

# Lung volume reduction surgery for advanced emphysema

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

February 2005

**Lung volume reduction surgery for advanced emphysema**  
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**Issue date:** February 2005

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Website: [www.nice.org.uk](http://www.nice.org.uk)

ISBN: 978-1-4731-9051-1

Published by the National Institute for Clinical Excellence  
February 2005

Typeset by Icon Design, Eton

Printed 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 lung volume reduction surgery for advanced emphysema. 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 lung volume reduction surgery is safe enough and works well enough for it to be used routinely for advanced emphysema.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of lung volume reduction surgery and how well it works
- asked experts for their opinions
- 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 lung volume reduction surgery for advanced emphysema

Emphysema is a lung disease. The walls of the air sacs in the lungs become weak and disintegrate, leaving behind abnormally large air spaces that stay filled with air even when the person breathes out. The lungs also become less able to get enough oxygen into the blood, so the person can feel extremely tired. Lung volume reduction surgery, which is the procedure being looked at here, may be an option for people with severe symptoms of emphysema when other treatments haven't worked well. (People with emphysema often also have long-lasting bronchitis. You may hear both of these conditions being referred to as 'chronic obstructive pulmonary disease' or COPD.)

The aim of lung volume reduction surgery is to remove the part of the lung that's working least well, so that the effort of breathing can be concentrated on the part of the lung that's working better.

First, the doctors use images of the lung to see which part should be removed. Then they make openings in the chest area that will allow them to get to the lung. There are different ways that this can be done. For example, the bone running down the centre of the chest may be opened up (this is known as a median sternotomy). Or several small openings may be made on both sides of the chest so that surgical instruments can

be put into the chest between the ribs. If this operation is used, the surgeon uses video to help see what's happening (it's known as a video-assisted thoracoscopy). Another way of getting to the lung is by making an opening between the ribs on one side of the chest and separating out the ribs (this is known as a thoracotomy).

When the surgeon has access to the lung, the worst affected part of the lung is removed using either a special stapling device to cut and seal the lung tissue or a laser. Sometimes both are used. Once the lung tissue has been removed, the lung is re-inflated and the opening or openings in the chest are closed up.

## How well it works

### What the studies said

In studies, lung volume reduction surgery seemed to help certain patients. After the operation, their lungs seemed to work better and they had a better quality of life.

One large study compared what happened in patients who had lung volume reduction surgery with patients who were treated with medicine. After 2 years, 54 out of 371 people who had had surgery were able to do more exercise than they could do previously. As a comparison, 10 out of 378 people who were taking the medicines were able to do more exercise. As percentages, these figures are 15% for the surgery group and

3% for the medicines group – statistical tests show that this is a ‘true’ difference. More people in the surgery group also had an improvement in their quality of life compared with the people taking the medicines (33% compared with 9%). But the different treatments didn’t affect the death rates, which were the same in the two groups.

### **What the experts said**

The experts said that lung volume reduction surgery could help certain patients, but that the benefits tend to decline as time goes on.

### **Risks and possible problems**

#### **What the studies said**

In the studies, the most common problem that patients had was leakage of air from the lung after the operation. In one study of 250 patients, nearly half of the patients had air leaks that lasted more than 7 days. Eight patients needed to have another operation because of the air leaks. Other problems in this study were:

- pneumonia, which developed in 24 out of 250 patients
- heart attack, which happened in 5 out of 250 patients
- deep vein thrombosis (a blood clot in one of the deep veins), which happened in 4 out of 250 patients

- blockage in the small intestine, which happened in 6 out of 250 patients
- damage to a nearby nerve, which happened in 2 out of 250 patients.

In this study, 12 patients died while in hospital. But it's important to remember that some of the problems that were reported may have happened because of the patients' medical condition rather than directly because of the operation.

### What the experts said

The experts said that the problems that could happen with this type of operation were well known. They said the main problems were air leaks, chest infections and respiratory failure, which is when the body's breathing system stops working.

### What has NICE decided?

NICE has considered the evidence on lung volume reduction surgery. It has recommended that when doctors use it for people with advanced emphysema, they should be sure that:

- the patient understands what is involved, the risk of problems happening, and that the short-term benefits might not last
- the patient agrees (consents) to the treatment, and
- the results of the procedure are monitored.



NICE has said that in people who are very ill and whose lungs are not working at all well, it's likely that the operation would cause more harm than good. For this reason, it's important that doctors take care to make sure that only those patients who are likely to benefit are offered it as an option.

Finally, NICE has said that healthcare teams that do lung volume reduction surgery should include a doctor who specialises in treating chest conditions, people who specialise in helping patients recover from lung surgery and a surgeon who specialises in operations on the chest.

## Other comments from NICE

Some other operations are now being used to give the same effect as lung volume reduction surgery, and these don't involve opening up the chest.

## What the decision means for you

Your doctor may have offered you lung volume reduction surgery for advanced emphysema. 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, in particular, the risks of lung volume reduction surgery before you

agree to it. Your doctor should discuss these with you, and should explain how the benefits of the operation might not be long-lasting. Some of the benefits and risks 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](http://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 lung volume reduction surgery for advanced emphysema is on the NICE website ([www.nice.org.uk/IPG114guidance](http://www.nice.org.uk/IPG114guidance)), or you can order a copy from the website or by telephoning the Department of Health Publications Order Line on 0870 1555 455 and quoting reference number N0819. The evidence that NICE considered in developing this guidance is also available from the NICE website.

If you want more information on emphysema and chronic obstructive pulmonary disease, a good starting point is NHS Direct (telephone 0845 4647) or NHS Direct Online ([www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)). NICE has also issued a clinical guideline on chronic obstructive pulmonary disease, which is available from [www.nice.org.uk/CG012publicinfo](http://www.nice.org.uk/CG012publicinfo).

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