

PEDIATRIC INTENSIVE CARE UNIT ROTATION

Faculty:

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Goal: Develop competency in pediatric intensive care medicine

Competency Tool: Multiple choice quiz

Learning Objectives:

1. Understand how to rapidly resuscitate and stabilize the critically ill child in the PICU setting.
 - a. Explain and perform steps in resuscitation and stabilization, particularly airway management and resuscitative pharmacology.
 - b. Describe the common causes of acute deterioration in the previously stable PICU patient.
 - c. Function appropriately in codes and resuscitations as part of the PICU team.
2. Understand how to evaluate and manage common signs and symptoms seen in critically ill children, including when to transfer to an intensive care setting.
3. Understand how to manage certain common diagnoses in the PICU setting.
4. Develop case management skills on complex multi-problem patients under high stress situations, under the supervision of an intensivist, using principles of decision-making and problem-solving and understanding one's own limits.
5. Understand how to provide comprehensive and supportive care to PICU patients and their families.
6. Become familiar with ethical and medical-legal considerations in the care of critically ill children.
7. Understand key aspects of cost control in the PICU.
8. Understand how to maintain accurate, timely and legally appropriate medical records on complex and critically ill children.

Curriculum Content:

1. For each of the following signs and symptoms which may herald the onset of serious or life-threatening events in infants, children or adolescents:
 - a. Rapidly recognize the signs or symptoms as heralding the onset of disease or injury and perform a directed pertinent history and physical exam.
 - b. Formulate an age appropriate differential diagnosis.
 - c. Discuss indications for admission to and discharge from the PICU, and indications for emergent interventions, as well as procedures for stabilization prior to transport to the PICU.

- d. Devise a plan for stabilization, further evaluation and definitive management, and be able to describe the physiologic basis for therapies.

Signs and symptoms:

1. **Cardiovascular:** bradycardia, tachycardia, cardiopulmonary arrest, hypertension, hypotension, rhythm disturbances, poor capillary perfusion.
2. **GI:** abdominal distension, acute gastrointestinal hemorrhage, peritoneal signs, vomiting.
3. **Hematologic:** petechiae, purpura, polycythemia, anemia, neutropenia.
4. **Neurologic:** altered mental status, coma, delirium, encephalopathy, seizures, thermoregulatory abnormalities, acute weakness, tetany.
5. **Renal:** anuria, hematuria, oliguria, polyuria.
6. **Respiratory:** tachypnea, dyspnea, apnea, cyanosis, increased or decreased respiratory effort, poor air movement, stridor, wheezing, pulmonary edema.

2. For each of the following diagnoses which may require PICU monitoring and management:

- a. Discuss the pathophysiologic basis of the disease or injury.
- b. Discuss the indications for admission to and discharge from the PICU.
- c. Discuss stabilization, further work-up and management.
- d. Explain potential acute and long-term consequences and complications of the disease, and treatment and be able to evaluate prognosis.

Common conditions:

1. **General:** submersion injury, shock (cardiogenic, hypovolemic, septic, toxic), burns (thermal, electrical), common intoxications.
2. **Cardiovascular:** congestive heart failure, pericardial effusion, cardiac tamponade.
3. **Fluids, electrolytes, metabolic:** severe dehydration, diabetic ketoacidosis, syndrome of inappropriate secretion of antidiuretic hormone, diabetes insipidus.
4. **GI/surgery:** stress ulcer, massive GI bleeding, abdominal trauma (blunt/penetrating), acute abdomen, pre-op and post-op management.
5. **Hematologic:** disseminated intravascular coagulopathy.
6. **Neurologic:** head injury acute increased intracranial pressure, cerebral edema, status epilepticus.
7. **Pulmonary:** adult respiratory distress syndrome, respiratory failure/impending respiratory failure, status asthmaticus, pneumothorax, upper airway obstruction (infectious, structural, foreign body).

Skills Acquisition:

1. Laboratory and diagnostic tests:
 - a. Explain the indications and limitations and be aware of age appropriate normals.
 - b. Interpret abnormalities in the context of specific physiologic derangement.
 - c. Discuss therapeutic options for corrections when appropriate.

List of laboratory tests:

1. CBC, differential, platelets, indices
2. Blood chemistries: electrolytes, calcium, magnesium, glucose
3. Tests of liver function and damage
4. Renal function tests
5. Arterial blood gases
6. Coagulation studies, platelets, PT/PTT, fibrinogen, FSP, D-dimers, "DIC screen"
7. Urinalysis
8. CSF analysis
9. Cultures and other diagnostic tests for infectious agents
10. Drug levels and toxicologic studies

List of imaging studies:

11. Chest x-ray
12. Abdominal survey
13. Cervical spine films
14. CT scans

2. Perform procedures:

- a. Intubation
- b. Arterial lines
- c. Central lines
- d. Lumbar punctures
- e. Pleuracentesis
- f. Chest tubes

Reading Materials: Provided by faculty.

Rotation Requirements:

1. Residents will care for their patients under the supervision of an intensivist.
2. Residents will pre-round on their patients daily and when on call.
3. Residents will take call every fourth night.
4. Residents will perform procedures with the supervision of faculty.