Prevention of Venous Thromboembolism

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Prevention of Venous Thromboembolism

- A solid evidence base exists
- Global and national practice appears suboptimal
- At risk medical patients are less likely to receive recommended prophylaxis than surgical patients
- VTE risk extends beyond hospitalization

Next evidence based consensus due in 2008

Which benefits of thromboprophylaxis have been demonstrated?

A. Reduction in asymptomatic DVT

B. Reduction in fatal PE

C. Reduction in health care costs

D. All of the above

Non-surgical Inpatients

Randomized Placebo-Controlled Clinical Trials
<u>Asymptomatic</u> DVT Endpoints

	Enoxaparin 40 mg Mederiox N = 1102	Dalteparin 5000 IU Prevenit N = 3706	Fondaparinux 2.5 mg Artemis N = 849
DVT Reduction, %	63	45	49
Bleed, %	1.7	0.5	0.2
Placebo bleed, %	1.1	0.2	0.2

NEJM 1999; 341:793 Circ 2004; 110:874 BMJ 2006; 332:325

Non-surgical Inpatients

Meta-analysis of Randomized Clinical Trials
(n=19,958)
<u>Symptomatic</u> DVT Endpoints

DVT Reduction, %	0.47
PE Reduction, %	0.29* *NNT = 345
Fatal PE Reduction, %	0.25* *NNT = 400
Major bleed increase, %	1.32

Ann Intern Med 2007; 146: 278 - 288

Non-surgical Inpatients

Heparin dose

	5000 q 12 hrs N = 1102	5000 q 8 hrs N = 3706	p
DVT / 1000 days	5.4	3.0	0.4
PE / 1000 days	1.5	0.5	0.09
Major bleed / 1000 days	0.35	0.96	<.001

CHEST 2007; 131: 507

Mechanical Prophylaxis

Advantage: do not cause bleeding

Disadvantages:

- not intensively studied
- not shown to ↓ death or PE
- less effective than anticoagulant (or not effective)
- trials unblinded ∴ potential for bias
- poor compliance – patients, staff

8th ACCP Consensus Conference on Antithrombotic Therapy

General Recommendations

1.4.3 Mechanical prophylaxis used primarily:

- in patients at high risk of bleeding

or

- as an adjunct to anticoagulant-based prophylaxis

Need for Post-Discharge Prophylaxis Following Major Orthopedic Surgery

Compared with in-hospital prophylaxis, extending prophylaxis for up to 1 month,

↓ Venographic DVT by 52%

↓Symptomatic VTE by 62% → NNT = 50

Without ↑ clinically-important bleeding

- 9 RCTS, N = 3,999

Eikelboom - Lancet 2001;358:9

Extended Prophylaxis for Non-surgical Inpatients

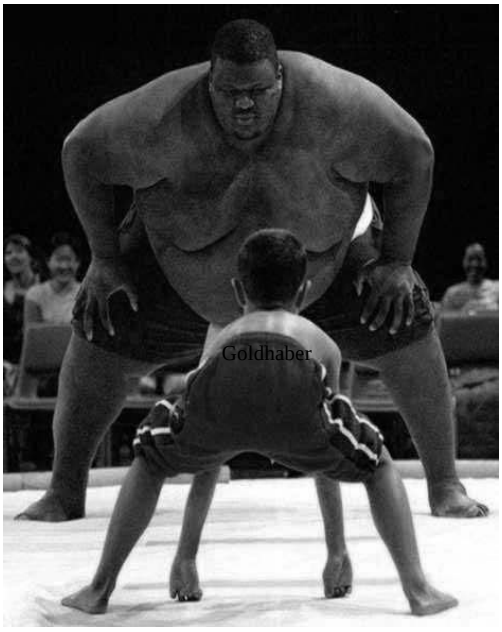
VTE after discharge from the hospital:

MEDENOX	**1% over 3 months**
PREVENT	**0.3% over 3 months**
ARTEMIS	**1.2% over 1 month**

8th ACCP Consensus Conference on Antithrombotic Therapy*

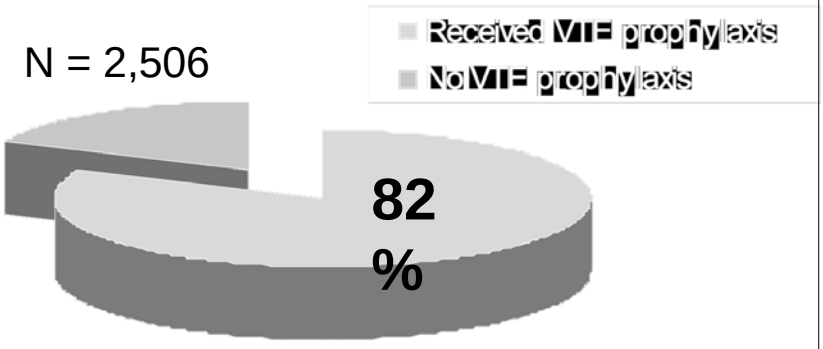
What is new?

We know what to do, but !!!!!!!!!



2000 - 2004: compliance to prevent VTE is poor

N = 2,506



N = 13,922 with VTE risk score > 4

Kucher N et al N Engl J Med 2005; 352: 969 - 977

Randomized Trial of Computer Alerts for 2,506 patients with VTE risk

	Alert N = 1255	Control N = 1251	p
Overall %	33.5	14.5	<.001
Mechanical %	10.0	1.6	<.001
Anticoagulant %	23.5	13.0	<.001

Kucher N et al N Engl J Med 2005; 352: 969 - 977

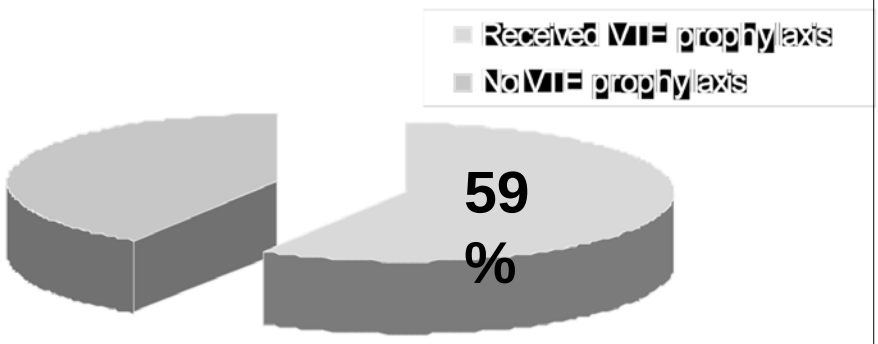
ENDORSE : A global study

32 countries - 358 hospitals – 68,183 evaluable patients

52% had VTE risk(s) and only 50% received effective prophylax

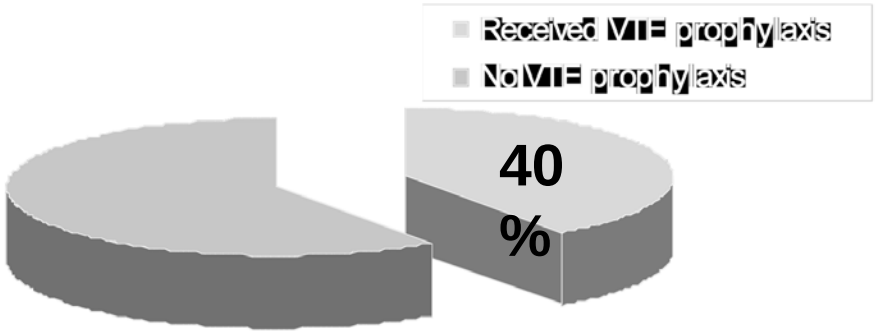
Prins et al. Thromb Haemost 2007

Global surgical compliance to prevent VTE is poor



N = 30,827

Global medical compliance to prevent VTE is poorer

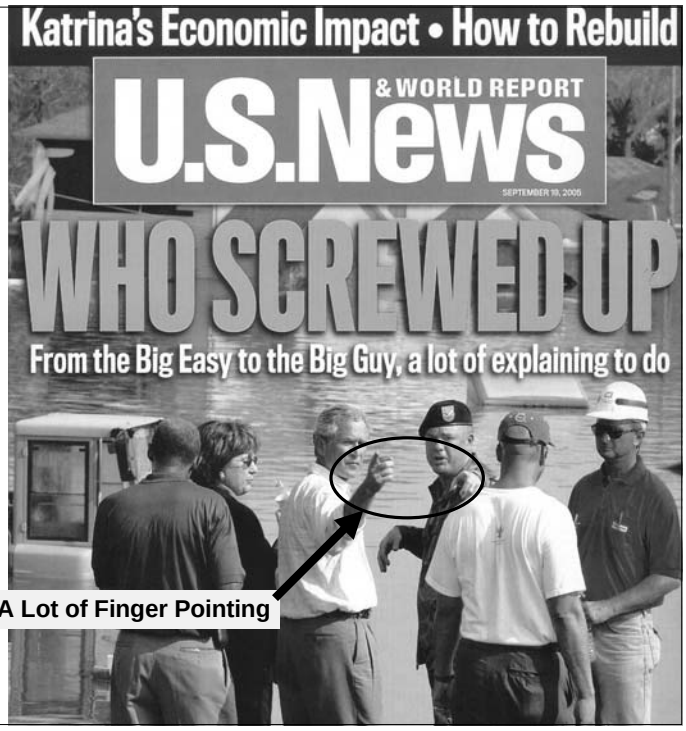


N = 37,356

⏩ " The disconnect between evidence and execution as it relates to DVT prevention amounts to a public health crisis "

Sam Goldhaber, MD

U.S. News & World Report Sept. 19, 2005



Thromboprophylaxis . . .

- Is the top patient safety practice for hospitals

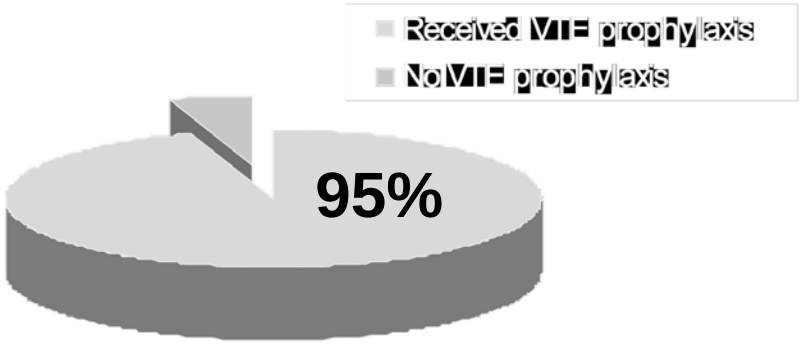
Making Health Care Safer: A Critical Analysis of Patient Safety Practices Shojania (2001) - www.ahrq.gov/clinic/ptsafety/

⏩ " Every system is designed to produce the results it gets "

Paul Batalden, Dartmouth University

The Most Egregious Safety Standards

Routine compliance with VTE prevention guidelines is possible



N = 4,170 surgical inpatients

Mosen D et al Chest 2004; 125:1635 - 1641

⏩ Re-design systems and aim support at the “front line”

Prevention of VTE: Summary

1. Thromboprophylaxis is indicated for most inpatients
2. Keep it simple, routine