation* **123**, 2736-2747, doi:10.1161/circulationaha.110.009449 (2011).