



Australian Government

National Health and
Medical Research Council

Blood Clots

Reducing your risk

If you are in hospital—particularly for a major operation or a serious injury or illness—your risk of having a blood clot in your leg or your lung is much higher than usual. There are ways to reduce this risk and prevent blood clots. This pamphlet explains why you are more likely to develop a blood clot when you are in hospital, why this matters, and what can be done to reduce your risk.

Why are blood clots a problem?

A blood clot that forms in a deep vein in the muscles of the leg is known as a deep vein thrombosis or DVT. The clot can partly or totally block blood flow. Most blood clots form in a vein in the calf. They are less common in the thigh, and rare in other parts of the body.

Venous thromboembolism, or VTE, describes the whole process by which clots form and travel through the blood stream. ‘Venous’ means to do with the veins. This is different from arterial thrombosis which can cause stroke or heart attack. When a blood clot forms in a leg vein, it usually remains stuck to the vein wall. Sometimes, however, one of two things may happen:

- 1 Part of the blood clot may break off and travel in the blood to the lungs. Here it may block an artery and cut off blood supply. This dangerous condition is known as a **pulmonary embolus**, or PE. A large clot in the lung is very serious and can be life-threatening.
- 2 If the blood clot in the leg is not treated, it may lead to long-term symptoms such as pain or discomfort, swelling, rashes or—in severe cases—a skin ulcer. This is called **post-thrombotic syndrome**. It happens because the vein is blocked, and can therefore damage the leg tissues.

How are blood clots prevented?

Two approaches are used: medicines that interfere with the clotting process, also known as anti-clotting medicine or anticoagulants. These are commonly called blood thinners but they do not thin the blood. Mechanical devices work by increasing the pressure within the leg. Often anti-clotting medicines and mechanical devices are used together, but not always.

Anti-clotting medicines

Anti-clotting medicines work by reducing the blood’s tendency to clot. This may also increase the risk of bleeding. The aim is to get the dose just right so the blood will not clot too easily, and bleeding is less likely. Some people cannot take anti-clotting medicines if they already have a condition that makes them bleed more easily than normal. Anti-clotting medicines can be injected just under the skin. Others are taken as a tablet. You may be given an anti-clotting medicine for a few days or up to a few weeks, depending on your particular operation or medical condition. Check with your medical team about how long you’ll need to take your medicine for.

What medicines are used?

The anti-clotting medicines used will depend on your operation or condition; your doctor will recommend the best option. Anti-clotting medicines that are injected include low molecular weight heparin (LMWH), unfractionated heparin (UFH), fondaparinux or danaparoid. Anti-clotting medicines taken as tablets include rivaroxaban, dabigatran etexilate, aspirin or warfarin. Make sure you tell your health care team if you are already taking one of these medicines prior to going into hospital.

How are blood clots prevented?

Stay mobile and active

Movement of the legs stimulates blood flow, so you should try to get moving as soon as possible. The hospital staff may also:

- give you gentle exercises for your feet and legs while you are in bed
- get you up and walking as soon as possible.

This helps to keep the blood flowing in your leg veins. It’s important to do these exercises and walk as often as your doctor, nurse or physiotherapist advises.

Mechanical devices

Mechanical devices help to keep the blood moving through the deep veins of the leg by squeezing them. There are three types:

- 1 **Graduated compression stockings** are elasticised stockings, either over the whole leg or just the calf. It is important to have stockings that are professionally fitted to your size. Sizing can be done by your health professional. Graduated compression stockings should be worn until fully mobile.
- 2 **Intermittent pneumatic compression (IPC)** involves a garment around the leg that is regularly inflated and deflated, to squeeze the leg. It may be over the whole leg or just the calf.
- 3 **Venous foot pumps** have a pad under the foot that is rapidly inflated and deflated every few seconds. This stimulates blood flow in the sole of the foot. The pad is held in place by a slipper.

Stockings or IPC can cause rashes or irritate the skin so they need to be removed at least once a day to check the skin. Some people find stockings uncomfortable, especially the thigh length ones, as they can bunch up.

Why is the risk of blood clots high in hospital?

There are two main reasons:

- 1 **Not moving increases your risk of blood clots.** Normally blood flows quickly through veins without clotting. In the legs, muscle movements help to push the blood by squeezing the veins. But if you are not walking around for some time - for example, in bed in hospital - blood flow can become sluggish and allow a clot to form. This is also why on a long air flight it is suggested you do some leg and foot exercises.
- 2 **The body protects itself from bleeding.** When you have surgery or an injury, the body stimulates the blood to clot more easily, to prevent blood loss. But this also increases the risk of unwanted clotting - that is, a DVT or PE.

Who is most at risk?

The risk is highest in people who have:

- major joint surgery (e.g. hip or knee replacement)
- major surgery to the abdomen, hips, chest or legs
- major surgery for cancer
- severe physical injury
- serious acute illness, in part because you must remain in bed for a time. These illnesses include
- heart attack, heart failure, stroke, spinal cord injury, severe infection, cancer, and chronic obstructive pulmonary disease (COPD).

Talk to your medical team if you think you may be at risk

Are there other risk factors?

Blood clots are also more likely in:

- people who have had a clot in a vein in the past
- people with active cancer
- people over 40 years - the risk increases as you get older
- prolonged severe immobility (prolonged bed rest, immobilisation in a plaster cast or brace or prolonged travel resulting in limited movement)
- women who are pregnant or have recently given birth— pregnancy (like surgery and injury) stimulates clotting to prevent blood loss
- people who are overweight or obese
- women who are using hormone replacement therapy (HRT) or the contraceptive pill
- people with a condition called **thrombophilia**, which makes the blood clot more easily than normal.

When you go home from hospital

If you have been using anti-clotting medicines or a mechanical device in hospital, you may be asked to continue using these at home. Ask your pharmacist for the consumer medicines information leaflet if you have not received it with your discharge medication. It's important to follow your medical team's instructions to reduce your risk of developing a clot. If you have any of the following symptoms in hospital

or after you return home, call your doctor or go to the nearest emergency department straight away:

- redness, pain or swelling in your leg
- difficulty breathing, faintness
- coughing up blood
- pain in your lungs or chest.

This information brochure is based on the National Health and Medical Research Council's *Clinical Practice Guideline for the Prevention of Venous Thromboembolism in People Admitted to Australian Hospitals*. This brochure and the guideline on which it is based are available for download from www.nhmrc.gov.au. December 2010