

## **660S PEDIATRIC CRITICAL CARE & PULMONARY PHYSIOLOGY (PICU)**

This rotation is not accepting international students.

This rotation fulfills the ICU requirement for UC Irvine students.

All students must get prior approval for all CHOC based rotations.

### **Course Description:**

This is a four week rotation offered at Long Beach Miller's Children Hospital and CHOC. ICU is offered in medicine, surgery and pediatrics. Students function as sub-interns, becoming integral members of the ICU team, and serve as primary caregivers under supervision.

**Department:** Internal Medicine

**Prerequisites:** All students must get prior approval for all CHOC based rotations. UC Irvine students must have successfully completed the basic science curriculum and their Core Clerkship. Extramural students must be in their final year of undergraduate medical education.

**Restrictions:** All students must get prior approval for all CHOC based rotations.

### **Elective Director:**

LB Miller's Children Hospital PICU/NICU - Glenn Levine, MD [GLEvine@memorialcare.org](mailto:GLEvine@memorialcare.org)

CHOC PICU/NICU : Jason Knight, MD [jknight@choc.org](mailto:jknight@choc.org)

**Who/Location/Time to Report on First Day:** Frank Cruz student coordinator will contact student with further details. [fcruz@uci.edu](mailto:fcruz@uci.edu) (714)-456-5650

**Site:** Miller Children's Hospital and CHOC

**Site Coordinator:** Frank Cruz [fcruz@uci.edu](mailto:fcruz@uci.edu) 714-456-5650

**Periods Available:** Throughout the year

**Duration:** 4 weeks

**Number of Students:** One per site

**Scheduling Coordinator:** UC Irvine students please email [comsched@uci.edu](mailto:comsched@uci.edu) or call (714) 456-8462 to make a scheduling appointment.

**Course Objectives:** During this rotation, you are expected to enhance these clinical skills:

Assess patient's overall status and recognized critically ill children – ABC's

Understand and recognize the variety of ways that patients can present with critical illness

Improve basic skills in chest radiograph review, order writing, and oral case presentation

Interpret and manage hemodynamic variables

Interpret normal and abnormal ECGs

Assess adequacy of ventilation/oxygenation and treat dysfunction

Understand fluid, electrolyte, and acid-base management

Understand blood product transfusion indications and concerns

Recognize and manage shock and shock states

Recognize and manage single and multiple organ dysfunction

Understand inherent post-operative changes and problems

Understand sedation and pain management skills

Understand social and ethical aspects of critically ill patient care and end-of-life issues

Understand ventilator management and modes  
Understand code situations and PALS

**Key Topics:** Focus your attention and energy on these basic disease processes:

Respiratory Failure, types/diagnosis/treatment, ALI/ARDS  
Ventilator therapy/modes/weaning  
Invasive hemodynamic monitoring  
Shock and shock states  
Venous thromboembolic disease/pulmonary embolism  
Cardiovascular dynamics  
Cardiac dysrhythmias  
Fluid, electrolyte, acid-base management  
Sepsis/infection control  
Renal insufficiency/failure  
Diabetic Ketoacidosis  
Traumatic Brain Injury/elevated intracranial pressure/ICP management  
Coagulopathy/blood component therapy

**Competencies:**

Assess patient's overall status – the ABCs  
Interpret and manage hemodynamic variables  
Recognize an abnormal ECG  
Knowledge about PALS protocols  
Assess adequacy of ventilation/oxygenation and treat dysfunction  
Understand fluid, electrolyte, and acid-base management  
Understand blood product transfusion indications and concerns  
Recognize and manage shock and shock states  
Recognize and manage single and multiple organ dysfunction  
Understand inherent post-operative changes and problems  
Understand sedation and pain management skills  
Understand social and ethical aspects of critically ill patient care and end-of-life issues  
Understand ventilator management and modes  
Improve basic skills in chest radiograph review, order writing, and oral case presentation

**Attitudes and Commitment:**

Competence  
Compassion  
Professionalism  
Integrity  
Sensitivity  
Respect  
Commitment

**Educational Activities:**

The ICU is the best intensive learning unit (ILU). Your role in rounds is to know your patients. We do not expect you to know all aspects of pediatric critical care, but we do expect you to know your patients. This would include vital signs, laboratory tests, radiology tests and any other pertinent information in order to round on them. Preparation is key. You will be taking care of the sickest patients in the hospital. The diversity and intensity of pathology to which you are exposed is incomparable to any other clinical setting. Take the experience to do your best and make the most of it. You will learn from the attendings, fellows, and residents, but you can also learn from subspecialists, nurses, dieticians, pharmacists, respiratory therapist and other members of the team. If you are present and show enthusiasm, you will be taken more seriously and likely witness reciprocal enthusiasm. We would like you to carry at most 1-2 patients with a resident at each time. You will

learn more with exposure to a variety of cases, so work with the residents/team to carry a variety of patients. You can learn from every patient on the team, so pay attention to all the patients on rounds. You are always welcome to follow interesting patients for which you are not the primary. Since you will be carrying a smaller “load” of the patients, try to offer to do a 5-10 minute presentation on a topic relevant to your patients. Often, the best way to master a topic is to teach it.

#### **What Students Should do to Prepare for the Rotation:**

An orientation packet outlines the everyday activities, conferences and responsibilities of the medical student and residents.

The PICU manual, which has essential information for critical care topics, is emailed to the student prior to rotation and is on line.

Other References for Reading:

- Rogers' Textbook of Pediatric Intensive Care: 4th Edition : David G. Nichols (Editor), Alice D Ackerman (Editor), Joseph A Carcillo (Editor), Heidi J Dalton (Editor), Niranjana "Tex" Kissoon (Editor)
- Pediatric Cardiology for Practitioners: 5th Edition: Myung K. Park MD
- Nelson Textbook of Pediatrics: 19th edition : Robert M. Kliegman, MD, Bonita M.D. Stanton, MD, Joseph St. Geme, Nina Schor, MD, PhD and Richard E. Behrman, MD

**Clinical Responsibilities of the Student:** Students function as sub-interns, becoming integral members of the ICU team and serve as primary care givers under supervision

**Patient Care Responsibilities:** Students function as sub-interns, becoming integral members of the ICU team and serve as primary care givers under supervision

#### **Call Schedule of the Student:**

CHOC: Students function as sub-interns becoming integral members of the ICU team and serve as primary caregivers under supervision. Your duty hours will be aligned with the ACGME requirements for interns. That means a 16 hour work day with an 8-10 hour (minimum of 8 hours) break before the next shift. With that said, we would like you to take 4-6 calls during the month. They can either be a long day until 10 PM or an overnight shift to come in at 8 PM and stay post-call for rounds until your patients are rounded on. Please coordinate with residents and fellow rotating for the month to see what schedule is the most appropriate

LBM: Students are expected to work the same shifts as their team.

#### **Procedures Students will Learn:**

- Airway management
- Peripheral and Central IV catheter placement
- Arterial line placement
- Lumbar puncture

**Percentage of Time in Ambulatory Setting: 20%**

#### **Conference/Lecture/Small Group Sessions:**

Hemodynamic Monitoring & Optimization Fluid & Shock management

Respiratory Failure & Ventilation ARDS

Trauma and Head Injury

Ethics and End of Life Issues

Pediatrics Critical Care

#### **Course Hours Weekly Summary:**

2.5	Case Based: observation of and reflection on difficult cases across clerkships
2.0	Conference
1.0	Grand Rounds
1.0	Examination
2.5	Lectures
15.0	Patient-Care Activities
2.5	Small Group
2.5	Standardized patients
15.0	Tutorials
2.5	Ward Rounds
46.5	Total

**Content Theme Integration:** You will encounter these associated themes regularly in the ICU. Use the opportunity to gain experience in:

- Terminal Illness, Death & Dying
- Ethics (Esp. End-of-Life Issues)
- Genetics & Genetics Counseling
- Nutrition
- Pain Management
- Palliative Care
- Research Methods
- Substance Abuse / Drug Toxicity

**Required Reading:**

Your syllabus is the FCCS, the main text provided by the Society of Critical Care Medicine for medical students. You are required to study it during your 4-week rotation, discuss any questions with your faculty, and will be tested based on it on your end-of-rotation written MCQ exam. Contact your site clerkship coordinator to collect the book at the beginning of the rotation, and make sure you return it at the end. For additional recommended reading please see:

- Handbook of Critical Care - Jesse B. Hall (September, 2009)
- Critical Care Medicine: The Essentials - John J. Marini and Arthur P Wheeler (November - 2009)
- The Washington Manual of Critical Care - Marin H Kollef, Timothy J Bedient, Warren Isakow, and Chad A Witt (October - 2007)
- Irwin and Rippe's Intensive Care Medicine 6th edition - Richard S Irwin and James M. Rippe (August - 2007)
- The ICU Book, 3rd Edition - Paul L. Marino (September - 2006)

**Official Grading Policy:** Your final grade is a composite based on your end-of-rotation written MCQ exam (usually administered on the Friday of week 4) and your clinical evaluations. The clinical evaluations are based on motivation, knowledge of clinical medicine, clinical skills, and personal characteristics. A passing grade requires daily attendance at rounds, attendance and participation in lectures, discussions, and clinical assignments, as well as satisfactory scores for the categories listed in the clinical evaluations. Absences will be excused only upon approval by the course director. Comments will be made available for your Dean's Letter. The written examination is comprised of 50 multiple-choice questions which are derived directly from the FCCS content. Students can be eligible for Honors if they receive a satisfactory score on all clinical evaluation categories, score at least 90% on the MCQ examination, have perfect attendance, and show exceptional skills in a number of clinical

categories and prepare a relevant presentation. Students who receive a failing grade will meet with the course director to discuss options for re-evaluation that may include additional time in the MICU along with a written reexamination. A score of 70% or greater is required on the MCQ exam in order to pass the course.

Attendance: You are expected to participate as a team member, every weekday in addition to one day every weekend, other than the last weekend. You are encouraged to take call with one of your team interns; you should coordinate the details regarding hours of attendance and the call schedule with your site clerkship director and ICU faculty.

Absence: With prior notification, you are allowed a maximum of three (3) days of absence during your 4-week rotation. You will need to reschedule your rotation for another date if you miss more than 3 days.

Any questions or issues regarding your critical care clerkship grade should be presented to your course director and the grading faculty.