

PICU Resident Rotation

**Alfred I duPont Hospital
for Children**

Nemours Foundation

Curriculum

2005-2006

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Alfred I duPont Hospital for Children Pediatric Critical Care Education Program

Nemours' Pediatric Critical Care physicians provide a PICU educational experience for:

- Thomas Jefferson University Pediatric 2nd-year residents
- Thomas Jefferson University Emergency Medicine 2nd-year residents
- Christiana Care Health System Emergency Medicine 2nd-year residents
- Christiana Care Health System 2nd- and 3rd-year Medicine-Pediatric and Internal Medicine-Emergency Medicine residents
- Pediatric Critical Care Medicine Fellow
- Alfred I duPont Hospital for Children Emergency Medicine 1st-year fellows
- Surgical Trauma Fellow, Christiana Care Health Center
- 4th year medical students from various programs.

We aim to introduce individual residents to the art of pediatric critical care in an environment where we need to balance:

- Residents' expectations for a productive educational experience
- Resident's PICU service obligations
- Resident's commitment to outside-of-PICU program expectations and restricted duty hours
- Pediatric GME and SCCM viewpoints on time committed to resident ICU exposure
- Critical care attendings' clinical, administrative, research, and other educational responsibilities
- Consistent bedside care of the critically ill child
- Institute of Medicine issues of timeliness, efficiency, effectiveness, safety, equity, and patient centeredness.
- Health care economics.

Our present PICU goals, curriculum, and future plans reflect ongoing development since 1992 based on recommendations and observations from:

- SCCM Guidelines for Resident Physician Training in Critical Care Medicine
- American Medical Association, Graduate Medical Education Guidelines for PICU Resident Rotations
- SCCM Pediatric ICU Resident Education Committee
- The Future of Pediatric Education II
- Interactions with the Thomas Jefferson University Pediatric Residency Program
- CQI via nursing and resident questionnaires as well as survey of practicing physicians who participated in our PICU rotation

Goals
Resident Pediatric Critical Care Rotation
Alfred I duPont Hospital for Children

APA Educational Guidelines for Pediatric Residency. Diane Kittredge, Constance Baldwin, Miriam Bar-on, Patricia Beach, and Franklin Trimm (Eds.). Ambulatory Pediatric Association website, www.ambpeds.org/EGweb/index.cfm

Edited by Keith J. Mann, MD, Assistant Director of the Thomas Jefferson University Pediatric Residency Program (3/31/05)

I. Resuscitation and Stabilization (PICU). Recognize the critically ill patient and initiate appropriate stabilization and/or resuscitative measures.

A) Explain and perform steps in resuscitation and stabilization, particularly airway management, volume replacement, and resuscitative pharmacology.

B) Describe the common causes of acute deterioration in the previously stable patient in the PICU.

C) Function appropriately in codes and resuscitations as part of the PICU team.

II. Common Signs and Symptoms (PICU). Evaluate and manage, under the supervision of an intensivist, common signs and symptoms seen in critically ill infants, children and adolescents in the intensive care setting.

A) Evaluate and manage, under supervision of an intensivist, patients with signs and symptoms that present commonly to the intensive care unit (examples below):

1. Cardiovascular: Acute life-threatening event, bradycardia, cardiopulmonary arrest, congestive heart failure, cyanosis, hypertension, hypotension, poor capillary perfusion, rhythm disturbances, tachycardia
2. Endocrine: Signs and symptoms suggestive of hypo- and hyperglycemia and adrenal insufficiency/crisis
3. GI: Abdominal distension, hematemesis and melena, icterus, peritoneal signs, vomiting
4. Hematologic: Pallor, petechiae, purpura, uncontrolled bleeding
5. Infectious Diseases: Endotoxic shock, fever
6. Neurologic: Acute weakness, altered mental status, coma, delirium, encephalopathy, seizures, tetany, thermoregulatory abnormalities
7. Renal: Anuria, hematuria, oliguria, polyuria, severe electrolyte disturbance
8. Respiratory: Apnea, cyanosis, dyspnea, hemoptysis, hypercarbia, hyperpnea, hypoxemia, increased or decreased respiratory effort, poor air movement, pulmonary edema, respiratory failure, stridor, tachypnea, wheezing

III. Common Conditions (PICU). Recognize and manage, under the supervision of an intensivist, conditions that commonly present to the intensive care unit, using consultation when appropriate.

A) Evaluate and manage, under the supervision of an intensivist, patients with conditions that present commonly to the intensive care unit (examples below):

1. General: Burns (thermal, electrical), common intoxications, drug overdose, shock (cardiogenic, hypovolemic, distributive, toxic), inhalation injury, malignant hyperthermia, non-accidental trauma,

submersion injury, toxic or caustic ingestion or inhalation injury, toxic shock syndrome

2. Allergy Immunology: Anaphylaxis, life-threatening angioedema, Stevens Johnson Syndrome
3. Cardiovascular: Arrhythmias, cardiac tamponade, congestive heart failure, cyanotic congenital heart disease, malignant hypertension, myocarditis/cardiomyopathy
4. Endocrine: Diabetes insipidus and adrenal insufficiency/crisis, diabetic ketoacidosis, hypo- and hyperglycemia, syndrome of inappropriate antidiuretic hormone (SIADH)
5. Fluids, electrolytes, metabolic: Inborn errors of metabolism, severe dehydration (hyper-, normo-, or hyponatremic), severe acid-base disturbances, severe electrolyte disturbance
6. GI/Surgery: Abdominal trauma (blunt/penetrating), acute abdomen, acute GI bleeding, fulminant hepatic dysfunction, hepatic dysfunction, pancreatitis, pre- and post-operative management, stress ulcer
7. Hematologic: Anemia (severe), disseminated intravascular coagulopathy (DIC), Deep venous thrombosis (DVT), neutropenia, sickle crisis, polycythemia, thrombocytopenia, tumor lysis syndrome
8. Infectious disease: Encephalitis, infant botulism, meningitis, nosocomial infections, sepsis
9. Neurologic: Acute increased intracranial pressure, brain death, cerebral edema, cerebrovascular accident (CVA), coma, encephalopathy, Guillain-Barre, head injury, spinal muscle atrophy, status epilepticus
10. Pulmonary: Acute respiratory distress syndrome (ARDS), epiglottitis, pulmonary edema, pneumothorax, respiratory failure/impending respiratory failure, severe croup and bacterial tracheitis, status asthmaticus, upper airway obstruction (infectious, structural, foreign body)
11. Renal: Acute renal failure, hemolytic uremic syndrome

IV. GOAL: Diagnostic Testing (PICU). Utilize common diagnostic tests and imaging studies appropriately in the intensive care unit, obtaining consultation as indicated for interpretation of results.

A) Demonstrate understanding of common diagnostic tests and imaging studies used in the PICU by being able to:

1. Explain the indications for and limitations of each study.
2. Know or be able to locate readily age-appropriate normal ranges (lab studies).
3. Apply knowledge of diagnostic test properties, including the use of sensitivity, specificity, positive predictive value, negative predictive value, likelihood ratios, and receiver operating characteristic curves, to assess the utility of tests in various clinical settings
4. Discuss cost and utilization issues.
5. Interpret the results in the context of the specific patient.
6. Discuss therapeutic options for correction of abnormalities.

B) Use appropriately the following laboratory and imaging studies when indicated for patients in the PICU setting:

1. CBC with differential, platelet count, RBC indices
2. Blood chemistries: electrolytes, glucose, calcium, magnesium, phosphate.
3. Renal function tests
4. Tests of hepatic function (PT, albumin) and damage (ammonia, bilirubin, liver enzymes)
5. Serologic tests for infection (e.g., hepatitis, HIV).
6. C-reactive protein, erythrocyte sedimentation rate.
7. Therapeutic drug concentrations
8. Coagulation studies: platelets, PT/PTT, fibrinogen, FSP, D-dimers, "DIC screen"
9. Arterial, capillary, and venous blood gases
10. Detection of bacterial, viral, and fungal pathogens
11. Urinalysis
12. CSF analysis
13. Stool studies
14. Toxicologic screens/drug levels
15. Other fluid studies (e.g. pleural fluid, joint fluid)
16. Chest x-ray and Abdominal series
17. Skeletal survey
18. Cervical spine films
19. CT scans of abdomen, chest and head
20. MRI scans

V. GOAL: Monitoring and Therapeutic Modalities (PICU). Understand how to use the physiologic monitoring, special technology and therapeutic modalities used commonly in the intensive care setting.

A) Demonstrate understanding of the monitoring techniques and special treatments commonly used in the PICU by being able to:

1. Discuss the indications, contraindications and complications.
2. Have a basic understanding of the general techniques (e.g. Seldinger technique for central venous line placement).
3. Interpret the results of monitoring

B) Use appropriately the following monitoring techniques in the intensive care unit under supervision of an intensivist:

1. Central venous pressure monitoring
2. Invasive arterial blood pressure monitoring
3. Intracranial pressure monitoring
4. Pulse oximetry
5. End-tidal carbon dioxide monitoring

C) Utilize appropriately or be familiar with the following treatments and techniques in the intensive care unit, including monitoring effects and anticipating potential complications specific to each therapy:

1. Oxygen administration by cannula, masks, hood
2. Positive pressure ventilation including non-invasive modalities such as nasal/mask BiPAP/CPAP, bag and mask ventilation)
3. Principles of ventilator management, intubation and extubation procedures and criteria
4. Analgesics, sedatives, and paralytics
5. Enteral and parenteral nutrition
6. Blood and blood product transfusions
7. Vasoactive drugs (pressors and inotropes)

VI. GOAL: Death, Acute Illness/Injury and Terminal Illness: Provide skillful medical care and empathic support to the acutely ill, injured or terminally ill child and his/her family.

A) Discuss principles in the medical management of acutely ill, injured or terminally ill children, and demonstrate an understanding of the goals of treatment, including relevant medical, legal, and psychosocial issues such as:

1. Involving parents in decision-making processes
2. Redirection of the goals of care
3. Symptomatic management of pain, respiratory distress, and nutrition
4. In-hospital "hospice" care
5. Home hospice care
6. "Do Not Resuscitate" orders and termination of life support
7. Use of bioethics committees in difficult decision-making situations
8. Definition of brain death and criteria for organ donation
9. Concepts of futility, withdrawal, and withholding of care, as well as euthanasia

B) Discuss the principles of counseling parents regarding treatment options for terminally ill children, including the integration of relevant cultural and religious or spiritual values.

C) Describe the stages of the normal grieving process.	
D) Describe the common reactions of siblings to the impending death of a sibling.	
E) Counsel parents with regard to: <ol style="list-style-type: none"> 1. The diagnosis of life-threatening illness 2. Persistent vegetative states 3. Grief counseling and referral for the child and other children in the family 4. Strategies to help siblings and other children cope with the death of a loved one 	
F) Describe how to formulate management plans for terminally ill patients, including: <ol style="list-style-type: none"> 1. Pain/comfort management plan 2. Outpatient plan for patients going home or to a hospice 3. In-hospital, hospice-like plan for patients whose parents want them to remain in the hospital 	
G) Demonstrate sensitivity to the balance between involving the family in decision-making and placing inappropriate burdens for these decisions on parents.	
H) Understand one's personal response and feelings when dealing with death and dying, including: <ol style="list-style-type: none"> 1. Personal belief and religious/spiritual belief systems related to disease and management of the dying child 2. The need to share feelings with others during times of stress or death 	
Procedures	
VII. Technical and therapeutic procedures. Describe the following procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.	
<ol style="list-style-type: none"> 1. Arterial puncture 2. Cardioversion/defibrillation 3. Central line 4. Chest tube placement 5. Endotracheal intubation 6. Lumbar puncture 	
IX. GOAL: Pediatric Competencies in Brief (PICU): Demonstrate high standards of professional competence while working with patients in the Pediatric Intensive Care Unit. [For details see Pediatric Competencies]	
A) Competency 1: Patient Care. 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.
<ol style="list-style-type: none"> 1. Use a logical and appropriate clinical approach to the care of critically ill patients, applying principles of evidence-based decision-making and problem solving. 2. Provide sensitive support to patients with serious illness and to their families, and arrange for on-going support or preventive services if needed.
<p>B) Competency 2: Medical Knowledge. Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.</p>
<ol style="list-style-type: none"> 1. Demonstrate a commitment to acquiring the knowledge base expected of general pediatricians caring for seriously ill children under the guidance of an intensivist. 2. Know and/or access medical information efficiently, evaluate it critically, and apply it appropriately to care of patients in the PICU.
<p>C) Competency 3: Interpersonal and Communication Skills. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.</p>
<ol style="list-style-type: none"> 1. Provide effective and sensitive communication with patients and families in the intensive care setting. 2. Participate effectively as part of an interdisciplinary team in the intensive care unit to create and sustain information exchange, including communication with the primary care physician. 3. Maintain accurate, timely and legally appropriate medical records on complex and critically ill children.
<p>D) Competency 4: Practice-based Learning and Improvement. 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.</p>
<ol style="list-style-type: none"> 1. Use scientific methods and evidence to investigate, evaluate, and improve one's patient care practice in PICU setting. 2. Identify personal learning needs, systematically organize relevant information resources for future reference, and plan for continuing acquisition of knowledge and skills.
<p>E) Competency 5: Professionalism. Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.</p>
<ol style="list-style-type: none"> 1. Demonstrate a commitment to carrying out professional responsibilities while providing care in the PICU setting. 2. Adhere to ethical and legal principles, and be sensitive to diversity in the care of critically ill children.

F) Competency 6: Systems-Based Practice. Understand how to practice high quality health care and advocate for patients within the context of the health care system.

1. Identify key aspects of health care systems, cost control, and mechanisms for payment as they relate to the intensive care setting.
2. Recognize the limits of one's knowledge and expertise and take steps to avoid medical errors.

**PICU
Resident Rotation
Nemours Alfred I. duPont Hospital for Children
Practical Considerations**

Information outlined in recent SCCM guidelines (Appendix) that residents must get in their one-month PICU rotation that they won't get over the three years in their training program?

Supervised exposure to an adequate number of critically ill patients who are cared for by appropriately trained individuals in an appropriately staffed and equipped PICU.

Identify when a patient requires treatment best delivered in an ICU under the direction of a qualified intensivist.

Diagnose and stabilize patients with impending organ failure (respiratory, cardiac, neurologic, hepatic, gastrointestinal, hemorrhagic, renal, etc.).

Identify the need for and initiate cardiopulmonary resuscitation.

Diagnose and prevent hemodynamic instability, and /or initiate treatment for cardiogenic, traumatic, hypovolemic and distributive shock.

Use data from appropriate invasive and noninvasive monitoring devices to titrate therapy in an ICU.

Understand basic sedation and analgesia principles.

Recognize, use and help integrate the unique skills of ICU nurses and ancillary personnel in caring for critically ill patients into the multiple-professional team model.

Consider ethical issues and patients' wishes in making treatment decisions.

Communicate with and support patients, their families and all members of the healthcare team through the physical and psychological complexities of critical illness.

ACGME competencies (Appendix) that realistically can be taught during a one-month PICU rotation?

Patient Care:

- Recognize the critically ill child and adolescent

Medical knowledge

- Stabilization of the acutely ill child and adolescent

Practice Based Learning and Improvement

- Become acquainted with the evidence-based evaluation process
- Know where to access pediatric critical care evidence-based information
- Practice using the evidence-based clinical practice process to answer a focused clinical question on a patient care issue.

Interpersonal and Communication Skills

- Build on previous skills by observing the critical care physician

Professionalism

- Build on previous skills by observing the critical care physician

Systems-Based Practice

- Build on previous skills by observing the critical care physician

Critical care physicians' basic responsibilities for educational activities in the PICU

Educational activities

- Keep up with the current literature in pediatric critical care medicine
- Schedule teaching staff so that there is ready supervision and faculty support/consultation to residents on duty;
- Work with resident duty hour assignments that recognize that faculty and residents collectively have responsibility for patient safety and welfare;
- Monitor residents for the effects of sleep and fatigue with appropriate action when it is determined that fatigue might affect safe patient care or learning;
- Educate faculty and residents in recognizing the signs of fatigue and in applying preventive and operational countermeasures;
- Provide appropriate backup support to residents when patient care responsibilities are difficult and prolonged, and if unexpected needs create resident fatigue sufficient to jeopardize patient care;
- Provide a core, critical care, case-based curriculum to supplement the residents' clinical experience
- Provide pediatric critical care fellow with educational curriculum
- Provide educational activities for PICU nurses and respiratory therapists

Supervised resident exposure to an adequate number of critically ill patients who are cared for by appropriately trained individuals in appropriately staffed and equipped ICUs.

- A critical care, attending physician is scheduled for day and night PICU coverage of patient care and transport coordination. He or she is responsible for resident supervision.
- A back –up critical care, attending physician is available during the day and night to assist with patient care if needed. She or he participates in resident supervision.
- Multidisciplinary PICU nurses, respiratory therapists provide 24 hour a day bedside care for PICU patients.
- Clinical pharmacists, social service personnel, nutritionists, occupational, physical and speech therapists, medical librarian provide daily support for PICU patients

Resident participation in the cognitive and technical aspects of patient care.

- Pediatric ICU Resident Rotation Web Site provides information to residents on patient care responsibilities, Code Blue, Difficult Airway Cart, administrative issues.
<http://www.nemours.org/internet?url=no/aidhc/picu/index.html>
- The resident who was on call at night will update residents in AM before they see their respective patients.
- Before morning patient rounds, residents examine and assess their primary patients, check with nursing, RT and consultants for any patient updates.
- Residents synthesize the clinical course of their primary PICU patients during multi-disciplinary daily rounds; they also discuss an overall assessment and plan for their primary PICU patients and assist in the coordination of ongoing multidisciplinary and multi-specialty care of the PICU patients.
 - Daily Progress Notes (Resident and Critical Care Attending Combined Note)

- Assist with procedures
 - In order to be an active participant in supervised procedures, residents are expected to
 - Know indications/ contraindications/ potential adverse effects of a procedure
 - Know Landmarks
 - Be acquainted with Seldinger techniques
 - Know What supplies are needed
 - Family explanation / permission
 - Supervised assistance for procedure
 - Document procedure note
 - (Textbooks are available in PICU regarding critical care procedures)
- Computer order entry
 - Although the Leap Frog Group for Patient Safety goal is to have all computer entry orders by the physician, the present Cerner system takes residents away from patient care.
 - Specialized PICU staff now enter resident written orders in order to free up residents from the clerical work. A more friendly interface with Cerner order entry needs is being developed.
- Residents participate in afternoon patient care check out rounds (to be completed no later than 5 PM in order to stay within Duty Hour limits)
- Individual residents checks out primary patients to on-call resident.
- Residents are encouraged to read about the primary issues that affect their primary PICU patients: respiratory distress, shock, neurologic compromise, renal failure, etc.
 - Each resident has a copy of **Manual of Pediatric Critical Care** (Singh NC, W.B.Saunders Company 1997)
 - Additional critical care related textbooks are available in the PICU
- Residents are encouraged to review a set of pediatric critical care core topics that are presented on a SCCM web site designed specifically for residents on a Pediatric Critical Care Medicine rotation. http://www.sccm.org/specialties/pediatric/picu_course/course_index.asp
- PICU residents are encouraged to ask focused clinical questions that address patient problems.
 - Additionally, each resident will be asked to prepare one Critically Appraised Topic during their PICU rotation. The Personal Evidence Project is available under the Guides Tab of the Nemours UGI Desktop. This resource simultaneously helps one to learn about and do a critically appraised topic. A copy of the formal Critically Appraised Topic will be forwarded to their program directors at the end of the PICU rotation
 - A Critically Appraised Topic involves describing a PICU patient problem, asking a Focused Clinical Question, explaining what search strategy was used to find pertinent literature to address the question, evaluating and describing the pertinent literature validity, results and applicability to their patient, and giving a brief clinical bottom line sentence that answers the focused clinical question.
 - Resources to develop A Critically Appraised Topic include:
 - Access to the Nemours UGI Desktop (Personal Evidence Project)
 - Access to the Users Guides to the Medical Literature
 - Access to Jeffline on-line Medical Library
 - Access to the PICU Evidence Based Clinical Practice Journal Club
 - PICU Evidence Based Clinical Practice Journal Club already contains several evidence-based reviews of PICU patient related problems.
- Residents are encouraged to participate in ongoing educational or clinical research projects.

Core Critical Care Curriculum using case based educational methodologies as much as possible to supplement the clinical experience

Case-Based, Bedside-Teaching by critical care physician during patient care rounds.

- During their week as the primary PICU attending, critical care physicians will concentrate on the following topics when the care of particular patients presents itself.
 - Acute Respiratory Failure
 - Hemodynamic Instability
 - Sepsis
 - Acute Neurologic insults
 - Acute electrolyte and endocrine disorders
 - Acute renal failure
 - Coagulation disorders
 - Overdoses & Poisonings
- Critical care physician can email me with a brief description if they covered a specific issue that day. This will be entered under Interactive Sessions in the PICU resident data base
 - At times, bedside teaching can only occur if a second critical care physician is available for acute patient issues or procedures.

Case-Based, Bedside Teaching by critical care physician during daytime and nighttime based on-going patient care issues.

Concentrate on

- Acute Respiratory Failure
- Hemodynamic Instability
- Sepsis
- Acute Neurologic insults
- Acute electrolyte and endocrine disorders
- Acute renal failure
- Coagulation disorders
- Overdoses & Poisonings

- Critical care physician can email me with a brief description if they discussed a specific problem that day or evening. This will be entered under Interactive Sessions in PICU resident data base

Incorporate Multidisciplinary (Pharmacy / RT/ Nursing /Medical Librarian) case-based bedside-teaching into daily patient rounds when possible.

Weekly Mock Code / Difficult Airway Mock Code Scenario (30-60min)

- Nursing Staff Development assistance
- Location PICU or Simulation Lab (when available)
 - Critical care physician can email me with a brief description of the Mock Code scenario. This will be entered under Mock Codes in PICU resident data base

Critical care physicians, critical care fellows, pediatric critical care nurse practitioners can also give didactic lectures to the resident group if their schedules permit.

- A brief description of a topic discussed can be emailed to me. This will be entered under Interactive Sessions in PICU resident data base to allow credit for the person giving the lecture.
- Resident availability to participate as a group is limited (Tuesday after daily patient rounds is best time at since Christiana ER residents have conference Wednesday

mornings, Jefferson ER residents have conference Thursday mornings, Mock Code are scheduled for Fridays and Mondays are usually hectic with residents trying to know new patients.)

Monthly Pediatric Critical Care Journal Club

Evaluating residents' achievement of the required ACGME and SCCM competencies as outlined for a PICU rotation

- Validated Outcome Measurement Tools are still in the process of being developed by
 - Thomas Jefferson University Pediatric Residency program,
 - Nemours Alfred I duPont Hospital for Children GME Office
 - SCCM
 - Pediatric Critical Care Resident Education Committee.
 - As validated measurement tools are developed, we will incorporate them into the PICU rotation.
- Presently
 - Individual program evaluation forms are completed by critical care physicians for each resident-in-training. This data is sent to program directors and also entered into the Pediatric ICU Resident Data Base
 - Residents complete a national SCCM PICU Resident Rotation on-line post-test. Results will be forwarded to their respective program directors. Data is also entered into the Pediatric ICU Resident Data Base
 - Each PICU resident will complete a Critically Appraised Topic using a focused clinical question on a PICU patient problem. This will be forwarded to their respective program director.
 - Residents keep track of their primary patient exposures and procedures done under supervision. Data is entered in the Pediatric ICU Resident Data Base.
 - Residents keep track of hours spent in the hospital. Data is entered in the Pediatric ICU Resident Data Base.
 - Incorporation of a 360 evaluation process by nurses, respiratory therapists, clerks, family is being evaluated by the Pediatric Residency Program

Quality Control Monitoring

- Pre-PICU rotation questionnaire
- Pre-PICU rotation evidence-based clinical practice questionnaire
- Resident Evaluation of PICU rotation questionnaire
- Pediatric Critical Care Survey of residents during their first year after completing their residency program

Data Management

- Pediatric Resident Rotation Data Base
 - Ilene Sivikoff, Critical Care Secretary, maintains data entry.

Financial resources available to pediatric critical care physicians in order to implement PICU educational activities

- Nemours Foundation
 - General support. No specific RVU equivalent for educational activity.
- Centers for Medicare & Medicaid Services, Health Resources and Services Administration Children's Hospital Graduate Medical Education Payment Program
 - Direct Medical Education (DME) portion of the Health Resources and Services Administration Graduate Medical Education (GME) Payment Program to our free-standing Children's Hospital historically has not covered teaching physicians' compensation. (Pediatric 2003; 112(1):40-48)

Challenges facing the Nemours Alfred I duPont Hospital for Children PICU rotation if the goal is to become a national resource for pediatric critical care subspecialty education

- Develop validated outcome tools to confirm that residents are acquiring competencies as outlined by SCCM and ACGME for pediatric critical care medicine.
 - Collaborate with
 - Nemours Education Committee
 - Thomas Jefferson University Pediatric Residency program
 - Nemours Alfred I duPont Hospital for Children GME Office
 - Thomas Jefferson Emergency Medicine Residency Program
 - Christiana Care Emergency Medicine and Medicine-Pediatrics Residency Programs
 - Society of Critical Care Medicine (SCCM)
 - Pediatric Critical Care Resident Education Committee
 - Nemours' pediatric critical care physicians in Florida
- Develop an outcomes based budget.
- Provide compensation for educational activities that produce desired outcomes.
- Provide adequate number of pediatric critical care physician FTEs in order to carry out clinical educational activities that are designed to meet desired outcomes.
- Provide opportunities for critical care physicians to develop an ever-increasing, measurable quantity of knowledge
- Provide leadership training for critical care physicians through the Nemours Center for Medical Leadership in order to more fully incorporate the Institute of Medicine aims for an idealized PICU: safety, effectiveness, equity, timeliness, patient-centeredness, efficiency.
- Provide resources (research nurses) in order to increase clinical research activity
- Dedicated Data Collection Personnel and Data Base Programmers both for the PICU NACHRI data base as well as the PICU Resident Data Base.
- Develop and maintain a Simulation Lab: Teach and Test - Interactive Mock Codes, Clinical Scenarios, Procedures

Orientation To PICU Resident Rotation

Nemours Alfred I duPont Hospital for Children

Principle Clinical Responsibility

Examine your primary patient before morning and afternoon patient care rounds and frequently throughout the day and night if the child is unstable.

Keep critical care physician updated with any changes in your primary patient's condition.

Know the general clinical course and plan of all PICU patients.

Principle Educational Objective

At the end of your PICU rotation, be able to recognize and stabilize a critically ill child or adolescent who presents with

Acute Respiratory Failure

Hemodynamic Instability

Sepsis

Acute Neurologic insults

Acute electrolyte and endocrine disorders

Acute renal failure

Coagulation disorders

Overdoses & Poisonings

Patient Care: Resident Responsibilities

- PICU morning rounds begin at 0730 on week-days and 0800 on Sat/Sun and Holidays.
- It is expected that residents will examine their primary patients & collect necessary data before rounds.
- Residents will write a daily SOAP note on their primary patients. Name must be printed as well as signed at end of all notes and orders.
- Please do not pre-date transfer summaries
- Residents will put their names next to the critical care attendings' names on the PICU room board for those primary patients that they are following.
- In the interest of patient continuity of care, before leaving for clinic, seminar or home, residents must check out in detail the updated clinical course of their primary patients with the resident who is designated on-call and the critical care attending.
- On Sat/Sun and Holidays, the on-coming resident and the resident from night call are each responsible for examining and collecting data on half the PICU patients before rounds and completing the daily patient notes..

During your first two days in the PICU, it is expected that you will review the following information about the PICU Resident Rotation: <http://www.nemours.org/internet?url=no/aidhc/picu/index.html> in this order:

Administrative Issues

General Information

Patient Responsibilities

Order Entry

Transfer Out of PICU Algorithm

Surgical NICU Coverage by PICU Rotation Resident

Browser Tab

- Double Click the Bell on the desk for a Tour describing the basic Vividesk technology and an introduction to the on-line Users' Guides To The Medical Literature

Activities Tab

- Under Interactivities, complete NFEIP Pre-study questionnaire during your first week in the PICU

Resource Tab

- Search Engines: PubMed, Ovid, ACP Journal Club, Cochrane Library.
- MD Consult (includes access to Nelson's Pediatrics, Harriett Lane).
- Practice Guidelines (AAP, SCCM, etc)
- Journals (Connection to Journals via Jeffline).
- Article and Search Requests from Delaware Academy of Medicine Library (<http://www.delamed.org>) which is located in the Library icon. The FAX number for the PICU is 302-651-5460.
- LexiComp (Alfred I duPont Hospital for Children Formulary)
- Micromedex.
- PedsCCM (<http://www.PedsCCM.org>), Pediatric Critical Care educational resources

Guides Tab

- Users' Guides To The Medical Literature textbook.
- Learning Modules: Concentrate on Asking Questions, Acquiring Evidence, Appraising Therapy
- Search Engine instructions
- Calculators for evidence-based clinical practice
- Personal Evidence Project (Help with doing a Critically Appraised Topic on-line)

Practice Tab

- PedsCCM web site: National SCCM Power Point Lecture Series for Residents in a PICU
- PICU Rotation PICU Article Collection Resource
- Radiology Review
- Epic Web connection
- Pediatric Lectures: General Pediatric Lecture Series developed by Alfred I duPont Hospital for Children pediatricians and pediatric residents.

Monitoring Activities

During their first week, residents are asked to complete Pre-PICU Rotation questionnaire on the PICU Resident Rotation web site and the Nemours Foundation EIP Pre-study Questionnaire under the Activities Tab on the Nemours Users Guides Interactive Desktop.

PICU Residents are to document their primary patients' diagnoses and age, procedures performed with supervision and their hospital work-hours on forms provided. Please return to Ilene Sivikoff, Pediatric Critical Care Secretary (extension 5159) at the end of the last week of rotation.

Residents will complete one Critically Appraised Topic and hand in to Dr Cullen. (A copy will be sent to their program director).

During the last week of the rotation, residents are asked to complete the on-line evaluation of their PICU experience. This is found on the PICU Rotation Web Site under Questionnaires, Tests

During the last week of the rotation, residents participate in the Pediatric Section of the Society of Critical Care Medicine (SCCM) Pediatric Resident Education Committee post-PICU on-line test. This is found on the PICU Rotation Web Site under Questionnaires, Tests Their scores will be forwarded to their respective program directors.

Questions? Contact Edward J.Cullen Jr., D.O. Phone: 302-651-5159 / email: ecullen@nemours.org

Appendix

Nemours Foundation Commitment to Medical Education

“Nemours has defined itself as an organization seeking to be excellent in the patient care experience. In our model, education and research are important because we believe that the best practitioners thrive and contribute their best in an environment of not only intellectual rigor, vitality and inquisitiveness, but also ethics, patient focus and personal commitment.

Research and education are not ends in themselves; they are means to increase the probability of excellent patient care. Nemours provides resources to fund education and research because our belief is that the best outcomes derive from the best people who are constantly challenged and encouraged to seek improvement and change – on behalf of the patient”

W. Jeff Wadsworth, Nemours President and CEO,
Nemours Vision, June 2003

Nemours Drive to Excellence

- Become one of the top 10 pediatric research centers in the United States
- Become a national resource for pediatric subspecialty education
- Provide the national standard for pediatric patient and family education

Nemours Vision, June 2003

Integrating the Institute of Medicine's Six Quality Aims into Pediatric Critical Care

Safety

- Improving patient safety through reducing medical errors and adverse events in the high-risk PICU environment.

Effectiveness

- Incorporating the best-research evidence, clinical expertise and patient values in order to achieve the best outcomes for the patient

Equity

- Provide impartial care for populations and to individuals that is free from bias related to race, ethnicity, insurance status, income or gender.

Timeliness

- A marker of the adequacy of processes to achieve acceptable outcomes
 - Timely and effective communication
 - Available resources
 - Experience and competency of physician, nursing and technical staff
 - Presence of pediatric intensivists and pediatric critical care fellows
 - Multidisciplinary critical care teams

Patient-Centeredness

- Provision of information, education, emotional support to families
- Attention to the physical comfort of families
- Involvement of family and friends in care

Efficiency

- Health care resources are delivered in a cost-effective and efficient manner while not jeopardizing quality

**Integrating the Institute of Medicine's six quality aims into pediatric critical care: Relevance and applications
Pediatric Critical Care 2005; 6(3): 264-269**

Accreditation Council for Graduate Medical Education (ACGME)
Residency Review and Institutional Review Committee

Residency programs must require its residents to obtain competencies in the 6 areas below to the level expected of a new practitioner. Toward this end, programs must define the specific knowledge, skills, and attitudes required and provide educational experiences as needed in order for their residents to demonstrate:

- a. **Patient Care** that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health
- b. **Medical Knowledge** about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care
- c. **Practice-Based Learning and Improvement** that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, and improvements in patient care
- d. **Interpersonal and Communication Skills** that result in effective information exchange and teaming with patients, their families, and other health professionals
- e. **Professionalism**, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population
- f. **Systems-Based Practice**, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value

The residency program must demonstrate that it has an effective plan for assessing resident performance throughout the program and for utilizing assessment results to improve resident performance. This plan should include:

- a. use of dependable measures to assess residents' competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice
- b. mechanisms for providing regular and timely performance feedback to residents
- c. a process involving use of assessment results to achieve progressive improvements in residents' competence and performance

Programs that do not have a set of measures in place must develop a plan for improving their evaluations and must demonstrate progress in implementing the plan.

The residency program should use resident performance and outcome assessment results in their evaluation of the educational effectiveness of the residency program.

The residency program should have in place a process for using resident and performance assessment results together with other program evaluation results to improve the residency program.

ACGME, Outcome Project

<http://www.acgme.org/outcome/comp/compMin.asp>

Accreditation Council for Graduate Medical Education (ACGME)
Work Group on Resident Duty Hours (June 2002)

The goal is to simultaneously foster high-quality education, patient care and resident well-being. The only way residency programs and their sponsoring institutions can achieve a true “education” program as well as provide high quality clinical care, is by attending to the issue of resident duty hours and by placing a higher value on resident education and safe patient care than on meeting service demands.

Duty Hours are defined as all clinical and academic activities related to the residency program, i.e. patient care (inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.

Duty Hours

- 80 hours per week, averaged over 4 weeks, inclusive of all in-house call activities
- One day off out of seven, averaged over 4 weeks, One day is defined as one continuous 24-hour period free from all clinical, educational and administrative activities.
- No in-house call more than once every three nights averaged over 4 weeks. In-house call is defined as those duty hours beyond the normal work day when residents are required to be immediately available in the assigned institution.
- Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Residents may remain on duty for up to six additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics and maintain continuity of medical and surgical care as defined in Specialty and Subspecialty Program Requirements. No new patients may be accepted after the 24 hours of continuous duty.
- 10 hours off between duty periods and after in-house call.
- Probation or accreditation withdrawal for facilities that do not comply

Institutional Oversight

- Monitoring of program’s policies governing resident duty hours by the sponsoring institution.
- Requiring sound educational justification of any increases above the 80 hour limit
- An annual report to the sponsoring institution’s governing body on duty hour compliance
- Institutional policies on patient care activities external to the educational program (moonlighting), prospective approval of these activities, and monitoring their effect on performance in the educational program
- Counting time spent in patient care activities external to the educational program that occur in the primary programs institution toward the weekly duty hour limit
- Requiring programs and their sponsoring institutions to have policies and procedures to monitor and support the physical and emotional well-being of residents
- Requiring sponsoring institutions to monitor the demands home call places on residents in all programs, and making adjustments as necessary to address excessive demands and fatigue
- Patient care support services for IV, phlebotomy, and transport activities to reduce resident time spent on these routine activities

High Quality Education and Safe and Effective Patient Care

- Priority of clinical and didactic education in the allotment of residents’ time and energies
 - Schedules of teaching staff structured to provide ready supervision and faculty support/consultation to residents on duty
 - Duty hour assignments that recognize that faculty and residents collectively have responsibility for patient safety and welfare
 - Monitor residents for the effects of sleep and fatigue by Program director and faculty with appropriate action when it is determined that fatigue might affect safe patient care or learning.
 - Education of faculty and residents in recognizing the signs of fatigue and in applying preventive and operational countermeasures
- Appropriate backup support when patient care responsibilities are difficult and prolonged, and if unexpected needs create resident fatigue sufficient to jeopardize patient care.

Guidelines for critical care medicine training and continuing medical education

CritCare Med 2004; 32 (1):263

Critical care physician education is a continuum from residency through subspecialty training and into continuing practice.

Learning in critical care medicine is optimized when the learner is intimately exposed to and participates in the cognitive and technical aspects of care.

Training should include a structured process that progressively transfers increasing levels of responsibility for decision making, ensures continued training in the practical aspects of care, and provides training and experience in the administrative and management functions of the ICU

In addition to being an environment in which excellence in patient care is the foundation for learning to care for the critically ill and injured patient, the critical care environment should be an intensivist-directed, collaborative multiple-professional team model of patient-centered care for all ICU patients. The ICU should comply with ACCM guidelines. The training program director must demonstrate a commitment to and competence in all aspects of critical care medicine

On completion of an ACGME approved graduate education program in a clinical specialty of medicine (e.g., anesthesiology, internal medicine, pediatrics, or surgery), each resident physician will have developed a measurable quantity of knowledge, learned a set of observable skills, demonstrated adequate decision making and possess a caring and compassionate attitude for patients who are critically ill.

On completion of an ACGME approved graduate education program, each resident physician will be able to perform the following:

Clinical

- Identify when a patient requires treatment best delivered in an ICU under the direction of a qualified intensivist.
- Diagnose and stabilize patients with impending organ failure (respiratory, cardiac, neurologic, hepatic, gastrointestinal, hemorrhagic, renal, etc.).
- Identify the need for and initiate cardiopulmonary resuscitation.
- Diagnose and prevent hemodynamic instability, and /or initiate treatment for cardiogenic, traumatic, hypovolemic and distributive shock.
- Identify and initiate treatment for life-threatening electrolyte and acid-base disturbances.
- Suspect and initiate treatment for common poisonings.
- Use data from appropriate invasive and noninvasive monitoring devices to titrate therapy in an ICU.
- Understand basic infection control techniques.
- Understand basic nutrition support techniques.
- Understand basic sedation and analgesia principles.
- Understand basic concepts of therapeutic decision-making and medication safety.
- Recognize, use and help integrate the unique skills of ICU nurses and ancillary personnel in caring for critically ill patients into the multiple-professional team model.
- Consider ethical issues and patients' wishes in making treatment decisions.

Research

- Understand the basic methods for searching, reviewing and evaluating the medical and scientific literature.
- Support ongoing basic and clinical science protocols as well as process improvement protocols within the ICU.

Administrative

- Communicate effectively with families and all members of the healthcare team about ICU capabilities and patient-specific issues.
- Communicate with and support patients, their families and all members of the healthcare team through the physical and psychological complexities of critical illness.
- Seek consultation, when appropriate, with specialty physicians in managing complex ICU problems.
- Maintain good relationships with other healthcare providers.
- Support initiatives to improve care of critically ill patients.
- Understand the need for patient safety monitoring and error reduction strategies.
- Understand the need for and help in the process of assessing patients and family satisfaction.
- Understand basic compensation methodologies for critical care services.
- Understand and ensure compliance with institutional and unit policies and procedures as well as regulatory policies from accreditors, regulators and payers.

All GME programs must ensure that each resident receives supervised exposure to an adequate number of critically ill patients.

- These patients should be cared for by appropriately trained individuals in appropriately staffed and equipped ICUs.

Since not all trainees will be exposed to the entire length and breadth of clinical problems during their ICU experience, a core critical care curriculum taught by clinical experts should supplement the clinical experience.

- Case based education methodology is encouraged.

The program director should ensure that each resident achieves the competencies outlined.

Physicians engaged in the specialty practice of CCM will develop an ever-increasing, measurable quantity of knowledge; regularly perform and teach an increasingly broader set of skills; continue to demonstrate advanced, ethical decision making; and serve as a role model for a compassionate and caring attitude toward patients who are critically ill. They will serve as role models for the intensivist-directed multiple-professional team model of patient-centered care for all ICU patients. In addition, each critical care physician will perform the following:

Clinical.

- Continue to augment his or her knowledge by assimilating appropriate new peer-reviewed published medical literature through self-directed learning.
- Develop and participate in CME activities designed to enhance critical care knowledge.
- Teach others to identify the need for and provide care for all critically ill adult and/or pediatric patients.
- Continue to provide and teach cardiopulmonary and cerebral resuscitation including advanced techniques for all patients sustaining life-threatening events.
- Introduce and teach others new methods and use of devices for management of patients in respiratory failure.
- Develop and evaluate curriculum changes for ICU caregivers, fellows, and residents.
- Diagnose and treat a sufficient number of patients with critical illness using conventional and state-of-the-art approaches to maintain clinical proficiencies.
- Teach others to select, place, and use appropriate monitors for titrating therapy in any critically ill patient by demonstrating these skills in daily practice.
- Teach others infection control and monitor infection control practices of the unit.
- Teach medication safety and cost-effectiveness of therapeutic decision making.
- Increase the skills of ICU nurses and ancillary personnel in caring for critically ill patients by acting as the ICU team leader and providing in-service education.
- Model effective communication with patients, families, and members of the healthcare team about treatment decisions and patient prognosis.

- Support patients, their families, and other members of the healthcare team through the trauma of critical illness.
- Develop collaborative and productive relationships with other specialist physicians and model joint clinical planning in managing complex ICU problems.
- Identify ethical issues and lead discussions involving patients, families, and members of the healthcare team in making treatment decisions.

Research.

- Advance the clinical practice of CCM using evidence-based medicine techniques and through the dissemination of findings by publishing case reports and clinical and basic science research.
- Develop and continue ongoing basic science and clinical studies designed to evaluate and improve care of the critically ill.

Administrative.

- Evaluate, modify, and approve ICU hospital policies.
- Improve resource utilization and maintain patient care quality by planning for future needs for institutional and regional critical care resources.
- Develop programs and change unit, institution, and regional practice to improve care of critically ill patients.
- Develop programs and document improvement in patient safety monitoring and error reduction.
- Use existing tool sets to assess patient and family satisfaction and direct the development of new tools when appropriate.
- Develop high-quality relationships with other healthcare providers.
- Teach the business of medicine.

All active intensivists must demonstrate a commitment to professional development and lifelong learning. This commitment can be assessed by achieving board certification and recertification in CCM; by regular attendance at CME activities and individual self-studies; by publications related to education or research studies; or by attestations from colleagues, peers, patients, students, residents, fellows, nurses, allied health professionals, and hospital administrators that include quality reports, patient lists, and outcome statistics.

Lists of credentials and cognitive and procedural skills intended to serve as guides for both programs and individuals participating in the educational process.

I. Specific Credentials

Each trainee should achieve provider and/or instructor status in one or more of the following:

1. Advanced Cardiac Life Support
2. Advanced Trauma Life Support
3. Pediatric Advanced Life Support
4. Fundamentals of Critical Care Support

II. Cognitive Skills for Residents

Acquisition of the following cognitive skills by trainees could be ensured by the training director through the use of any of a number of techniques, including didactic lectures, journal club sessions, and illustrative case reports.

- A. Cardiovascular Physiology, Pathology, Pathophysiology, and Therapy
 1. Shock (hypovolemic, neurogenic, septic, cardiogenic) and its complications
 2. Myocardial infarction and its complications

3. Cardiac rhythm and conduction disturbances
 4. Indications for and types of pacemakers
 5. Pulmonary embolism—thrombus, air, fat, amniotic
 6. Pulmonary edema—cardiogenic, noncardiogenic
 7. Cardiac tamponade and other acute pericardial diseases
 8. Acute and chronic life-threatening valvular disorders
 9. Acute aortic and peripheral vascular disorders, including arteriovenous fistulas
 10. Acute complications of cardiomyopathies and myocarditis
 11. Vasoactive and inotropic therapy
 12. Pulmonary hypertension and cor pulmonale
 13. Complications of angioplasty
 14. Principles of oxygen transport and utilization
 15. Hemodynamic effects caused by ventilatory assist devices
 16. Thrombolytic and anticoagulant therapy
 17. Perioperative management of patient undergoing cardiovascular surgery
 18. Recognition, evaluation, and management of hypertensive emergencies and urgencies
 19. Congenital heart disease and the physiologic alterations with surgical repair
 20. Noninvasive methods of cardiac output assessment (i.e., aortic Doppler, indicator dilution techniques, etc.)
- B. Respiratory Physiology, Pathology, Pathophysiology, and Therapy
1. Acute respiratory failure
 - a. Hypoxemic respiratory failure including acute respiratory distress syndrome
 - b. Hypercapnic respiratory failure
 - c. Acute on chronic respiratory failure
 2. Status asthmaticus
 3. Smoke inhalation, airway burns
 4. Aspiration
 5. Chest trauma (e.g., flail chest, pulmonary contusion, rib fractures)
 6. Bronchopulmonary infections including bronchiolitis
 7. Upper airway obstruction
 8. Near drowning
 9. Bronchopleural fistulas
 10. Pulmonary mechanics and gas exchange
 11. Oxygen therapy
 12. Hyperbaric oxygenation
 13. Mechanical ventilation
 - a. Pressure and volume modes of mechanical ventilators
 - b. Positive end-expiratory pressure, intermittent mandatory ventilation, continuous positive airway pressure, high-frequency ventilation, inverse ratio ventilation, pressure-support ventilation, volume support (airway pressure release ventilation, pressure-regulated volume control ventilation), negative pressure ventilation, differential lung ventilation, pressure control and noninvasive ventilation, spilt lung ventilation, one-lung ventilation
 - c. Indications for and hazards of mechanical ventilation
 - d. Barotrauma and volutrauma
 - e. Criteria for extubation and weaning techniques
 - f. Extracorporeal membrane oxygenation
 - g. Permissive hypercapnia
 - h. Liquid ventilation
 - i. Pulmonary surfactant therapy
 - j. High-frequency oscillatory ventilation
 14. Airway maintenance
 - a. Emergency airway management
 - b. Endotracheal intubation
 - c. Tracheostomy, open and percutaneous
 - d. Long-term intubation vs. tracheostomy

15. Ventilatory muscle physiology, pathophysiology, and therapy, including polyneuropathy of the critically ill and prolonged effect of neuromuscular blockers
16. Pleural diseases
 - a. Empyema
 - b. Pleural effusion
 - c. Pneumothorax
 - d. Hemothorax
17. Pulmonary chylothorax, hemorrhage, and hemoptysis
18. Nitric oxide and prostaglandin therapies
19. Noninvasive ventilation
20. Positional therapy (i.e., prone position, rotational therapy)
- C. Renal Physiology, Pathology, Pathophysiology, and Therapy
 1. Renal regulation of fluid balance and electrolytes
 2. Renal failure: Prerenal, renal, and postrenal
 3. Derangements secondary to alterations in osmolality and electrolytes
 4. Acid-base disorders and their management
 5. Principles of renal replacement therapy and associated methodologies (hemodialysis, peritoneal dialysis, ultrafiltration, continuous arteriovenous hemofiltration, and continuous veno-venous hemofiltration)
 6. Interpretation of urine electrolytes
 7. Evaluation of oliguria
 8. Drug dosing in renal failure
 9. Rhabdomyolysis
 10. Systemic diseases that involve the kidney (thrombotic thrombocytopenic purpura, hemolytic uremic syndrome)
- D. Central Nervous System Physiology, Pathology, Pathophysiology, and Therapy
 1. Coma
 - a. Metabolic
 - b. Traumatic
 - c. Infectious
 - d. Mass lesions
 - e. Vascular-anoxic or ischemic
 - f. Drug induced
 - g. Assessment and prognosis
 2. Hydrocephalus and shunt function and dysfunction
 3. Psychiatric emergencies
 4. Perioperative management of patient undergoing neurologic surgery
 5. Brain death evaluation and certification
 6. Diagnosis and management of persistent vegetative states
 7. Management of increased intracranial pressure, including intracranial pressure monitors
 8. Status epilepticus
 9. Neuromuscular disease causing respiratory failure
 - a. Guillain-Barré
 - b. Amyotrophic lateral sclerosis
 - c. Myasthenia gravis
 - d. Myopathies (Duchenne's, etc.)
 - e. Neuropathy of critical illness
 10. Traumatic and nontraumatic intracranial bleed
 - a. Subarachnoid
 - b. Intracerebral
 - c. Epidural
 - d. Others (subdurals)
 - e. Traumatic brain injury
 - f. Axonal shear injury
 11. Conscious and deep sedation
 12. Pain management: Intravenous, oral, transdermal, and regional and axial

- 13. Neuromuscular blockade: Use, monitoring, and complications
- E. Metabolic and Endocrine Effects of Critical Illness
 - 1. Colloid osmotic pressure
 - 2. Nutritional support
 - a. Enteral and parenteral
 - b. Evaluation of nutritional needs including indirect calorimetry
 - c. Immunonutrition and specialty formulas
 - 3. Endocrine
 - a. Disorders of thyroid function (thyroid storm, myxedema coma, sick euthyroid syndrome)
 - b. Adrenal crisis and insufficiency (primary and secondary)
 - c. Disorders of antidiuretic hormone metabolism
 - d. Diabetes mellitus
 - 1. Ketotic and nonketotic hyperosmolar coma
 - 2. Hypoglycemia
 - e. Pheochromocytoma
 - f. Insulinoma
 - g. Disorders of calcium, magnesium, and phosphate balance
 - h. Inborn errors of metabolism
 - 4. Electrolyte disorders including Na, K, Mg, Ca, PO₄.
 - 5. Glucose management
- F. Infectious Disease Physiology, Pathology, Pathophysiology, and Therapy
 - 1. Antibiotics
 - a. Antibacterial agents including aminoglycosides, penicillins, cephalosporins, quinolones, and newer emerging classes of antibiotics
 - b. Antifungal agents
 - c. Antituberculosis agents
 - d. Antiviral agents
 - e. Agents for parasitic infections
 - 2. Infection control for special care units
 - a. Development of antibiotic resistance
 - b. Universal precautions
 - c. Isolation and reverse isolation
 - 3. Anaerobic infections
 - 4. Sepsis definitions (sepsis, severe sepsis, septic shock)
 - 5. Systemic inflammatory response syndrome
 - 6. Tetanus
 - 7. Hospital-acquired and opportu- nistic infections in the critically ill
 - 8. Adverse reactions to antimicrobial agents
 - 9. ICU support of the immunosuppressed patient
 - a. Acquired immunodeficiency syndrome
 - b. Transplant
 - c. Oncologic
 - 10. Infectious risks to healthcare workers
 - 11. Evaluation of fever in the ICU patient
 - 12. Biological modifiers (activated protein C, tissue factor, etc.)
 - 13. Mechanisms of antibiotic resistance
- G. Physiology, Pathology, Pathophysiology, and Therapy of Acute Hematologic and Oncologic Disorders
 - 1. Acute defects in hemostasis
 - a. Thrombocytopenia/thrombocytopathy
 - b. Disseminated intravascular coagulation
 - 2. Anticoagulation; fibrinolytic therapy
 - 3. Principles of blood component therapy
 - a. Packed red blood cell transfusions
 - b. Fresh frozen plasma transfusions
 - c. Platelet transfusions

- d. Cryoprecipitate transfusions
 - e. Specific coagulation factor concentrates
 - f. Albumin, plasma protein fraction
 - g. Hemoglobin substitutes
 - h. Pharmacologic agents that modify the need for transfusion (i.e., aminocaproic acid, aprotinin)
 - i. Erythropoietin
 - 4. Acute hemolytic disorders including thrombotic microangiopathies
 - 5. Acute syndromes associated with neoplastic disease and antineoplastic therapy
 - 6. Sickle cell crisis and acute chest syndrome
 - 7. Plasmapheresis
 - 8. Prophylaxis against thromboembolic disease
 - 9. ICU-acquired anemia
- H. Physiology, Pathology, Pathophysiology, and Therapy of Acute Gastrointestinal, Genitourinary, and Obstetrical-Gynecologic Disorders
- 1. Acute pancreatitis with shock
 - 2. Upper gastrointestinal bleeding, including variceal bleeding
 - 3. Lower gastrointestinal bleeding
 - 4. Acute and fulminant hepatic failure
 - 5. Toxic megacolon and pseudo-obstruction syndromes (i.e., Ogilvie's)
 - 6. Acute perforations of the gastrointestinal tract
 - 7. Ruptured esophagus
 - 8. Acute inflammatory diseases of the intestine
 - 9. Acute vascular disorders of the intestine, including mesenteric infarction
 - 10. Obstructive uropathy, acute urinary retention
 - 11. Urinary tract bleeding
 - 12. Toxemia of pregnancy, amniotic fluid embolism, HELLP (hemolysis, elevated liver function tests, and low platelet count) syndrome, ovarian hyperstimulation
 - 13. Hydatidiform mole
 - 14. Perioperative management of surgical patients
 - 15. Stress ulcer prophylaxis
 - 16. Drug dosing in hepatic failure
 - 17. Acalculous cholecystitis
 - 18. Postoperative complications including fistulas, wound infection, and evisceration
 - 19. Placenta previa and abruption
 - 20. Peripartum cardiomyopathy
- I. Environmental Hazards
- 1. Drug overdose and withdrawal
 - a. Barbiturates
 - b. Narcotics
 - c. Salicylates
 - d. Alcohols
 - e. Cocaine
 - f. Tricyclic antidepressants
 - g. Acetaminophen
 - h. Others
 - 2. Temperature-Related Injuries
 - a. Hyperthermia, heat shock
 - b. Hypothermia, frostbite
 - 3. Envenomation
 - 4. Altitude sickness
 - 5. Decompression sickness
 - 6. Skin and wound care
 - 7. Biological and chemical terrorism
 - 8. Radiation exposure
- J. Immunology and Transplantation

1. Principles of transplantation (organ donation, procurement, preservation, transportation, allocation, implantation, maintenance of organ donors, national organization of transplantation activities)
 2. Immunosuppression
 3. Organ transplantation: Indications preoperative and postoperative care
 4. Transplant-related infectious disease
- K. Trauma, Burns
1. Initial approach to the management of multiple system trauma
 2. Central nervous system trauma (brain and spinal cord)
 3. Skeletal trauma, including the spine and pelvis
 4. Chest trauma, blunt and penetrating
 5. Abdominal trauma, blunt and penetrating
 6. Crush injury
 7. Burns
 8. Electrical injury
- L. Monitoring, Bioengineering, Biostatistics
1. Prognostic indexes, severity, and therapeutic intervention scores
 2. Principles of electrocardiographic monitoring, measurement of skin temperature and resistance, transcutaneous measurements
 3. Invasive hemodynamic monitoring
 - a. Principles of strain gauge transducers
 - b. Signal conditioners, calibration, gain, adjustment
 - c. Display techniques
 - d. Principles of arterial, central venous, and pulmonary artery pressure catheterization and monitoring
 - e. Assessment of cardiac function and derived hemodynamic variables
 4. Noninvasive hemodynamic monitoring
 5. Electrical safety
 6. Thermoregulation
 7. Central nervous system brain monitoring (intracranial pressure, cerebral blood flow, cerebral metabolic rate, electroencephalogram, jugular venous bulb oxygenation, transcranial Doppler)
 8. Respiratory monitoring (airway pressure, intrathoracic pressure, tidal volume, pulse oximetry, deadspace/tidal volume ratio, compliance, resistance, capnography, pneumotachography)
 9. Metabolic monitoring (oxygen consumption, carbon dioxide production, respiratory quotient, indirect calorimetry)
 10. Use of computers in critical care units
- M. Ethics
1. Consent
 2. Study enrollment
 3. End-of-life decision making and care
 4. Organ procurement
 5. Outcome and futility
 6. Quality of end of life
- N. Administration
1. Team building
 2. Contracting care
 3. Patient triage
 4. Physician, nurse, and ancillary staff staffing models
 5. Documentation compliance and billing
 6. Patient safety
- O. Genetic
1. Congenital disease (trisomy, etc.)
 2. Storage diseases (Hurlers, etc.)
 3. Polymorphisms

- P. Pharmacology
 - 1. Pharmacokinetics
 - 2. Pharmacodynamics
 - 3. Safe medication practice
 - 4. Drug dosing adjustments in hepatic disease
 - 5. Drug dosing adjustments in renal disease

Core Procedural Skills for Residents

In addition to practical training in the following procedural skills, the resident must have an understanding of the indications, contraindications, complications, and pitfalls of these interventions. Due to the variability of individual training programs, practical experience may be limited for some procedures.

- A. Airway Management
 - 1. Maintenance of an open airway in the nonintubated patient
 - 2. Ventilation by bag-mask
 - 3. Tracheal intubation
 - 4. Management of pneumothorax
- B. Circulation
 - 1. Arterial puncture and cannulation
 - 2. Insertion of central venous catheters
 - 3. Pericardiocentesis in acute tamponade
 - 4. Dynamic electrocardiogram interpretation
 - 5. Cardioversion and defibrillation
 - 6. Pulmonary artery catheterization
 - 7. Transcutaneous pacing
 - 8. Electrocardiographic monitoring
- C. Additional Procedures
 - 1. Thoracentesis
 - 2. Paracentesis
 - 3. Endoscopy
 - 4. Bronchoscopy

Critical Care Fellow core skills:

Clinical

- Identify the need for and provide care for all critically ill adult and/or pediatric patients.
- Provide resuscitation, including advanced techniques to any patients sustaining a life-threatening event.
- Initiate critical care to stabilize and manage patients who require transport to another facility for a higher level of critical care support.
- Initiate, manage, and wean patients from mechanical ventilation using a variety of techniques and ventilators.
- Instruct other qualified caregivers and the lay public in the theory and techniques of cardiopulmonary resuscitation.
- Treat cardiogenic, traumatic, hypovolemic, and distributive shock using conventional and state-of-the-art approaches.
- Recognize the potential for multiple organ failure and institute measures to avoid or reverse this syndrome.
- Identify life-threatening electrolyte and acid-base disturbances, provide treatment, and monitor outcome.
- Diagnose malnutrition and use and monitor advanced nutrition support methodologies.
- Diagnose common and uncommon poisonings and provide all necessary treatment.

- Instruct others in appropriate use and monitoring of conscious and deep sedation and use advanced pain management strategies.
- Select, place, and use appropriate invasive and noninvasive monitors for titrating therapy in any critically ill patient. Prioritize complex data to support an action plan.
- Use and help enforce advanced methods of infection control.
- Use medication safe practice guidelines and determine cost-effectiveness of therapeutic interventions.
- Use and increase the skills of ICU nurses and ancillary personnel in caring for critically ill patients by acting as the ICU team leader.
- Initiate consultation with other specialist physicians and negotiate a joint clinical plan in managing complex ICU problems.
- Initiate discussions involving ethical issues and patients' wishes in making treatment decisions, using advance directives, and using other methods.
- Communicate effectively with patients, families, and other involved members of the healthcare team about all treatment decisions and patient prognosis.
- Support patients, their families, and other members of the healthcare team through the trauma of critical illness.

Research.

- Analyze current and novel clinical practices by identifying relevant scientific publications and evaluating them using evidence-based medicine techniques.
- Support ongoing basic science or clinical studies designed to evaluate and improve the understanding of critical illness and the care of the critically ill.

Administrative

- Evaluate current ICU hospital policies and suggest improvements.
- Triage critically ill patients to optimize care delivery within the institution.
- Improve resource utilization and maintain patient care quality by facilitating triage of patients to limited institutional critical care beds and caregivers.
- Develop programs and change unit practice to improve care of critically ill patients.
- Develop programs for patient safety monitoring and error reduction.
- Actively participate in quality assurance processes, including mortality and morbidity conferences, process improvement teams, and Joint Commission on Accreditation of Healthcare Organizations preparation.
- Support the process of assessing patient and family satisfaction and participate in tool development and implementation.
- Encourage and enhance good relationships with other healthcare providers.
- Understand advanced concepts important for compensation of critical care services and contractual issues related to providing critical care services and performing the business of medicine.
- Develop skills for teaching critical care.

Alfred I. duPont Hospital For Children
Pediatric ICU Rotation
Pre-Rotation Questionnaire

Name _____
 PGY2 _____ PGY3 _____

 TJU Pediatric Residency
 Program
 MCD ER _____
 TJU ER _____
 Other _____

1. Have you had any pervious ICU experience?
 Pediatric: _____
 Neonatal: _____
 Adult: MICU ___ CCU ___ SICU ___ Trauma ICU ___

2. Which of the following procedures have you had experience with? If experience with infants and children, mark (P). If experience with adults, mark (A).
 _____ Intubation of infant <1 year
 _____ Intubation of children > 1 year and adolescents
 _____ Intubation of adults
 _____ Use of muscle relaxants for intubation
 _____ Central Line Placement
 _____ Internal Jugular
 _____ Subclavian
 _____ Femoral Vein
 _____ Arterial Catheter Placement
 _____ Radial
 _____ Femoral
 _____ Posterior tibial
 _____ Dorsalis pedis
 _____ Chest tube placement
 _____ Pigtail chest tube placement
 _____ Emergency defibrillation
 _____ Elective cardioversion
 _____ External pacemaker

3. Have you ever been in charge of an actual pediatric resuscitation?
 a. yes
 b. no

4. In an actual infant or pediatric resuscitation, have you EVER personally provided:
 (Circle all that apply)
 a. Chest compressions
 b. Any form of ventilation (i.e. Mouth to mouth, mouth to mask, BVM, ET)
 c. Specifically Mouth to Mouth (or Mouth to Barrier Device) ventilation
 d. None of the above

5. WITHIN THE PAST 2 YEARS, in an actual infant or pediatric resuscitation, have you personally provided:

(Circle all that apply)

- a. Chest compressions
- b. Any form of ventilation (i.e. Mouth to mouth, mouth to mask, BVM, ET)
- c. Specifically Mouth to Mouth (or Mouth to Barrier Device) ventilation
- d. None of the above

6. At duPont hospital for Children, what is the number you call to activate a code blue ?

7. What do you anticipate learning from this PICU rotation that will prepare you for your pediatric or emergency medicine career goals?

8. You learn a new medical topic best by:

- Participating in daily unit rounds with an attending physician
- Formal lectures
- Asking attending physicians direct questions about present patients care
- Formal reading program that covers basic topics in the field of study
- Looking up the answers to your questions in a recent medical textbook
- Reviewing critically recent literature on pertinent patient problems as they arise during your rotation (medline searches)
- Participating in mock drills regarding patient care scenarios
- Direct patient care with as many patients as possible
- Give a talk about what you are trying to learn

9. How comfortable do you feel evaluating and stabilizing a critically ill child.

Scale: 0 = No exposure to base a decision on.
10 = Full independence

0 1 2 3 4 5 6 7 8 9 10

10. How comfortable do you feel recognizing and initially managing critically ill children with the following problems?

Scale: 0 = No exposure to base a decision on.
10 = Full independence

Acute respiratory Failure

0 1 2 3 4 5 6 7 8 9 10

Hemodynamic instability

0 1 2 3 4 5 6 7 8 9 10

Sepsis

0 1 2 3 4 5 6 7 8 9 10

Acute Neurologic Insults

0 1 2 3 4 5 6 7 8 9 10

Acute electrolyte and endocrine disorders

0 1 2 3 4 5 6 7 8 9 10

Acute renal failure

0 1 2 3 4 5 6 7 8 9 10

Coagulation disorders

0 1 2 3 4 5 6 7 8 9 10

Overdoses and Poisonings

0 1 2 3 4 5 6 7 8 9 10

11. Please carefully look over all the nine profiles below, which describe your ideal pediatric critical care experience regarding resident clinical supervision, resident procedural supervision, the teaching format and the resident evaluation process. Then rank all the profiles from 9 (best) to 1 (worst).

Profile	Clinical	Procedural	Teaching Style	Resident Evaluation	Rank
1.	Independent after demonstrating ability	Tightly structured with close supervision	Scheduled formal lectures with prep reading	Oral interview with attending	_____
2.	Tightly structured with close supervision	Flexible with supervision	Independent study program	Oral interview with attending	_____
3.	Tightly structured with close supervision	Tightly structured with close supervision	Interactive patient rounds with attending	Essay response to case scenarios	_____
4.	Flexible with supervision	Independent after demonstrating ability	Interactive patient rounds with attending	Oral interview with critical care attending	_____
5.	Flexible with supervision	Tightly structured with close supervision	Independent study program	Presentation	_____
6.	Flexible with supervision	Flexible with supervision	Scheduled lectures, reading preparation	Essay response to case scenarios	_____
7.	Independent after demonstrating ability	Independent after demonstrating ability	Independent study program	Essay response to case scenarios	_____
8.	Tightly structured with close supervision	Independent after demonstrating ability	Scheduled lectures, reading preparation	Presentation	_____
9.	Tightly structured with close supervision	Flexible with supervision	Interactive patient rounds with attending	Presentation	_____

Nemours Education Innovation Program
Promoting
Evidence Based Clinical Practice

Pre-Questionnaire

Name:

Age (yrs):

Sex:

PICU Staff Physicians:

Years post fellowship

Fellows:

Program (Other)

Year

Residents:

PGY Year

Program Type

(Other)

Medical Students:

Year

Medical School (Other)

RNs:

Specialty

Years post initial training

1 Have you been exposed to Evidence Based Clinical Practice principles in any of the following formal training programs?
 . (Check all that apply)

Yes	Medical school
Yes	Medical internship
Yes	Medical residency program
Yes	Medical fellowship program
Yes	Nursing school
Yes	Respiratory therapy program
Yes	Pharmacy program
Yes	Graduate program
Yes	PhD program

2 Have you participated in any Evidence Based Clinical Practice continuing education workshop?
 .

Yes	Yes
No	No

3 Have you participated in the McMaster University workshop How To Teach Evidence Based Clinical Practice?
 .

Yes	Yes
No	No

4 How long ago did you participate in an Evidence Based Clinical Practice workshop?
 .

< 6 months	< 6 months
6 months - 1 year	6 months - 1 year
1-2 years	1-2 years
2-5 years	2-5 years
>	> 5 years

years"
 name=participate

5 How important is it to your **day-to-day clinical practice** to have the skills to find and appraise the most recent literature?
 .

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

6 How confident are you in your ability to **ask a focused clinical question** in order to address a patient related problem?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

7 How confident are you in your ability to **search the literature** in order to find the most relevant articles that address your focused clinical questions?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

8 How confident are you in your ability to **evaluate what is being studied** in the articles you find?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

9 How confident are you in your ability to **determine the validity of the articles** that you find?

Always	Always
Most of the time	Most of the time

Sometimes	Sometimes
Rarely	Rarely
Never	Never

1
0 How confident are you in your ability to **ascertain the results and the preciseness of the results** of the articles that you find?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

1
1 How confident are you in your ability to judge if the **results** of the articles you find are **applicable to your patient**?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

1
2 Do you feel that **patient care is improved** when you are able to add to your clinical expertise and appreciation of the patient's va
system the ability to access and evaluate the most up to date information that pertains to your patient's needs?

Always	Always
Most of the time	Most of the time
Sometimes	Sometimes
Rarely	Rarely
Never	Never

ALFRED I. DUPONT HOSPITAL FOR CHILDREN

PEDIATRIC RESIDENT FEEDBACK OF A CLINICAL ROTATION

Rate the following aspects of the rotation

Circle one:
(1) strongly disagree; (2) disagree; (3) neutral; (4) agree; (5) strongly agree)
much

1. I was made aware of the expectations of the rotation?	1	2	3	4	5
2. I was a valuable member of the team?	1	2	3	4	5
3. I was given an appropriate level on independence?	1	2	3	4	5
4. I was given an appropriate level of support/backup?	1	2	3	4	5
5. I was expected to think independently during the rotation?	1	2	3	4	5
6. I increased my knowledge base during the rotation?	1	2	3	4	5
7. I improved my physical exam skills during the rotation?	1	2	3	4	5
8. I improved my communication skills during the rotation?	1	2	3	4	5
9. I improved my technical skills during the rotation?	1	2	3	4	5
10. I felt that my expectations of the rotation were met?	1	2	3	4	5
11. I was given appropriate feedback about my performance?	1	2	3	4	5

Rate the following aspects of the rotation

Circle one:
(1) is not enough; (2) is just right; (3) is too

1. The number of patients seen during the rotation?	1	2	3
2. The time spent in conferences and lectures?	1	2	3
3. The time spent in contact with patients?	1	2	3
4. The amount of teaching done by fellow residents?	1	2	3
5. The amount of teaching done by attendings?	1	2	3
6. The duration of the rotation?	1	2	3

Overall score given to rotation? (1) weak rotation; (5) average rotation; (10) great rotation

1 2 3 4 5 6 7 8 9 10

What are the strongest assets of this rotation?

How would you improve this rotation?

Any other comments about this rotation?

(over)

Rate each attending (fellow) that you had contact with on the rotation Circle one: (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; (5) strongly agree

Attending's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					
1	2	3	4	5	

Overall rating of attending (1) weak; (5) average; (10) great

1 2 3 4 5 6 7 8 9 10

Comments:

Attending's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					
1	2	3	4	5	

Overall rating of attending (1) weak; (5) average; (10) great

1 2 3 4 5 6 7 8 9 10

Comments:

Attending's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					
1	2	3	4	5	

Overall rating of attending (1) weak; (5) average; (10) great

1 2 3 4 5 6 7 8 9 10

Comments:

Attending's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					
1	2	3	4	5	

Overall rating of attending (1) weak; (5) average; (10) great

1 2 3 4 5 6 7 8 9 10

Comments:

Fellow's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					

Fellow's Name:					
He/She valued my presence during the rotation?					
1	2	3	4	5	
He/She encouraged me to think independently?					
1	2	3	4	5	
He/She took time to teach me during the rotation?					
1	2	3	4	5	
He/She is an effective teacher?					
1	2	3	4	5	
He/She is an effective role model for residents?					

1	2	3	4	5					
Overall rating of attending (1) weak; (5) average; (10) great									
1	2	3	4	5	6	7	8	9	10

1	2	3	4	5					
Overall rating of attending (1) weak; (5) average; (10) great									
1	2	3	4	5	6	7	8	9	10

Resident's Comfort Level With Critically Ill Children

After your one month PICU rotation, I feel comfortable in recognizing and initially stabilizing a seriously ill child or adolescent in the following areas.

Scale: 0 = No exposure to base a decision on.

10 = Full independence

Acute respiratory failure

0 1 2 3 4 5 6 7 8 9 10

Hemodynamic instability

0 1 2 3 4 5 6 7 8 9 10

Sepsis

0 1 2 3 4 5 6 7 8 9 10

Acute Neurologic Insults

0 1 2 3 4 5 6 7 8 9 10

Acute electrolyte and endocrine disorders

0 1 2 3 4 5 6 7 8 9 10

Acute renal failure

0 1 2 3 4 5 6 7 8 9 10

Coagulation disorders

0 1 2 3 4 5 6 7 8 9 10

Overdoses and poisonings

0 1 2 3 4 5 6 7 8 9 10

Overall assessment

0 1 2 3 4 5 6 7 8 9 10

Comment

Thomas Jefferson Univ/duPont Hospital for Children Preceptor Evaluation for Pediatric/Med-PedResidents

RESIDENT:	ROTATION:	
PRECEPTOR:	BLOCK DATES:	
<p>For each component below that is rated a 4 (or less) OR 8 (or greater), please provide specific comments and recommendations. Be as specific as possible, including reports of critical incidents and/or outstanding performance. Global adjectives or remarks, such as "good resident" do not provide meaningful feedback to the resident.</p>		
<p><i>Resident's overall clinical competence:</i> <i>Unsatisfactory</i> <input type="checkbox"/> <i>Satisfactory</i> <input type="checkbox"/> <i>Superior</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/></p>		
Below Expectations 1-3	Meet Expectations 4-6	
<p>Patient Care: Resident provides compassionate care that is effective for the promotion of health, prevention, treatment, and at the end of life</p>		
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
<ul style="list-style-type: none"> • Interviews and examines patients poorly; lacks technical proficiency • Has poor judgement • Disregards patient preference 	<ul style="list-style-type: none"> • Satisfactory skills in interviewing, physical exam, procedures • Adequate judgement • Usually respectful of patient preferences 	<ul style="list-style-type: none"> • Performs excellent patient interviews, exam, procedures • Uses sound judgement • Is highly respectful of patient preference
<p>Medical Knowledge: Resident demonstrates knowledge of biomedical, clinical and social sciences, and applies that knowledge effectively to patient care.</p>		
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
<ul style="list-style-type: none"> • Limited knowledge base • Minimal interest in learning • Poor understand of complex problems 	<ul style="list-style-type: none"> • Solid fund of knowledge • Satisfactory learner • Adequately understands complex problems 	<ul style="list-style-type: none"> • Exceptional knowledge base • Committed to continuous learning • Has comprehensive understanding of complex problems.
<p>Practice-Based Learning & Improvement: Resident uses evidence and methods to investigate, evaluate, and improve his/her patient care.</p>		
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
<ul style="list-style-type: none"> • Minimizes or ignores self-assessment • Avoids new technology • Ignores feedback 	<ul style="list-style-type: none"> • Intermittently self-assesses • Intermittently uses new technology • Intermittently seeks feedback 	<ul style="list-style-type: none"> • Regularly self-assesses • Uses new technology consistently • Eagerly accepts feedback
<p>Communication & Interpersonal Skills: Resident demonstrates these skills and maintains professional & therapeutic relationships with patients & the healthcare team.</p>		
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
<ul style="list-style-type: none"> • Has poor relationships with patients/families • Avoids educating or counseling patients • Incomplete, illegible medical records 	<ul style="list-style-type: none"> • Maintains satisfactory relationships • Intermittently educates, counsels patients • Usually maintains complete, legible records 	<ul style="list-style-type: none"> • Establishes excellent relationships with patients/families • Educates and counsels patients • Always maintains comprehensive; timely, legible medical records
<p>Professionalism: Resident demonstrated behaviors that reflect an ongoing commitment to continuous professional development, ethical practice, sensitivity to diversity, and responsible attitudes.</p>		
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>

<ul style="list-style-type: none"> • Not respectful. • Not compassionate • Dishonest • Avoids responsibility for errors • Not considerate of others 	<ul style="list-style-type: none"> • Usually respectful • Usually compassionate • Endeavors to be honest • Recognizes errors • Tries to be considerate of others 	<ul style="list-style-type: none"> • Consistently respectful • Very compassionate • Is honest • Accepts responsibility for errors • Considers needs of others (patients/colleagues) 						
<p>Systems-Based Practice: Resident demonstrates both an understanding of the contexts and systems in which health care is provided and applies this knowledge to improve and optimize health care.</p>								
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
<ul style="list-style-type: none"> • Poor utilization of resources • Makes no attempt to reduce errors • Resists improvement to systems of care 	<ul style="list-style-type: none"> • Adequate resource utilization • Tries to reduce errors • Tries to improve systems of care 	<ul style="list-style-type: none"> • Effectively uses resources • Reduces errors • Improves systems of care 						

**THOMAS JEFFERSON UNIVERSITY HOSPITAL
EMERGENCY MEDICINE RESIDENT EVALUATION**

Resident's Name: _____

Training Level: PGY II

Service: PICU - duPont

Evaluator: _____

Dates of Rotation: _____

Please circle appropriate scores below:

- 1 Severe deficits
- 2 Marginal competence
- 3 Expected competence
- 4 Above expected competence
- 5 Outstanding competence
- X Unable to evaluate

Patient Care:							
Has developed skills in infant/pediatric resuscitation	X	1	2	3	4	5	
Has developed skills in performance of pediatric H & P	X	1	2	3	4	5	
Has developed proficiency in pediatric procedures	X	1	2	3	4	5	
Medical Knowledge:							
Understands the manifestations, differential diagnosis and significance of common pediatric emergencies	X	1	2	3	4	5	
Understands specific problems of pediatric & trauma victims	X	1	2	3	4	5	
Has a good knowledge base of pediatric illnesses, their presentation and management	X	1	2	3	4	5	
Practice Based Learning & Improvement:							
Demonstrate commitment to improvement	X	1	2	3	4	5	
Effectiveness in teaching med students & residents	X	1	2	3	4	5	
Adaptation to new technology	X	1	2	3	4	5	
Interpersonal & Communication Skills:							
Relationship w/other healthcare personnel	X	1	2	3	4	5	
Effectiveness as team member	X	1	2	3	4	5	
Professionalism:							
Compassion & Empathy	X	1	2	3	4	5	
Willingness to accept feedback	X	1	2	3	4	5	
Adherence to professional & ethical standards	X	1	2	3	4	5	
Systems Based Practice							
Sensitivity to patients age,sex,gender,culture	X	1	2	3	4	5	
Effectiveness in managing health care resources	X	1	2	3	4	5	
Consideration of costs of diagnosis & management	X	1	2	3	4	5	

Comments and Recommendations:

This evaluation is based on personal contact of and average of _____ hours/week for _____ weeks.
Have you discussed this evaluation with the resident? ____ yes ____ no

Signature

Date

3 Practice-Based Learning/Improvement

<u>Unsatisfactory</u>			<u>Satisfactory</u>			<u>Superior</u>		
y								
1	2	3	4	5	6	7	8	9

Performance needs attention

Insufficient contact to judge

Fails to perform self-evaluation; lacks insight, initiative; resists or ignores feedback; fails to use information technology to enhance patient care or pursue self-improvement

Constantly evaluates own performance, incorporates feedback into improvement a effectively uses technology to manage info for patient care and self-improvement

PLEASE RETURN TO:
 ROBERT E. O'CONNOR, MD
 EMER MED RESIDENCY PROGRAM
 CHRISTIANA CARE HEALTH SERVICES
 PO BOX 6001
 NEWARK, DE 19718-6001

4 Interpersonal and Communication Skills

<u>Unsatisfactory</u>			<u>Satisfactory</u>			<u>Superior</u>		
y								
1	2	3	4	5	6	7	8	9

Performance needs attention

Insufficient contact to judge

Does not establish even minimally effective therapeutic relationships with patients and families; does not demonstrate ability to build relationships through listening, narrative or nonverbal skills; does not provide education or counseling to patients, families or colleagues

Establishes a highly effective therapeutic relationship with patients and families; demonstrates excellent relationship building through listening, narrative and nonverbal excellent education and counseling of pati families, and colleagues; always "interpers engaged

5 Professionalism

<u>Unsatisfactory</u>			<u>Satisfactory</u>			<u>Superior</u>		
y								
1	2	3	4	5	6	7	8	9

Performance needs attention

Insufficient contact to judge

Lacks respect, compassion, integrity, honesty; disregards need for self-assessment; fails to acknowledge errors; does not consider needs of patients, families, colleagues; does not display responsible behavior

Always demonstrates respect, compassion integrity, honest; teaches/role models resp behavior; total commitment to self-assesss willingly acknowledges errors; always con needs of patients, families, colleagues

6 Systems-Based Practice

<u>Unsatisfactory</u>			<u>Satisfactory</u>			<u>Superior</u>		
y								
1	2	3	4	5	6	7	8	9

Performance needs attention

Insufficient contact to judge

Unable to access/mobilize outside resources; actively resists efforts to improve systems to care; does not use systematic approaches to reduce error and improve patient care

Effectively accesses/utilizes outside resour effectively uses systematic approaches to errors and improve patient care; enthusias assists in developing systems' improve

Resident's Overall Clinical Competence

<u>Unsatisfactory</u>			<u>Satisfactory</u>			<u>Superior</u>		
y								
1	2	3	4	5	6	7	8	9

Performance needs attention

Insufficient contact to judge

Total Contact Hours with Resident per Block

<2 2-10 11-20 >20

Sr. EM Resident's Signature

Date Signed

Critical Care Attendings' Comfort Level With PICU Residents

From my observations of the resident during the one month PICU rotation, I feel she / he has the potential to be effective as a third year resident in recognizing and initially stabilizing a seriously ill child or adolescent in the following areas.

Scale: 0 = No exposure to base a decision on.
10 = Full independence

Acute respiratory failure
0 1 2 3 4 5 6 7 8 9 10

Hemodynamic instability
0 1 2 3 4 5 6 7 8 9 10

Sepsis
0 1 2 3 4 5 6 7 8 9 10

Acute Neurologic Insults
0 1 2 3 4 5 6 7 8 9 10

Acute electrolyte and endocrine disorders
0 1 2 3 4 5 6 7 8 9 10

Acute renal failure
0 1 2 3 4 5 6 7 8 9 10

Coagulation disorders
0 1 2 3 4 5 6 7 8 9 10

Overdoses and poisonings
0 1 2 3 4 5 6 7 8 9 10

Overall assessment
0 1 2 3 4 5 6 7 8 9 10

Comment

Resident demonstrates concern for patient safety.

4=Exceeds expectations 3=Meets expectations 2=Needs improvement 1=Major are of deficiency

Comment

Resident demonstrates concern for patient quality of care.

4=Exceeds expectations 3=Meets expectations 2=Needs improvement 1=Major are of deficiency

Comment

Critical Care Practice Pattern Survey for Previous Alfred I. duPont Hospital for Children PICU Rotation Residents

1. How long have you been in practice?
---< 1 yr ---1-3 yr

2. Have you achieved board certification in your specialty?
---YES
---NO

3. Type of present practice setting
---Private pediatric practice
---Private combined pediatric and adult practice
---Group pediatric practice
---Group, combined pediatric and adult practice
---Multispecialty pediatric practice
---Multispecialty practice (adult and children)
---Hospital based pediatric practice
---Hospital based adult and pediatric practice
---Emergency Room Practice
 ---Community Hospital (adult and children)
 ---University Hospital (adult and children)
 ---Children's Hospital ER
---Fellowship
 Type _____
---Basic Science Research
---Other _____

4. Population base of present practice location
---<20,000
---21,000-50,000
---51,000 - 100,000
---101,000- 500,000
---501,000- 1,000,000
--->1,000,000

5. WHICH of the following did you formally attend during your residency program?

 ---BLS for Healthcare Provider
 ---PALS
 ---APLS
 ---ATLS
 ---ACLS

6. How confident do you feel that you will be able to recognize and initially stabilize any acutely ill or injured child or adolescent who presents to you in your present clinical setting?

Circle your confidence level on a scale from 1 to 10 (10 being the most confident.).

1 2 3 4 5 6 7 8 9 10

7. In your present clinical setting, how often do you find that **you** are the primary physician who must deal with children and adolescents who initially present with the following acute, life threatening problems?

Please circle the appropriate letter next to each problem below.

D=Daily, W=Weekly, M=Monthly, Y=Yearly, N=Never

Cardiopulmonary Arrest	D	W	M	Y	N
Multiple Trauma	D	W	M	Y	N
Preoperative and postoperative management of pediatric surgical patients in the PICU	D	W	M	Y	N
Acute respiratory failure requiring intubation and mechanical ventilation	D	W	M	Y	N
Upper airway obstruction from foreign bodies and infection	D	W	M	Y	N
Septic shock	D	W	M	Y	N
Hemodynamic instability requiring various inotropes, pressors and vasodilators	D	W	M	Y	N
Coma	D	W	M	Y	N
Intracranial hemorrhage	D	W	M	Y	N
Increased intracranial pressure monitoring and management	D	W	M	Y	N
Status epilepticus requiring multiple IV anticonvulsants	D	W	M	Y	N
Overdoses and poisonings requiring intensive respiratory, cardiovascular and neurologic support	D	W	M	Y	N
Acute electrolyte and endocrine disorders	D	W	M	Y	N
Acute renal failure	D	W	M	Y	N
Coagulation disorders such as DIC or thrombosis	D	W	M	Y	N
Child with Multiple Organ System Dysfunction	D	W	M	Y	N
Provide Sedation, Analgesia, and Neuromuscular Blockade to the Critically Ill child	D	W	M	Y	N
Talk with parents about a child who is dying or suddenly dies from a serious illness or injury	D	W	M	Y	N
Withhold or withdraw life support from a child or adolescent	D	W	M	Y	N
Discuss DNAR for a seriously ill or injured child or adolescent	D	W	M	Y	N

8. In your present clinical setting, are **you** the primary physician who manages children and adolescents with the following acute, life threatening problems until they are ready from discharge from the hospital?

Please circle for each problem below.

Y=YES N=NO

Cardiopulmonary Arrest	Y	N
Multiple Trauma	Y	N
Preoperative and postoperative management of pediatric surgical patients in the PICU	Y	N
Acute respiratory failure requiring intubation and mechanical ventilation	Y	N
Upper airway obstruction from foreign bodies and infection	Y	N
Septic shock	Y	N
Hemodynamic instability requiring various inotropes, pressors and vasodilators	Y	N
Coma	Y	N
Intracranial hemorrhage	Y	N
Increased intracranial pressure monitoring and management	Y	N
Status epilepticus requiring multiple IV anticonvulsants	Y	N
Overdoses and poisonings requiring intensive respiratory, cardiovascular and neurologic support	Y	N
Acute electrolyte and endocrine disorders	Y	N
Acute renal failure	Y	N
Coagulation disorders such as DIC or thrombosis	Y	N
Child with Multiple Organ System Dysfunction	Y	N
Provide Sedation, Analgesia, and Neuromuscular Blockade to the Critically Ill Child	Y	N
Child or adolescent requiring central hyperalimentation	Y	N

9. In your present clinical setting, how often do you find yourself having to perform the following procedures on children and adolescents?

Please circle the appropriate letter next to each procedure below.

D=Daily, W=Weekly, M=Monthly, Y=Yearly, N=Never

Maintenance of an open airway in the nonintubated patient	D	W	M	Y	N
Ventilation by bag-mask systems	D	W	M	Y	N
Tracheal intubation	D	W	M	Y	N
Acutely change a tracheostomy tube	D	W	M	Y	N
Removal of upper airway foreign bodies	D	W	M	Y	N
Temporary surgical airway	D	W	M	Y	N
Management of pneumothorax	D	W	M	Y	N
Insertion of central venous catheters	D	W	M	Y	N
Insertion of pulmonary artery catheter and interpretation of hemodynamic data	D	W	M	Y	N
Insertion of arterial catheters	D	W	M	Y	N
Pericardiocentesis for acute tamponade	D	W	M	Y	N
Dynamic electrocardiogram interpretation	D	W	M	Y	N
Transcutaneous pacing	D	W	M	Y	N
Elective Cardioversion	D	W	M	Y	N
Defibrillation	D	W	M	Y	N

10. After seeing what is expected from you in your present clinical situation, what would you request from the critical care attendings if you could do the one month second year resident PICU rotation at Alfred I. duPont Hospital for Children over again?

11. What additional course work or practicums have you taken that address pediatric critical care competencies?

Thank you for your time and cooperation.

Please forward your responses in the self addressed stamped envelope to:

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