

Inova Fairfax Hospital Surgical Critical Care Service

Surgical Critical Care Fellowship Program

I. Basic Science Curriculum and ACGME Competencies

A. Patient Care

1. Compassionate Patient Care:

- Caring and respectful behavior in all interactions with patients and their families
- Decision-making about diagnostic and therapeutic interventions that incorporates patient preferences
- Compassionate end-of-life care in accord with patients' wishes including application of comfort care measures and referral to the local Organ Procurement Organization
- Use of the Animal-Assisted Care Program for critical care patients

2. Appropriate Patient Care:

- Gathering essential and accurate information about patients
- Diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgement
- Development and presentation of patient management plans
- Indications and contraindications for various medications used in the preparation and performance of procedures
- Multidisciplinary rounds and coordination of patient care in conjunction with residents, students, and other health professionals

3. Technical Skills in Patient Care:

- See Section VIII.B of this PIF

B. Medical Knowledge

1. Clinical and Basic Science Knowledge

- Understanding of the physiology, pathophysiology, diagnosis, and therapy of disorders of the following systems as a whole, with special attention to the listed subcategories listed (where applicable):
 - Cardiovascular:
 - Shock states (hemorrhagic and hypovolemic, septic, neurogenic, cardiogenic)
 - Use of vasopressors and inotropes

- Cardiovascular monitoring interpretation as it relates to cardiac physiology, and treatment of hemodynamic instability based on physiological parameters.
- Cardiopulmonary resuscitation and ACLS
- Respiratory
 - Mechanical ventilator management including various modes of ventilation
 - Noninvasive ventilation techniques
 - Arterial blood gas and mixed venous oxygen saturation interpretation
 - Physiology, pathophysiology, diagnosis, and management of Acute Lung Injury and Acute Respiratory Distress Syndrome
- Gastrointestinal
 - Ileus and obstruction
 - Intraabdominal infections
 - Stress gastritis, ulceration, and gastrointestinal bleeding
 - Abdominal compartment syndrome
 - Enteric fistula
 - Open abdomen management including performing dressing changes (vacuum assisted closure), washouts, proper tissue handling, drain placement, and patient positioning
- Genitourinary
 - Acute renal insufficiency and failure
 - Fluid and electrolyte homeostasis and derangements
 - Traumatic injuries: kidneys, ureters, bladder, urethra
- Neurological
 - Traumatic brain injury
 - Intracranial pressure and cerebral perfusion pressure interpretation and treatment
 - Spinal cord injuries and syndromes
 - Non-traumatic cerebral hemorrhage and infarction
 - Seizures
 - Ventriculoperitoneal and ventriculopleural shunts
- Endocrine
 - Neurogenic and nephrogenic diabetes insipidous
 - Adrenal insufficiency, testing, and treatment
 - Thyroid disorders in the ICU
- Musculoskeletal
 - Extremity and pelvic trauma
 - Compartment syndrome
 - Rhabdomyolysis
- Immune systems
 - The inflammatory response to trauma and critical illness, including the Systemic Inflammatory Response Syndrome
- Nutrition

- Nutritional assessment and support using enteral and parenteral feeding
 - Estimate daily energy requirements using metabolic rate equations
 - Infectious diseases
 - Hospital-acquired infections including ventilator-associated pneumonia, catheter-associated urinary tract infection, catheter-related blood stream infection
 - Sepsis
 - Necrotizing soft tissue infections
 - Meningitis and ventriculitis
- Metabolic, nutritional, and endocrine effects of critical illness
- Hematologic and coagulation disorders
 - Coagulopathies in the intensive care unit including the acute coagulopathy of trauma, disseminated intravascular coagulation, and coagulation disorders due to anticoagulant drugs, sepsis, brain injury, vitamin K deficiency, cirrhosis, renal failure, acidosis and hypothermia, and common congenital disorders
 - Use and interpretation of basic laboratory coagulation tests including the thromboelastogram
 - Reversal of anticoagulation medications
 - Heparin-induced thrombocytopenia
 - Transfusion-related acute lung injury
 - Venous thromboembolism
- Critical obstetric and gynecologic disorders
- Trauma, thermal, electrical, and radiation injuries
- Inhalation and immersion injuries
- Monitoring and medical instrumentation
- Critical pediatric surgical conditions
- Demonstrate knowledge of organ donation processes
 - Understand the processes of donation after brain death and cardiac death
 - Perform accurate and timely brain death examination and declaration
 - Recognize clinical triggers for OPO notification
 - Maintain physiologic stability of brain dead patients who are designated as organ donors
- Pharmacokinetics and dynamics of drug metabolism and excretion in critical illness
- Biostatistics and experimental design
- Age-related physiologic changes and unique characteristics of managing elderly critically ill patients

2. Leadership and Administrative Knowledge

- Acquire experience in the principles and techniques of administration and management of an intensive care unit, including working with

multidisciplinary health care personnel in achieving coordinated and cooperative management of the ICU.

- Through leadership and teaching, demonstrate understanding of the significance of the natural history of surgical critical disease, the consequences of surgical critical care (both positive and negative), and the influence of continuity of care upon surgical outcomes
- Incorporate the knowledge of ethical, legal, economic, and/or social factors into the activities of the entire surgical team for all components of surgical care.
- Demonstrate basic skills in mass casualty and internal disaster planning as it relates to ICU resources including equipment and personnel

C. Practice-based Learning and Improvement

1. Investigate And Evaluate Patient Care Practices

- Analyze practice experience using review of systematic data collection
- Analyze practice experience through the program's Performance Improvement Program and implement changes based on this experience
- Use patient management protocols in the management of specific patients within the larger context of the intensive care unit as a whole

2. Appraise and Assimilate Scientific Evidence Relevant to Patient Care

- Locate, appraise, and assimilate evidence from scientific studies related to current patients' health problems
- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness
- Perform practice-based improvement activities
- Use information technology to manage information, and access on-line medical information, in support of the fellow's self-education
- Exhibit and recognize the importance of lifelong learning in surgical practice

3. Improve Patient Care Practices

- Analysis of personal practice outcomes to improve patient care.
- Performance of practice-based improvement activities
- Perform and participate in research activities related to surgical critical care

D. Interpersonal and Communication Skills

1. Demonstrate the effective exchange of information between, and collaboration with, patients, their families, and other health professionals

- Engage in multidisciplinary ICU rounds
- Demonstrate ability to perform concise and effective handoff of patient care to and from other health professionals
- Include families (and patients if applicable) in daily patient rounds and be able to relay pertinent medical information in understandable language,

confirm the families' and/or patients' understanding, and answer their questions

- Demonstrate effective teaching skills in teaching surgical critical care to other health professionals, in particular residents and students
- Create and sustain therapeutic and ethically sound relationships with patients and families
- Effectively and promptly document patient care and practice activities
- Present all patients and conference material in a concise, organized, logical, and knowledgeable manner
- Utilize input from all collaborative interactions with all personnel contributing to the surgical patient care
- Exhibit surgical team leadership
- Evaluate the performance and competence of all members of the surgical residency team

E. Professionalism

- Demonstrate respect, compassion and integrity in all professional interactions; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society and the profession; and a commitment to excellence and ongoing professional development
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practice
- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities
- Complete required administrative responsibilities (evaluations, recording hours, chart documentation, medical record dictations, etc.) in a timely manner
- Maintain positive professional relationships
- Demonstrate accountability for actions and decisions
- Present one's physical demeanor in a professional manner through basic hygiene and appropriate attire
- Admirably represent the surgical profession in all professional interactions

F. Systems-based Practice

1. Awareness and Responsiveness to the Health Care System

- Understand how patient care and other professional practices affect other health care professionals, the health care organization, and the larger society; Understand how these elements of the system affect their own practice
- Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
- Learn the basic methods of critical care coding and billing

2. Utilization of System Resources

- Practice cost-effective health care and resource allocation that does not compromise quality of care.
- Use critical care protocols to manage patients within the larger context of critical care at the hospital level and health system level
- Advocate for quality patient care and assist patients in dealing with system complexities
- Partner with health care managers and health care providers to assess, coordinate, and improve health care and understand how these activities can affect system performance

II. Clinical Component

A. Topic Outline and Teaching Methods (PR IV.A.2.b).(1))

All Surgical Critical fellows must be provided with a structured curriculum in the following areas. Denote how each area is taught using the following chart:

	Patient Management	Conference/ Lectures	Self-directed study	Computer/ AV	Other
<i>Cardiorespiratory resuscitation</i>	X	X	X		
<i>Physiology & pathophysiology of major organ systems</i>	X	X	X		
<i>Metabolic & coagulation disorders</i>	X		X		
<i>Hematologic & coagulation disorders</i>	X	X	X		
<i>Critical obstetric and gynecological disorders</i>			X		
<i>Trauma, thermal, electrical & radiation injuries</i>	X	X	X		Journal club
<i>Inhalation and immersion injuries</i>			X		
<i>Monitoring and medical instrumentation</i>	X				ICU Nursing instruction
<i>Critical pediatric surgical conditions</i>	X		X		
<i>Drug metabolism and excretion in critical illness</i>	X		X		Rounds with pharmacist present
<i>Ethical and legal aspects of SCC</i>	X	X		X	

<i>Principles of administration and management</i>					Interaction with ICU med director
<i>Biostatistics an experimental design</i>			X		Research meetings

B. Clinical Skills Required (PRIV.A.2.a).(1))

All SCC residents must be provided with supervised clinical educational experiences in the following skills. Confirm which are provided.

1. **Airway management** – Endoscopy (*bronchoscopy, direct laryngoscopy*). (X) YES () NO
2. **Circulatory**
 - Invasive monitoring (X) YES () NO
 - Non-invasive monitoring (X) YES () NO
 - Transesophageal and pericardial ultrasound (X) YES () NO
 - Transvenous pacemaker (X) YES () NO
 - Cardiac output (X) YES () NO
 - Systemic and pulmonary vascular resistance (X) YES () NO
 - Electrocardiogram (X) YES () NO
 - Cardiac assist devices (X) YES () NO
3. **Neurological**
 - Complete neurological examination (X) YES () NO
 - Intracranial pressure monitoring (X) YES () NO
 - Electroencephalogram (X) YES () NO
 - Hypothermia in cerebral trauma (X) YES () NO
4. **Renal**
 - Evaluation of renal function (X) YES () NO
 - Peritoneal dialysis and hemofiltration (X) YES () NO
 - Hemodialysis (X) YES () NO
5. **Gastrointestinal**
 - GI intubation (X) YES () NO
 - Endoscopic techniques (X) YES () NO
 - Enteral feeding (X) YES () NO
 - Stoma, fistula and percutaneous catheter drainage (X) YES () NO
 - Measurement of bladder pressures (X) YES () NO
6. **Hematologic**
 - Autotransfusion (X) YES () NO
 - Coagulation status (X) YES () NO
 - Component therapy (X) YES () NO
7. **Infectious disease**
 - Isolation technique (X) YES () NO
 - Drug therapy with organ failure (X) YES () NO
 - Nosocomial infections (X) YES () NO

Hyperbaric oxygen therapy..... (X) YES () NO

8. Nutritional

Parenteral & enteral (X) YES () NO

Assessing metabolism and nutrition (X) YES () NO

9. Monitoring

Use & calibration of transducers, amplifiers and recorders (X) YES () NO