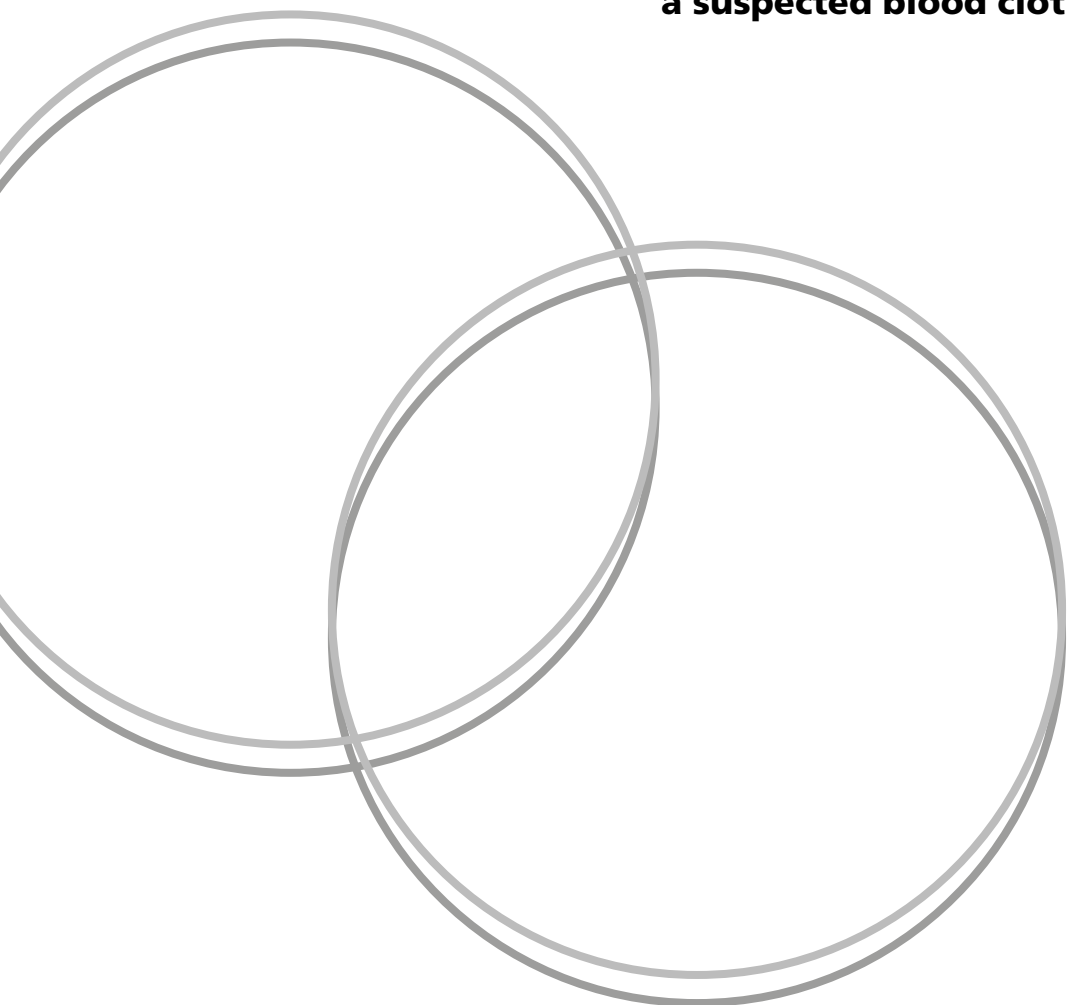




Oxford University Hospitals
NHS Foundation Trust

Testing for blood clots during or after pregnancy

**Information for women with
a suspected blood clot**



You have been given this leaflet because you are **pregnant or have recently been pregnant** and your doctor suspects you may have a **blood clot** in your leg or your lungs.

It will explain what types of blood clot there are, why we need to look for them, how we look for them, and how a blood clot is treated.

Terms you might hear being used

A **thrombus or thrombosis** is the name of a clot that forms in a blood vessel.

An **embolus or embolism** is part of a thrombus that breaks off and travels through your blood stream to another point in your body.

So, a blood clot that forms in the veins in your legs is known as a **deep vein thrombosis**, and if this breaks away and travels to your lungs it is known as a **pulmonary embolism**.

The scans discussed in this leaflet are:

- **Doppler ultrasound scans**
- **ventilation/perfusion scans (V/Q scans)**
- **computerised tomography pulmonary angiography (CTPA).**

Pregnancy and blood clots

Blood clots are up to 5 times more common in pregnancy, as your blood is thicker. However, it is still uncommon, occurring in only 1 or 2 pregnant women in every 1,000.

A clot can occur at any time in your pregnancy, including in the first 3 months and up to 12 weeks after delivery.

What is a deep vein thrombosis?

A deep vein thrombosis (DVT) is when your blood forms a clot in one or more of the veins in your leg, blocking the blood flow.

Symptoms of a deep vein thrombosis can include:

- pain, swelling and tenderness in one of your legs, especially when walking or standing
- a heavy ache in the affected area
- warm or red skin in the affected area.

However, many people have no symptoms at all.

How is a DVT diagnosed?

Doppler ultrasound scan

This is a good way of looking for clots in the blood vessels in your legs. It uses an ultrasound machine, exactly like the one used to look at your baby during your pregnancy scans.

Other scans

Sometimes a blood clot can form higher up, in the veins in your tummy (that lead to the leg veins). This is more common in pregnancy. If the doctors are concerned you have a blood clot in these veins, other scans will be needed, such as an MRI (magnetic resonance) scan. This is safe to carry out in pregnancy, if needed, and is only rarely required for suspected blood clots.

What are the risks of not identifying a DVT?

A DVT can cause short term circulation problems in your leg (redness, swelling, impaired blood flow), but may also cause long term swelling (the swelling may not go away).

The clot can also get bigger and then part of it may break off and travel to your lungs (a pulmonary embolism), which can be life-threatening. Blood-thinning medication can prevent the clot from enlarging and leading to a pulmonary embolism.

What is a pulmonary embolism?

A pulmonary embolism (PE) develops when a blood clot in the deep veins breaks free and travels to the lungs. The clot can then block the blood supply to part of the lung/s, preventing oxygen from being used in that area. This can cause the symptoms listed below. A suspected pulmonary embolism requires urgent medical attention.

Symptoms of a pulmonary embolism can include:

- sudden, unexplained difficulty breathing
- tightness in the chest or chest pain
- coughing up blood
- feeling very unwell or collapsing.

How is a PE diagnosed?

A pulmonary embolism can be life-threatening, so it is important to have a scan to rule out or confirm this diagnosis. You will be started on blood-thinning medication before the scan.

If you have a suspected PE **and** symptoms in your legs (such as pain or swelling), we will usually carry out an ultrasound scan of your legs first. If a DVT is found, then **often no further scan is required** to confirm the diagnosis of a PE. This is because treating your DVT will also treat any PE you may have, as the treatment for both conditions is the same.

If the ultrasound scan doesn't show a DVT, there are two types of scan used to diagnose a PE; a ventilation/perfusion (V/Q) scan and computerised tomography pulmonary angiography (CTPA). They both involve a very low dose of radiation. The scans cannot be carried out without this low dose of radiation and there is **no alternative test for PE**.

Examinations that use radiation, even at very low dose, are only carried out when necessary. We will only recommend that you have a scan like this if the benefit to you (and your unborn child) of having the examination **outweighs the risks of not having it**.

Chest X-ray

Before either a V/Q scan or CTPA, you will have a chest X-ray. The X-ray uses a tiny dose of radiation to create an image of your chest and lungs. This is an excellent way to rule out other conditions, such as pneumonia, which can cause very similar symptoms to a PE.

If signs of another condition are found on your chest X-ray, you may not need the V/Q scan or CTPA, so it is an important test to do first.

The tiny dose of radiation used in a chest X-ray is not considered at all harmful for you or your baby. The radiation dose is equivalent to eating 140g of brazil nuts.

V/Q SCAN

What happens during a V/Q scan?

During this scan you will have a narrow tube, called a cannula, put into a vein in your arm. The scan has two stages:

1. **First part:** Breathing in a low dose of a tasteless and odourless radioactive substance through a small plastic mask.
2. **Second part:** An injection of a low dose of a radioactive substance through the cannula in your arm.

The radiation from each of these substances is picked up by a special camera, which then creates images of the blood supply to your lungs.

Importantly:

- The first part of the test (breathing in the radioactive substance) is not carried out if your chest X-ray is normal (this is the case for the majority of pregnant women having this scan). The scan would then be described as a Q scan (perfusion only).
- Half the normal dose of radiation for the second part can be used in pregnancy, which has been shown to be just as good at diagnosing PEs as using the full dose and is referred to as a 'half-dose' scan.

What are the risks to me and my baby from having a V/Q scan?

Radiation exposure to you

Both V/Q scans and CTPA scans involve exposure to 'ionising radiation', which is used to produce the images. Ionising radiation can sometimes cause cell damage which, after many years or decades, could turn cancerous.

There is a very low risk of this damage developing from the amount of radiation that you will be exposed to as a result of the V/Q scan. The dose you will receive is lower than you would get from a CTPA, which is very low.

The dose you will receive is similar to the natural radiation dose from living in Oxford for approximately 2 months, as background radiation occurs naturally all around us.

Radiation exposure to your baby

Having a V/Q scan whilst pregnant:

Your baby will be exposed to an even lower level of radiation than you will. The level of radiation during a V/Q scan is a little higher than your baby would receive from a CTPA scan, but it is still so low that the risk to your baby is considered to be minimal.

Historically, there have been concerns about brain development or birth defects in unborn babies following the exposure of pregnant women to high doses of radiation. Importantly, the doses of radiation used in any form of hospital-based test are many times lower than the level which could cause problems.

In the normal population, childhood cancers are not uncommon, and can affect up to 1 in 500 children. Studies have shown that low doses of radiation can cause a very small increase in this risk. It is important to note that the dose of radiation given in a single scan is lower than the dose used in these studies. It is more of an issue for women who are having repeated scans, or women requiring radiotherapy treatment for cancer, where the total dose given is much higher than that of a single V/Q scan or CTPA.

Having a V/Q scan after delivery:

You should avoid long periods of close contact with your baby (e.g. cuddling for longer than 30 minutes) for 12 hours after your scan, including when feeding your baby. If you are breastfeeding, please see the next section.

Can I have the V/Q scan if I am breastfeeding?

Yes. You can feed your baby as normal before the scan. However, due to the low levels of radioactive dye that may remain in your body for a few hours after the scan, it is recommended that you **do not breastfeed your baby for 12 hours following the scan.** You should express any breastmilk you produce during this time and discard it.

Suggested plan:

- If you are able to, express at least one feed before your scan and store appropriately.
- Breastfeed your baby **just before** the scan.
- 3-4 hours after the injection of dye, express milk as completely as possible (from both breasts).
- **Discard** this milk (do not give it to your baby, instead use previously expressed milk, donated breastmilk or formula or formula).
- Continue to express and discard your breastmilk for 12 hours after the scan.
- After 12 hours, you can restart breastfeeding as normal.

If you follow these precautions, the radiation dose to your baby will be lower than the natural radiation dose from living in Oxford for approximately 3 months, as background radiation occurs naturally all around us.

If you have very recently given birth to your baby and are still producing colostrum rather than milk, there is little evidence to guide advice about how long to avoid breastfeeding for. We would advise that you avoid breastfeeding for a minimum of 12 hours. We can test your colostrum after this time to assess the level of radioactivity still present.

If you have not expressed your breastmilk before, a member of the maternity team will be happy to show you how to do this.

Do I need to take any other precautions?

- No special preparation is required before the test. You can eat, drink, and take medication as normal.
- As the radioactive dye will still be in your body for a few hours after the scan, it is possible you will be giving off a small amount of radiation during this time. It may also be present in your bodily fluids, such as your urine. Because of this, it is recommended that you are not cared for by pregnant staff members for 12 hours after the test.
- You will be encouraged to use the toilet, rather than a bedpan or bottle, and to flush the toilet twice, in the first 12 hours after the scan.
- Family members, including children, can visit you as normal.

When is a V/Q scan not appropriate?

A V/Q scan is not recommended if you have a chest condition (such as asthma) or if you smoke, as this can affect the results.

The V/Q scan cannot be carried out in an emergency, for example in the middle of the night or at a weekend. If a scan is required to make a diagnosis in an emergency, a CTPA would be advised.

COMPUTERISED TOMOGRAPHY PULMONARY ANGIOGRAPHY (CTPA)

What happens during a CTPA scan?

CTPA stands for computerised tomography pulmonary angiography. This is a specialised scan of your lungs by a scanner that uses X-rays to create images.

You will have an injection of dye into a cannula (narrow tube) in a vein in your arm (normally at the level of your elbow). The dye makes the blood vessels of your lungs easy to see on the scan images, so that clots can be identified.

What are the risks of this scan?

If you are still pregnant, the CTPA scan exposes your baby to an even lower dose of ionising radiation than a V/Q scan (see page 7).

If your baby has already been born, it will not be exposed to any radiation, as you will have no radioactive substances in your body after the scan. However, the CTPA scan will give a higher radiation dose to your breasts than a V/Q scan.

When you are pregnant or breastfeeding, the cells in your breast tissue are growing more and working harder than normal. This means they are more vulnerable to damage from radiation.

Breast cancer is the most common type of cancer affecting women in the UK, affecting 1 in 8 women in the course of their lifetime. Studies suggest that the use of a CTPA scan whilst pregnant or breastfeeding increases this risk by a small amount.

The dye used in a CTPA scan is different to a V/Q scan, and is not radioactive. The radiation comes from the X-ray machine used to take the pictures. Whilst the radiation dose to you (and your unborn baby) is higher than you would get from a V/Q scan, it is still considered a very low dose.

The dose you will receive is similar to the natural radiation dose from living in Oxford for approximately 15 months, as background radiation occurs naturally all around us.

Can I have this test if I am breastfeeding?

Yes. You can continue breastfeeding as normal.

Do I need to take any other precautions?

No other precautions are required before or after a CTPA.

Frequently asked questions

Why do I need to have either a V/Q or CTPA scan?

It is very important that we find out whether you have a pulmonary embolism (PE). This is potentially life-threatening if it is not identified. There are no good alternatives to using these scans, as there are no blood tests or examinations that doctors can do that can confirm the diagnosis.

If a PE is left untreated there is a risk of death, as well as longer-term consequences including heart failure from excessive strain being put on your heart.

A diagnosis of DVT or PE has important implications for future pregnancies (you may need daily preventative injections). It may also mean you should avoid using the combined oral contraceptive pill and hormone replacement therapy, as these can increase the chance of a blood clot happening again.

Why can't I just have the treatment without having a scan?

The treatment for a blood clot involves having blood-thinning medication called low-molecular-weight heparin (LMWH). However, as with all blood-thinning medications used for any length of time, this causes an increased risk of bleeding.

This is not a treatment that we can give you for any length of time 'just in case', so confirming the diagnosis of PE using scans is essential. It is a balance of risk, and the risks associated with the scans are lower than the risks of continuing treatment without a confirmed diagnosis.

There are also other medical conditions that can cause very similar symptoms to those of a PE. It is extremely important that we do the right tests to look for a PE, so that if a PE is not present we can make sure other causes are looked for (for which blood-thinning medication may not be the right treatment).

If I can have a V/Q scan whilst pregnant, why are pregnant staff members not allowed to look after me after the scan?

The radiation dose to you from a scan is very small, so the risk to a pregnant staff member from caring for you is even smaller (and is related to how likely they are to come into contact with your bodily fluids). However, that member of staff may be exposed to many women who have had these scans, so the total dose to them during the course of their entire pregnancy is greater, as the dose adds up.

Which scan will I have?

Both the V/Q and CTPA scans use low doses of radiation. The opinion from healthcare professionals in our own hospital Trust is that if a V/Q scan is appropriate, then this is generally preferred to a CTPA. If possible, a 'half dose' Q scan will be carried out, as described on page 7, which means the dose of radiation would be even lower.

Sometimes a V/Q scan is not appropriate. If so, this will be discussed with you and we will recommend a CTPA scan is carried out instead.

How to contact us

If you have questions after reading this leaflet, please speak with the medical team looking after you.

If you need an interpreter or would like this information leaflet in another format, such as Easy Read, large print, Braille, audio, electronically or another language, please speak to the department where you are being seen. You will find their contact details on your appointment letter.

Making a difference across our hospitals

charity@ouh.nhs.uk | 01865 743 444 | hospitalcharity.co.uk

OXFORD HOSPITALS CHARITY (REGISTERED CHARITY NUMBER 1175809)



Authors: University of Oxford Medical Student
Consultant Obstetric Physician

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