A Parent’s Guide to:

ECMO

(EXTRACORPOREAL MEMBRANE OXYGENATION)
What is ECMO?

ECMO stands for EXTRACORPOREAL MEMBRANE OXYGENATION. The ECMO machine is very similar to the machine used in the operating room during open heart surgery. Children are placed on ECMO when breathing machines and medicines are failing to keep them alive. When your child is placed on ECMO, the machine can take over the work of the heart and/or the lungs for a limited period of time to allow these organs to heal, usually days to weeks.

Types of ECMO

**VV ECMO (Veno-venous)** is used when the lungs are very sick but the heart is strong enough to pump blood to the rest of the body.

**VA ECMO (Veno-arterial)** is used when both heart and lungs are sick and need rest.

Based on how sick your child is, the physician will choose the type of ECMO needed.

What Care Does My Child Receive While on ECMO?

Your child will have two caregivers, an ECMO specialist and a bedside nurse. Your child will be attached to multiple monitors and a breathing machine. A large tube will be placed in the neck, chest or groin, so blood can be drained from the body, moved through the ECMO machine where oxygen is absorbed, and then pumped back into your child. The number of tubes needed and location depend on the type of ECMO used.

Medications will be given continuously to keep your child comfortable. A medicine will also be given to keep your child from moving and potentially dislodging the tubes. Depending on the reason your child goes on ECMO, other medications may be needed for blood pressure support, infection or other problems. Labs will be drawn throughout the day to keep the pump working properly. If your child gets too sick that his/her kidneys stop working, dialysis can be performed using a machine to remove harmful substances and/or extra fluid from the blood. A physician will decide when your child is well enough to discontinue ECMO.
Risks of ECMO
ECMO is a life-saving therapy that is not without risks.

1. Every child on ECMO is on a blood thinner called heparin. Heparin keeps the blood from clotting as it passes through the plastic tubes of the ECMO machine. There is a risk of bleeding due to heparin. Generally this bleeding is small, however at times the bleeding could be excessive. We will provide medications that can help slow down and/or stop the bleeding if the bleeding becomes excessive. Although bleeding can occur anywhere it is most common where tubes enter the body, but it can also occur internally (inside the body where you cannot see it). Internal bleeding is very worrisome and can occur in the brain, chest or belly. It can lead to significant brain damage or injury to other organs in the body. Your child will receive blood and blood products to control the bleeding. If bleeding cannot be stopped, ECMO will be discontinued and routine ICU (Intensive Care Unit) care will be restored.

2. Even with close attention to blood clotting labs, blood clots may form in the machine. Rarely, small pieces of these clots can break off and travel through the ECMO tubes into your child’s body. If this happens, the clots could cause damage to other organs.

3. Your child is at risk for infection, due to multiple tubes being placed in the body. Tests are done often to check for it, and if found, antibiotics are given to treat it.

4. Since ECMO is a machine and made up of many different parts, problems can occur with the equipment or with the tubing. An ECMO specialist is at your child’s bedside 24 hours a day. ECMO specialists are trained to recognize problems and correct them as soon as possible. There is always a new ECMO machine ready to be hooked up to child in if necessary.