



# ETV postquirúrgica

Juan I. Arcelus

Hospital Virgen de las Nieves

Universidad de Granada



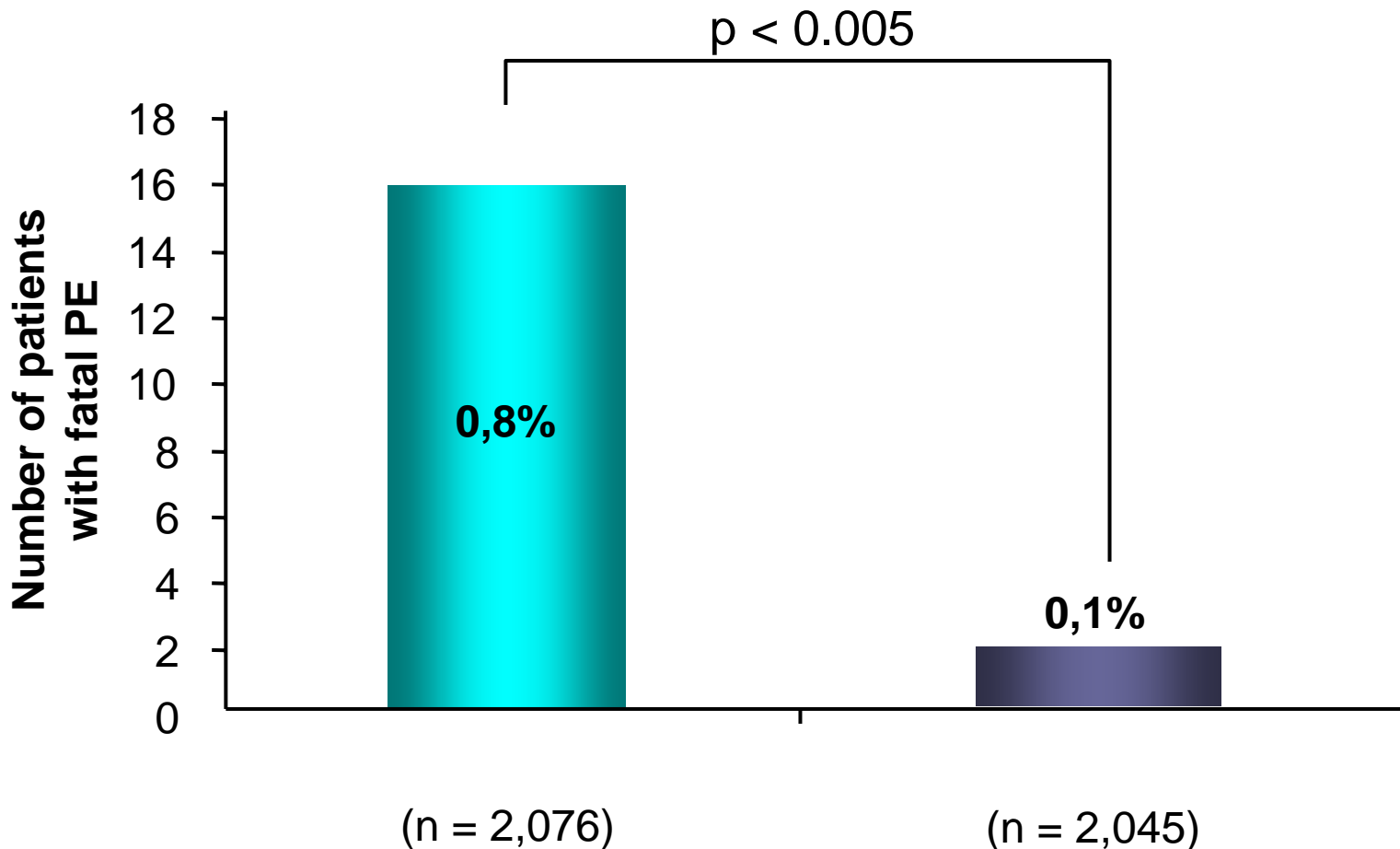
# Introducción

- El riesgo de ETV postoperatoria se reconoce desde hace más de 40 años
- En los años 70-90 se demostró que la profilaxis es eficaz y segura
- Recientes estudios epidemiológicos han demostrado que el porcentaje de pacientes de alto riesgo que reciben profilaxis adecuada es insuficiente
- La Academia Americana de Cirujanos Ortopédicos (AAOS) cuestiona las recomendaciones del ACCP
- Los registros aportan importante información sobre la historia natural y la evolución clínica de la ETV postoperatoria sintomática

# PREVENTION OF FATAL POSTOPERATIVE PULMONARY EMBOLISM BY LOW DOSES OF HEPARIN

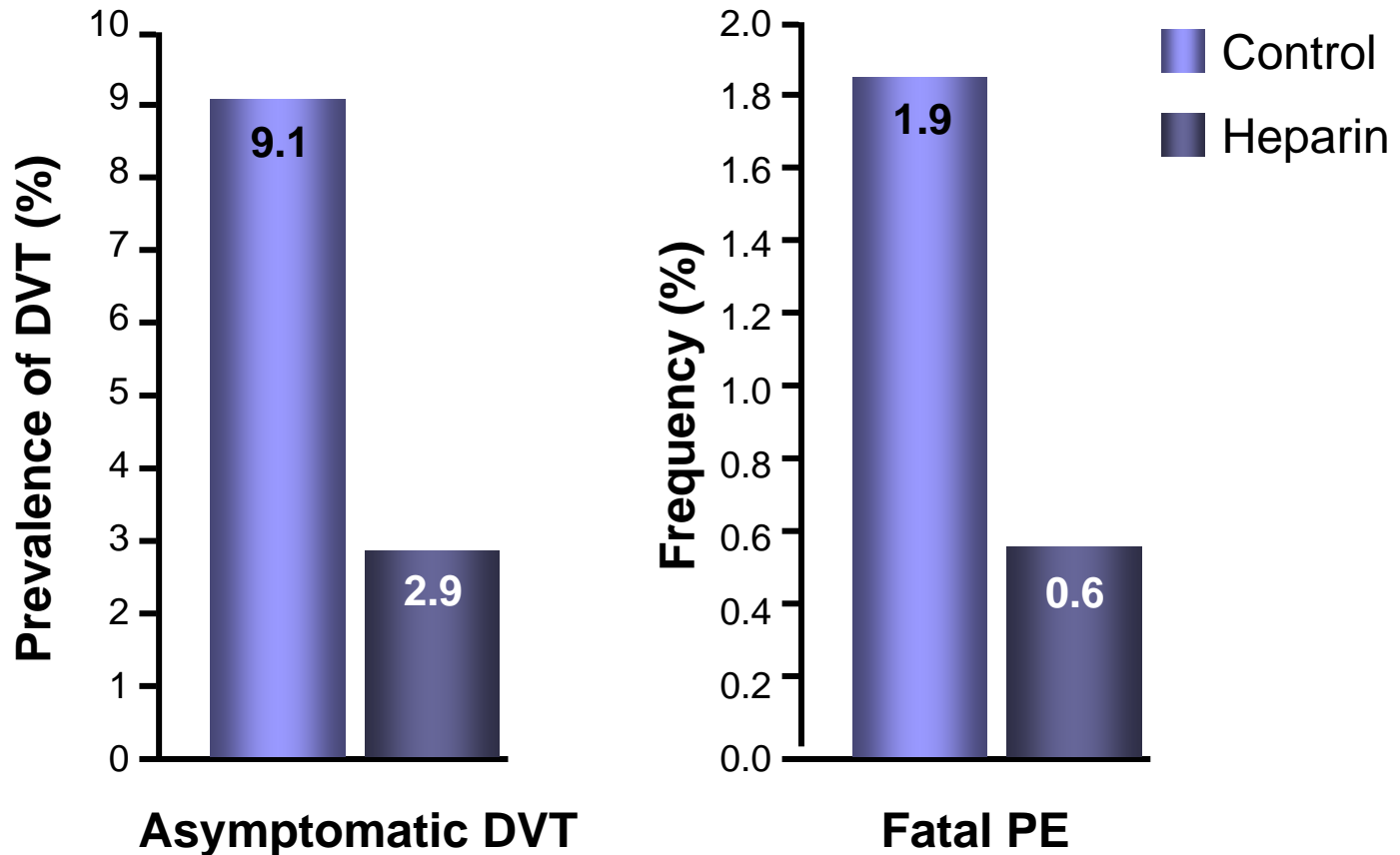


An International Multicentre Trial \*



Low-dose UFH saves 7 lives for every 1,000 operated patients

# Reduction in fatal PE with heparin therapy correlates with DVT reduction



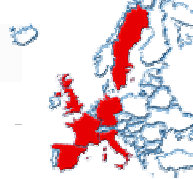
# Fatal PE in surgical patients

Randomized double-blind comparison of LMWH with UFH,  
involving 23,078 surgical patients

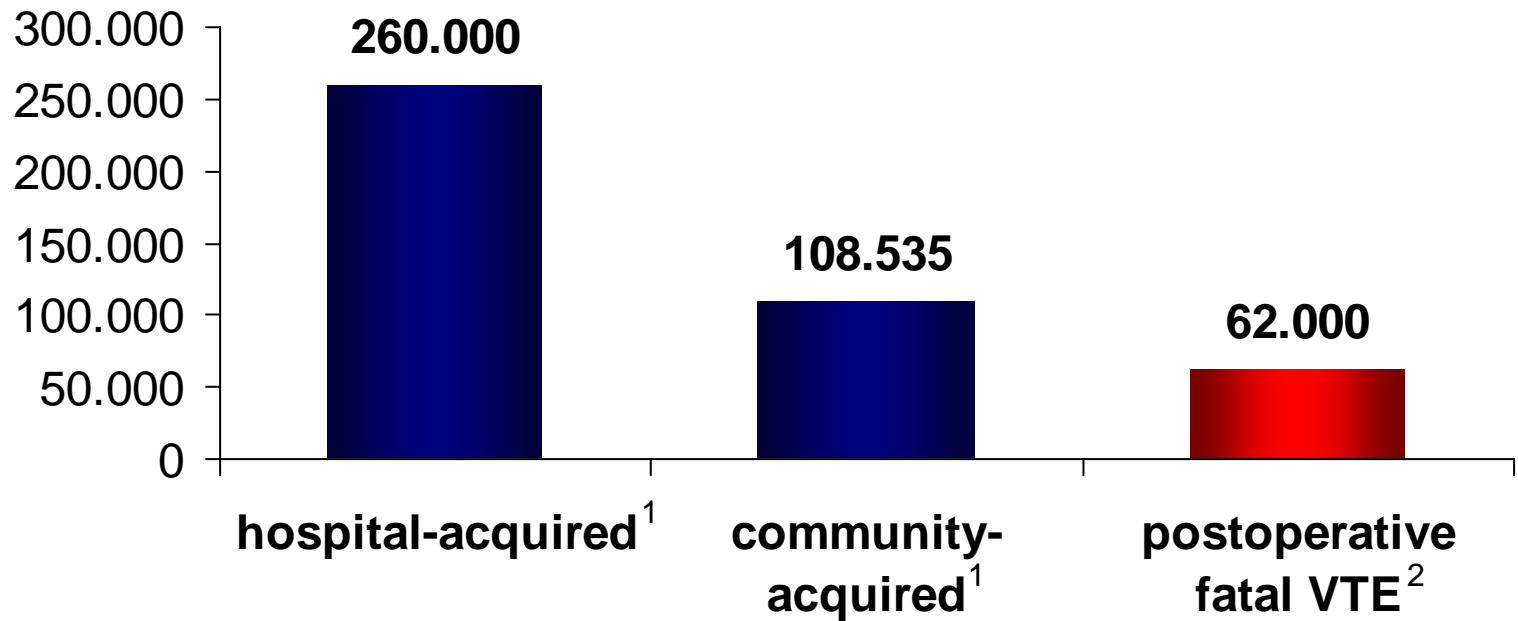
Outcome	LMWH (N = 11,542), n (%)	UFH (N = 11,536), n (%)	p value
PE (at autopsy)	22 (0.191)	22 (0.191)	
<b>Fatal</b>	<b>17 (0.147)</b>	<b>18 (0.156)</b>	<b>0.87</b>
Non-fatal	5 (0.043)	4 (0.035)	1

Anticoagulant prophylaxis reduces the risk of death to 0.15%

**No deaths from anticoagulant bleeding occurred in this large series**



## Incidencia anual de EP fatal en los países participantes en el proyecto VITAE



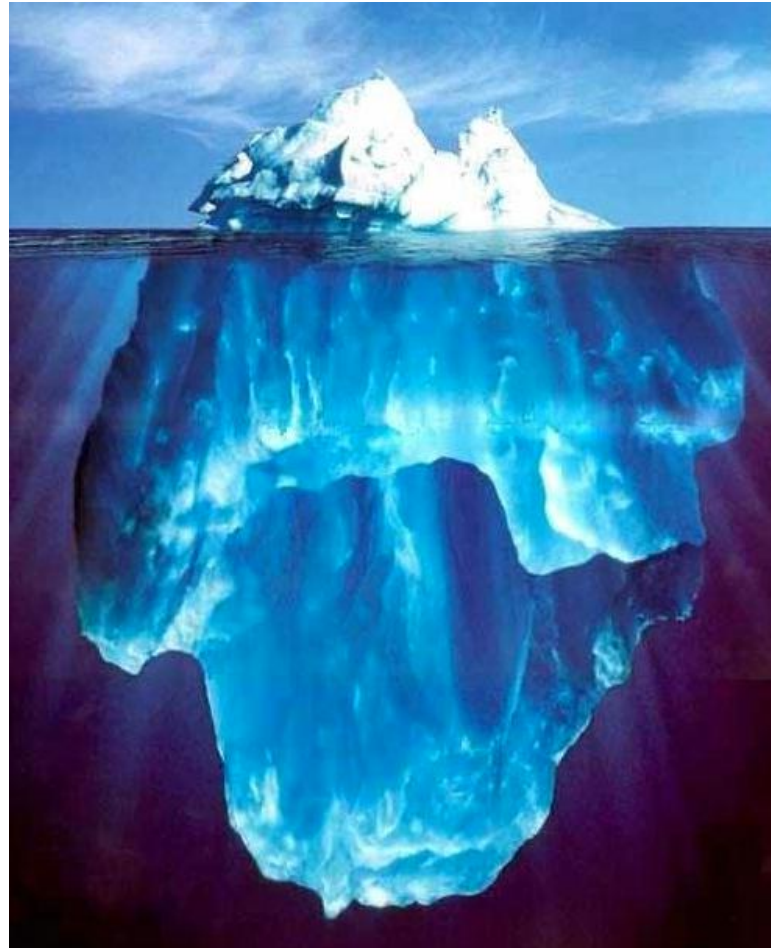
<sup>1</sup>Cohen AT, et al. Thromb Hamost 2007; 98: 756-764.

<sup>2</sup>Adapted from Sandler DA, Martin JF. J Roc Soc Med.1989;82:203-5.

# La mayoría de los casos de ETV no son correctamente diagnosticados

**10-20% con  
síntomas**

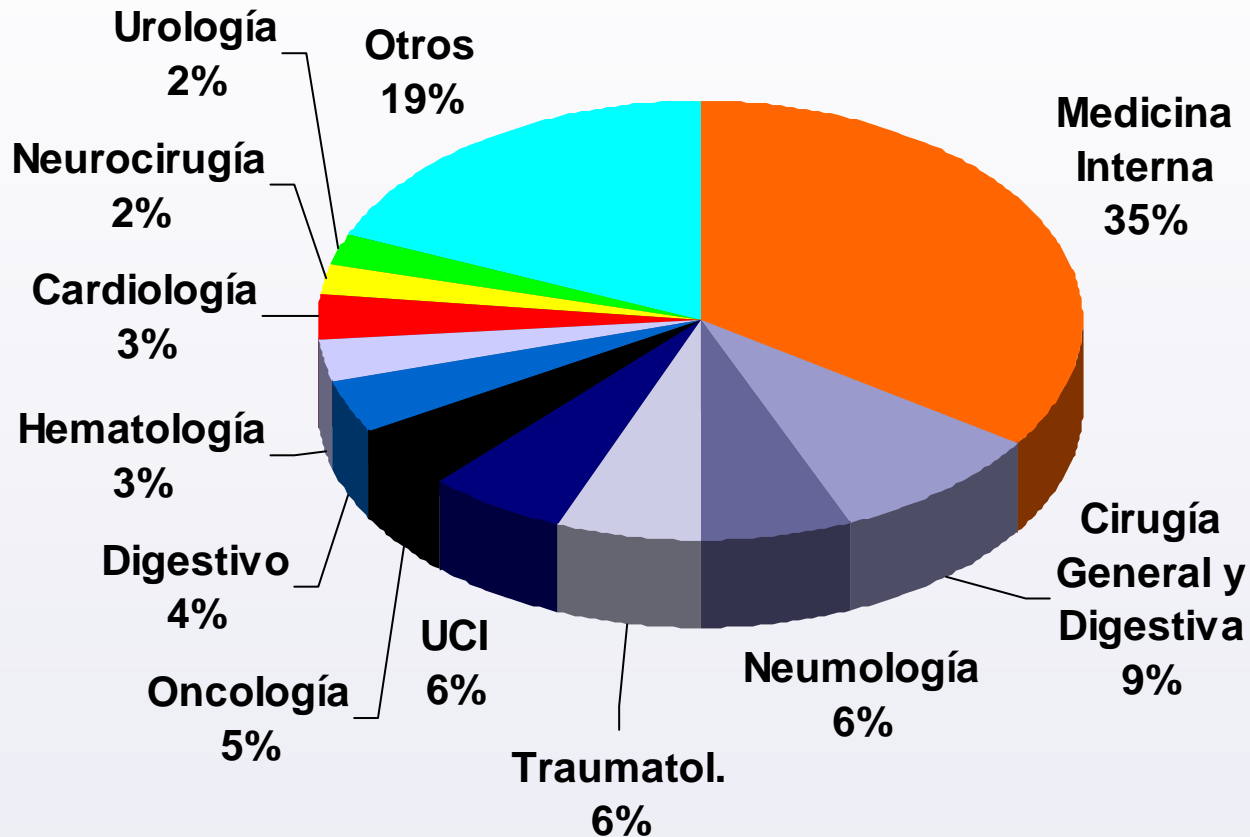
**80-90% sin  
Síntomas o  
con otro  
diagnóstico**





# ETV COMO DIAGNÓSTICO SECUNDARIO<sup>(1)</sup>

## SERVICIOS EN LOS QUE SE DISTRIBUYEN LAS ALTAS



(1). Excluidos casos de tromboflebitis superficial MMSS



# Causas de hospitalización mas frecuentes en pacientes con ETV como diagnóstico secundario

## GDR Quirúrgicos

Código CIE-9-MC	Patología (Diagnósticos Principales)	%
140-239	Neoplasias	24,54
820-821	Fractura de cuello de fémur y otras fracturas de fémur	8,26
520-579*	Digestivas (otras)	5,78
996-999	Complicaciones cuidados quirúrgicos y médicos NCOM	5,48
574-576	Colelitiasis y otras alteraciones de la vía biliar	5,03
715	Osteoartrosis / Enfermedades afines	4,97
390-429*	Otras cardiacas	4,02
410-414	Cardiopatía isquémica	3,67
800-959*	Lesiones varias (heridas, contusiones, fracturas, quemaduras)	3,47
440-448	Otras Arteriopatías	3,21

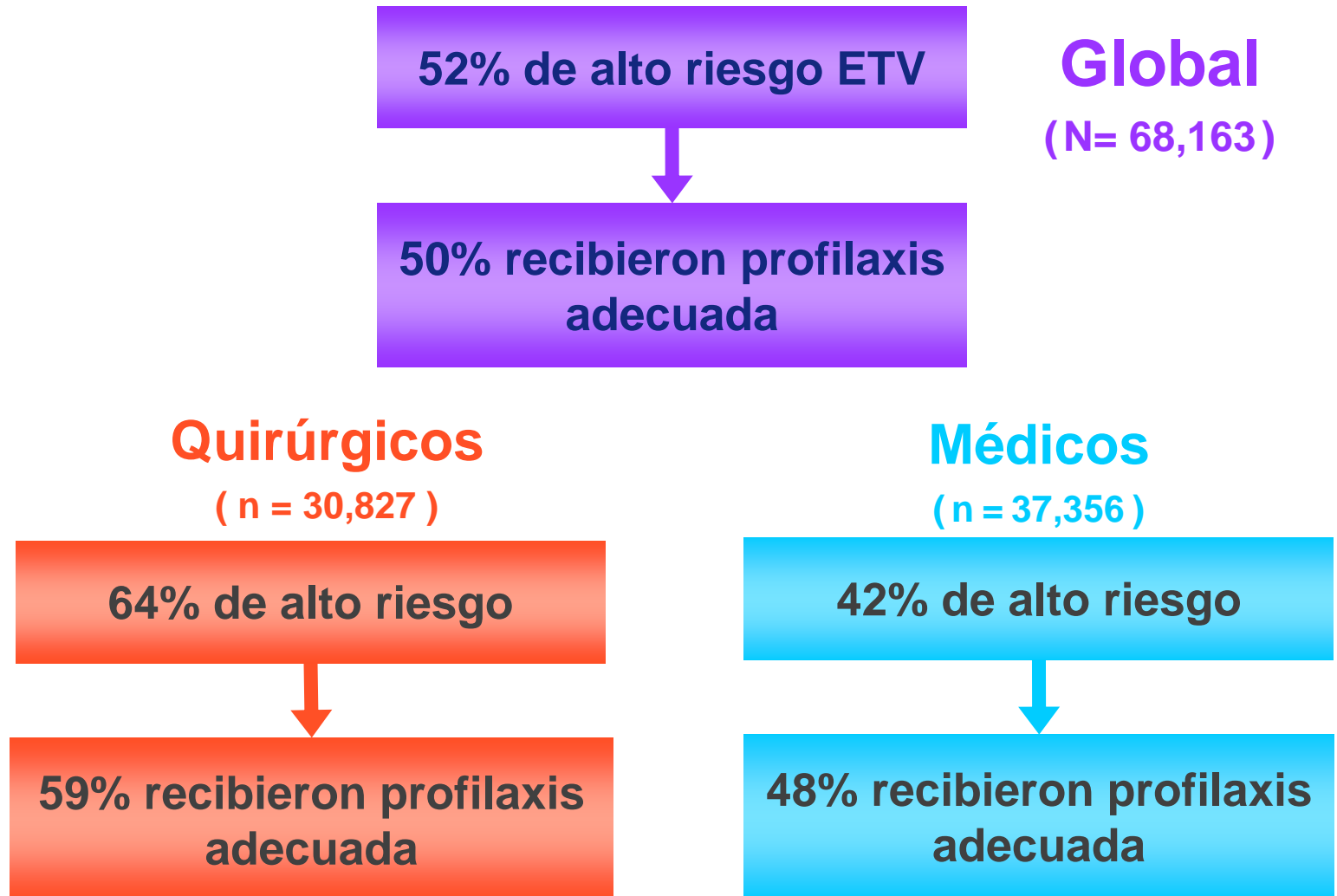
# Utilización real de la profilaxis de la ETV

## Estudio internacional ENDORSE



**32 países -- 358 hospitales**

# Pacientes con elevado riesgo de ETV que recibieron profilaxis adecuada



# Pacientes con elevado riesgo de ETV que recibieron profilaxis adecuada

61% con alto riesgo ETV

**España**  
(N= 3,065)

71% recibieron profilaxis adecuada

**Quirúrgicos**  
(n = 996)

74% de alto riesgo

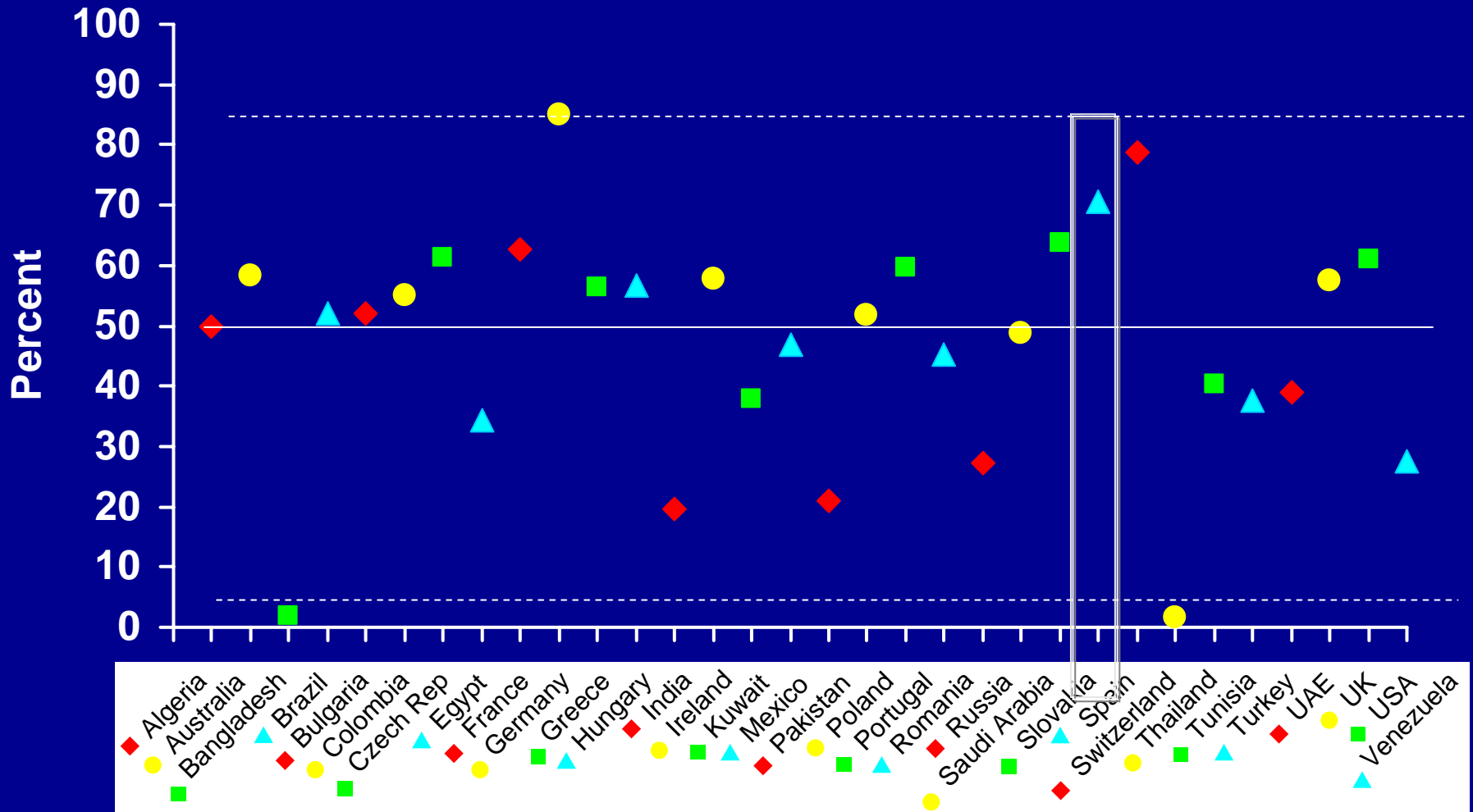
82% recibieron profilaxis adecuada

**Médicos**  
(n=2,069)

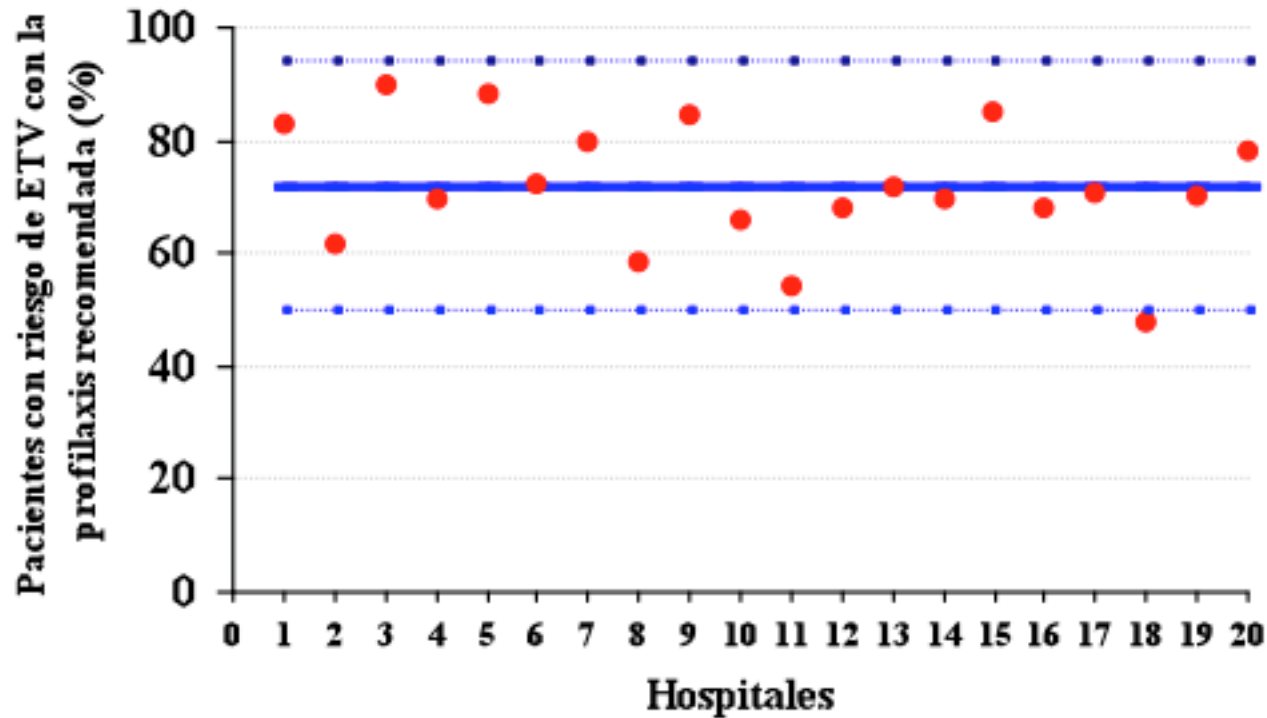
55% de alto riesgo

64% recibieron profilaxis adecuada

# Porcentaje de pacientes que recibieron prevención adecuada en el estudio



# Proporción de pacientes de alto riesgo que recibieron profilaxis adecuada en los hospitales españoles participantes



---

**American Academy of Orthopaedic Surgeons Clinical Guideline**  
**on**  
**Prevention of Symptomatic Pulmonary Embolism in Patients**  
**Undergoing Total Hip or Knee Arthroplasty**  
**Summary of Recommendations**

---

***Recommendation 3.3.1*** Patients **at standard risk of both PE and major bleeding** should be considered for one of the chemoprophylactic agents evaluated in this guideline, including-in alphabetical order: **Aspirin, LMWH, synthetic pentasaccharides, and warfarin.** (Level III, Grade B (choice of prophylactic agent), Grade C (dosage and timing))

Note: The grade of recommendation was reduced from B to C for dosage and timing because of the lack of consistent evidence in the literature defining a clearly superior regime.

***Recommendation 3.3.2*** Patients **at elevated (above standard) risk of PE and at standard risk of major bleeding** should be considered for one of the chemoprophylactic agents evaluated in this guideline, including-in alphabetical order: **LMWH, synthetic pentasaccharides, and warfarin.** (Level III, Grade B (choice of prophylactic agent), Grade C (dosage and timing)).

Note: The grade of recommendation was reduced from B to C for dosage and timing because of the lack of consistent evidence in the literature on risk stratification of patient populations.





# Post-operative VTE in different surgical populations in the RIETE registry



**Surgery: 11% of the total number of cases of symptomatic VTE**

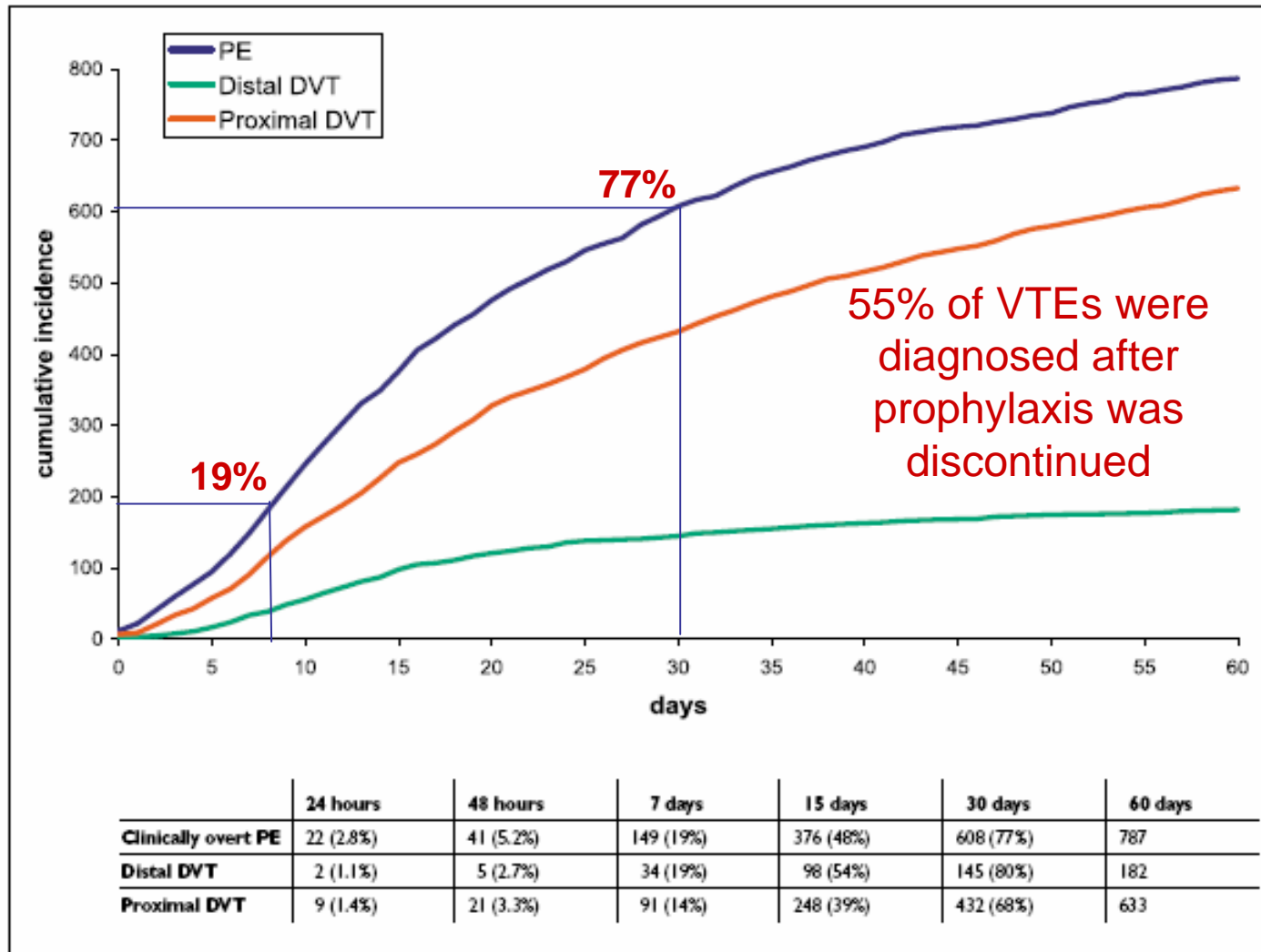
Type of surgery	N	Patients with prophylaxis	Mean LMWH dose	Mean LMWH duration (days)	DVT	PE	Death at 3 months
Hip fracture	248	236 (95%)	4.244 IU/d	21.5	122 (49%)	126 (51%)	33 (13%)
Hip prosthesis	264	249 (94%)	4.233 IU/d	20.7	144 (55%)	120 (45%)	16 (6%)
Knee prosthesis	246	241 (98%)	4.147 IU/d	17.6	122 (50%)	124 (50%)	2 (1%)
Other orthopaedic surgery	431	329 (76%)	4.041 IU/d	21.3	211 (49%)	220 (51%)	9 (2%)
Oncologic surgery	436	328 (75%)	3.253 IU/d	13.5	226 (52%)	210 (48%)	52 (12%)
Abdominal	463	291 (63%)	3.329 IU/d	12.1	237 (51%)	226 (49%)	21 (5%)
Genitourinary	301	157 (52%)	3.342 IU/d	9.1	143 (48%)	158 (52%)	12 (4%)
Neurosurgery	253	96 (38%)	3.811 IU/d	13.3	129 (51%)	124 (49%)	17 (7%)
Arterial surgery	73	51 (70%)	3.154 IU/d	12.1	35 (51%)	36 (49%)	10 (14%)
Varicose veins surgery	100	35 (35%)	3.680 IU/d	11.6	41 (41%)	59 (59%)	1 (1%)
Other interventions	441	150 (34%)	3.554 IU/d	12.5	209 (47%)	232 (53%)	18 (4%)
<b>Total</b>	<b>3,256</b>	<b>2,163 (66%)</b>	<b>3.769 IU/d</b>	<b>16.3</b>	<b>1,621 (50%)</b>	<b>1,635 (50%)</b>	<b>19 (6%)</b>

# Time course and prophylaxis in 1,602 patients with postoperative clinical VTE (RIETE)

	<b>Major orthopaedic</b>	<b>Cancer surgery</b>	<b>OR or p value</b>
<b>Patients</b>	393 (25%)	207 (13%)	
<b>Prophylaxis</b>			
Yes	376 (96%)	157 (76%)	7.0 (3.9–1.3)*
LMWH dose	4,252 ± 1,016	3,260 ± 1,141	p < 0.001
Duration (days)	17 ± 9.6	13 ± 8.9	p < 0.001
<b>Time course</b>			
Time to VTE	22 ± 16	24 ± 16	p = NS
First 15 days	184 (47%)	85 (41%)	1.3 (0.9–1.8)
First 30 days	279 (71%)	137 (66%)	1.2 (0.9–1.8)

\* p < 0.001

# Time course and clinical presentation of postoperative VTE in RIETE



**Table I. Clinical characteristics of 2684 patients with postoperative VTE according to their initial presentation.**

	<b>Clinically overt PE</b>	<b>Only DVT signs</b>	<b>Odds ratio (95% CI)</b>	<b>p value</b>
<b>Patients, N</b>	<b>1302</b>	<b>1382</b>		
<b>Clinical characteristics,</b>				
Gender (males)	578 (44%)	658 (48%)	0.9 (0.8-1.0)	N.S.
Age (mean years±SD)	63±17	62±17	-	N.S.
Time to VTE (days±SD)	21±15	22±14	-	N.S.
Outpatients	740 (57%)	801 (58%)	1.0 (0.8-1.1)	N.S.
Readmission for VTE	711 (55%)	559 (40%)	1.8 (1.5-2.1)	<0.001
<b>Underlying diseases,</b>				
Cancer	348 (27%)	348 (25%)	1.1 (0.9-1.3)	N.S.
Abnormal creatinine levels	110 (8.4%)	116 (8.4%)	1.0 (0.8-1.3)	N.S.
Prior VTE	100 (7.7%)	124 (9.0%)	0.8 (0.6-1.1)	N.S.
<b>Type of surgery,</b>				
Hip fracture	92 (7.1%)	97 (7.0%)	1.0 (0.7-1.4)	N.S.
Elective hip arthroplasty	89 (6.8%)	125 (9.0%)	0.7 (0.5-0.9)	0.02
Elective knee arthroplasty	109 (8.4%)	109 (7.9%)	1.1 (0.8-1.4)	N.S.
Other, orthopaedic surgery	168 (13%)	172 (12%)	1.0 (0.8-1.3)	N.S.
Oncologic surgery	162 (12%)	178 (13%)	1.0 (0.9-1.2)	N.S.
Abdominopelvic surgery	319 (25%)	332 (24%)	1.0 (0.9-1.2)	N.S.
Brain surgery	95 (7.3%)	116 (8.4%)	0.9 (0.6-1.1)	N.S.
Vascular surgery	86 (6.6%)	70 (5.1%)	1.3 (1.0-1.8)	N.S.
Other	182 (14%)	183 (13%)	1.1 (0.9-1.3)	N.S.

**Table I. Clinical characteristics of 2684 patients with postoperative VTE according to their initial presentation.**

	<b>Clinically overt PE</b>	<b>Only DVT signs</b>	<b>Odds ratio (95% CI)</b>	<b>p value</b>
<b>Patients, N</b>	<b>1302</b>	<b>1382</b>		
<b>Thromboprophylaxis,</b>				
Yes	857 (66%)	919 (67%)	1.0 (0.8-1.1)	N.S.
Duration (mean days $\pm$ SD)	15 $\pm$ 19	15 $\pm$ 14	-	N.S.
<b>VTE treatment,</b>				
Initial therapy, LMWH	1057 (81%)	1310 (95%)	0.2 (0.2-0.3)	<0.001
Long-term therapy, VKA drugs	947 (73%)	847 (61%)	1.7 (1.4-2.0)	<0.001
<b>3-month follow-up,</b>				
Recurrent DVT	9 (0.7%)	21 (1.5%)	0.5 (0.2-1.0)	0.04
Recurrent PE	19 (1.5%)	15 (1.1%)	1.4 (0.7-2.7)	N.S.
Admission for recurrent VTE	21 (1.6%)	16 (1.2%)	1.4 (0.7-2.7)	N.S.
Major bleeding	31 (2.4%)	13 (0.9%)	2.6 (1.3-4.9)	0.004
Admission for major bleeding	28 (2.2%)	11 (0.8%)	2.7 (1.4-5.8)	0.002
Death	89 (6.8%)	71 (5.1%)	1.4 (1.0-1.9)	N.S.
<b>Cause of death:</b>				
Fatal, initial PE	17 (1.3%)	0	-	<0.001
Fatal, recurrent PE	7 (0.5%)	6 (0.4%)	1.2 (0.4-3.7)	N.S.
Fatal bleeding	7 (0.5%)	6 (0.4%)	1.2 (0.4-3.7)	N.S.
Disseminated cancer	19 (1.5%)	21 (1.5%)	1.0 (0.5-1.8)	N.S.
Infection	12 (0.9%)	6 (0.4%)	2.1 (0.8-5.7)	N.S.
Unknown	14 (1.1%)	23 (1.7%)	0.6 (0.3-1.3)	N.S.
Other	8 (0.6%)	8 (0.6%)	1.1 (0.4-2.9)	N.S.

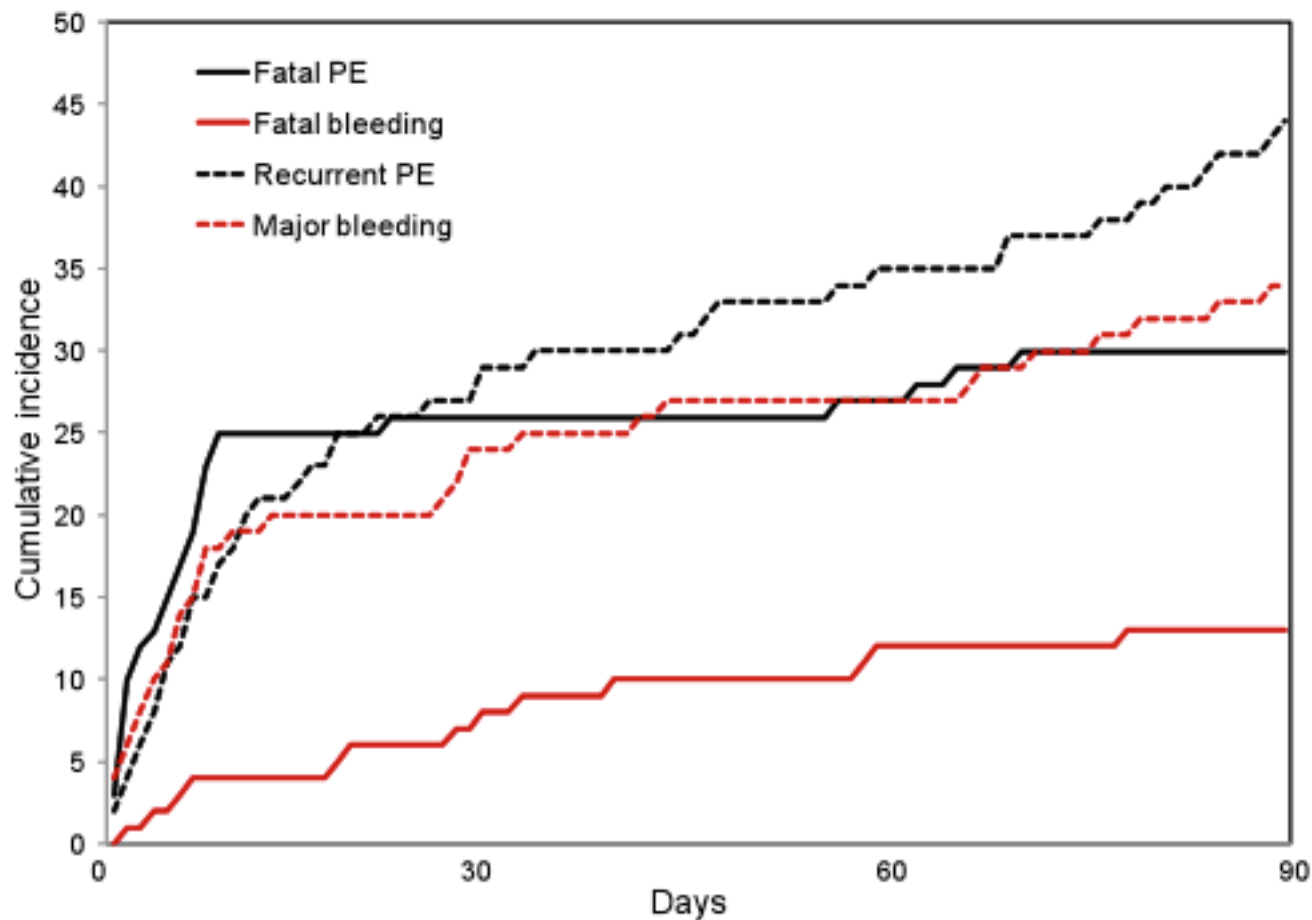


**Table II. Three-month outcome according to the clinical characteristics and type of surgery.**

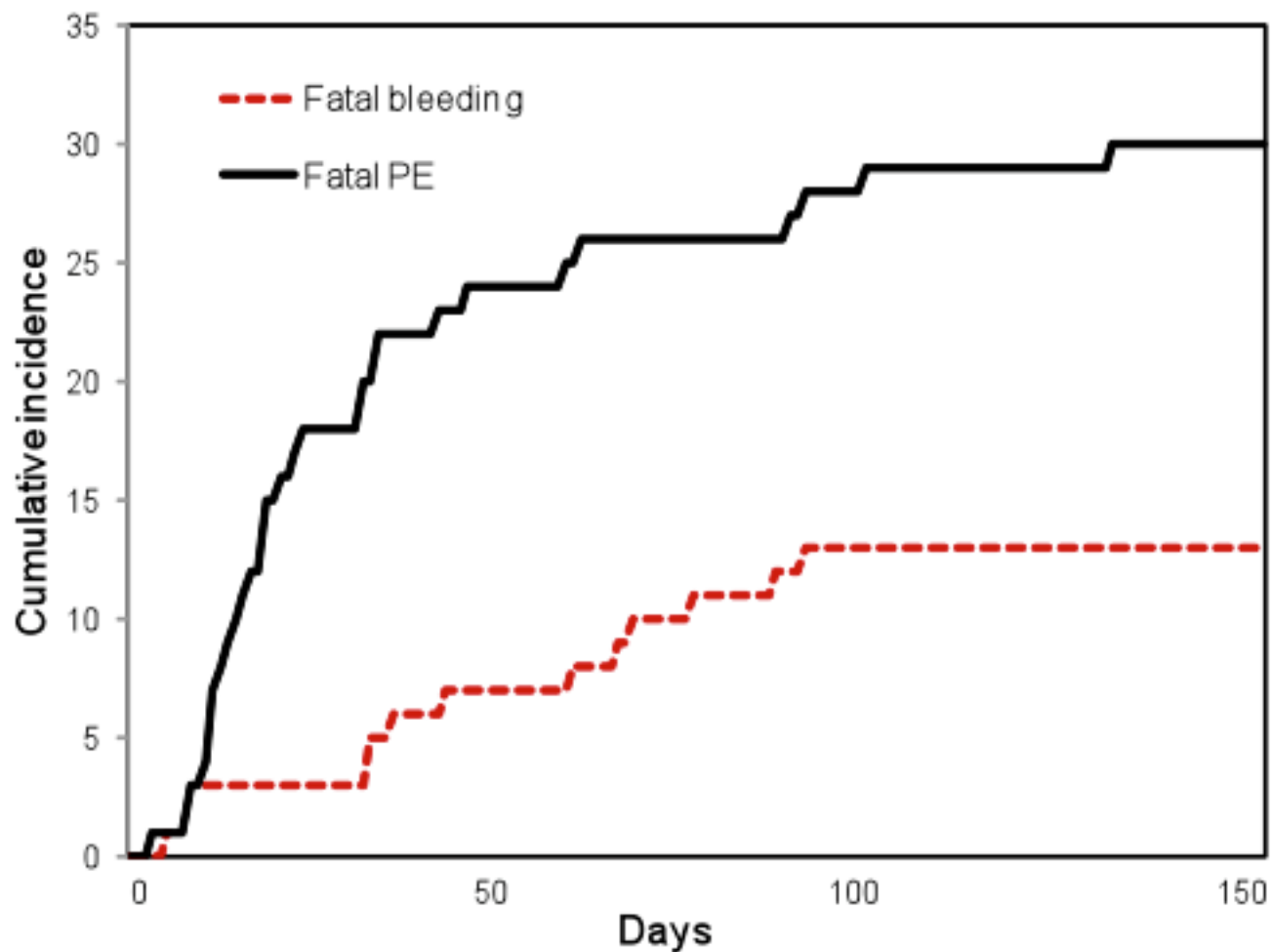
	<b>Patients N</b>	<b>Fatal PE</b>	<b>Recurrent VTE</b>	<b>Major bleeding</b>	<b>Fatal bleeding</b>	<b>Death, other reasons</b>
<b>Patients, N</b>	<b>2684</b>	<b>30 (1.1%)</b>	<b>64 (2.4%)</b>	<b>44 (1.6%)</b>	<b>13 (0.5%)</b>	<b>117 (4.4%)</b>
<b>Clinical characteristics,</b>						
Gender (females)	1448	21 (1.5%)*	28 (1.9%)	21 (1.5%)	8 (0.6%)	63 (4.4%)
Age (mean±SD)	65±16	69±18*	62±17	73±11‡	73±13*	71±14‡
<b>Underlying diseases,</b>						
Cancer	696	10 (1.4%)	39 (5.6%)*	31 (4.5%)	5 (0.7%)	76 (11%)‡
Abnormal creatinine levels	226	7 (3.1%)†	5 (2.2%)	9 (4.0%)†	3 (1.3%)	26 (12%)‡
Prior VTE	224	0	6 (2.7%)	4 (1.8%)	1 (0.4%)	5 (2.2%)
<b>Type of surgery,</b>						
Hip fracture	189	8 (4.2%)‡	8 (4.2%)	5 (2.6%)	1 (0.5%)	19 (10%)
Elective hip arthroplasty	214	1 (0.5%)	5 (2.3%)	4 (1.9%)	1 (0.5%)	14 (6.5%)
Elective knee arthroplasty	218	1 (0.5%)	1 (0.5%)	2 (0.9%)	1 (0.5%)	0
Other, orthopaedic	340	3 (0.9%)	3 (0.9%)	3 (0.9%)	0	3 (0.9%)
Oncologic surgery	340	6 (1.8%)	14 (4.1%)	10 (2.9%)	3 (0.9%)	36 (11%)
Abdominopelvic surgery	651	2 (0.3%)†	9 (1.4%)	13 (2.0%)	4 (0.6%)	23 (3.5%)
Brain surgery	211	6 (2.8%)*	12 (5.7%)‡	2 (0.9%)	0	6 (2.8%)
Vascular surgery	156	2 (1.3%)	2 (1.3%)	1 (0.6%)	1 (0.6%)	6 (3.8%)
Other	365	1 (0.3%)	10 (2.7%)	4 (1.1%)	2 (0.5%)	10 (2.7%)

Comparisons between groups: \* p <0.05 ; † p <0.01; ‡ p <0.001.

**Figure 1. Cumulative incidence of fatal PE, recurrent PE, major bleeding and fatal bleeding after VTE diagnosis.**



**Figure 2. Cumulative incidence of fatal PE and fatal bleeding after surgery.**







MINISTERIO  
DE SANIDAD  
Y CONSUMO

SECRETARÍA GENERAL  
DE SANIDAD

AGENCIA DE CALIDAD  
DEL SNS

# Plan de Calidad para el Sistema Nacional de Salud

**Objetivo 8.3: *Implantar a través de convenios con las Comunidades Autónomas proyectos que impulsen y evalúen prácticas seguras en 8 áreas específicas***

- **Prevenir el Trombo-embolismo Pulmonar (TEP)/ Trombosis Venosa Profunda (TVP) en pacientes sometidos a cirugía.** Se procederá a la elaboración y difusión de protocolos centrados en el uso apropiado de anticoagulantes para favorecer la prevención de las TEP/TVP que consideren especialmente la indicación de profilaxis en pacientes a riesgo.

## III. OTRAS DISPOSICIONES

### MINISTERIO DE SANIDAD Y CONSUMO

- 1090** *Resolución de 22 de diciembre de 2008, de la Secretaría General de Sanidad, por la que se publica el Convenio de colaboración, entre el Ministerio de Sanidad y Consumo y la Consejería de Salud de la Junta de Andalucía, para el impulso de prácticas seguras en los centros sanitarios.*

#### ESTIPULACIONES

Primera. *Objeto.*—El presente Convenio tiene por objeto regular las condiciones de la colaboración entre el Ministerio de Sanidad y Consumo y la Consejería de Salud de la Junta de Andalucía para el desarrollo de la estrategia 8 del Plan de Calidad para el Sistema Nacional de Salud, para la mejora de la seguridad de los pacientes atendidos en los centros sanitarios con los siguientes objetivos específicos:

1. Prevenir las complicaciones de la anestesia y de la cirugía.

Incluye acciones orientadas a:

Prevenir la cirugía en lugar equivocado

Prevenir el trombo embolismo pulmonar y la trombosis venosa profunda

Complicaciones propias de la anestesia

Otras acciones relacionadas con el proceso quirúrgico en la fase de preparación, acto quirúrgico y fase posquirúrgica

# Conclusiones

- La ETV sigue representando una frecuente complicación en los pacientes quirúrgicos
- No se debe subestimar la gravedad de la ETV postoperatoria
- Existen métodos para la prevención de la ETV seguros y eficaces
- Es preciso mejorar la utilización de profilaxis en los pacientes médicos y su calidad en los quirúrgicos de alto riesgo (duración, nuevos métodos..)

¡Suerte en Roma!



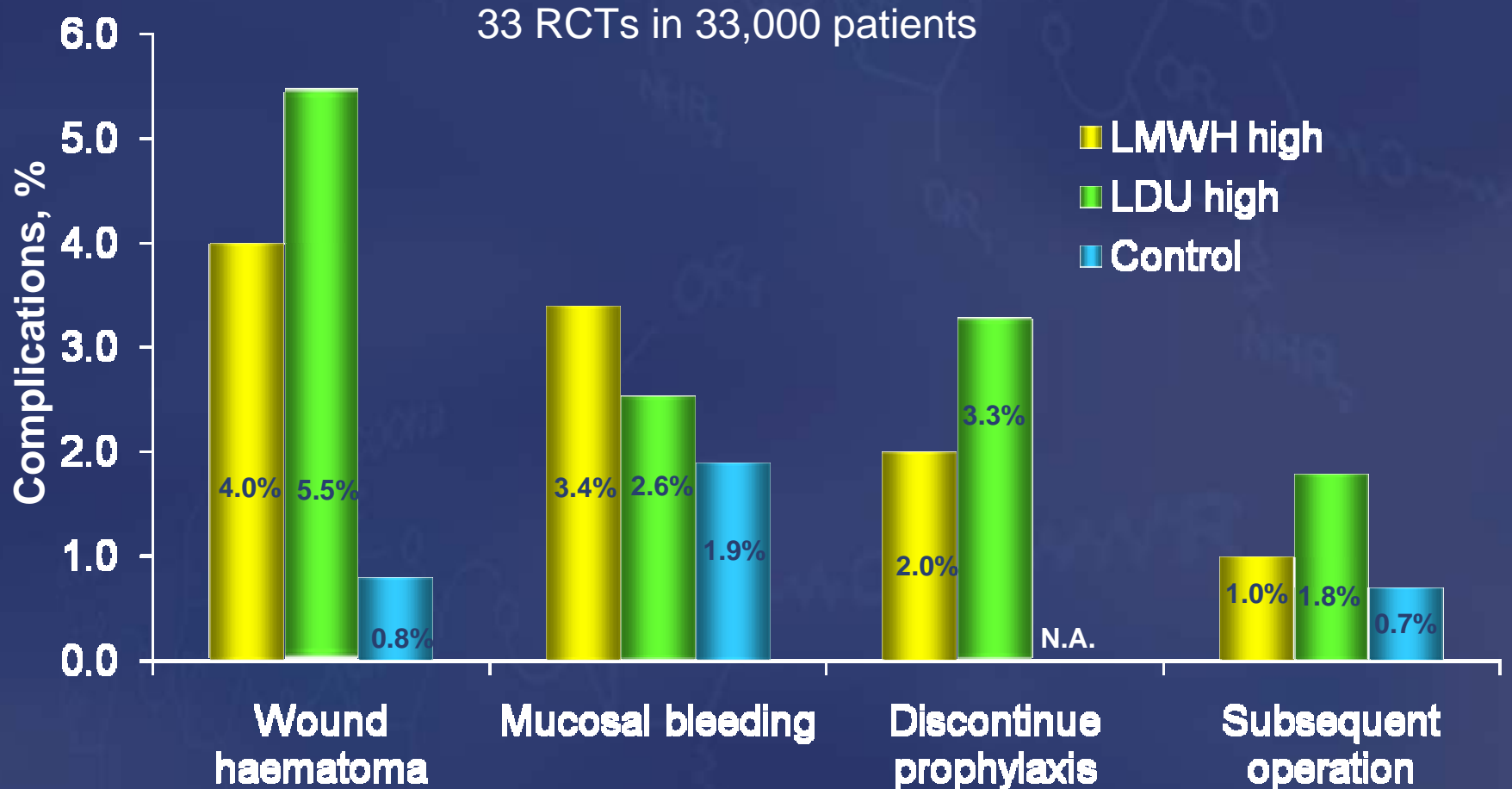




**Muchas gracias**



# The rate of bleeding complications after pharmacologic DVT prophylaxis



# VTE among hospitalized patients before and after electronic alerts system

