





2.0
ANCC CONTACT HOURS

Positioning the neurosurgical patient

By Joan L. Banovic, BSN, RN, CNOR;
Karen L. Nappi, RN, CNOR; and
Carmen P. Vicente, BSN, RN, CNOR

The most crucial responsibility of the neurosurgical perioperative nurse is assisting with positioning the patient. The length of patient immobilization and the type of surgical procedure being performed determine which position to use.

Positioning basics

The nurse is part of a multidisciplinary neurosurgical team that also includes: the neurosurgeon, anesthesia provider, and a surgical technician. Together this team keeps the patient in proper body alignment providing optimal surgical exposure and reducing pressure on bony prominences. Monitoring these conditions helps decrease complications that could lead to tissue breakdown and nerve damage. (See *Responsibilities of neurosurgical perioperative nurses.*)

Positioning devices used simultaneously perform several functions. Pressure-relieving devices absorb compression forces, prevent uneven and excessive pressure distribution, prevent excessive compression, and allow for proper chest expansion, gas exchange, and aid in the maintenance of proper physiologic function.¹ (See *Positioning devices.*)

The patient must remain in proper body alignment to avoid damage from over extension, flexion, or rotation. The perioperative team works together to ensure proper body alignment throughout the procedure. Keeping the head and neck in a neutral position, with the patient's head above the level of

the heart. Monitoring chest expansion and keeping the abdomen free from compression. Padding and protecting bony prominences to avoid breakdown and prevent complications.¹

The nurse confirms that the patient does not have any contraindications to the use of the sequential compression device and applies sequential compression boots to the patient's lower extremities to promote circulation and prevent venous pooling in the legs.

The anesthesia provider applies a water-soluble ophthalmic lubricant to the eyes and tapes them closed to minimize the risk of corneal abrasions. Protecting the eyes helps avoid any direct pressure on them reducing the risk of central retinal artery occlusion or other types of ocular damage.¹

Intraoperative monitoring

An adjunct to neurosurgical procedures is the use of intraoperative neurophysiologic monitoring. Neurophysiologic monitoring is performed by a

trained physician who provides information intraoperatively to the surgical team regarding nerve and spinal cord function while monitoring for the risk of surgical complications that can lead to nerve damage. The monitoring is done in real time and allows the surgeon to take corrective measures immediately. At times, a simple adjustment in positioning can return physiologic function to normal and decrease the risk of an adverse clinical outcome.⁴

Temperature control

The neurosurgical perioperative nurse helps maintain normothermia by controlling the ambient temperature in the operating suite, minimizing exposure of the patient's skin to the elements, and applying a warming blanket to the patient to regulate temperature. As the patient's core body temperature declines, peripheral vasoconstriction and tissue hypoxia are a concern.¹ This decrease in oxygenation can lead to an increase in tissue damage resulting from pressure points. Body warming devices and fluid warmers are all used in conjunction with each other to help maintain patient normothermia.

Tissue breakdown

Pressure ulcers are caused by prolonged pressure exerted on bony prominences. The tissue is typically of necrotic evolution and is characterized by ulceration and ischemic necrosis.⁵ Pressure ulcers involve the skin and subcutaneous region and can extend into the underlying muscle.

The National Pressure Ulcer Advisory Panel has determined clinical practice guidelines to assess risk factors for the development of pressure ulcers.² General recommendations include: assessing individuals at risk for skin breakdown often and routinely, reassessment if any significant change occurs, comprehensive skin assessments, documentation of all risk factors, and the development and implementation of a risk-based prevention plan.²

Pressure ulcers that develop intraoperatively are unusual in that the ulcer begins in the muscle and subcutaneous tissue. With time the tissue damage reaches the dermis and outer layer of skin typically developing 3 to 7 days postoperatively.⁵

Tissue ischemia is directly related to the amount of time a patient spends immobile during a procedure; the longer the procedure, the greater the chance for tissue damage. According to

Responsibilities of neurosurgical perioperative nurses

The neurosurgical perioperative nurse plays an intricate role within the surgical team. He or she prepares the surgical suite for the patient, gathers supplies and equipment, acts as a liaison between perioperative team members, maintains patient safety, and most importantly, acts as a patient advocate.

The nurse conducts the initial assessment by confirming the patient's name and date of birth and verifies that the surgical site and procedure are correct.³

It is also imperative for the neurosurgical perioperative nurse to assess for and document any preexisting conditions that the patient has prior to surgery. This clinical assessment should be performed in order to note any change in the patient's condition postsurgical procedure. Once these safety precautions have been performed, the patient is ready to enter the surgical suite.

A primary concern of neurosurgical perioperative nurses is preserving patients' dignity, safety, and physical well-being. Nurses help keep noise levels to a minimum and monitor traffic in and out of the OR. Once the patient has entered the OR, doors to the suite should remain closed and only essential personnel are allowed inside.

Prior to surgery, the neurosurgical perioperative nurse gathers all devices required for safe patient positioning including: gel pads, pillows, foam padding, arm boards, safety straps, and tape.

Bulfone and colleagues, the incidence of pressure ulcers in surgical patients ranges between 4.7% and 66% based on clinical conditions.⁵

Several conditions influence patient vulnerability to tissue damage including:¹

- age (neonates, and older adults over 70 years)
- comorbid conditions (cardiovascular disorders, cancer, diabetes)
- poor nutritional status
- poor skin integrity
- weight (underweight or morbid obesity)
- smoking.

When the blood flow to tissue is compromised, tissue breakdown occurs. It is estimated that 80% of all pressure ulcers occur in one of four anatomical locations: sacrum, ischium, trochanter, and the heel.¹ Pressure ulcers are a primary focus of the neurosurgical perioperative nurse in maintaining the safety and skin integrity of the patient.

Spinal procedure positioning

There are four common positions used for spinal procedures: supine, prone, knee chest, and lateral. Each requires the experience of knowledgeable perioperative team members to safely position the surgical patient. The type of procedure and the optimal exposure required by the surgeon to gain access to the site determine the final position of the patient.

Supine spine position

The supine position is utilized for various spinal procedures of the anterior cervical, thoracic, and lumbar regions. This position provides optimal access to the cervical spine for anterior cervical fusion and to the lumbar spine for anterior lumbar fusion. The supine position allows the patient to position him- or herself on the OR bed prior to receiving anesthesia. This position allows the patient to determine his or her comfort level and verbalize any areas of concern. Even though the supine position might seem like the least challenging of positions, it is still very important to ensure every measure is taken to provide maximum surgical access for the surgeon while maintaining optimal patient safety.

The patient lies on his or her back with arms extended and supported on padded arm boards or tucked, padded, and secured at the side. When positioning the arms extended on arm boards, do not extend the arms more than 90 degrees to prevent injury to the brachial plexus nerve.¹

Positioning devices

Gel rolls, gel donut, foam padding, ulnar pads, bean bag, pillows, safety strap, tape, and surgical clamps are among some of the positioning devices used.



Photo By: Joan L. Banovic, Hackensack University Medical Center

Also, prevent any compression to the subclavian and axillary arteries.¹ When the arms are positioned at the patient's sides, face the palms toward the patient's body with the arms tucked under a draw sheet that starts above the elbow and goes between the patient and the operating bed. The elbows and hands should be padded with foam to prevent injury. Alleviate pressure on the lower back by placing a pillow under the patient's knees.¹ Pad the heels with foam and a safety belt two inches above the patient's knees to ensure patient safety during surgery.¹

Prone spine position

The prone position provides optimal exposure to the posterior cervical, thoracic, and lumbar regions of the spine. The prone position can be achieved using various mechanical positioning devices including a spinal frame, pegboard with chest bolsters, gel rolls, and prone spinal table. The surgeon decides which positioning device will be used prior to the procedure since some devices provide more distraction of the vertebrae for more direct access to the surgical site.⁶ Additionally, the surgeon chooses a positioning device for the head; it may be a foam face rest, horse shoe, or three-pin head holder. The surgeon chooses the type of support based on the patient's size, physical limitations, and optimal exposure for the surgery. (See *Positioning devices for prone positioning*.)

A four-person "log roll" technique moves the patient from supine to the prone position. To

accomplish this, the surgeon positions himself or herself at the patient's head while the anesthesia provider controls the airway. The rest of the team positions themselves at the patient's sides and feet. Special attention is paid to maintain both arms and legs aligned in order to not hyperextend the extremities. The surgeon—controlling the patient's head—initiates the roll; all members move the patient in a safe, uniform, and gentle manner.

Prior to movement, the patient's gown is removed to prevent bunching material at pressure areas, as well as allowing visualization of the patient during positioning. The patient's dignity must always be maintained, taking care to remove any nonessential personnel from the OR during positioning.

When positioning the patient prone, extend chest supports from the clavicle to the iliac crest. Free the abdomen to reduce compression and facilitate expansion of the diaphragm during surgery. For a female patient, rest the breasts between the chest bolsters avoiding compression and for a male patient ensure that there is not any compression of the genitalia. Slightly flex and pad the knees. Support the legs with pillows elevating the feet high enough that the toes are facing down not touching any surface preventing pressure. The safety belt should be placed on the posterior thigh just below the buttocks ensuring patient safety.

The surgeon determines the placement of the arms based on accessibility to the surgical site. Support the arms on padded arm boards or secure

them at the patient's sides. Regardless of which position is chosen, the team must ensure that the arms, elbows, and hands are padded and kept in alignment preventing injury to the radial nerve. If placing the arms at the patient's sides, face the palms toward the thighs and use a draw sheet securing the arms between the patient and the OR mattress. Positioning the arms on padded arm boards may also be an option. Proper alignment in this position requires facing the palms down toward the floor and flexing the elbows. The arms should not be abducted more than 90 degrees to avoid brachial plexus nerve injury.¹ Place padding under the arms to avoid any pressure points.¹

Knee chest position

This position is not used as frequently as the prone position, but the knee chest position helps access the posterior spinal region providing exposure of the vertebral laminae and foramina of the spine.¹ This position is achieved by using a knee chest spinal table or padded chest bolster.

If using the knee chest spinal table to position the patient, it is important that all appropriate positioning parts are inspected and used properly. If using an OR bed, the bed must have the ability to flex. The patient is positioned prone with the hips at the break of the OR bed and the footboard is added to support the lower extremities. The head is kept in alignment and supported on a foam face rest to prevent placing any pressure on the eyes. The anesthesia provider applies a water-soluble ophthalmic lubricant to the eyes and tapes the eyes shut to prevent any corneal abrasions. The anesthesia provider should always be able to see the patient's eyes as well as the endotracheal tube providing direct access to the patient's airway.

The arms should be flexed and placed on padded arm boards keeping the wrists and hands aligned protecting the ulnar and radial nerves. Pad the axillae avoiding excessive compression and stretching on the brachial plexus.¹ Position the legs at a right angle to the body on the footboard with the knees padded so that the patient is kneeling. It is crucial to pad the knees while in this position and to check for distal lower extremity pulses because of the flexion at the knees and the added pressure it presents.⁶ Flex the feet down toward the floor and let them rest freely preventing any pressure and breakdown. Place a safety strap around the posterior aspect of the thighs.⁶

Positioning devices for prone positioning

Positioning devices used for positioning the patient in the prone position for posterior lumbar/thoracic procedures. Prone face padding, padded arm foam, gel bolsters, pillows, and safety strap.



Photo By: Joan L. Banovic, Hackensack University Medical Center

Lateral position

The lateral position is used for procedures that require a lateral approach to the thoracolumbar spine. A minimum of four people are required to safely position an anesthetized patient in the lateral position. Use a pillow or gel pad under the head to maintain proper alignment of the cervical spine. Flex and support the lower arm on a padded arm board with an axillary roll placed slightly posterior to the axillae relieving any pressure on the nerves and vessels. Bring the lower shoulder slightly forward.⁶ Place the upper arm on an elevated arm board or supported on pillows. It is important to safely position the top arm while maintaining the proper exposure for the operative procedure. The bottom leg is flexed and padded while the top leg remains straight or slightly flexed.⁵ Put pillows between the legs and padding on the lateral aspect of the bottom knee preventing pressure on the peroneal nerve.

Cranial procedure positioning

Several positions are routinely utilized in cranial surgery. Obtaining the optimal surgical exposure and maintaining patient safety is the primary objective of the perioperative team. The perioperative team collaborates with the surgeon regarding positioning, operative site, and positioning devices needed.

Supine or dorsal recumbent position

The supine or dorsal recumbent position is most commonly used for anterior approaches in cranial surgery. The patient lies flat with his back on the operating table, allowing optimal exposure to the anterior, middle, and lateral part of the head. During a craniotomy, a three-pin head holder, gel headrest, or horseshoe headrest holds the head in place. (See *Neurosurgical horseshoe headrest*.)

During all cranial surgeries, a circulating nurse or assistant must always be present when the surgeon applies the three-pin head holder to the patient's head. (See *Neurosurgical three-pin head holder*.)

It is important to ensure that the patient's eyes or temporal arteries are not damaged during the application. The perioperative team works cohesively maintaining proper positioning and head and neck alignment. Gel headrest or a horseshoe head holder is commonly used for pediatric patients due to the soft exteriors of the head. An advantage of using these two devices for craniotomies is that

Neurosurgical horseshoe headrest

Neurosurgical horseshoe headrest used for positioning the patient either in the supine or prone position for many cranial procedures.



Photo By: Joan L. Banovic, Hackensack University Medical Center

they can be used for minor cases and they come in different sizes.

Typically, the arm closest to the anesthesia provider is positioned on an arm board providing access during the surgical procedure. Do not extend this arm more than 90 degrees. Carefully position the upper extremities to avoid injuring the peripheral nerve and vessels. Tuck, secure, and pad the opposite arm at the side. Protect the elbows from the hard surface and compression against the side of the table. Position the upper extremities to avoid damaging the peripheral nerve and vessels. Neglecting these factors leads to brachial plexus injury; a common nerve injury and can result in motor and sensory loss to the arm.⁷ Keep the safety leg strap at least two inches above the knees, and a pillow positioned under the knees to prevent pressure on the popliteal area.⁷ Elevate and pad the heels. The perioperative nurse documents that all bony prominences are padded and free from pressure.

Prone cranial position

The prone position provides optimal exposure to the posterior portion of the head. The patient is initially lying supine on the stretcher. The procedure begins with the induction of anesthesia and after the anesthesia provider intubates the patient, the eyes are taped after a water-soluble ophthalmic lubricant is applied to the eyes preventing corneal abrasion.⁷ The head is positioned either in the three-pin head holder or horseshoe headrest depending on the surgical access required.

Using the four-person “log roll” technique, move the patient from the supine to the prone position. The surgeon positions himself at the patient’s head while the anesthesia provider controls the airway. The rest of the team positions themselves at the patient’s sides and feet. The arms and legs are aligned preventing hyperextension of the extremities. The surgeon controlling the head initiates the roll; all members move the patient in a safe, uniform, and gentle manner. Prior to movement, the patient’s gown is removed to prevent pressure areas from bunching material, as well as aiding the visualization of the patient during positioning.

Gel rolls raise the chest and are placed parallel to each other, extending from the clavicle to the iliac crest. The rolls assist in the patient’s ventilation, thus relieving the abdomen from vascular congestion and allowing full expansion of the diaphragm and lungs.⁶ Make sure that female breasts and male genitalia remain free from any compression.

Neurosurgical three-pin head holder

Neurosurgical three-pin head holder used for positioning the patient for cranial and posterior cervical procedures.



Photo By: Joan L. Banovic, Hackensack University Medical Center

The patient’s arms, elbows, and hands are placed at their sides and are fully padded with palms turned inward facing the thighs. The peripheral lines are checked for any twists before the arms are secured. The arms can either be tucked between the body and the operating bed, or they are secured with a draw sheet across the back and clipped with surgical clamps. Once positioned, the circulating nurse makes a final check ensuring no metal is in contact with the skin and that elbows are fully padded protecting the ulnar nerve from injury.

Both knees are padded with the legs remaining in proper alignment. Pillows are used to provide flexion to the lower extremities with the toes pointing downward eliminating pressure. A safety belt is placed securely across the dorsal aspect of the patient’s thigh just below the buttock. Padding placed under the safety belt prevents superficial venous impairment.¹

Lateral cranial position

After induction of anesthesia the patient is turned from supine to the lateral position on the operating bed. Similar to the cranial prone position a four-person team is required to lift the patient to prevent sheering injury.¹ The patient is positioned with the operative side facing upward. Team members are positioned to maintain the patient in proper body alignment. They also provide support assuring safe patient transfer.⁷

A three-pin head holder is the usual positioning device for head fixation. The perioperative team observes proper alignment of the head, neck, and spine during the procedure. The anesthesia provider ensures that the dependent ear and eye are free from any pressure. An axillary roll, typically a rolled sheet or covered I.V. bag, is placed between the bed and the lower axillae. This lifts the patient’s chest and relieves pressure on the nerves and vessels of the brachial plexus.¹

A beanbag supports the torso, acting as an immobilizer and maintaining the patient’s correct body alignment. The lower leg is flexed and the top leg remains straight or slightly flexed with pillows in between to protect the peroneal nerves.⁷ One team member remains at the patient’s back supporting the torso, while positioning the lower extremity. Once the correct position is achieved, the beanbag is inflated and maintains the patient in position. All body parts near the edge of the beanbag are checked and padded protecting the patient’s skin from pressure.

For added stability, adhesive tape is applied to the body, shoulder and legs then secured to the OR bed. A foam pad is applied between the skin and tape, protecting the patient's skin integrity from laceration.

The dependent arm is positioned on a padded arm board; do not hyperextend the arm above 90 degrees. An axillary roll is placed inferior to the axillae to prevent damage to the brachial plexus and to facilitate chest expansion. The opposite arm is either placed on an elevated padded arm support, or secured with several pillows and taped along the torso. Make sure the female patient's breasts remain free from compression by any positioning device.¹

When positioning is completed, the neurosurgical perioperative nurse checks the final patient position, making sure the safety belt is over the upper thigh and checks other areas most vulnerable to pressure. The nurse reassesses and documents the patient's skin and tissue integrity with special attention to the dependent upper rib cage and trochanter for extreme pressure.⁶

Sitting or Fowler cranial position

Sitting or Fowler position is used for occipital and posterior fossa craniotomies. This particular approach has a list of advantages that make it ideal for head surgery: it improves cerebral venous drainage, lowers intracranial pressure, and promotes gravity drainage of cerebrospinal fluid and blood away from the surgical area.⁶ (See *Three-pin head holder used for sitting positions*.)

A major complication, which makes this positioning used infrequently, is the potential for a venous air embolism. When in a seated position, the operating site at the head is higher than the heart, causing a potentially negative venous gradient between the surgical site and the right atrium.⁶ The anesthesia provider needs to monitor the patient for venous air embolism and promptly treat if an air embolism occurs. Venous air embolism is a recognized complication occurring when the patient is in the sitting position. During occipital craniotomies when the dural sinuses and diploic veins are exposed under negative venous pressure the possibility of air aspiration can occur.⁸ Treatment of venous air embolism concentrates on directing air out of the right ventricle and into the pulmonary circulation aiding in reabsorption of the air.⁸ The treatment of venous air embolism consists of placing the patient in left lateral decubitus position, administration of vasopressors, and the use of closed chest cardiac massage.⁸

Three-pin head holder used for sitting positions

Positioning of the three-pin head holder when used for positioning the patient in the sitting position.



Photo By: Joan L. Banovic, Hackensack University Medical Center

Unfortunately, despite many of these measures, patient outcomes have not been favorable.⁸

The neurosurgeon places the three-pin head holder while the patient is in the supine position. Holding the head, he designates a team member to gently raise the back of the OR bed. Once the desired flexion is achieved, the headrest is secured to a cross bar attached to the side rails of the OR bed. Extra padding used gives additional support to the patient's back and protects the scapulas.

The upper extremities are secured on arm boards or are secured across the patient's lap. The arms are protected from pressure by positioning them in a neutral position with the palms down.

Flex the lower part of the bed supporting the legs in a sitting position. Place pillows under the knees to help minimize strain on the sciatic nerve, and pad the heels. Use a safety strap above the patient's knees preventing hyperflexion of the knees and peroneal nerve stretching.⁵ Then a final assessment of all skin pressure vulnerability areas is made including: the back, elbows, ischial tuberosities, coccyx, popliteal space, and heels.⁶

Just to recap

As with all surgical procedures, patient positioning remains at the forefront. Neurosurgery is a complex surgical specialty requiring lengthy periods of time, which translates into extended immobility for the

patient. Based upon the neurosurgical procedure that the patient undergoes, the neurosurgical perioperative nurse develops a plan of care tailored specifically for each patient. Once the surgical site has been defined, the nurse assesses the equipment and positioning aides required, age, nutritional status, skin integrity and any preexisting comorbidities all play a role in the development of the plan of care for each patient.

Maintaining patient safety and surgeon accessibility to the operative site are crucial. Proper positioning and monitoring of the neurosurgical patient prevents the occurrence of tissue breakdown. When the neurosurgical perioperative team works cohesively ensuring proper positioning of the neurosurgical patient then patient safety is achieved. **OR**

REFERENCES

1. St-Arnaud D, Paquin MJ. Safe positioning for neurosurgical patients. *AORN J*. 2008;87(6):1156-1168.
2. National Pressure Ulcer Advisory Panel. *Prevention and Treatment of Pressure Ulcers: Quick Reference Guide*. 2014. <http://www.internationalguideline.com/static/pdfs/NPUAP-EPUAP-PPPIA-PUQuickReferenceGuide.pdf>.
3. The Joint Commission. Hospital national patient safety goals. 2013. http://www.jointcommission.org/standards_information/npsgs.aspx.
4. Nuwer MR, Emerson RG, Galloway G, et al. Evidence-based guideline update: Intraoperative spinal monitoring with somatosensory and transcranial electrical motor evoked potentials: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and the American Clinical Neurophysiology Society. *Neurology*. 2012;78(8):585-589.
5. Bulfone G, Marzoli I, Quattrin R, Fabbro C, Palese A. A longitudinal study of the incidence of pressure sores and the associated risks and strategies adopted in Italian operating theatres. *J Perioper Pract*. 2012;22(2):50-56.
6. Heizenroth PA. Positioning the patient for surgery. In: *Alexanders Care of the Patient in Surgery*. 14th ed. St. Louis, MO: Mosby Elsevier; 2011:144-173.
7. AORN. Recommended practices for patient positioning in the perioperative practice setting. In: *Perioperative Standards and Recommended Practices*. Denver, CO: AORN; 2014:481-499.
8. Michenfelder JD, Terry HR, Daw EF, Miller RH. Air Embolism During Neurosurgery...a new method of treatment. 2015. http://journals.lww.com/anesthesia-analgia/Citation/1966/07000/AIR_EMBOLISM_DURING_NEUROSURGERY_a_new_method_of.5.aspx.

Joan L. Banovic is a clinical level IV clinical coordinator in the neurosurgery/spine/maxillofacial, inpatient OR, Karen L. Nappi is a clinical level III educator in neurosurgery/spine/maxillofacial, and Carmen P. Vicente is a clinical level II staff nurse in the inpatient OR at Hackensack University Medical Center, Hackensack, N.J.

The authors have disclosed that they have no financial relationships related to this article.

DOI-10.1097/01.ORN.0000460898.79060.9f

For more than 111 additional continuing education articles related to surgical topics, go to Nursingcenter.com/CE.

CE CONNECTION

Earn CE credit online:
Go to <http://www.nursingcenter.com/CE/ORnurse>
and receive a certificate *within minutes*.

INSTRUCTIONS

Positioning the neurosurgical patient

TEST INSTRUCTIONS

- To take the test online, go to our secure website at <http://www.nursingcenter.com/ORnurse>.
- On the print form, record your answers in the test answer section of the CE enrollment form on page 27. Each question has only one correct answer. You may make copies of these forms.
- Complete the registration information and course evaluation. Mail the completed form and registration fee of \$21.95 to: Lippincott Williams & Wilkins, CE Group, 74 Brick Blvd., Bldg. 4 Suite 206, Brick, NJ 08723. We will mail your certificate in 4 to 6 weeks. For faster service, include a fax number and we will fax your certificate within 2 business days of receiving your enrollment form.
- You will receive your CE certificate of earned contact hours and an answer key to review your results. There is no minimum passing grade.
- Registration deadline is April 30, 2017.

DISCOUNTS and CUSTOMER SERVICE

- Send two or more tests in any nursing journal published by Lippincott Williams & Wilkins together and deduct \$0.95 from the price of each test.
- We also offer CE accounts for hospitals and other health care facilities on nursingcenter.com. Call 1-800-787-8985 for details.

PROVIDER ACCREDITATION

Lippincott Williams & Wilkins, publisher of *ORNurse2015* journal, will award 2.0 contact hours for this continuing nursing education activity. Lippincott Williams & Wilkins is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

Lippincott Williams & Wilkins is also an approved provider of continuing nursing education by the District of Columbia and Florida #50-1223. This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP 11749 for 2.0 contact hours.

Your certificate is valid in all states.

The ANCC's accreditation status of Lippincott Williams & Wilkins Department of Continuing Education refers only to its continuing nursing educational activities and does not imply Commission on Accreditation approval or endorsement of any commercial product.