

Competency-based Goals and Objectives

Surgical Critical Care Fellowship

Rotation: Surgical Critical Care Service (SCCS)

Trauma Services, Department of Surgery

Inova Fairfax Hospital

Surgical Critical Care Service Goals and Objectives

The SCC fellow will demonstrate the ability to use evidence based principles to care for critically ill surgical and trauma patients with single and multiple organ system abnormalities, perform basic and advanced procedures and demonstrate excellent communication skills with patients, families, and other health professionals.

These Goals and Objectives include the ACGME educational Milestones for Surgical Critical Care, which are specifically denoted by an **(M)**. The Level 4 Milestones are incorporated here.

At the end of the fellowship, the resident should be able to meet the following goals and objectives:

Patient Care:

Compassionate Patient Care:

- Demonstrate caring and respectful behaviors when interacting with patients and/or their families.
- Incorporate patient preferences in making decisions about diagnostic and therapeutic interventions.
- Provide compassionate end-of-life care according to patients' wishes including application of comfort care measures and referral to the local Organ Procurement Organization
- Use of therapeutic programs such as the Animal-Assisted Care Program

Appropriate Patient Care:

- Gather essential and accurate information about patients
- Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment.
- Develop, present to attending when appropriate, and carry out patient management plans

- Demonstrate knowledge of the indications and contraindications for various medications used in the preparation and performance of procedures.
- Coordinate the overall care of patients in conjunction with the team of residents and students and the multidisciplinary ICU team of nurses, respiratory therapists, nutritionists, pharmacists, physical/occupational and other therapists
- Competent performance of invasive and noninvasive procedures in the ICU

Technical and Procedural Skills in Patient Care:

- **(M)** Proficient in performance of ICU procedures in patients at high risk for complications
- **(M)** Proficient in management of procedural complications
- Demonstrate manual dexterity appropriate for level of training.
- Demonstrate knowledge, psychomotor skills and judgment related to the performance of surgical procedures and in teaching operative techniques to residents and students
- Proceed through various steps of operative procedures in a manner that is consistent with the flow of the operation.
- Make appropriate and timely intraoperative decisions
- Oversee safe transport of the critically ill patient
- Manage the open abdomen including performing dressing changes (vacuum assisted closure), washouts, proper tissue handling, drain placement, and patient positioning
- Airway and Respiratory management
 - Perform therapeutic bronchoscopy, Bronchoalveolar lavage, direct laryngoscopy, intubation, surgical airway, bag valve mask, chest tube, thoracentesis
 - **(M)** Demonstrate proficiency in the management of patients with respiratory failure who require advanced ventilator techniques
- Circulatory
 - **(M)** Demonstrate proficiency in the resuscitation of all types of shock in special patient populations (e.g., those at extremes of age, with complex co-morbidities, or who are immunosuppressed)
 - **(M)** Utilize and interpret appropriate advanced monitoring techniques (e.g., echocardiography, non-invasive and invasive hemodynamic monitoring)
 - **(M)** Demonstrate proficiency in the diagnosis and treatment of complex cardiac disorders (e.g., valve disorders, biventricular failure, pulmonary hypertension, hypertensive crisis)
 - Insertion of central venous lines, pulmonary artery catheters, dialysis catheters, and arterial lines
 - Use ultrasound for evaluation and procedural guidance for central access
 - Perform bedside pericardial and cardiac ultrasound
 - Calculate cardiac output, systemic and pulmonary vascular resistance
 - Interpret electrocardiogram
 - Perform effective chest compressions during cardiopulmonary resuscitation
 - Perform cardioversion and defibrillation
- Neurological
 - **(M)** Proficient in prevention, diagnosis and treatment of multiple etiologies of coma, delirium, and other neurologic disorders

- Perform a complete neurological examination
- Perform a brain death examination
- Interpret and manage intracranial pressure and cerebral perfusion pressure
- Monitor the electroencephalogram in patients in barbiturate coma
- Apply equipment for hypothermic treatment of post-cardiac arrest patients or traumatic brain injury patients
- Renal
 - **(M)** Demonstrate proficiency in the recognition and comprehensive management of patients with acute kidney injury
 - **(M)** Demonstrate proficiency in management of patients requiring renal replacement therapy
 - Evaluate renal function in critically ill patients
 - Coordinate the induction of hemodialysis and/or continuous renal replacement therapy in the context of the overall critical care management of multiple organ failure
- Gastrointestinal
 - **(M)** Demonstrate proficiency in the comprehensive management of acute GI disorders
 - Perform upper endoscopy, percutaneous endoscopic gastrostomy, and lower endoscopy
 - Place enteral feeding tubes
 - Apply dressings and/or drainage systems to manage stomas and fistulas
 - Measure bladder pressures in the investigation of abdominal compartment syndrome
- Hematologic
 - Use autotransfusion from thoracostomy tube systems
 - Assess patients' coagulation status using clinical exam, history, and laboratory tests including interpretation of the thromboelastogram
 - Order component transfusion therapy including initiation and management of the Massive Transfusion Protocol
- Infectious disease
 - **(M)** Demonstrate proficiency in the comprehensive management (prevention, diagnosis, and treatment) of infectious diseases and infectious complications
 - **(M)** Demonstrate appropriate antimicrobial stewardship
 - Use proper isolation techniques and handwashing
 - Adjust drug and antibiotic dosing as applicable with organ failure
 - Apply prevention techniques for nosocomial infections
 - Discuss the indications for hyperbaric oxygen therapy
- Nutritional
 - **(M)** Demonstrate proficiency in the nutritional assessment and management for special populations of critically ill patients
 - Write orders for parenteral & enteral nutrition
 - Assess the nutritional status and needs of ICU patients
- Monitoring
 - Use and calibrate transducers, amplifiers and recorders as used in the ICU
- Trauma

- **(M)** Demonstrate proficiency in the comprehensive management of severely injured patients at the extremes of age and with complex co-morbidities
- **(M)** Recognize and treat more unusual complications in severely injured patients
- Complex wound care, e.g. fasciotomy, negative pressure therapy

Medical Knowledge:

- Cardiovascular:
 - **(M)** Demonstrate comprehensive knowledge of the pathophysiology, diagnosis, and treatment of all types of shock in special patient populations (e.g., those at extremes of age, with complex co-morbidities, or who are immunosuppressed)
 - **(M)** Demonstrate comprehensive knowledge of cardiac pathophysiology and treatment of complex cardiac disorders
 - Demonstrate an understanding of cardiac physiology and monitoring
 - Correctly interpret values from invasive hemodynamic monitoring and incorporate this interpretation into patient management
 - Guide the resuscitation of patients in shock (hemorrhagic, septic, neurogenic, cardiogenic)
 - Institute vasopressor and inotropic therapy appropriately based on hemodynamic and clinical parameters
 - Demonstrate an understanding of the treatment of hemodynamic instability based on physiological parameters
 - Demonstrate the ability to manage the treatment of shock and cardiopulmonary arrest
 - Diagnose and manage common cardiac arrhythmias
- Respiratory:
 - **(M)** Demonstrate comprehensive knowledge for identification, diagnosis, prevention, and treatment of ventilator-associated events
 - Manage mechanical ventilation including initiation and adjustment of ventilator settings, including ARDS management
 - Demonstrate an understanding of basic respiratory physiology and pathophysiology of acute lung injury and the acute respiratory distress syndrome
 - Diagnose and treat common pulmonary conditions in critically ill patients, such as ALI, ARDS, aspiration, ventilator-associated pneumonia, pulmonary embolism, pneumothorax, hemothorax, pleural effusion, atelectasis and lobe collapse, and pulmonary edema
- Gastrointestinal
 - **(M)** Demonstrates comprehensive knowledge of the diagnosis, prevention, and treatment of acute GI disorders
 - Apply prophylactic measures for stress gastritis and ulceration based on appropriate indications
 - Manage gastrointestinal bleeding with resuscitation and bleeding localization through endoscopic or radiologic techniques
 - Screen, diagnose, and manage abdominal compartment syndrome
- Renal
 - **(M)** Demonstrate comprehensive knowledge of pathophysiology, diagnosis, and treatment of all types and severities of acute kidney injury

- **(M)** Demonstrate knowledge of the physiologic perturbations of all forms of renal replacement therapy
- Optimize renal perfusion and maintain euvolemia
- Prevent, diagnose, and treat acute renal insufficiency and failure
- Relate indications for hemodialysis, hemofiltration, and continuous renal replacement therapy
- Treat acid-base and electrolyte problems
- Demonstrate an understanding of normal fluid and electrolyte homeostasis and the ability to maintain homeostasis by recognizing and correcting fluid and electrolyte derangements
- Provide fluid and electrolyte orders for sepsis, major surgery requiring transfusion, cardiac failure, and fistulas
- Neurological
 - **(M)** Demonstrate comprehensive knowledge of pathophysiology and treatment of neurologic disorders
 - Demonstrate principles of nonoperative management of traumatic brain injury, including Intracranial pressure and cerebral perfusion pressure interpretation and treatment
 - Immobilize patients with vertebral fractures
 - Manage hemodynamic consequences of spinal cord injuries and syndromes
 - Demonstrate physiologic and hemodynamic management of nontraumatic cerebral hemorrhage and infarction
 - Oversee observation of patients with neurological injuries for improvement or deterioration
- Musculoskeletal
 - Communicate and use an algorithm for treatment of patients with severe pelvic fractures
 - Be able to monitor for and diagnose extremity compartment syndrome
 - Treat rhabdomyolysis, including prevention of secondary renal complications
- Endocrine
 - Diagnose and treat neurogenic and nephrogenic diabetes insipidus
 - Perform testing and treatment for adrenal insufficiency
 - Recognize thyroid disorders related to critical illness
- Organ Donation
 - Demonstrate knowledge of organ donation processes including local, state, and national regulations
 - Relate the steps in the processes of donation after brain death and after cardiac death
 - Perform accurate and timely brain death examination and declaration
 - Recognize clinical triggers for notification of the local organ procurement organization
 - Maintain physiologic stability of brain dead patients who are designated as organ donors
- Nutrition
 - **(M)** Demonstrate comprehensive knowledge of nutritional requirements for special populations of critically ill surgical patients
 - Determine and manage daily energy requirements of critically-ill patients using established formulas accounting for varied metabolic demands

- Initiate and coordinate orders involving enteral and parenteral nutrition
- Track nitrogen balance and other nutritional parameters
- Infection
 - **(M)** Demonstrate comprehensive knowledge of diagnosis, prevention, and treatment of infectious disease and infectious complications
 - **(M)** Demonstrate comprehensive knowledge of antimicrobial stewardship
 - Apply evidence-based measures in infection control and prevention, including those for invasive vascular lines, urinary catheters, ventilator-associated pneumonia, and surgical sites
 - Diagnose common ICU infections such as UTI, VAP, and catheter-related blood stream infection
 - Diagnose and treat severe infections including necrotizing soft tissue infections, fungal infections, fulminant *Clostridium difficile* infection, and meningitis
 - Apply appropriate use and discontinuation of antibiotics
- Trauma
 - **(M)** Demonstrate comprehensive knowledge of the pathophysiology, prevention, and management of complications in severely injured patients
- General Principles:
 - Demonstrate an understanding of the anatomy, physiology, and pathophysiology of conditions pertinent to critical care
 - Manage multiple and individual organ system failure
 - Perform nonoperative management of traumatic solid organ injury and relate indications for surgical or radiological intervention
 - Recognize and manage an unprotected, non-patent, or obstructed airway
 - Exhibit knowledge of physiologic and anatomic changes that occur in the elderly age group
 - Dose medications correctly based on weight or hepatic/renal function
 - Relate basic medical knowledge to patient care; critically evaluate and demonstrate knowledge of pertinent scientific information and apply that knowledge in daily care
 - Demonstrate knowledge of thermal regulation in critical illness, and the effects of hypothermia on the neurologic, cardiac, and coagulation systems
 - Demonstrate understanding of the significance of the natural history of surgical critical disease, the consequence of surgical critical care (both positive and negative), and the influence of continuity of care upon surgical outcomes
 - Exhibit the capability to integrate surgical continuity of care principles into the total care plan for all critically ill patients
 - 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

Practice-Based Learning and Improvement:

Investigate And Evaluate Patient Care Practices:

- Analyze practice experience using review of systematically collected data

- 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

Appraise and Assimilate Scientific Evidence Relevant To Patient Care:

- Locate, appraise, and assimilate evidence from scientific studies related to 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 using a systematic methodology
- Use information technology to manage information, access on-line medical information, and support fellows' own education through self-study
- Recognize and exhibit the importance of lifelong learning in surgical practice

Improve Patient Care Practices:

- **(M)** Exhibit ongoing self- evaluation and improvement that includes reflection on practice, tracking, and analyzing patient outcomes, integrating evidence-based practice guidelines, and identifying opportunities to make practice improvements
- **(M)** Discuss or demonstrate application of M&M and/or other QI conference conclusions to own patient care
- **(M)** Lead a QI activity relevant to patient care outcomes
- Analyze personal practice outcomes to adjust practices and behaviors in order to improve patient care
- Perform practice-based improvement activities using a systematic methodology
- Use information technology to manage information, access on-line medical information, and apply this information to patient care practices

Teaching

- **(M)** Recognize teachable moments and readily and respectfully engage the learner
- **(M)** Facilitate conferences and case discussions based on assimilation of evidence from the literature

Self-Directed Learning

- **(M)** Routinely synthesize current scientific literature and other resources for self-directed learning and improvement of patient care

Interpersonal and Communication Skills:

Effective Communication with Patients and Families

- **(M)** Proficiently individualize and lead difficult discussions specific to patient and family needs, (e.g., end-of-life, explaining complications)
- **(M)** Effectively negotiate and manage conflict among patients, families, and the health care

team

Effective Communication with the Health Care Team

- **(M)** Effectively lead a health care team responsible for the care of critically-ill patients using individualized communication strategies
- **(M)** Utilize strategies to prevent conflict within the health care team
- **(M)** Effectively negotiate and manage conflict within the health care team
- Demonstrate skill and sensitivity for appropriate counseling to patients, and informing patients and their families about their medical condition
- Create and sustain therapeutic and ethically sound professional relationships with patients and families
- Demonstrate compassion and empathy in discussing bad news with patients and families
- Work effectively with others as a leader of the health care team and/or other professional groups
- Effectively and promptly document clinical practices and interventions
- Present patients and conference materials in a concise, organized, logical and knowledgeable manner
- Utilize input from all collaborative interactions with personnel contributing to the critically ill patients' care
- Exhibit teamwork and leadership
- Evaluate the performance and competence of members of the surgical residency team

Professionalism:

Professionalism and Personal Behavior

- **(M)** Serve as a role model for ethical and professional behavior
- **(M)** Consistently place the interests of patients ahead of self-interests when appropriate
- **(M)** Maintain composure in accordance with ethical principles even in stressful situations

Ethical Issues

- **(M)** Serve as a role model for consistently considering and managing ethical issues in practice

Personal Responsibility

- **(M)** Serve as a role model for promptness and attendance for conferences, meetings, operations, and other activities on all rotations
- **(M)** Perform clinical and administrative responsibilities in an exemplary manner without prompting

Healthy Work Environment

- **(M)** Set an example by promoting healthy habits and creating an emotionally healthy environment for co-workers
- **(M)** Model appropriate management of personal health issues, fatigue, and stress
- Demonstrate respect, compassion and integrity; 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 medical care, confidentiality of patient information, informed consent, and business practice
- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

- Exhibit professionalism through timely completion of required administrative responsibilities (evaluations, recording hours, chart documentation, medical record dictations, conference and meeting attendance, etc.)
- Maintain positive professional relationships
- Demonstrate accountability for actions and decisions
- Present one's physical demeanor in a professional manner through personal hygiene and appropriate attire
- Admirably represent the surgical profession in all professional interactions

Systems-Based Practice:

Administrative Responsibility

- **(M)** Participate in work groups or performance improvement teams designed to reduce errors, improve patient safety, and improve health outcomes
- **(M)** Understand the appropriate use of standardized approaches to care, and participate in creating protocols of care

Coordination and Transitions of Care

- **(M)** Take a leadership role in ensuring accurate transitions of care and optimizing communication across systems and the continuum of care

Awareness and Responsiveness to the Health Care System:

- Identify how patient care and other professional practices affect other health care professionals, the health care organization, and the larger society
- Identify how these elements of the system affect one's own practice
- Be able to relate how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources

Utilization of System Resources:

- Practice cost-effective health care and resource allocation that does not compromise quality of care
- 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

Assessment:

PATIENT CARE

- Patient rounds with attending faculty
- Evaluations by faculty
- Evaluations by ICU and ER nurses

MEDICAL KNOWLEDGE

- Patient rounds with attending faculty
- Evaluations by faculty
- Presentations at conferences

PRACTICE-BASED LEARNING

- Patient rounds with attending faculty
- Evaluations by faculty
- Faculty-observed teaching of residents and students

PROFESSIONALISM

- 360 evaluations
- Evaluations by faculty, nurses, and residents

INTERPERSONAL RELATIONSHIPS & COMMUNICATION

- 360 evaluations
- Evaluations by faculty, nurses, and residents

SYSTEMS-BASED PRACTICE

- Participation in family conferences
- Journal club
- Critical Care Conferences