



# Curriculum Outline for Surgical Critical Care

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**SURGICAL COUNCIL ON RESIDENT EDUCATION**

1617 JOHN F. KENNEDY BOULEVARD  
SUITE 860  
PHILADELPHIA, PA 19103

INFO@SURGICALCORE.ORG  
WWW.SURGICALCORE.ORG

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# INTRODUCTION

## EXPLANATION OF THE CURRICULUM OUTLINE

The **SCORE Curriculum Outline for Surgical Critical Care** is a list of patient care, medical knowledge and professionalism topics to be covered over the course of a 24-month Surgical Critical Care training program and represents core education in Surgical Critical Care (SCC). This list will be updated periodically to ensure that it remains contemporary.

The outline has been created with input from the Trauma, Burns and Surgical Critical Care Board of the ABS to define the knowledge and skills to be acquired by a SCC fellow by completion of training.

With help from this group, modules have been developed to address each of the patient care topics, consisting of learning objectives with bullet points outlining what trainees should know, questions to assess their understanding of each topic, and links to other text resources for further study. Additional modules will be developed until all of the topics on the curriculum outline are covered. For more information, see [www.surgicalcore.org](http://www.surgicalcore.org).

### Category 1: Biostatistics and Experimental Design

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#### Medical Knowledge

- Biostatistics and Evaluating Data
- Scoring Systems and Outcome Prediction
- Quality Improvement

### Category 2: Cardiorespiratory Resuscitation

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#### Diseases/Conditions

- Cardiac Valvular Disease
- [Respiratory Failure](#)
- Types of Cardiac Failure and Treatment
- [Types of Shock](#)

#### Operations/Procedures

- Intubation and Initiation of Mechanical Ventilation
- [Invasive Hemodynamic Monitoring](#)
- Mechanical Support Devices including IABP, ECMO
- [Techniques for Closed and Open Cardiac Compression, Pericardiocentesis](#)

#### Medical Knowledge

- [Endpoints of Resuscitation](#)
- [Inotropic and Vasopressor Agents](#)
- Pacemakers

### Category 3: Obstetrics and Gynecology

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#### Diseases/Conditions

- Obstetrical Hemorrhage

- Pre-eclampsia, Eclampsia, HELLP Syndrome, Cardiomyopathy, and Other Disorders

### **Medical Knowledge**

- Radiologic, Pharmacologic and Procedural Considerations

## **Category 4: Pediatric Surgery**

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### **Diseases/Conditions**

- Issues in Pediatric Critical Care Including Shock and Respiratory Failure
- Role of ECMO in pediatrics

### **Operations/Procedures**

- Techniques in Pediatric Airway Management and Vascular Access

### **Medical Knowledge**

- Identification of Child Abuse and Interventions

## **Category 5: Ethics, Palliative Care and Legal Issues**

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### **Medical Knowledge**

- Brain Death
- Decision Making and Informed Consent in the Critically Ill Patient
- Describe Manifestations of Normal Grieving in Expression in a Cultural Context
- Goals of Care, Futility, and End-of-Life Care
- Nonpharmacologic and Pharmacologic Treatment of Pain

## **Category 6: Hematologic and Coagulation Disorders**

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### **Diseases/Conditions**

- [Coagulopathy and Clotting Disorders in Critical Illness including HIT](#)
- [VTE Prophylaxis and Risk Stratification in Critically Ill Patients](#)
- [VTE Treatment](#)

### **Medical Knowledge**

- [Massive Transfusion](#)
- [TEG](#)
- [Transfusion and Resuscitation](#)

## **Category 7: Metabolic, Nutritional and Endocrine Effects**

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### **Diseases/Conditions**

- Acid-Base Disorders
- [Adrenal Insufficiency, Sick-Euthyroid Syndrome](#)
- [Hypernatremia and Hyponatremia](#)
- [K, Mg, Phos and Ca](#)
- Nutrition and Assessment of Nutritional Status

### **Operations/Procedures**

- [Nutrition Administration: NG, NJ, Gastrostomy \(Open, PEG or Laparoscopic\) or Jejunostomy](#)

### **Medical Knowledge**

- [Glucose Metabolism](#)
- [Metabolic Effects of Critical Illness](#)
- Specialized Nutritional Formulas including Enteral versus TPN

## **Category 8: Monitoring and Medical Instrumentation**

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### **Operations/Procedures**

- [Techniques: Central and Arterial Line Placement](#)

### **Medical Knowledge**

- [Arterial Catheter Monitoring: Indications, Limitations and Complications](#)
- [Central Venous and PA Catheter Monitoring: Indications, Limitations and Complications](#)
- Evolving Monitoring Technologies
- [Pulse Oximetry](#)

## **Category 9: Diagnostic and Therapeutic Imaging**

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### **Medical Knowledge**

- Chest X-ray Indications and Limitations in Critical Illness
- Risks and Benefits of Imaging Technology: CT Scan, MRI, Angiography, and Bedside Imaging
- Ultrasound in Critical Illness Including FAST, Cardiac and Pulmonary

## **Category 10: Pharmacokinetics and Dynamics of Drug Metabolism**

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### **Medical Knowledge**

- [Analgesia and Sedation in Critical Illness](#)
- Effects of Renal, Hepatic Dysfunction, Obesity, Age and Critical Illness on Drug Metabolism - and Appropriate Dosing Adjustment
- Evaluation of Cost-Effectiveness in Medication Choices

## **Category 11: Cardiovascular**

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### **Diseases/Conditions**

- Arterial Disease in Critical Illness
- Cardiac Assist Devices: General Principles
- Cardiac Ischemia, Arrhythmias
- Hypertension and Hypertensive Emergencies
- Preoperative Evaluation of Cardiac Risk

## **Category 12: Respiratory**

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### **Diseases/Conditions**

- [ARDS](#)
- [Complications of Pulmonary Dysfunction: VAP, Empyema, Tracheobronchitis](#)

- [Evaluation of Respiratory Status, Need for Mechanical Ventilation](#)
- Weaning from Mechanical Ventilation

#### **Operations/Procedures**

- [Airway Management: Intubation, Recognition of Difficult Airway](#)
- [Procedures: Cricothyroidotomy, Tracheostomy](#)

#### **Medical Knowledge**

- [Modes of Ventilation](#)

### Category 13: Gastrointestinal

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#### **Diseases/Conditions**

- Abdominal Compartment Syndrome and Bowel Ischemia
- Ascending Cholangitis and Acalculous Cholecystitis
- GI Bleeding Including Stress Gastritis
- Hepatic Failure Including Encephalopathy, Varices, and Hepatorenal Syndrome
- Ileus, Pseudoobstruction, Toxic Megacolon, and Clostridium difficile
- Severe Acute Pancreatitis

#### **Operations/Procedures**

- How to Stop Bleeding from Varices

### Category 14: Renal

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#### **Diseases/Conditions**

- Acute Kidney Injury: Etiology, Diagnosis, and Management
- Chronic Kidney Injury

#### **Medical Knowledge**

- Renal Replacement Therapies

### Category 15: Neurologic

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#### **Diseases/Conditions**

- Acute Decompensation Including Delirium
- Anoxic Brain Injury and Stroke
- [Blunt Cerebrovascular Injury](#)
- Fluid and Electrolytes Considerations in Neurologic Injury Including SIADH, DI
- [Management of Intracranial Hypertension - Including Prevention of Secondary Brain Injury](#)
- Meningitis: Identification and Treatment
- Neurologic Outcome Scores
- Spinal Cord Injury Including Airway and Hemodynamics

### Category 16: Endocrine

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#### **Diseases/Conditions**

- Diagnosis and Treatment of Hypocalcemia and Hypercalcemia
- Thyroid, Thyroid Storm, and Pheochromocytoma

- Treatment of Diabetes in the Critically Ill

### **Operations/Procedures**

- Use of Steroids in the Critically Ill

## **Category 17: Musculoskeletal**

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### **Diseases/Conditions**

- Compartment Syndrome
- Necrotizing Soft Tissue Infection
- Rhabdomyolysis, Contracture and Pressure-Related Skin Injury

### **Medical Knowledge**

- Use of Specialty Beds, Positioning, and Mobilization

## **Category 18: Immune System**

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### **Diseases/Conditions**

- [Fever in the Critically Ill Patient](#)
- Prevention Strategies for VAP, CAUTI, CLABSI
- [Sepsis and Septic Shock](#)
- [Transplant in Critical Illness](#)

### **Medical Knowledge**

- [Antibiotic Management and Stewardship](#)
- [Infection Control](#)

## **Category 19: Administration and Management**

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### **Medical Knowledge**

- Collaborative Decision Making and Leadership

## **Category 20: Trauma**

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### **Diseases/Conditions**

- Abdominal Injury
- Airway Injury: Upper and Lower
- Extremity Injury: Closed and Open Fractures
- Genitourinary Trauma
- Pelvic Fractures
- Soft Tissue Injury
- Special Circumstances: Pediatric, Obstetric and Geriatric Patients
- Thoracic Trauma
- [Traumatic Brain Injury](#)
- Vascular Injury

### **Operations/Procedures**

- Damage Control Laparotomy

## **Category 21: Thermal, Electrical and Inhalation Injury**

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**Diseases/Conditions**

- Chemical Burns
- Electrical Injury Including Arrhythmias and Compartment Syndrome
- Hypermetabolism and Nutrition for Burn Victims
- Inhalation Injury Including Bronchoscopy and HBO
- Thermal Injury: Size, Depth and Resuscitation

**Category 22: Transplantation**

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**Diseases/Conditions**

- Liver Failure Identification and Management