

Critical Care Nursing in Acute Postoperative Neurosurgical Patients



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KEYWORDS

- Neurological • Postoperative • Neurosurgery • Craniotomy • Endovascular
- Intensive care

KEY POINTS

- Most postoperative neurologic patients, regardless of the disease process, face common risks and complications that require continuous monitoring to improve patient outcomes.
- Postoperative neurosurgical patients require an understanding of the unique needs that must be met by both the anesthesia and nursing staff.
- Surgical and endovascular neurologic patients require a high acuity of care. Mainstays of postoperative care include continuous assessment in areas of level of consciousness, hemodynamics, temperature, pain, seizures, nausea, and fluid therapy.

CONSIDERATIONS OF POSTNEUROSURGICAL PATIENTS REGARDLESS OF PATHOLOGIC CONDITION

Neurologic Assessment

Frequent and thorough neurologic assessments are paramount to rapid intervention in a deteriorating or worsening patient condition. Many facilities implement the use of hourly neurologic assessments through the routine use of the Glasgow Coma Scale (GCS) ([Table 1](#)).

The objectivity of the GCS allows for a standard measurement of a patient's neurologic status. Nurses can use this scale by assessing 3 components of a patient's condition via eye, motor, and verbal response. Deteriorations in a patient's GCS will require prompt nursing intervention and notification of the neurosurgical team. On admission of acute neurosurgical patients to the intensive care unit (ICU), it is imperative to perform a baseline neurologic examination. This baseline examination will allow the nurse to quickly detect any potential deterioration in the neurologic condition during patient care. This examination also allows for continuity of care in the transitional period from the postoperative period through the transfer of care to the ICU.

No disclosures.

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Crit Care Nurs Clin N Am 27 (2015) 33–45
<http://dx.doi.org/10.1016/j.cnc.2014.10.002>

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Action	Reaction	Value
Eye opening	Spontaneously opens eyes	4
	Opens eyes to verbal stimulation	3
	Opens eyes to painful stimulation	2
	No response to stimulation	1
Verbal	Oriented	5
	Confused	4
	Inappropriate to questions	3
	Incomprehensible	2
	No response to stimulation	1
Motor	Follows commands	6
	Localizes extremities to pain	5
	Withdraws extremities to pain	4
	Decorticate movement	3
	Decerebrate movement	2
	No response to stimulation	1
Total	Normal neurologic examination	15
	Coma	8 or less
	Unresponsive	3

Adapted from Teasdale G, Jennett B. Assessment of coma and impaired consciousness: a practical scale. *Lancet* 1974;2:81, with permission; and Jennett B. Assessment of the severity of head injury. *J Neurol Neurosurg Psychiatry* 1976;39:647.

Another key element of the nursing neurologic assessment includes frequent monitoring of pupil appearance and reactivity, commonly known as PERRLA (pupils that are equally round and reactive to light and accommodation). Changes in pupil appearance or sluggish reactivity to light can be an indicator of a patient's worsening neurologic prognosis. The neurosurgical evaluation should also include the baseline and continued monitoring of all extremities' power and mobility to command. Any change in a patient's level of consciousness (LOC) or deviation from baseline assessment requires prompt notification to the medical care team.

Testing and Imaging

Routine tests for neurologic conditions include the use of a computerized tomography (CT) scan and MRI for more accurate diagnostic depictions of a patient's clinical picture. Initial imaging may occur in the emergency department on the patient's admission to the hospital. Subsequent testing is commonly used as a daily prognostic indicator or with a change in neurologic status that may require surgical or endovascular intervention. Diagnostic tests may need to be performed on critically ill patients who require mechanical ventilation. Nurses should anticipate that patients suffering from acute brain trauma or a diminished GCS may require mechanical ventilation while transported for testing. Mechanically ventilated patients must be closely monitored with emphasis on protecting the endotracheal tube (ETT). Transfer of these patients to procedural and testing areas within health care institutions may call for increased assistance, along with sedatives and portable ventilators to ensure patient safety. Patients requiring mechanical ventilation via an ETT also require a nurse who is skilled in critical care management.

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