



Curriculum Outline for Surgical Critical Care

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SURGICAL COUNCIL ON RESIDENT EDUCATION

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TABLE OF CONTENTS

(click to go to that page)

INTRODUCTION	3
Category 1: Biostatistics and Experimental Design.....	3
Category 2: Cardiorespiratory Resuscitation.....	3
Category 3: Obstetrics and Gynecology.....	4
Category 4: Pediatric Surgery	4
Category 5: Ethics, Palliative Care and Legal Issues.....	4
Category 6: Hematologic and Coagulation Disorders.....	4
Category 7: Metabolic, Nutritional and Endocrine Effects.....	4
Category 8: Monitoring and Medical Instrumentation.....	5
Category 9: Diagnostic and Therapeutic Imaging.....	5
Category 10: Pharmacokinetics and Dynamics of Drug Metabolism.....	5
Category 11: Cardiovascular.....	5
Category 12: Respiratory	6
Category 13: Gastrointestinal.....	6
Category 14: Renal.....	6
Category 15: Neurologic	6
Category 16: Endocrine	7
Category 17: Musculoskeletal	7
Category 18: Immune System.....	7
Category 19: Administration and Management.....	7
Category 20: Trauma.....	7
Category 21: Thermal, Electrical and Inhalation Injury.....	8
Category 22: Transplantation.....	8

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 the topics on the curriculum outline are covered. For more information, see www.surgicalcore.org.

Category 1: Biostatistics and Experimental Design

Medical Knowledge

- [Biostatistics and Evaluating Data](#)
- [Scoring Systems and Outcome Prediction](#)
- [Quality Improvement](#)

Category 2: Cardiorespiratory Resuscitation

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

Diseases/Conditions

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

Medical Knowledge

- Management of the Critically Ill Obstetric Patient

Category 4: Pediatric Surgery

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

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

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

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

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

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

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

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

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

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

Diseases/Conditions

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

Medical Knowledge

- Renal Replacement Therapies

Category 15: Neurologic

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

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

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

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

Medical Knowledge

- Collaborative Decision Making and Leadership

Category 20: Trauma

Diseases/Conditions

- Abdominal Injury
- Airway Injury: Upper and Lower
- Extremity and Neck Vascular Injury
- Extremity Injury: Closed and Open Fractures
- Genitourinary Trauma
- Pelvic Fractures
- Soft Tissue Injury

- Special Circumstances: Geriatric Patients
- Special Circumstances: Obstetric Patients
- Special Circumstances: Pediatric Patients
- Thoracic Trauma
- Traumatic Brain Injury
- Extremity and Neck Vascular Injury

Operations/Procedures

- Damage Control Laparotomy

Category 21: Thermal, Electrical and Inhalation Injury

Diseases/Conditions

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

Category 22: Transplantation

Diseases/Conditions

- Liver Failure Identification and Management
- Long-term Effects of Steroids and Immunosuppression
- Postoperative Care of Solid and Hollow Organ Transplants