Residents are required to have sufficient knowledge of their patients in order to present them to the team on rounds, and to construct a differential diagnosis and treatment plan. They are required to appropriately document all patient care information, including admission notes, daily progress notes, discharge notes and transfer notes unless excused by the attending of record.

The Pediatrics Milestone Project provides a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in the context of their participation in an ACGME-accredited residency program¹.

A. Patient Care:

1. Gather accurate, essential information from all sources, including medical interviews, physical examinations, medical records and diagnostic/therapeutic procedures
2. Interpret laboratory and physiologic data and recognize patient deterioration or improvement
3. Organize and prioritize responsibilities to provide patient care that is safe, effective, and efficient
4. Make informed recommendations about preventive, diagnostic and therapeutic options and interventions that are based on clinical judgment, scientific evidence, and patient/family preference
5. Develop, negotiate and implement effective patient management plans and integration of patient care in consultation with the attending physician
6. Demonstrate appropriate care of acutely ill children, including patients with major medical illnesses, surgical patients, patients with significant trauma, and patients with congenital heart disease
7. Provide transfer of care that insures seamless transitions
8. Observe and/or perform the diagnostic and therapeutic procedures considered essential to the practice of pediatric critical care medicine:
   a. Endotracheal intubation
   b. Mechanical ventilation
   c. Bag mask ventilation
   d. Arterial puncture
   e. Peripheral arterial line
   f. Peripheral venous line
   g. Central venous line
   h. Basic cardiac life support
   i. Advanced cardiac life support
   j. Placement, chest tube
   k. Placement, nasogastric tube
   l. Venipuncture
   m. Lumbar puncture
   n. Tracheotomy tube change

B. Medical Knowledge:

1. Identify acutely ill patients and determine which patients require care in the intensive care unit
2. Recognize need for appropriate initial stabilization of acutely ill patients – understand proper indications for stabilization, potential complications, and demonstrate skill in the initial
management of critically ill patients:
   a. Recognition and initial management of shock
   b. Cardiopulmonary resuscitation
   c. Airway management
   d. Invasive procedures
   e. Transport

3. Assess the process by which decisions are made with respect to the care of acute critical illnesses

4. Describe and demonstrate how to use the equipment and perform procedures necessary to appropriately monitor and support critically ill children
   a. Pulse oximetry
   b. End-tidal CO2 monitoring
   c. Hemodynamic monitoring (arterial, central venous, noninvasive cardiac output determination)
   d. Mechanical ventilation
   e. Hemodynamic support
   f. Intracranial pressure monitors
   g. Continuous EEG

5. Recognize impending organ system failure and understand basic pathophysiologic and pharmacologic principles related to clinical presentation and management decisions
   a. Respiratory (status asthmaticus, acute or respiratory failure, ALI/ARDS, pneumonia)
   b. Cardiology (congenital heart disease, cardiogenic shock, pulmonary hypertension, heart failure)
   c. Neurology (post-op surgical management, neuromuscular disease, coma, status epilepticus, hypoxic-ischemic or metabolic encephalopathy, stroke, neoplasms, brain death)
   d. Infectious disease (sepsis, critical viral infections, CNS infections, opportunistic infections, nosocomial infections)
   e. Immunology/Inflammatory (solid organ or bone marrow/stem cell transplant complications, immunodeficiency, autoimmune disorders)
   f. Oncology/Hematology (oncologic or hematologic emergencies, coagulation issues, sickle cell disease)
   g. Nephrology (acute renal failure, hypertensive crisis, electrolyte disturbances)
   h. Endocrinology (diabetes, adrenal dysfunction)
   i. Gastroenterology (acute abdomen, liver dysfunction, pancreatitis)
   j. Nutrition (refeeding syndrome, malnutrition)
   k. Environmental crises (trauma, drowning, burns, poisoning)

6. Demonstrate knowledge to recognize alterations in mental status, respiratory distress/respiratory failure and cardiovascular compromise

7. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems

8. Recite treatment algorithms related to Pediatric Advanced Life Support and participate in the management of children requiring emergency life support

9. Manage advanced life support technologies
   a. ECMO
   b. Renal replacement therapy
   c. Plasma exchange/plasmapheresis

10. Review the general concepts of medical reversibility and futility

11. Complete the Pediatric Critical Care Core Curriculum:
12. Pediatric Residency Critical Care Curriculum Lecture Series
   a. Morning Didactic Sessions
b. Case-Based Learning Curriculum

13. Radiology Rounds
14. Clinically Applied Pathophysiology Series; topics include:
   a. Fluids
   b. Hematologic emergencies
   c. Blood products
   d. Electrolytes
   e. Acid-base disturbances
   f. Respiratory failure
   g. Respiratory mechanics of the upper airway
   h. ARDS
   i. Mechanical ventilation
   j. Sepsis: basic science, management
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   l. Pressors
   m. Mechanical support of circulation
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   aa. Endocrinopathies
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   dd. Hepatic failure
   ee. Sedation in the ICU

15. Grand Rounds
16. Noon Conference Lecture Series
17. Interactive Bedside Teaching
18. Simulation/Mock Code Cases

C. Practice-Based Learning and Improvement:

1. Identify areas for improvement and implement strategies to enhance knowledge, skills, attitudes and processes of care
2. Identify and perform appropriate learning activities to guide personal and professional development
3. Analyze and evaluate practice experiences and implement strategies to continually improve the quality of patient practice
4. Develop and maintain a willingness to learn from errors and use errors to improve the system or processes of care
5. Use information technology or other available methodologies to access and manage information, support patient care decisions and enhance both patient and physician education
6. Incorporate formative evaluation feedback into daily practice

D. Interpersonal and Communication Skills:

1. Use effective listening, nonverbal, questioning, and narrative skills to communicate with patients and families
2. Communicate with parents and other family members of critically ill patients in a compassionate and appropriate manner
3. Provide effective and professional consultation to other physicians and health care professionals and sustain therapeutic and ethically sound professional relationships with patients, their families, and colleagues
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E. Professionalism:

1. Demonstrate humanism, compassion, integrity, and respect for others; based on the characteristics of an empathetic practitioner (Humanism)
2. Demonstrate sensitivity and responsiveness to the gender, age, culture, religion, sexual preference, socioeconomic status, beliefs, behaviors and disabilities of patients and professional colleagues
3. Perform with a sense of duty and accountability to patients, society, and the profession (Professionalization)
4. Exhibit high standards of ethical behavior which includes maintaining appropriate professional boundaries (Professional Conduct)
5. Recognize self-awareness of one’s own knowledge, skill, and emotional limitations that leads to appropriate help-seeking behavior
6. Display trustworthiness that makes colleagues feel secure when one is responsible for the care of patients
7. Adhere to principles of confidentiality, scientific/academic integrity, and informed consent
8. Understand the capacity to accept that ambiguity is part of clinical medicine and to recognize the need for and to utilize appropriate resources in dealing with uncertainty

F. Systems-Based Practice:

1. Access and utilize the resources, providers and systems necessary to provide optimal care (social services, pharmacists, nutritionists, case managers, physical/occupational therapists)
2. Recognize the limitations and opportunities inherent in various practice types and delivery systems, and develop strategies to optimize care for the individual patient
3. Apply evidence-based, cost-conscious strategies to prevention, diagnosis and disease management
4. Advocate for patients and their families and help them to navigate the medical system complexities
5. Collaborate with other members of the health care team to assist patients in dealing effectively with complex systems and to improve systematic processes of care

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