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 Europe\(^1-6\)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Incidence</th>
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<tbody>
<tr>
<td>DVT</td>
<td>160 per 100,000</td>
</tr>
<tr>
<td>Symptomatic Non-Fatal PE</td>
<td>20 per 100,000</td>
</tr>
<tr>
<td>Fatal Autopsy-Detected PE</td>
<td>5 per 100,000</td>
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VTE Associated Long Term Risks
Pulmonary Hypertension

- Recurrent PE may lead to pulmonary hypertension

<table>
<thead>
<tr>
<th>Cumulative Incidence of pulmonary hypertension from VTE</th>
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<tbody>
<tr>
<td>3 months</td>
</tr>
<tr>
<td>6 months</td>
</tr>
<tr>
<td>1 year</td>
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<tr>
<td>2 years</td>
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</tbody>
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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$)\(^5\)

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

Advancing age
Anesthesia
Immobilization
Infection
Obesity

Circulatory Stasis

Hypercoaguable State

Endothelial Injury

Malignancy
Hormone therapy
Dehydration
Postpartum period
Thrombophilias

Surgery & Anesthesia
Previous DVT
Trauma


Hospitalization and VTE Risk

- Hospitalization for either medical or surgical treatment increases the risk for VTE
- Risk continues into the post-discharge period\(^1-5\)
- 75% of annual VTE related deaths in six European countries were from hospital-acquired VTE\(^6\)

Need to Improve the Prevention of Venous Thromboembolism Persists

- Rate of appropriate VTE prophylaxis worldwide is low\(^1\)-\(^3\)
- Acute medically ill patients are at particularly high risk\(^1\)-\(^3\)
- Improving the application of guidelines is necessary

**Tools to assist:**
- Education combined with hospital-wide protocols\(^4\)
- Local audits for VTE prevention\(^5\)
- Electronic alerts\(^6\)-\(^7\)