

**DEPARTMENT OF PEDIATRICS
WALTER REED ARMY and NATIONAL NAVAL MEDICAL CENTERS
NATIONAL CAPITAL CONSORTIUM PEDIATRIC RESIDENCY PROGRAM**

PEDIATRIC INTENSIVE CARE UNIT ROTATION

SEPTEMBER 2010

1. **Duration of rotation:** Four weeks.
2. **Eligibility:** PL-2 or PL-3 (elective).
3. **Position:** One per rotation.
4. **Facilities:** Pediatric ICU, WRAMC
5. **Teaching Staff:**

Downing Lu, MD, MAJ, MC, USA, Medical Director
Harlan S. Patterson, MD, COL, MC, USA
Christopher Watson, MD, LCDR, MC, USN

CNMC PICU Attendings:

Sonali Basu, MD
Christiane Corriveau, MD
Tessie October, MD
Matthew Sharron, MD
Sophia Smith MD
Michael Spaeder, MD
David Stockwell, MD
Angela Wratney, MD

6. **Competency Based Goals and Objectives:**

The goal of the Pediatric Intensive Care Unit (PICU) experience for 2nd and 3rd year pediatric residents is to provide an intensive care environment in which the resident may familiarize and be exposed to the spectrum of pathophysiology in the PICU, participate in the care of children with severe illness and be familiar with age appropriate differential diagnoses and illness presentation. Residents are exposed to invasive and non-invasive techniques for monitoring and supporting critically ill infants, children and adolescents. Patients include critically ill medical patients, preoperative patients at risk and postoperative patients with PICU needs. The curriculum includes daily work rounds, a resident lecture series and a weekly simulation laboratory.

a. Patient Care

GOAL: Provide family centered patient care that is developmentally and age appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

- i. Obtain a complete history from parent/caregiver or patient, for children of all ages, with emphasis on the events leading to the PICU admission.
- ii. Perform an appropriate physical examination, for children of all ages, with recognition of those examination findings most significant during periods of hemodynamic compromise.
- iii. Develop skill in evaluating and determining which child is a sick child and prioritizing patient's level of disease severity.
- iv. Develop an appropriate diagnostic and therapeutic plan based on history and physical exam findings for critically ill, preoperative and postoperative patients in the PICU.
- v. Communicate the treatment options and plan of care effectively with patient/family throughout the day.

b. Medical Knowledge

GOAL: Learn how to evaluate and manage common signs and symptoms seen in critically ill children, including when to transfer to an intensive care.

- i. Demonstrate a knowledge (appropriate for level of training) of:
 - a. Respiratory failure – pathophysiology, mechanisms, and therapeutic approaches
 - b. Circulatory failure – concepts, types and priorities, therapeutic tools
 - c. Circulatory failure - care of the child after cardiac surgery
 - d. Sepsis and septic shock
 - e. Toxicology in the PICU – toxidromes, common entities, therapeutic priorities
 - f. CNS failure – types, presentations, priorities for the care of the comatose child, cerebral edema, intracranial hypertension, traumatic brain injury
 - g. Liver failure – etiologies, management
 - h. Renal failure – definitions, etiologies, management, hypertensive emergencies, dialysis/renal replacement therapies
 - i. Nutrition in the PICU
 - j. Stress, crisis, grief in the PICU
- ii. Demonstrate an understanding of basic resuscitation and stabilization skills through discussion, observation and if able participation of patients in the PICU.
- iii. Demonstrate a familiarity through exposure, discussion and interpretation of invasive and non-invasive techniques for monitoring pulmonary, cardiovascular, cerebral and metabolic function/dysfunction.

c. Interpersonal Skills and Communication

GOAL: Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families, and professional associates.

- i. Maintain accurate, legible, timely, and legally appropriate medical records in the hospital inpatient setting.
- ii. Present the history & physical and daily progress report to the team in an organized, accurate, efficient, and professional manner.
- iii. Communicate effectively with nurses, social workers, technicians, clerical staff, pharmacists and other members of the health care team.
- iv. Communicate effectively with floor team when patient is transferred from PICU to floor
- v. Understand the principles of delivering bad news to families; participate when possible in family conferences to learn these skills.

d. Professionalism

GOAL: Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

- i. Provide care that is respectful to the patient's and family's ethnic, cultural, and religious framework, and attempts to modify treatments when necessary to suit a patient's or families' diverse needs.
- ii. Demonstrate respect, compassion and empathy for critically ill patients and families.
- iii. Collaborate respectfully with nurses, students, nutritionists, pharmacists, students, therapists, technicians and other members of the health care team.
- iv. Knows the importance of continuity of care; takes ownership of patients by offering and/or arranging follow-up of complicated and/or seriously ill children.
- v. Demonstrates appropriate military bearing; behaves in a manner appropriate for a military medical officer

e. Practice-based Learning and Improvement

GOAL: Demonstrate knowledge, skills, and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.

- i. Identify personal learning needs, organize relevant information resources for future reference, and plan for continuing acquisition of knowledge and skills.

- ii. Recognize the limits of one's knowledge, skills, and tolerance for stress level by asking for help as needed.
- iii. Access medical information efficiently, critically appraise the level of evidence supporting the diagnostic and treatment choices, and appropriately apply it to the critically ill PICU patient.
- iv. Educate other members of the team on information learned during the care of patients.

f. System-based Practice

GOAL: Practice quality care and advocate for patients in the context of the larger health care system.

- i. Consider cost-effectiveness and risk/benefit ratio in medical decision-making process including patient and family preferences.
- ii. Identify needs of the technology -dependent patients discharged from PICU and coordinate home care with case management and social work.
- iii. Use appropriate clinical pathways to foster efficient and effective health care
- iv. Utilize efficiently and communicate effectively with healthcare consultants.
- v. Adhere to order writing requirements without fail.

7. Instructional Plan:

- a. Lectures on critical care topics will be presented to the resident on average of two to three times per week and draw from Appendix A "Core didactic lecture topics for PICU Residents."
- b. The resident will examine one topic in depth by preparing and delivering in Critically Appraised Topic (CAT) format with the attending an informal, yet thorough evidence-based journal article review with the option for submission to an online Pediatric Critical Care Medicine peer-reviewed database.
- c. Weekly simulation laboratory exercises will be conducted for further hands-on familiarization with concepts and practices surrounding pediatric airways, resuscitation, and procedures.
- d. Independent viewing on the New England Journal of Medicine's Online library of procedure videos (<http://www.nejm.org/multimedia/videosinclinicalmedicine>) to include: Peripheral Venous Cannulation, Placement of a Femoral Venous Catheter, Chest Tube Insertion, Positive-Pressure Ventilation with a Face Mask and a Bag-Valve Device, Orotracheal Intubation, Lumbar Puncture, Thoracentesis and Placement of an Arterial Line. The procedure videos viewed, simulated, and performed will be tracked by the resident using the "Simulation and Procedure Log" (Appendix B).
- e. Completion of the PREP-based online pre and post-tests which will be tracked only for completion.

8. Reading List:

- a. Educational resources are archived on the common departmental “S: drive” under the “PICU Rotation” folder. This repository of information includes:
 - i. Comprehensive PICU journal article reference library
 - ii. PICU Reading Syllabus
 - iii. The VIPER references (Virtual Intensive Pediatric Educational Resource)
- b. Regular viewing of the Pediatric Resident ICU Course available at www.learnicu.org is strongly recommended.
- c. Additional online resources recommended for review are available at the www.pedsccm.org website.

9. Methods of Evaluation:

- a. Monthly summative evaluations will be written and discussed with the resident prior to the end of the rotation. Evaluation tools will include:
 - i. Performance during didactic sessions and rounds with attending (Medical Knowledge and Patient Care)
 - ii. Presentation skills during morning report and on rounds (Communication)
 - iii. Patient care and procedural skills are assessed by attending (Patient Care)
 - iv. Simulation lab performance (Simulated Patient Care)
 - v. Evidence of self-evaluation and use of medical literature (Practice-Based Learning)
- b. Resident evaluation will be documented on Pediatric Department Monthly Evaluation Forms.
- c. A written post evaluation will be given (Medical knowledge)

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Concur:

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Appendix A. Core didactic lecture topics for PICU Residents

Resident Name:

Rotation Block:

Residents are exposed to some combination of these core lecture topics during a given month on average of two to three times per week:

- PICU Primer
 - Monitoring in the ICU
 - Fluid and electrolytes
 - Acid-base disorders and blood gas interpretation
 - Pulmonary and cardiovascular physiology review
 - Operative signout and the surgical continuum of care
 - Code cart orientation
- Respiratory failure:
 - Acute airway management and pharmacology
 - Status asthmaticus and ARDS
 - Non-invasive, conventional, and high-frequency ventilation
- Circulatory failure:
 - Shock: Concepts, types, and goal-directed priorities
 - Basic resuscitation algorithms, PALS review, and CPR science
 - Vasoactive agents and other therapeutic tools
 - Dysrhythmias and pacing
 - Care of the child after cardiac surgery
- CNS failure:
 - Non-traumatic coma: HIE, tumors, stroke and encephalopathies
 - Traumatic brain injury and intracranial hypertension
 - Seizures and status epilepticus
 - Brain death and organ donation
- Acute renal failure and renal replacement therapies
- Fulminant hepatic failure
- The bleeding patient
- Hyperleukocytosis, tumor lysis and mediastinal masses
- Endocrine emergencies:
 - Diabetic ketoacidosis
 - SIADH, DI, CSW, AI, and thyroid storm
- Sedation, analgesia and neuromuscular blockade
- Trauma, burns and near-drowning
- Nutrition in the PICU
- Toxicology in the PICU
- Transport of the critically ill child
- Stress, crisis, death, dying, ethics and grief in the PICU
- ECPR and Extracorporeal Membrane Oxygenation (ECMO) basics
- Other(s): _____

Appendix B. Simulation and Procedure Log

Resident Name:

Rotation Block:

Residents should track the dates for their review of the NEJM Videos in Clinical Medicine (<http://www.nejm.org/multimedia/videosinclinicalmedicine>) viewing, simulated procedures, and patient-based procedures below:

Procedure	Video	Simulation	Patient-Based
Arterial Line Insertion			Successful? Y / N
Chest Tube Insertion			Successful? Y / N
Femoral Venous Catheter Insertion			Successful? Y / N
Lumbar Puncture			Successful? Y / N
Orotracheal Intubation			Successful? Y / N
Peripheral Venous Cannulation			Successful? Y / N
Positive-Pressure Ventilation with Bag-Valve-Mask Device			Successful? Y / N
Thoracentesis			Successful? Y / N