



Evaluation & Management of a Critically Ill Child

Description of the Activity	Surgical intensivists are commonly called on to care for critically ill children. The surgical intensivist should be able to assess, diagnose, and manage critically ill pediatric patients and perform the common critical care procedures necessary for their treatment and monitoring.
Functions	<ul style="list-style-type: none">❖ Resuscitation<ul style="list-style-type: none">➤ Perform a comprehensive assessment to evaluate the severity of illness and formulate a differential diagnosis.➤ Recognize age-related differences in critical illness presentations in infants and children, including vital signs; physical exam; laboratory and diagnostic imaging indications and findings; differential diagnosis, and treatment options.➤ Recognize age-appropriate considerations in workup relevant to infants and children, including implications of diagnostic radiation, skeletal immaturity, and pediatric-specific diagnostic techniques.➤ Practice evidence-based pediatric resuscitation management, including weight-based fluid and blood product administration.➤ Recognize when a patient's status exceeds individual, team, or hospital capabilities, and seek appropriate consultations or transfer.➤ Recognize and manage limitations in institutional/system resources, and implement an approach to care in resource-limited situations.➤ Work collaboratively with referring practitioners and consulting teams (including inpatient teams, emergency department team, pediatric team, pharmacy, or teams from outside facilities) to expedite care.➤ Counsel patient/caregiver(s), ensuring alignment of goals of care; understanding of diagnosis, prognosis, and treatment options; and performing shared decision-making.➤ Determine whether a procedure is indicated in conjunction with a patient/caregiver(s) and any other involved health care teams, ensuring patient/caregiver comprehension using applicable language services and audio/visual aids and addressing patient/caregiver questions, concerns, and preferences.➤ Develop a safe sedation approach if indicated, in collaboration with the multidisciplinary team.➤ Perform straightforward bedside procedures, recognizing age-related differences in equipment and techniques.❖ Ongoing Care<ul style="list-style-type: none">➤ Monitor endpoints of resuscitation, and reassess the patient to identify whether any additional stabilization or specialist consultation is indicated.➤ Recognize age-related alterations in pharmacokinetics, and adjust medication dosing and monitoring when indicated.➤ Recognize fluid and nutritional needs in infants and children and implement age- and weight-appropriate nutritional support.➤ Perform pediatric-specific advanced ventilatory management.➤ Perform comprehensive evidence-based critical care management for organ system dysfunction.➤ Be aware of applicable laws regarding surrogate decision-makers for minors.➤ Be aware of indications for workup and pathways for management of child physical abuse/neglect.❖ Transition of Care



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	<ul style="list-style-type: none">➤ Reassess the patient at intervals for consideration of additional stabilization, intervention, or specialist care.➤ Recognize the need for pediatric-specific rehabilitation in the context of child development.➤ Recognize the need for age-appropriate enrichment and facilitate age-related social support.➤ Lead an interdisciplinary team to ensure streamlined care and communication to patients/caregiver(s) to include decision-making that addresses and considers a patient's goals of care➤ Throughout the care continuum, and particularly when there are unanticipated changes in the course of a patient's treatment, provide and lead the team in primary palliative care in communication, symptom management, and goal concordance.➤ In complex patient care scenarios, lead the team in weighing risks, benefits, and goal concordance of possible therapies, using the assistance of subspecialty palliative care and ethics as needed.➤ Customize difficult news to patients/caregiver(s), setting realistic recovery expectations and facilitating goals-of-care discussions.➤ Systematically de-escalate care, and recognize when a patient no longer requires ICU-level care.➤ Select transfer destination, and communicate with consultants and teams as well as patients/caregivers.➤ Identify when the disease has become acutely life-limiting with no further disease-directed treatments, and lead the team in helping transition the patient/caregiver(s) to end-of-life care, prioritizing comfort and symptom-directed therapy as indicated.➤ Lead the team in reflection on difficult patient care experiences, and employ coping strategies that maximize provider well-being and the health of the team.
Scope	<ul style="list-style-type: none">❖ In scope<ul style="list-style-type: none">➤ Airway management of infants and children➤ Cardiac arrest in children➤ Child physical abuse and neglect➤ Pediatric burns➤ Pediatric extracorporeal membrane oxygenation (ECMO) evaluation➤ Pediatric patients as defined by individual system guidelines and protocols➤ Pediatric trauma➤ Pediatric-specific infections➤ Resuscitation in pediatric shock➤ Sequelae of life-threatening congenital conditions



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<p style="text-align: center;">1</p> <p><u>Limited Participation</u></p> <p>Demonstrates limited critical care knowledge and skills</p> <p><u>Framework:</u></p> <p>What a learner directly out of residency should know</p> <p>Performs ICU procedures on straightforward patients but requires supervision/direction for more complex patients/procedures</p> <p>Requires continuous direct supervision by the attending for patient management</p>	<ul style="list-style-type: none"> Recognizes the presence of shock but requires assistance to delineate type and etiology Demonstrates basic knowledge of resuscitation but requires specific directions to initiate it in a straightforward patient Requires active assistance to identify indications for advanced monitoring (eg, invasive monitoring, arterial pressure waveform) Requires active assistance to apply age- and weight-related considerations to the resuscitation of a critically ill child With prompting, recognizes the potential for child abuse; requires active direction for workup and further management Requires active assistance to perform bedside procedures (eg, tube thoracostomy, peripheral arterial/central venous catheterization, IV access) and recognize complications Requires prompting to provide timely, accurate, and accessible updates to a patient/caregiver(s) Requires continuous direction from the attending physician to lead the team during resuscitation 	<ul style="list-style-type: none"> Requires active direction from the attending physician for continued assessment and management of a critically ill or injured patient; needs direction on when to modify therapy Requires direct assistance to apply age- and weight-related considerations to the ongoing care of a critically ill child Demonstrates familiarity with age-based nutritional assessment but needs assistance to implement it Demonstrates knowledge of the pathophysiology, pharmacology, and therapeutics of complex critical care conditions; requires assistance to apply this knowledge in a clinical context Requires active assistance to perform ICU procedures (eg, peripheral arterial/central venous catheterization) and recognize complications Provides timely and accurate updates to a patient/caregiver(s); with active direction, customizes communication, avoiding personal biases and communication barriers Requires active assistance to lead and coordinate the multidisciplinary care team during ongoing care 	<ul style="list-style-type: none"> Requires prompting to de-escalate care and recognize a patient's readiness for liberation from the ICU Requires prompting to reflect on clinical reasoning for critical care problems Requires direct assistance to provide timely and accurate updates to a patient/caregiver(s) Clearly and concisely requests and responds to a consultation, using language that values all members of the health care team



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<p style="text-align: center;">2</p> <p><u>Direct Supervision</u></p> <p>Initiates straightforward management for many critical illnesses but requires active direction for further management and complex critical illnesses</p> <p><u>Framework:</u></p> <p>Demonstrates a sufficient fund of knowledge for basic critical care and some knowledge of complex critical illness</p> <p>Performs ICU procedures on straightforward patients but may require supervision/direction for more complex patients/procedures</p> <p>The attending gives active help throughout to direct the clinical course.</p>	<ul style="list-style-type: none"> Recognizes the presence of shock and, with prompting, delineates type and etiology Demonstrates knowledge of resuscitation and, with prompting, initiates it in a straightforward patient Identifies indications for advanced monitoring, including invasive and arterial pressure waveform monitoring With prompting, initiates resuscitation of a critically ill child, applying age- and weight-related considerations Recognizes the potential for child abuse and initiates assessment; requires direction to complete assessment and management Provides timely, accurate, and accessible updates to a patient/caregiver(s) in a straightforward situation With prompting, leads the team during resuscitation Requires direct supervision to perform bedside procedures (eg, tube thoracostomy, peripheral arterial/central venous catheterization, IV access) and recognize complications 	<ul style="list-style-type: none"> Requires direct supervision for continued assessment and management of a critically ill or injured patient; with prompting, adjusts therapy in response to changes in patient status Requires direct supervision to apply age- and weight-related considerations to the ongoing care of a critically ill child Performs age-based nutritional assessment, needing assistance to tailor it to specific patient needs With direct supervision, synthesizes knowledge of the pathophysiology, pharmacology, and therapeutics of common critical care conditions Performs ICU procedures (eg, peripheral arterial/central venous catheterization) and recognizes complications in a straightforward patient With some coaching, coordinates recommendations from different members of the health care team; is cognizant and respectful of all health care team members Customizes communication with a patient/caregiver(s), avoiding personal biases and communication barriers; actively listens to elicit patient/caregiver preferences and expectations 	<ul style="list-style-type: none"> De-escalates care and recognizes readiness for ICU liberation in a straightforward patient With prompting, initiates conversations about the care plan as new clinical data/results arise Customizes communication while avoiding personal biases and communication barriers with a straightforward patient and their caregiver(s); actively listens to the patient/caregiver(s) to elicit preferences and expectations With prompting, assimilates recommendations from consultants and communicates with the health care team



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<p>3</p> <p><u>Indirect Supervision</u></p> <p>Manages most critical illnesses but may require guidance for more complex patients or atypical presentations</p> <p>Framework: Demonstrates a sufficient fund of knowledge for basic and most complex critical care</p> <p>Independently performs most ICU procedures and supervises procedures on straightforward patients</p> <p>May require input to manage the most complicated ICU patients</p> <p>The learner can manage a critically ill patient in straightforward circumstances.</p>	<ul style="list-style-type: none">• Initiates evidence-based resuscitation for straightforward and complex patients with intermittent direction• Independently identifies indications for advanced monitoring, including invasive and arterial pressure waveform monitoring• With indirect supervision, applies age- and weight-related considerations to the resuscitation of a critically ill child• Recognizes the potential for child abuse and initiates and completes assessment and management, including social services involvement• Independently provides timely, accurate, and accessible updates to a patient/caregiver(s)• Independently leads the team during resuscitation of a straightforward patient• Performs bedside procedures (eg, tube thoracostomy, peripheral arterial/central venous catheterization) and manages complications in a straightforward patient	<ul style="list-style-type: none">• With intermittent supervision, performs continued assessment and management of a complex critically ill or injured patient; monitors response to therapy and adjusts treatment in response to the patient's needs• Synthesizes and applies knowledge of the pathophysiology, pharmacology, and therapeutics of common critical care conditions• Performs age-based nutritional assessment and tailors it to specific patient needs• Independently performs ICU procedures (eg, peripheral arterial/central venous catheterization) and recognizes complications• Uses shared decision-making to develop a personalized care plan; delivers complex and difficult information to a patient/caregiver(s)• Coordinates recommendations from different members of the health care team and is cognizant and respectful of all health care team members• Applies evidence-based principles to direct patient care in a complex critical care problem	<ul style="list-style-type: none">• De-escalates care and recognizes readiness for ICU liberation in a straightforward patient but requires guidance for a more complex or atypical patient• Independently reflects and adjusts the care plan as new clinical data arise• With indirect supervision, delivers complex and difficult information to a patient/caregiver(s)• Coordinates recommendations from different members of the health care team



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<p>4</p> <p>Practice Ready</p> <p>Independently manages complex critical illnesses and leads the critical care team</p> <p>Framework: Demonstrates an attending-level fund of knowledge</p> <p>Independently performs and supervises procedures</p> <p>The attending is available at the request of the learner but is not routinely needed for common or complex critical illness.</p>	<ul style="list-style-type: none">Independently delineates the etiology of and initiates treatment for shock in a complex patientInterprets data and tailors resuscitation for a complex patient, recognizing when the patient will benefit from advanced monitoring, including invasive and arterial pressure waveform monitoringApplies age- and weight-related resources to the resuscitation of a critically ill childRecognizes the potential for child abuse and directs the team in initiating and completing assessment and management, including social services involvementPerforms bedside procedures (eg, tube thoracostomy, peripheral arterial/central venous catheterization) and manages complications in a complex patient; troubleshoots techniques (eg, arterial/central line placement, including bedside ultrasound)Independently anticipates, recognizes, and manages procedural complicationsFacilitates difficult discussions specific to patient/caregiver needsIndependently leads the team during resuscitation of a complex patient, maintaining communication in a challenging situation; resolves conflict within the interdisciplinary team	<ul style="list-style-type: none">Independently assesses and manages a complex critically ill or injured patient, including treatment of complex injuries and complications carrying over from the initial evaluation and into longitudinal ICU care; adjusts therapies in response to changes in a patient's statusIndependently uses age- and weight-related resources in the ongoing care of the critically ill childLeads the team in performing age-based nutritional assessment and tailors it to specific patient needs, even in a highly complex patientSynthesizes and applies knowledge of the pathophysiology, pharmacology, therapeutics, and complications of complex critical care conditionsSynthesizes and prioritizes the differential and anticipates potential complications in a complex critical care conditionAssesses a patient at high risk for procedural complications and describes managementFacilitates difficult discussions specific to patient/caregiver needs; negotiates and manages conflict between the patient/caregiver(s) and the health care team	<ul style="list-style-type: none">Independently de-escalates care and recognizes readiness for ICU liberationLeads the team in debriefing clinical decision-making and identifying areas of improvementDelivers complex and difficult information to a patient/caregiver(s); independently negotiates and manages conflict between the patient/caregiver(s) and the health care teamLeads and coordinates the care team and a patient/caregiver(s) in addressing goals and transitions of care



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	<ul style="list-style-type: none">• Requests and coordinates consultations for a complex patient; uses this information to address specific aspects of patient management	Independently leads and coordinates the multidisciplinary care team during ongoing care and promotes respect of all health care team members	