Policy Name: ECMO Nursing Care Guidelines

Effective Date: 09/29/15

Policy Primary:

Status: Published

Final Approval:
Approved by: DUH ECMO Steering Committee Date: 07/01/14

Glossary:

Terms:
Definitions:

Definitions:
ECMO- Extracorporeal Membrane Oxygenation

Level: Interdependent - asterisked [*] items require an order from a health care practitioner licensed to prescribe medical therapy.

Personnel:
All nurses providing care to patients supported with extracorporeal membrane oxygenation.

Competencies/Skills:
RNs may care for patients receiving ECMO therapy after orientation to the care of an ECMO patient per unit. NOTE: Only the perfusionist/ECMO Specialist may access the circuit or make changes to any ECMO setting. An ECMO-trained MD may take over in the case of an incapacitated perfusionist/ECMO Specialist or catastrophic emergencies. In an emergency, an ECMO-trained nurse may clamp the ECMO lines. In addition, under the direction of a perfusionist/ECMO Specialist, an ECMO-trained nurse may be instructed handcrank the ECMO pump in an emergency.

Required Resources:

Policy Statement:
Content:

Cannulation and initiation of ECMO outside of the operating room per ECMO Deployment policy (Refer to ECMO Deployment Protocol- Pediatric and/or ECMO Deployment Protocol- Adult).

Maintenance: The patient is monitored per policy by a perfusionist or ECMO specialist (See DUH ECMO Policies) and an RN.

- ECMO machine is to be plugged into a red emergency power outlet.
- Perform patient assessment per unit standards in addition to:
  - Monitor cannula site for position, bleeding, and signs of infection.
Monitor neurovascular function including distal pulses in limbs with cannulae q 1 h (i.e. femoral and axillary cannulation).

- *Follow lab orders per DUH ECMO policy and ECMO order sets.
- *Cuff blood pressures, sticks, line, and tube placements and removals to be performed only with provider order after discussion with care team.

**Cannula Site**

- Keep peripheral and minimally invasive cannulae sites as dry as possible and covered with a CHG dressing. Follow Duke central line protocol for dressing changes (See DUH Adult Intravenous (IV) Therapy policy or DUH Pediatric Intravenous (IV) Therapy policy).
- Report any erythema or drainage to the surgical team.
- Inspect suture integrity at time of dressing change. Report loose or broken sutures to the surgical team.
- *Hemostatic agents are only to be applied to cannulation sites with the order from the surgical team.
- Surgical team will re-evaluate cannulation site Q7 days with dressing off. Coordinate dressing change with surgical evaluation.
- Open chest cannulation dressing/Ioban changed by surgical team per their discretion.

**Medications**

- Collaborate with ECMO specialist/perfusionist to deliver any medications, blood products, or volume through the ECMO circuit. (Refer to Administration of Medications Through an ECMO Circuit)
- Use air filters on any lines attached to ECMO pump that RN staff use to deliver medications.
- All infusions attached to ECMO pump will be delivered with a syringe pump.
- No free flowing infusions on ECMO patients. All infusions should be through an infusion pump.
- NOTE: *ONLY neonatal and pediatric patients on veno-arterial ECMO: Inotropic support is to be connected to patient at all times, and titrated as ordered to specific parameters.

**Anticoagulation:** follow the ECMO Anticoagulation Protocol policy.

**Continuous Renal Replacement Therapy (CRRT) may be added to compatible ECMO circuits in collaboration with the perfusionist/ECMO Specialist per the DUH Continuous Renal Replacement Therapy nursing policy. The bedside RN may need to bypass the access alarm on the CRRT machine due to negative pressure generated by the ECMO circuit.

**Plasmapheresis may be added to compatible ECMO circuits in collaboration with the perfusionist/ECMO Specialist and the Pheresis RN.

**Patient Mobility**

- *All patients will be turned per unit policy unless otherwise ordered.
- Keep head of bed ≥30 degrees as tolerated with the exception of femoral cannulation. For femoral cannulation, maintain head of bed at 30 degrees and use reverse Trendelenburg as tolerated
- *Sedate patients with minimal sedation as required for patient safety and to meet patient goals. Collaborate with team, particularly the perfusionist and/or ECMO Specialist, to determine timing and need for daily neurological assessment.
- All patient position changes and procedures require perfusionist/ECMO Specialist notification and/or assistance to stabilize cannulae/sites and monitor patient and pump.
- Patient rehabilitation and ambulation per Guidelines for Ambulating ECMO Patients.

**Blood Transfusion**
*Maintain current type and screen.
*Keep the following minimum blood products available for the patient: 4 type-specific PRBCs, 4 FFP on hold in Transfusion Services.
*If the patient is actively bleeding, cooler of blood products may be kept at the bedside as ordered.
*The decision to transfuse products is made by collaboration of provider, perfusionist/ECMO Specialist, and RN. Transfusion targets per protocol or as otherwise ordered.
For adult patients and all patients on the Sprinter and Cardiohelp circuits, all blood products can be given by the RN through the patient’s IV access. In an emergency, the perfusionist/ECMO Specialist may transfuse via the ECMO pump.
For neonatal/pediatric patients, the preference is to transfuse via IV access, but the ECMO manifold may be utilized to transfuse RBCs and FFP. Platelets will only be administered to patient access. In an emergency, the perfusionist/ECMO Specialist may push blood products via the ECMO pump. (Refer to DUH ECMO Blood Product Administration policy.

Intrahospital transport of the ECMO patient per DUH ECMO Intrahospital transport policy. A cooler of blood products is required prior to the transport of an ECMO patient for an invasive procedure. Blood pressure and pulse oximetry monitoring is required. Security may be utilized to clear hallways and hold elevators.

Inter-hospital transport of the ECMO patient per DUH ECMO Inter-hospital Transport and Referral Policy. RN support of this program is provided by Life Flight.

Additional Documentation for ECMO patients:
- Peripheral pulses distal to ECMO cannulation sites are documented q 1 hr and prn.
- Assessment of cannulae sites (signs of infection and any drainage) q shift.
- Activity including ambulation.
- Significant events.

Weaning, Procedures, and Discontinuation of ECMO per DUH ECMO Policies
- Refer to DUH ECMO Weaning Policy.
- Emergencies:
  - In cases of massive air entrainment/decannulation, isolate patient from ECMO circuit by clamping the ECMO lines.
  - Activate unit resuscitation procedures.
  - Activate ECMO Deployment Protocol (Refer to DUH ECMO Deployment Policy Adult or Pediatric.)
  - Call Transfusion Services for blood product release as needed.

REFERENCES

Citations:


Policies:

Authoritative Source:

Additional References:

Attachment Names:

Company:

Entities:
DUH