

# Pediatric Critical Care Medicine Fellowship Training Program

**Goals and Objectives**  
**Version Date: 11/15/2018**

*“Our goal is to create an environment of collegial scholarship and apprenticeship for trainees in Pediatric Critical Care Medicine that fosters learning and growth for both fellows and faculty. Within this environment, we wish to nurture and promote the development of empathy, respect, professionalism, scholarly inquiry, clinical excellence and effective leadership as traits essential to practitioners of Pediatric Critical Care Medicine.”*



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**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**Table of Contents**

|   |    |
|---|----|
| 1.0 General Considerations .....  | 3  |
| 2.0 Overall Educational Goals.....  | 3  |
| 3.0 ACGME Competencies:.....  | 3  |
| 4.0 Pediatric Cardiac Intensive Care Unit (PCICU), Year 1.....                      | 5  |
| 5.0 Pediatric Intensive Care Unit (PICU), Year 1 .....                              | 9  |
| 6.0 Pediatric Cardiac Intensive Care Unit (PCICU), Year 2.....                      | 13 |
| 7.0 Pediatric Intensive Care Unit (PICU), Year 2 .....                              | 17 |
| 8.0 Pediatric Cardiac Intensive Care Unit (PCICU) Year 3.....                       | 21 |
| 9.0 Pediatric Intensive Care Unit (PICU), Year 3 .....                              | 24 |
| 10.0 Year 1 Anesthesia Rotation .....   | 28 |
| 11.0 Year 2 or 3 Pediatric Emergency Department (PED) Elective .....                | 30 |
| 12.0 Year 2 or 3 Pediatric Emergency Department Transport Elective .....            | 33 |
| 13.0 Year 2 or 3 Procedural Sedation Elective .....                                 | 36 |
| 14.0 Year 3 Procedural Trauma Elective.....   | 39 |
| 15.0 Morbidity and Mortality Conference (Performance Measures and Indicators) ..... | 40 |
| 16.0 PCCM Fellow Case Conference .....  | 42 |
| 17.0 PCCM Education Series.....   | 44 |
| 18.0 PCCM Journal Club .....  | 45 |
| 19.0 Core Curriculum Conference (Dept of Pediatrics) Year 1 .....                   | 47 |

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

## **1.0 General Considerations**

The following document is an educational overview to be used by both fellows and faculty as a guide in progressing through the course of the Pediatric Critical Care fellowship training program. While not inclusive, nor designed to be followed in a rigid manner, this guide sets milestones which we believe are appropriate goals. Please refer to this plan at the beginning of each new rotation to develop a learning plan and set goals to achieve through the course of the rotation. This document will be reviewed and updated as needed.

## **2.0 Overall Educational Goals**

The overarching goal of the Pediatric Critical Care fellowship training program at Vanderbilt University is to train a physician to become competent in the independent practice of pediatric critical care medicine. This requires specialized medical knowledge, procedural skills, leadership training, quality improvement and systems evaluation as well as interpersonal and communication skills. This will be achieved through increasing levels of autonomy and responsibility throughout training, close interaction with the faculty, participation in an education curriculum, and performance assessments throughout the period of training.

## **3.0 ACGME Competencies:**

### **Patient Care:**

*Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

### **Medical Knowledge:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.*

### **Professionalism and Professional Development:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.*

*Fellows are expected to demonstrate:*

- *Compassion, integrity and respect for others*
- *Responsiveness to patient needs that supersedes self-interest*
- *Respect for patient privacy and autonomy*
- *Accountability to patients, society and the profession*
- *Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture race, religion, disabilities and sexual orientation*

### **Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals.*

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

*Fellows are expected to:*

- *Communicate effectively with patients, families and the public as appropriate, access a broad range of socioeconomic and cultural backgrounds*
- *Communicate effectively with physicians, other health professionals and health related agencies.*
- *Work effectively as a member or a leader of a health care team or other professional group.*
- *Act in a consultative role to other physicians and health professionals*
- *Maintain comprehensive, timely and legible medical records, if applicable.*

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.*

*Fellows are expected to:*

- *Work effectively in various health care delivery settings and systems relevant to their clinical specialty*
- *Coordinate patient care within the health care system relevant to their clinical specialty*
- *Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate*
- *Advocate for quality patient care and optimal patient care systems*
- *Work in inter-professional teams to enhance patient safety and improve patient care quality*
- *Participate in identifying system errors and implementing potential systems solutions*

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.*

*Fellows are expected to develop skills and habits to be able to meet the following goals:*

- *Identify strengths, deficiencies and limits in one's knowledge and expertise*
- *Set learning and improvement goals*
- *Identify and perform appropriate leaning activities*
- *Systematically analyze practice using quality improvement methods and implement changes with the goal of practice improvement.*
- *Incorporate formative evaluation feedback into daily practice*
- *Locate, appraise and assimilate evidence from scientific studies related to their patient's health problems.*
- *Use information technology to optimize learning*
- *Participate in the education of patients, families, students, fellows and other health professionals*

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**ROTATION**

**4.0 Pediatric Cardiac Intensive Care Unit (PCICU), Year 1**

**Faculty:**

Pediatric Critical Care Medicine Faculty, Pediatric Cardiology, Pediatric Cardiac Anesthesia, Pediatric Cardiothoracic Surgery Faculty

**Goals:**

This rotation is designed to introduce the PGY4 fellow to the immediate postoperative care of the child with congenital heart disease and the ongoing care of those children with complex congenital heart disease.

**Format:**

Clinical rotation.

- PCICU Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
  - Initial week: The fellow will be paired with a senior fellow for the first week to learn the daily work flow of care in the PCICU.
  - Final weeks: The fellow will begin in the role of the supervisor for the cardiac ICU and will be supervising care provided by advanced practitioners, residents and students in the cardiac ICU.
- PCICU Night Service: Typically 6 nights of clinical service as the primary fellow responsible for patient care.
- Cardiac Anesthesia/Cardiac OR: 1 week of 5 days in the operative suite and cath suite with both cardiac anesthesia and cardiothoracic surgery faculty.
  - The fellow will be paired with anesthesia for the preoperative evaluation and initial anesthetic induction and preparation for surgery.
  - Intraoperatively the fellow will flow between anesthesia team, perfusion team and surgical team learning about the intraoperative management and surgical technique for repair or palliation of the cardiac lesion.
  - The fellow will remain with the anesthesia team and patient through the immediate post-operative period and assist in the transport of the patient to the ICU and handover.

**OBJECTIVES:**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PCICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY4**

- Perform the initial resuscitation of a patient with cardiac disease including post-operative

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

care.

- Perform basic procedures listed below

**Anatomy:**

- Be able to identify the structures of the fetal, newborn and child heart as well as relevant circulatory structures

**Physiology:**

- Describe the physiologic adaptation of each major organ system in the child with congenital heart disease

**Cardiac Physiology:**

- Demonstrate appropriate interpretation of blood flow in each child with congenital heart disease as well as basic interpretation of the results of arterial and venous blood gases as well as hemodynamic monitoring
- Demonstrate understanding of ECMO support for cardiorespiratory support as well as familiarity with indications and complications

**Postoperative Care:**

- Be able to describe the normal postoperative course and common complications in children with congenital heart disease

**Electrophysiology:**

- Recognize and treat common cardiac arrhythmias

**Pharmacology:**

- Understand the mechanisms and indications for common medications used in the pediatric cardiac intensive care unit

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Adjustment of temporary pacemaker
6. ECMO Management.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Take a complete but concise general medical history and effectively communicate the history, presentation and care plan to members of the healthcare team.
  - This includes presenting patients on morning surgical rounds as well as the pre-operative case review each morning.
- Develop and maintain a therapeutic relationship with patients by appreciating the need for

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- ongoing communication with parents and the patient throughout the hospital course.
- Communicate effectively with family members and the patient being mindful of the broad range of socioeconomic and cultural backgrounds that our patients come from.
- Identify emotional concerns of patients and communicate this to the team.
- Work effectively as a member or leader of a health care team keeping all members apprised of progress or seeking assistance as soon as it become necessary.
- Maintain comprehensive and timely medical records.
- Obtain informed consent for basic procedures.
- Communicate effectively with consulting physicians.
- Understand the basic elements of effective delivery of bad news and end of life discussions.
- Perform nighttime “work rounds” in the PCICU as team leader.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information
- Acts respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient’s needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become familiar with the abilities and scope of practice of the many care providers working with PCICU patients.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and suggesting potential solutions.
- Arrange and manage inter-unit patient transfers including effective exchange of information.
- Understand basic patient safety, outcomes and quality of care data presented at PM&I.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify at least one strength, deficiency, and limit in knowledge and expertise after each rotation.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Set at least one learning and improvement goal in a learning plan.
- Demonstrate interest and receptiveness to feedback and use this to improve the quality of care rendered to patients.
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the PCICU.
- Participate in the education of patients, families, students, residents and staff members.
- Utilize information from textbooks, practice guidelines and resuscitation programs in the care of patients.

**Resources:**

- Chang, Pediatric Cardiac Intensive Care
- ECMO: Extracorporeal Cardiopulmonary Support in Critical Care
- Nichols, Critical Heart Disease in Infants and Children
- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)
- PALS

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**ROTATION**

## **5.0 Pediatric Intensive Care Unit (PICU), Year 1**

**Faculty:**

Pediatric Critical Care Medicine Faculty

**Goals:**

This rotation is designed to introduce the PGY4 fellow to the care of the critically ill child. During this rotation, the PGY4 fellow will be introduced to a variety of medical and surgical diseases and will learn how to evaluate a critically ill patient. The PGY4 fellow will also be responsible for assisting in bed management within the Critical Care Unit. In addition, the PGY4 fellow will respond to consults, outside hospital transfers, and Rapid Response evaluations.

**Format:**

Clinical rotation.

- Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
- Night Service: Typically 6 nights of clinical service as the primary fellow responsible for patient care.

**OBJECTIVES:**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY4**

Recognition and Evaluation of Critical Illness:

- Be able to identify the critically ill patient via clinical and laboratory examination
- Be able to recognize early and late signs of cardiorespiratory compromise
- Be able to recognize early and late signs of shock
- Be proficient in advanced resuscitation guidelines (BLS, PALS)
- Become proficient at the initial resuscitation from cardiorespiratory compromise/shock for all patients admitted to the PICU.

Perform basic procedures listed below.

**Anatomy:**

- Be able to delineate the anatomy of the pediatric airway and recognize differences between the pediatric and adult airway
- Be able to recognize the difficult airway
- Be proficient with peripheral vascular anatomy for catheterization
- Be familiar with the use of portable ultrasound, particularly for the use of vascular access

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

**Physiology:**

- Describe normal and abnormal respiratory physiology as well as the basics of mechanical ventilation and noninvasive positive pressure ventilation
- Describe physiologic effect of shock on end organ systems
- Describe basic pathophysiology of medical and surgical diseases in critically ill patients, including, but not limited to status asthmaticus, diabetic ketoacidosis, status epilepticus, multisystem trauma, acute respiratory distress syndrome, pneumonia, toxicology, sepsis, and shock
- Describe various methods of invasive and noninvasive patient monitoring

**Pharmacology:**

- Understand the mechanism of action for common medications used in the pediatric critical care unit
- Understand the mechanisms of action of inotropic and vasoactive medications
- Understand the mechanisms of action of sedation medications

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Adjustment of temporary pacemaker
6. ECMO Management.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Take a complete but concise general medical history and effectively communicate the history, presentation and care plan to members of the healthcare team.
- Develop and maintain a therapeutic relationship with patients by appreciating the need for ongoing communication with parents and the patient throughout the hospital course.
- Communicate effectively with family members and the patient being mindful of the broad range of socioeconomic and cultural backgrounds that our patients come from.
- Identifies emotional concerns of patients and communicates this to the team
- Work effectively as a member or leader of a health care team keeping them apprised of progress or seeking assistance as soon as it become necessary.
- Maintain comprehensive and timely medical records.
- Obtain informed consent for basic procedures.
- Communicate effectively with consulting physicians.
- Understand the basic elements of effective delivery of bad news and end of life discussions.
- Perform nighttime “work rounds” in the PICU as team leader.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence*

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

*to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information
- Acts respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient's needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become familiar with the abilities and scope of practice of the many care providers working with PCICU patients.
- Work in interprofessional teams to enhance patient safety and improve patient care quality.
- Participate in identifying system errors and suggesting potential solutions.
- Arrange and manage inter-unit patient transfers including effective exchange of information.
- Understand basic patient safety, outcomes and quality of care data presented at PM&I.
- Assist in bed management and patient flow within the critical care unit

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify at least one strength, deficiency, and limit in knowledge and expertise when meeting with the faculty mentor at the end of the rotation.
- Set at least one learning and improvement goal in a learning plan.
- Demonstrate interest and receptiveness to feedback and use this to improve the quality of care rendered to patients.
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the pediatric critical care unit.
- Participate in the education of patients, families, students, residents and staff members.
- Utilize information from textbooks, practice guidelines and resuscitation programs in the care of patients.

**Recommended Materials:**

- Rogers: Textbook of Pediatric Intensive Care
- Fuhrman: Pediatric Critical Care
- West: Respiratory Physiology-the essentials.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Pediatric Advanced Life Support – American Heart Association
- Advanced Trauma Life Support – American Heart Association
- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES  
ROTATION**

## **6.0 Pediatric Cardiac Intensive Care Unit (PCICU), Year 2**

**Faculty:**

Pediatric Cardiac Intensivists, Pediatric Cardiology, Pediatric Cardiac Anesthesia

**Goals:**

This rotation is designed to further the exposure of the fellows to management of immediate postoperative care of the child with congenital heart disease as well as the chronic management of complex congenital heart disease. Additionally, at this level the fellows will be responsible for the triaging of patients to and from the pediatric cardiac ICU. The PGY5 fellow will be involved in more complicated cardiac procedures, and will be expected to assume a higher level of team leadership in daily multidisciplinary team rounds.

**Format:**

Clinical rotation.

- Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
- Night Service: Typically 6 nights of clinical service as the primary fellow responsible for patient care.

### **OBJECTIVES**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PCICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY5**

- Ability to manage an entire PCICU course of a simple patient from admission to discharge. (e.g. uncomplicated VSD, ASD, Coarctation)
- Advanced airway and procedural skills.

**Anatomy:**

- Be able to identify the structures of the fetal, newborn and child heart as well as relevant circulatory structures

**Physiology:**

- Describe the physiologic adaptation of each major organ system in the child with congenital heart disease
- Develop a deeper understanding of ECMO for cardiorespiratory support, including indications, contraindications, cannulation, decannulation and troubleshooting.

**Cardiac Physiology:**

- Demonstrate appropriate interpretation of blood flow in each child with congenital heart

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

disease as well as basic interpretation of the results of arterial and venous blood gases as well as hemodynamic monitoring

**Postoperative Care:**

- Be able to describe the normal postoperative course and common complications in children with congenital heart disease

**Electrophysiology:**

- Recognize and treat common cardiac arrhythmias

**Pharmacology:**

- Understand the mechanisms and indications for common medications used in the pediatric cardiac intensive care unit

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Adjustment of temporary pacemaker
6. ECMO Management.

**Interpersonal and Communication skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Perform assessments of the patients, formulate a care plan and communicate to members of the health care team, the patient and her family and to appropriate caregivers.
- Keep patients, families and care team apprised of patient's progress and any necessary change in plan.
- Establishing trust with the patient and family as a more senior member of the team.
- Uses language appropriate to the situation
- Explain benefits and risks of treatment
- Lead the PCICU team in daily rounds
- Address patient/family concerns and grievances
- Provide leadership for nursing/unit concerns of limited scope.
- Lead end of life discussions

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to diverse patient population. Fellows are expected to:*

- Assure that the patient's needs are key concerns of the healthcare team in a culturally sensitive manner.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Maintain patient's or parents' autonomy in decision-making when appropriate
- Demonstrate compassion and sensitivity when participating in discussions regarding withdrawal of care.
- Be aware of one's own beliefs, values and practices when dealing with patients who come from different backgrounds.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in the role of a consultant to outside services.
- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors rotation and suggest potential solutions.
- Define the "system" of care for the patient by drawing a simple flowchart of the processes and how the team members add value to this care.
- Identify systems based unit issues during PM&I conferences
- Participate in a quality improvement project as part of a committee.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to refine their skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise when meeting with the faculty mentor at the end of the rotation.
- Set several learning and improvement goals in a learning plan.
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the pediatric cardiac intensive care unit.
- Participate in the education of patients, families, students, residents and staff members.
- Perform literature review to determine "state of the art" medical practice within the PCICU.
- Specific supervision of the team including advanced nurse practitioners, visiting students and PGY 4 PCCM fellows.

**Recommended Materials:**

- Chang, Pediatric Cardiac Intensive Care
- ECMO: Extracorporeal Cardiopulmonary Support in Critical Care
- Nichols, Critical Heart Disease in Infants and Children
- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)
- PALS



**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES  
ROTATION**

## **7.0 Pediatric Intensive Care Unit (PICU), Year 2**

**Faculty:**

Pediatric Critical Care Medicine Faculty

**Goals:**

This rotation is designed to further the PGY5 fellow's understanding of the critically ill child. During this rotation, the PGY5 fellow will have further exposure to a variety of medical and surgical diseases with an emphasis on establishing plans for diagnosis and treatment. The PGY5 fellow will also take a more active role for assisting with bed management within the Critical Care Unit. In addition, the PGY5 fellow will respond to consults, outside hospital transfers, and Rapid Response evaluations. Finally, the PGY5 fellow will have increased responsibility for the overall care of patients including daily team rounds when appropriate.

**Format:**

Clinical rotation.

- Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
- Night Service: Typically 6 of 7 nights of clinical service as the primary fellow responsible for patient care.

**OBJECTIVES:**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY5**

Care of the Critically Ill Patient:

- Be able to formulate appropriate diagnostic plans for the complex critically ill patient
- Be able to formulate appropriate therapeutic plans for the complex critically ill patient
- Manage the entire PICU course for a simple patient with limited single organ disease.

**Anatomy:**

- Be familiar with basic principles and interpretation of diagnostic medical imaging
- Be familiar with the use of portable ultrasound for the purposes of rapid assessment and diagnosis, particularly for the use of vascular access
- Further understand the use of and indication for advanced airway techniques

**Physiology:**

- Describe appropriate use and physiology of extracorporeal support of organ function
- Describe the appropriate use of and interpretation of invasive and non-invasive patient monitoring

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Describe the use and indications for non-conventional mechanical ventilation
- Increase understanding of pathophysiology of medical and surgical diseases in critically ill patients

**Pharmacology:**

- Understand the indications and appropriate use of common medications used in the pediatric critical care unit
- Understand the indications and appropriate use of inotropic and vasoactive medications
- Understand the indications and appropriate use of sedation medications in various clinical scenarios
- Become competent in deep sedation techniques and protocols

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Adjustment of temporary pacemaker
6. ECMO Management.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Become proficient with overseeing a larger group of patients through appropriate delegation of assignments to junior fellows and residents.
- Develop excellent communication skills and be responsible for coordinating patient care among several groups including students, junior residents and nursing staff
- Conduct organized and efficient rounds.
- Develop and maintain a therapeutic relationship with patients by appreciating the need for ongoing communication with parents and the patient throughout the hospital course.
- Communicate effectively with family members and the patient being mindful of the broad range of socioeconomic and cultural backgrounds that our patients come from.
- Identifies emotional concerns of patients and communicates this to the team
- Work effectively as a member or leader of a health care team keeping them apprised of progress or seeking assistance as soon as it become necessary.
- Address patient/family concerns and grievances
- Provide leadership for nursing/unit concerns of limited scope.
- Lead end of life discussions

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Acts respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient's needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Be knowledgeable and responsible for the care of all patients on the service, yet will allow the more junior fellows manage the patients as they are able.
- Become competent in the role of a consultant to outside services.
- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors rotation and suggest potential solutions.
- Define the "system" of care for the patient and how the team members add value to this care.
- Take the lead in educating patients, families, staff and students.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise when meeting with the faculty mentor at the end of the rotation.
- Set several learning and improvement goals in a learning plan.
- Actively seek feedback to improve the quality of care rendered to patients
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Critically assess skill and knowledge base and make practice- and evaluation-based improvements on an ongoing basis
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the pediatric cardiac intensive care unit.
- Participate in the education of patients, families, students, residents and staff members.
- Perform literature review to determine "state of the art" medical practice within the PICU.
- Specific supervision of Advanced nurse practitioners and PGY 4 PCCM Fellows.

**Recommended Materials:**

- Rogers: Textbook of Pediatric Intensive Care
- Fuhrman: Pediatric Critical Care
- West: Respiratory Physiology-the essentials.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Pediatric Advanced Life Support – American Heart Association
- Advanced Trauma Life Support – American Heart Association
- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES  
ROTATION**

## **8.0 Pediatric Cardiac Intensive Care Unit (PCICU) Year 3**

**Faculty:**

Pediatric Cardiac Intensivists, Pediatric Cardiology

**Goals:**

This rotation is designed to further the exposure of the fellows to management of immediate postoperative care of the child with congenital heart disease as well as the chronic management of complex congenital heart disease. Additionally, at this level the fellows will be responsible for a higher level of team leadership within the PCICU, including patient care, unit workflow and communication within the multidisciplinary team.

**Format:**

Clinical rotation.

- Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
- Night Service: Typically 6 nights of clinical service as the primary fellow responsible for patient care.

### **OBJECTIVES**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PCICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY6**

- Independent management of complex cardiac disease
- Management of complex patients with multi-system disease
- Troubleshoot and manage complicated procedures and their complications in a supervisory role.

**Anatomy:**

- Be able to identify the structures of the fetal, newborn and child heart as well as relevant circulatory structures

**Physiology:**

- Describe the physiologic adaptation of each major organ system in the child with congenital heart disease
- Develop a deeper understanding of ECMO for cardiorespiratory support, including indications, contraindications, cannulation, decannulation and troubleshooting.

**Cardiac Physiology:**

- Demonstrate appropriate interpretation of blood flow in each child with congenital heart

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

disease as well as basic interpretation of the results of arterial and venous blood gases as well as hemodynamic monitoring

**Postoperative Care:**

- Be able to describe the normal postoperative course and common complications in children with congenital heart disease

**Electrophysiology:**

- Recognize and treat common cardiac arrhythmias

**Pharmacology:**

- Understand the mechanisms and indications for common medications used in the pediatric cardiac intensive care unit

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Adjustment of temporary pacemaker
6. ECMO Management.

**Interpersonal and Communication skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Perform assessments of the patients, formulate a care plan and communicate to members of the health care team, the patient and her family and to appropriate caregivers.
- Keep patients, families and care team apprised of patient's progress and any necessary change in plan.
- Establishing trust with the patient and family as a more senior member of the team.
- Uses language appropriate to the situation
- Explain benefits and risks of treatment
- Anticipate potential communication and teamwork issues and implement a strategy to avoid/alleviate concerns
- Assume a leadership role in the management of complex ethical and social issues within the PCICU.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to diverse patient population. Fellows are expected to:*

- Assure that the patient's needs are key concerns of the healthcare team in a culturally sensitive manner.

## Critical Care Fellowship

### EDUCATIONAL GOALS AND OBJECTIVES

- Maintain patient's or parents' autonomy in decision-making when appropriate
- Demonstrate compassion and sensitivity when participating in discussions regarding withdrawal of care.
- Be aware of one's own beliefs, values and practices when dealing with patients who are different from our own.

#### **Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in the role of a consultant to outside services.
- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors rotation and suggest potential solutions.
- Define the "system" of care for the patient. E.g. by drawing a simple flowchart of the processes and how the team members add value to this care.
- Lead a quality improvement project through committee participation and implement changes.

#### **Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to refine their skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise when meeting with the faculty mentor at the end of the rotation.
- Set several learning and improvement goals in a learning plan.
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the pediatric cardiac intensive care unit.
- Participate in the education of patients, families, students, residents and staff members.
- Specific supervision of advanced nurse practitioners and PGY 4 PCCM Fellows.
- Utilize the literature to plan and evaluate for the care of patients with rare and complex medical conditions.

#### **Recommended Materials:**

- Chang, Pediatric Cardiac Intensive Care
- ECMO: Extracorporeal Cardiopulmonary Support in Critical Care
- Nichols, Critical Heart Disease in Infants and Children
- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)
- PALS

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**ROTATION**

## **9.0 Pediatric Intensive Care Unit (PICU), Year 3**

**Faculty:**

Pediatric Critical Care Medicine Faculty.

**Goals:**

This rotation is designed to further the PGY6 fellow's understanding of the critically ill child. During this rotation, the PGY6 fellow will have further exposure to a variety of medical and surgical diseases with an emphasis on independent care of the entire PICU course for the majority of patients. The PGY6 fellow will also take a more active role for assisting with bed management within the Critical Care Unit. In addition, the PGY6 fellow will respond to consults, outside hospital transfers, and Rapid Response evaluations. Additionally, at this level the fellows will be responsible for a higher level of team leadership within the PICU, including patient care, unit workflow and communication within the multidisciplinary team.

**Format:**

Clinical rotation.

- Daytime Service: Typically 7 days of clinical service as the primary fellow responsible for patient care.
- Night Service: Typically 6 of 7 nights of clinical service as the primary fellow responsible for patient care.

**OBJECTIVES:**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

**General: Specific to PGY6**

- Independent management of critical illness
- Management of complex patients with multi-system disease
- Troubleshoot and manage complicated procedures and their complications in a supervisory role.

**Anatomy:**

- Be familiar with basic principles and interpretation of diagnostic medical imaging
- Be familiar with the use of portable ultrasound for the purposes of rapid assessment and diagnosis, particularly for the use of vascular access
- Further understand the use of and indication for advanced airway techniques

**Physiology:**

- Describe appropriate use and physiology of extracorporeal support of organ function
- Describe the appropriate use of and interpretation of invasive and non-invasive patient

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

monitoring

- Describe the use and indications for non-conventional mechanical ventilation
- Increase understanding of pathophysiology of medical and surgical diseases in critically ill patients

**Pharmacology:**

- Understand the indications and appropriate use of common medications used in the pediatric critical care unit
- Understand the indications and appropriate use of inotropic and vasoactive medications
- Understand the indications and appropriate use of sedation medications in various clinical scenarios
- Become competent in deep sedation techniques and protocols

**Procedures:**

1. Central Venous Line Placement
2. Arterial Line Placement
3. Endotracheal Intubation
4. Chest Tube Placement
5. Evacuation of chest tube
6. Adjustment of temporary pacemaker
7. ECMO Management.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Perform assessments of the patients, formulate a care plan and communicate to members of the health care team, the patient and her family and to appropriate caregivers.
- Keep patients, families and care team apprised of patient's progress and any necessary change in plan.
- Establishing trust with the patient and family as a more senior member of the team.
- Uses language appropriate to the situation
- Explain benefits and risks of treatment
- Anticipate potential communication and teamwork issues and implement a strategy to avoid/alleviate concerns
- Assume a leadership role in the management of complex ethical and social issues within the PICU.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information
- Acts respectfully toward all members of the healthcare team.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient's needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in the role of a consultant to outside services.
- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors rotation and suggest potential solutions.
- Define the "system" of care for the patient. E.g. by drawing a simple flowchart of the processes and how the team members add value to this care.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise when meeting with the faculty mentor at the end of the rotation.
- Set several learning and improvement goals in a learning plan.
- Actively seek feedback to improve the quality of care rendered to patients
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Critically assess skill and knowledge base and make practice- and evaluation-based improvements on an ongoing basis
- Use information technology to locate, appraise and assimilate evidence from scientific studies related to the patient in the pediatric cardiac intensive care unit.
- Participate in the education of patients, families, students, residents and staff members.
- Specific supervision of advanced nurse practitioners and PGY 4 PCCM Fellows.
- Utilize the literature to plan and evaluate for the care of patients with rare and complex medical conditions.

**Recommended Materials:**

- Rogers: Textbook of Pediatric Intensive Care
- Fuhrman: Pediatric Critical Care
- West: Respiratory Physiology-the essentials.
- Pediatric Advanced Life Support – American Heart Association
- Advanced Trauma Life Support – American Heart Association

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- BOX Electronic Repository:  
[https://vanderbilt.app.box.com/files/0/f/3633182383/PICU\\_Fellowship\\_Share](https://vanderbilt.app.box.com/files/0/f/3633182383/PICU_Fellowship_Share)

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation:**

## **10.0 Year 1 Anesthesia Rotation**

**Faculty:**

Pediatric Anesthesia, Pediatric CRNA

**Goal:**

The goal of this rotation is to provide PCCM Fellows with the basic skills of airway management and anesthetic induction.

**ACGME Competencies:**

The learning objectives and performance assessments for this rotation are appropriately categorized as

- Patient Care
- Medical Knowledge
- Practice Based Learning and Improvement

**Objectives:** At the end of this rotation, PCCM Fellows will be able to:

1. Apply routine physiologic monitoring devices and interpret results
2. Prepare necessary pharmacologic agents for intravenous induction of general anesthesia
3. Induce general anesthesia via intravenous agents
4. Perform positive pressure ventilation via mask
5. Placement of oral and nasogastric tubes
6. Direct laryngoscopy with endotracheal intubation
7. Place Laryngeal Mask Airway
8. Support a patient through emergence from general anesthesia

**Format:**

- Didactic lectures during “Boot Camp”
- Bedside hands on learning in O.R.

**Performance Evaluation:**

- Progression towards achieving objectives of the rotation will be assessed using direct observation checklist competencies using the adapted Live Performance Competency Assessments.
- These LPCA’s will be utilized to guide the learner towards the desired objective as well as provide a framework for self-assessment during the process.
- Individual check lists are available for download from BOX.

LPCA: The following information reflects modification of a curriculum designed by Dr Richardson in the department of anesthesia.

This educational rotation will be driven by specific skill attainment and assessment objectives as outlined below in each individual skill competency checklist. These checklists will provide the learner with self-assessment tools and educational objectives, while providing faculty preceptors guidelines for educational content during the rotation. The learner is expected to attain and practice these skills throughout the initial two weeks of anesthesia rotation through didactic lectures during boot camp, bedside discussion and hands on learning from CRNA and faculty preceptors. The learner will then be assessed for competency using these checklists by a faculty preceptor.

**LPCA Skill Sets** (see individual LPCA documents for detailed objectives and performance criteria)

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

Available: [https://vanderbilt.app.box.com/files/0/f/3907291547/Anesthesia\\_Rotation\\_Documents](https://vanderbilt.app.box.com/files/0/f/3907291547/Anesthesia_Rotation_Documents)

1. **Routine Anesthetic Monitors** – Resident must demonstrate ability to place routine monitors before induction of anesthesia, and obtain baseline physiologic data. Resident must also demonstrate understanding of monitor system and its capabilities by scrolling through various screens.
2. **Complete Work Station Set-up** – Resident should demonstrate ability by performing complete work station set-up, **including IV Set up** (IV Fluid, Extension tubing, stopcock, blood warmer).
3. **Basic IV Anesthetic Drug Preparation** – Resident prepares and places on workstation all the drugs needed to begin a routine case (pre-med, opioid, hypnotic induction agent, neuromuscular blocker, emergency drugs [pressors]). Resident demonstrates sterile technique, speed, personal safety while drawing up drugs.
4. **Pre-Anesthetic Evaluation / Discussion** – Resident performs pre-anesthetic assessment, incl. gathering data from patient’s preop packet (including VPEC pre-op evaluation), chart / Star Chart; targeted physical exam(including complete airway exam); verification of procedure and consent; discussion of anesthetic plan; conducts patient “sign out” with holding room nurse.
5. **Mask Airway Management after Induction of GA** – Resident performs effective mask ventilation, and assessment of adequate ventilation.
6. **Direct Laryngoscopy / Tracheal Tube Placement / Mechanical Ventilation** – Resident performs direct laryngoscopy, ETT placement, and initiates mechanical ventilation.
7. **IV Induction** – Resident performs induction of general anesthesia
8. **Laryngeal Mask Airway** – Residents demonstrate proficiency in selecting appropriate patients & cases, insertion & removal procedures, and troubleshooting LMA malposition.

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation:**

**11.0 Year 2 or 3 Pediatric Emergency Department (PED) Elective**

**Faculty:**

Pediatric Emergency Medicine

**Goal:**

The goal of this rotation is to provide PCCM Fellows with a broader understanding of the role of the PED within the hospital/healthcare system as well as its interaction with the PCCU. Additionally, to provide PCCM Fellows with exposure to identification and stabilization of critically ill patients in the pre-ICU setting.

**Format:**

- Bedside hands on learning in PED
- PED Divisional Didactic learning sessions.

**Performance Evaluation:**

- Progression towards achieving objectives of the rotation will be assessed using direct observation evaluation.

**ACGME Competencies:**

The learning objectives and performance assessments for this rotation are appropriately categorized as

- Patient Care
- Medical Knowledge
- Practice Based Learning and Improvement
- Systems Based Practice

**Objectives:** At the end of this rotation, PCCM Fellows will be able to:

1. Provide initial evaluation and resuscitation for critically ill patients in the PED
2. Perform the initial assessment and stabilization of the traumatized child utilizing ATLS systems.
3. Describe the role of the PED in the initial identification and stabilization of critically ill patients.
4. Provide phone/radio medical supervision for EMS/patient transport system.
5. Describe barriers to effective interpersonal communication and coordinated care between departments within the hospital.
6. Identify and describe patient management strategies that differ significantly between the PED and PICU, and understand the pathophysiological, systems or care location etiology for this difference in practice.

**Medical Knowledge and Patient Care:**

*Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU. Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- Perform initial evaluation and resuscitation of critically ill patients in the pre-ICU setting
- Perform initial evaluation and resuscitation of traumatized patients using the ATLS system.
- Provide appropriate triage and medical direction as the “Med-Comm” for emergency patient transport systems.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Appropriately access technology and sub-specialty expertise in the evaluation and management of critically ill patients in the pre-ICU setting.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Perform assessments of the patients, formulate a care plan and communicate to members of the health care team, the patient and her family and to appropriate caregivers.
- Keep patients, families and care team apprised of patient's progress and any necessary change in plan.
- Anticipate potential communication and teamwork issues and implement a strategy to avoid/alleviate concerns between areas of the hospital.
- Assume a leadership role in the management of complex ethical and social issues within the PEM.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information
- Act respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient's needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.
- Maintain a patient-centered professional interaction with multiple members of the healthcare team including EMS personnel, bedside RN, PEM faculty and trainees, and consulting/receiving services outside the PEM.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in the role of a consultant to outside services.
- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors during the rotation and suggest potential solutions.

**Practice Based Learning and Improvement:**

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise especially as it relates to the initial evaluation and resuscitation of critically ill patients in the pre-ICU setting.
- Actively seek feedback to improve the quality of care rendered to patients
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Critically assess skill and knowledge base and make practice- and evaluation-based improvements on an ongoing basis
- Participate in the education of patients, families, students, residents and staff members.
- Utilize the literature to plan and evaluate for the care of patients with rare and complex medical conditions.

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation:**

**12.0 Year 2 or 3 Pediatric Emergency Department Transport Elective**

**Faculty:**

Pediatric Emergency Medicine

**Goal:**

The goal of this rotation is to provide PCCM Fellows with a broader understanding of the transport systems utilized to provide pre-hospital and inter-hospital care for patients. Through this experience, fellows will gain understanding of the capabilities and limitations of the Emergency Medical Services (EMS) system as it applies to children as well as to understand the role of the EMS director and EMS communications.

**Format:**

- Hands-on learning for pre-hospital communication
- Hands-on learning in the field with pre-hospital care as deemed necessary by rotation faculty
- PED quality improvement conferences and divisional educational conferences

**Performance Evaluation:**

- Progression towards achieving objectives of the rotation will be assessed using direct observation evaluation.

**ACGME Competencies:**

The learning objectives and performance assessments for this rotation are appropriately categorized as

- Patient Care
- Medical Knowledge
- Practice Based Learning and Improvement
- Systems Based Practice

**Objectives:** At the end of this rotation, PCCM Fellows will be able to:

1. Understand pre-hospital care environments
2. Understand the capabilities and limitations of the EMS system in resuscitation management of critically ill children
3. Understand the ethical and legal aspects of care in the pre-hospital setting
4. Provide phone/radio medical supervision for EMS/Patient transport systems
5. Become facile with the capabilities and restrictions of the pre-hospital environment
6. Be able to provide initial BLS and stabilization techniques in the field

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU. Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- Perform initial evaluation and assist in resuscitation of critically ill patients in the pre-

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

hospital setting.

- Perform initial evaluation and assist in resuscitation of trauma patients in the pre-hospital setting.
- Provide appropriate triage and medical direction as the “Med-Comm” for emergency patient transport systems.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Assist in communicating with patients and their families regarding their pre-hospital assessment and EMS treatment plan.
- Keep patients, families and care team apprised of patient’s progress and any necessary change in plan.
- Anticipate potential communication and teamwork issues
- Understand the standards of behavior for management of pre-hospital transports established Vanderbilt University Medical Center

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information.
- Act respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in the field setting especially in times of stress.
- Maintain responsiveness to patient’s needs being mindful of their ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to all calls, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.
- Maintain a patient-centered professional interaction with multiple members of the healthcare team including EMS personnel, bedside nurses, and Pediatric Emergency Medicine faculty and trainees.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in understanding the capabilities and limitations of pre-hospital care
- Understand the skills and abilities of the many providers that provide initial stabilization for patients in the pre-hospital setting

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Participate in identifying personal and system errors during the rotation and suggest potential solutions.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise especially as it relates to the initial evaluation and resuscitation of critically ill patients in the pre-hospital setting.
- Actively seek feedback to improve the quality of care rendered to patients.
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty.
- Critically assess skill and knowledge base and make practice- and evaluation-based improvements on an ongoing basis.
- Participate in the education of patients, families, students and staff members.

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation:**

**13.0 Year 2 or 3 Procedural Sedation Elective**

**Faculty:**

Pediatric Critical Care Medicine

**Goal:**

The goal of this rotation is to provide PCCM Fellows with a broader understanding of the role and practice of procedural sedation within the hospital/healthcare system as well as provide hands-on experience in the practice of procedural sedation.

**Format:**

- Bedside hands on learning in Special Procedures Sedation Suite
- Deep Sedation Learning Module.

**Performance Evaluation:**

- PCCM fellow must achieve a passing score on the Procedural Sedation learning module.
- Progression towards achieving objectives of the rotation will be assessed using direct observation evaluation.

**ACGME Competencies:**

The learning objectives and performance assessments for this rotation are appropriately categorized as

- Patient Care
- Medical Knowledge
- Practice Based Learning and Improvement
- Systems Based Practice

**Objectives:** At the end of this rotation, PCCM Fellows will be able to:

1. Identify appropriate patients for procedural sedation, including listing and identifying contraindications.
2. Provide initial evaluation and history specific to procedural sedation.
3. Perform the airway assessment and ASA classification for procedural sedation.
4. Perform the steps of informed consent related to procedural sedation.
5. Identify an appropriate sedation regimen and plan for the intended procedure.
6. Perform deep procedural sedation with direct observation.
7. Recognize and provide appropriate intervention for the complications of deep procedural sedation.
8. Provide an appropriate medical handover to the post anesthesia care unit regarding the patient and procedure.

**Medical Knowledge and Patient Care:**

*Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the PICU.*

*Residents must be able to provide patient care that is compassionate, appropriate and effective for the*

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

*treatment of health problems and the promotion of health.*

- Perform initial evaluation and history of patients presenting for procedural sedation.
- Perform initial an airway evaluation and ASA classification for procedural sedation.
- Know and identify the major and minor contraindications to procedural sedation.
- Appropriately communicate with family and other providers regarding the risks, benefits and complications for procedural sedation.
- Understand, and apply in the care of the patient, the pharmacokinetics of sedative and analgesic drugs in the procedural sedation suite.
- Identify, recognize and manage complications of procedural sedation.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Fellows are expected to:*

- Perform assessments of the patients, formulate a care plan and communicate to members of the health care team, the patient and her family and to appropriate caregivers.
- Keep patients, families and care team apprised of patient's progress and any necessary change in plan.
- Anticipate potential communication and teamwork issues and implement a strategy to avoid/alleviate concerns between areas of the hospital.
- Assume a leadership role in the management of patients presenting for procedural sedation.

**Professionalism:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles and sensitivity to a diverse patient population. Fellows are expected to demonstrate:*

- Show respect for privacy and confidentiality of all patient information
- Act respectfully toward all members of the healthcare team.
- Demonstrate compassion and sensitivity in an acute care setting especially in times of stress.
- Maintain responsiveness to patient's needs being mindful of her ethnic, cultural and social needs.
- Develop and maintain an excellent work ethic by being prompt to respond to calls/pages, answering questions in a respectful and appropriate manner and seeking advice from all team members when in doubt of correct action.
- Maintain a patient-centered professional interaction with multiple members of the healthcare team including proceduralists, bedside RN, advanced practitioners, and referring services.
- PCCM fellows will document each case of procedural sedation in New Innovations.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

- Become competent in the role of a consultant to outside services requesting procedural sedation.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

- Use the skills of the many care providers when working with patients who require a multidisciplinary approach to their care.
- Participate in identifying personal and system errors during the rotation and suggest potential solutions.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. During this rotation, fellows are expected to begin developing skills and habits to be able to meet the following goals:*

- Identify strengths, deficiencies, and limits in your knowledge and expertise especially as it relates to the initial evaluation, intraoperative and post procedural care of patients presenting for procedural sedation.
- Actively seek feedback to improve the quality of care rendered to patients
- Use feedback to improve the quality of care rendered to patients and discuss this with faculty
- Critically assess skill and knowledge base and make practice- and evaluation-based improvements on an ongoing basis
- Participate in the education of patients, families, students, residents and staff members.
- Utilize the literature to plan and evaluate for the care of patients with rare and complex medical conditions.

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation:**

## **14.0 Year 3 Procedural Trauma Elective**

**Faculty:**

Trauma Surgery/Trauma ICU Faculty

**Goal:**

The goal of this rotation is to provide PCCM Fellows with a broader understanding of the role and practice of adult trauma physicians and to gain extended procedural experience including but not limited to subclavian central venous catheterization.

**Format:**

- Bedside hands on learning in Trauma ICU
- Both Day and Night participation as a member of the Trauma ICU team.
  - Week 1: Daytime service Monday to Friday 7am to 6pm(handover)
  - Week 2: Monday Daytime, Tuesday Daytime, Wed-Saturday Night 6pm to 7am

**Performance Evaluation:**

- Direct Observation CVL Tool.
- Evaluation by Trauma Faculty for Interpersonal Communication, System Based Practice, and Professionalism.

**ACGME Competencies:**

The learning objectives and performance assessments for this rotation are appropriately categorized as

- Patient Care
- Medical Knowledge
- Interpersonal Communication Skills
- Systems Based Practice
- Professionalism

**Objectives:** At the end of this rotation, PCCM Fellows will be able to:

1. Identify appropriate patients for subclavian central venous catheterization, including listing and identifying contraindications.
2. Perform the steps of informed consent related to central venous catheterization in adults.
3. Perform subclavian central venous catheterization.
4. Describe the medical knowledge and patient care similarities and differences in Pediatric and Adult Trauma care.
5. Communicate effectively with patients, staff and faculty in the Trauma Unit.
6. Evaluate the systems level differences in adult and pediatric trauma care.

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**Rotation**

## **15.0 Morbidity and Mortality Conference (Performance Measures and Indicators)**

**Faculty:**

Pediatric Critical Care Medicine Faculty, Pediatric Cardiology, Pediatric Cardiac Anesthesia, Cardiothoracic Surgery, Nursing leadership, Pharmacy leadership, Bioethics, Infection Control

**Goal:**

Effective, efficient and safe health care delivery requires evaluation of systems errors in medical practice. Resident participation in this conference will provide a framework to acquire skills in the process of systems analysis and modification to prevent and avoid errors and improve health care delivery.

**Objectives:**

**Medical Knowledge and Patient Care:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the critical care unit.*

*Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- The resident will learn through participation to effectively present a patient case to emphasize a systems evaluation.
- The resident will evaluate patient care and medical knowledge from a systems standpoint with respect to morbidity and mortality in patient care.
- The resident will learn through observation and participation to evaluate the role of medical knowledge in systems errors.

**Professionalism and Professional Development:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.*

- The resident will learn through participation to identify, present and discuss ethical issues in complex patient care.
- The resident will learn through observation and participation to discuss systems issues and errors in a professional, respectful and impartial manner.
- The resident will learn through observation and participation to evaluate the role of professionalism in systems errors.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals.*

- The resident will learn through observation and participation to discuss systems issues and errors in a professional, respectful and impartial manner.
- The resident will learn through observation and participation to evaluate the role of communication in systems errors.

**Systems Based Practice:**

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.*

- The resident will learn through observation and participation to evaluate the role of systems based practice in systems errors.
- The resident will learn through observation and participation the process of evaluating practice from a systems level, including identification of points of error.
- The resident will participate in the resolution of systems errors through quality and performance committees which report to this conference.

**Practice Based Learning and Improvement:**

*Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.*

- The resident will learn through observation and participation to evaluate the role of practice based learning and improvement in systems errors.
- The resident will learn through observation and participation how to evaluate one's own practice for sources of error and areas of improvement.
- The resident will utilize current literature to guide evaluation and correction of system level errors.
- The resident will participate in a quality improvement project which will be initiated in discussions in this conference.

**Format:**

Case based conference series at which quality measures, error reporting, patient morbidity and mortality and outcome measures are presented in a group discussion format.

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**Rotation**

## **16.0 PCCM Fellow Case Conference**

**Faculty:**

PCCM Faculty, Pediatric Anesthesia Faculty

**Goals:**

To provide the resident with a clinical case based discussion of the evaluation and management of critically ill patients.

**Format:**

Case based discussion, group setting.

**Objectives:**

**Medical Knowledge:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the critical care unit.*

- The resident will acquire medical knowledge of the evaluation and management of critically ill patients through observation and participation in this conference.

**Patient Care**

*Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- The resident will acquire patient care skills in the evaluation and management of critically ill patients through observation and participation in this conference.

**Professionalism and Professional Development:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.*

- The resident will acquire knowledge and practice of professional attributes through observation and participation in this conference.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals.*

- The resident will acquire knowledge and practice of effective communication and interpersonal skills through observation and participation in this conference.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.*

- The resident will acquire knowledge and practice of the role of ICU practice within the greater

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

healthcare delivery system through observation and participation in this conference.

- The resident will acquire knowledge and practice of resources available for the care of critically ill patients in the complex medical system through observation and participation in this conference.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.*

- The fellow will practice self-evaluation of all ACGME Competencies as evidenced in patient care delivery through observation and participation in this conference.
- Through participation in this conference, residents will create a list of areas for improvement in all ACGME Competencies with respect to patient care.

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**Rotation**

## **17.0 PCCM Education Series**

**Faculty:**

Vanderbilt University School Of Medicine, Department of Pediatrics Faculty

**Goals:**

To provide the resident with the necessary education to augment the bedside clinical experience to facilitate the progression towards board certified independent practice of Pediatric Critical Care Medicine.

**Formats:**

Didactic lectures, small group formats, simulation based learning, group discussion.

**Objectives:**

**Medical Knowledge:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the critical care unit.*

- The resident will acquire medical knowledge relative to the practice of pediatric critical care medicine.

**Patient Care**

*Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- The resident will acquire knowledge about patient care relative to the practice of pediatric critical care medicine.

**Professionalism and Professional Development:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.*

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals.*

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.*

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.*

**Critical Care Fellowship**  
**EDUCATIONAL GOALS AND OBJECTIVES**  
**Rotation**

## **18.0 PCCM Journal Club**

(A subset of the PCCM Education Series Conference)

**Faculty:**

PCCM Faculty, Pediatric Anesthesia Faculty

**Goals:**

To provide the resident with a skill set necessary for evaluation of the medical literature.

**Format:**

Literature based discussion, group setting.

**Objectives:**

**Medical Knowledge:**

*Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to the patient in the critical care unit.*

- The resident will acquire medical knowledge from a systematic review of the literature.

**Patient Care**

*Fellows must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

- The resident will acquire patient care skills from a systematic review of the literature.

**Professionalism and Professional Development:**

*Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.*

- The resident will acquire knowledge about professional and ethical standards in research from a systematic review of the literature.

**Interpersonal and Communication Skills:**

*Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and health professionals.*

- The resident will acquire skills in interpersonal and communication through participation in discussion regarding a systematic review of the literature.

**Systems Based Practice:**

*Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.*

- The resident will acquire skills in systems based practice through participation in discussion regarding a systematic review of the literature.
- The resident will acquire knowledge regarding standards of care through a systematic review of

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

the literature.

**Practice Based Learning and Improvement:**

*Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.*

- The resident will acquire skills in practice based learning through participation in discussion regarding a systematic review of the literature.
- The resident will acquire knowledge regarding practice based learning through a systematic review of the literature.
- The resident will establish skills necessary for life long learning and evaluation of the literature.

**Critical Care Fellowship  
EDUCATIONAL GOALS AND OBJECTIVES**

**Rotation**

**19.0 Core Curriculum Conference (Dept of Pediatrics) Year 1**

**Faculty:**

Vanderbilt University School of Medicine

**Goal:**

Fellows must be able to demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.

**Objectives:**

The Department of Pediatrics has established a Core Curriculum for Fellows, which spans and encompasses the ACGME Competencies, that is expected to provide:

- A working understanding of biostatistics, clinical and laboratory research methodology, study design, preparation of applications for funding and/or approval of clinical research protocols, critical literature review, principles of evidence-based medicine, ethical principles involving clinical research, and the achievement of proficiency in teaching for all subspecialty fellows.
- An understanding of the principles of adult learning, and provide skills to participate effectively in curriculum development, delivery of information, provision of feedback to learners, and assessment of educational outcomes.

**Format:**

Didactic lecture series, invited speaker series. An example of the curriculum includes:

| <b>Fellow Lectures</b>  |
|---|
| Welcome and Course Introduction<br>(Mentor, training requirements, board requirements<br>T32 grants, MSCI Program, Professionalism) |
| Part 1: Research  |
| Research Design   |
| Statistical Analysis - Biostatistics #1   |
| Experimental Designs in Clinical Research   |
| Statistical Analysis - Biostatistics #2   |
| Scientific Communications   |
| Responsibilities in Research - Mentor Relationships,<br>Authorship, Misconduct  |
| Medical Writing 1 - Manuscripts   |
| Grants and Funding  |
| Clinical Epidemiology and Evidence-based Medicine   |
| Medical Writing 2 - Preparation of Applications for Funding   |
| Clinical Research: Analytical Techniques  |
| Vanderbilt Research Tools and Web Links   |
| Clinical Research Methodology   |
| Laboratory Research Methodology   |
| Pediatric Advocacy  |

**Critical Care Fellowship**

**EDUCATIONAL GOALS AND OBJECTIVES**

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|--|
| Culture and Health Disparities Research  |
| Responsible Conduct of Research -<br>Ethical Principles Involving Research           |
| Approval of Clinical Research Protocols<br>& Regulatory Issues in Pediatric Research |
| <b>Part 2: Education</b>   |
| Stress and Time Management   |
| Effective Leadership   |
| Risk Management  |
| Palliative Care  |
| Evaluation of Learners   |
| Critical Literature Review   |
|  |
| <b>Principles of Adult Learning - Second Year Fellow Retreat</b>                     |
|  |
| Principles of Adult Learning   |
| Effective Oral Presentations   |
| Habit of Lifelong Learning   |
|  |
| <b>Career Development and Communication - Third Year Fellow Retreat</b>              |
| Economics of Health Care   |
| Office Staffing and How to Run an Office   |
| Academic Leadership, Administration and Career Planning                              |
| Health Care Organization and Delivery  |