

Resources

- Healthline Reference Library-ECMO-
<http://www.healthline.com/health/extra-corporeal-membrane-oxygenation#Overview1>
- A Family Guide to Adult ECMO
<http://www.ards.org/learnaboutards/treatment/ecmo.html>
- Patient Education/Information Series
<https://www.thoracic.org/patients/patient-resources/resources/what-is-ecmo.pdf>

ECMO: Extracorporeal Membrane Oxygenation

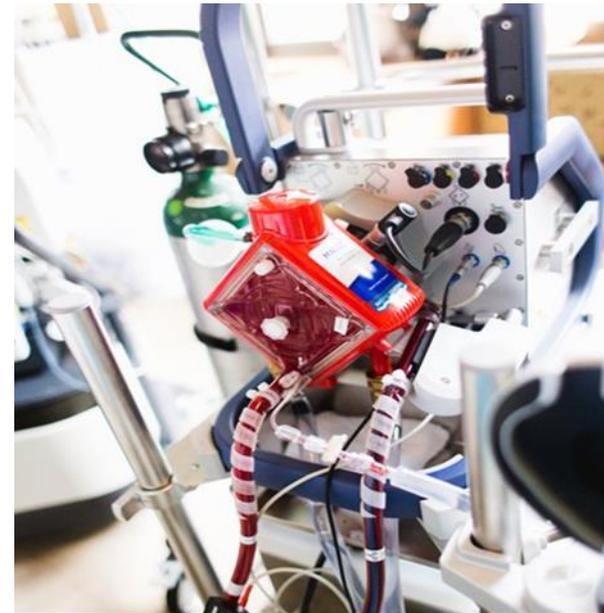


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Important Notes and Questions

Glossary

Foley: A tube in the bladder that drains the urine out of their body.

Intra-aortic balloon pump: a balloon placed inside the body's main artery. It rests the heart by decreasing the work.

ICU: Stands for intensive care unit. This is a special unit in the hospital for patients who need extra care and attention.

Infection: This is what it's called when germs get into the body and make someone sick.

Nasogastric Tube or NG: A tube that goes into someone's nose down into their stomach. It can drain the acid out of their stomach and give them food.

Respiratory System: The name for the lungs and all the parts of the body that are connected to the lungs.

Rounds: A meeting that happens every day at your loved one's bedside. The team shares with you how they are doing.

Sedation: A drug that will help your loved one rest and be comfortable. This allows for more oxygen for healing.

Ventilator: A breathing machine. It breathes just like our bodies do. The breathing tube is connected to this machine.

What is ECMO?

ECMO stands for Extra-Corporeal Membrane Oxygenation. ECMO is a **life support machine** for people with severe respiratory (lung) failure or heart failure **that does not respond to usual treatments**. ECMO is like a heart and lung bypass machine used in open heart surgery. It is used in intensive care areas for days to weeks of treatment. There are two main types of ECMO. One type is to help the lungs. The other type is to help the heart and lungs. The ECMO machine gives the patient's failing heart or lungs a chance to rest and recover.

Why ECMO Support?

Your loved one is very sick and other medical treatments have failed. Their heart and/or lungs cannot do their usual jobs as well. The doctors caring for your loved one have decided ECMO is crucial to try to save their life. ECMO can be used to help give the body time to heal. Because people are very sick before receiving ECMO, they can still die.

How Does ECMO Work?

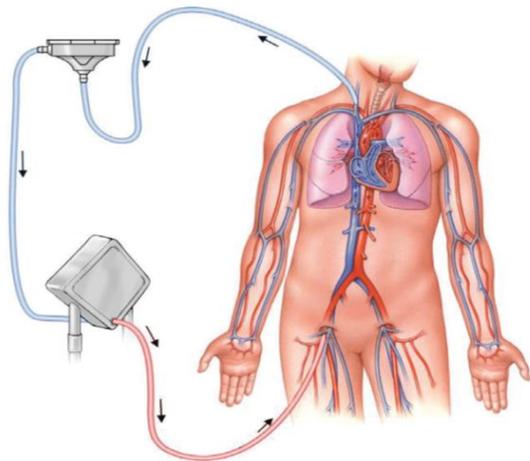
The machine works just like your heart and your lungs.

Normally your heart is the pump for the blood to travel all over your body. Normally your lungs put oxygen in the blood that your heart pumps.

This machine can pump and breathe while the body is healing.

The blood flows through a loop to make this work:

- It takes the blood out of the body through a large tube about the size of a garden hose.
- The blood goes into the ECMO machine that takes out the waste and adds in oxygen.
- Then the blood goes back through a large tube into the body.



Glossary

Antibiotics: Drugs that kills germs in the body that can make someone sick.

Anticoagulants (Blood Thinners): Drugs that help prevent dangerous clots from forming.

Arterial line: A small tube placed in the wrist or groin. It is used to get blood samples and to check blood pressure.

Bronchoscopy: A flexible tube with a camera and light on the end. It goes into the windpipe and down into the lungs. This is so we can check to see how the lungs are doing.

Cannula/Catheter: Another name for a tube.

Cannulation: The process to put the ECMO tubes into the patient's body.

Cardiac system: The name for the heart and all the parts of the body that are connected to the heart.

Chest Tube: A tube in the chest. It is to drain extra fluid or air out of the chest area so the lungs have more room to breathe.

Decannulation: The procedure to take out the ECMO tubes in the patient's body.

Dialysis machine: This machine does the same thing as your kidneys. It filters the blood

Diuretic: A drug that helps remove extra fluid in the body.

ET tube: Tube goes into the lungs and is connected to a breathing machine.

Stopping ECMO

ECMO is only able to go on for a short time. We will stop ECMO if your loved one is getting better or if they are getting much worse.

If your loved one's ECMO Care Team thinks they are getting better, they will try to wean them off ECMO. Weaning is where we reduce the amount of ECMO support for short periods of time. If they are getting better, they will handle this well. If weaning goes well, then we can stop the ECMO and take the tubes out.

ECMO does not cure the disease that caused the heart or lungs to fail. ECMO is only life support. Even with all this support, sometimes your loved one will not get better. The ECMO doctors are the experts at deciding if ECMO support is helping. The doctors will make the decision when ECMO should be stopped. Resources are available to help support your family during this difficult time.

Recovery After ECMO

It is common to have a long recovery after being so sick. A long time in bed can make muscles weak. Most people will need to go for inpatient rehab to improve their strength and movement skills. The amount of time it takes to get better is different for everyone. It can take longer if they are older or sicker.

ECMO Care Team

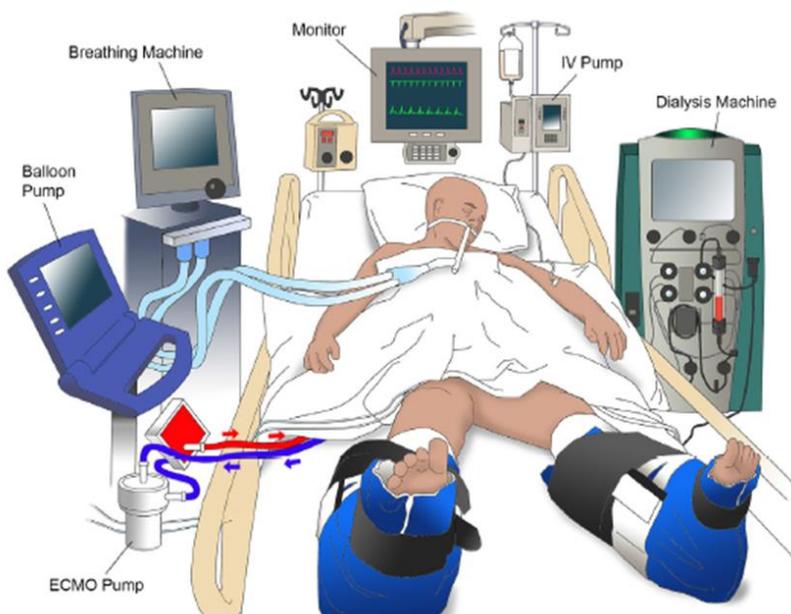
Every day the entire team taking care of your loved one meets together at the bedside. This meeting is called **Rounds**. The team talks about how they are doing. This is an important time for you to be involved and ask questions. Here's some of the people on the care team and what they do:

- **ECMO Doctor:** intensive care doctor trained in ECMO.
- **ECMO Nurse Specialist:** Registered Nurse (RN) specially trained in ECMO.
- **Respiratory Therapist:** helps with breathing problems and treatments.
- **Cardiologist:** doctor who works in treating heart problems.
- **Perfusionist:** specialist trained in the heart and lung machine and ECMO.
- **Pharmacist:** help the doctors choose and prepare drugs.
- **Physical and Occupational Therapists:** help keep and build muscles strength.
- **Dietician:** will help to check that your loved one is getting good nutrition.
- **Clinical Coordinator and Social Worker:** they can help you with any arrangements you may need.
- **Spiritual Care Services:** help families with emotional support and resources.
- **Palliative Care:** support patients and families in coping with their hospital stay and sickness. They also give information and guidance to family members.

What's it Like for My Loved One?

Seeing the ICU is overwhelming. There are lots of people and lots of noise. It's especially hard to see your loved one look so different. Their face will be puffy and their skin will look pale and feel cool. They will be on medication that will keep them asleep and they should not feel pain. We encourage you to talk to your loved one. They may be able to hear you even if they cannot talk back. Most people do not remember this time in their lives. They have lots of tubes going into and out of their body.

They will be connected to lots of machines. This is a picture of what it might look like. Each tube and machine is doing something special.



Medications

Your loved one will be on many medications. They will be given to them through the IV lines, feeding tube or through the breathing tube. Some of the medicines include:

Blood thinners: These are also called anticoagulants. They help prevent dangerous blood clots from forming.

Sedation: Drugs given for comfort and to help with rest and sleep. This allows for more oxygen for healing.

Antibiotic: Drugs given to treat or prevent infections.

Diuretic: Drugs to lower swelling from extra fluid in the body.



Risks of ECMO

There are certain risks for someone on ECMO. The risk of dying without ECMO is much greater than the risk of dying with it. These are some of the things we are watching closely for:

Bleeding: This is the most common risk. When we try to prevent dangerous clots by thinning the blood. Extra bleeding can happen when we thin the blood. Bleeding can happen anywhere in the body. It can happen around the mouth, tubes, and under the skin. Your loved one might need to get a blood transfusion if there is too much bleeding.

Blood Clots/Air Bubbles: There is a small chance that blood clots or air bubbles can get into the blood when patients are on ECMO. These can cause strokes.

Infection: is always a risk in people who are sick. Signs of new infections are always being monitored.

Not enough blood to the leg: This is most common for people on ECMO for heart and lung life support. Tubes placed in the leg can block blood flow and tissue can die. If this happens, Doctors will try to get blood flowing back to the leg.

Problems with ECMO equipment: Although every safety measure is taken, the ECMO circuit can work wrong or fail. If this happens, steps will be taken to keep your loved one stable. The ECMO Care Team is specially trained if this happens.

- **Breathing tube in their mouth:** This is connected to a machine that is breathing for them. This is called an ET tube, or endotracheal tube. It goes in their windpipe and into their lungs.
- **Breathing machine:** The breathing tube is connected to this machine. It breathes just like our bodies do. It is also called a ventilator.
- **Tube in their bladder:** Drains the urine out of their body. This is also called a Foley Catheter.
- **Tube in their nose:** Drains the acid out of their stomach and give them food. This is also called an NG tube, or nasogastric tube.
- **Tube in their chest:** Drains extra fluid out of the chest area so the lungs have more room to breathe. This is also called a chest tube.
- **IV tubes and pumps:** Most of the medication are in liquid form. They are given slowly drip by drip. The medicine is connected with a pump. The medicine travels through the tube into their body. This helps us give the exact amount of medicine they need.
- **Dialysis machine:** This machine does the same thing as your kidneys. It filters the blood.
- **Intra-aortic balloon pump:** a balloon placed inside the body's main artery. It rests the heart by decreasing the work.
- **Monitors:** machines are connected to screens to tell us what is going on. We check the information carefully and constantly watch the monitors.

How Can I Help?

There are things you can do to help your loved one while on ECMO. The most important is for you to take care of yourself during this time.

Ways to take care of yourself

- ✓ **Get enough sleep.** It's hard to get your mind to rest when you are worried, but rest is very important.
- ✓ **Eat well.** Drinking plenty of liquids and eating throughout the day is important to keep healthy.
- ✓ **Wash your hands.** People on ECMO are very sick. If you have a cold or any type of sickness, stay home until you are better.
- ✓ **Take breaks.** Other family members and close friends can sit with your loved one while you're away.
- ✓ **Talk to others.** It's very important that you have support. Ask to talk to a chaplain. Talk with friends and family. You will be surprised by all the support. People want to help and they are concerned. One way to keep everyone up to date is with CaringBridge. This is a website that is like Facebook for people who are very sick. This helps you keep all the updates in one place. You could also use one close family member or friend to be the family spokesperson. This takes some of the burden off you.

- ✓ **Accept help.** This goes for in the hospital and at home. Let your friends help with groceries, yard work, taking kids to activities, laundry, or meals.

Ways to Take Care of Your Loved One

- ✓ **Spend time with them.** Talk to them about what's going on. Share happy news and good things people say. Use a reassuring voice.
- ✓ **Gentle touch.** Gently holding their hand or touching their arm softly. This lets them know you are here.
- ✓ **Relaxation technique.** Bring a special comfort item like a blanket or photo. Use soothing music. This will help you relax too.
- ✓ **Keep a journal.** Your loved one will want to know what happened to them. They won't remember most of it. This also helps you to understand what's going on when you write it down.

