

Intraoperative fluorescence angiography for the evaluation of coronary artery bypass graft patency

**Understanding NICE guidance –
information for people considering the
procedure, and for the public**

October 2004



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Issue date: October 2004

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Website: www.nice.org.uk

ISBN: 1-84257-798-0

Published by the National Institute for Clinical Excellence
October 2004

Typeset by Icon Design, Eton
Print on Demand

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About this information

This information describes the guidance that the National Institute for Clinical Excellence (NICE) has issued to the NHS on a procedure called intraoperative fluorescence angiography. It is not a complete description of what is involved in the procedure – the patient’s healthcare team should describe it in detail.

NICE has looked at whether intraoperative fluorescence angiography is safe enough and works well enough for it to be used routinely to check on a heart bypass graft.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of intraoperative fluorescence angiography and how well it works
- asked experts for their opinion
- asked the views of the organisations that speak for the healthcare professionals and the patients and carers who will be affected by this guidance.

This guidance is part of NICE’s work on ‘interventional procedures’ (see ‘Further information’ on page 10).

About intraoperative fluorescence angiography

A person has a heart bypass operation if they have a blockage in one of the blood vessels that take blood to the heart. The aim is to re-route the blood to avoid the blockage so that it can reach the heart more easily. It's done using a piece of blood vessel from another part of the body, which is stitched into place so that the blood flows through it rather than into the original blocked blood vessel. The piece of blood vessel that's put in is called a graft. Sometimes the 'new' piece of blood vessel gets blocked quickly, so blood still doesn't get to the heart easily. This can cause more problems in people after their bypass operation.

Intraoperative fluorescence angiography is a way of checking that blood is flowing through the new blood vessel during the bypass operation. It involves injecting a small amount of a special dye into the blood system so that it passes into the blood vessels near to the heart. In the area of the heart, the dye is activated by a small laser and becomes fluorescent. The movement of the fluorescent dye in the blood is tracked by a digital video camera. At the moment, the technique can tell doctors whether blood is flowing well through the new blood vessel, or if it's still getting held up. The technique can't yet give an exact measurement of the blood flow through the graft.

How well it works

What the studies said

NICE found three studies that reported the results of intraoperative fluorescence angiography in patients who had this procedure during their heart bypass operation (there was a fourth study but the report didn't have any helpful information for NICE's purposes). In one study involving 200 patients, the technique was used to confirm that the graft was working well in 192 patients. In the other eight patients, the fluorescence angiography showed up a possible problem, so the doctors could alter the graft slightly to make it work better. This was also the case in 4 out of 290 patients in the second study that NICE looked at, and 4 out of 107 patients in the third study, and all these people also had adjustments made to the new blood vessels so that the blood could flow through them more easily.

What the experts said

One expert said that there had not been enough studies carried out to say whether fluorescence angiography was helpful.

Risks and possible problems

What the studies said

From the studies that NICE looked at, there didn't seem to be any particular problems or risks with the fluorescence angiography when it was used during heart bypass operations. But there have been reports of problems with the dye when it has been used in other types of procedure. The most common problem in those studies was a severe allergic reaction (though even in the study in which this happened most often, only the equivalent of 3 out of 1000 people had it).

What the experts said

One expert said that a severe allergic reaction to the dye could happen on rare occasions.

What has NICE decided?

NICE has considered the evidence on intraoperative fluorescence angiography. It has recommended that when doctors use it during a heart bypass operation, they should be sure that:

- the patient understands what is involved and agrees (consents) to it, and
- the results of the procedure are monitored.

NICE has encouraged doctors to keep records of the patients who have fluorescence angiography and what happens to them after the operation. This will help doctors to see whether having fluorescence angiography during the operation has real long-term benefits for patients' health. NICE may look at fluorescence angiography again if new studies on this are published.

What the decision means for you

Your doctor may have offered you intraoperative fluorescence angiography. NICE has considered this procedure because it is relatively new. NICE has decided that the procedure is safe enough and works well enough for use in the NHS. Nonetheless, you should understand the benefits and risks of fluorescence angiography before you agree to it. Your doctor should discuss the benefits and risks with you. Some of these may be described above.

Further information

You have the right to be fully informed and to share in decision-making about the treatment you receive. You may want to discuss this guidance with the doctors and nurses looking after you.

You can visit the NICE website (www.nice.org.uk) for further information about the National Institute for Clinical Excellence and the Interventional Procedures Programme. A copy of the full guidance on intraoperative fluorescence angiography is on the NICE website (www.nice.org.uk/IPG098guidance), or you can order a copy from the website or by telephoning the NHS Response Line on 0870 1555 455 and quoting reference number N0729. The evidence that NICE considered in developing this guidance is also available from the NICE website.

If you want more information on heart problems, a good starting point is NHS Direct (telephone 0845 4647), or NHS Direct Online (www.nhsdirect.nhs.uk).

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