

Venous Thromboembolism

A Brief Overview for Health Professionals

What is VTE?

Venous thromboembolism (VTE) is a common, potentially life-threatening, *but treatable and generally preventable* disorder that includes two related conditions:

1 Deep Vein Thrombosis (DVT)

DVT occurs in one or more deep veins, most commonly the veins of the leg or pelvis.

2 Pulmonary Embolism (PE)

PE occurs when a DVT embolizes from the leg veins, travels through the heart and lodges in a pulmonary artery.

How Common is VTE?

- VTE is very common – it is the third most common vascular disorder after heart disease and stroke
- In the United States, DVT occurs in up to one million people every year
- More than 100,000 Americans die from PE each year
- Every year, more people die from blood clots than from breast cancer, AIDS, and traffic accidents combined
- The risk of VTE increases with age
- Without prophylaxis, the risk of VTE is:
 - 10–20% in patients admitted with serious medical illnesses such as pneumonia or heart failure
 - 20–40% after major general or gynecologic surgery
 - 40–60% after hip or knee replacement or surgery for hip fracture
 - 60–80% after spinal cord injury

Clinical Features of DVT*

- Recent, unilateral leg pain and/or swelling
- Tenderness over the course of a deep vein
- Skin that may be warm to the touch
- With very extensive DVT, the leg may be dusky or cyanotic
- The likelihood of DVT increases in patients with risk factors for VTE and in the absence of an alternative explanation for the leg symptoms

Clinical Features of PE*

- Shortness of breath, especially if sudden onset
- Pleuritic chest pain
- Hemoptysis
- Palpitations and/or tachycardia
- Presyncope or sudden collapse
- The likelihood of PE increases in patients with risk factors for VTE and in the absence of an alternative explanation for the symptoms

* Clinical suspicion of DVT or PE requires urgent investigation

Risk Factors for VTE

- Recent major surgery
- Trauma or leg injury
- Cancer and its treatment
- Hospitalization with an acute medical illness
- Recent immobilization
- Pregnancy
- Hormonal therapy (birth control pill or hormone replacement therapy)
- Obesity
- Previous VTE or family history of VTE
- Inherited or acquired thrombophilia

Treatment of VTE

- In most cases, treatment starts with administration of a rapidly-acting parenteral anticoagulant such as low-molecular-weight heparin (LMWH), heparin, or fondaparinux, along with concomitant warfarin
- The parenteral anticoagulant is given for at least five days AND until warfarin produces an INR of at least 2.0. At this point, the parenteral anticoagulant is discontinued and warfarin is continued for at least three months with the dose adjusted to achieve a target INR between 2.0 and 3.0
- Most patients with VTE can be treated safely as outpatients without hospitalization
- Some patients with acute VTE are treated with long-term LMWH rather than warfarin. These may include pregnant women and patients with VTE in the presence of cancer
- Catheter-directed interventions should be considered in patients with extensive iliofemoral DVT
- Catheter-directed interventions, intravenous thrombolytic therapy or surgical embolectomy should be considered for patients with massive PE
- An IVC filter is recommended for patients with acute proximal DVT and an absolute contraindication to anticoagulation
- If there is leg swelling more than one month after DVT, the prescription of elastic compression stockings is strongly recommended to prevent the post-thrombotic syndrome

Preventing VTE

- The greatest opportunity to reduce the burden of VTE is the use of appropriate thromboprophylaxis in hospitalized patients who are at risk
- VTE risk should be assessed for all hospitalized patients and thromboprophylaxis provided accordingly:

Patient Group	Thromboprophylaxis Options
Medical	<ul style="list-style-type: none"> • Low-molecular-weight heparin • Low-dose heparin • Fondaparinux
General or gynecological surgery	<ul style="list-style-type: none"> • Low-molecular-weight heparin • Low-dose heparin • Fondaparinux
Hip or knee arthroplasty Hip fracture surgery	<ul style="list-style-type: none"> • Low-molecular-weight heparin • Fondaparinux • Warfarin (target INR 2-3)
High bleeding risk	<ul style="list-style-type: none"> • Mechanical prophylaxis