

Transcervical extracorporeal reverse flow neuroprotection for reducing the risk of stroke during carotid artery stenting

Information for the public

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What has NICE said?

Transcervical extracorporeal reverse flow neuroprotection for reducing the risk of stroke during carotid artery stenting works well enough for use in the NHS, but there are well-known risks associated with this procedure.

What does this mean for me?

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.

A healthcare team that includes an [interventional radiologist or neuroradiologist](#), a [vascular surgeon](#) and a doctor with a special interest in stroke should decide which patients should be offered this procedure. The procedure should only be done by doctors who have specific training in the techniques used and regularly do similar procedures.

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

The condition

The arteries supplying blood to the brain can become narrowed or blocked by fatty deposits of substances such as cholesterol. This increases the risk of a stroke or transient ischaemic attack (TIA or 'mini-stroke'). Lowering a person's risk usually involves them stopping smoking and taking drugs to prevent blood clots forming and to reduce levels of cholesterol in the blood.

Some people need surgery to unblock the artery or a procedure to insert a stent (tube) to keep the artery open. During the stent procedure fatty deposits can break away and block an artery to the brain, causing a stroke. The risk of this happening can be reduced, by using a filter to trap any deposits or by temporarily reversing the blood flow in the artery away from the brain.

NICE has looked at using [transcervical extracorporeal reverse flow neuroprotection](#) as another option.

[NHS Choices](#) and NICE's [information for the public about stroke](#) may be a good place to find out more.

The procedure

This procedure aims to reduce the risk of a stroke during surgery to insert a stent.

Under anaesthetic, a catheter (or thin tube) is inserted into the carotid artery through a small cut in the neck. The artery is clamped to reverse the blood flow away from the brain. The blood is filtered outside the body and then returned through a catheter into a vein in the neck or the groin. While the blood flow is reversed, the stent is inserted. When the stent is in the right place, blood flow is returned to normal and the catheters are removed.

Benefits and risks

When NICE looked at the evidence, it decided that there was enough evidence about how well this procedure works and how safe it is. The 9 studies that NICE looked at involved a total of 794 patients.

They showed that compared with another procedure, which did not reverse blood flow, there were:

- no strokes and 2 transient ischaemic attacks (TIAs) compared with 1 stroke and 1 TIA
- fewer new lesions in the brain because of poor blood supply; most lesions did not produce symptoms
- improved blood flow in the brain.

The studies showed that there are some serious risks of transcervical extracorporeal reverse flow neuroprotection. These included:

- tears in the inner lining of the carotid artery in 9 patients
- slow heart rate with or without low blood pressure in 6 patients
- death in 3 patients (2 from heart attacks, 1 from a lack of oxygen passing from the lungs into the blood)
- spasm of the carotid artery in 13 patients, needing drug treatment
- bleeding into the brain or neck in 4 patients
- nerve injury in 3 patients
- problems with the catheter and stent insertion in 3 patients, needing a different procedure to unblock the artery.

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?

Medical terms explained

Interventional radiologist

A specialist who uses imaging (such as X-rays, ultrasound and MRI scans) to investigate, diagnose and treat disease.

Neuroradiologist

A specialist who uses imaging (such as X-rays, ultrasound and MRI scans) to investigate, diagnose and treat disease in the brain, spine, head and neck.

Vascular surgeon

A surgeon who specialises in managing diseases affecting the arteries and veins.

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

