



Neurological Wake-Up Test for Severe Neurotrauma Patients

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A structured assessment of patients with severe traumatic brain injury (TBI) is routinely used in the neurointensive care units. A judicious clinical evaluation of heterogeneous pathologies such as TBI, stroke, and subarachnoid hemorrhage requires training specific to master the fundamental tools of neuro bedside examination. The wake-up test has been a strategy that has emerged as a source of valuable information^{1,2} to know about the progression of these patients and make an adequate correlation between neuromonitoring and neuroradiological imaging.³

Certain conditions need to be present before performing the neurological wake-up test. These include stable intracranial pressure (ICP), cerebral perfusion pressure, mean arterial pressure, oxygenation, carbon dioxide level, and partial pressure of brain parenchymal oxygen tension. We consider that these values have to be stable for the preceding 24 hours.

To have a successful and meaningful examination, the sedation reduction is the key center point. The process is called sedation vacation and can be used as a part of a protocol for neurointensive care units. ►**Fig. 1** shows a proposed pathway to proceed going from the basic criteria to undergo a sedation vacation followed by a wake-up examination. The process of meeting this criterion, sedation reduction/vacation followed by neurological examination, encompasses a comprehensive way to define

wake-up test in severe TBI patients. Different tier of TBI management based upon ICP can be used for this purpose.⁴

In conclusion, a wake-up test is an important part of the essentials of any neurointensive care unit dealing with severe TBI. This is done with a team approach protocol including full involvement of bedside staff, respiratory therapist, intensivist, pharmacist, among others. Further research will help to look at the details of this test and its major impact on the TBI neurocritical care outcomes.

Conflict of Interest

None declared.

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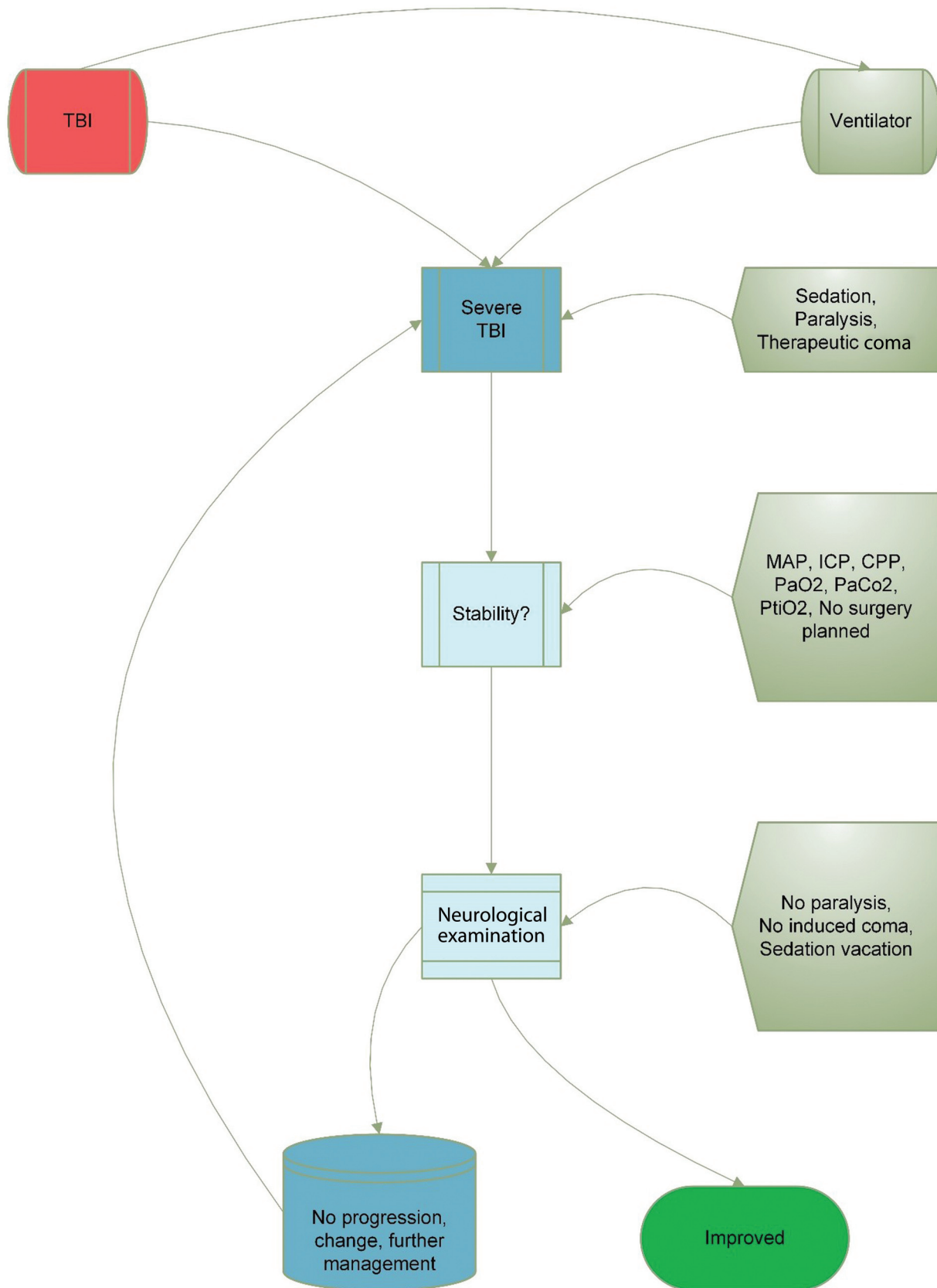


Fig. 1 Wake-up test process. CPP, cerebral perfusion pressure; ICP, intracranial pressure; MAP, mean arterial pressure; PaO₂, arterial oxygen tension; PaCO₂, arterial carbon dioxide tension; PtiO₂, brain tissue oxygen; TBI, traumatic brain injury.