Surgical Intensive Care Unit (SICU)

Length:	1 month of PGY-1 year 4 to 5 months of PGY-2 year 2 months of PGY-3 year
Location:	The Queen's Medical Center
Primary Supervisor:	Mihae Yu, M.D.
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One of the major responsibilities of a general surgeon is to be able to care for the critically ill patient. In order to prepare Residents for this responsibility, rotations in the SICU is required. During the rotation, Residents will learn to manage complex ICU cases. They will also be expected to develop a broad knowledge base and be able to use that knowledge base to make competent judgments concerning the care of their ICU patients. A set of SICU booklets with current reading material will be provided at the start of the rotation. The Resident is also directed to review policies of the SICU in the *Hawaii Residency Programs, Inc., Resident Handbook*.

Goals

Upon completion of the required SICU rotation, the Resident will be able to:

1. Assess and manage critically ill or injured patients and understand the rationale behind physiologic goals:
   a. Cardiovascular support, including appropriate fluid and electrolyte management
   b. Pulmonary support
   c. Maintenance of other vital organ function: liver, kidney, GI tract
   d. Prevention of multi-system organ failure
   e. Metabolic control: blood sugar; recognition and treatment of acid-base disorders
   f. Hormonal imbalance: adrenal, thyroid function
   g. Early nutritional support and nutritional requirements: enteral and parenteral
   h. Antibiotic use
   i. Pharmacokinetics of common ICU drugs
   j. Hematologic support
   k. Dialysis management

2. Identify and evaluate high-risk surgical patients, prepare them for surgery and provide intra- and post-operative management.
3. Perform a thorough neurologic assessment and manage patients with neurosurgical problems, including management of neurologic injuries and declaration of brain death.

Objectives

At the end of this rotation, the resident will be able to:

Medical Knowledge

1. Be able to discuss electrolyte and acid base abnormalities with plans on correcting the abnormalities.
2. Describe the pharmacology and pharmacodynamics of frequently used drugs.
3. Demonstrate an understanding of nutritional requirements and principles of nutritional support, both enteral and parenteral.
4. Demonstrate an understanding of the etiologies of acute pulmonary failure, indications for artificial ventilation, and principles of ventilator management and weaning strategies.
5. Demonstrate understanding of hemodynamic monitoring, including indications and uses, and proper interpretation of data.
6. Develop an understanding of the causes and pathophysiology of shock, including principles of management.
7. Demonstrate understanding of the pathophysiology of multisystem organ failure, including principles of prevention and management.
8. Demonstrate an understanding of the pathophysiology and management of brain and spinal cord injury.

Patient Care

1. Insert correctly arterial, central and pulmonary artery catheters.
2. Gather information and data from these catheters and explain their significance to the care plan for the patient.
3. Describe methods for detecting monitor errors, correcting those errors, and troubleshooting equipment.
4. Diagnose cardiac problems, including ischemia, arrhythmias, tamponade and cardiac failure.
5. Perform cardiopulmonary resuscitation.
6. Recognize acid base abnormalities and write orders to correct the problem.
7. Recognize, diagnose, and provide appropriate treatment for metabolic problems.
8. Diagnose pulmonary diseases, such as Adult Respiratory Distress Syndrome (ARDS), aspiration pneumonia, bacterial pneumonia, Chronic Obstructive Pulmonary Disease (COPD), pulmonary contusion.
9. Explain in detail the management for ventilator patients, including an explanation of the differences between various modes of ventilators and their effect on the work of breathing.
10. Write a plan for weaning and extubation of patients from a ventilator.
11. Explain the pathophysiologic concepts of Systemic Inflammatory Response Syndrome (SIRS), sepsis, and patterns of multiple organ failure and describe the

appropriate support for each situation including novel modalities of treatment, such as recombinant activated protein C.
12. Describe how to identify patients at risk for renal failure and methods for prevention.
13. State the indications for dialysis, continuous modes of dialysis, and describe adjustments and drug therapy necessary for patients in renal failure.
14. Write individualized nutritional orders, describe how to monitor the ongoing nutritional needs of the patient and how orders will need to be changed in order to meet a patient's nutritional needs.
15. Explain the rationale for early enteral feeding and its role in prevention of multi-system organ failure.
16. Explain the role of anti-oxidants in critically ill patients.
17. Identify and treat accordingly high-risk surgical patients including the preoperative optimization of cardiac status and prevention of perioperative cardiac complications.
18. Explain use of blood products and various etiologies of coagulation failure.
19. Assess neurologic deficits and institute management of the neurosurgical patient, including management of spinal cord injuries, and management and control of intracranial pressure.
20. Understand the neurologic exam for declaration of brain death and mobilization of the Organ Donor Service.
21. Recognize all types of shock and initiate correct treatment for each.
22. Understand the logistics of diagnosing brain death, asking for organ donation. Anticipate potential problems in organ donors and be able to treat these complications.

Professionalism

1. Discuss ethical considerations, dilemmas, and family support for patients in a surgical intensive care unit.
2. Demonstrate appropriate communication skills with family members, and interact with them in a respectful, ethical, and sensitive manner.
3. Interact with other members of the SICU Team in a respectful, responsible, and professional manner.

Systems-based Practice

1. Demonstrate cost conscientiousness, by ordering individual tests as necessary instead of routine batteries of tests, and in determining treatment planning.
2. Understand the multidisciplinary role of the Critical Care Surgeon, Nurses, Respiratory Therapists, Dieticians, Physical Therapists, Occupational Therapists, Rehabilitation Specialists, Social Services, and Case Managers in the provision of safe and high quality critical care care.

Practice-based Learning and Improvement

1. Demonstrate ability to utilize scientific studies to provide high quality critical care.

2. Appropriately utilize Hospital information technology systems to manage patient care, and to access on-line medical information to deliver high quality care.

3. Facilitate and support the education of Medical Students, Junior Residents, and other healthcare team members.

Interpersonal and Communication Skills

1. Model effective communication skills with fellow Residents, Attending Physicians, Consultants, Nurses and allied health personnel.

2. Demonstrate skill in effective information exchange with patients, their families, and other members of the SICU Team.

3. Demonstrate ability for accurate and timely information exchange between other members of the healthcare team, both verbally and in writing, with appropriate use of the medical record.

Performance Measures and Competency Assessment

1. Daily interactions with SICU Attending Faculty.
2. Global Evaluation and Nursing and Medical Student evaluations (360 degree) at the end of the rotation.