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Perioperative Care of the Critically Ill Surgery Patient (Includes Sepsis and Hemorrhage)

Description of the Activity	All general surgeons should be able to perform perioperative care for critically ill surgical patients. Surgeons are often called to diagnose and manage critically ill patients; consider what operation (or whether any operation) is indicated; and in the postoperative setting, perform critical care, recognize early complications, and adjust the plan of care when necessary.
Functions	❖ Resuscitation ➢ Expeditiously identify whether a patient is "sick" or "not sick," and perform the following 3 steps in order: ▪ Perform a focused history and physical examination, including an assessment of pertinent positive and negative signs and symptoms. ▪ Synthesize essential information from a patient's history, physical examination, medical records, and existing diagnostic evaluations to identify the patient's primary surgical problem and illness severity. ▪ Stabilize/resuscitate a critically ill surgical patient based on available evidence-based guidelines, including administering indicated treatments such as blood/blood products, antimicrobials, and cardiopulmonary support. ➢ Recognize whether any specialty-specific surgical care will be needed, including transfer to a tertiary or quaternary center. ➢ Work collaboratively with referring practitioners and consulting teams (including inpatient teams, the emergency department team, or teams from outside facilities) to expedite care. ➢ Identify a patient's current illness severity and underlying comorbidities to determine potential peri- and intraoperative challenges. ➢ With the potential risks, benefits, and goals of care in mind and with a patient/caregiver(s) and any other involved health care teams, determine whether an operation is indicated. ➢ If an operation is indicated, ensure patient/caregiver comprehension using applicable language services and audio/visual aids. ▪ Ensure the patient or surrogate can ask questions and address any expressed concerns, and take patient/caregiver preferences into account. ➢ Monitor endpoints of resuscitation, and reassess the patient to identify whether any additional stabilization or specialist consultation is indicated. ➢ Develop a safe anesthetic approach for the clinical situation in collaboration with the anesthesia team. ❖ Procedures ➢ Perform straightforward and complex bedside procedures, including placement of arterial lines, central venous lines (resuscitative and for continuous renal replacement therapy), and pigtail or chest tubes. Additional procedures include airway management, point-of-care ultrasound evaluation to assess volume status (cardiac contractility/inferior vena cava diameter), thoracentesis and paracentesis, bronchoscopy, and endoscopy. ❖ Post-resuscitation ➢ Recognize and manage common perioperative problems or complications using available evidence-based guidelines, including: ▪ Fluid, electrolyte, or renal system abnormalities ▪ Gastrointestinal/hepatobiliary systems ▪ Hematologic system abnormalities ▪ Hemodynamic instability and associated pathophysiology based on etiology

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	▪ Infection/immune system dysfunction ▪ Metabolic, nutrition, or endocrine system abnormalities ▪ Neurologic system abnormalities ▪ Respiratory failure ➢ Reassess the patient in the early postoperative course for consideration of additional stabilization, intervention, or specialist consultation, and communicate additional status and needs to the relevant teams. ➢ Communicate an updated plan of care to a patient/caregiver(s) to ensure understanding of the illness severity, prognosis, additional treatment options, and feasibility of carrying out the plan within the patient's psychosocioeconomic context. ➢ Throughout the care continuum, and especially when there are unanticipated changes in the course of a patient's treatment, provide primary palliative care in communication, symptom management, and goal concordance, adjusting as needed and communicating any changes to all involved teams. ➢ Document changes to a patient's/caregiver's goals and goal-concordant plan of care in the electronic medical record. ➢ In complex patient care scenarios, weigh the risks, benefits, and goal concordance of possible therapies, using the assistance of subspecialty palliative care and ethics as needed. ➢ In the event that the disease has become acutely life-limiting and there are no additional disease-directed treatments, identify the end-of-life stage of care, and help a patient/caregiver(s) into this stage, prioritizing comfort and symptom-directed therapy as indicated. ➢ Reflect on the experience of having been involved in the patient's care, and facilitate healthy ways to process the experience both inside and outside of the hospital to support the care team's physical, mental, emotional, and spiritual well-being.
Scope	❖ In scope ➢ All adult patients ➢ Pediatric patients older than 2 years ❖ Out of scope ➢ Specialty-specific subsequent management or operative intervention

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Level	Resuscitation	Procedures	Post-resuscitation
1 **Limited Participation** Demonstrates understanding of information and has very basic skills **Framework:** What a learner directly out of medical school should know The attending can show and tell.	• Reports information received from referring/consulting teams • Obtains an H&P inclusive of reviewing medical records and available testing with cultural humility; develops a differential for a patient's primary surgical problem • Communicates the elements of an informed consent discussion for bedside procedures but omits some when documenting the discussion • Demonstrates limited understanding of the pathophysiology of critical illness • Identifies but cannot yet apply evidence-based guidelines • Reports new data and other endpoints of resuscitation	• Demonstrates superficial knowledge of indications, steps, and basic skills (knot tying, suturing) for bedside procedures (eg, arterial and venous line placement, tube thoracostomy, surgical airway, POCUS, thoracentesis, paracentesis, bronchoscopy) • Demonstrates limited understanding of execution, confirmatory testing, and associated risks of bedside procedures	• Reports an updated plan of care to a patient/caregiver(s) in a timely way • Documents a goals-of-care discussion with a patient/caregiver(s) but omits some elements, particularly nuances • Identifies evidence-based critical care guidelines that apply to perioperative complications or management of a critically ill patient • Needs assistance to recognize a patient at the end of life and incorporate patient/caregiver preferences into the plan of care • Requires prompting to reassess a patient in their early postop/post-resuscitation course and adjust treatment based on new information • Evaluates an ICU patient for perioperative problems/complications
2 **Direct Supervision** Demonstrates understanding of the steps of the procedure but requires direction through principles and does not know the nuances of a basic case	• Identifies indicated referring/consulting teams, reports information received, and asks follow-up questions • Initiates informed consent for bedside procedures and, if indicated and goal concordant, an operation; requires help to complete the consent, address best- and worst-case scenarios for the short, medium, and long term, and ensure patient/caregiver comprehension • Demonstrates understanding of the pathophysiology of critical illness and normal physiologic response	• Demonstrates comprehensive knowledge of the indications, steps, and basic skills (knot tying, suturing) for bedside procedures (eg, arterial and venous line placement, tube thoracostomy, surgical airways, POCUS, thoracentesis, paracentesis, bronchoscopy)	• Communicates an updated plan of care to a patient/caregiver(s) without reliably considering if they can carry it out within their psychosocioeconomic context • Reports an updated plan of care to other involved specialist teams • Documents patient/caregiver goals and goal-concordant plan of care in the EMR with few, if any, omissions • Reflects on their involvement in a patient's care but is unsure how to process their experience in and outside of the hospital in healthy ways • Elicits patient/caregiver input regarding management to inform evidence-based care

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Framework: The learner can use the tools but may not know exactly what, where, or how to do it. The attending gives active help throughout the case to maintain forward progression.	• Demonstrates superficial knowledge of evidence-based guidelines for managing a critically ill patient • Evaluates a critically ill patient and orders/interprets diagnostic testing with assistance to discern underlying etiology • Reports new data and other endpoints of resuscitation and begins to formulate a management plan in response	• Demonstrates solid understanding of execution, confirmatory testing, and associated risks of bedside procedures	• Identifies a patient at the end of life and seeks to incorporate patient/caregiver preferences into the plan of care • Reassesses a patient in their early postop/post-resuscitation course but needs assistance to adjust management • Identifies perioperative problems/complications but needs assistance to manage them
3 **Indirect Supervision** Can do a basic procedure but will not recognize abnormalities and does not understand the nuances of an advanced case **Framework:** The learner can perform the procedure in straightforward circumstances. The attending gives passive help.	• Communicates with referring/consulting teams, including centers offering higher levels of care, but needs supervision to ensure all essential points have been relayed • Obtains informed consent for bedside procedures and, if indicated and goal concordant, an operation; addresses best- and worst-case scenarios for the short, medium, and long term but does not always ensure patient/caregiver comprehension by using applicable language services and audio/visual aids • Considers the effect of comorbidities on physiologic response (β-blockers, steroids, immunosuppression) • Demonstrates understanding of the pathophysiology of critical illness and normal/abnormal physiologic responses • Identifies an unexpected response or lack of response to an intervention • Resuscitates a patient based on available evidence-based guidelines with some supervision • Monitors some but not all endpoints of resuscitation, including UOP, labs, and	• Performs bedside procedures such as arterial and venous line placement, tube thoracostomy, surgical airways, POCUS, thoracentesis, and bronchoscopy, with confirmatory testing when indicated • Identifies the associated risks of bedside procedures • Calls for help if unable to accomplish a procedure and modifies an approach when initially unsuccessful in completing a procedure • Requires assistance to make a patient-specific decision regarding	• Communicates an updated plan of care to a patient/caregiver(s) with consideration of some, but not all, patient factors (eg, illness severity, prognosis, additional treatment, feasibility of carrying out plan within psychosocioeconomic context) • Considers a subspecialty consultation, including palliative care or ethics • Demonstrates understanding of the importance of primary palliative care but cannot reliably provide or adjust it as needed • Promptly documents changes to a patient's/caregiver's goals and goal-concordant plan of care in the EMR • Identifies end-of-life stage of care, prioritizing comfort and symptom-directed therapy as indicated with assistance • Reflects on the experience of having been involved in a patient's care and uses strategies to process the experience • Applies evidence-based critical care guidelines applicable to perioperative problems/complications or management of a critically ill patient • Reassesses a patient in their early postop/post-resuscitation course using data from interventions

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	imaging (eg, echo); reassesses the patient to identify if additional resuscitation or specialist consultation is indicated • Identifies whether an operation is indicated to address a patient's primary surgical problem but does not always do so in a timely way	treatment approach and time sensitivity of a procedure	performed; considers additional resuscitation, interventions, or specialist consultation, including subspecialty palliative care or ethics • Evaluates postop complications in light of comorbid conditions (bleeding in patients with coagulopathy or infection in immunosuppressed patients
4 **<u>Practice Ready</u>** Can manage more complex patient presentations and procedures and take care of most cases **<u>Framework</u>:** The learner can treat all critically ill surgery patients and has a strong understanding of surgical options and techniques for less common scenarios. The attending is available at the request of the learner but is not routinely needed for common presentations, though input may be needed for more complex presentations.	• Communicates with referring/consulting teams, including centers offering higher levels of care, ensuring all essential points have been relayed to expedite resuscitation • Obtains informed consent for bedside procedures and, if indicated and goal concordant, an operation; addresses best- and worst-case scenarios for the short, medium, and long term; uses applicable language services and audio/visual aids to ensure patient/caregiver comprehension • Resuscitates a patient in accordance with evidence-based guidelines • Synthesizes all information to identify a patient's illness severity and initiate management • Independently resuscitates a patient based on available evidence-based guidelines, administering indicated treatments (eg, blood/blood products; antimicrobials [including those active against toxins as indicated]; cardiopulmonary support) • Monitors endpoints of resuscitation (eg, UOP, labs, imaging such as echo) and adapts management as indicated, including making timely decisions regarding necessary operative intervention • Develops a management plan using decision-making that is concordant with patient/caregiver goals of care	• Independently makes patient-specific decisions regarding approach, admitting disposition, and time sensitivity	• Communicates an updated plan of care to a patient/caregiver(s), considering illness severity, prognosis, additional treatment, and feasibility of carrying out the plan within their psychosocioeconomic context • Provides primary palliative care in communication, symptom management, and goal concordance in an ongoing plan of care • Adjusts a goal-concordant plan when there are unanticipated changes in a patient's course and communicates any changes to all involved teams • Reviews and gives feedback on documentation in the EMR regarding changes to a patient's/caregivers' goals and goal-concordant plan of care • Reflects on the experience of having been involved in a patient's care; uses multiple strategies to process the experience both in and outside of the hospital in ways that support physical, mental, emotional, and spiritual well-being • Critically appraises and applies evidence to a critically ill patient and adapts the plan of care when the patient does not respond • Reassesses the patient in their early postop/post-resuscitation course using data from interventions performed; independently identifies when additional information is required or management needs to be modified • Identifies and manages perioperative problems/complications using a systems-based approach and available evidence-based guidelines