

PREVENTION AND TREATMENT OF VENOUS THROMBOEMBOLISM

International Consensus Statement 2013 Guidelines According to Scientific Evidence

Developed under the auspices of the:

Cardiovascular Disease Educational and Research Trust (UK)

European Venous Forum

North American Thrombosis Forum

International Union of Angiology and

Union Internationale du Phlebologie

The Problem and the Need For Prevention

Chapter 2

Venous Thromboembolism

- **Deep vein thrombosis (DVT) and pulmonary embolism (PE) are major health problems with potential serious outcomes**
 - ▶ DVT is a common disease
 - ▶ PE may be fatal
 - ▶ Very large population at risk
 - ▶ DVT is often silent and commonly life-threatening
 - ▶ DVT has debilitating sequelae:
 - post-thrombotic syndrome (PTS) (skin changes and ulceration)
 - pulmonary hypertension
 - ▶ Adversely impacts quality of life (QOL)
 - ▶ Costly to patient and healthcare systems

Incidence of Venous Thromboembolism

Annual Incidence of VTE in North America and Europe¹⁻⁶

DVT	160 per 100,000
Symptomatic Non-Fatal PE	20 per 100,000
Fatal Autopsy-Detected PE	5 per 100,000

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4. Nordstrom M, et al. J Intern Med 1992; 232:155-60.
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VTE Associated Long Term Risks

Pulmonary Hypertension

- Recurrent PE may lead to pulmonary hypertension

Cumulative Incidence of pulmonary hypertension from VTE	
3 months	0%
6 months	1%
1 year	3.1%
2 years	3.8%

VTE Associated Long Term Risks

Chronic Venous Insufficiency

- **Prevalence of venous ulceration is > 300 per 100 000**
 - ▶ Approximately 25% are secondary to DVT^{1,2}
- **Annual cost of Chronic Venous Insufficiency**
 - ▶ Western Europe: ~600-900 million € or 720 million-1 billion (US\$)^{3, 4}
 - ▶ United States: ~2.5 billion € or 3 billion (US\$)⁵

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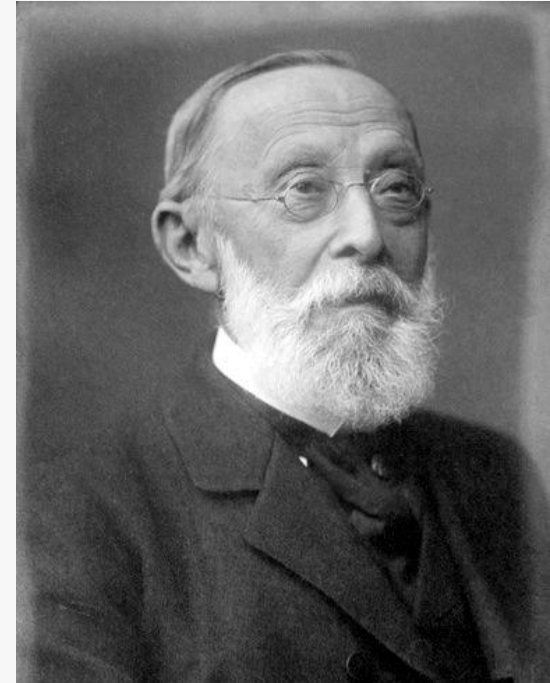
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Factors Predisposing Patients to Risk of Venous Thromboembolism

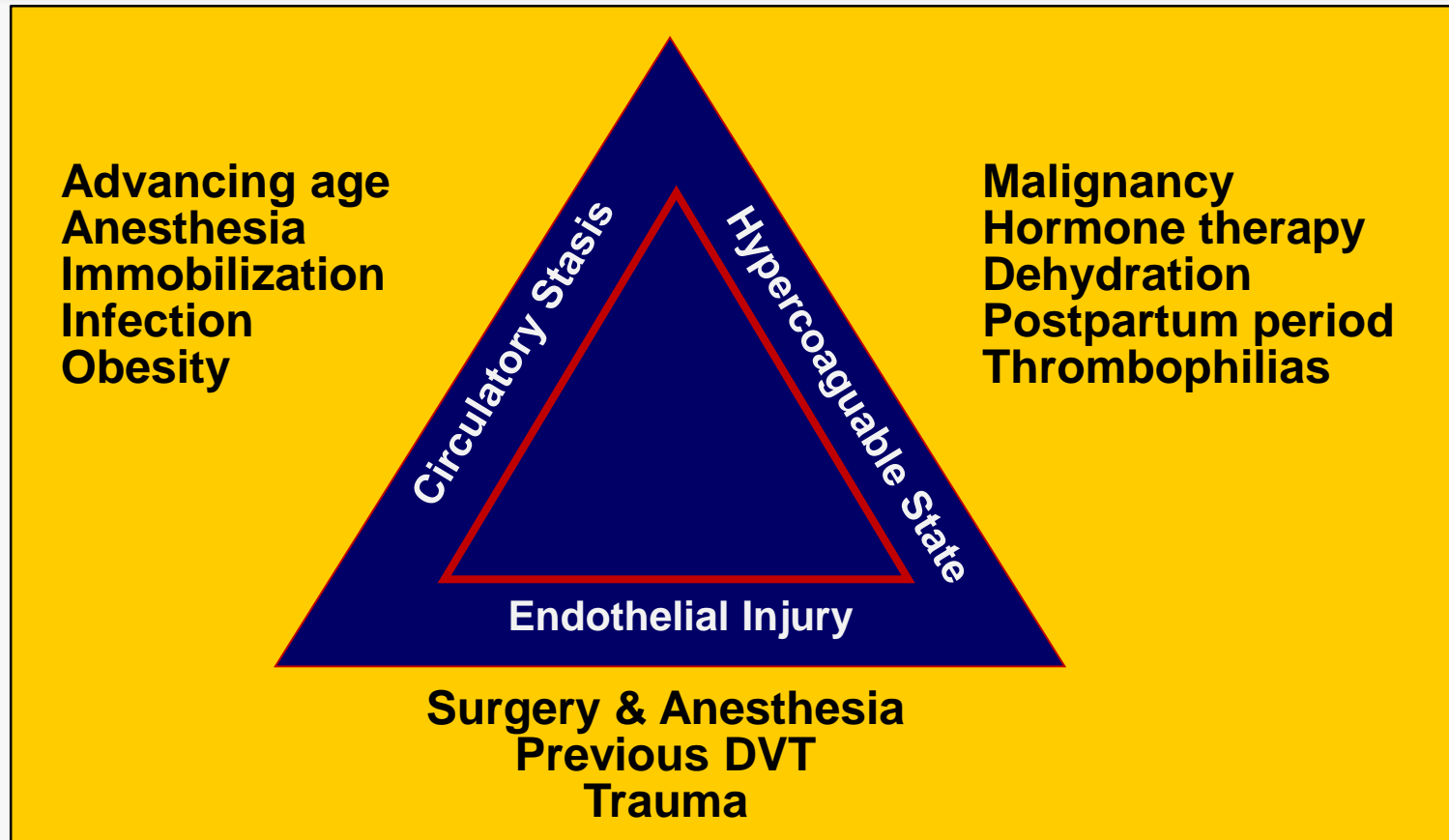
- **Virchow's triad of risk factors**
 - ▶ Venous stasis
 - ▶ Alterations in blood constituents
 - ▶ Changes in the endothelium
- **As true today as when postulated by Rudolf Virchow in the 19th century**



Rudolph Carl Virchow
13 October 1821 – 5 September 1902

Clinical Predisposing Factors for VTE

Relationship to Virchow's Triad



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Hospitalization and VTE Risk

- **Hospitalization for either medical or surgical treatment increases the risk for VTE**
- **Risk continues into the post-discharge period¹⁻⁵**
- **75% of annual VTE related deaths in six European countries were from hospital-acquired VTE⁶**

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2. White RH, et al. N Engl J Med 2000; 343:1758-64.
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6. Cohen AT, et al Thromb Haemost 2007; 98:756-64.

Need to Improve the Prevention of Venous Thromboembolism Persists

- **Rate of appropriate VTE prophylaxis worldwide is low¹⁻³**
- **Acute medically ill patients are at particularly high risk¹⁻³**
- **Improving the application of guidelines is necessary**
- **Tools to assist:**
 - ▶ Education combined with hospital-wide protocols⁴
 - ▶ Local audits for VTE prevention⁵
 - ▶ Electronic alerts⁶⁻⁷

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