



Critical Care: Goals and Objectives

Goals

1. CA 1 and 2 residents are assigned to two one-month rotations that are spent in the Surgical Intensive Care Unit (SICU) to develop competency in functioning as part of a team dedicated to the management of critically sick patients. This includes patients who have undergone: liver transplant, neurosurgery, major vascular surgery, orthopedic surgery, oral and maxillofacial surgery, gynecological surgery, general surgery, and trauma, and includes critically ill obstetric patients.
2. The ability to provide primary intensive care for trauma, thoracic, general surgical, transplant, and other critically ill patients, within the context of a care team, is the expected outcome of this rotation.

Objectives

1. *Patient care*

1. Clinical Care
 - a) Participate in all teaching rounds and regular morning and afternoon work rounds. Regular daily rounds begin at 7:30am on weekdays. During weekends rounds will be made as decided upon by the team on call.
 - b) Write a consultation for new patients upon their arrival in the SICU and write appropriate admission, daily progress notes, and discharge notes on all patients on their on-call day.
 - c) Participate in the care of trauma patients from initial resuscitation in the emergency room OR and then when they are admitted to the SICU
 - d) Counsel and educate patients and their families in your area of expertise
 - e) Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment.
 - f) Develop and carry out patient management plans
 - g) Gather essential and accurate information about your patients including:
 1. Complete history
 2. Relevant laboratory data
 3. Radiologic studies
 4. Report of consultants
2. Technical skills
 - a) Place central venous access lines using aseptic technique
internal jugular
subclavian, femoral or
Femoral vein
 - b) placement/interpretation of CVP and PA catheters
 - c) Place arterial line using aseptic technique (radial, axillary, femoral, or dorsalis pedis)
 - d) Chest tubes
 - e) Intubate patients in an emergency setting under the following conditions:

- f) Awake with respiratory failure
- g) Trauma
- h) Unconscious
- i) Unstable or radiologically uncleared cervical spine
- j) Assist with placement of percutaneous tracheostomy
- k) Assist with placement of percutaneous gastric tube placement

2. Medical knowledge

Reading: Miller Chapters: 71, 72, 74, 75, 76

Miller Chapters 5B, 15, 17, 18, 30, 33, 34, 45, 46

ICU Library articles

The minimum essential topics that should be mastered by the end of this rotation are outlined below.

General

1. Basic science knowledge
2. Basic respiratory, renal and cardiovascular physiology
3. Basic respiratory, renal and cardiovascular pharmacology

Clinical knowledge

- a) Respiration/ventilation including ventilator management, advanced modes of ventilation, and pulmonary function tests
- b) Management of Respiratory failure including pathophysiology of ARDs
- c) Cardiovascular/hemodynamics including cardiovascular support(drugs and fluids)
- d) Cardiopulmonary resuscitation
- e) Basic oxygen transport and delivery, with particular emphasis on the systemic
- f) Inflammatory response syndrome and multi organ system failure.
- g) Pharmacokinetics and pharmacodynamics in the critically ill patient
- h) Management of increased ICP and other neurological emergencies
- i) Management of oliguria and renal failure
- j) Acute and Chronic Hepatic failure and pre- and postoperative management of the liver transplant patient
- k) Management of massive bleeding and transfusion.
- l) Nutritional support
- m) GI-bleeding prophylaxis
- n) Infectious disease in the ICU
- o) Interpretation of laboratory tests and data (including X-rays)
- p) Evaluation and management of the patient in shock.
- q) Management of Sepsis; including pathophysiology
- r) Management of hypovolemia
- s) Information on management of hypertension, infection, including drug selection
- t) Evaluation of Acute Abdomen

Formal lectures: Residents are expected to attend or review the following lectures presented by the ICU staff

1. Update in Cardiopulmonary and Cerebral Resuscitation
2. The Critically Injured Trauma Patient
3. Invasive and Non-Invasive Monitoring in the ICU
4. Diagnosis and Treatment of Shock and Circulatory Dysfunction
5. ARDS
6. Modern Management of Acute Spinal Cord Injury
7. Pain and Agitation in the ICU
8. Sepsis
9. Diagnosis and Treatment of Acid – Base Disorders
10. Determinants of Arterial PO₂
11. V/Q Mismatch and Gas Exchange
12. Diagnosis of Respiratory Failure
13. Therapy of Respiratory Failure
14. Weaning from Mechanical Ventilation
15. Hemodynamic Monitoring in Respiratory Failure
16. Acid Base Physiology
17. Chronic Obstructive Lung Disease
18. The Difficult Airway
19. Mechanical Ventilation
20. Patient Ventilator Interactions
21. Partial Ventilatory Assist
22. Intracranial Hemorrhage
23. Myocardial Infarction
24. Congestive Heart failure and Cardiogenic Shock
25. Adult Acute and Chronic Renal Failure in the ICU
26. Renal Replacement Therapy in the ICU
27. Intensive Care of Liver Transplant Recipients
28. Ventilator basics including hands-on test breathing on a Siemens 300C ventilator during different modes of ventilation
29. ARDS and advanced modes of ventilation
30. Diagnosis and treatment of pneumothorax and chest tube drainage systems
31. Pharmacokinetics and pharmacodynamics in the critically ill patient
32. Cardiovascular support (fluids and vasoactive drugs)
33. Management of increased ICP and other neurological emergencies
34. Vasopressors
35. Nutritional support
36. Brain death

3. Practice-based learning and improvement

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Residents are expected to:

1. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems using literature search or internet search engine
2. Obtain and use information about severely ill patients and the larger population from which their patients are drawn
3. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness
4. Use information technology to manage information, access on-line medical information; and support their own education
5. Improve patient care through teaching of medical students and other health care professionals participating in the care process

4. D. Interpersonal and communication skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates.

Residents are expected to:

1. Create and sustain a therapeutic and ethically sound relationship with patients
2. Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills
 - a) Efficiently and accurately present patient data on rounds
 - b) Write complete and legible notes in chart
 - c) Effectively relate information to consultants
4. Effectively relate information to patients family in lay terms, including end of life discussions work effectively with others as a member or leader of a health care team or other professional group
 - a) Effectively communicate with nursing, therapists and social workers
 - b) Teach medical students and junior residents

5. E. Professionalism

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

1. Demonstrate caring and respectful behavior when interacting with patients and their families providing only information that you are authorized to provide and know to be accurate.
2. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, and informed consent in the SICU environment
3. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

6. F. Systems-based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. Residents are expected to:

1. Discuss how your patient care activities affects other health care professionals at Thomas Jefferson University Hospital, and how you are affected by them.
2. Estimate the impact of limiting work hours for ICU residents as it effects patient care and the cost of health care.
3. Practice cost-effective health care and resource allocation that does not compromise quality of care.
4. Advocate ideas for improving the quality patient care to your attending in a constructive manner.
5. Assist patients and their families in dealing with system complexities
6. Associate with health care managers and health care providers to plan ways to improve health care in the SICU at TJUH.