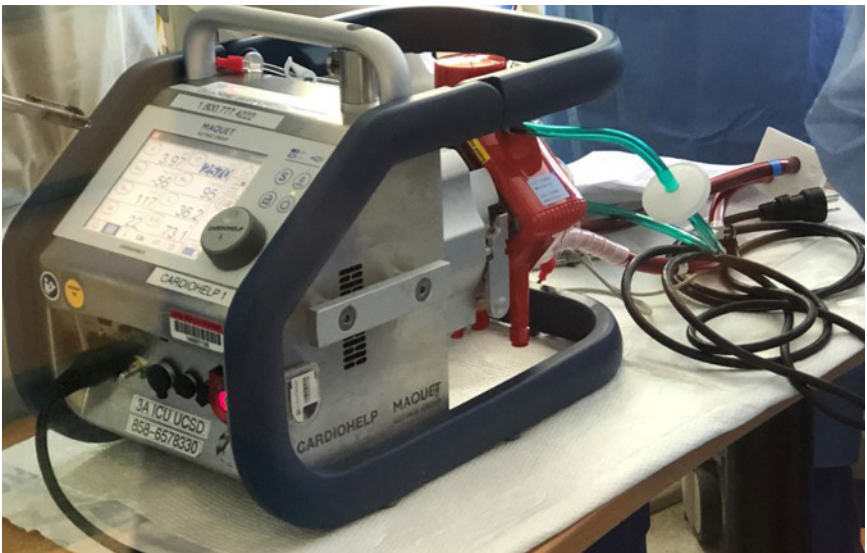


UC San Diego Health

# ECMO Life Support Patient and Family Education



## What is ECMO?

- ECMO is a type of mechanical therapy used when someone has a severe illness that prevents the heart and/or lungs from working properly.
- The ECMO machine helps the heart and/or lungs to rest by assisting the body in their function.

## What does ECMO do?

- ECMO adds oxygen into the blood and removes carbon dioxide.
- It pumps oxygenated blood to the organs of the body.
- ECMO does not cure health problems. It is a short-term support as the body is healing.

## ECMO Procedure

A surgeon may perform the procedure in the patient's room or in the operating room. The patient is sedated, given pain medications and a blood thinner. Two tubes called cannulas are inserted into arteries and/or veins and are sutured in place. After the procedure, x-rays may be done to ensure appropriate cannula position.

## Common Medications Used with ECMO

- Heparin, a blood thinner to prevent blood clots
- Antibiotics to prevent infections
- Sedatives and pain medications
- Diuretics to help the kidneys make urine
- Blood products, such as red blood cells or platelets, as needed



## What Else to Expect

Patients on ECMO are usually also supported by:

- A ventilator to help their lungs
- A feeding tube for nutritional support
- A drainage bag connected to the bladder
- Other IVs in the arms, neck, or chest

The ECMO team will communicate with the family spokesperson when there are updates or changes in the patient's condition. A formal meeting with all the team members and the patient's family may be scheduled weekly.

The purpose of these team meetings is for decision makers and care teams to come together to discuss the patient's progress and status.

A person receiving ECMO may be sedated much of the time, but sedation is balanced with enabling them to work with physical therapy as much as possible.

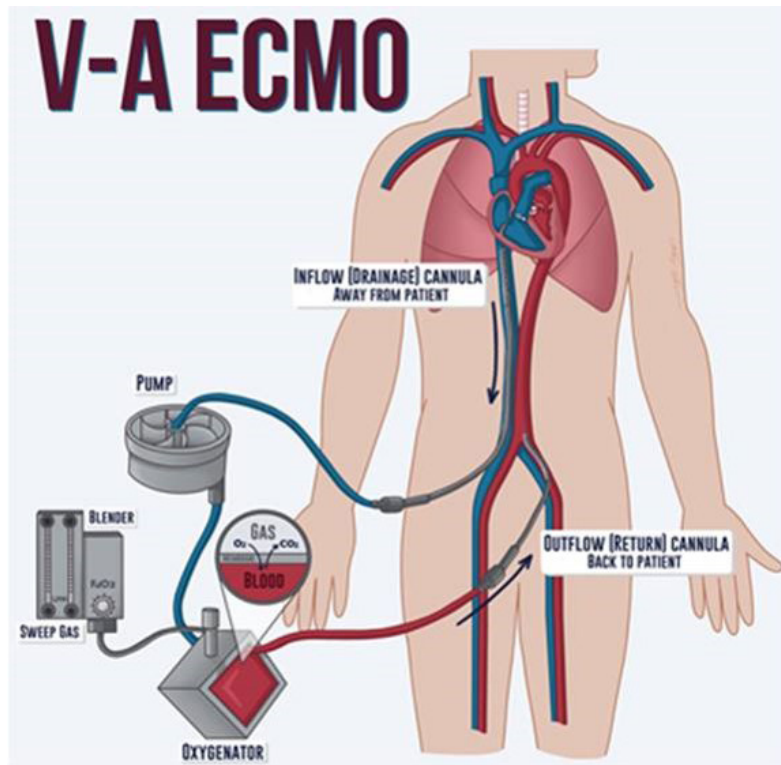
Patients on ECMO may have a palliative care consultation. The palliative care team is focused on facilitating communication and providing support to the patient and family.



## Types of ECMO

### Veno-Arterial (VA-ECMO)

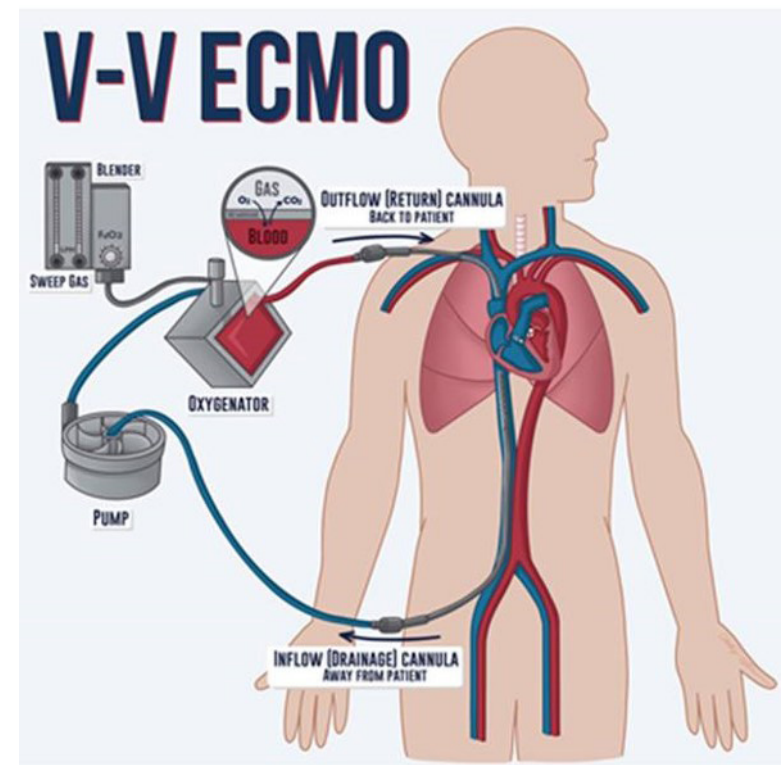
VA ECMO is similar to being on the heart-lung machine in the operating room. It provides full heart and breathing support so the patient's heart and lungs can rest and heal. The most common location of the cannulas in VA ECMO is the vein and artery in both sides of the groin.



## Types of ECMO

### Veno-Venous (VV-ECMO)

VV ECMO helps take over the function of the lungs so the patient's lungs can rest and heal. This type of ECMO has cannulas only in the large veins.



## Commonly Used ECMO Terms

### **ECMO**

ECMO stands for Extracorporeal Membrane Oxygenation, which is the highest level of life support that modern medicine can provide.

### **Cannula**

Large tubes placed into the veins and arteries that carry blood between the body and the ECMO machine.

### **Cannulation**

The process of inserting the cannula tubes through the skin into the veins and arteries.

### **Decannulation**

Removal of the cannula tubes when it is time for the patient to come off ECMO.

### **ECMO Flow**

The amount of blood being moved through the ECMO circuit by the pump.

### **Oxygenator**

A component of the ECMO machine that is the "artificial lung." Blood runs through filters that remove carbon dioxide and add oxygen into the blood.

### **Pump**

A component of the ECMO machine that is the "artificial heart." It pumps blood through the circuit and back into the patient.

### **Sweep**

The setting that controls how much carbon dioxide is removed from the blood.



## The Care Team May Include...

- Critical Care Physicians
- Cardiothoracic Surgeons
- Interventional Cardiologists
- Perfusionists
- Nurse ECMO Specialists
- Bedside Nurses
- Respiratory Therapists
- Pharmacists
- Physical and Occupational Therapists
- Dietary-Clinical Nutritionists
- Chaplaincy Services
- Palliative Care

## Risks

Although ECMO is a life-saving therapy, it does have risks. The most common risks are bleeding, infection, and an increased chance of having a stroke.

## Removing ECMO

ECMO can only be offered for a limited period depending on the patient's progress. The ECMO team will discuss this with the patient and the family spokesperson at the family meetings.

Discontinuing ECMO requires a surgical procedure to remove the cannulas and repair the veins and arteries. Small stitches will be placed to close the insertion sites.



# ECMO Team Members (left to right)

**Kit Tainter, MD**, Anesthesia Critical Care

**Marcus Anthony Urey, MD**, Advanced Heart Failure

**Mitul Patel, MD**, Interventional Cardiology

**Travis Pollema, MD**, Program Director,  
Cardiothoracic Surgery

**Cassia Yi, RN/CNS**, ECMO Coordinator

**Samira Najmaii**, Perfusion

**Mazen Odish, MD**, Pulmonary Critical Care

**Robert Owens, MD**, Pulmonary Critical Care



Not pictured: Angela Meier, MD , Anesthesia Critical Care



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For more information:

[health.ucsd.edu/ECMO](https://health.ucsd.edu/ECMO)

[ecmo@health.ucsd.edu](mailto:ecmo@health.ucsd.edu)