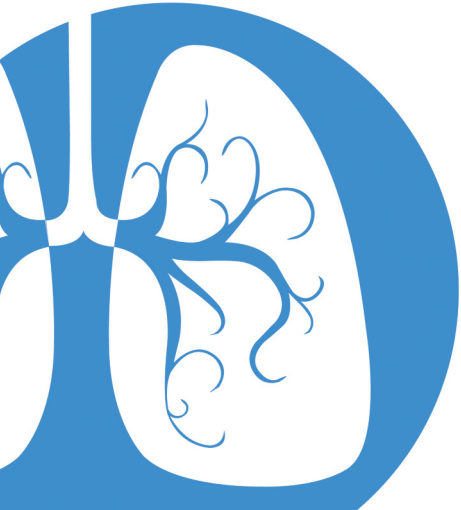
A lifetime of specialist care

Royal Brompton & Harefield NHS
NHS Foundation Trust

Royal Brompton Hospital

Extracorporeal membrane oxygenation (ECMO) for severe lung failure



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This leaflet gives general information about extracorporeal membrane oxygenation (ECMO) for severe lung failure to relatives and friends of patients who may benefit from this treatment at a specialist centre. It does not replace the need for personal advice from a qualified healthcare professional. Please ask us if you have any questions.

What is ECMO?

ECMO is a treatment that uses specialised equipment to take over the work of a patient's lungs and heart to give them time to rest and heal. It is used to treat adults and babies with severe lung and heart problems.

During ECMO a machine pumps a patient's blood from a large vein in their neck through an artificial lung (the membrane) outside the body (extracorporeal). This artificial lung adds oxygen to the blood and removes the waste carbon dioxide. The patient's blood is then returned to the body through another large vein. It is very similar to the heart-lung machine that is used for patients having an operation on their heart.

Why is ECMO being considered?

Your friend or relative has been referred to us because his / her lungs are damaged and this specialist treatment may help them to recover.

Our bodies need oxygen to survive. Lungs that are working normally allow oxygen to pass from the air we breathe into the blood. Our bodies then use this oxygen and produce a waste gas called carbon dioxide. The lungs get rid of extra carbon dioxide when we breathe out.

When lungs are extremely damaged, they are unable to pass enough oxygen into the blood and get rid of enough carbon dioxide. Patients who may benefit from ECMO are probably already linked to a breathing machine (or ventilator), which is helping, but not enough.

Over half of the patients who become so unwell that they need high levels of support from the ventilator and high levels of oxygen, do not survive. ECMO may help these patients to stay alive and allow more time for their lungs to get better.

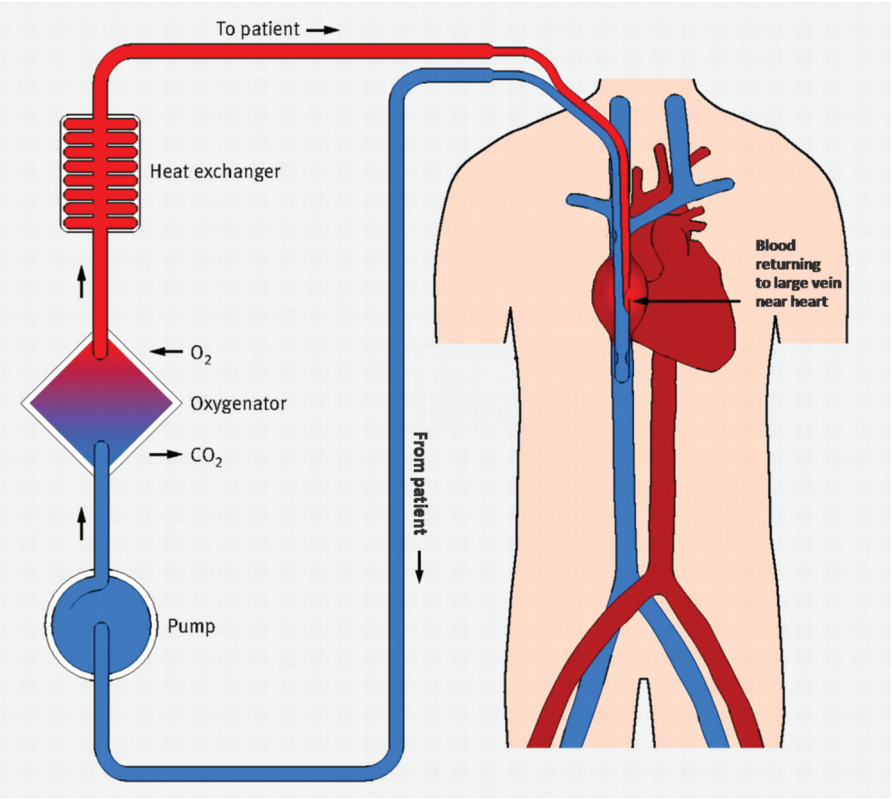

Figure 1 adapted with permission from BMJ Publishing Group Limited. Extracorporeal life support. Gaffney et al, BMJ 2010;341:c5317

The picture above illustrates how ECMO works. A drainage tube moves blood from a vein in the neck to the oxygenator. Carbon dioxide is removed from the blood and oxygen is added. Blood is warmed to body temperature and returned to the patient through a tube in the neck or groin.

What is the potential advantage of ECMO?

Sometimes, if ventilators are used to give large amounts of oxygen at high pressure, they can damage lungs even more.

The aim of ECMO is to supply the body with enough oxygen and remove enough carbon dioxide from the blood.

Breathing machines are still used during ECMO, but the doctors are able to turn the oxygen and pressure levels down, which allows the lungs to rest and heal.

How effective is ECMO?

A study carried out at Glenfield Hospital in Leicester, showed that ECMO works successfully in some adults. The study, which monitored patients with very severe lung problems, showed that patients who were moved from local hospitals to a specialist ECMO centre were more likely to survive without severe disability.

The National Institute for Health and Clinical Excellence (NICE) has produced a summary of the benefits and risks of ECMO. If you are not given a copy with this leaflet, please ask for it.

Why is ECMO not available at local hospitals?

Annually, the number of people needing ECMO is very low. The treatment requires specially trained staff and specialist equipment, so it is only available at a few hospitals in the UK, including Royal Brompton Hospital in London.

How do patients get from their local hospital to Royal Brompton Hospital?

Hospital staff will arrange for our ECMO team to transport patients to Royal Brompton Hospital.

We usually transport patients by road ambulance, or sometimes by air ambulance. If you are a relative or friend, you will need to travel separately. This is because we will have limited space and medical staff will need to concentrate on caring for the patient. If the transfer is by road, we strongly advise relatives and friends not to follow directly behind the ambulance as this can be dangerous.

There is a risk involved in moving patients who are very unwell. It is possible that they may become more unwell or, in rare cases, even die during the journey. However, those risks are outweighed by the advantages of a patient being treated in a hospital with staff skilled in ECMO.

What happens when the ECMO team arrives to transport a patient?

When the ECMO team arrives to transport a patient from a local hospital to Royal Brompton we need you to be there.

This is because sometimes when the patient is very unwell, he / she cannot communicate with members of our team, so we need to talk to you instead.

The nurse or doctor caring for your relative or friend will tell you when the ECMO team will arrive to take him / her to the specialist centre.

When our team arrives at the local hospital, they will carefully assess the patient and check that ECMO is suitable. They will discuss the patient's condition with you and may

ask about his / her medical history. The team will then get the patient ready to be transferred. It is possible that they may have to insert extra drips or tubes.

Often, our team has to start ECMO treatment at the local hospital before transferring the patient to Royal Brompton Hospital.

What happens when the patient arrives at Royal Brompton?

If the ECMO treatment has not been started at a local hospital, the patient is assessed again on arrival at Royal Brompton. If his / her condition has improved, the team may decide to treat without using ECMO. However, ECMO treatment will usually still be necessary.

ECMO is started after a small operation, which is done under a general anaesthetic (so the patient is asleep). During the operation, doctors insert tubes into veins in the neck, and sometimes the groin. These tubes allow blood to be pumped into the ECMO machine where oxygen is added and carbon dioxide removed. While ECMO is carried out, the patient usually stays attached to the ventilator and is kept asleep on the intensive care unit. On average, patients need ECMO for five to 14 days.

Sometimes treatment will be needed for several weeks.

The patient will continue to have other treatments on the intensive care unit while he / she is on ECMO.

Are there any risks associated with ECMO?

The main risk during ECMO treatment is bleeding. This is because a blood-thinning medicine called heparin must be given during treatment. Heparin prevents the blood from clotting in the ECMO machine. Clotting stops ECMO from working.

Minor bleeding is common, and although this may look unsightly, it is not usually a major concern.

More serious bleeding occurs in about one in every 10 patients. If bleeding occurs inside a patient's brain it may be fatal. We closely monitor the amount of blood-thinning medicine required to reduce the risk of serious bleeding problems.

There is a small risk of damage to the heart or blood vessels when tubes are inserted into veins in the neck or groin. We reduce the risk by using X-ray (shown on a TV monitor) to guide us.

Are relatives allowed to stay with patients?

The nurses will inform relatives about visiting times. When patients need to wash or rest, relatives may be asked to leave.

We understand that relatives may be a long way from home and we will try and help with accommodation. The nurses will be able to help arrange this. Our social worker may be able to help with claiming travel and living expenses.

Hospital psychologists and religious ministers are available if their help is needed during this difficult time.

We will do our best to keep relatives updated on the patient's progress.

More information

If you have more questions, please ask the doctors and nurses looking after the patient. They will do their best to find out the answers.

Contact details

Adult intensive care unit	**020 7351 8587**
Main hospital switchboard	**020 7352 8121**
ECMO administrator	**020 7352 8121** extension **2674** (Monday to Friday 9am-5pm)

You can leave a message and the administrator will return your call as soon as possible.

Your notes

If you have concerns about any aspect of the service you have received in hospital and feel unable to talk to those people responsible for your care, call PALS on:

- Royal Brompton Hospital – 020 7349 7715
- Harefield Hospital – 01895 826 572

You can also email pals@rbht.nhs.uk. This is a confidential service.

Royal Brompton Hospital
Sydney Street
London
SW3 6NP
tel: 020 7352 8121
textphone: (18001) 020 7352 8121

Harefield Hospital
Hill End Road
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UB9 6JH
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textphone: (18001) 01895 823 737

Website: www.rbht.nhs.uk

إذا كنت ترغب في الحصول على ترجمة فورية لمضمون هذه الوثيقة إلى اللغة العربية، يرجى منك الاتصال بأحد مستخدمينا بجناح المصلحة التي يتم فيها استشفائك. أحد موظفينا سيسعى لترتيب إجراءات الترجمة وإتمامها في الوقت المناسب لك.

Brosurteki bilginin Turkçe tercumesi için tedavi goruyor oldugunuz bolume bas vurunuz. Bolum personeli tercumenin gerçeklesmesini en kisa zamanda ayarlacaktir.

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