Welcome to the Surgical Critical Care Service at Harborview

Over your time here you will manage some of the most complex patients you will ever come across over the course of your career. These patients often have several services involved in their management. Although these patients are usually admitted under the General Surgery, Vascular, or Thoracic Services, it is the Surgical Critical Care Service that coordinates their care. Although the ICU attendings are surgeons, it is important to note that the scope of the ICU service will be limited to evaluation and management of problems separate and distinct from routine postoperative surgical care. These services include but are not limited to:

- Ventilator management
- Hemodynamic management
- Management of coagulopathy
- Diagnosis and management of nosocomial infection
- Nutritional support
- Non-operative management of head injury
- Venous thromboembolism screening, prophylaxis and treatment
- Management of renal failure exclusive of dialysis
- Coordination of subspecialty consultations
- End-of life care

In addition, the ICU service will assume primary responsibility for interacting and coordinating ancillary services required for care of the critically ill surgical patient including, but not limited to:

- Nutritional services
- Infection control
- Respiratory therapy
- Lifecenter Northwest
- Pharmacy
- Hospital ethics committee

Interactions with Surgical Services

The responsibilities and activities of the surgical critical care services are listed above. These responsibilities have been chosen to complement those of the surgical services caring for patients admitted to the ICU and in essence, results in what amounts to co-management. It is expected that the surgical services first evaluating the patient on admission review their patients daily and document issues pertinent to their surgical care throughout their ICU stay. The decision as to when and whether operative or percutaneous interventions are warranted for complications related to the surgical site will be left to the surgical services. If an issue arises that might call for operative management (e.g. taking a patient back to the OR for bleeding or intra-abdominal sepsis), then this decision, its timing and its performance must be left to the surgical team. This does not apply to placement of central venous catheters, pulmonary artery catheters, percutaneous tracheostomy (performed outside the operating room) or feeding tube placement, but may apply to insertion of chest tubes depending on the clinical setting. The timing, route and type of nutritional support will be left to the discretion of the ICU service unless there is concern over the integrity of the alimentary tract (e.g. status post bowel resection). In these scenarios it is expected that the surgical services provide guidance as to when feeding may occur via the enteral route.

There are wide variations in practice patterns for the use of antimicrobial therapy for management of surgical site infections and nosocomial infections unrelated to the surgical site. To respect these variations in

practice, antimicrobial therapy directed toward pathogens at all sites will be left to the discretion of the ICU service with input from the surgical team. It is preferable that the ICU service maintains oversight of antimicrobial therapy so other infections outside of the surgical site are considered in the choice of agents.

The ICU service will maintain primary responsibility for coordinating meetings and providing information regarding plans and prognoses with family members. It is expected that the surgical services maintain contact with the family members and provide whatever information is necessary and pertinent to care; similar to how the orthopedic surgeons or neurosurgeons interact with the family members at present. Major decisions, particular those specific to withdrawal of care, must be coordinated with the services caring for the patient, although the ICU service will assume primary responsibility in relaying this information to the patient's family, ideally in concert with the most actively involved surgical service.
It is anticipated that there will be overlap of other responsibilities not listed above. Communication between the ICU service and the surgical services is critical to assure that the entire spectrum of care is provided. Discussions between the Surgical Attending and the ICU Attending are encouraged to coordinate care and are mandatory when treatment plans diverge.

ICU resident responsibilities

As residents on the Surgical Critical Care Service, you will be the primary means of communication between the surgical teams and the ICU team. You will round with your surgical team each morning and convey ICU issues to them while they convey surgical issues (and plans) to you. We encourage the surgical team to make progress (i.e. ventilator changes, etc) on their early morning rounds. These changes and progress will be reviewed on ICU rounds at 0800 each morning and may be altered depending on the patient's response and status. When you are on call, it is important to review new patients and problems with the senior residents in house. If these problems are complex or if the senior residents are unavailable, the ICU attending or fellow must be notified. Each ICU attending will have a different threshold for being called and some may want to be notified of each ICU admission.
Patients in the ICU require an admission note and a daily progress note in the electronic medical record. You will note that the progress note has a section for "Problem list." Please update this with the problem and date as new problems arise so that we don't have to depend on our collective memory to recreate what has happened with the patient over the course of their ICU stay. You should have received a password for CIS access for the purpose of accessing the electronic medical record. If not, please notify Suzanne Mills (731-3433). Try to have your notes written shortly after ICU rounds (and before noon) so that the ICU attending can complete his/her notes early in the day. Before doing any procedures during regular working hours (07:00 to 18:00) it is imperative that you page the ICU attending so that they can supervise. The attendings should be notified irrespective of whether you are comfortable or not with the procedure.

Children under the age of 15 are also cared for by the Pediatric ICU attending. Pediatric ICU issues similar to those listed above for adults, should be addressed with the PICU attending. There are typically no more than 1 or 2 children at any one time, so I suggest you call the PICU attending and review the patient with them at a mutually convenient time.Rounds

There are daily working/teaching rounds that begin at 08:00 each morning and last approximately 2 hours. These are in concert with the pharmacists and the nutritionists. Most of the decisions and plans are made during these rounds.

Tuesday morning at 07:00, Dr. Maier has teaching rounds in the TICU. The resident on call the previous night must present the new admissions for discussion. It is expected that the entire surgical team attend these rounds.

Thursday at noon there are rounds in the Neurosurgery conference room. This is a multidisciplinary critical

care journal club where either the surgical ICU, medical ICU or neurosurgical ICU residents/attendings present important papers. Lunch is served.

Educational objectives

Your educational objectives are listed on the following pages. These objectives are typically met through daily rounds and conferences due to the large volume and complexity of patients that come through the unit. If you feel that certain objectives are not being met, please bring them up at rounds and they will be discussed.

Thank you and enjoy your time here in the ICU.

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HMC General Surgery/Trauma Critical Care Service Goals and Objectives

The HMC General Surgery/Trauma Critical Care Service is designed to provide in-depth exposure to management of the critically ill surgical patient in a structured environment and in close interaction with both the Surgical Critical Care Attending and the Trauma/ICU fellow. Each resident is expected to review the HMC General Surgery/Trauma Critical Care Service Document and be familiar with his or her objectives and responsibilities while on the service.

Overall goal
The primary goal of this rotation is to develop a comprehensive approach to care of the critically ill surgical patient. Residents participating in the care of these patients will develop an understanding of the pathophysiology, rationale and treatment options pertaining to the profound physiologic derangements common in this cohort of patients. By the end of the rotation, it is expected that residents will be able to lead a major resuscitation, support failing organ systems and will have developed the necessary technical skills to institute invasive hemodynamic monitoring and control of the airway.

Objectives:

Cognitive:

1. Each resident is expected to read and understand the core articles provided at the beginning of their rotation. The core articles pertain to the basic principles of mechanical ventilation and invasive hemodynamic monitoring. Additional state of the art articles will be provided for reading throughout the rotation and will be updated at regular intervals by the surgical critical care attendings. The additional reading will include selected chapters from the critical care textbooks provided for reference in the intensive care units. It is expected that the resident review specific articles relevant to patient problems arising while the resident is on the service. There are interdisciplinary rounds weekly organized with the medical ICU service where manuscripts are presented and critically appraised. It is expected that the residents on the service will select manuscripts and present at no greater frequency than every second week.

2. There are daily teaching rounds at which each resident must present their patients' problem lists in a systematic fashion and propose a daily treatment plan. It is expected that each resident be prepared to discuss the rationale underlying their treatment plan, pose alternatives and identify potential problems that might undermine their patient's progress.

3. There are weekly teaching rounds that focus on new admissions. The purpose of these rounds is to highlight either critically important or novel approaches to care of the surgical patient in the ICU. In contrast to the daily teaching rounds, it is expected that all housestaff at all levels on General Surgery/Trauma teams I-III participate.

4. It is expected that by the end of the rotation the resident will have established a solid foundation in understanding the pathophysiology and/or therapeutic options pertaining to:

- Ventilatory strategies
- Weaning from mechanical ventilation
- Interpretation of data derived from invasive hemodynamic monitoring (i.e. pulmonary artery catheter)
- Endpoints of resuscitation
- Rational use of inotropes and vasopressors
- Sepsis and mediator-directed therapy
- Ventilator-associated pneumonia
- Appropriate use of antimicrobial therapy
- Nutritional support – enteral and parenteral
- Management of elevated intracranial pressure and traumatic brain injury
- Brain death
- Acute Respiratory Distress Syndrome
- Renal failure
- Hepatic failure
- Shock states
- Massive transfusion and coagulopathy
- Hypothermia
- Electrolyte abnormalities
- Fat embolism
- Sedation in the critical care environment
- Thromboembolic disease

Additionally, the resident will learn to critically appraise the literature and develop an evidence-based approach to critical care. Cost-effectiveness and resource utilization in the ICU environment will also be addressed.

Resident feedback on cognitive proficiency will be part of the biweekly written and verbal resident evaluation currently performed by all surgical services at HMC.

Technical

Residency proficiency and knowledge of the indications and contraindications to several procedural skills in the critical care environment will be evaluating, including:

- Central venous access
- Pulmonary artery catheterization
- Arterial line
- Endotracheal intubation
- Tracheostomy
- Thoracentesis
- Tube thoracostomy
- Continuous arteriovenous rewarming
- Cardioversion

- Endoscopic placement of transpyloric feeding tubes
- Fibreoptic bronchoscopy

Resident feedback on technical proficiency will be part of the biweekly written and verbal resident evaluation currently performed by all surgical services at HMC.

Behavioral

The approach to the critically ill patient calls for a high level of complex decision-making such that competing priorities can be organized to minimize risk to the patient and maximize the potential for a favorable outcome. This calls for attention to detail and remarkable flexibility in a very stressful environment. Additionally, many the families of these individuals are confronted with a very unfamiliar environment that only adds to their fears at their time of maximal stress. The resident must be able to communicate effectively with family members to minimize this stress. Additionally, residents must become comfortable with addressing end of life issues with family members of their patients.

Residents will receive ongoing feedback in a timely manner by surgical critical care faculty regarding their progress in these spheres. In addition, resident feedback will be part of the biweekly written and verbal resident evaluation currently performed at HMC.