Thromboprophylaxie: Recommandations Européennes
European task force for prevention of perioperative venous thromboembolism

8 ESA members + 8 representatives from invited societies

• European Society of Intensive Care Medicine (ESICM): Jacques Duranteau
• European Association of Urology (EAU): guidelines manager, Karin Plass
• European Digestive Surgery (EDS): Linas Venclauskas
• European Hip Society (EHS): Eleftherios Tsiridis
• European Knee Society (EKS): Emmanuel Thienpont
• European Board of Colleges of Obstetrics and Gynaecology (EBCOG): Jacky Nizard
• International Society on Thrombosis and Hemostasis (ISTH): Walter Ageno
• Network for the Advancement of Patient Blood Management, Haemostasis and Thrombosis (NATA): Jakob Stensballe
ESA Guidelines for the prevention of venous thromboembolism in anaesthesia and intensive care

9 Clinical Settings:
• Surgery in the obese patient
• Surgery in the pregnant patient and during the immediate post-partum period
• Surgery in the elderly
• Day surgery and fast track surgery
• Intensive Care
• Cardio-vascular and thoracic surgery
• Neurosurgery
• Chronic treatments with antiplatelet agents
• Coagulation disorders/ bleeding patient

3 Controversial Treatments:
• Mechanical prophylaxis
• Aspirin
• Vena Cava Filters

Published on-line:
http://journals.lww.com/ejaanaesthesiology/toc/publishahead
Eur J Anaesthesiol 2018;35:73-153
Avant......c’était bien
Chez les patients à faible risque, c’est le risque de la chirurgie qui prime....
......et pendant ce temps là......
Ten-Year Trends in Medical Complications Following 540,623 Primary Total Hip Replacements from a National Database

J Bone Joint Surg Am. 2018;100:360-7

Table II: Associated Risk of 90-Day Mortality, by Complication, Following Total Hip Replacement from January 2005 to July 2014*

<table>
<thead>
<tr>
<th>Complication</th>
<th>2005, N = 34,643</th>
<th>2014, N = 40,758</th>
<th>Overall, N = 540,623</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90-Day Mortality</td>
<td>90-Day Mortality</td>
<td>90-Day Mortality</td>
</tr>
<tr>
<td></td>
<td>No. (%)</td>
<td>OR (95% CI)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>MI</td>
<td>167 (0.48)</td>
<td>59.8 (40.4-88.5)</td>
<td>75 (0.18)</td>
</tr>
<tr>
<td>PE</td>
<td>268 (0.77)</td>
<td>13.0 (7.9-21.5)</td>
<td>162 (0.40)</td>
</tr>
<tr>
<td>DVT</td>
<td>400 (1.15)</td>
<td>2.1 (0.9-5.2)</td>
<td>116 (0.28)</td>
</tr>
<tr>
<td>CVA</td>
<td>2 (0.01)</td>
<td>—</td>
<td>6 (0.01)</td>
</tr>
<tr>
<td>RF</td>
<td>73 (0.21)</td>
<td>46.3 (25.8-83.1)</td>
<td>443 (1.09)</td>
</tr>
<tr>
<td>LRTI</td>
<td>188 (0.54)</td>
<td>43.8 (29.3-65.3)</td>
<td>342 (0.84)</td>
</tr>
<tr>
<td>C. difficile</td>
<td>57 (0.16)</td>
<td>47.0 (24.5-90.2)</td>
<td>8 (0.02)</td>
</tr>
</tbody>
</table>

*OR = odds ratio, CI = confidence interval, MI = myocardial infarction, PE = pulmonary embolism, DVT = deep-vein thrombosis, CVA = cerebrovascular accident, RF = renal failure, LRTI = lower respiratory tract infection, and C. difficile = Clostridium difficile. †The percentage is of the total number of hip replacements with the indicated complication at that time period.
Surgical Duration and Risk of Venous Thromboembolism

John Y. S. Kim, MD; Nima Khavanin, BS; Aksharananda Rambachan, BA; Robert J. McCarthy, DPharm; Alexei S. Mlodinow, BA; Gildasio S. De Oliveira Jr, MD; M. Christine Stock, MD; Madeleine J. Gust, MD; David M. Mahvi, MD

Retrospective cohort of 1,432,855 patients undergoing surgery under general anesthesia at 315 US hospitals from 2005 to 2011. **Overall VTE rate: 0.96%**; DVT 0.71% (n = 10,198) and PE 0.33% (n = 4,772). Compared with a procedure of average duration, **patients undergoing the shortest procedures demonstrated an OR of 0.86 (CI 0.83-0.88)**.
14 RCTs involving THA 1,174 patients

- **Surgery duration**
  - Heterogeneity: $\chi^2 = 45.92, df = 10, P < 0.00001$; $I^2 = 90$
  - Test for overall effect: $Z = 0.98 (P = 0.33)$

- **Blood loss**
  - Heterogeneity: $\chi^2 = 13372.50, df = 7, P < 0.00001$; $I^2 = 84$
  - Test for overall effect: $Z = 2.42 (P = 0.02)$

- **Pain medication**
  - Heterogeneity: $\chi^2 = 0.11, df = 5, P = 0.008$; $I^2 = 68$
  - Test for overall effect: $Z = 0.84 (P = 0.40)$

- **Length of stay**
  - Heterogeneity: $\chi^2 = 2.56, df = 4, P = 0.63$; $I^2 = 0$
  - Test for overall effect: $Z = 2.46 (P = 0.01)$
  - Test for subgroup differences: $\chi^2 = 2.05, df = 3, P = 0.56$, $I^2 = 0$
.......les danois.......
Early thromboembolic events ≤ 1 week after fast-track total hip and knee arthroplasty

Christoffer C. Jørgensen *, Henrik Kehlet, the Lundbeck Foundation Centre for Fast-track Hip and Knee replacement collaborative group

PTH: n=7222  PTG: n=6552

Thromboprophylaxis was given only during hospitalization if admitted for 5 days or less

Median LOS was 2 days (IQR: 2–3)
LOS > 4 days: 8.2%

In hosp  CV events: 70%
MI: 0.04%
Strokes: 0.06%
VTE: 0.12%

30 days CV events: 0.65%
30 days VTE: 0.45%

« ...fast-track protocols, including regional anesthesia, multimodal opioid-sparing analgesia and early mobilization and with planned discharge to own home... »
Early thromboembolic events ≤ 1 week after fast-track total hip and knee arthroplasty

Christoffer C. Jørgensen *, Henrik Kehlet, the Lundbeck Foundation Centre for Fast-track Hip and Knee replacement collaborative group.¹

**PTH** « ...fast-track protocols, including regional anesthesia, multimodal opioid-sparing analgesia and early mobilization and with planned discharge to own home... »

Median LOS
LOS > 4 days

In hosp

30 days CV
30 days VTE: 0.45%
For the remaining 1,893, the median length of stay (LOS) was 4 days (IQR 3–5). Of the 1,893, four (0.20 per cent) experienced a non-fatal symptomatic VTE.
......les « guidelines », les américains et l’aspirine.....
In patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA), we recommend use of one of the following for a minimum of 10 to 14 days rather than no antithrombotic prophylaxis:

- low-molecular-weight heparin (LMWH),
- fondaparinux,
- apixaban, dabigatran, rivaroxaban,
- low-dose unfractionated heparin (LDUH),
- adjusted-dose vitamin K antagonist (VKA),
- aspirin (all Grade 1B),
- or an intermittent pneumatic compression device (IPCD) (Grade 1C).
Figure 2. Trends in the Use of Aspirin and Anticoagulation Agents in Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) by Quarter (Q) From Second Q 2013 to Fourth Q 2015
Noninferiority study of a retrospective cohort of TKA cases submitted to the Michigan Arthroplasty Registry Collaborative Quality Initiative at 29 member hospitals. The study included 41,537 patients who underwent primary TKA between April 1, 2013, and October 31, 2015. Clinical events were monitored for 90 days after surgery.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>No. (%)</th>
<th>Aspirin Only</th>
<th>Anticoagulation</th>
<th>Both</th>
<th>P Value of Pearson $\chi^2$ Test$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No.</td>
<td>668 (1.61)</td>
<td>12,831 (30.89)</td>
<td>22,620 (54.46)</td>
<td>5,418 (13.04)</td>
<td>NA</td>
</tr>
<tr>
<td>Composite VTE (death, PE, or DVT)</td>
<td>32 (4.79)</td>
<td>149 (1.16)</td>
<td>321 (1.42)</td>
<td>71 (1.31)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Death</td>
<td>&lt;10$^b$</td>
<td>13 (0.10)</td>
<td>28 (0.12)</td>
<td>&lt;10$^b$</td>
<td>NA</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>13 (1.95)</td>
<td>41 (0.32)</td>
<td>89 (0.39)</td>
<td>25 (0.46)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Deep venous thrombosis</td>
<td>16 (2.40)</td>
<td>95 (0.74)</td>
<td>204 (0.90)</td>
<td>41 (0.76)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bleeding outcome</td>
<td>10 (1.50)</td>
<td>116 (0.90)</td>
<td>258 (1.14)</td>
<td>73 (1.35)</td>
<td>.03</td>
</tr>
</tbody>
</table>
multicenter, double-blind, randomized, controlled trial TKR, THR.

Once-daily oral rivaroxaban (10 mg) until postoperative day 5
rivaroxaban or switch to aspirin (81 mg daily)
for an additional 9 days after TKA or for 30 days after THA

Table 2. Primary Effectiveness and Safety Outcomes.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Rivaroxaban (N=1717)</th>
<th>Aspirin (N=1707)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venous thromboembolism</td>
<td>12 (0.70)</td>
<td>11 (0.64)</td>
<td>0.84*</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>6 (0.35)</td>
<td>5 (0.29)</td>
<td></td>
</tr>
<tr>
<td>Proximal deep-vein thrombosis</td>
<td>4 (0.23)</td>
<td>4 (0.23)</td>
<td></td>
</tr>
<tr>
<td>Pulmonary embolism and proximal deep-vein thrombosis</td>
<td>2 (0.12)</td>
<td>2 (0.12)</td>
<td></td>
</tr>
<tr>
<td>Major bleeding</td>
<td>5 (0.29)</td>
<td>8 (0.47)</td>
<td>0.42</td>
</tr>
<tr>
<td>Any bleeding†</td>
<td>17 (0.99)</td>
<td>22 (1.29)</td>
<td>0.43</td>
</tr>
</tbody>
</table>

* P<0.001 for noninferiority, as defined by the upper boundary of the 95% confidence interval for the absolute between-group difference.
† This category includes major bleeding and clinically relevant nonmajor bleeding.

et donc...
European guidelines on perioperative venous thromboembolism prophylaxis

*Day surgery and fast-track surgery*

Linas Venclauskas, Juan V. Llau, Jean-Yves Jenny, Per Kjaersgaard-Andersen and Øivind Jans, for the ESA VTE Guidelines Task Force

### Low VTE risk procedure

<table>
<thead>
<tr>
<th>Low VTE risk patient</th>
<th>High VTE risk patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>No specific VTE prophylaxis&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Choice: LMWH and/or IPC&lt;sup&gt;b&lt;/sup&gt; Alternative in OS: AAS and/or IPC</td>
</tr>
</tbody>
</table>

### High VTE risk procedure

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<td>Choice: LMWH and/or IPC Alternative in OS: AAS and/or IPC</td>
<td>LMWH and/or IPC</td>
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</table>
Day surgery and fast track surgery

For patients undergoing a low risk procedure with additional risk factors, we recommend general measures of thromboprophylaxis (eg. early mobilisation, adequate hydration) (Grade 1B). We suggest assessing pharmacologic prophylaxis with LMWH over other drugs (Grade 2B). We suggest assessing specific mechanical measures (intermittent pneumatic compression (IPC) devices) in case of increased bleeding risk (Grade 2C).

In the case of pharmacological prophylaxis, we recommend a minimal 7 days duration of treatment over protocols lasting 3 days or single dose protocols (Grade 1B), although in selected cases of fast-track surgery thromboprophylaxis only during hospitalisation could be an option (Grade 2C).
we recommend general measures of thromboprophylaxis (e.g. **early ambulation** and optimal hydration)........
Aspirin

• We recommend the use of aspirin as an option for venous thromboembolism (VTE) prevention after total hip arthroplasty, total knee arthroplasty and hip fracture surgery (Grade 1B).

• We suggest to favour the use of aspirin for VTE prevention after total hip arthroplasty, total knee arthroplasty and hip fracture surgery in patients without high VTE risk (Grade 2C).

• We suggest to favour the use aspirin for VTE prevention after total hip arthroplasty, total knee arthroplasty and hip fracture surgery in patients with an increased bleeding risk (Grade 2C).
Aspirin (2)

• We suggest that the use of aspirin for VTE prevention after total hip arthroplasty, total knee arthroplasty should be associated with a rapid recovery (fast track) program (Grade 2C).

• No recommendation can be made concerning dose and duration of aspirin treatment and patient selection.

• **We do not recommend aspirin as thromboprophylaxis in general surgery (grade 1C).** However, this type of prophylaxis could be interesting especially in low income countries (Grade 2C) and adequate large scale trials with proper study designs should be carried out. Grade 1C
Mechanical prophylaxis

• We suggest the combined use of mechanical and pharmacological thromboprophylaxis in selected high-risk patients. Grade 2B.

• In selected patients who are at very high-risk for VTE and who have contra-indications for pharmacological thromboprophylaxis, we recommend the use of IPC over GCS alone. Grade 1B

• In patients with contra-indications for pharmacological thromboprophylaxis who are not at very high-risk for VTE, we suggest no prophylaxis over GCS alone. Grade 2B
La durée moyenne d'attente de PTH est de 8,5 jours (rPTH 25%) dans le secteur public et de 5,7 jours (rPTH 18%) dans le secteur privé.

Source : Le Point (2017)
8,4 jours (rPTG 9%)
6,4 jours (rPTG 6%)
Take Home Messages

• The first European recommendations on post-operative VTE prophylaxis!
• Endorsed by five European Surgical Societies (EBCOG, EDS, EHS, EKS, EUA), ESICM, ISTH and NATA
• Much more practical and clinical than ACCP’s recommendations...
• Do not systematically favor pharmacological prophylaxis
• For the first time, recommendations are available for:
  – Day surgery and fast-track procedures
  – Aspirin
  – Graded compression stockings
• Will allow new research (prophylaxis for fast-track, aspirin...)

LES RENCONTRES
4-5 AVRIL 2019

TUC GIHP GACI
Parce que le monde bouge.