Actualización en el uso de HBPM en el manejo de la ETV

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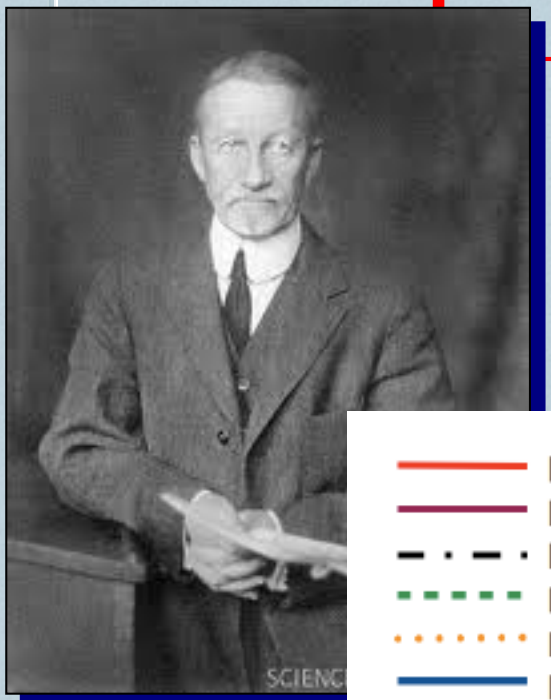
Conflicto de intereses
Disclosure

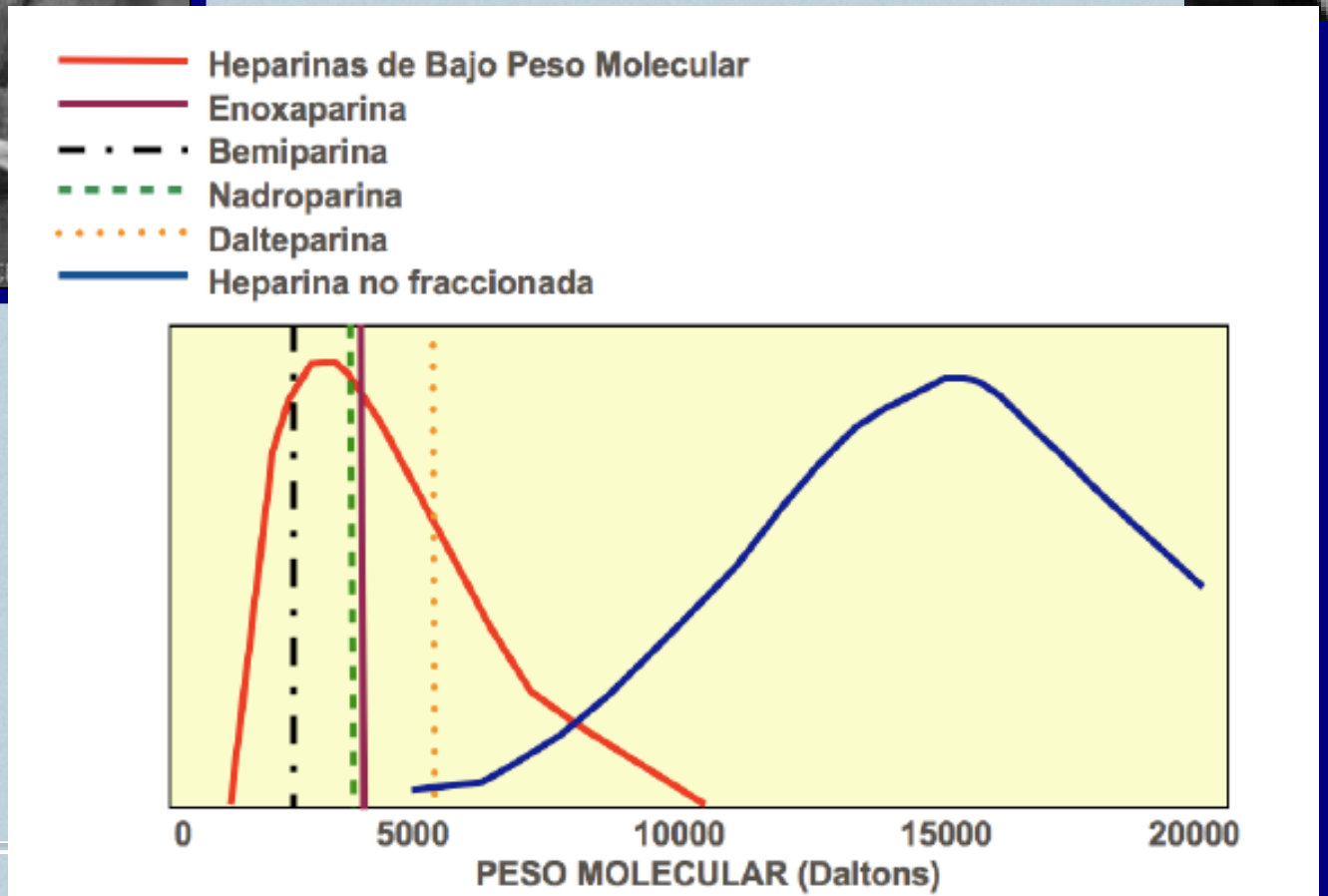
Perspectiva histórica

William H. Howell
(1860-1945)

Jay MacLean
(1890-1957)

Perspectiva histórica





Necesidad de tromboprofilaxis

Table 2—*Rationale for Thromboprophylaxis in Hospitalized Patients (Section 1.2)*

High prevalence of VTE
Almost all hospitalized patients have one or more risk factors for VTE
DVT is common in many hospitalized patient groups
Hospital-acquired DVT and PE are usually clinically silent
It is difficult to predict which at-risk patients will develop symptomatic thromboembolic complications
Screening at-risk patients using physical examination or noninvasive testing is neither cost-effective nor effective
Adverse consequences of unprevented VTE
Symptomatic DVT and PE
Fatal PE
Costs of investigating symptomatic patients
Risks and costs of treating unprevented VTE
Increased future risk of recurrent VTE
Chronic postthrombotic syndrome
Efficacy and effectiveness of thromboprophylaxis
Thromboprophylaxis is highly efficacious at preventing DVT and proximal DVT
Thromboprophylaxis is highly effective at preventing symptomatic VTE and fatal PE
The prevention of DVT also prevents PE
Cost-effectiveness of thromboprophylaxis has repeatedly been demonstrated

CHEST ONLINE

Prevention of Venous Thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition)

William H. Geerts, David Bergqvist, Graham F. Pineo, John A. Heit, Charles M. Samama, Michael R. Lassen and Clifford W. Colwell

Chest 2008;133;381-453
DOI 10.1378/chest.08-0656

Estratificación del riesgo

RIESGO TROMBÓTICO VENOSO

Riesgo
cor
y circunsta
del

Estratificación del riesgo

RIESGO
HEMORRÁGICO

Riesgo
cor
y circunsta
del

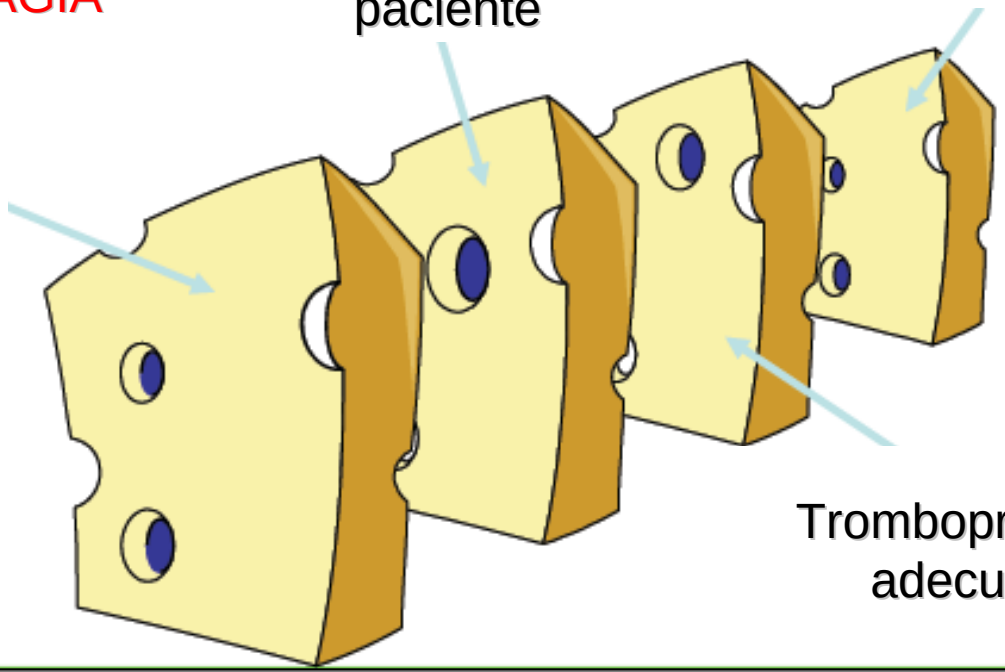
Modelo de riesgo/daño

DEFENSAS DEL SISTEMA FRENTE AL RIESGO-DAÑO DE TROMBOSIS-HEMORRAGIA

Optimización del cuidado global del paciente

Condiciones hemostáticas mínimas

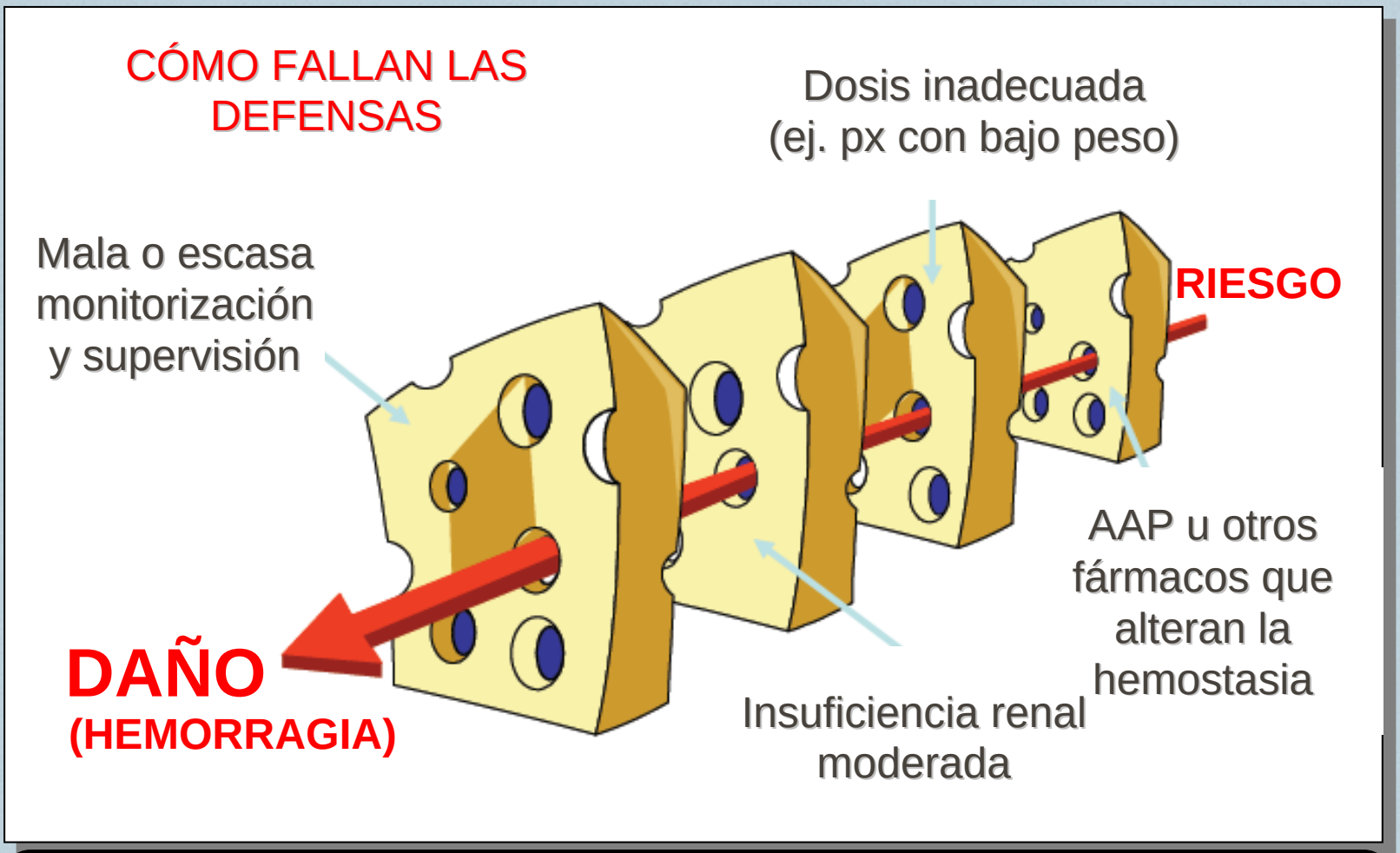
Monitorización y vigilancia



Tromboprofilaxis adecuada

MODELO DE REASON del queso suizo en la producción del daño

Modelo de riesgo/daño



MODELO DE REASON del queso suizo en la producción del daño

HBPM: actualización y controversias

Momento de inicio en cirugía: pre vs post.
Dosificación óptima
Pacientes especiales
Terapias puente

HBPM: actualización y controversias

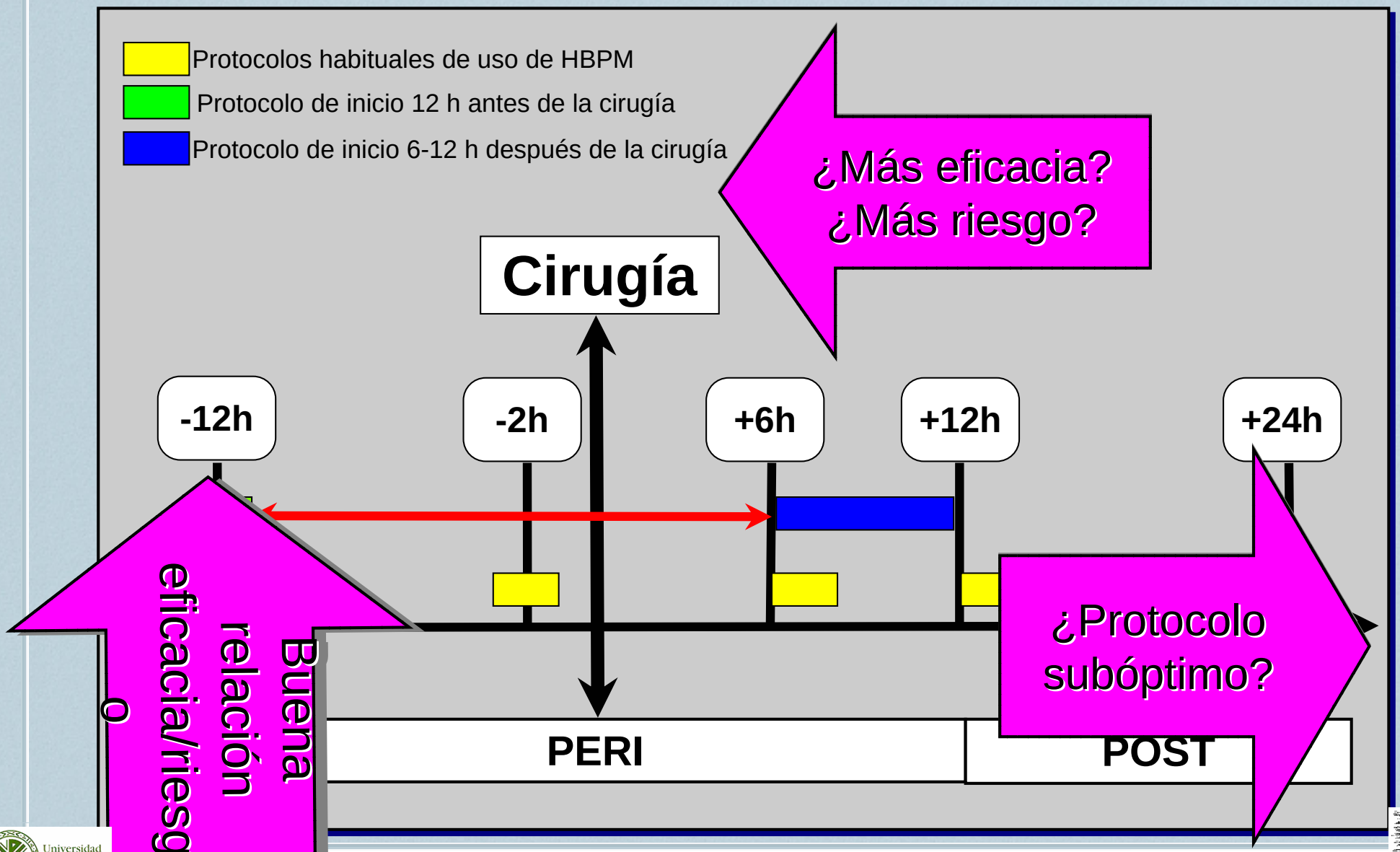
Momento de inicio en cirugía: pre vs post.

Dosificación óptima

Pacientes especiales

Terapias puente

Inicio: pre vs post



Inicio: pre vs post

Orthopaedic surgery

Elective hip replacement

At admission
Offer mechanical VTE prophylaxis with any one of:

- anti-embolism stockings (thigh or knee length), used with caution (see page 10)
- foot impulse devices
- intermittent pneumatic compression devices (thigh or knee length).

Continue until patient's mobility no longer significantly reduced.

1–12 hours after surgery
Provided there are no contraindications, offer pharmacological VTE prophylaxis

Continue pharmacological VTE prophylaxis for 28–35 days[19].

Choose one
- dabigatr
- fondapar
provided haemostasis has been established
- LMWH (or UFH[21]), started 6–12 hours after surgery
- rivaroxaban[22], started 6–10 hours after surgery.

Elective knee replacement

At admission
Offer mechanical VTE prophylaxis with any one of:

- anti-embolism stockings (thigh or knee length), used with caution (see page 10)
- foot impulse devices
- intermittent pneumatic compression devices (thigh or knee length).

Continue until patient's mobility no longer significantly reduced.

Choose one of:

- dabigatran[20], started 1–4 hours after surgery
- fondaparinux, started 6 hours after surgical closure, provided haemostasis has been established
- LMWH (or UFH[21]), started 6–12 hours after surgery
- rivaroxaban[22], started 6–10 hours after surgery.

Universidad Católica de Valencia San Vicente Mártir

HOSPITAL CLINIC UNIVERSITARI

Inicio: pre vs post

GUIDELINES

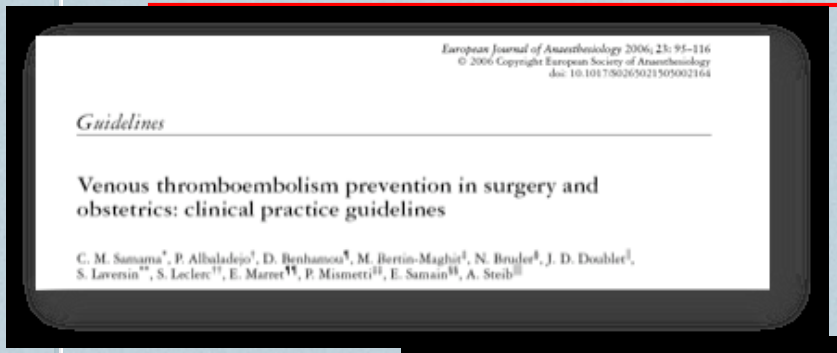
Regional anaesthesia and antithrombotic agents: recommendations of the European Society of Anaesthesiology

Wiebke Gogarten, Erik Vandermeulen, Hugo Van Aken, Sibylle Kozek, Juan V. Llau and Charles M. Samama

Timing of thromboprophylaxis

In most European countries thromboprophylaxis begins preoperatively; the exception to this is neurosurgery, wherein it is started postoperatively. The reason for preoperative prescribing is the belief that thrombus formation occurs intraoperatively and that patients should be protected during this period. In order to reduce bleeding and to enable neuraxial blockade, LMWH are usually administered the night before as opposed to the morning of surgery. Scientific support for this approach is poor. A single study including 1472 hip replacements, in whom dalteparin given 2 h preoperatively was compared to dalteparin given 4 h postoperatively,[21] found no difference in the incidence of VTE, and patients in the preoperative group required significantly more transfusions. A meta-analysis of preoperative versus postoperative studies shows that LMWH given 12 h preoperatively does not reduce the risk of VTE compared to a postoperative regimen.[22] The most recent German guidelines on thromboprophylaxis, emanating from a number of different specialties, and also the ACCP, refer to preoperative administration only as an option, and not as a requirement.[20,23] As antithrombotic drugs increase the risk of spinal epidural haematoma after neuraxial blockade, a postoperative start may be advantageous, especially in patients also receiving aspirin (Class IIb, level B).

Inicio: pre vs post



European Journal of Anaesthesiology 2006; 23: 95–116
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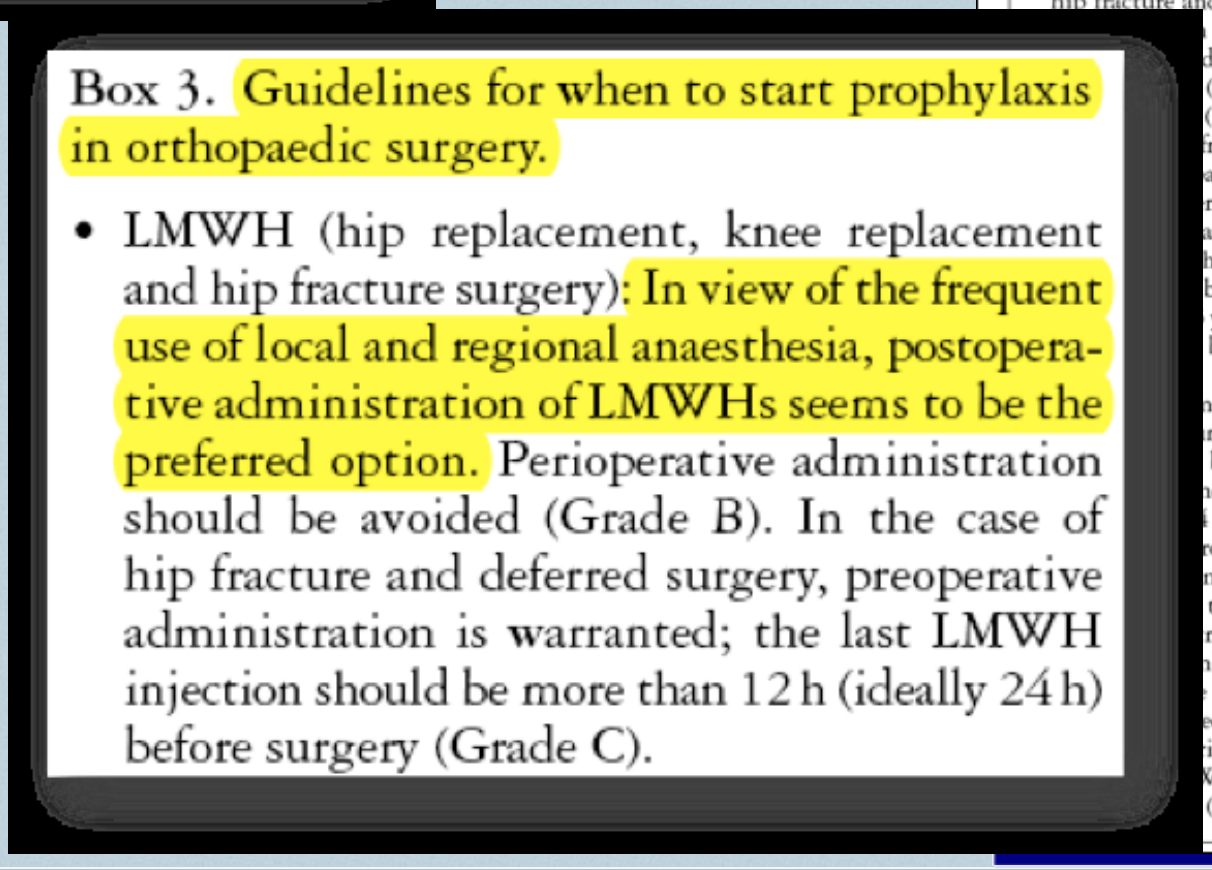
doi: 10.1017/S0265021505002164

Guidelines

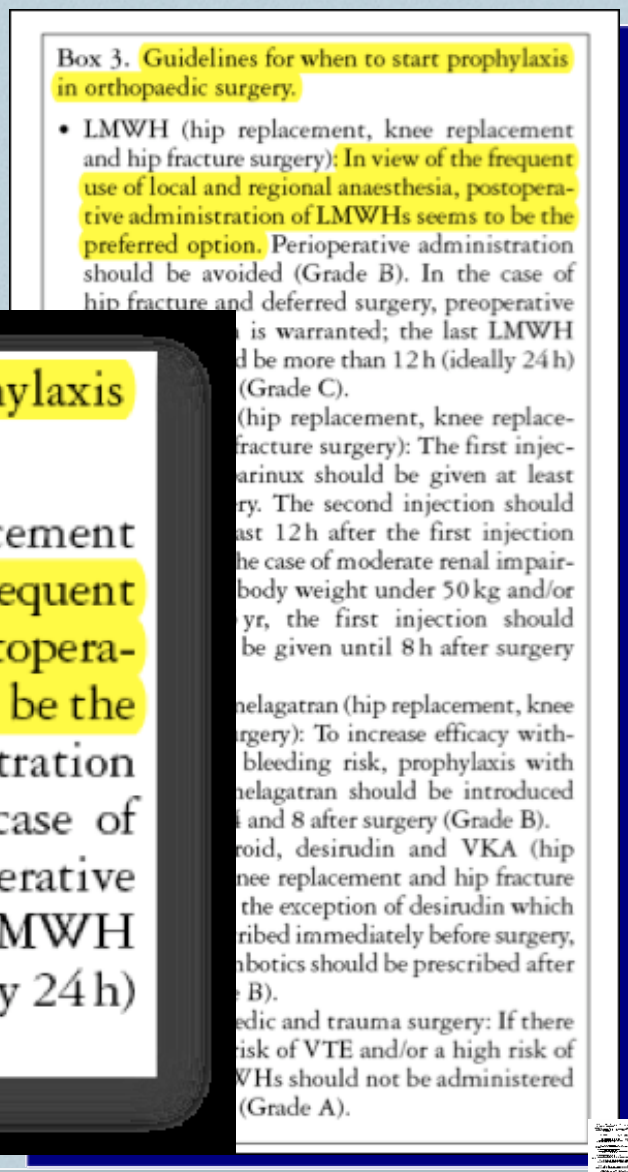
Venous thromboembolism prevention in surgery and obstetrics: clinical practice guidelines

C. M. Samama*, P. Albaladejo†, D. Benhamou‡, M. Bertin-Maghit§, N. Brujes§, J. D. Doublet¶, S. Laversin**, S. Leclerc††, E. Marret‡‡, P. Mismetti§§, E. Samain§§, A. Steib¶¶



Box 3. Guidelines for when to start prophylaxis in orthopaedic surgery.

- LMWH (hip replacement, knee replacement and hip fracture surgery): In view of the frequent use of local and regional anaesthesia, postoperative administration of LMWHs seems to be the preferred option. Perioperative administration should be avoided (Grade B). In the case of hip fracture and deferred surgery, preoperative administration is warranted; the last LMWH injection should be more than 12 h (ideally 24 h) before surgery (Grade C).



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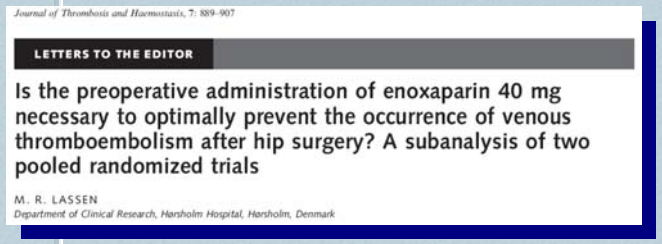
(hip replacement, knee replace-
fracture surgery): The first injec-
arinux should be given at least
ry. The second injection should
ast 12 h after the first injection
he case of moderate renal impair-
body weight under 50 kg and/or
yr, the first injection should
be given until 8 h after surgery
nelagatran (hip replacement, knee
rgery): To increase efficacy with-
bleeding risk, prophylaxis with
nelagatran should be introduced
and 8 after surgery (Grade B).
roid, desirudin and VKA (hip
nee replacement and hip fracture
the exception of desirudin which
ribed immediately before surgery,
nbotics should be prescribed after
B).
edic and trauma surgery: If there
isk of VTE and/or a high risk of
WHs should not be administered
(Grade A).

Inicio: pre vs post



Journal of Thrombosis and Haemostasis, 7: 889–907

LETTERS TO THE EDITOR

Is the preoperative administration of enoxaparin 40 mg necessary to optimally prevent the occurrence of venous thromboembolism after hip surgery? A subanalysis of two pooled randomized trials

M. R. LASSEN
Department of Clinical Research, Hørsholm Hospital, Hørsholm, Denmark

In conclusion, despite the enhanced convenience and safety of delaying the once-daily administration of 40 mg of enoxaparin until after the surgical procedure, these results, with the limitation that they were obtained by a *post hoc* analysis, suggest that this therapeutic strategy may not be appropriate in terms of antithrombotic efficacy. It may therefore be preferable to use dosage regimens proven to be effective when started postoperatively [7,8,11–13]. In any case, large randomized clinical trials in major orthopedic surgery have demonstrated that enoxaparin (irrespective of the dosage regimen and the timing of its first administration relative to surgery) was less effective and no safer than a postoperative regimen of selective FXa inhibitors [4,5,7,8,11].

Inicio de Enoxaparina 40 mg entre 12 y 24 h tras cirugía

Inicio: pre vs post

Journal of Thrombosis and Haemostasis, 1: 425–432

IN FOCUS

Efficacy and safety of bemiparin compared with enoxaparin in the prevention of venous thromboembolism after total knee arthroplasty: a randomized, double-blind clinical trial

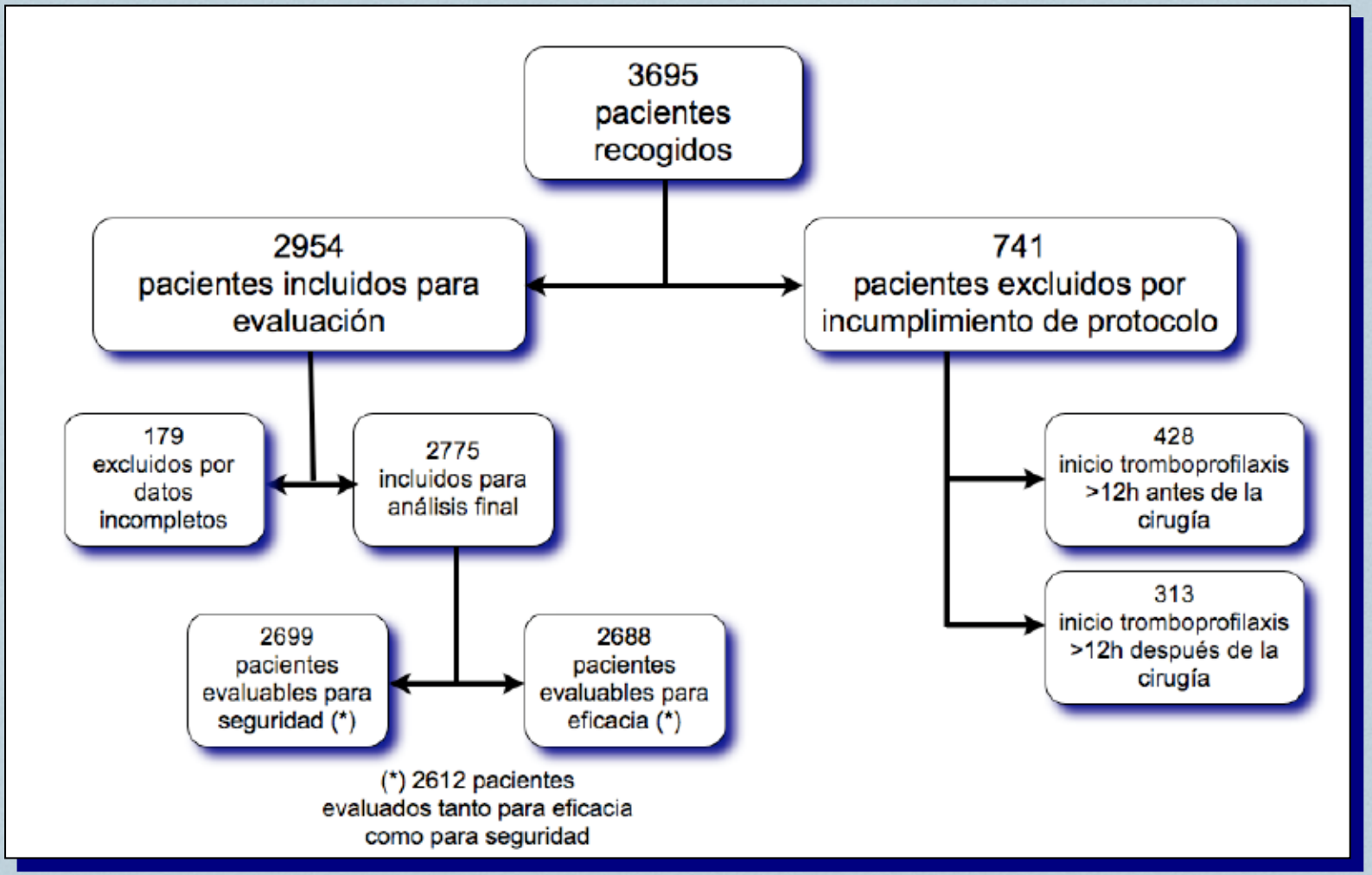
A. NAVARRO-QUILIS,* E. CASTELLET,* E. ROCHA,† J. PAZ-JIMÉNEZ‡ and A. PLANÈS§ for the BEMIPARIN STUDY GROUP IN KNEE ARTHROPLASTY[1]

Hospital Vall d'Hebrón, Barcelona; †University Clinic of Navarra, Pamplona; ‡Hospital Central de Asturias, Oviedo, Spain; and §Clinique Radio-Chirurgicale du Mail, La Rochelle, France

Summary. In this randomized, multicenter, controlled, double-blind, sequential trial, 381 patients undergoing primary total knee replacement were randomly assigned to receive subcutaneous injections of either 3500 IU anti-factor Xa of bemiparin sodium, first dose 6 h after surgery, or 40 mg of enoxaparin, first dose 12 h before surgery, followed by daily doses for 10 ± 2 days, for the prophylaxis of venous thromboembolism. The primary efficacy endpoint was venous thromboembolism up to postoperative day 10 ± 2, defined as deep vein thrombosis detected by mandatory bilateral venography, documented symptomatic deep vein thrombosis and/or documented symptomatic pulmonary embolism. The primary safety endpoint was major bleeding. Eighty-seven percent of all randomized patients (333 of 381 patients) were evaluable for efficacy. The incidence of venous thromboembolism was 32.1% (53 of 165 patients) in the bemiparin group and 36.9% (62 of 168 patients) in the enoxaparin group. The absolute risk difference was 4.8% in favor of bemiparin [95% confidence interval (CI), −15.1% to 5.6%; non-inferiority *P*-value: 0.02; superiority *P*-value: 0.36]. The incidence of proximal deep vein thrombosis was 1.8% (three of 165 patients) in the bemiparin group and 4.2% (seven of 168 patients) in the enoxaparin group. Major bleeding occurred in six patients (three in each group). There were no deaths during the study. This trial shows that bemiparin started postoperatively is as effective and safe as enoxaparin started preoperatively in the prevention of venous thromboembolism in patients undergoing total knee replacement.

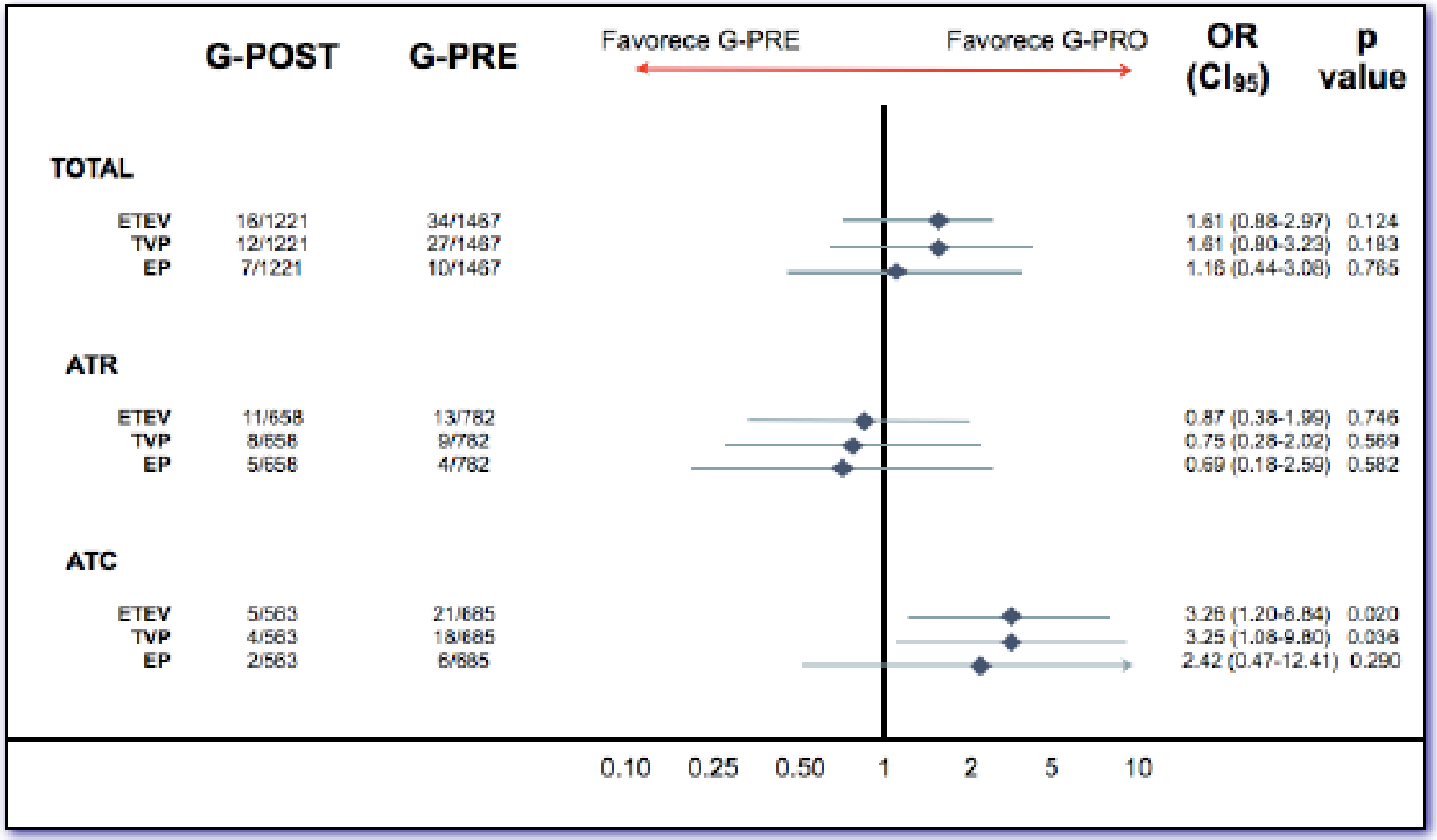
Inicio: pre vs post

Estudio ENOXACOR: observacional enoxaparina 12h pre vs 6-12h post (Pte. publicación)



Inicio: pre vs post

Estudio ENOXACOR: observacional enoxaparina 12h pre vs 6-12h post (Pte. publicación)



HBPM: actualización y controversias

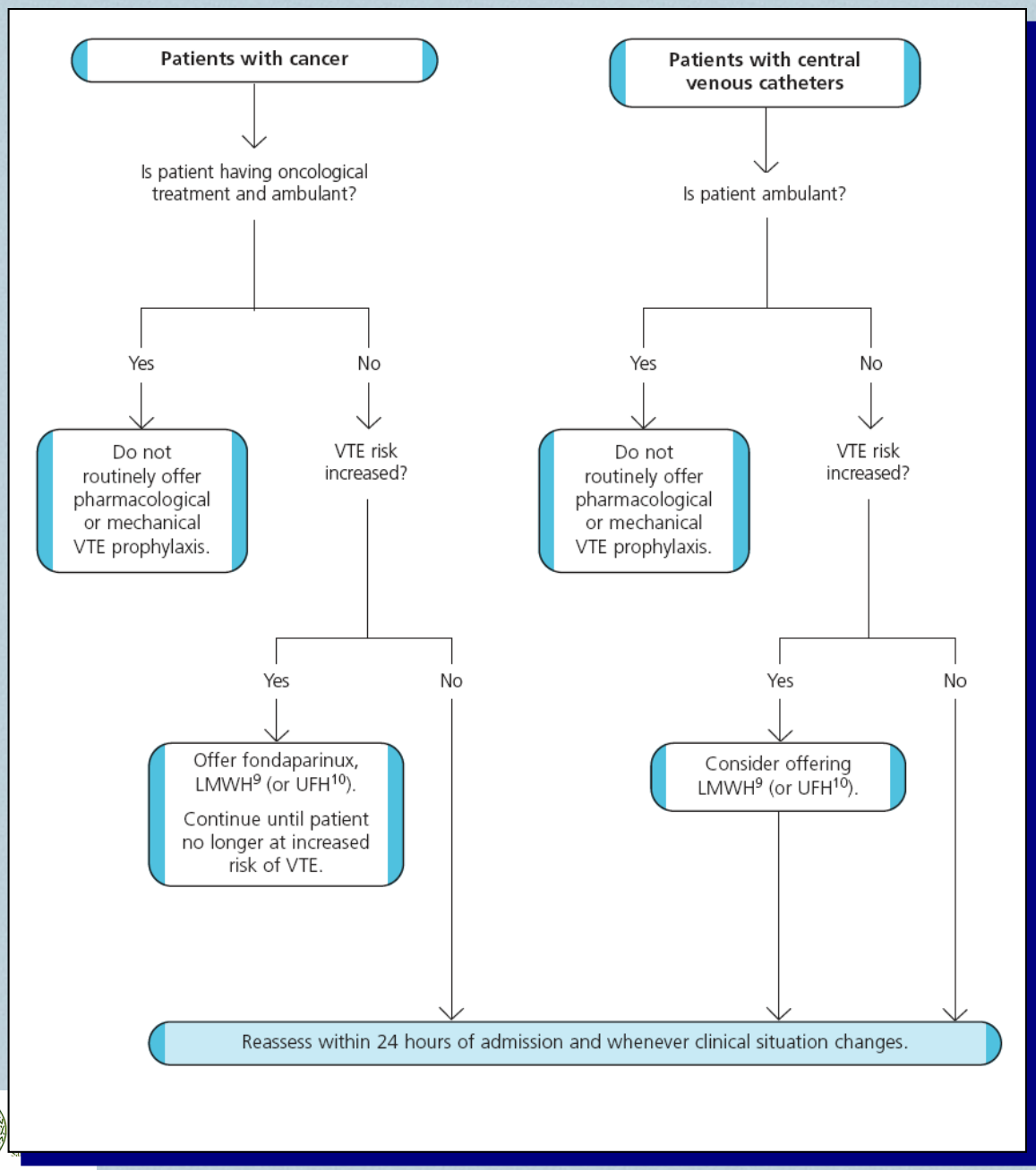
Momento de inicio en cirugía: pre vs post.

Dosificación óptima

Pacientes especiales

Terapias puente

Dosificación: ¿cuál es la óptima?



No se especifica la dosis en dos situaciones tan diferentes en cuanto a riesgo trombótico

Dosificación: ¿cuál es la óptima?

6.0 Medical Conditions

6.0.1. For acutely ill medical patients admitted to hospital with congestive heart failure or severe respiratory disease, or who are confined to bed and have one or more additional risk factors, including active cancer, previous VTE, sepsis, acute neurologic disease, or inflammatory bowel disease, we recommend thromboprophylaxis with LMWH (Grade 1A), **LDUH** (Grade 1A), **or fondaparinux** (Grade 1A).

7.0 Cancer Patients

7.0.1. For cancer patients undergoing surgical procedures, we recommend routine thromboprophylaxis that is appropriate for the type of surgery (Grade 1A). **Refer to the recommendations in the relevant surgical subsections.**

7.0.2. For cancer patients who are bedridden with an acute medical illness, we recommend routine thromboprophylaxis as for other high-risk medical patients (Grade 1A).

Refer to the recommendations in Section 6.0.

7.0.3. For cancer patients with indwelling central venous catheters, we recommend that clinicians not use either prophylactic doses of LMWH (Grade 1B). **or minidose warfarin** (Grade 1B) **to try to prevent catheter-related thrombosis.**

Dosificación: ¿cuál es la óptima?

6.0 Medical Condit

6.0.1. For acutely
to hospital with
severe respirator
to bed and have
factors, including
sepsis, acute neu
tory bowel disea
prophylaxis with
(Grade 1A), or for

Analizador de inmovilización previa a la trombosis

Total pacientes válidos: 36365

Motivo Inmovilizado	N	Recibieron Profilaxis	HBPM Dosis Media	HBPM Dura. Media	TVP	EP	Muerte en los 3 meses
Demencia-depresión	1.262	79 (6%)	3.550 UI/día	49,7 días	671 (53%)	587 (47%)	258 (20%)
Infección aguda	1.301	482 (37%)	3.715 UI/día	13,3 días	643 (49%)	657 (50%)	168 (13%)
Déficit motor perm.	688	68 (10%)	3.818 UI/día	38,7 días	379 (55%)	309 (45%)	95 (14%)
Cardiopatía isquémica	119	72 (61%)	4.177 UI/día	8,8 días	55 (46%)	64 (54%)	13 (11%)
Insuficiencia cardíaca	287	110 (38%)	3.811 UI/día	11,4 días	90 (31%)	197 (69%)	60 (21%)
Ictus agudo	341	142 (42%)	3.649 UI/día	14,6 días	187 (55%)	154 (45%)	48 (14%)
Trauma sin intervención	1.737	527 (30%)	3.929 UI/día	23,5 días	972 (56%)	763 (44%)	73 (4%)
Neoplasia	537	148 (28%)	3.414 UI/día	18,7 días	289 (54%)	245 (46%)	299 (56%)
Broncopatía crónica	358	136 (38%)	3.523 UI/día	12,8 días	134 (37%)	224 (63%)	46 (13%)
Artropatía	666	47 (7%)	4.300 UI/día	26,8 días	391 (59%)	275 (41%)	37 (6%)
Hepatopatía	31	3 (10%)	2.000 UI/día	8,0 días	22 (71%)	9 (29%)	11 (35%)
Pancreatitis	40	25 (63%)	3.600 UI/día	21,2 días	24 (60%)	16 (40%)	3 (8%)
Enf. inflam. intestinal	65	17 (26%)	4.429 UI/día	29,2 días	36 (55%)	28 (43%)	4 (6%)

going surgical
ine thrombo-
r the type of
recommenda-
ections.
re bedridden
recommend
r other high-

Section 6.0.
dwelling cen-
nend that cli-
ctic doses of
arfarin (Grade
d thrombosis.

Dosificación: ¿cuál es la óptima?

ARTÍCULO ESPECIAL

Guía de Práctica Clínica para el diagnóstico y tratamiento del síndrome coronario agudo sin elevación del segmento ST

Grupo de Trabajo para el diagnóstico y tratamiento del síndrome coronario agudo sin elevación del segmento ST de la Sociedad Europea de Cardiología

Autores/miembros del Grupo de Trabajo: Jean-Pierre Bassand* (Coordinador, Francia), Christian W. Hamm* (Co-coordinador, Alemania), Diego Ardissino (Italia), Eric Boersma (Países Bajos), Andrzej Budaj (Polonia), Francisco Fernández-Avilés (España), Keith A.A. Fox (Reino Unido), David Hasdai (Israel), E. Magnus Ohman (Estados Unidos), Lars Wallentin (Suecia) y William Wijns (Bélgica)

Rev Esp Cardiol. 2007;60(10):1070.e1-e80

Las dosis de HBPM utilizadas en los SCASEST se deben ajustar por el peso corporal y son de la misma magnitud que las que se emplean para el tratamiento de la tromboembolia venosa (TEV), que son más altas que las dosis utilizadas para la profilaxis de la trombosis venosa profunda (TVP). En los SCASEST, las HBPM se administran normalmente por vía subcutánea cada 12 h, para evitar el riesgo de alcanzar inadecuadas concentraciones anti-Xa durante el tratamiento[149,151-155]. Se ha propuesto la administración de un bolo inicial intravenoso en los pacientes de alto riesgo[151]. El intervalo terapéutico para una actividad anti-Xa obtenido de los estudios de TEV es 0,6-1,0 U/ml, sin que haya una relación clara entre la actividad anti-Xa y el resultado clínico. No obstante, el riesgo de hemorragia aumenta cuando la actividad anti-Xa está por encima de 1,0 U/ml[145,146]. En el estudio TIMI-11A, en el que la dosis de enoxaparina fue de 1,5 mg/kg dos veces al día, los pacientes con hemorragias mayores tenían una actividad anti-Xa en 1,8-2 U/ml. El exceso de sangrado condujo a una reducción de la dosis[156]. Con las dosis que se utilizan actualmente en la práctica clínica, la monitorización de la actividad anti-Xa no es necesaria, excepto en poblaciones especiales de pacientes, como los que tienen insuficiencia renal y obesidad.

HBPM: actualización y controversias

Momento de inicio en cirugía: pre vs post.

Dosificación óptima

Pacientes especiales

Terapias puente

Pacientes especiales: críticos

Patient admitted to critical care unit

Assess risks of VTE and bleeding on admission to critical care unit.

account planned interventions and other therapies that may increase risk of complications.

Offer VTE prophylaxis according to reason for admission.

- Reassess risks of VTE and bleeding and review decisions about VTE prophylaxis daily – more frequently if clinical condition is changing rapidly.
- Take into account known views of the patient, family and/or carers and multidisciplinary team.

Pacientes especiales: críticos

Patient admitted to critical care unit

Assess risks of VTE and bleeding on admission to critical care unit.

account planned interventions and other therapies that may increase risk

Offer VTE prophylaxis according to reason for admission.

Critical Care	Thromboprophylaxis
oderate risk for VTE	LMWH or LDUH › VTE risk factors: medically ill or postoperative general surgery
gher risk	LMWH › VTE risk factors: following major trauma or orthopedic surgery
gh risk of bleeding	GCS and/or IPC until bleeding risk decreases; then pharmacologic prophylaxis substituted for or added to mechanical method

Pacientes especiales: críticos

Robinson *et al. Critical Care* 2010, 14:R41
http://ccforum.com/content/14/2/R41

CRITICAL CARE

RESEARCH Open Access

Enoxaparin, effective dosage for intensive care patients: double-blinded, randomised clinical trial

Sian Robinson[1*], Aleksander Zincuk[1], Thomas Strøm[1], Torben Bjerregaard Larsen[2], Bjarne Rasmussen[2], Palle Toft[1]

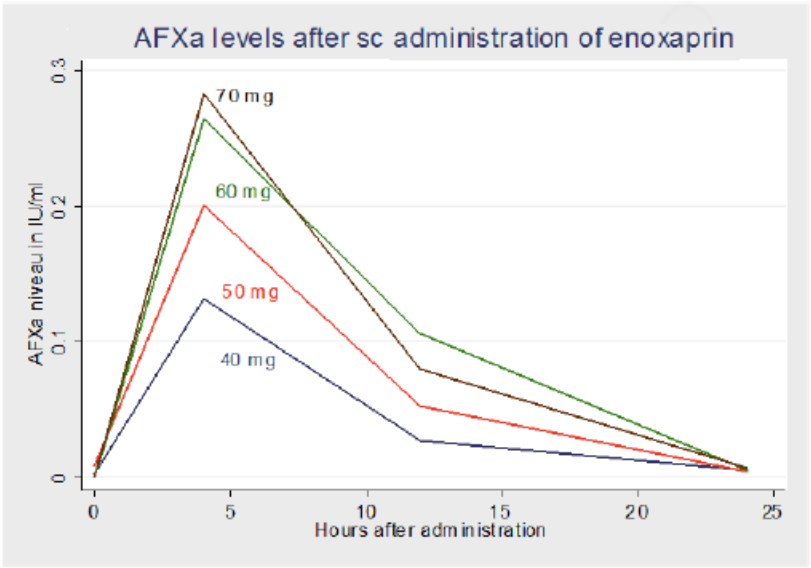


Figure 3 Variation in anti-factor Xa over time for each dose of enoxaparin. AFXa denotes anti-factor Xa.

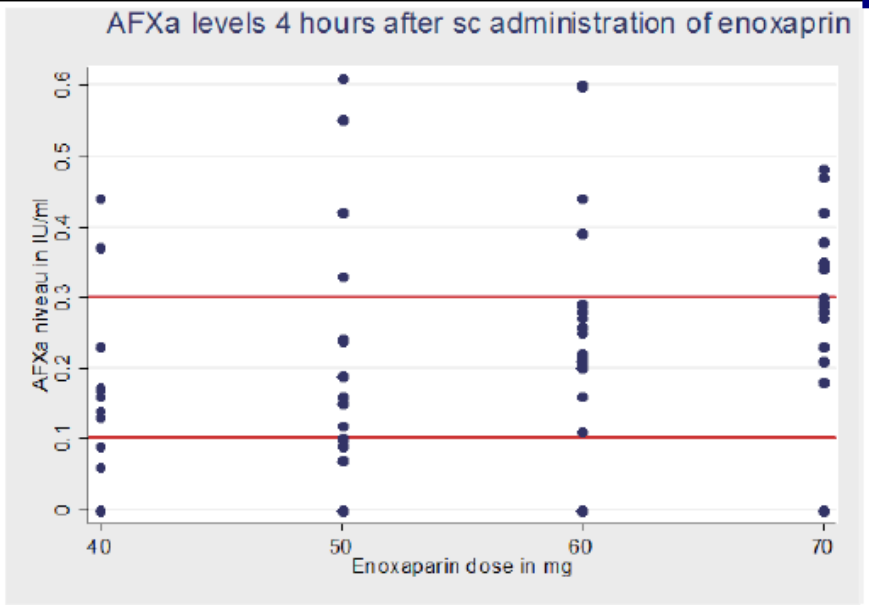


Figure 2 Scatter diagram depicting anti-factor Xa levels for each dose, 4 hours after enoxaparin administration. AFXa denotes anti-factor Xa.

Pacientes especiales: críticos

Standard Prophylactic Enoxaparin Dosing Leads to Inadequate Anti-Xa Levels and Increased Deep Venous Thrombosis Rates in Critically Ill Trauma and Surgical Patients

Darren Malinoski, MD, Fariba Jafari, BS, Tyler Ewing, EMT-B, Chris Ardary, BS, Heather Conniff, Mark Baje, PharmD, Allen Kong, MD, Michael E. Lekawa, MD, Matthew O. Dolich, MD, Marianne E. Cinat, MD, Cristobal Barrios, MD, and David B. Hoyt, MD

(*J Trauma.* 2010;68: 874–880)

Background: Deep venous thromboses (DVT) continue to cause significant morbidity in critically ill patients. Standard prophylaxis for high risk patients includes twice-daily dosing with 30 mg enoxaparin. Despite prophylaxis, DVT rates still exceed 10% to 15%. Anti-Xa levels are used to measure the activity of enoxaparin and 12-hour trough levels ≤0.1 IU/mL have been associated with higher rates of DVT in orthopedic patients. We hypothesized that low Anti-Xa levels would be found in critically ill trauma and surgical patients and that low levels would be associated with higher rates of DVT.
Methods: All patients on the surgical intensive care unit (ICU) service were prospectively followed. In the absence of contraindications, patients were given prophylactic enoxaparin and anti-Xa levels were drawn after the third dose. Trough levels ≤0.1 IU/mL were considered low. Screening duplex exams were obtained within 48 hours of admission and then weekly. Patients were excluded if they did not receive a duplex, if they had a prior DVT, or if they lacked correctly timed anti-Xa levels. DVT rates and demographic data were compared between patients with low and normal anti-Xa levels.
Results: Data were complete for 54 patients. Eighty-five percent suffered trauma (Injury Severity Score of 25 ± 12) and 74% were male. Overall, 27 patients (50%) had low anti-Xa levels. Patients with low anti-Xa levels had significantly more DVTs than those with normal levels (37% vs. 11%, $p = 0.026$), despite similar age, body mass index, Injury Severity Score, creatinine clearance, high risk injuries, and ICU/ventilator days.
Conclusion: Standard dosing of enoxaparin leads to low anti-Xa levels in half of surgical ICU patients. Low levels are associated with a significant increase in the risk of DVT. These data support future studies using adjusted-dose enoxaparin.

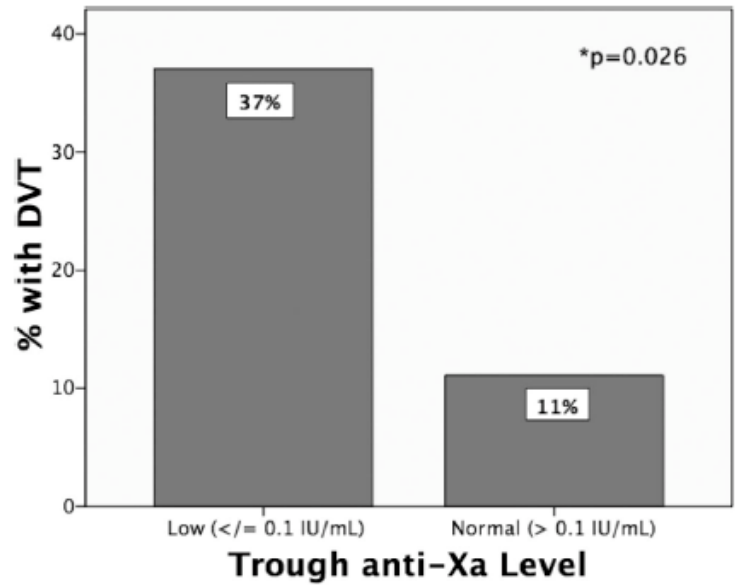


Figure 2. The relationship between low trough anti-Xa levels and DVT rates. Trough anti-Xa levels were drawn within 1 hour of the fourth dose of LMWH. Low levels were defined as being ≤0.1 IU/mL and normal levels were >0.1 IU/mL. The DVT rates between the two groups were compared using the Fisher's exact test.

Pacientes especiales: obesos

2.6 Bariatric Surgery

2.6.1. For patients undergoing inpatient bariatric surgery, we recommend routine thromboprophylaxis with LMWH, LDUH three times daily, fondaparinux, or the combination of one of these pharmacologic methods with optimally used IPC (each Grade 1C).

2.6.2. For patients undergoing inpatient bariatric surgery, we suggest that higher doses of LMWH or LDUH than usual for nonobese patients be used (Grade 2C).

CHEST ONLINE

Prevention of Venous Thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition)

William H. Geerts, David Bergqvist, Graham F. Pineo, John A. Heit, Charles M. Samama, Michael R. Lassen and Clifford W. Colwell

Chest 2008;133;381-453
DOI 10.1378/chest.08-0656

Pacientes especiales: obesos

Prevention of venous thromboembolism in obesity

Expert Rev. Cardiovasc. Ther. 8(12), 1711–1721 (2010)

Andrew L Freeman[†1,2], Robert C Pendleton[1,2] and Matthew T Rondina[1,2]

- Low-molecular-weight heparin given either at increased fixed doses (e.g., enoxaparin 40 mg every 12 h or dalteparin 5000 IU every 12 h) or preferably weight-based doses using actual body weight (e.g., anti-FXa 40–75 IU/kg once daily) with or without accompanying peak anti-FXa-level monitoring. As stated, the current recommendations by the ACCP guidelines are to consider weight-based dosing [63];

Although the debate over the utility of laboratory testing with LMWH dosing is ongoing, monitoring in special patient groups, including the obese, remains recommended [36,37]. The most consistent and widely used laboratory test for LMWH has been the anti-FXa activity assay and for therapeutic dosing with twice-daily LMWH, the recommended range for peak anti-FXa activity assessed 4 h after dosing is 0.6–1.0 U/ml. For prophylactic dosing, the optimal peak anti-FXa level is unknown since monitoring of prophylactic-dose LMWH is generally not performed. However, peak anti-FXa levels of 0.2–0.5 IU have been suggested by some authors [36,38].

Pacientes especiales: obesos

Dosage of enoxaparin among obese and renal impairment patients☆

Annie Bazinet[a,b], Karine Almanric[a,b], Catherine Brunet[a,b], Isabel Turcotte[a,b], Josée Martineau[a], Stéphanie Caron[a], Normand Blais[a], Lyne Lalonde[a,b,c,d,*]

Thrombosis Research (2005) **116**, 41–50

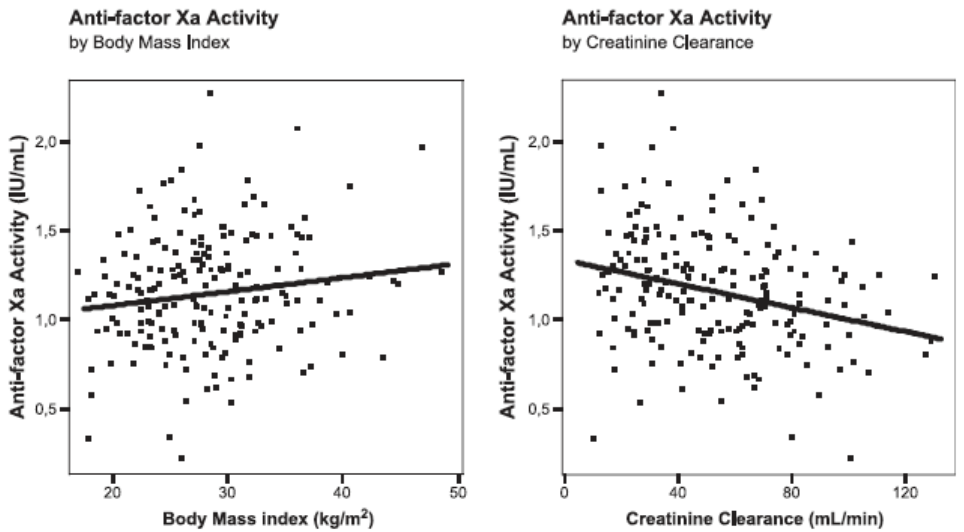


Figure 1 Anti-factor Xa activity among all participants except those on dialysis as a function of patient body mass index and creatinine clearance among participants who received enoxaparin once and twice a day (n=196). The univariate regression line represents the estimated mean change in anti-factor Xa activity as a function of body mass index and creatinine clearance.

Conclusion

Overall, with the administration of enoxaparin at a dose of 1 mg/kg twice daily or 1.5 mg/kg once daily, only 50% of patients achieve levels of anti-Xa considered as "therapeutic", even among patients with adequate weight and renal function. Once-daily regimen tends to produce subtherapeutic levels while the twice-daily regimen tends to produce supratherapeutic levels. Among special populations, based on anti-Xa activity levels, our results suggest that dosage adjustment of enoxaparin would not be required in obese patients.

HBPM: actualización y controversias

Momento de inicio en cirugía: pre vs post.
Dosificación óptima
Pacientes especiales
Terapias puente

Terapias puente

Inicio de anticoagulación en ACxFA

J Thromb Thrombolysis (2010) 30:479–485
DOI 10.1007/s11239-010-0470-8

Low molecular weight heparin bridging for atrial fibrillation: is VTE thromboprophylaxis the major benefit?

Henny H. Billett · Barbara A. Scorziello · Emily R. Giannattasio · Hillel W. Cohen

Abstract Paucity of data has led to a lack of consensus regarding indications for, and risk–benefit ratio of, low molecular weight heparin 'bridging' for cardioembolic prevention in patients with atrial fibrillation (AF) until their INR levels are in therapeutic range. Using a hospital database, we compared AF patients ≥65 years who were bridged ($n = 265$) with patients who were not bridged ($n = 4532$) after hospital discharge. Patients who failed to achieve a therapeutic INR within 30 days were excluded. $CHADS_2$ scores (congestive heart failure, hypertension, age ≥75, diabetes, stroke), bleeding risk and co-morbidity scores were assessed. Unadjusted and adjusted odds ratios for outcome events (death, stroke, hemorrhage and venous thromboembolism (VTE) within 30 days of discharge were compared. Bridged patients, as compared to those not bridged, were younger (74.7 ± 6.6 vs. 78.5 ± 7.7 years), less likely to be white (36 vs. 51%), and less likely to have $CHADS_2$ scores ≥2 (67 vs. 84%), all $P < 0.001$. There was no significant difference in bleeding risk (bridged vs. not bridged: 1.5 ± 7 vs. 1.7 ± 6). In logistic models adjusting for age, white race, bleeding risk, $CHADS_2$ and Comorbidity scores, bridging was significantly associated with lower mortality and a decreased odds ratio for VTE (both $P < 0.01$) but not for stroke or hemorrhage (both $P > 0.80$). Although we found insufficient evidence of either lower stroke or greater bleeding risk with bridging, our data suggest the possibility that LMWH bridging in patients with AF is associated with lower risks of VTE and death within 30 days of discharge.

Keywords Bridging anticoagulation · Atrial fibrillation · $CHADS_2$ · Venous thromboembolism · Warfarin

Table 3 Adjusted odds ratios of bridged compared to non-bridged for death, VTE, hemorrhage and stroke

Outcome	Odds ratio (95% CI) bridged vs. not bridged	*P*
Death	0.07 (0.01, 0.47)	0.007
VTE	0.24 (0.09, 0.64)	0.005
Stroke	<.01†	>0.99
Hemorrhage	0.88 (0.31, 2.47)	0.81

VTE venous thromboembolism

* Odds ratios and 95% confidence intervals estimated with multivariable logistic regression models adjusting for age, white race, $CHADS_2$ score, bleeding risk index, and comorbidity score

† There were no strokes in the bridged group so that a stable OR and 95% CI could not be estimated

Universidad Católica de Valencia San Vicente Mártir

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Terapias puente

HBPM tras AVK
antes de cirugía

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DOI 10.1007/s11239-009-0410-7

To bridge or not to bridge: that is the question. The argument FOR bridging therapy in patients on oral anticoagulants requiring temporary interruption for elective procedures

Alex C. Spyropoulos

Conclusions

With respect to the perioprocedural management of patients on VKA, one must carefully assess both TE and bleed risk for the patient and procedure, especially when VKA is interrupted. For patients at high TE risk, bridging with treatment-dose heparin (preferably LMWH) is recommended, while in patients at low TE risk, bridging is likely unnecessary. For the moderate TE risk patient, bridging therapy should be considered, especially when there is a standardized bridging protocol in place. One should consider delaying LMWH or the use of prophylactic-dose LMWH in high bleed risk procedures. There remain several unanswered questions for the perioperative management of patients on chronic VKA, and large randomized, placebo-controlled trials are under way to determine whether bridging therapy is efficacious and safe, especially for the moderate TE risk patient. Lastly, how the newer target-specific oral antithrombotics will perform in procedural settings needs to be determined.

Terapias puente

HBPM tras AVK
antes de cirugía

The Perioperative Management of Antithrombotic Therapy*

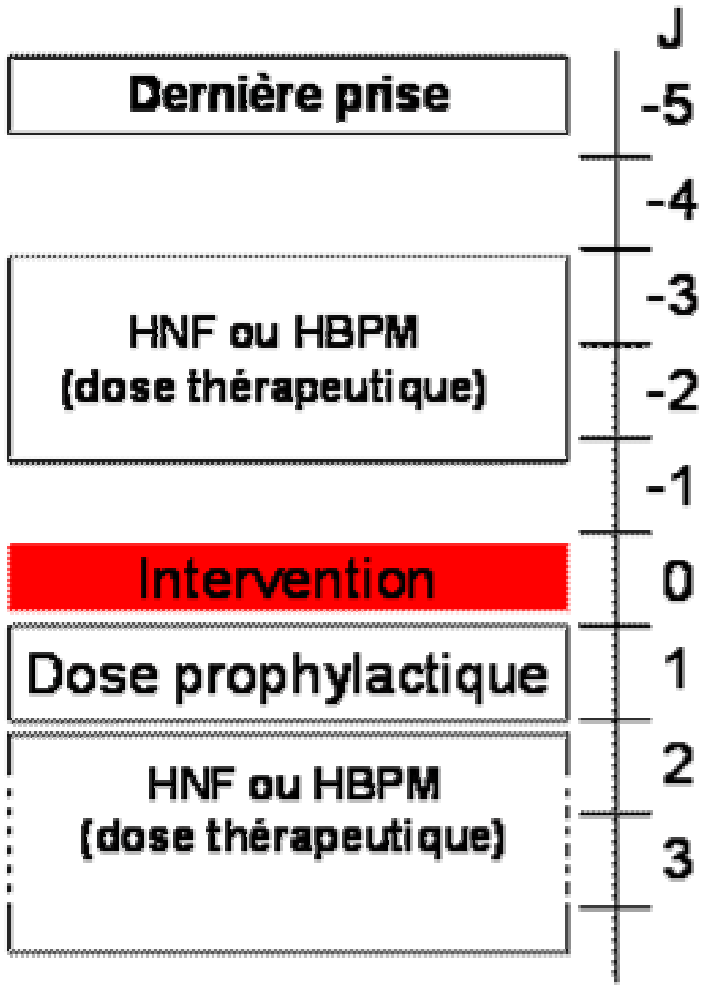
American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition)

James D. Douketis, MD, FRCP(C); Peter B. Berger, MD, FACP; Andrew S. Dunn, MD, FACP; Amir K. Jaffer, MD; Alex C. Spyropoulos, MD, FACP, FCCP; Richard C. Becker, MD, FACP, FCCP; and Jack Ansell, MD, FACP, FCCP

The key recommendations in this article include the following: in patients with a mechanical heart valve or atrial fibrillation or venous thromboembolism (VTE) at high risk for thromboembolism, we recommend bridging anticoagulation with therapeutic-dose subcutaneous (SC) LMWH or IV UFH over no bridging during temporary interruption of VKA therapy (Grade 1C); in patients with a mechanical heart valve or atrial fibrillation or VTE at moderate risk for thromboembolism, we suggest bridging anticoagulation with therapeutic-dose SC LMWH, therapeutic-dose IV UFH, or low-dose SC LMWH over no bridging during temporary interruption of VKA therapy (Grade 2C); in patients with a mechanical heart valve or atrial fibrillation or VTE at low risk for thromboembolism, we suggest low-dose SC LMWH or no bridging over bridging with therapeutic-dose SC LMWH or IV UFH (Grade 2C).

Terapias puente

Nuevos ACO antes de cirugía



Manuscrit Annales Françaises d'Anesthésie-Réanimation V1 rubrique Mise au point ou Article spécial, à discuter

Chirurgies et actes invasifs chez les patients traités au long cours par un anticoagulant oral anti-IIa ou anti-Xa direct.

Surgery and invasive procedures in patients on long term treatment with oral direct thrombin or factor Xa inhibitors

Propositions du Groupe d'Intérêt en Hémostase Périopératoire (GIHP)* et du Groupe d'Etudes sur l'Hémostase et la Thrombose (GEHT)**.

Pierre Sié, Marc Samama, Anne Godier, Nadia Rosencher, Annick Steib, Juan V Llau, Philippe van der Linden, Gilles Pernod, Thomas Lecompte, Isabelle Gouin-Thibault et Pierre Albaladejo.

Conclusiones

Las HBPM son fármacos con amplias indicaciones desde hace años: profilaxis y tratamiento de la Enfermedad Tromboembólica Venosa, profilaxis y tratamiento en Patología Arterial.

A pesar del tiempo de uso siguen existiendo diversas controversias en su manejo, que van desde el momento óptimo de su administración en el perioperatorio hasta la dosificación idónea en pacientes “especiales”

Conclusiones

Los nuevos anticoagulantes recientemente desarrollados presentan un perfil farmacológico interesante y competirán en un futuro cercano con las HBPM, pero actualmente éstas siguen siendo los anticoagulantes más empleados en todo el mundo.

MUCHAS GRACIAS POR VUESTRA ATENCIÓN

Actualización en el uso de HBPM en el manejo de la ETV

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