



Evaluation & Management of a Patient with Neurologic Dysfunction/Delirium/Encephalopathy or Brain Injury

| Description of the Activity | All surgical intensivists should be able to perform focused and timely care for critically ill patients with neurologic dysfunction. Surgical intensivists are often called to diagnose and manage neurologic dysfunction, considering a broad differential diagnosis and focusing it appropriately based on clinical context. |
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| Functions | <ul style="list-style-type: none">❖ Resuscitation<ul style="list-style-type: none">➤ Promptly recognize patients with neurologic dysfunction.➤ Synthesize essential information from a patient's history, physical examination, medical and surgical history, medications, baseline functional status, and cognitive function to determine potential care challenges.➤ Use and interpret available diagnostic tests and imaging to determine the diagnosis and treatment plan.➤ Lead an interdisciplinary team to ensure streamlined care and communication with patients/caregivers, including decision-making that addresses and considers a patient's goals of care.➤ Recognize whether any specialty-specific surgical care will be needed, including transfer to a tertiary or quaternary center.➤ Lead a collaborative, multidisciplinary team that includes referring practitioners, consulting teams, or outside providers to expedite care.❖ Ongoing Management<ul style="list-style-type: none">➤ Recognize and manage complications of common neurological bedside procedures.➤ Implement appropriate pharmacologic and nonpharmacologic strategies for the prevention and treatment of neurologic disorders.➤ Appropriately use and apply evidence-based scoring systems to evaluate for neurologic dysfunction.➤ Recognize the severity of neurologic dysfunction, and counsel and adjust the management plan accordingly.➤ Recognize the ethical, moral, and logistical complexity surrounding death by neurological criteria, and apply the current standards and practices for evaluating patients with a potential diagnosis of death by neurological criteria.➤ Reassess patients for consideration of additional stabilization, intervention, or specialist consultation, and communicate additional status and needs to the relevant teams.❖ Transition of Care<ul style="list-style-type: none">➤ 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 regarding communication, symptom management, and goal concordance.➤ In complex patient care scenarios, lead the team in weighing the risks, benefits, and goal concordance of possible therapies, using the assistance of palliative care and ethics teams as needed.➤ Customize difficult news to patients/caregivers, setting realistic recovery expectations and facilitating goals-of-care discussions. |



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| | <ul style="list-style-type: none">➤ Identify when disease has become acutely life-limiting with no further disease-directed treatments, and lead the team in helping transition patients/caregivers 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.➤ Systematically de-escalate care, and recognize when patients no longer requires intensive care unit (ICU)-level care.➤ Select transfer destinations, and communicate with consultants and teams as well as patients/caregivers.➤ Identify the need for post-ICU recovery services, such as neurological rehabilitation, long-term acute care facility, skilled nursing facility, or acute inpatient rehabilitation, and identify and direct support services for caregivers. |
| Scope | <ul style="list-style-type: none">❖ In scope<ul style="list-style-type: none">➤ Anoxic brain injury➤ Coma➤ Death by neurological criteria➤ Delirium➤ Infectious neurological disease➤ Metabolic encephalopathy➤ Neurogenic shock and resuscitation➤ Organ donor➤ Polyneuropathy of critical illness➤ Spinal cord injury➤ Status epilepticus➤ Stroke and intracranial hemorrhage➤ Traumatic brain injury |



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| <p>1</p> <p>Limited Participation Demonstrates limited critical care knowledge and skills</p> <p>Framework: 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">• Performs workup of neurologic dysfunction, ordering basic diagnostic studies such as imaging, labs, and EEG, but formulates an incomplete differential• Recognizes the severity of a patient's illness but requires ongoing assistance to execute a tailored diagnostic and treatment strategy• Discusses straightforward goals of care with a patient/caregiver(s) (eg, DNR/DNI) and elicits whether an intervention is desired• Provides a status update to a patient/caregiver(s) with assistance• Demonstrates limited communication with other team members, including nursing staff, regarding the resuscitation plan | <ul style="list-style-type: none">• Recognizes validated scoring systems to evaluate for neurologic dysfunction and delirium but is unable to apply them• Recognizes changes in patient physiology but is unable to develop a treatment plan• Recognizes limited indications for neurologic monitoring• Implements pharmacologic and nonpharmacologic strategies for preventing and treating neurologic disorders and delirium with prompting• Develops a straightforward plan for managing sedation and analgesia with assistance• Implements organ donor management with ongoing supervision• Articulates basic principles of death by neurological criteria• Demonstrates knowledge of informed consent, surrogate decision-making, advance directives, and other ethical principles surrounding organ donation and death by neurologic criteria, requiring assistance with implementation | <ul style="list-style-type: none">• Identifies when the disease has become acutely life-limiting with no further disease-directed treatments• With assistance, identifies a patient who no longer requires ICU-level care• Implements best practices for comfort- and symptom-directed therapy with prompting• Recognizes the potential need for post-ICU procedures (eg, tracheostomy, feeding tube) and recovery services with prompting• Communicates with consultants, teams, and patients/caregiver(s) regarding transfer destinations with ongoing assistance |
| <p>2</p> <p>Direct Supervision</p> | <ul style="list-style-type: none">• Performs workup of neurologic dysfunction, including most of the important elements, and develops a complete differential in a | <ul style="list-style-type: none">• Recognizes validated scoring systems to evaluate for neurologic dysfunction and | <ul style="list-style-type: none">• With prompting, communicates with a caregiver(s) when disease has become |



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| <p>Initiates straightforward management for many critical illnesses but requires active direction for further management and complex critical illnesses</p> <p>Framework:</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> | <p>straightforward patient but requires assistance for a more complex patient</p> <ul style="list-style-type: none">Recognizes severity of patient illness and requires limited assistance to execute a tailored diagnostic and treatment strategyDiscusses complex goals of care with a patient/caregiver(s) (eg, DNR/DNI) and elicits whether an intervention is desiredProvides a status update to a patient/caregiver(s)Communicates with other team members, including nursing staff, regarding the resuscitation plan but may require some prompting | <p>delirium and applies them to a straightforward patient</p> <ul style="list-style-type: none">Recognizes changes in patient physiology and develops a comprehensive treatment planRecognizes straightforward indications for neurologic monitoringTailors pharmacologic and nonpharmacologic strategies for preventing and treating neurologic disorders and delirium in a straightforward patientDevelops basic plans for managing sedation and analgesiaImplements organ donor management goals with promptingPerforms a clinical exam for determination of death by neurologic criteria with minimal directionNavigates a straightforward situation surrounding organ donation and death by neurologic criteria | <p>acutely life-limiting with no further disease-directed treatments</p> <ul style="list-style-type: none">Identifies a straightforward patient who no longer requires ICU-level careImplements comfort- and symptom-directed therapy with assistance for a straightforward patientRecognizes the potential need for post-ICU procedures (eg, tracheostomy, feeding tube) and recovery servicesInitiates communication with consultants, teams, and patients/caregiver(s) regarding transfer destinations with some prompting |
| <p>3</p> <p>Indirect Supervision</p> <p>Manages most critical illnesses but may require guidance for more complex patients or atypical presentations</p> | <ul style="list-style-type: none">Performs workup of neurologic dysfunction independently and includes all of the important elementsRequires minimal assistance to execute tailored diagnostic and treatment strategies | <ul style="list-style-type: none">Recognizes validated scoring systems to evaluate for neurologic dysfunction and delirium and applies them in a complex condition | <ul style="list-style-type: none">Communicates with caregiver(s) when disease has become acutely life-limiting with no further disease-directed treatments |



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| <p>Framework:</p> <p>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>The learner can manage a critically ill patient in straightforward circumstances but may require input to manage the most complicated ICU patients.</p> | <p>but may require more guidance for complex conditions</p> <ul style="list-style-type: none">• Incorporates health care proxy, advance directives, and code status into a goal-concordant plan of care, seeking occasional guidance for complex cases• Provides status updates that are tailored to individual patient/caregiver health literacy and family dynamics, with some guidance for complex cases• Communicates with other team members, including nursing staff, regarding the resuscitation plan and solicits input and suggestions | <ul style="list-style-type: none">• Applies evidence-based protocols and shared decision-making to the development of a treatment plan• Interprets data from neurologic monitoring and implements a treatment plan with assistance• Tailors pharmacologic and nonpharmacologic strategies for preventing and treating neurologic disorders and delirium in a complex patient• Executes plans for managing sedation and analgesia in a moderately complex patient, taking comorbidities into consideration• Implements organ donor management with minimal input• Applies the current standards and practices for evaluating patients with a potential diagnosis of death by neurological criteria• Recognizes the need to seek help in managing and resolving ethical, moral, and logistical complexity surrounding organ donation and death by neurologic criteria | <ul style="list-style-type: none">• Recognizes when a patient no longer requires ICU-level care and initiates de-escalation, requiring assistance in a highly complex patient• Implements comfort and symptom-directed therapy for a patient, seeking assistance in a highly complex situation• Recognizes the potential need for post-ICU procedures (eg, tracheostomy, feeding tube) and recovery services and considers goal concordance and timing• Communicates with consultants, teams, and patients/caregiver(s) regarding transfer destinations, requiring direction for a complex patient |
| <p>4</p> <p>Practice Ready</p> <p>Independently manages complex critical illnesses</p> | <ul style="list-style-type: none">• Directs the workup of a patient with neurologic dysfunction, develops a comprehensive differential for the | <ul style="list-style-type: none">• Leads the team in applying validated scoring systems to evaluate for neurologic dysfunction and delirium | <ul style="list-style-type: none">• Recognizes when disease has become acutely life-limiting with no further disease-directed treatments and leads |



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| <p>and leads a 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> | <p>etiology, and recognizes the need for immediate intervention</p> <ul style="list-style-type: none">Independently executes tailored diagnostic and treatment strategies in a highly complex patientRecognizes and navigates prognostic uncertainty in communication with a patient/caregiver(s)Independently provides status updates that are tailored to individual patient/caregiver health literacy and family dynamicsCommunicates with other team members, including nursing staff, regarding the resuscitation plan, even in a complex and stressful situation | <ul style="list-style-type: none">Adjusts a complex and comprehensive management plan in response to a decline in neurologic functionInterprets data from neurologic monitoring and implements a treatment plan accordinglyDevelops pharmacologic and nonpharmacologic strategies for preventing and treating neurologic disorders and deliriumOversees initiation, titration, and discontinuation of sedation and analgesia, taking underlying comorbidities into considerationSupervises the implementation of organ donor management goalsApplies the current standards and practices for evaluating patients with a potential diagnosis of death by neurological criteria, leading the team in navigating the diagnosis of a complex patientIndependently recognizes ethical, moral, and logistical complexity surrounding organ donation and death by neurologic criteria and uses appropriate resources for managing and resolving ethical dilemmas as needed | <p>the transition to end-of-life care, prioritizing comfort and symptom-directed therapy</p> <ul style="list-style-type: none">Recognizes when a patient no longer requires ICU-level care and initiates de-escalation, considering patient factors and specific hospital resourcesImplements comfort and symptom-directed therapy in even a highly complex patientLeads the team in coordinating procedures (eg, tracheostomy, feeding tube) and recovery services, considering goal concordance and timingCommunicates with consultants, teams, and patients/caregiver(s) regarding transfer destinations, even in a highly complex patient |