

Lucile Packard Children's Hospital  
DEPARTMENT OF PATIENT CARE SERVICES

**PATIENT CARE GUIDELINE:  
Bedside Nursing Management of the Pediatric Patient Requiring ECMO**

This guideline is intended to provide the nurse with a description of recommended courses of action to address a specific diagnosis/clinical condition or need of a particular patient population. It is not necessarily the only acceptable and appropriate approach to patient care. Patient care continues to require individualization based on patient needs and responses.

**Overview:**

*Caring for a pediatric patient on Extracorporeal Membrane Oxygenation (ECMO) requires the nurse to have a strong understanding of the function of the cardiovascular system, respiratory system and anticoagulation status.*

*The bedside nurse must use proper assessment tools in caring for pediatric patients requiring ECMO. He/she must make interventions that are timely and appropriate, as these patients typically have severe cardio-respiratory dysfunction.*

**Key Assessments:**

**Respiratory:**

- Impaired gas exchange

**Cardiovascular:**

- Impaired tissue perfusion
- Arrhythmias
- Decreased peripheral pulses
- Hypotension
- Edema

**Gastrointestinal:**

- Decreased calorie intake

**Neurological:**

- Decreased level of consciousness

**Immunology:**

- Malnutrition

**Coagulation Status:**

- Bleeding

**Renal:**

- Risk of renal insufficiency
- Decreased urine output
- Electrolyte imbalance

**Family/Psychosocial History**

- Stress

**Interdisciplinary Treatment Goals:**

1. Protect airway and respiratory status
2. Optimize cardiovascular status
3. Assess nutritional status with nutritionist or dietician
4. Family teaching in regards to ECMO
5. Ensure case management is involved in patient care discharge

**Common Problems:**

**1. Alteration in respiratory function and nosocomial pneumonia related to required bed rest.**

**Nursing Orders and Interventions:**

1. Follow Standards of Care
2. Monitor respiratory rate and effort
3. Pulse oximetry
4. Arterial blood gas as ordered
5. Assess breath sounds
7. Chest X-ray prn

|   |   |
|---|---|
|   | 9. Know appropriate back up ventilator settings available in case of ECMO emergency   |
| <b>2. Alteration in cardiovascular function related to inadequate cardiac output: pump failure</b>  | <ol style="list-style-type: none"> <li>1. Follow Standards of Care</li> <li>2. Monitor vital signs and rhythm quality</li> <li>3. Monitor capillary refill time</li> <li>4. Strict intake and output</li> <li>5. Monitor lab values</li> <li>6. Bed rest as ordered per MD</li> <li>7. Ensure break coverage for patient is 1:1 assignment</li> </ol>   |
| <b>3. Potential for impairment of skin integrity secondary to altered tissue perfusion, edema and immobility</b>                                    | <ol style="list-style-type: none"> <li>1. Follow Standards of Care</li> <li>2. Assess patient's skin, checking bony prominences and other pressure areas for redness, blistering of skin or breaks in skin</li> <li>3. Keep skin clean and dry</li> <li>4. Change body position at least every two hours</li> <li>5. Use of pressure relief devices and/or mattress</li> <li>6. Keep sheets dry and wrinkle free</li> <li>7. Float heels and elbows</li> </ol>  |
| <b>4. Potential for confusion related to sensory overload/ICU and sleep deprivation</b>   | <ol style="list-style-type: none"> <li>1. Follow Standards of Care</li> <li>2. Provide restful environment by eliminating extraneous noise as much as possible.</li> <li>3. Organize nursing activities to provide periods of rest throughout the day and sleep at night</li> <li>4. Continue to orient patient to time, place and person</li> <li>5. If in discomfort, administer comfort medications</li> </ol>   |
| <b>5. Potential for anxiety and fear related to knowledge deficit</b>   | <ol style="list-style-type: none"> <li>1. Follow Standards of Care</li> <li>2. Explain all procedures in simple, concise and reassuring manner</li> <li>3. Treat patient and family as one unit</li> <li>4. Provide comfortable environment</li> <li>5. Give parents as many choices and opportunities to help in care of the patient</li> <li>6. Provide opportunities for family and significant others to be with the patient</li> <li>7. Begin teaching when parents indicate readiness to learn</li> </ol> |
| <b>6. Alteration in gastrointestinal function related to decrease cardiac output, decrease calorie intake and poor absorption and stress ulcers</b> | <ol style="list-style-type: none"> <li>1. Follow Standards of Care</li> <li>2. Monitor calorie count</li> <li>3. Consult dietician</li> <li>4. Administer H2 blockers per MD orders</li> <li>5. Monitor changes in nutritional intake</li> </ol>  |
| <b>7. Alteration in coagulation status related to heparinization</b>  | <ol style="list-style-type: none"> <li>1. Follow ECMO policies related to heparinization and patient care</li> <li>2. Observe for obvious and covert signs of bleeding</li> <li>3. Be aware of current ACT, platelet and hematocrit goals</li> </ol>  |

### Complications/Contact MD:

Any changes in neurologic or cardiovascular status  
Change in vital signs such as decreased/ increased heart rate, hypotension, hypertension, temperature.  
Poor PO intake, vomiting, nausea, or diarrhea, weight loss  
Arrhythmias

### Teaching Content:

Provide specific patient instructions related to the following and document on the plan of care on IPOC, Teaching Record and/or Progress Note.

#### 1. Symptom Management/ Risk Factors:

Describe changes in hemodynamics, bleeding issues, respiratory status related to ECMO  
Discuss acuity and why the patient has two nurses  
Discuss possible complications

#### 2. Medications:

Will vary

#### 3. Procedures/Equipment:

Describe bedside and ECMO equipment

### Related Data/Resources:

LPCH CVICU Nursing Standards of Care

Curley, M.A.Q. & Moloney-Harmon, P. A. (2001). Critical Care Nursing of Infants and Children 2<sup>nd</sup> Ed.  
EMCO Specialist Manual (1999). ELSO

Written By: Sandy Staveski RN, MS, CCRN

Reviewed By: Stephen Roth MD, MPH

Approved By: Stephen Roth MD, MPH and Sandy Staveski RN, MS, CCRN

Original Date: \_11/2003

\_\_\_\_\_ . doc

temp-ins.doc

S:\nurspub\guides