

A Guide to ECPR Therapy St. Paul's Hospital



Dear Family & Friends

Welcome to St. Paul's Hospital and the Cardiac Surgical Intensive Care Unit (CSICU).

Your loved one had a cardiac arrest and is being treated with a heart-lung machine called "ECMO". This must be a very stressful time for you, and we are sorry that you are going through this difficult time. We want you to feel supported and informed by our care team every step of the way. For this reason we developed this information package to provide additional information.

Your ECMO team is made of the following members:

- **Cardiac Surgeon:** Leads the team and the ECMO initiation. Together, the cardiac surgeon and cardiac anesthesiologist/intensivist direct the medical management of the ECMO treatment.
- **Cardiac Anesthesiologist:** Co-leader
- **Perfusionist:** Operates the ECMO machine
- **Critical Care Nurses:** Provide constant care for your loved one.
- **Respiratory Therapists:** Operates the breathing machine.
- **Social Worker:** A skilled counsellor who works with families to support them and locate resources as needed. They will support you in working with the healthcare team.
- There may be other doctors and staff members involved in your loved one's care including cardiologists (heart doctor), neurologists (brain doctor), and resident doctors (those in training).

We look forward to working with you and continuing to care for your loved one. Please let us know when you have further questions.

What is cardiac arrest?

A cardiac arrest occurs when the heart stops beating. This can happen for a number of reasons, but a common reason is a “heart attack” in which there is a blockage of one of the arteries going to the heart muscle. Other causes can include a clot in the lung, an electrical disturbance of the heart muscle, or a bleed in the brain. Unfortunately, overall survival for cardiac arrest is only 10%.

What are standard treatments for cardiac arrest?

Cardiac arrest treatment in the community is initiated by bystanders or paramedics and includes chest compressions (CPR), defibrillation (“shocks”), and certain medications. Paramedics attempt to restart the heart by providing these treatments at the scene of the cardiac arrest. Paramedics continue attempts to restart the heart at the scene of the cardiac arrest for approximately 30 minutes, after which the patient is typically declared dead. Treatments for arrests that occur in a hospital are similar.

How was the care different for my loved one?

St. Paul’s Hospital and BC Emergency Health Services have created an ECPR protocol for the city of Vancouver. Among those for whom paramedics are unable to restart the heart, paramedics identify those who may benefit from ECPR. These patients are then transported to St. Paul’s Hospital with ongoing CPR, and ECPR treatment is initiated in the emergency department.

What is ECMO? What is ECPR?

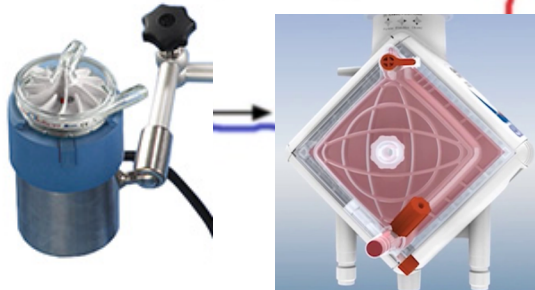
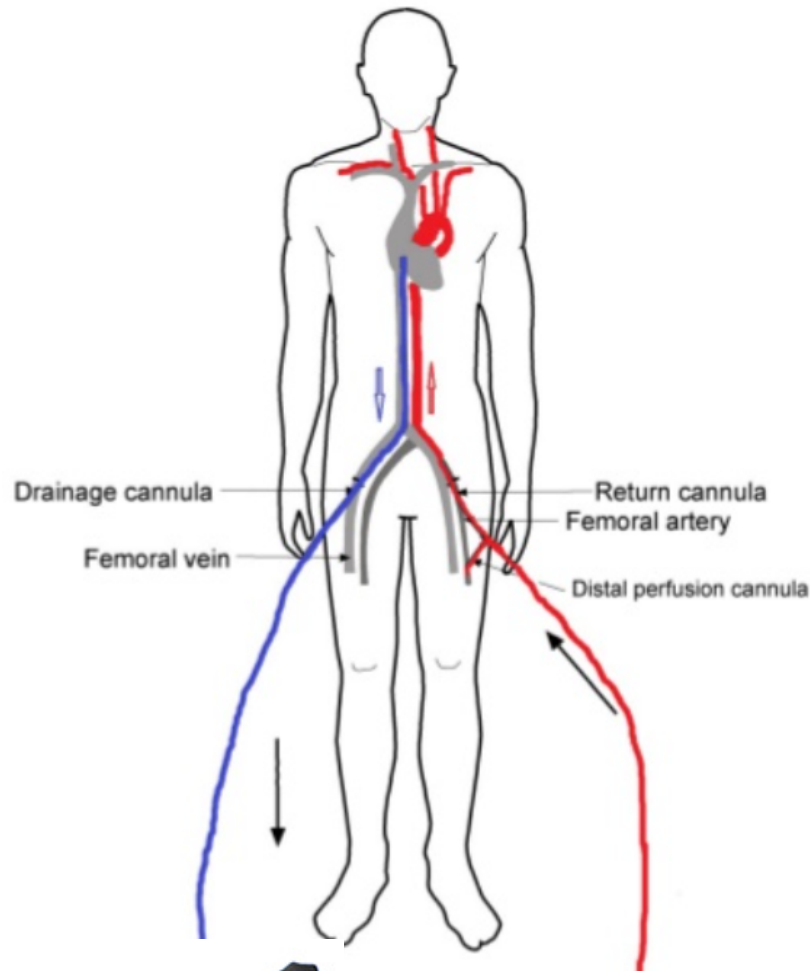
ECMO stands for Extra-Corporeal Membrane Oxygenation. ECMO functions as an external heart and lungs. When ECMO is used in a patient who is receiving CPR as their heart has stopped beating, we call this ECMO-CPR, or “ECPR”.

How does ECMO work?

ECMO is a circuit of tubing which contains an oxygenator (external mechanical lung) and pump (external mechanical heart).

Blood leaves the patient’s body through a tube in a vein. The blood then moves through the ECMO tube to a pump that pushes the blood forward (the external mechanical heart). The blood then travels through a device called an oxygenator that puts oxygen into the blood and takes out carbon dioxide (the external mechanical lung). The blood is also warmed as it moves through the ECMO device. The blood is then returned to the body through the other tube (cannula).

ECMO is a complicated and advanced procedure for those with critical illness. Fortunately, as BC’s provincial cardiac centre, the St. Paul’s CSICU has extensive experience with this type of ECMO treatment.



Oxygenator

What has happened to my loved one so far?

Your loved one had a cardiac arrest, which means his or her heart stopped beating. Paramedics were not successful at restarting the heart. Your loved one was transported to hospital and the ECPR initiated ECMO treatment. A coronary angiogram was likely then performed. This is a procedure in which a cardiologist is able to take pictures of the arteries that supply the heart with blood. If there is a blockage, in the case of a heart attack, the cardiologist is able to place a stent to open up the artery again.

How successful is ECPR?

Patients who are treated with ECPR have already had prolonged attempts at restarting the heart, and are critically ill. Unfortunately, only 1 in 6 patients treated with ECPR survive. Despite this low survival rate, we believe that attempting treatment with ECPR is still worthwhile, to save the lives of all that we can.

What happens now?

We will continue ECMO treatment and all other therapies to support your loved one in every way possible. We will continue to update you regularly of how things are going.

What if my loved one does not survive?

All hospital resources are made available to support ECPR patients. Unfortunately most still do not survive. Our social workers and other staff are available to assist all families through this difficult time.

Some patients continue to deteriorate and cannot be supported even with ECMO, our most advanced life support system. These patients often die within the first 24 hours. Other patients may be stabilized with ECMO but may have irreversible severe brain injury. During a cardiac arrest, the brain may not receive enough blood and oxygen, which can result in irreversible injury. There is no treatment for this type of brain injury. If there is no chance for recovery, due to brain injury or other untreatable illness, the team will stop life support and change to care focused on comfort.

Is there an option for organ donation?

Some patients treated with ECPR who do not survive are eligible for organ donation. Often families of non-surviving patients gain some comfort in the opportunity for donation. It is our policy to give every patient and family the opportunity for organ donation in the event their loved one cannot recover.

Please note that your ECMO team in the CSICU is not involved in the process of organ donation —they are **solely dedicated to caring for your loved one with the goal of survival.**

If the condition of your loved one turns out to not be survivable, and **after** the decision is made that ongoing life support will not be beneficial, the CSICU team may ask if you would like to consider organ donation. If you did wish to consider donation, an organ donation specialist will come and speak to you in detail about the process. Consent for donation is entirely voluntary and has no impact on the care of your loved one.

If you would like to speak to someone about organ donation earlier, during the treatment of your loved one, to receive further information about organ donation or make your wishes known, we can arrange this for you.

As part of our protocol an organ donation specialist is notified with each ECPR case, however they have absolutely no involvement in the care of your loved one, and will not have any contact with you during that time unless you request discussion. Some of the blood tests taken at the beginning of treatment can be used as part of organ donation assessment, if appropriate

Created by the St. Paul's Hospital
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