THROMBOPROPHYLAXIS IN HOSPITALIZED MEDICAL PATIENTS

Thrombosis Canada
Thrombose Canada

TARGET AUDIENCE: All Canadian health care professionals.

OBJECTIVE:

To review the risk factors for venous thromboembolism and bleeding in acutely-ill hospitalized medical patients and to recommend different thromboprophylaxis options (mechanical and pharmacological) based on the underlying risk of thrombosis and bleeding.

ABBREVIATIONS:

APS	antiphospholipid antibody syndrome
CrCl	creatinine clearance
DVT	deep vein thrombosis
ECS	elastic compression stockings
LMWH	low-molecular-weight heparin
MTHFR	methylene tetrahydrofolate reductase
PE	pulmonary embolism
SC	subcutaneously
UFH	unfractionated heparin
VTE	venous thromboembolism

BACKGROUND:

Venous thromboembolism (VTE) (see DVT: Diagnosis, DVT: Treatment and PE guides) remains a frequent cause of preventable morbidity and mortality in patients hospitalized with medical illness. Although thromboprophylaxis in medically-ill patients has been shown to be safe and effective, its practice remains underused in Canada.

The risk of developing VTE is affected by a patient's underlying medical condition as well as the presence of other co-morbidities. Risk factors for VTE in the medically-ill patient include: age > 70 years, previous VTE, immobility ≥ 3 days, active cancer (see Cancer and Thrombosis guide), known thrombophilia (see Factor V Leiden, APS, Homocysteinemia-MTHFR and Protein C, S & AT guides), sepsis, acute inflammatory conditions, acute infectious disease, trauma < 1 month, recent surgery < 1 month, obesity (body mass index >30), hormone therapy and respiratory and cardiac failure .

The risk of developing bleeding is significantly increased if the patient has active gastroduodenal ulcer, previous bleeding (within 3 months of hospitalization), advanced age, severe renal failure (creatinine clearance (CrCl) < 30 mL/min), hepatic failure (international normalized ratio [INR] > 1.5), active cancer or low platelet count (< 50×10^9/L) .

Decisions regarding pharmacological thromboprophylaxis in acutely-ill hospitalized medical patients should be made after consideration of risk factors for both VTE and bleeding.

AGENTS AND DOSING:

Acutely-ill hospitalized medical patients at increased risk of VTE who are not bleeding or at high risk of bleeding should receive pharmacological thromboprophylaxis of unfractionated heparin (UFH) 5000 IU subcutaneously (SC) twice daily or three times daily; low-molecular-weight heparin (LMWH) enoxaparin 40 mg, dalteparin 5000 IU or tinzaparin 4500 IU once daily; or fondaparinux 2.5 mg once daily. Pharmacological thromboprophylaxis should not be extended beyond the period of hospitalization.

Acutely-ill hospitalized medical patients who are bleeding or at high risk of bleeding should not receive pharmacological thromboprophylaxis. In this situation, properly measured and fitted elastic compression stockings (ECS) could be used. When the bleeding risk decreases, and if the VTE risk persists, pharmacological thromboprophylaxis should be started.

Patients admitted with acute stroke should not receive ECS because of an increased risk of skin breakdown.

MONITORING:

Laboratory monitoring is not indicated.

SPECIAL CONSIDERATIONS:

Dose reduction should be considered for patients with weight < 40 kg; dose increase should be considered for patients with weight > 100 kg. For patients weighing over 150 kg, even higher doses should be considered.

In patients with renal impairment (CrCl < 30 mL/min), administration of UFH, or a dose reduction of enoxaparin to 30 mg SC once daily should be considered. No dose adjustment of dalteparin or tinzaparin is needed in patients with impaired renal function. Fondaparinux should not be used in patients with CrCl < 30 mL/min.

PEDIATRICS:

Evidence for the safety and efficacy of thromboprophylaxis in neonates and children is lacking. There may be high risk cohorts where thromboprophylaxis may be considered.

REFERENCES:

Decousus H, Tapson VF, Bergmann JF, et al. Factors at admission associated with bleeding risk in medical patients: findings from the IMPROVE investigators. Chest 2011;139:69–79.

Dentali F, Douketis JD, Gianni M, et al. Meta-analysis: anticoagulant prophylaxis to prevent symptomatic venous thromboembolism in hospitalized medical patients. Ann Intern Med 2007;146:278–288.

Kahn SR, Lim W, Dunn AS, et al. Prevention of VTE in nonsurgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e195S-226S.

Lijfering WM, Rosendaal FR, Cannegieter SC. Risk factors for venous thrombosis - current understanding from an epidemiological point of view. Br J Haematol 2010;149:824–833.

Monagle P, Chan AK, Goldenberg NA, et al. Antithrombotic therapy in neonates and children: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e737S-801S.