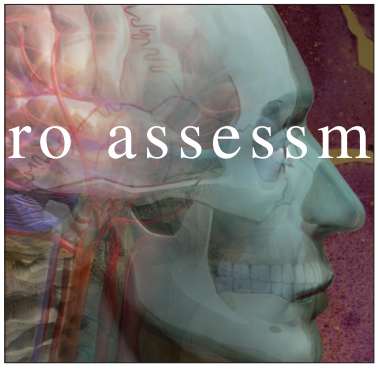
Facing neuro assessment fearlessly



ANCC/AACN 1.5 Contact Hours

Confused and intimidated by neurologic assessment? An expert offers easy steps to confidence.

IF YOU DON'T ASSESS neurologic patients routinely, you're probably not very confident and are afraid of making a mistake. You're not alone: I used to fear neuro too, but I put my mind to learning it and now I love it. Now when I teach nurses about neurologic assessment, I emphasize how all the pieces fall into place once you understand a few basic principles and relationships. I'd like to share what I learned with you now. I hope that when I'm done, you'll love neuro too.

Five common mistakes

Many brain-injured patients aren't consistently assessed accurately for several reasons. Here are five common mistakes nurses may make when we try to assess patients with neurologic injuries.

- *We don't know how to stimulate these patients.* The biggest mistake is failing to adequately stimulate patients to figure out what their best response is.
- *We start with an inadequate or inaccurate baseline assessment.* This is a direct consequence of the first shortcoming. In neuro, the name of the game is change. When a patient makes the most subtle change from baseline, that's when we need to spring into action. But if we didn't stimulate him adequately, the baseline assessment is wrong and we won't recognize a change.
- *We don't describe our assessments accurately enough using objective terminology.* We don't have very good vocabulary for neurologic observations. We might say, for example, "*He's a tad weak on the right.*" A "tad" is a subjective term and is open to misinterpretation. We're trying to say that something is wrong with this patient, but we don't have the right vocabulary.
- *We fail to recognize subtle clues.* I'll tell you right now that what you learned in nursing school about the signs and symptoms of increased intracranial pressure (ICP) is wrong. The signs and symptoms you learned in nursing school and at most seminars are late signs that occur just before herniation. By the time you see these signs, the patient is in real trouble. But if you can recognize subtle clues earlier, you can intervene before the patient's condition deteriorates hopelessly.
- *We fail to persist and pursue.* Don't be intimidated by the neurosurgeon. If you think that the patient's condition is changing, let the neurosurgeon know and keep persisting until he gets the point and your patient gets the help he needs.

Now let's review each of these common errors in depth, starting with inadequate stimulation.

LINDA S. NYE

BY JUDITH "SKI" LOWER, RN, CCRN, CNRN, MSN
Nurse-manager
Neurologic Critical Care Unit and Neurovascular Intensive Care Unit
Johns Hopkins University Hospital
Baltimore, Md.

Maximizing stimulation

A meaningful neurologic assessment requires adequate stimulation. If you don't get the maximum response, then your baseline assessment isn't right. The principle to remember is *maximum stimulation for maximum response*.

Suppose you're assessing an unconscious patient injured in a traffic accident. Is he unconscious because of a head injury, because of drugs or alcohol, or because of all three? These days, drugs and alcohol could be a factor with almost any patient. You need to apply maximum stimulation just to get past the effects of drugs and alcohol.

So, how do you do it? You'd start with a gentle voice. I'd say, "Bob, it's time to get up." If he doesn't get up, then I yell at him: "Bob, it's time to get up!" If he still doesn't get up, then I shake him. And that's what you have to do with your patient.

The principle to remember is maximum stimulation for maximum response.

If your patient still doesn't awaken, then you have to inflict pain in an acceptable way—not, for example, by doing a nipple twist, which is demeaning and unacceptable.

The *trapezius squeeze* is an acceptable way to get a response. The trapezius muscle covers the shoulder like a scarf, extending from the back of the neck to the shoulder. Pinch 1 or 2 inches (2.5 to 5 cm)—grabbing the actual muscle, not just skin—and twist. This is an excellent way to get a response.

Applying *supraorbital pressure* is another good test, as you can demonstrate on yourself. (Don't try this on yourself or a patient if you have long thumbnails.) Feel the orbital rim a little bit under your eyebrow. You'll find a little notch near the center. Push on it hard. You should have an instant sinus headache. That's because a nerve lies in that little groove on the orbital rim.

Mandibular pressure, another option, is the most painful for me personally. Take your index and your middle finger and push up and inward at the angle of your jaw. Isn't that painful?

Now let's try the *sternal rub.* This is the technique that you learned in school, but you may not have learned to do it right. I watch nurses doing a sternal rub like they're scrubbing a washboard. A better analogy is grinding a pill with a mortar and pestle. To get a good response, you may need to do a sternal rub for as long as 30 seconds. If you do it right, you'll leave the imprint of your knuckles on the sternum and the imprint of your fingernails in your palm. If your patient is fair-skinned, you'll see a bruise the next day, so don't use this technique exclusively; instead, vary the stimulus used.

These four techniques—the trapezius squeeze, supraorbital pressure, mandibular pressure, and sternal rub—are all examples of central stimulus. That means that if you get a response to any of these stimulants, it's the brain that's responding, rather than a spinal or reflex response.

Now let's say that you're doing a sternal rub on a patient and everything moves except his right arm. To figure out if his right arm is capable of moving, you need to inflict *peripheral pain.*

Take a pencil, which is better than a pen because it has flat sides so it won't slip. Brace his finger on your thumb and put the pencil over the little moon on the cuticle. Push the pencil down on the nail with all your might. This also will cause bruising over time, but you can use all 10 fingers.

Do you have to inflict peripheral pain on everybody? No. Use this test only on those patients who don't respond to central pain or if everything responds except one limb.

We've already said you need to stimulate the patient for maximum response. But if the patient doesn't respond, how long do you persist? How long do you actually stimulate him? The rule is a minimum of 15 seconds and a maximum of 30 seconds. Thirty seconds can seem like forever, so use a watch to make sure you're making the maximum effort.

Looking at LOC

Now let's look at how to further examine your patient and clearly document your findings. The neurologic exam starts with *level of consciousness (LOC).* It's the earliest and most sensitive indicator that something is changing. And who knows the patient's LOC best? The family. When they tell you that he's different, he's different.

Level of consciousness has two components, *arousal* (or wakefulness) and *awareness.* (For more details, see *Using the Glasgow Coma Scale.*) Controlled by the brain stem, wakefulness is the most fundamental part of LOC. If the patient can open his eyes spontaneously to voice or to pain, it says that the wakefulness center in the brain stem is still functioning.

Awareness, a higher function controlled by the reticular activating system in the brain stem, is the ability to interact with and interpret the environment. You assess four components of awareness: orientation, memory, calculation, and fund of knowledge.

• *Orientation to person, place, and time.* Patients lose their orientation the same way that we do. You know who you are and where you are, but if I asked you the exact date, you may not always know. Similarly, patients lose orientation to time first, then to place, and then to person.

Getting a grip on cranial nerves

Some of these assessments must be performed on a conscious patient, so you may not assess all 12 cranial nerves each time.

Nerves and what they control	How to assess them	Interpreting the results
I—smell	Stimulate each nostril with a potent scent, such as vanilla extract.	The patient should be able to identify the scent.
II and III—pupillary reflex	Use a flashlight, but bring it in from the side, not from the front, because of the accommodation reflex. Turn the flashlight on when you're holding it directly over the eye. Test one pupil at a time, shielding the other eye from the light.	The pupils should constrict and remain constricted as long as you keep the flashlight on. In normal light, pinpoint pupils can indicate damage to the pons (middle of the brain stem). Bilateral dilation indicates atrophy, possibly from hypoxia. Unilateral dilation is a sign of herniation. Pupils should be round; an oval pupil is an early sign of increasing intracranial pressure.
II—vision	Ask: Can you read my name tag? How many fingers am I holding up?	The patient should be able to see these things. Patients who wear corrective lenses should wear them when being tested.
III, IV, and VI—eyeball motion	Instruct the patient to look at your fingers, following them up and over (without turning his head), then hold the patient's eyelids while he looks down at his toes.	The left and right eye should move together.
V and VII—corneal reflex	Test by brushing a little twist of cotton across the patient's eye while he's looking away from you.	Patient should briskly close that eye. If he doesn't have a corneal reflex, you'll need to protect the cornea with ointment and a moisture trap made of plastic wrap taped over the eye. Remember that people who wear contact lenses have a diminished corneal reflex.
VIII—hearing	Whisper into a hand cupped at the patient's ear.	Patient should be able to hear your voice.
IX and X—gag reflex, speech	Ask the patient to shrug his shoulders and turn his head. Have him open his mouth and say "ah," and see if the soft palate rises symmetrically.	If the uvula rises straight up, the patient has a good gag reflex. If it veers to one side, that indicates a weakness on one side; use protective measures.
XI—motor function of the sternocleidomastoid muscle	Ask the patient to turn his head to the side, against the resistance of your hand.	The patient should be able to perform this maneuver.
XII—tongue strength	Ask the patient to stick out his tongue.	The patient's tongue should stick straight out; deviation from the midline indicates a weakness on that side.

When you're going to assess a patient's orientation, get every bit of embroidered detail that you can. Don't just ask, "What's your name?" Have him tell you his first and last name. Don't just ask, "Where are you?" Find out if he can identify the city, state, and hospital. And when assessing his sense of time, find out if he can identify the month, day, year, day of the week, recent or upcoming holidays, and so on. In future assessments, the details that start to fall away will be your early clues to deterioration.

We did a research project where we looked at emergency department nurses' assessments of patients who came in with potential neurologic problems. We found that some won't ask these kinds of questions of a person in a business suit who's apparently affluent and well educated because they'd feel silly. But you must. You can preface your assessment with a statement like this: "I have to ask you some questions that might sound a little silly, but they really will help me get a good idea of what your brain function is like so I can take the best care of you."

• *Memory.* You can ask the patient all kinds of questions to test his short-term memory. But don't ask yes-or-no questions; he has a 50/50 chance of getting the answer right, whether or not he has a clue.

Here's a good technique. You might say, "Mrs. Smith, this is a memory quiz. Please remember these three things, and I'll ask you about them later. Apple,

orange, dog. Say them back: apple, orange, dog." Don't ask obvious things, such as January, February, March; those are considered automatic speech and held in a different part of the brain. After doing the rest of the exam, come back and ask her to tell you the three things.

To test long-term memory, ask the patient things you can check in her chart: "Where were you born?" "What's your date of birth?" To test judgment, ask questions such as, "What would you do if you were in a crowded theater and saw a fire?" To measure the patient's attention span, notice whether you frequently have to ask her if she's paying attention or if she interacts with you throughout the exam.

• C*alculation.* To assess calculation, many nurses ask people to subtract by 7 from 100. Although that's the standard, it doesn't make a lot of sense to me because so many people have become dependent on calculators. I use change instead: "If you had $2 and your apple costs $1.25, how many quarters would you get back?"

• *Fund of knowledge.* Ask the patient to name the president and to tell you what's on the national news these days.

With any change in the patient's LOC, carefully look for hypoxia, hypercarbia, hypotension, hypothermia, drugs, or a postictal state following an unwitnessed or unrecognized seizure as the cause of the change.

Checking motor responses

Following commands is the highest level of motor response. When you ask a patient to follow a command, the normal response is that he follows the command. The problem is that often we don't give him the *right* command. Suppose, for instance, you tell him to squeeze your hand. Infants grasp everything placed in their hand because of a grasp reflex. Adults don't do this because the grasp reflex inhibitor develops, preventing it. However, the grasp reflex inhibitor disappears if the part of the patient's brain that controls the grasp reflex is hypoxic or ischemic. You know this is a reflex, not a response to a command, when you can't get your fingers out of his hand.

So a better test is to ask the patient to hold up two fingers. No matter how weak he is, you can see those fingers start to move and you know you're getting through to him. If he doesn't hold up two fingers, proceed up the pain stimulus options and try for 30 seconds to get a response. Then when you chart that he doesn't follow commands, you know it's really true.

But suppose that while you're charting this, the patient pulls out his intravenous device or extubates himself. This is a perfectly normal motor response—not as high level as following commands, but it's *purposeful movement* or localizing. Something bothered him and he can locate it and attempt to remove it.

Withdrawing is the third highest level of motor function, after following commands and purposeful movement. If you're inflicting peripheral pain on a patient and he pulls his hand away, you don't know if that's a reflex or purposeful movement. Keep the painful stimulus on his hand and don't let go, even when he pulls away. If he continues to pull away after that initial movement, he's withdrawing.

Posturing is an abnormal motor function that indicates major trouble. The two types are flexion (formerly decorticate) posturing and extension (formerly decerebrate) posturing. In both postures, the legs are rigidly extended. Flexion posturing is the less severe of the two. If you restore adequate oxygenation and adequate perfusion (increase the patient's blood pressure[BP]), the posturing often can be eliminated. But most patients who posture despite good BP and oxygenation have a high potential to remain in a persistent vegetative state.

You can perform the following tests if your patient is alert.

• Assess your patient's *strength*. Test only normal motor responses and record the answer as a fraction. The denominator is always five, and the numerator is the patient's score. For example, if you ask the patient to lift his arm and nothing happens

Using the Glasgow Coma Scale

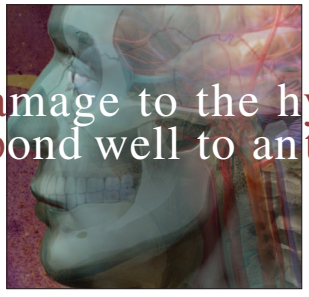
A score of 13-14 (out of a possible 15) indicates mildly impaired consciousness; 9-12, moderate impairment; and 3-8, severe impairment.

	Points	Verbal child/adult	Infant/preverbal child
Eye opening	4	Spontaneous	Spontaneous
	3	To speech	To speech
	2	To pain	To pain
	1	None	None
Verbal response	5	Oriented	Coos, babbles
	4	Confused	Irritable cries
	3	Inappropriate words	Cries to pain
	2	Incomprehensible	Moans to pain
	1	None	None
Motor response	6	Obeys commands	Normal, spontaneous
	5	Localizes pain	Withdraws to touch
	4	Withdraws to pain	Withdraws to pain
	3	Abnormal flexion	Abnormal flexion
	2	Abnormal extension	Abnormal extension
	1	None	None

even when you inflict pain, his score would be 0/5. But the next week, you see or feel a flicker in his biceps muscle when you do this test, so his score becomes 1/5.

If his arm or wrist moves across the bed (joint movement), you'd give him a 2/5. If he can lift it off the bed but drops it as soon as you touch it, that's a 3/5; he can overcome gravity, but he has no strength. To get a 4/5, he has to resist you a little bit, but you win. To get a 5/5, he lifts that arm and you arm wrestle and he wins or it's a draw.

What about the legs? One test is enough to give you a baseline assessment. You can ask the patient to pretend he's pushing on a car accelerator pedal as hard as he can. Or ask him to pull his toes up toward his nose and hold that position without flexing his knees or lifting his feet. You'll be able to see when the toes start to fall a little bit. You could also ask him to raise or lower each leg against your resistance.



Fever from damage to the hypothalamus won't respond well to antipyretics.

- Next, check for *drift*, an indicator of motor weakness. Depending on his condition, the patient can be lying down, sitting, or standing. Tell him to hold his arms out straight, parallel to the floor, with his palms up, as if he's holding a pizza. Then tell him to close his eyes.

The normal response is to hold that pizza steady. If he's a little weak, the weaker hand will shake a little bit. As he gets weaker his hand will start to curve a little bit (or pronate) and if he has a lot of weakness, his arm will drift downward (pronator drift). If a patient develops a drift, contact the neurologist or neurosurgeon immediately.

- Finally, check his *coordination.* To test rapid alternating movement, ask the patient to touch his fingers, one at a time, to his thumb as fast as he can, on both hands. If he misses the thumb, or one hand is much slower than the other, he has a lack of coordination with rapid alternating movement.

Next, ask him to place his finger on his nose. If his finger lands on his forehead or cheek or someplace else, he doesn't have good coordination. If his finger lands a little bit to the side of his nose, you can double-check coordination by asking him to touch your finger while you keep moving your finger. This is harder to do than it sounds; he has to concentrate. Don't expect a perfectly smooth response.

To test leg coordination, ask him to pretend to press the accelerator with both feet simultaneously. Then have him lift his feet up off the bed and continue to press against the imaginary gas pedal. Try it. You think your feet would be perfectly straight and coordinated, but they veer a little bit, don't they? That's normal. But if one foot is moving rapidly and the other is moving more slowly, you'd document a lack of coordination for the patient's lower extremities.

For information on assessing cranial nerves, see *Getting a Grip on Cranial Nerves.*

Monitoring vital signs

Watch for a BP with a rising systolic pressure and an unchanged diastolic pressure, resulting in a widening pulse pressure. Also watch for bradycardia with a rate in the 40s or 50s, and for development of abnormal respiration. These three things, known as Cushing's triad, are late signs of increased ICP and indicate that the brain is about to herniate.

What about temperature? Most patients with head injuries are febrile, which is dangerous because fever increases the brain's oxygen demands 6% to 10% for every degree above normal. Fever from infection can be treated pharmacologically, but fever from damage to the hypothalamus won't respond well to antipyretics. Use temperature-regulating blankets instead and wrap up the patient's hands and feet to warm peripheral temperature sensors, which decreases shivering and lessens the hypothalamus' resetting of his internal thermostat.

Neurologic patients rarely are hypothermic unless they've just come out of the operating room. Hypothermia in a neurologic patient usually means death is imminent.

Guarding against brain herniation

We've been taught to watch the patient's ICP measurement to recognize early signs of brain herniation. But the brain's ability to adjust to changes in volume of brain tissue, cerebrospinal fluid, or blood without sustaining an increase in ICP can throw us off the track. As intracranial bleeding progresses, ICP doesn't increase immediately because the body compensates by getting rid of extra water and extra spinal fluid and even by constricting blood vessels in the brain to allow space for an expanding lesion or hemorrhage. By the time ICP rises, the body's compensatory mechanisms have failed, and interventions are less likely to be successful.

If you don't notice the earliest clues, ICP will continue to rise until the brain herniates. Here's what to watch for:

- *Changes in LOC.* These are the earliest and most subtle changes. When you assess your patient, you'll find it takes more stimulation to get the same results.
- *Loss of detail and orientation.* He can tell you the year and the month, but not the day. Eventually he can't tell

you the month, and lastly, he can't remember the year.

• *Forgetfulness.* The patient knew why he was here yesterday, but today he can't remember. He asks a lot of repetitive questions.

• *Restlessness.* This is a major clue. Usually when a patient suddenly gets restless, you know it's potentially a neurologic change. Don't wait for an arterial blood gas analysis. Is he breathing as deeply and as frequently as before? If not, administer supplemental oxygen. If he's still restless, you know it's a neurologic change.

• *Sudden quietness.* When a restless patient suddenly becomes quiet, that's a strong danger signal. Has he just exhausted himself, or has he experienced a serious neurologic change? Reassess him using maximum stimulation. If he's exhausted, he'll respond and then fall back asleep again. If you get no response, the patient is in real trouble.

• *Pupillary changes.* The pupils usually will change on the same side as the lesion. The first and most subtle clue to trouble is that the pupil reacts, but sluggishly. By the time the pupil becomes fixed and dilated, his third cranial nerve is affected because part of the temporal lobe is herniating onto the brain stem.

• *Motor changes.* Motor changes occur on the opposite side of the injury, tumor, or stroke. Resistance to passive movement is your first motor clue. You'll also notice a subtle weakness; the patient's strength score drops, for example, from 5/5 to 4/5. As things get worse, he'll develop that pronator drift, a weakness (paresis), and then paralysis (plegia).

• *Vital signs.* You won't detect early vital sign clues unless you're working in a monitored unit. Then you *might* see intermittent bouts of unexplained hypertension: The patient's alarm goes off while he's asleep because his systolic BP is suddenly 180 when it's normally about 150.

To summarize, a patient with impending or actual brain herniation is unarousable despite deep pain and has a unilaterally fixed and dilated pupil, substantial contralateral motor weakness (or posturing or no response despite deep pain), and Cushing's triad.

Making a difference

Your savvy assessment can make a real difference to patients in danger of suffering devastating and irreversible brain damage. Once I learned how to spot trouble early enough to make a difference for these patients, I came to love neuro. I hope you will too. N

SELECTED REFERENCES

Hickey, J.: *The Clinical Practice of Neurological and Neurosurgical Nursing,* 4th edition. Philadelphia, Pa., Lippincott Williams & Wilkins, 1997.

Lower, J.: *Videotape Series: Neuroscience Nursing Assessment.* Philadelphia, Pa., Lippincott Williams & Wilkins, 1995.

Neatherlin, J.: "Foundation for Practice: Neuroassessment for Neuroscience Nurses," *Nursing Clinics of North America.* 34(3):572-592, September 1999.

O'Hanlon-Nichols, T.: "Neurologic Assessment," *American Journal of Nursing.* 99(6):44-50, June 1999.

SELECTED WEB SITE

National Institute of Neurological Disorders and Stroke
http://www.ninds.nih.gov

Last accessed on January 7, 2002.

To earn CE credit, follow these instructions:

1. Choose one answer for each question and darken box.
2. Fill in registration information and evaluation on answer form (Social Security or nursing license number must be included to process test).
3. **Mail your answer form** (copies accepted) and $11.95 processing fee to: Lippincott Williams & Wilkins, 2710 Yorktowne Blvd., Brick, NJ 08723. Make checks payable to Lippincott Williams & Wilkins; if paying by credit card, include number and expiration date. Within 4 weeks, you'll be notified of your test results.
4. **New discount procedure:** Take 75¢ off the price of each test if submitting two or more tests at a time from any issue.
5. **Fax-back service:** Fax your test (credit card orders only) to 732-255-2926 and we'll fax back your CE certificate within 2 business days. Provide a fax number for a location where confidential information will be safe (home/workplace). Faxes sent to a workplace will be accompanied by a cover letter. We aren't responsible for faxes not received due to malfunctioning machine on receiving end. A CE certificate will be mailed after attempts to fax have failed.
6. **Take tests on-line** at **http://www.springnet.com/ce.htm** and have them processed immediately. Also check our Web site for on-line CE Saver discounts.

The passing score for tests is 70%. If you pass, a certificate for earned contact hours will be awarded by Lippincott Williams & Wilkins. You'll also receive an answer sheet with the rationale for each correct answer. If you fail the test, you can take the test again for free. For questions about test results, contact Lippincott Williams & Wilkins, Springhouse Office, CE Dept., 1111 Bethlehem Pike, P.O. Box 908, Springhouse, PA 19477; 1-800-346-7844 ext. 1286.

Provider information:

This continuing nursing education (CNE) activity for 1.5 contact hours is provided by Lippincott Williams & Wilkins, which is accredited as a provider of continuing education in nursing by the American Nurses Credentialing Center's Commission on Accreditation and by the American Association of Critical-Care Nurses (AACN 9722; category A). This activity is also provider-approved by the California Board of Registered Nursing, provider #CEP11749, for 1.5 contact hours. Lippincott Williams & Wilkins is also an approved provider of CNE in Alabama (#ABNP0114), Florida (#FBN2454), and Iowa (#75).* All of its home study activities are classified for Texas nursing continuing education requirements as Type I. Your certificate is valid in all states.

**In accordance with Iowa Board of Nursing administrative rules governing grievances, a copy of your evaluation of this CE offering may be submitted to the Iowa Board of Nursing.*

TEST RESULTS MUST BE POSTMARKED BY JANUARY 31, 2004

FACING NEURO ASSESSMENT FEARLESSLY

PURPOSE To improve nursing practice and the quality of care by providing a learning opportunity that enhances a participant's understanding of neurologic assessment.

OBJECTIVES After reading the preceding article and taking this test, you should be able to: **1.** Identify five common errors of neurologic assessment. **2.** Indicate how to perform an accurate neurologic assessment. **3.** Identify early and late signs and symptoms that indicate increased intracranial pressure.

CE TEST 1.5
ANCC/AACN CONTACT HOURS

1. A common mistake of neurologic assessment is
1. describing findings in objective terms.
2. overstimulating the patient to elicit a response.
3. failing to recognize subtle clues of rising ICP.
4. putting too much emphasis on the baseline assessment.

2. Which of the following is an unacceptable way to administer a pain stimulus?
1. pinching and twisting the trapezius muscle
2. pressing on the superior orbital rim
3. pushing up and inward at the angle of the jaw
4. twisting a nipple

3. Which statement is correct about the sternal rub?
1. You should perform it as if scrubbing a washboard.
2. You may need to perform it for as long as 30 seconds.
3. If you leave a mark on the patient's skin, you've pressed too hard.
4. You can use this method exclusively, even if bruising occurs.

4. Which technique is recommended for eliciting a response to peripheral pain?
1. sternal rub
2. trapezius muscle squeeze
3. nail-bed pressure
4. mandibular pressure

5. What's the minimum amount of time you should administer a pain stimulus?
1. 15 seconds
2. 20 seconds
3. 30 seconds
4. 1 minute

6. Test your patient's long-term memory by
1. asking her yes-or-no questions.
2. asking her to identify the city, state, and hospital.
3. asking her to identify the month.
4. asking her where she was born.

7. Which statement is correct about assessing motor response?
1. Asking the patient to hold up two fingers is a good way to test for a purposeful response.
2. If the grasp reflex is intact, you know he's capable of following commands.
3. A patient who extubates himself isn't exhibiting purposeful movement.
4. You should consider extension posturing to be less severe than flexion posturing.

8. How would you rate the motor strength of a patient who can raise his arm but quickly drops it?
1. 2/5
2. 3/5
3. 4/5
4. 5/5

9. Which statement is correct about testing for drift?
1. Tell the patient to hold his arms out, palms down.
2. Tell him to keep his eyes open throughout the test.
3. Pronator drift indicates lack of coordination.
4. If the patient develops a pronator drift, contact the physician immediately.

10. Which of the following is an early indicator of increased ICP?
1. decreased LOC
2. heart rate between 40 and 50 beats/minute
3. hypothermia
4. widening pulse pressure

11. Which statement is correct about temperature changes in a patient with a head injury?
1. Fever is unusual in patients with head injuries.
2. Hypothermia usually signals improvement in the patient's condition.
3. Every degree of temperature above normal increases the brain's oxygen demand by 6% to 10%.
4. Fever from a damaged hypothalamus responds well to pharmacologic interventions.

12. Which of the following is an abnormal finding when you test cranial nerve function?
1. diminished corneal reflex in a patient who wears contact lenses
2. an oval-shaped pupil
3. right and left eye move together
4. uvula rises straight up when he says "ah"

Carefully cut along dotted line.

Evaluation Listed below are statements about the CE offering. Please circle the number that best indicates your response.

	Disagree			Agree
1. I met objective 1.	1	2	3	4
2. I met objective 2.	1	2	3	4
3. I met objective 3.	1	2	3	4
4. The objectives related to the purpose of the activity.	1	2	3	4
5. The learning method was effective for me.	1	2	3	4

6. It took_____(hrs.) _____(mins.) to read and review the article and take the test.

Any licensed nurse may submit this evaluation form directly to the Iowa Board of Nursing.

Name _____

Address _____ ☐ New

City _____ State _____ ZIP_____

Social Security No. _____

Nursing License No(s). and State of Licensure _____
(One of the above numbers is required in order to process this test.)

Phone Number (home) _____ (work) _____

☐ Fax my certificate to (fax number) _____ ☐ home ☐ work

☐ Visa
☐ MasterCard No. _____ Exp. Date _____
(Credit card must be used for faxed tests. Payment must accompany the tests.)

NEURO ASSESSMENT ANSWER FORM

1.	2.	3.	4.	5.	6.
☐ 1.	☐ 1.	☐ 1.	☐ 1.	☐ 1.	☐ 1.
☐ 2.	☐ 2.	☐ 2.	☐ 2.	☐ 2.	☐ 2.
☐ 3.	☐ 3.	☐ 3.	☐ 3.	☐ 3.	☐ 3.
☐ 4.	☐ 4.	☐ 4.	☐ 4.	☐ 4.	☐ 4.

7.	8.	9.	10.	11.	12.
☐ 1.	☐ 1.	☐ 1.	☐ 1.	☐ 1.	☐ 1.
☐ 2.	☐ 2.	☐ 2.	☐ 2.	☐ 2.	☐ 2.
☐ 3.	☐ 3.	☐ 3.	☐ 3.	☐ 3.	☐ 3.
☐ 4.	☐ 4.	☐ 4.	☐ 4.	☐ 4.	☐ 4.

Before January 31, 2004, cut out or copy this form and mail or fax to: Lippincott Williams & Wilkins, 2710 Yorktowne Blvd., Brick, NJ 08723; fax number 732-255-2926; phone number 1-800-346-7844, ext. 1286. Mail your test with a check for $11.95, payable in U.S. funds only, to **Lippincott Williams & Wilkins,** or include your credit card information. Take 75¢ off every test if submitting two or more tests at a time. These prices do not pertain to the Internet.

N032