

Using ultrasound scanning to help place an epidural tube to give pain relief or an anaesthetic

*NICE 'HealthTech
guidance' advises
the NHS on when
and how new
procedures can
be used in
clinical practice.*

This leaflet is about when and how ultrasound scanning can be used in the NHS to help place an epidural tube to give pain relief or an anaesthetic. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence).

This HealthTech guidance makes recommendations on the safety of a procedure and how well it works. An interventional procedure is a test, treatment or surgery that involves a cut or puncture of the skin, or an endoscope to look inside the body, or energy sources such as X-rays, heat or ultrasound. The guidance does not cover whether or not the NHS should fund a procedure. Decisions about funding are taken by local NHS bodies (primary care trusts and hospital trusts) after considering how well the procedure works and whether it represents value for money for the NHS.

NICE has produced this guidance because the procedure is quite new. This means that there is not a lot of information yet about how well it works, how safe it is and which patients will benefit most from it.

This leaflet is written to help people who have been offered this procedure to decide whether to agree (consent) to it or not. It does not describe the use of ultrasound scanning in placing an epidural tube in detail – a member of your healthcare team should also give you full information and advice about this. The leaflet includes some questions you may want to ask your doctor to help you reach a decision. Some sources of further information and support are on page 7.



What has NICE said?

There is not very much evidence about using ultrasound scanning to place an epidural tube, but the evidence that there is suggests it is safe and may be helpful, particularly if it is difficult to identify where to place the epidural tube. The procedure can be offered for people who need pain relief or an anaesthetic for the lower body provided that:

- the patient understands what is involved and agrees to the treatment, and
- the results of the procedure are monitored.

Patients should be given information about the possibility of rare but serious complications of epidural pain relief and anaesthetics.

This procedure may not be the only possible way of placing an epidural tube.

Your healthcare team should talk to you about whether it is suitable for you and about any other treatment options available.

Ultrasound scanning to help place an epidural tube

The procedure is not described in detail here – please talk to your doctor for a full description.

Pain relief or an anaesthetic can be given by injecting a local anaesthetic into the back via a fine tube (called a catheter). This tube is left in place, which makes it easier to give more anaesthetic if needed. It is usually given to women during labour and to patients during or after surgery to the lower body (including the abdomen, lower back, hips and legs).

To place the tube, a hollow needle must be inserted into the patient's spine. Doctors feel with their hands to find the correct place between the bones of the back, then a local anaesthetic is injected into the skin to numb the back in this area. The needle is then inserted slowly to a precise depth. While inserting the needle, the doctor injects air or liquid

until it flows easily (called 'loss of resistance'). This means that the needle has reached the space inside the spine, called the epidural space, which is just before the spinal sac (a membrane that surrounds the spinal cord). The catheter is then inserted into the epidural space, the needle is removed and local anaesthetic can be passed through the catheter.

Ultrasound scanning can be used to help find the epidural space. It may be particularly helpful when it is difficult to place the epidural tube (for example, in children or in patients who are obese or have scoliosis, which causes the backbone to curve). Ultrasound scanning can be used continuously to guide the needle into the body, between the bones and through to the epidural space, or a scan can be done before the needle is inserted to help see where the needle should be positioned and judge how deep it should go. In both methods, loss of resistance is still used as an extra check that the needle has been inserted correctly.

What does this mean for me?

NICE has said that although there is not very much information about this procedure, it appears safe enough and works well enough for use in the NHS. If your doctor thinks using ultrasound scanning to place an epidural tube is a suitable treatment option for you, they should still make sure you understand the benefits and risks before asking you to agree to it.

Your doctor should explain that there is the possibility of rare but serious complications with epidural pain relief and anaesthetics.

You may want to ask the questions below

- 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 happens if something goes wrong?

You might decide to have this procedure, to have a different procedure, or not to have a procedure at all.

Summary of possible benefits and risks

Some of the benefits and risks seen in the studies considered by NICE are briefly described below. NICE looked at eight studies on this procedure.

How well does the procedure work?

In three studies including a total of 402 women in labour who were given epidural pain relief, fewer attempts were required to place the epidural tube in women who had an ultrasound scan before the tube was inserted compared with those who did not have an ultrasound scan. One of these studies (of 30 women) also found that fewer tries were needed when ultrasound was carried out continuously compared with ultrasound before the epidural was inserted. In another study (of 300 women), women who had ultrasound were more satisfied with their procedure than those who did not have an ultrasound.

A study of 180 children who had ultrasound before the epidural tube was inserted found that only one attempt was required to insert the epidural tube in 179 out of 180 procedures.

In a study of 64 children, an epidural tube was placed successfully in all children who had ultrasound. The procedure took slightly longer for those who had ultrasound before the procedure compared with those who had ultrasound while the epidural tube was inserted.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. The advisers said that factors used to assess how well the procedure works include the comfort of the patient during insertion of the epidural tube, whether the needle enters the epidural space on the first attempt, successful insertion in patients in whom the conventional technique has not worked and the ability to position the needle and judge how far to push the needle in.

Risks and possible problems

In one of the studies of women in labour given epidural pain relief, the needle was passed too far (puncturing the spinal sac) in 1 out of 150 women who had ultrasound before the procedure and 2 out of 150 women who did not have ultrasound. Severe headaches were reported in 4 out of 150 women who had ultrasound before the procedure and in 15 out of 150 who did not have ultrasound.

In the studies of 64 and 180 children, there were no reports of puncture to the spinal sac.

As well as looking at these studies, NICE also asked expert advisers for their views. These advisers are clinical specialists in this field of medicine. One adviser said that there is possibly an increased risk of puncture to the spinal sac if the loss-of-resistance technique is not used.

More information about epidural pain relief and anaesthetic

[NHS Direct online](#) may be a good starting point for finding out more.

Your local Patient Advice and Liaison Service (PALS) may also be able to give you further advice and support.

About NICE

NICE produces guidance (advice) for the NHS about preventing, diagnosing and treating different medical conditions. The guidance is written by independent experts including healthcare professionals and people representing patients and carers. They consider how well an interventional procedure works and how safe it is, and ask the opinions of expert advisers. This guidance applies to the whole of the NHS in England, Wales, Scotland and Northern Ireland. Staff working in the NHS are expected to follow this guidance.

To find out more about NICE, its work and how it reaches decisions, see [NICE's about our guidance page](#).

This leaflet is about 'Ultrasound-guided catheterisation of the epidural space'. This leaflet and the full guidance aimed at healthcare professionals are also available at www.nice.org.uk/guidance/HTG160

You can order printed copies of this leaflet from the NHS Response Line (phone 0870 1555 455 and quote reference N1450).

We encourage voluntary sector organisations, NHS organisations and clinicians to use text from this booklet in their own information about this procedure.

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