NICE - Deep Vein Thrombosis (DVT) for patients in hospital

NICE ‘clinical guidelines’ advise the NHS on caring for people with specific conditions or diseases and the treatments they should receive.

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Reducing the risk of deep vein thrombosis (DVT) for patients in hospital

This booklet is about the care and treatment of people who are at risk of developing deep vein thrombosis (DVT) while in hospital in the NHS in England and Wales. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence). It is written for patients in hospital but it may also be useful for their families or carers or for anyone with an interest in the condition.

The booklet is to help you understand the care and treatment options that should be available in the NHS. It does not describe DVT or the steps that can be taken to reduce the risk in detail. A member of your healthcare team should discuss these with you. There are examples of questions you could ask throughout this booklet to help you with this.

You can get more information from the organisations listed on page 16.

Medical terms printed in **bold** type are explained throughout the booklet.

The advice in the NICE guideline covers the care and treatment that should be offered to:

- all adults (aged 18 and over) who are admitted to hospital as inpatients (including those admitted for day-case procedures).

It does not cover the care and treatment that should be offered to:

- people under the age of 18
- people attending hospital as outpatients
- people attending emergency departments who are not admitted to hospital
- older people who are cared for at home or in residential care homes
- people who are immobile and are cared for at home or in residential care homes
- people who are admitted to hospital because they have a diagnosis or signs and symptoms of DVT or pulmonary embolism.

This is an update of advice on ‘Reducing the risk of venous thromboembolism in inpatients undergoing surgery’ that NICE produced in April 2007, and replaces it.

Your care

In the NHS, patients and healthcare professionals have rights and responsibilities as set out in the NHS Constitution (www.dh.gov.uk/en/Healthcare/NHSConstitution/index.htm). All NICE guidance is written to reflect these. You have the right to be involved in discussions and make informed decisions about your treatment and care with your healthcare team. Your choices are important and healthcare professionals should support these wherever possible. You should be treated with dignity and respect.

To help you make decisions, healthcare professionals should explain DVT and the steps that can be taken to reduce your risk of developing this condition. They should cover possible benefits and risks related to your personal circumstances. You should be given relevant information that is suitable for you and reflects any religious, ethnic, or cultural needs you have. It should also take into account whether you have any physical or learning disability, sight or hearing problem or language difficulties. You should have access to an interpreter or advocate (someone who helps you put your views across) if needed.

Your family and carers should be given their own information and support. If you agree, they should also have the chance to be involved in decisions about your care.

You should be able to discuss or review your care as your treatment progresses, or your circumstances change. This may include changing your mind about your treatment or care. If you have made an ’advance directive’ about any treatments that you do not wish to have, your healthcare professionals have a legal obligation to take this into account.

All treatment and care should be given with your informed consent. If, during the course of your illness, you are not able to make decisions about your care, your healthcare professionals have a duty to talk to your family or carers unless you have specifically asked them not to. Healthcare professionals should follow the Department of Health's advice on consent

(www.dh.gov.uk/consent) and the code of practice for the Mental Capacity Act. Information about the Act and consent issues is available from www.publicguardian.gov.uk. In Wales healthcare professionals should follow advice on consent from the Welsh Assembly Government (www.wales.nhs.uk/consent).

In an emergency, healthcare professionals may give treatment immediately, without obtaining your informed consent, when it is in your best interests.

If you think that your care does not match what is described in this booklet, please talk to a member of your healthcare team in the first instance.

DVT is more likely to happen when you are unwell and inactive.

Deep vein thrombosis (DVT)

Your blood has a mechanism that normally forms a 'plug' or clot to stop the bleeding when you are injured, for example when you have a cut to your skin. Sometimes the blood's clotting mechanism goes wrong and forms a blood clot when there has been no injury. When this happens inside a blood vessel, the blood clot is called a **thrombus**. When the blood clot is deep inside one of the veins in your body, most commonly in the leg, it is called **deep vein thrombosis (DVT)**. If the blood clot comes loose it can travel through your bloodstream to your lungs. This is called **pulmonary embolism** and it can be fatal. DVT and pulmonary embolism together are known as **venous thromboembolism**.

DVT is more likely to happen when you are unwell and inactive or less active than usual. When you are unwell your blood may become temporarily 'sticky' and flow more slowly. If you are inactive or less active than usual it is more likely that a blood clot will form inside a vein.

People in hospital can be at risk of DVT because they may be unwell and inactive for long periods of time. DVT can happen at any time during a stay in hospital or in the weeks after leaving hospital.

Your risk of DVT

Your risk of developing DVT depends partly on why you have been admitted to hospital and the type of treatment you will have, for example whether you are having an operation.

Some people also have certain 'risk factors' that make them more likely to develop DVT (see page 5). If you are pregnant or have recently given birth you may have special risk factors (see page 6).

Risk factors for DVT

If you have any one of the following you may be at risk of DVT.

- You are having an operation that takes longer than 90 minutes, or 60 minutes if the operation is on your leg, hip or abdomen.
- You are having an operation for an inflammatory or abdominal condition such as appendicitis.
- For at least 3 days you are confined to bed, or are unable to walk without help, or spend a large part of the day in bed or in a chair.
- You are much less active than usual, or you are having an operation, or you have a serious injury **and** any one of the following applies to you: –
  you are having treatment for cancer
  - you are aged over 60
  - you are being treated in the hospital critical care unit
  - you are dehydrated
  - you have **thrombophilia** (a disorder that makes your blood more likely to clot)
  - you are seriously overweight (your body mass index is 30 or more)
  - you have a medical condition such as a heart or lung problem, an infectious disease such as hepatitis or an inflammatory condition such as rheumatoid arthritis
  - you or a close relative has had DVT before
  - you are taking an oestrogen-containing contraceptive pill (the 'combined pill')
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  - you are taking hormone replacement therapy (HRT)
  - you have varicose veins with **phlebitis** (pain and swelling).

Your healthcare team should assess your risk

of DVT when you are admitted to hospital, again within 24 hours of the time you were admitted, and whenever your condition changes.

If you are pregnant or have given birth within the past 6 weeks you may have special risk factors.

Risk factors for DVT if you are pregnant or have given birth within the past 6 weeks

- For at least 3 days you are confined to bed, or are unable to walk without help, or spend a large part of the day in bed or in a chair.
- You are having treatment for cancer.
- You are aged over 35.
- You are being treated in the hospital critical care unit.
- You are dehydrated.
- You have lost a lot of blood or have had a blood transfusion.
- You have **thrombophilia** (a disorder that makes your blood more likely to clot).
- You are seriously overweight (your body mass index was 30 or more before you became pregnant or during the early part of your pregnancy).

- You have a medical condition such as heart or lung disease, an infectious disease such as hepatitis or an inflammatory condition such as rheumatoid arthritis.
- You or a close relative has had DVT before.
- You have problems with your pregnancy such as pre-eclampsia.
- You are expecting or have given birth to more than one baby in this pregnancy.
- You have varicose veins with **phlebitis** (pain and swelling).
- You are having an operation (including caesarean section).

If you are at risk of DVT your healthcare team should also assess whether bleeding might be a problem during your hospital treatment. They should do this before offering you a drug to help prevent DVT. If your risk of having problems with bleeding is higher than your risk of DVT, you should not be offered a drug to help prevent DVT. This is because these drugs thin your blood and may increase your risk of bleeding problems.

Your healthcare team should assess whether bleeding might be a problem before offering you a

Risk factors for bleeding problems drug to help

prevent DVT.

- You are already bleeding.
- You have a condition that causes problems with the blood, such as liver failure.
- You are already taking a drug that thins the blood and is known to increase the risk of bleeding (for example, warfarin).
-

  You have had a lumbar puncture, an epidural or an anaesthetic in your spine within the past 4 hours, or will have one of these within the next 12 hours.
- You have recently had a stroke.
- You have a blood condition called **thrombocytopenia** (low platelet count) that makes the blood less able to clot and increases the risk of bleeding.
- You have very high uncontrolled blood pressure.
- You have an untreated inherited blood problem, such as haemophilia or von Willebrand’s disease, which makes the blood less able to clot and increases the risk of bleeding.

Some treatments may not be

suitable for you, depending on your exact circumstances. If you have questions about specific treatments and options covered in this booklet, please talk to a member of your healthcare team.

Your healthcare team should assess your risk of DVT and your risk of bleeding problems when you are admitted to hospital, again within 24 hours

of the time you were admitted, and whenever your condition changes. At each of these assessments they should also make sure that any drugs or treatments you are having to help prevent DVT are:

- suitable for you
- being used correctly so that you get the most benefit from them
- not causing any problems.

Reducing your risk of DVT

Before you go into hospital

If you are taking an oestrogen-containing oral contraceptive (the ‘combined pill’) or having hormone replacement therapy (HRT) and you will be having an operation, your healthcare team should advise you to consider stopping these drugs temporarily 4 weeks before you have your operation. If you stop taking the combined pill your healthcare team should offer you advice about other forms of contraception.
If you are having an operation and you are already taking a drug that thins the blood (for example, aspirin) your healthcare team should assess the risks and benefits of stopping this drug temporarily 1 week before your operation. Aspirin and similar drugs may increase the risk of bleeding during or after an operation and, for people who are at risk of DVT, will not offer enough protection during this time. If you are going into hospital for any reason your healthcare team should consider and discuss with you other treatments to help prevent DVT.

For some operations, it may be possible for you to have a **regional anaesthetic** (an anaesthetic that numbs an area of the body). This has a lower risk of leading to DVT than a general anaesthetic. If a regional anaesthetic is suitable for you, your healthcare team should discuss your choice of anaesthetic with you.

Questions you might like to ask your healthcare team before you go into hospital

- When can I start taking the combined contraceptive pill or HRT again?
- Can I carry on taking other medicines?
- I am already taking aspirin. Why won’t this protect me from DVT?
- I am already taking warfarin (or heparin). Will I still need treatment to help prevent DVT when I go into hospital?
- Will I be able to have a regional anaesthetic for my operation?

There are a number of steps your healthcare team can take to reduce your risk of DVT during your stay in hospital.

While you are in hospital

There are a number of steps your healthcare team can take to help reduce your risk of DVT during your stay in hospital. They should make sure you

have enough fluids so that you do not become dehydrated. They should also encourage you to move around as soon as you are able.

If you are having an operation as a day patient and you are at risk, your healthcare team may decide to offer you treatment to help prevent DVT. They may ask you to continue the treatment at home after your operation (see page 14).

Depending on your risk factors you may be offered:

- **anti-embolism stockings** or an **intermittent pneumatic compression device** to help keep the blood in your legs circulating

(see pages 11 and 12)

- a drug known as an **anticoagulant** that thins the blood and helps prevent blood clots forming (see page 12).

Before offering you anti-embolism stockings, an intermittent pneumatic compression device or an anticoagulant drug, your healthcare team should talk to you and/or your family or carers and offer a leaflet about:

- the risks of DVT
- what might happen if you develop DVT
- how to use stockings or devices for helping to prevent DVT
- how you can reduce your risk of DVT, for example by having enough fluids so that you do not become dehydrated and, if possible, moving around and exercising.

Anti-embolism

Anti-embolism stockings stockings help your

Anti-embolism stockings (also known as ‘compression stockings’) blood to circulate are tight stockings specially designed to reduce the risk of DVT. around your legs

The stockings squeeze your feet, lower legs and thighs, helping more quickly. your blood to circulate around your legs more quickly. Your healthcare team should measure your legs before fitting stockings to make sure you are given the right size. If your legs become swollen they should be measured again and new stockings fitted.

It is important to wear the stockings for as much of the time as possible, day and night, whether in hospital or afterwards at home,

until you are back to your usual level of activity. Your healthcare team should show you how to use them. They should check regularly to make sure you are using them correctly and offer help so that you get the most benefit from them. If you have ulcers or wounds on your legs your healthcare team should take special care when using anti-embolism stockings.

Your healthcare team should ensure that your stockings are taken off every day to clean the area and check the condition of your skin. If you have pain or discomfort, bruising or blisters, or areas where your skin has changed colour, your healthcare team should make sure you stop using the stockings.

People who should not be offered anti-embolism stockings

You should not be offered anti-embolism stockings if you have recently had a stroke, you have **peripheral arterial disease** (narrowing of the arteries leading to your legs), **peripheral neuropathy** (damage to the sensory nerves), gangrene or a recent skin graft, eczema or fragile skin on your legs, fluid on the lungs caused by heart failure, an allergy to the stocking material, your legs are very swollen or a good stocking fit cannot be achieved.

Intermittent pneumatic compression devices

These are worn around your legs or on your feet (where they are known as foot impulse devices or 'foot pumps'). They inflate automatically at regular intervals. When these devices are inflated they apply pressure, which helps keep the blood in your legs circulating. It is important to use your intermittent pneumatic compression device for as much of the time as possible, both when you are in bed and when you are sitting up in a chair. Your healthcare team should show you how to use the device correctly and check regularly to make sure you are getting the most benefit from it.

Anticoagulant drugs

Anticoagulant Depending on your risk factors, your healthcare team may offer drugs thin the you a type of drug called **heparin** or a drug called **fondaparinux**.

Both of these are **anticoagulants**, which are drugs that thin the blood and help

blood and help to stop blood clots forming. Heparin and

to stop blood fondaparinux are usually given by injection. clots forming.

If you are having total hip or total knee replacement surgery, you may instead be offered a drug called **dabigatran** or one called **rivaroxaban**. These drugs are also anticoagulants. They are taken as tablets.

Heparin is made from animal products. Synthetic alternatives may be available if you are concerned about this, and your healthcare team should discuss the suitability, advantages and disadvantages of the available treatment options with you.

Vena caval filter

If your risk of DVT is high but you cannot take anticoagulant drugs and are not able to use anti-embolism stockings or intermittent pneumatic compression devices, you may be offered a temporary **vena caval filter**.

This is an umbrella-shaped device that is inserted into a large vein to trap any blood clots and stop them moving toward the lungs.

Women who are pregnant or have given birth within the past 6 weeks

If you are pregnant or have given birth within the past 6 weeks and are at risk of developing DVT, your healthcare team should discuss with you the risks and benefits of treatments to help prevention. Before offering you a treatment they should discuss it with other healthcare teams who have experience of using that treatment for women who are pregnant or have recently given birth.

Questions you might like to ask your healthcare team about treatments to help reduce the risk of DVT

Please tell me why you have decided to offer me this particular treatment.

- Are there any side effects associated with this treatment?
- I am pregnant/breastfeeding. Will this treatment affect my baby?
- How long will I need to keep having this treatment?
- Will I need to stay in hospital longer if I’m having this treatment?

If you have talked to your healthcare team, and you think that a treatment is suitable for you but it is not available, you can contact your local patient advice and liaison service (‘PALS’) or

NHS Direct Wales.

When you leave hospital

Before you leave hospital your healthcare team should talk to you and offer you a leaflet about:

- how to tell whether you might have DVT or pulmonary embolism
- why it is important to seek medical help and who to contact if you think you might have DVT or pulmonary embolism.

If you are advised to continue treatment with anti-embolism stockings or an anticoagulant drug for a time after you leave hospital, your healthcare team should tell your GP. Your healthcare team should also make sure you are able to use the treatment or have someone available to help you. They should talk to you and offer you a leaflet about:

- how to use your treatment after you go home
- how long to continue the treatment
- why it is important to follow the advice you are offered about how to use the treatment and for how long
- how to tell if the treatment is causing you problems

- why it is important to seek help and who to contact if you think the treatment might be causing a problem.

Questions you might like to ask your healthcare team before you leave hospital

- How long should I keep wearing the stockings?
- How do I care for the stockings?
- How long should I keep using the anticoagulant drug?
- What should I do if I can't inject myself?
- Who should I contact if I am having problems?
- What should I do if I think I might have DVT or pulmonary embolism? (see page 15)

How to tell if you might have DVT or pulmonary embolism

There are certain signs to look out for after your hospital treatment that may mean you have developed DVT or pulmonary embolism. You should seek help immediately if you experience any of the following in the days or weeks after your treatment.

- You have pain or swelling in your leg.
- The skin on your leg feels hot or is discoloured (red, purple or blue), other than bruising around the area where you have had an operation.
- The veins near the surface of your legs appear larger than normal or you notice them more.
- You become short of breath.
- You feel pain in your chest or upper back.
- You cough up blood.

It is important to seek medical help if you think you might have DVT or pulmonary embolism.

More information

The organisations below can provide more information and support for people in hospital who may be at risk of DVT. NICE is not responsible for the quality or accuracy of any information or advice provided by these organisations.

- Anticoagulation Europe, 020 8289 6875, www.anticoagulationeurope.org
- British Heart Foundation, Heart HelpLine: 0300 330 3311, www.bhf.org.uk
- H.E.A.R.T. UK – The Cholesterol Charity, Helpline: 0845 450 5988, www.heartuk.org.uk
- Lifeblood: The Thrombosis Charity, 0207 633 9937, www.thrombosis-charity.org.uk

NHS Choices (www.nhs.uk) may be a good place to find out more. Your local patient advice and liaison service (usually known as ‘PALS‘) may be able to give you more information and support. You should also contact PALS if you are unhappy with the treatment you are offered, but you should talk about your care with a member of your healthcare team first. If your local PALS is not able to help you, they should refer you to your local independent complaints advocacy service. If you live in Wales you should speak to NHS Direct Wales for information on who to contact.

About NICE

NICE produces guidance (advice) for the NHS about preventing, diagnosing and treating medical conditions. The guidance is written by independent experts including healthcare professionals and people representing patients and carers. They consider the evidence on the condition and treatments, the views of patients and carers and the experiences of doctors, nurses and other healthcare professionals. Staff working in the NHS are expected to follow this guidance.

To find out more about NICE, its work and how it reaches decisions, see www.nice.org.uk/AboutGuidance

This booklet and other versions of the guideline aimed at healthcare professionals are available at www.nice.org.uk/guidance/CG92. The versions for healthcare professionals contain more detailed information on the care and treatment you should be offered.

You can order printed copies of this booklet from NICE publications (phone 0845 003 7783 or email publications@nice.org.uk and quote reference N2081). The NICE website has a screen reader service called Browsealoud, which allows you to listen to our guidance. Click on the Browsealoud logo on the NICE website to use this service.

We encourage NHS and voluntary organisations to use text from this booklet in their own information about reducing the risk of DVT and pulmonary embolism in patients admitted to hospital.