



Clinical Guide - Prevention of Deep Vein Thrombosis in Medical Patients

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Scope

In North America, there are over 7 million patients hospitalized per year with medical illness¹, many of whom may be at risk for developing deep vein thrombosis (DVT) which can progress to life-threatening pulmonary embolism. Consensus groups, such as the American College of Chest Physicians Guidelines on Antithrombotic Therapy, confer a Level 1A Recommendation to giving DVT prophylaxis with low-dose unfractionated heparin (UFH) or low-molecular-weight heparin (LMWH) in at-risk medical patients². However, DVT prophylaxis is underused in clinical practice, with only 25-33% of eligible patients receiving this preventive intervention³⁻⁵.

The reason why DVT prophylaxis is underused in medical patients is not clear but may include uncertainty as to which patients should receive prophylaxis. Unlike surgical patients, in whom the need for DVT prophylaxis is determined primarily by the risk associated with the surgical procedure², medical patients are heterogeneous both in terms of their risk for DVT and their risk for bleeding. Both of these factors need to be considered to facilitate decisions about the appropriateness of DVT prophylaxis.

Chapter Objectives

to provide a clinical guide that identifies at-risk hospitalized medical patients in whom DVT prophylaxis should be considered.
to provide a clinical guide that identifies DVT prophylaxis regimens that can be used in medical patients

Other Related Documents in this Educational Monograph

Prevention of Deep Vein Thrombosis in Orthopedic Surgery Patients

Prevention of Deep Vein Thrombosis in General Surgery Patients

Patient Assessment and Management

1) *Is the patient at increased risk for DVT?*

- DT prophylaxis is an important patient safety intervention for medical patients who have one or more of the following major risk factors for DVT⁶⁻⁸:
 - decreased mobility
 - previous DVT or pulmonary embolism
 - active cancer (treated within the past 6 months or palliative)
 - recent (within past 4 weeks) surgery
 - lower limb paralysis or paresis
 - congestive heart failure
 - chronic obstructive or interstitial pulmonary disease
 - sepsis or other severe infection
 - active inflammatory bowel disease
 - nephrotic syndrome or other chronic renal disease
- **Recommendation 1:** DVT prophylaxis is recommended in medical patients with illness that is associated with one or more major risk factor.

2) Does the patient have any contraindications to DVT prophylaxis with an anticoagulant?

- Patients with one or more of the following characteristics should not receive anticoagulants (i.e., heparin/low-molecular-weight heparin/fondaparinux) until the contraindication resolves:
 - active bleeding or at high risk for bleeding
 - coagulopathy: international normalized ratio (INR) >1.5 or activated partial thromboplastin time (aPTT) >40 sec. (N.B. This contraindication does NOT apply to patients with liver disease or with an antiphospholipid antibody, two groups at increased risk for DVT, or in patients being converted to oral anticoagulation with warfarin.)
 - thrombocytopenia: platelets <50 × 10⁹/L
 - history of heparin-induced thrombocytopenia (not a contraindication to fondaparinux)
- **Recommendation 2:** DVT prophylaxis with heparin/LMWH/fondaparinux should be avoided in patients with a contraindication to anticoagulant use.

3A) What DVT prophylaxis should be used in at-risk medical patients without a contraindication to anticoagulants?

- Acceptable options for DVT prophylaxis with an anticoagulant for at-risk medical patients are low-dose UFH, low-dose LMWH, or fondaparinux:
 - unfractionated heparin, 5000 IU subcutaneously (SC) b.i.d. or t.i.d.
 - dalteparin, 5000 IU SC once daily
 - enoxaparin, 40 mg SC once daily
 - tinzaparin, 4500 IU SC once daily
 - fondaparinux, 2.5 mg SC once daily
- **Recommendation 3A:** DVT prophylaxis with low-dose heparin, LMWH or fondaparinux is recommended in medical patients at risk for DVT.

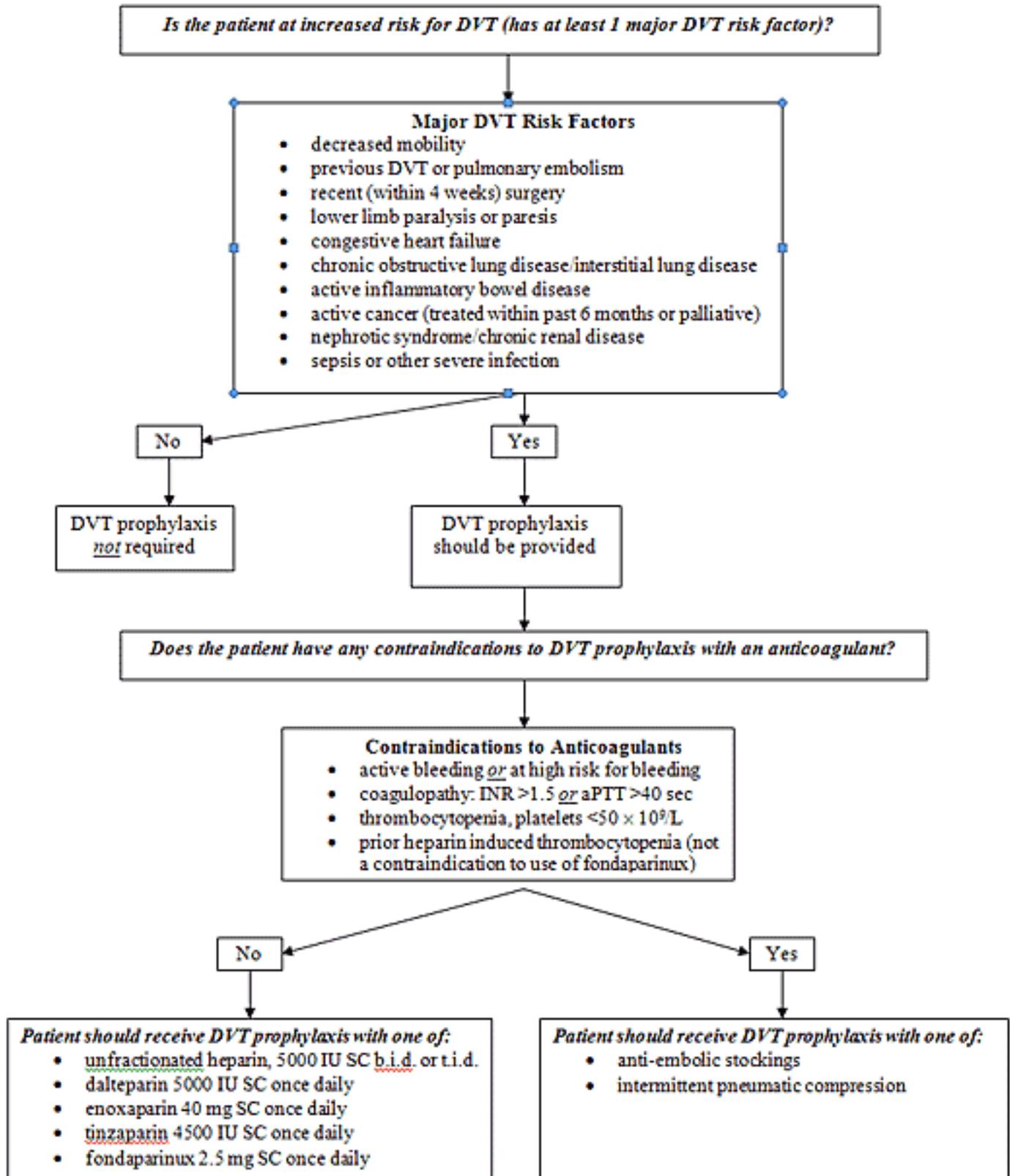
3B) What DVT prophylaxis should be used in at-risk medical patients with a contraindication to anticoagulants?

- In patients who are at increased risk for DVT and in whom anticoagulant prophylaxis is contraindicated, non-anticoagulant methods of DVT prophylaxis are available and include anti-embolic stockings (AES) and/or intermittent pneumatic compression (IPC) devices.
- However, if any mechanical method of prophylaxis is used, the following principles should be adhered to:
 - The AES or IPC needs to be properly fitted for each patient.
 - The AES or IPC needs to be used continuously (at least 23 hours per day) and removed only when the patient is walking or bathing.
 - When (if) the patient's contraindication to anticoagulant prophylaxis resolves, they should be switched to anticoagulant prophylaxis.
- **Recommendation 3B:** DVT prophylaxis with a mechanical method is recommended in medical patients at risk for DVT who cannot receive an anticoagulant.

4) Is DVT prophylaxis needed in medical patients with a central venous catheter?

- Indwelling central venous catheters, such as peripherally inserted central catheters (PICC), are becoming more common in hospitalized medical patients to administer fluids, antibiotics and parenteral nutrition and for venous access to facilitate laboratory blood testing.
- In patients with cancer who have a central venous catheter (e.g., Hickman line) to receive chemotherapy, DVT prophylaxis with low dose warfarin (1 mg/day) or prophylactic-dose LMWHs have not been shown to prevent catheter-associated DVT^{9,10}.
- No well-designed studies have assessed anticoagulant DVT prophylaxis in non-cancer medical patients with a central venous catheter or PICC line.
- **Recommendation 4:** DVT prophylaxis is not recommended to prevent central venous catheter-related thrombosis.

Algorithm for Assessing Need for DVT Prophylaxis in Medical Patients



References

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