York and Scarborough Teaching Hospitals
NHS Foundation Trust

Radiology Investigations for suspected Pulmonary Embolus in Pregnancy

Information for patients, relatives and carers

ⓘ For more information, please contact:

Radiology Department

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About this leaflet

In this leaflet we tell you about the investigations used to detect a blood clot in the lungs (a pulmonary embolus). We explain what is involved and what the possible risks are. The information in this leaflet is not meant to replace informed discussion between you and your doctor but can act as a starting point for such a discussion.
The preferred test is a CT scan (CT pulmonary angiogram or CTPA for short), with a V/Q scan as back up. We do a CTPA examination because it provides us with more detailed information than a V/Q scan and it is readily available seven days a week.

What is a CTPA?

This is a type of CT scan that uses x-ray contrast (iodine dye) injected into an arm vein, to enable us to visualise the blood vessels in your lungs. An embolism appears as a filling defect in one or more of the blood vessels.

Are there any alternatives?

A V/Q scan may be preferred in certain circumstances during pregnancy, usually if there is a history of CT contrast allergy or evidence of kidney disease. A VQ scan irradiates all the tissues in the body (including the foetus), as the isotope is injected into the bloodstream, whereas CTPA irradiates predominantly the tissues in the scan field.

What preparation is needed before the CTPA?

There is no special preparation needed for this test so you may eat and drink normally. A chest x ray (CXR) is usually performed as part of the initial assessment as this may explain your symptoms without requiring more complex tests.

For the CXR you will be asked to remove your clothes from the waist up and be given a hospital gown to put on. You will not be asked to remove your clothes for the scan, but you will be required to remove metal items such as bras, belts, keys and coins. Buttons and zips are fine.

What happens during the CTPA scan?

You will be asked to lie flat on your back on the CT scanner table. A tube (cannula) will be inserted into an arm vein by the medical team looking after you, before you come down to the CT department. The scan is performed immediately after injection of the x-ray contrast. The injection may induce a hot flushing sensation, and sometimes the feeling that you have passed water, but this is normal and nothing to worry about. The scan takes approximately 20 minutes.

What happens after the CTPA scan?

You will return to the department that sent you for the CT scan to await the result. You can eat and drink normally.

Are there any risks or complications?

Contrast agents are commonly used in imaging tests like CT scans to improve picture quality. While usually safe, they can occasionally cause side effects. The injection may make you feel warm all over, give you a metallic taste or make you feel like you need to pass water but should not cause you undue discomfort. In rare cases, a mild rash (hives) or very rarely more serious allergic reactions can occur, such as swelling or difficulty breathing.
The rate of a severe adverse or allergic reaction is less than one in 10,000 (reference 1). Allergic reactions typically happen shortly after the injection and are treatable. Very rarely, delayed reactions (up to 24 hours after the injection) may occur, and for this reason we advise you not to drive until an hour after the injection.

It is worth bearing in mind that many thousands of scans are carried out perfectly safely, nationally and at both our sites every year. Let your clinical team know if you have any allergies or a history of contrast reactions.
Your medical team will monitor you during and after the procedure to ensure your safety and manage any possible side effects.

Iodinated contrast agents cross the placenta and carry the theoretical risk of neonatal thyroid function depression; however, this risk is not supported by findings of clinical studies (reference 2). Additionally, all babies have their thyroid function routinely tested at birth to test for any thyroid deficiencies.

The amount of radiation from the CTPA scan depends on several factors, but we make sure this is minimised, particularly in pregnant patients. Due to improvements in technology, modern X-ray and CT machines can now achieve a good image with a low level of radiation. Staff will always make sure the benefit to you from having the X-ray or CT scan is much greater than the risk.

The radiation dose to the breast is the main concern, due to breast tissue which is more sensitive to radiation than usual during pregnancy, but there is only a small additional risk of breast cancer developing due to the scan. The risk to the foetus is low with CTPA, as only the chest is scanned. With V/Q scanning, all the tissues are irradiated by the injected radioisotope, including breast and the foetus, but dose to the breast is lower than with CTPA.

Is a protective shield or apron needed to protect you or the foetus against radiation?

Using shielding is not an efficient way of reducing your radiation dose and sometimes the shielding or apron can prevent staff getting a good image. This might mean you have to have a repeat scan, which would give you more radiation. Also, the shield can inadvertently increase the radiation dose to the foetus. With V/Q scanning shielding is not possible as all the tissues are irradiated by the injected radioisotope.

Results

A report will be sent to the doctor who referred you for the test. They will then let you know the results.

What if I have any other questions?

If you have any worries or questions about your scan, please feel free to telephone us on:
York - 01904 725937
Scarborough – 01723 342044
We will be happy to answer any questions you may have.

References

1. Wei, Y., Jiang, X., Hibberd, M. *et al.* Estimating the rate of acute adverse reactions to non-ionic low-osmolar contrast media: a systematic review and meta-analysis. *Eur Radiol* 35, 6240–6249 (2025).

2. Bourjeily G, Chalhoub M, Phornphutkul C, Alleyne TC, Woodfield CA, Chen KK. Neonatal thyroid function: effect of a single exposure to iodinated contrast medium in utero. Radiology 2010;256:744–50.

Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact
Dr Peter Brown, Radiology Department, York Hospital, Wigginton Road, York, YO31 8HE or
telephone 01904 726671.

Teaching, training and research

Our Trust is committed to teaching, training and research to support the development of health and healthcare in our community. Healthcare students may observe consultations for this purpose. You can opt out if you do not want students to observe. We may also ask you if you would like to be involved in our research.

Patient Advice and Liaison Service (PALS)

PALS offers impartial advice and assistance to patients, their relatives, friends and carers. We can listen to feedback (positive or negative), answer questions and help resolve any concerns about Trust services.

PALS can be contacted on 01904 726262, or email yhs-tr.patientexperienceteam@nhs.net.

An answer phone is available out of hours.

Leaflets in alternative languages or formats

If you would like this information in a different format, including braille or easy read, or translated into a different language, please speak to a member of staff in the ward or department providing your care.

Patient Information Leaflets can be accessed via the Trust's Patient Information Leaflet website: www.yorkhospitals.nhs.uk/your-visit/patient-information-leaflets/

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