

Venous Thromboembolism Prevention and Perioperative Management of Anticoagulants



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KEYWORDS

- Venous thromboembolism prevention • Management of anticoagulants • Heparin
- Low-molecular-weight heparins • Warfarin • Target-specific oral anticoagulants
- Perioperative

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Venous thromboembolism (VTE) is a common cause of preventable death in surgical and hospitalized patients.
2. Approximately one-third of the 150,000 to 200,000 VTE deaths each year occur secondary to surgery and the incidence of asymptomatic VTE is higher following major orthopedic surgery.
3. Recommendations on the need for VTE prophylaxis during the perioperative period should be based on the assessment of the patient's thromboembolic and bleeding risks.
4. The Caprini Risk Assessment Model and the Rogers Score can be used to assess thromboembolic risk.
5. Assessment of bleeding risk is multifactorial and takes into account both patient-specific and procedure-specific variables.
6. Pharmacologic options for VTE prophylaxis and treatment include heparin, vitamin K antagonists, aspirin, and novel anticoagulants.

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7. Cessation of anticoagulation and resumption differ based on the agent and its half-life.
8. The most recent American College of Chest Physicians (ACCP) evidence-based clinical guidelines suggests 10 to 14 days of thromboprophylaxis for patients having total hip replacement/total knee replacement receiving low-dose unfractionated heparin, low-molecular-weight heparin, fondaparinux, adjusted-dose warfarin, aspirin, apixaban, dabigatran, or rivaroxaban; however, after hospital discharge, the guidelines suggest extended prophylaxis for up to 35 days following major orthopedic surgery.
9. In the most recent ACCP guidelines, mechanical compression systems should be used as adjuvant therapy in patients at high risk for VTE.
10. Inferior vena cava filters for VTE prophylaxis have become widely used in a variety of patient populations; however, the most recent ACCP guidelines recommend against their prophylactic use, because of the lack of the evidence of efficacy, the inability to predict which patients might benefit, and the high costs of filter placement.
11. Patients at low thrombotic risk do not require bridging. In patients at moderate risk, the decision to bridge or not to bridge is based on careful consideration of patient-specific and surgery-specific factors. Patients who have a mechanical heart valve, atrial fibrillation, or VTE who are inherently at a high risk for the development of thromboembolism should undergo bridging anticoagulation during the period of interruption.

DEFINITIONS*What is venous thromboembolism (VTE)?*

VTE is a common cause of preventable death in surgical and hospitalized patients. VTE encompasses a disease process that includes both deep vein thrombosis (DVT) and pulmonary embolism (PE). There are several risk factors for VTE; some acquired and others genetic. Often, it is the interaction of these risk factors that leads to the Virchow triad of stasis, endothelial injury, and hypercoagulable state, and subsequently causes the development of VTE. VTE most commonly occurs in the lower extremities postoperatively, but other less common locations include mesenteric veins, cavernous sinuses, and upper extremity veins.

What is the incidence and prevalence of VTE in postoperative patients?

Approximately one-third of the 150,000 to 200,000 VTE deaths each year occur secondary to surgery.^{1,2} Risk factors for VTE include surgery, trauma, active malignancy or history of previous VTE, age, pregnancy, central venous catheterization, and acute medical illness.³ Several studies have focused specifically on the epidemiology of VTE over a spectrum of various urgent or elective surgical procedures. It has been estimated that, without prophylaxis, the incidence of hospital-acquired DVT is approximately 10% to 40% among general medical patients and general surgery patients. The incidence of asymptomatic VTE is even higher following major orthopedic surgery, and can reach up to 40% to 60% of patients in the absence of prophylaxis, whereas the rate of symptomatic VTE is 4.3%.^{4,5}

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