

Extracorporeal membrane oxygenation (ECMO) in adults

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

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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 extracorporeal membrane oxygenation. 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 extracorporeal membrane oxygenation is safe enough and works well enough for it to be used routinely for the treatment of severe heart or lung failure in adults.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of extracorporeal membrane oxygenation 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 extracorporeal membrane oxygenation

Extracorporeal membrane oxygenation (ECMO) is a temporary life support system used for people whose heart or lungs have stopped working properly. This can be caused by a number of things such as very severe infections, heart conditions, severe burns, or bleeding from the lungs. ECMO is used for people who are very seriously ill and who have not responded to other measures. It can also be used for people whose hearts have been artificially stopped during heart surgery to help take the strain off their system after the operation.

The ECMO machine does the work of the heart and/or lungs. A tube carries blood from the right side of the heart, which is then pumped through an artificial lung where it picks up oxygen. This oxygen-rich blood is then passed back into the person's blood system. A drug is given to stop the blood from clotting.

How well it works

What the studies said

The studies showed a broad range of success for this procedure. In one study the procedure worked in only 4 out of 42 patients (10%) but in another study it worked in 63 out of 100 patients (63%).

What the experts said

The experts thought that ECMO works better when it is used in children with heart and/or lung failure than when it is used in adults. A study called the CESAR trial (Conventional ventilation or ECMO for Severe Adult Respiratory Failure) is underway looking at how well it works when compared with a conventional life support system. The experts decided that the results from this trial are needed to be certain of how well ECMO works.

Risks and possible problems

What the studies said

Some complications seen in people who had ECMO were due to faults with the ECMO machine itself. There were also problems with blood clotting in the ECMO system, injuries from where the tube is inserted and problems caused by the original condition that had affected the person's heart or lungs.

What the experts said

Because people who have ECMO are very ill, many of the problems seen were caused by the condition that made their heart or lungs stop working, as much as by having the procedure itself. The experts didn't have major concerns about the safety of ECMO. One expert thought that bleeding could be a problem, because a drug has to be given to stop the blood clotting so that it doesn't clot in the ECMO machine.

What has NICE decided?

NICE has decided that ECMO in adults should only be used for patients who are taking part in a study of this procedure. If a doctor wants to carry out ECMO he or she is strongly advised to do so as part of the CESAR trial. The doctor who carries out the procedure should make sure that the patient understands what is involved and that there are still uncertainties over the safety of the procedure and how well it works.

What the decision means for you

Your doctor may have asked you to think about taking part in a trial looking at ECMO, called the CESAR trial. NICE has considered ECMO because it is relatively new. NICE has decided that there are uncertainties about the benefits and risks of ECMO which you need to understand before you agree to it. Your doctor should discuss the benefits and risks with you. Some of these 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) for further information about the National Institute for Clinical Excellence and the Interventional Procedures Programme. A copy of the full guidance on extracorporeal membrane oxygenation in adults is on the NICE website (www.nice.org.uk/IPG039guidance), or you can order a copy from the website or by telephoning the NHS Response Line on 0870 1555 455 and quoting reference number N0424. The evidence that NICE considered in developing this guidance is also available from the NICE website.

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