

ECMO Cannulation Check List

Time page sent: _____

Weight of patient: _____

IS THIS AN ECMO EMERGENCY?

YES

- Confirm with Attending or Fellow that they want to use the Ped ECMO Activation pager
- Confirm with Attending or Fellow the type of ECMO needed (examples: VA vs VV, cardiac vs respiratory, peripheral vs open chest, Peds Surgery vs Cardiac Surgery)
- Send page – include type of ECMO (Peds Surg vs CT Surg), location, indication, weight, call back number. (see boxes below for examples)**

NO

- If NOT an Emergency, but you think you may need ECMO in the next few hours to days**
- Page Pediatric Surgery for a consult or discuss with CT surgery if cardiac patient
- Page ECMO 1st responder 216-0432
Vocera “call ECMO first responder” or “broadcast to ECMO”
- ECMO 1st Responder will notify Children’s OR 984-974-1501
- Notify Pharmacy (46679)

You do not need to send an emergency page if all the above have already been notified

Steps for finding the Pediatric ECMO Activation Pager (123-5595)

1. Open myUNC Health Directory on home page
2. In the BOTTOM box labeled “directory search” Type “ECMO” in the box labeled “search”
3. Click “search”
4. Scroll down to “UNCNC – Pediatric ECMO Activation” and click
5. Type in the box: type of ECMO needed, location, indication, weight of patient, call back number

Tips for Emergency Pages:

- Patient with ARDS with SpO₂ 60% and HR is dropping.
Example: Need **PedSurg** ECMO, 2C09, PICU, 13 kg, ARDS near arrest, 45488
- For cardiac patients, identifying peripheral vs transthoracic is helpful. (Most patients will be peripheral unless they just had cardiac surgery).
- If the patient needs **transthoracic (OPEN CHEST) ECMO**, please type: **CARDIAC OPEN CHEST ECMO**, room #, PCICU, weight, indication, call back #
- If patient needs **peripheral cannulation**, type the following into the text box:
CARDIAC PERIPHERAL ECMO, Room #, PCICU, weight, indication, call back #

Who receives the Peds Emergent ECMO page?

Cardiac Surgeon
PICU attending
Peds Surg Attending
Peds Surg Sr Resident in house
ECMO 1st responder
ECMO Coordinator
Peds OR
Peds Pharmacy

Definitions:

- Pediatric Surgery ECMO**
PPHN, CDH, ARDS, Sepsis, Cardiopulmonary collapse of unknown etiology, CPR in a patient with a structurally normal heart, and/or you want a Pediatric Surgeon to cannulate
- Cardiac Surgery ECMO**
Congenital heart disease, need for central cannulation, and/or you want a Cardiac Surgeon to cannulate

*For acute myocarditis or cardiomyopathy consider discussing with cardiac surgery if not emergent – emergent cannulations will typically be Pediatric Surgery

PICU fellow:

- Check with HUC or designee that all appropriate parties have been notified and **have called back**
- Blood products
 - Notify Blood Bank, 41780
 - Will need your name/title, patient name/age/weight, time of estimated circuit prime
 - order ECMO priming blood STAT
 - Orders found within "Pre ECMO order set in EPIC"
 - verify Type and Screen
 - If you need STAT blood for an emergent (CPR in progress) cannulation, call and tell them you want STAT blood, emergency release if necessary (pink slips by each HUC desk in PICU/PCICU)
- Order STAT Echocardiogram, if applicable
- Order STAT Head U/S if not already done
- Complete pre-ECMO order set in Epic (may be delegated to a Resident)
- Obtain additional access: PIVs, CVL, A-line
- Discuss optimal ECMO flows and goal with surgery team, ECMO specialist and ECMO perfusionist
- Discuss with cannulating surgeon if need Cardiologist at bedside for ECHO-guidance for cannula placement
- Ensure cefazolin ordered for case (if patient not already on antibiotics)
- Open an anesthesia record

Charge Nurse:

- Notify Pharmacy 46679 (to bring code drugs & heparin 1000:1 concentration for cannulation)
- Call Radiology to bring X-ray plate to bedside: Vocera “call portables”. Ask for ECMO X-ray plate to be brought to room.
- Identify PICU person responsible for transporting blood products
- Assist bedside nurse with bedside tasks
- Confirm Initiation of ECMO orders complete and communicated with bedside RT, ECMO specialist, HUC and bedside nurse
- Crowd control – only those with a defined role should be in the room
- Notify Pastoral Care (for family support during cannulation)
- Clear visitors from the unit

Pediatric Surgery: (can be done by Peds Surg Resident, PICU fellow to confirm)

- Post the case and notify operating room staff (including anesthesia if needed).
- ECMO consent form complete, if time permits
- Surgical headlight from OR in room
- ECMO surgical cart from OR in room
- Bovie pad on patient
- Secure ECMO cannulas

Respiratory Therapist:

- Move ventilator to left side of bed (if neck cannulation)
- Place ET CO2 monitor if applicable
- Bag/mask/PEEP valve and suction at bedside
- In-line suction available
- Confirm O2 source gas not under surgical drapes (fire hazard during bovie procedures)
- Confirm ETT in proper position and secure before draping
- Ensure ventilator accessible and resuscitation bag accessible to staff
- Post emergency ventilator settings on ventilator

Bedside Nurse:

- Appropriate warmer or bed that can be elevated with no side or head rails
 - ** please admit neonates < 2 weeks of age on an infant warmer**
 - HARD crib with Geomatt or special adult bed set up in bed storage area with Geomatt
 - Warmer with x-ray tray option-may need to get from NICU
- Head of bed toward entrance of room, wheels locked (only for neck cannulation)
- Patient positioned for ECMO cannulation including shoulder rolls in place
- All unnecessary furniture, carts and equipment removed
- Place PICU surgical light in room
- Place HEPA filter in the room
- Weigh patient
- Insert Feeding tube
- Insert Foley
- Insert Rectal probe if applicable
- Ensure patency of current IV access/obtain PIVs if needed
- Draw pre ECMO labs per orders
- Extra-long IV tubing, suction tubing and extra suction set up
- Chest tube set up to bedside
- Ensure code meds, resuscitation fluids (NS, 5% albumin), and heparin for cannulation are at bedside
- Place x-ray plate under patient prior to draping
- Assess pupils prior to draping
- Confirm effective paralysis prior to draping
- Set BP to cycle q2 minutes
- Confirm monitor position and visibility for PICU/anesthesia team
- Confirm IV pumps are accessible by staff
- Identify nurse responsible for IV med pump changes
- Send initial STAT ECMO labs and blood gas
- Confirm family updated after cannulation

ECMO Specialists:

- Confirm cannulation strategy (VA, VV, VVDL)
 - Preferred cannulation strategies: (at cannulating surgeon discretion)
 - Neonates and ECPR: cervical VA cannulation
 - Respiratory failure in children >25 kg: VV (Right IJ and Left femoral vein percutaneous cannulation)
 - VVDL only to be used if can be confirmed using ECHO at the bedside or fluoroscopy in the OR
- Confirm priming type for circuit ($\leq 13\text{kg}$ always blood prime)
- Confirm adequate flow volume for optimal patient perfusion
- Confirm venous cannula and arterial cannula size and appearance with OR scrub tech
- Provide twill and headwrap for securing cannula(e)

Additional Items for Cardiac Patients:

- Discuss cannulation strategy with surgeon immediately
 - Ask if cardiac OR team is needed
- Blood prime for every cardiac arrest unless immediate ROSC. Then check with attending intensivist and/or CT surgeon
- Ensure vascular access lines are at the head of the bed with long line or away from sterile field
- Sterile gloves available
- Ensure a shoulder roll is placed
- ECMO specialists should have cannula for transthoracic, femoral, and cervical cannulation available
- Head light source available in the PCICU
- Open chest tray should be brought to beside while COR team mobilizing in the event of transthoracic cannulation
- If present, ensure temporary pacemaker wires are accessible off the field and temporary pacemaker is available

****PRIOR TO THE PROCEDURE START**:**

PERFORM PRE-PROCEDURE ECMO TIME-OUT

Personnel: Surgeon, PICU Attending & Fellow, ECMO specialist, Scrub Nurse

*Cannula flow charts should be available at the bedside for this time out

- Type of ECMO
- Desired Amount of flow
- Approach (cervical vs other)
- Desired cannulas based on flow with backups one size smaller
- Determine need for intraoperative ECHO
- Discuss Special circumstances or needs