

# Investigations for suspected blood clots during or after pregnancy

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## Information for patients

This leaflet has been written for you if you have a suspected blood clot in your legs or lungs during or after pregnancy. It provides information about specific investigations that may be needed to confirm or exclude a blood clot, and what to expect during the procedures. If you have more questions at any time, please do not hesitate to contact a member of staff.

### Confirming your identity

Before you have a treatment or procedure, our staff will ask you your **name** and **date of birth** and check your **ID band**. If you don't have an ID band we will also ask you to confirm your address.

**If we don't ask these questions, then please ask us to check.**  
Ensuring your safety is our primary concern.

## Pregnancy and blood clots

During pregnancy, you are up to five times more likely to develop a thrombus (blood clot) as your blood thickens (a hypercoagulable state). However, it is still uncommon, and occurs in only one to two pregnant people in every 1,000. A clot can occur at any time during the gestational period, but you are up to 20 times more likely to develop a blood clot up to 12 weeks following the birth of your baby.

## Deep vein thrombosis

A deep vein thrombosis (DVT) is a blood clot that has formed in one or more of the deep veins, usually in your leg. When a DVT develops, the blood flow through the vein is either partially or completely blocked by a blood clot. Symptoms of a DVT include:

- leg pain, swelling and tenderness
- hot, inflamed or red skin in the affected area of the leg, but the redness may be harder to see on brown and black skin
- affected area of the leg painful to the touch.

Many people may not experience any symptoms.

If part of the blood clot breaks off from the DVT, it can travel through the blood stream to your lungs, where it can block one of the blood vessels in the lung. This is known as a pulmonary embolism (PE). A PE can cause you to cough up bloodstained saliva, and feel chest pain and shortness of breath.

DVT and PE are collectively referred to as venous thromboembolism (VTE).

## Consent

We must by law obtain your consent to any operation and some other procedures beforehand. Staff will explain the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure about any aspect of the procedure or treatment proposed, please do not hesitate to speak with a senior member of staff.

## Diagnosis of a DVT

### Compression duplex ultrasound scan

- An ultrasound machine is used to look for clots in the blood vessels of your legs. This is a non-invasive technique, and is usually not painful to carry out.

### Other scans

- Sometimes a blood clot can form higher up, such as in your groin or abdomen. This is more common during pregnancy and in the postnatal period. If the doctors suspect this, other scans may be needed, such as an MRV scan. This is safe to carry out during pregnancy, and is only rarely required for people with suspected blood clots.

## Diagnosis of a PE

A PE can be life-threatening, therefore it is important to have a scan to rule out or confirm diagnosis, and ensure you receive the correct treatment. You may start on an anticoagulant (blood thinning medication) called enoxaparin before the scan. This is given by injection into the fatty layer of skin on the abdomen.

If you have a suspected PE and symptoms in your legs such as pain or swelling, a Doppler ultrasound scan of your leg/s is usually performed first. If a DVT is found in this instance, no further scans are usually required to confirm the diagnosis of a PE, because treatment is the same.



If the ultrasound does not show a DVT, the following are used to diagnose a PE:

- chest X-ray\*
- ventilation/perfusion (VQ) scan
- computerised tomography pulmonary angiography (CTPA) scan

\* A chest X-ray will not confirm the diagnosis of a PE but is performed to exclude other causes of possible chest pain.

All of the above involve a low dose of radiation. There is no alternative test to confirm a PE. Examinations that use radiation, even at low doses, are only carried out when clinically indicated. They will only be recommended to you if the benefit outweighs the risk.

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

The diagnosis of a DVT or PE has important implications for future pregnancies. You may be required to have daily preventative blood-thinning injections. You may also need to avoid using the combined oral contraceptive pill and hormone replacement therapy, as these can increase the risk of a blood clot happening again. Please speak with your doctor if you have any queries concerning this.

## **Chest X-ray**

When a PE is suspected, a chest X-ray is performed first. The X-ray uses a very small amount of radiation to create an image of your chest and lungs. It is a good test to rule out other conditions that may be causing your symptoms, such as a chest infection. If signs of another condition are identified on your X-ray, you may not need to have further tests. Therefore it is an important test to perform first. The dose of radiation used in the chest X-ray is not considered to be harmful for you or your baby.

## **V/Q scan**

To perform a V/Q scan, you will have a cannula (thin plastic tube), inserted into a vein in your hand or arm. The scan has two parts, using two X-ray tracers:

1. breathing in a low dose of a tasteless and odourless radioactive substance through a mouth piece
2. an injection of a low dose radioactive substance through the cannula.

The radiation from these substances is picked up on a camera which will create images of the blood supply to your lungs and confirm if a blood clot has formed.

## **CTPA scan**

A CTPA scan is a specialised scan of your lungs that uses X-rays to create images. Like a V/Q scan, you will have a cannula inserted into a vein to inject dye into your vein. The dye makes the blood vessels of your lungs easy to see on the scan images to identify any blood clots.

The dye used in a CTPA scan differs from that used in a V/Q scan, and is not radioactive. The radiation comes from the X-ray.



# Risks from having a V/Q or CTPA scan

## Radiation exposure

- V/Q and CTPA scans involve exposure to ionising radiation, which is used to produce the images needed to determine if you have a blood clot. Ionising radiation can cause cell death which after many years can turn cancerous. The risk of this damage developing is incredibly low due to the amount of radiation you would be exposed to from having a V/Q scan.
- A CTPA scan gives a higher dose of radiation than a V/Q scan. When you are pregnant or breastfeeding, the cells in the breast tissue are growing more which means they can be more vulnerable to damage from the radiation.
- There is a very small radiation dose to your unborn baby from a V/Q scan. This is around 0.3mSv (milliSievert), which is a radiation dose equivalent to approximately six weeks of natural background radiation. Natural background radiation comes from several sources including cosmic rays from the sun and radiation released by certain types of rocks. This is a small radiation dose and the risk factor of a baby developing a childhood cancer as a result of this dose is 1 in 33,000 (the natural risk of developing a childhood cancer is 1 in 500).
- After birth, you should avoid long periods of close contact with your baby (for example, cuddling for longer than 30 minutes) for approximately 12 hours after your scan, including when feeding your baby.

## Estimated fetal radiation exposure

Procedure	Estimated Fetal Exposure (mSv)
Chest X-ray	<0.01
V/Q scan	0.3
CTPA scan	0.24-0.66

To put this into some context, if you were to fly from London to New York, you would be exposed to 0.03mSv.

## Breastfeeding

- If you are formula feeding, you can continue to feed your baby as normal.
- If you have had a CTPA scan, you can continue to breastfeed as normal before and after your scan.
- If you have had a V/Q scan, due to the low levels of radioactive dye that may remain in your body, it is recommended that you do not breastfeed your baby for 12 hours following the scan. Please see the box below to help support breastfeeding during this time.

### Recommendations for V/Q scan patients who are breastfeeding:

- express and store breastmilk in a refrigerator before the scan so you are able to feed baby with expressed breast milk (EBM) after the scan
- feed baby just before coming for your scan
- breastfeeding should be stopped for 12 hours following the injection of dye
- express every three to four hours after the scan to maintain milk supply and discard this for the 12 hour period you are not breastfeeding your baby
- drink plenty of fluids and empty your bladder frequently after your scan
- limit cuddles with your baby to short periods of time
- return to normal feeding 12 hours after your scan

## Who to contact

If you have any queries or concerns, please contact the department that made the referral, or your community midwife.



## Sharing your information

We have teamed up with Guy's and St Thomas' Hospitals in a partnership known as King's Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at Guy's or St Thomas'. To make sure everyone you meet always has the most up-to-date information about your health, we may share information about you between the hospitals.

## Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

## PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. They can also pass on praise or thanks to our teams.

Tel: 020 3299 4618

Email: [kings.pals@nhs.net](mailto:kings.pals@nhs.net)

**If you would like the information in this leaflet in a different language or format, please contact our Interpreting and Accessible Communication Support on 020 3299 4618 or email [kings.access@nhs.net](mailto:kings.access@nhs.net).**