

How to prevent fatal pulmonary embolism ?

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Background

❖ fatal PE in recent RCTs: 1.5% at 3 months

- despite a high selection of patients
- despite adequate treatments
- despite optimal management

→ some patients remain at high risk of fatal PE

The Matisse Investigators. *N Engl J Med* 2003

Background

❖ **Aujesky score**: to identify patient at low risk

Age > 70

History of Comorbid conditions

Cancer

Chronic lung disease

Heart failure

Chronic renal disease

Cerebrovascular disease

Clinical abnormality

Pulse \geq 100 mm Hg

SBP < 100mm Hg

Altered mental status

aO₂sat < 90%

Aujesky D et al. *Arch Intern Med* 2006

RIETE : Methods

❖ RIETE design

- prospective cohort of consecutive patients with symptomatic DVT or PE confirmed by objective tests
- 3 month follow-up

❖ outcome : fatal PE

- autopsy proven
- death shortly after occurrence or recurrence of symptomatic PE objectively confirmed, **in the absence of any alternative diagnosis**

Methods

❖ Potential predictors of fatal PE

- demographic and clinical characteristics
- VTE characteristics :
 - DVT or PE
 - transient or permanent risk factors
 - idiopathic

❖ Statistical analysis

- logistic regression model
- univariate analysis → multivariate analysis

Patients' characteristics

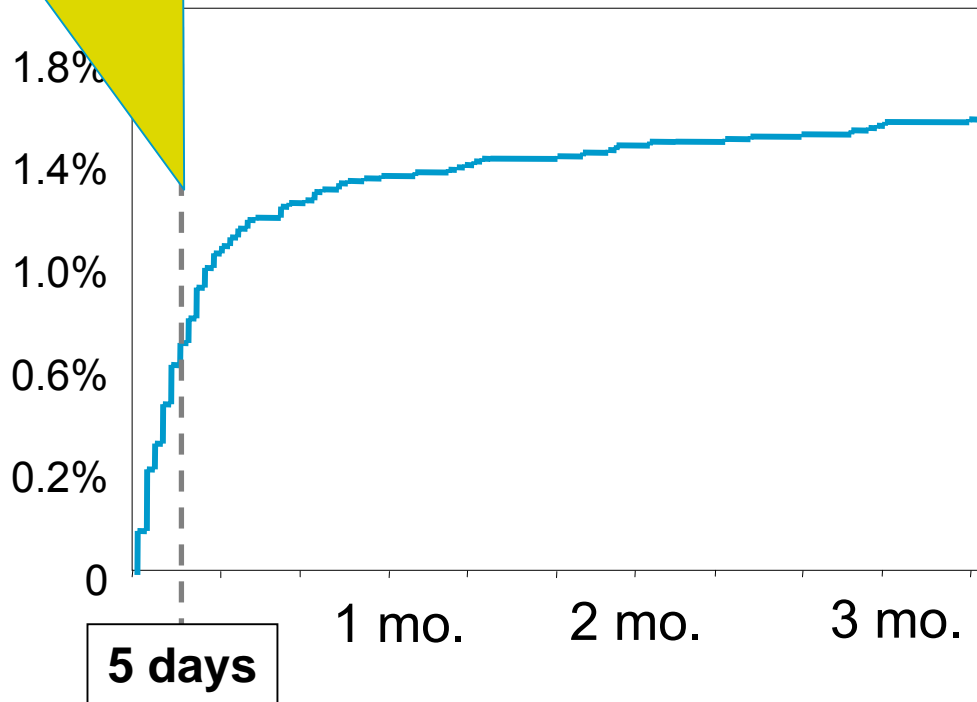
n = 15,520 patients

Mean age	66 yrs ± 17	
Age > 75 yrs	37 %	
Cancer	20 %	
Cardioresp. insufficiency	17 %	
History of VTE	16 %	
DVT	58 %	
PE	42 %	
Massive PE	1.6 %	<i>SBP < 90 mmHg</i>

Results: fatal PE at 3 months

- ❖ Overall cumulative mortality : 1342 deaths (8.65%)
- ❖ Cumulative rate of fatal PE

50% within 5 days
75% within 12 days



260 fatal PE
1.68%

Results: high fatal PE rates

	No. Pts	%fatal PE	whole population
Massive PE	248	9.3%	1.68%
Neurological disease	567	4.9%	
symptomatic PE	6264	3.0%	
Cardiorespiratory insuf.	2611	2.9%	
Age > 75 yrs	5800	2.9%	
Cancer	3172	2.8%	
Recent surgery	2006	1.0%	
DVT	8958	0.5%	

Multivariate analysis of fatal PE

	OR	95 % CI	P value
Initial VTE			< 0.0001
<i>DVT</i>	1		
<i>non massive PE</i>	5.4	3.2 – 9.2	
<i>massive PE</i>	17.5	7.45 – 41.2	
Neurological disease	4.9	2.71 – 8.84	< 0.0001
Age > 75 yrs	2.3	1.7 – 3.2	< 0.0001
Cancer	2.0	1.29 – 3.21	0.0022
Treatment duration < 3 mo.	1.7	1.2 – 2.6	0.004
Recent surgery	0.5	0.23 – 1.25	0.015

Probability of fatal PE...

❖ Patient < 75 yrs old, DVT	0.2%	low
❖ Patient < 75 yrs old, PE	1.2%	moderate
❖ Patient > 75 yrs old, PE	3.4%	
❖ Patient > 75 yrs old, PE, neurological disease	9.8%	high
❖ Patient > 75 yrs old, massive PE, neurological disease	24.7%	very high

Discussion

❖ RIETE : real life ?

		fatal PE	deaths
MATISSE 2003	2213 PE	1.5%	4.75%
RIETE 2006	15 520 VTE	1.68%	8.65%
ICOPER 1999	2 110 PE	8%	18%

❖ Limits of the results

Cardiac biology and imaging

Usefulness of the following prognostic factors:

initial PE, neurological disease, cancer, advanced age

Risk

low

moderate

high

very high

RVD+

Tropo - Tropo +

Ambulatory ?

filter ?

Fibrino
lytics ?

Fibrinolytics*



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