

VTE Prevention

A plain-English guide for you and your family

WHAT IS HAPPENING

When you are in the hospital, your blood can clot too easily. Lying in bed, having surgery, fighting cancer, or just being still slows the blood in your leg veins. Slow blood plus injured vessel walls plus sticky blood (the three parts of Virchow's triad) trigger clotting, and a clot can form silently in a deep leg vein (deep vein clot formation (thrombosis), or DVT). That clot can break free, travel through your heart, and lodge in your lung arteries (pulmonary a traveling clot lodging in a vessel (embolism), or PE), blocking oxygen and sometimes killing you in minutes. Hospitals prevent this by checking every patient's risk with a scoring tool, then giving blood-thinning shots (like heparin or enoxaparin) or using squeezing leg sleeves (sequential compression devices) to keep blood moving. The goal is simple: stop the clot before it ever forms, because once a big PE happens, even the best care may not save you.

What you might feel

- Recent surgery (especially hip, knee, belly, or cancer surgery)
- Being stuck in bed for three or more days, or not able to move around much (from illness, injury, or stroke)
- Active cancer or getting chemotherapy
- Past blood clot (DVT or PE) in your own history
- Pregnancy or just gave birth (especially in the first six weeks after delivery)
- Using birth-control pills or hormone replacement therapy (estrogen)
- Long travel (plane, car, or train ride longer than four hours) where you sit still
- Obesity (BMI over 30)
- Age over 60
- Central venous catheter (a large IV line in the chest or neck)

Call the doctor right away if...

- Sudden shortness of breath, fast breathing, or chest pain that gets worse with a deep breath (could mean a clot has broken off and traveled to the lungs — a pulmonary embolism (a clot lodging in a lung artery) — which can be deadly)
- One leg is swollen, painful, red, and warm compared to the other leg (sign of a a clot in a deep leg vein (deep vein thrombosis) or DVT forming right now)
- Coughing up blood or bloody mucus (can mean a clot in the lung has damaged the tissue)
- Fainting, feeling dizzy, or heart racing with shortness of breath (signs that a big clot in the lung is blocking blood flow and dropping blood pressure — life-threatening)

What the care team will do

- Complete VTE risk assessment using a validated tool like Padua Prediction Score or Caprini Score within four hours of hospital admission
- Apply sequential compression devices to both legs immediately for all patients unless they have acute DVT or severe peripheral artery disease
- Assist patient out of bed and ambulate in hallway at least three times per day starting on day one of admission
- Administer ordered pharmacologic prevention (prophylaxis) at the correct time every day, holding doses only for active bleeding or platelet count below 50,000
- Monitor injection sites for a pooled collection of blood (hematoma) (blood pocket under skin) and check complete blood count every two to three days while on heparin
- Teach patient to report leg swelling, pain, warmth, or redness and any sudden chest pain or shortness of breath immediately
- Ensure adequate hydration with at least 1500 mL oral or IV fluid daily unless heart failure limits fluids
- Document and communicate VTE prevention (prophylaxis) plan at every handoff and verify continuation orders if patient transfers units or goes for procedures

Medicines you may be given — and why

Enoxaparin (Lovenox)

Enoxaparin blocks Factor Xa, a protein in the blood that helps clots form. By stopping Factor Xa, the drug keeps the clotting chain from moving forward, so new clots cannot build. It works in the blood itself, not in any single organ.

Unfractionated heparin (UFH)

Unfractionated heparin blocks both Factor Xa and thrombin, two key proteins in the clotting chain. By stopping both, it keeps the blood from making clots. It works in the bloodstream and is given through an IV or under the skin.

Fondaparinux (Arixtra)

Fondaparinux is a man-made version of a natural sugar chain that boosts antithrombin. It blocks only Factor Xa, stopping the clotting chain early. It works in the bloodstream and is given as a shot under the skin once a day.

Rivaroxaban (Xarelto)

Rivaroxaban directly blocks Factor Xa without needing antithrombin. It is a pill taken by mouth, so no shots are needed. By stopping Factor Xa, it keeps the clotting chain from moving forward.

Apixaban (Eliquis)

Apixaban directly blocks Factor Xa, just like rivaroxaban, without needing antithrombin. It is a pill taken twice a day. By stopping Factor Xa, it keeps the blood from making new clots.

Aspirin

Aspirin blocks an enzyme inside platelets called COX-1, which platelets need to make thromboxane A2 (a chemical that tells platelets to stick together). With less thromboxane, platelets are less sticky and clots form more slowly. Aspirin is weaker than the other clot-prevention drugs, so it is used only in some hip or knee replacement patients as an alternative when bleeding risk is high or the patient does not want injections.

Mechanical prevention (prophylaxis) (intermittent pneumatic compression devices, graduated compression stockings)

These devices squeeze the legs gently and rhythmically to keep blood moving through the veins. When blood flows instead of pooling, clots are less likely to form. They are used when bleeding risk is too high for blood thinners, or alongside blood thinners for extra protection.

Where this information comes from

- American Society of Hematology VTE prevention guideline 2018
- American College of Chest Physicians antithrombotic guideline (ACCP) 2012
- American College of Obstetricians and Gynecologists VTE in pregnancy guideline 2018
- Cochrane systematic reviews on thromboprophylaxis

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