

# Balloon pulmonary angioplasty for chronic thromboembolic pulmonary hypertension

Information for the public

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## What has NICE said?

There is the potential for serious complications with balloon pulmonary angioplasty, but it works well enough for use in the NHS for patients with chronic thromboembolic pulmonary hypertension in whom pulmonary endarterectomy (open surgery) isn't an option.

There is not much good evidence about how well this procedure works for patients with chronic thromboembolic pulmonary hypertension in whom pulmonary endarterectomy is an option. It should only be used in such patients if extra care is taken to explain the risks, and extra steps are put in place to record and review what happens.

## What does this mean for me?

**If you have chronic thromboembolic pulmonary hypertension and pulmonary endarterectomy isn't an option**, your health professional should fully explain what is

involved in having this procedure and discuss the possible benefits and risks with you. You should also be told how to find more information about the procedure. All of this should happen before you decide whether you want to have this procedure or not. Your health professional should ask you if details of your procedure can be collected.

**If you have chronic thromboembolic pulmonary hypertension and pulmonary endarterectomy is an option**, your health professional should fully explain what is involved in having this procedure and discuss the possible benefits and risks with you. In particular, they should explain the uncertainty about the evidence on how likely it is to improve your symptoms and possible side effects. You should also be told how to find more information about the procedure. You should only be asked if you want to agree to this procedure after having this discussion. Your health professional should ask you if details of your procedure can be collected.

## Your healthcare team

A healthcare team experienced in managing chronic thromboembolic pulmonary hypertension should decide which patients should be offered this procedure. The procedure should only be carried out by clinicians with expertise in this procedure in units with quick access to services that can deal with any complications that occur.

## The condition

Pulmonary hypertension is raised blood pressure in the arteries (blood vessels) that supply the lungs. In chronic thromboembolic pulmonary hypertension, this is caused when a blood clot that has formed in a deep leg vein becomes loose and is carried in the blood to the lungs. Here, it can block an artery. Blood clots in the lungs may dissolve over time but they don't always dissolve completely, leaving the artery narrowed. This restricts blood flow through the lungs leading to shortness of breath, dizziness, tiredness, chest pain, fluid retention and, eventually, heart failure.

Treatment includes drugs to stop blood clots forming or to dilate narrowed arteries in the lungs. Pulmonary endarterectomy is a surgical procedure that aims to remove the blood clot, but it isn't suitable for everyone. NICE has looked at using [balloon pulmonary angioplasty](#) as another treatment option.

[NHS Choices](#) may be a good place to find out more.

## The procedure

The procedure is usually done using a local anaesthetic, and the patient is given a medicine to stop their blood clotting. A catheter (a thin, flexible tube) carrying a folded balloon is inserted into a vein in the groin or neck. It is then guided to the narrowed artery in the lung. The balloon is then positioned at the site of the narrowing and inflated to widen the artery. The aim is to improve blood flow through the lungs and reduce back-pressure on the heart.

## Benefits and risks

When NICE looked at the evidence, it based its recommendations on the fact that there is the potential for serious complications with the procedure and not much evidence on efficacy. The 8 studies that NICE looked at involved a total of 226 patients.

Generally, they showed the following benefits:

- 16 of 18 patients still alive after an average of 34 months
- a long-term fall in blood pressure in the lung arteries
- improved heart function 2–3 years after the procedure
- improved walking and ability to exercise
- reduced need for medication.

The studies showed that the risks of balloon pulmonary angioplasty included:

- 4 patients died from heart failure between 2 hours to 15 months after the procedure
- 1 patient died from an infection in hospital and 1 died from a blood clot in a lung 9 days after the procedure
- piercing of blood vessels in 2% to 5% of patients
- damage to the main artery in the groin in 17% of patients
- swelling in the lungs in 35% to 61% of patients

- severe coughing up of blood in 4% of patients and mild to moderate coughing up of blood in up to 50% of patients.

NICE was also told about some other possible risks: acute kidney injury and anaphylactic shock, both caused by dye injected during the procedure, and exposure to high levels of radiation in patients needing repeat procedures.

If you want to know more about the studies, see the [guidance](#). Ask your health professional to explain anything you don't understand.

## Questions to ask your health professional

- What does the procedure involve?
- What are the benefits I might get?
- How good are my chances of getting those benefits? Could having the procedure make me feel worse?
- Are there alternative procedures?
- What are the risks of the procedure?
- Are the risks minor or serious? How likely are they to happen?
- What care will I need after the procedure?
- What happens if something goes wrong?
- What may happen if I don't have the procedure?

## About this information

NICE [interventional procedures guidance](#) advises the NHS on the safety of a procedure and how well it works.

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## Accreditation

