

## Heart-lung machine at the ICU

### ECMO treatment – Information for family and friends

Your relative or friend has been admitted to the Intensive Care Unit (ICU).

At this stage, we need to support the way their heart and/or lungs work, using a method called extracorporeal membrane oxygenation (ECMO).

You will have been told about this by the attending doctor. But this leaflet provides you with more information. If you have any questions, please feel free to ask the doctor or nurse.

#### **Why is my relative or friend receiving ECMO treatment?**

ECMO is used to support the heart and/or lungs. It takes over the work of these organs, either wholly or partially.

This is necessary when the heart and/or lungs don't work as well as usual because of a disease, disorder or complicated surgery. ECMO is used when all other treatments and options have been exhausted.

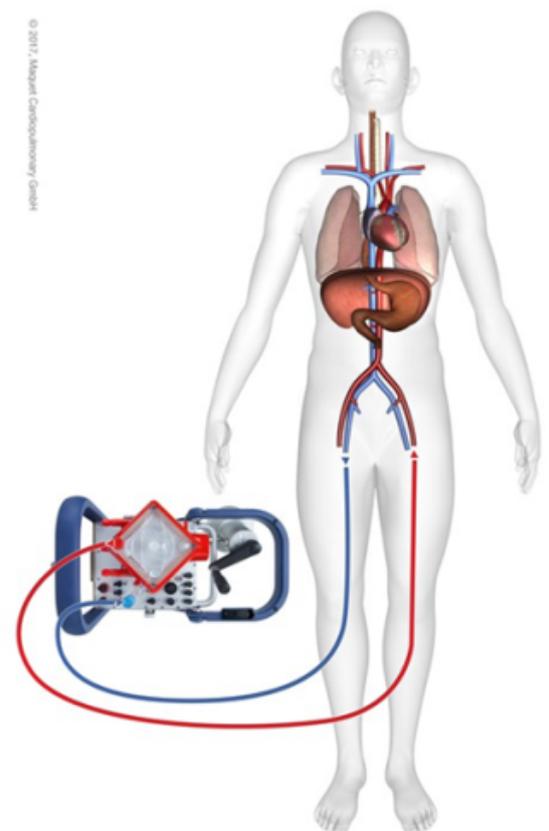
Thanks to ECMO, we can give the heart and/or lungs time to recover. ECMO stands for **extracorporeal membrane oxygenation**. It is also known as **extracorporeal life support (ECLS)** or a heart-lung machine.

#### **Lungs**

Lungs may not receive enough oxygen ( $O_2$ ) or release less carbon dioxide ( $CO_2$ ) in the case of serious pneumonia, for example. ECMO assumes the function of the lungs by extracting the low-oxygen blood from the patient. The blood then passes through an artificial lung, which pumps oxygen into the blood and removes carbon dioxide from it.

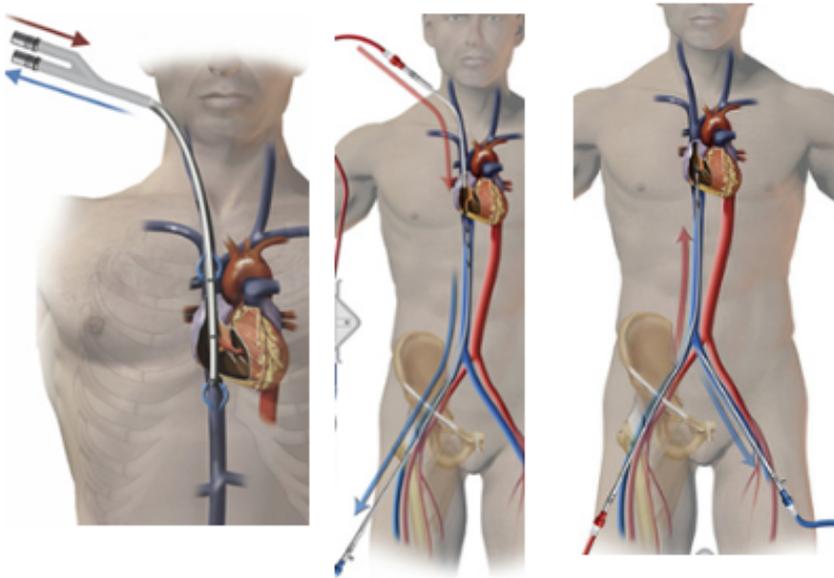
This oxygen-rich blood then flows back into the body. This helps the lungs to rest, in the hope that things will soon get back to normal. In most cases, the patient is connected to a ventilator at the same time.

The duration of treatment may range from a few days to a few weeks.



# Patient Information

In the pictures below, you can see where the cannula (tubes) can be placed and how your family member or friend will look with these connected to them.



## Heart

As with the lungs, the heart could also be unable to circulate blood properly for various reasons, such as heart failure after surgery, a major heart attack or inflammation in the heart muscle. Blood is extracted directly from a large vein and pumped back into a large artery under pressure through an artificial heart. Treatment may last between a few days to two weeks.

## Care

During the treatment, your family member or friend will be kept under close watch by an intensive care nurse, the team of doctors and a perfusionist (the specialist who operates the heart-lung machine).

Care will also be provided by the physiotherapist and nutritionist.

If desired, you can also receive psychological support, not just for the patient, but also for you as a family member or friend.

## During the ECMO treatment

- Small amounts of blood may be taken on a regular basis, so we can adjust the settings of the ECMO, regulate the ventilator and tailor the treatment.
- An X-ray of the heart and lungs will usually be taken every day to see if there are any changes.
- It is important that the patient continues to urinate, allowing waste to be eliminated. If the kidneys are not functioning properly, temporary renal function replacement treatment may be started (dialysis).
- To prevent the blood in the system (tubes and artificial lung) from clotting, the patient will be given blood thinners.
- In the initial phase, the patient is kept asleep by an intravenous drip of sleep medication and painkillers. This does not have to last for the entire period.
- The patient will be fed through a stomach tube or drip.

## Complications and consequences

ECMO is a very invasive treatment. Patients who are seriously ill and receive ECMO treatment have a much greater chance of surviving. However, there are also risks associated with this treatment, primarily:

- bleeding, since the blood needs to be thinned
- infections, since different tubes need to be inserted through the skin
- blood clotting, which can occur despite the blood being thinned.

During the ECMO treatment, you will receive regular information on the patient's condition and treatment. Please bear in mind that unfortunately there is also a chance that your relative or friend might not recover.

If there is no improvement to your relative or friend's health, then the intensivist will discuss this with you.

If you have any questions or would like to talk, please ask the nurse who is caring for your relative or friend.

If the ECMO treatment is successful, then support can be reduced. This will be determined by the team treating your relative or friend.

For the heart, this is when its ability to pump blood is recovering.

For the lungs, this is when the ventilator can be combined with the patient's own lung function.

## Research

At MUMC+, we are constantly striving to improve the care we provide with ECMO treatment. We might ask for your consent to involve your relative or friend in a study or research during the ECMO treatment.

The researcher will contact you and tell you what this entails. You can give or withdraw your consent at any time, and your decision has no influence on treatment provided.

## Questions

If you have any questions after reading this information, please speak to one of our nurses or doctors.

## Contact

There are three Intensive Care departments at Maastricht UMC+. They are all located on Level 3.

Department D3 043-387 63 41 / 043-387 43 41

Department E3 043-387 43 84 / 043-387 63 82

Department F3 043-387 43 80 / 043-387 63 81

## Websites

- [www.intensivecare.mumc.nl](http://www.intensivecare.mumc.nl)
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