NURSING SKILL

Assessing for Stroke Using the National Institutes of Health Stroke Scale (NIHSS)

Purpose

The National Institutes of Health Stroke Scale (NIHSS) is used to assess the neurologic status of patients with known or suspected stroke, quantify the severity of the stroke, determine appropriate treatment, and predict/monitor patient outcomes following treatment or during their participation in a clinical trial.

Procedure

SUPPLIES

- Nonsterile gloves
- Other personal protective equipment if you anticipate exposure to biohazards, such as bodily fluids and respiratory droplets/aerosols
- NIHSS instrument
- Pen or pencil
- Pin or needle

PREPROCEDURE STEPS

1. Check care plan, treating clinician orders, and facility practice on care of patient suspected of stroke.
2. Review patient's medical history/medical record for:
    - History of stroke or risk factors for stroke
    - Medications
    - Labs/diagnostic test results
    - Allergies (use alternatives, as appropriate)
3. Follow standard preprocedure steps, as appropriate. [3, 4, 5]

PROCEDURE STEPS

1. Assess patient using NIHSS as soon as they are stabilized. [6]
2. Follow these general guidelines when administering NIHSS: [6]
   - Administer NIHSS by assessing and scoring each item in order.
   - Score patient's first response only (**do not** go back and change patient scores).
   - **Do not** coach patient.
   - Score only what patient does, not what you think patient can do.
3. Assess LOC/arousal (item 1a) by speaking to patient (ask 2 or 3 questions as necessary to assess for alertness) or applying a noxious stimulus (sternal rub, for example) if patient appears unresponsive. Assign a score of: [6]
   - 0 if patient is alert
   - 1 if patient is not alert but is easily aroused
   - 2 if patient is not alert and is not easily aroused
   - 3 if patient responds only reflexively or is unresponsive
4. Assess LOC/orientation (item 1b) by asking patient to state month and their age. Assign a score of: [6]
   - 0 if patient answers both questions correctly
   - 1 if patient answers 1 question correctly
   - 2 if patient answers neither question correctly
5. Assess LOC/ability to follow commands (item 1c) by instructing patient to open and close eyes and to make a fist and then release it (gripping clinician's hand can be substituted for making a fist). Pantomime action to provide visual as well as verbal instruction. Assign a score of: [6]
   - 0 if patient is able to follow both commands correctly
   - 1 if patient is able to follow 1 command correctly
   - 2 if patient is able to follow neither command correctly
6. Assess best gaze (item 2) by holding 1 finger up approximately 1 foot (0.3 meters) in front of patient's face at eye level and instructing patient to follow finger with their eyes (keeping face still) as you move finger horizontally back and forth across patient's field of view. Observe for voluntary or reflexive horizontal eye movement. Assign a score of: [6]

- 0 if patient has normal horizontal eye movements
- 1 if patient has abnormal gaze in 1 or both eyes but the gaze is not fixed
- 2 if patient has a fixed gaze or the gaze does not change as the head is moved side to side

7. Assess visual field (item 3) by instructing patient to cover 1 eye and focus on your eyes/nose. Place your hand in any quadrant of patient's visual field and wiggle fingers (alternately, hold up a number of fingers). Have patient indicate when they see your fingers wiggling (or state number of fingers they see). Repeat in other 3 quadrants. Assign a score of: [6]

- 0 if patient has no visual loss in any visual field
- 1 if patient has visual loss in 1 visual field
- 2 if patient has visual loss in more than 1 visual field
- 3 if patient is blind from any cause (including cortical blindness)

8. Assess facial palsy (item 4) by asking patient to show their teeth or raise their eyebrows and close their eyes. Pantomime action to provide visual as well as verbal instruction. If patient is unresponsive, apply a noxious stimulus and observe for symmetry of facial grimace. Assign a score of: [6]

- 0 if patient has a symmetrical smile or symmetrical face movements
- 1 if there is minor asymmetry or facial paralysis (such as a flattened nasolabial fold)
- 2 if there is partial facial paralysis (such as paralysis of the lower face)
- 3 if there is total facial paralysis of 1 or both sides of face

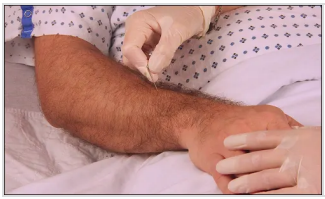
9. Assess motor strength of left arm (item 5a) by positioning patient's left arm at a 45° angle if supine or at a 90° angle if sitting, with elbow straight and palm down. Release arm and count to 10 on fingers in view of patient as well as out loud. Pantomime as needed. Assign a score of: [6]

   - 0 if patient holds arm in place for 10 seconds (arm may take an initial dip after being released, but then patient holds arm in position)
   - 1 if arm drifts down but not does touch bed
   - 2 if arm drifts down to bed but there is effort against gravity
   - 3 if arm falls to bed but patient is able to voluntarily move arm or shoulder
   - 4 if arm falls to bed and patient is unable to voluntarily move arm or shoulder
   - UN (untestable) if patient has an amputation or fused shoulder joint
10. Assess motor strength of right arm (item 5b) by repeating step 9 on right arm. [6]
11. Assess motor strength of left leg (item 6a) by positioning patient's left leg at a 30° angle from bed while patient is lying supine. Release leg and count to 5 on fingers in view of patient as well as out loud. Pantomime as needed. Assign a score of: [6]

   - 0 if patient holds leg in place for 5 seconds (leg may take an initial dip immediately after being released, but then patient holds leg in position)
   - 1 if leg drifts down but not does touch bed
   - 2 if leg drifts down to bed but there is effort against gravity
   - 3 if leg falls to bed but patient is able to voluntarily move hip or leg
   - 4 if leg falls to bed and patient is unable to voluntarily move hip or leg
   - UN if patient has an amputation or fused hip joint
12. Assess motor strength of right leg (item 6b) by repeating step 11 on right leg. [6]
13. Assess for limb ataxia (item 7) by instructing patient to touch clinician's extended finger with their index finger and then touch their own nose. Repeat on other side. Then instruct patient to touch their right heel to left shin just below knee and run heel down to ankle and back up again. Repeat with left heel on right shin. Assign a score of: [6]

- 0 if patient is able to accomplish both tasks correctly on both sides
- 1 if patient is able to accomplish tasks correctly on only 1 side
- 2 if patient is unable to accomplish tasks correctly on either side
- UN if patient has an amputation or fused hip joint

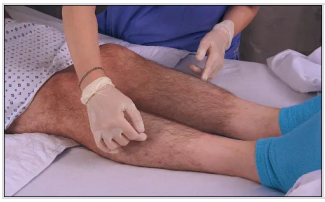
14. Assess for sensation (item 8) by applying pinpricks to arm, face, trunk, or leg (comparing side to side), or determining if obtunded or aphasic patient moves away from noxious stimuli asymmetrically. Assign a score of: [6]



- 0 if patient has no loss of sensation
- 1 if patient senses a difference in sharpness of prick or in pain between 2 sides
- 2 if patient is unaware of pinprick

15. Assess best language (item 9) by showing patient a picture of a kitchen scene attached to instrument and asking them to describe scene, a picture of a collection of images attached to instrument and asking them to name items, and a list of phrases attached to instrument and asking them to read phrases. Assign a score of: [6]
    - 0 if patient is able to complete all tasks accurately
    - 1 if patient demonstrates some diminishment of speech and/or comprehension but clinician is able to understand patient's comments and speech
    - 2 if patient demonstrates great difficulty attempting to communicate and/or comprehend and clinician is unable to understand patient's comments/speech
    - 3 if patient is mute
16. Assess dysarthria (item 10) by asking patient to read list of words attached to instrument. Assign a score of: [6]
    - 0 if patient is able to clearly articulate all words on list
    - 1 if patient slurs some words on list but can be understood
    - 2 if patient's speech is unintelligible or patient is mute
    - UN if patient is intubated or otherwise has a physical barrier to speech

17. Assess extinction and inattention (formerly referred to as neglect) (item 11) by assessing if patient neglects 1 side of body (based on interaction with patient while administering NIHSS or by having patient close their eyes and then touching patient on each side simultaneously and noting patient response). Assign a score of: [6]



    - 0 if patient does not neglect 1 side of body
    - 1 if patient demonstrates visual, auditory, tactile, spatial, or personal neglect of 1 side of body
    - 2 if patient demonstrates severe visual, auditory, tactile, spatial, or personal neglect of 1 side of body, orients only to 1 side of body, or does not recognize own hand
18. Add up scores for each item to determine an overall NIHSS score. [6]
19. Compare overall score to range of scores to assess likelihood or severity of stroke or to determine change from previous assessment in response to therapy. [6]

PATIENT/FAMILY EDUCATION

- Educate about usefulness of NIHSS in assessing for stroke, and about any diagnostic tests or treatments that become necessary.
- Stress stroke is a medical emergency. Explain, if stroke is suspected, they should local dial emergency number and seek immediate emergency medical care.
- Provide patient education resources, if available, to reinforce verbal education.

POSTPROCEDURE STEPS

1. If patient is suspected of having a stroke, prepare patient for/assist with diagnostic tests, such as CT scan, CT angiography, MRI, magnetic resonance angiography, ECG, cerebral angiography, and/or intra-arterial digital subtraction angiography. [7, 8]
2. Repeat NIHSS 2 hours after initiation of treatment, 24 hours after first signs/symptoms suggestive of stroke, 7-10 days after first signs/symptoms suggestive of stroke, and as needed to assess for clinical deterioration. [6]

3. Follow standard postprocedure steps, as appropriate. [3]

DOCUMENTATION

Update patient's plan of care and medical record, as appropriate. Include:

- Date/time of assessment
- Scores for each individual items as well as overall NIHSS score received
- Details of any items for which patient received a score of 1 or more
- Details of any items for which patient received a score of "UN"
- Patient assessment information, including patient's response to assessment activity
- Any unexpected patient events or outcomes, interventions performed, and whether treating clinician was notified
- Patient/family education, such as topics presented, response to education, plan for follow-up education, any communication barriers, and techniques that promoted successful communication