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Protocol for Comprehensive Assessment and Management of Neurological Patients

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Abstract
Effective neurological management begins with a rigorous, systematic assessment to guide clinical reasoning and patient-centred goal setting. This protocol details a standardized approach for managing neurological emergencies in the resuscitation room, beginning with rapid consciousness screening via the AVPU scale and Glasgow Coma Scale (GCS). Following initial stabilization, a comprehensive ABCDEFGH survey is employed to address both systemic and neurological variables, ranging from airway protection to glycaemic control. The protocol concludes with a diagnostic pathway focused on neuroimaging, directing nurses and clinicians toward time-sensitive interventions such as thrombolysis for infarcts or emergency stabilization for haemorrhages. This structured framework ensures the immediate identification of life-threatening conditions while establishing a baseline for long-term recovery.

Keywords: Neurological assessment, Emergency management, AVPU scale, Glasgow Coma Scale

Introduction

A neurological assessment focuses on the nervous system to assess and identify any abnormality that affect function and activities of daily living. It is the most important step in the rehabilitation process, helps to guide our clinical reasoning and decision when making informed decisions about the rehabilitation process. In order to provide the best care and plan the best treatment a thorough assessment must be undertaken.

Johnson & Thompson (1996) outlined that treatment can only be as good as the assessment on which it was based. So, in order for us to progress and manage our treatment plan and ensure we are identifying out patients' problems the assessment should be an ongoing and continuous process. It allows us to create individual, patient-centred goals and ultimately a tailor-made treatment plan based on the client's needs.

Recognition of these patterns of injury have led to the development of the protocol. This protocol examines the comprehensive assessment and management of neurological disorders. It ensures that the most immediate life-threatening conditions are actively identified and to be managed effectively.

Protocol overview

This protocol outlines the essential steps for the rapid, systematic assessment and management of neurological patients upon arrival at the resuscitation room.

The primary goal is to identify and manage immediate, life-threatening conditions while establishing a detailed baseline of the patient's neurological status.

Initial Neurological Status Assessment

The initial neurological assessment uses two key scales to quickly determine the patient's level of consciousness:

- **AVPU Scale (First-line Assessment):**

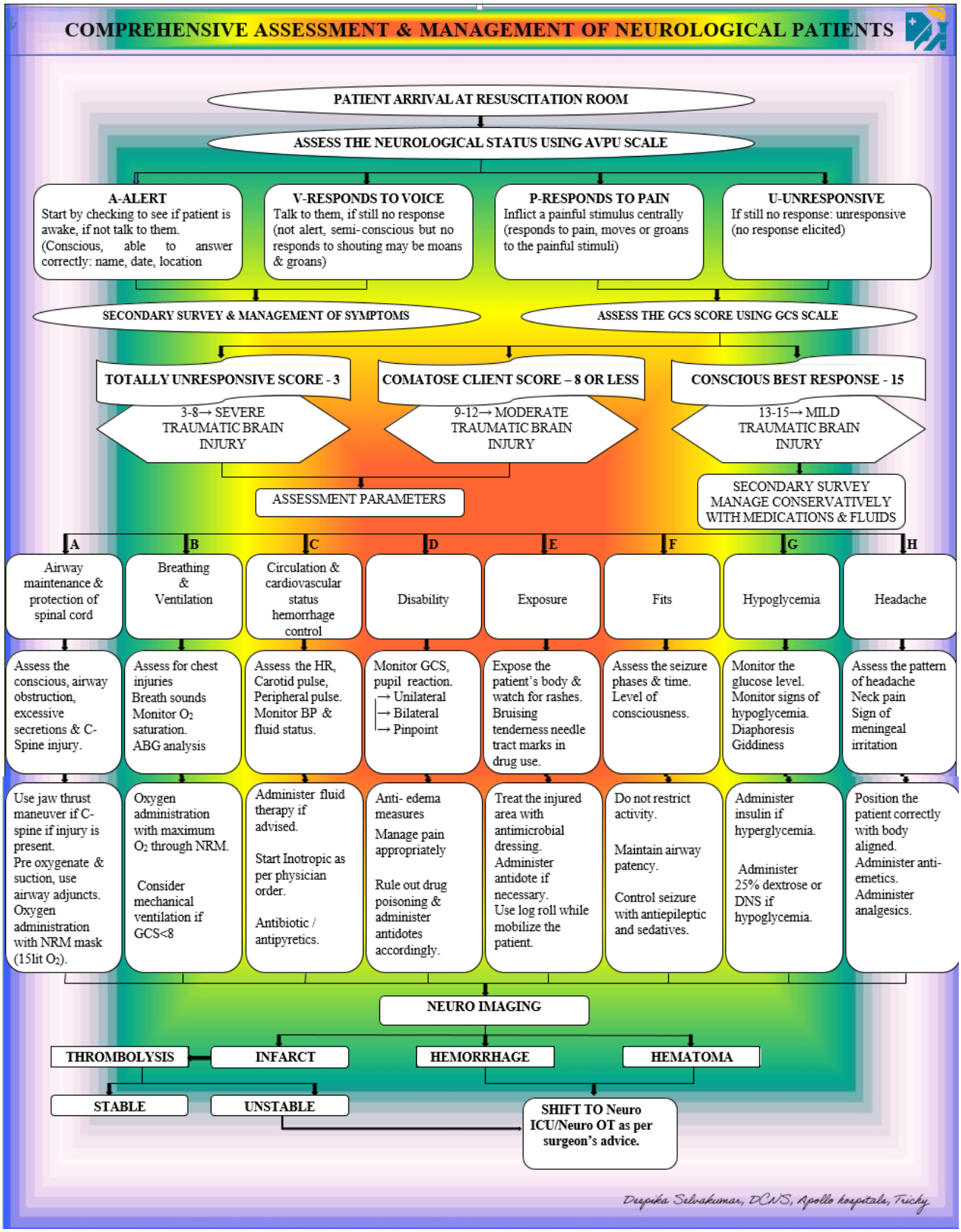
1. **A - Alert:** Patient is conscious and able to correctly answer for name, date, and location.
2. **V - Responds to Voice:** Patient is not fully alert (semi-conscious) but responds to verbal stimuli, potentially with moans or groans.
3. **P - Responds to Pain:** Patient moves or groans only in response to a painful central stimulus.
4. **U - Unresponsive:** No response is elicited to any stimulus.

Glasgow Coma Scale (GCS): Used for a more detailed, quantifiable assessment. The score guides the classification of Traumatic Brain Injury (TBI) severity:

- **MILD TBI:** GCS score of 13-15.
- **MODERATE TBI:** GCS score of 9-12.
- **SEVERE TBI:** GCS score of 3-8. A score of 3 is totally unresponsive, and 8 or less indicates a comatose client.

Secondary Systematic Assessment & Management (The ABCDEFGH Approach)

Following initial stabilization, a systematic secondary survey is conducted to manage symptoms and injuries conservatively with medications and fluids.


COMPREHENSIVE ASSESSMENT & MANAGEMENT OF NEUROLOGICAL PATIENTS
PATIENT ARRIVAL AT RESUSCITATION ROOM
ASSESS THE NEUROLOGICAL STATUS USING AVPU SCALE
A-ALERT
Start by checking to see if patient is awake, if not talk to them. (Conscious, able to answer correctly: name, date, location
V-RESPONDS TO VOICE
Talk to them, if still no response (not alert, semi-conscious but no responds to shouting may be moans & groans)
P-RESPONDS TO PAIN
Inflict a painful stimulus centrally (responds to pain, moves or groans to the painful stimuli)
U-UNRESPONSIVE
If still no response: unresponsive (no response elicited)
SECONDARY SURVEY & MANAGEMENT OF SYMPTOMS
ASSESS THE GCS SCORE USING GCS SCALE
TOTALLY UNRESPONSIVE SCORE - 3
COMATOSE CLIENT SCORE – 8 OR LESS
CONSCIOUS BEST RESPONSE - 15
3-8→ SEVERE TRAUMATIC BRAIN INJURY
9-12→ MODERATE TRAUMATIC BRAIN INJURY
13-15→ MILD TRAUMATIC BRAIN INJURY
ASSESSMENT PARAMETERS
SECONDARY SURVEY MANAGE CONSERVATIVELY WITH MEDICATIONS & FLUIDS
A
Airway maintenance & protection of spinal cord
Assess the conscious, airway obstruction, excessive secretions & C-Spine injury.
Use jaw thrust maneuver if C-spine if injury is present. Pre oxygenate & suction, use airway adjuncts. Oxygen administration with NRM mask (15lit O2).
B
Breathing & Ventilation
Assess for chest injuries Breath sounds Monitor O2 saturation. ABG analysis
Oxygen administration with maximum O2 through NRM. Consider mechanical ventilation if GCS<8
C
Circulation & cardiovascular status hemorrhage control
Assess the HR, Carotid pulse, Peripheral pulse. Monitor BP & fluid status.
Administer fluid therapy if advised. Start Inotropic as per physician order. Antibiotic / antipyretics.
D
Disability
Monitor GCS, pupil reaction. → Unilateral → Bilateral → Pinpoint
Anti- edema measures Manage pain appropriately Rule out drug poisoning & administer antidotes accordingly.
E
Exposure
Expose the patient's body & watch for rashes. Bruising tenderness needle tract marks in drug use.
Treat the injured area with antimicrobial dressing. Administer antidote if necessary. Use log roll while mobilize the patient.
F
Fits
Assess the seizure phases & time. Level of consciousness.
Do not restrict activity. Maintain airway patency. Control seizure with antiepileptic and sedatives.
G
Hypoglycemia
Monitor the glucose level. Monitor signs of hypoglycemia. Diaphoresis Giddiness
Administer insulin if hyperglycemia. Administer 25% dextrose or DNS if hypoglycemia.
H
Headache
Assess the pattern of headache Neck pain Sign of meningeal irritation
Position the patient correctly with body aligned. Administer anti-emetics. Administer analgesics.
NEURO IMAGING
THROMBOLYSIS
INFARCT
HEMORRHAGE
HEMATOMA
STABLE
UNSTABLE
SHIFT TO Neuro ICU/Neuro OT as per surgeon's advice.
Deepika Selvakumar, DCNS, Apollo hospitals, Trichy

Parameter	Assessment	Management/Intervention
A: Airway	Assess conscious level, airway obstruction, excessive secretions, and C-spine injury	Use jaw thrust maneuver if C-spine injury is present. Pre-oxygenate, suction, use airway adjuncts, and administer oxygen (15L via NRM mask)
B: Breathing	Assess for chest injuries, breath sounds, and monitor oxygen saturation(SPO2), respiratory rate and ABG analysis	Oxygen administration with maximum O_2 through NRM. Consider mechanical ventilation if GCS <8
C: Circulation	Assess HR, carotid and peripheral pulses, BP, and fluid status.	Administer fluid boluses if advised. Start inotropes as per physician order.
D: Disability	Monitor GCS score and pupil reaction (unilateral, bilateral, pinpoint)	Anti-edema measures and manage pain appropriately.
E: Exposure	Expose the patient's body and look for rashes, bruising, tenderness, and needle tract marks (suggesting drug use).	Treat injured areas with antimicrobial dressing. Rule out drug poisoning and administer antidotes accordingly.
F: Fits	Assess seizure phases and timing	Control seizures with anti-epileptics and sedatives. Do not restrict activity; maintain airway patency.
G: Hypoglycaemia	Monitor glucose level and signs of hypoglycaemia (diaphoresis, giddiness) and level of consciousness.	Administer 25% Dextrose or DNS for hypoglycaemia or insulin for hyperglycaemia
H: Headache	Assess the pattern of headache, neck pain, and signs of meningeal irritation.	Position the patient correctly with body aligned. Administer anti-emetics and analgesics.

Further Treatment Decision Pathway

- Neuro imaging is essential for diagnosis
- If Infarct is diagnosed

1. STABLE patient, fits into criteria, no contraindication for thrombolysis, Consider Thrombolysis. If fits into the criteria of mechanical thrombectomy, patient and attenders are willing, get opinion of interventional neurologist and consider cerebral angiography and mechanical thrombectomy if advised.

- **If haemorrhage/hematoma is diagnosed**

1. If patient is unstable, they require immediate life-saving intervention.
2. If patient is stable Proceed to further specific treatment as per neurologist/ neurosurgeon advice.

Conflict of Interest

Not available.

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