

KINGSTON GENERAL HOSPITAL

CARE OF THE PATIENT FOLLOWING SPINAL (INTRATHECAL) ANESTHESIA/ANALGESIA

LEARNING-GUIDE for Registered Practical Nurses (RPNs)

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by

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Note: This learning guide contains information current at the time of distribution. Policies and procedures are frequently revised. Please refer to related policies and procedures contained in the Nursing Policy and Procedure Manual for ongoing current information.

PART A: SPINAL (INTRATHECAL) ANESTHESIA/ANALGESIA:

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. It is difficult to find any one definition that is acceptable to everyone, other than all agree that it is an unpleasant sensation. Pain is always subjective. The experience of pain is affected by previous painful experiences earlier in life. Pain has been identified as a critical symptom that affects quality of life and other patient outcomes in both acute and chronic illness.

Acute pain, which is most often intense, short-lived, and reversible, is usually the result of a surgery. Short-term acute pain is the type of pain associated with postoperative healing, diagnostic procedures, and certain painful therapies.

Two main nursing activities contribute to the success of pain management: assessment and documentation. Along with the four classic vital signs: pulse, blood pressure, respiration and temperature, pain can be identified as the 'fifth vital sign'. Pain assessment aims to detect pain, quantify its severity, and assess response to treatment. In fact, this assessment is the key to diagnosis and treatment. Pain intensity can be measured by using simple scales such as the numeric rating scale from 0 (no pain) to 10 (worst possible pain). The primary nurse is with the patient more than any other health team member and is in the best position to frequently assess and respond to the effectiveness of pain management interventions.

Consistent documentation of pain assessments promotes communication of pain and treatment efficacy amongst team members. Documentation of pain assessment is key to making pain a more visible problem in all health care settings.

Advances in pain management are changing the view that severe pain is a usual and expected outcome of surgery. It is no longer acceptable for patients to experience severe pain at any stage of their health care experience. Few other symptoms can be as physically, emotionally and spiritually distressing and unpleasant as pain. A thorough understanding of the effects of drugs being administered, and the assessment, care and monitoring of the patient in painful circumstances is essential to effective pain management.

The patient with postoperative pain traditionally has been treated with intermittent intravenous, intramuscular or subcutaneous injections, or with oral administration of opioid analgesics. The disadvantages in these methods include peaks and valleys in pain relief and increased nursing workload. As a result, the use of neuraxial analgesia for postoperative pain relief is becoming a widely accepted treatment modality. Neuraxial analgesia refers to the administration of medications via epidural/paravertebral/intrathecal(spinal) routes to block pain impulses.

Spinal (Intrathecal) anesthesia is used frequently for abdominal, genitourinary, orthopedic, vascular, obstetrical and gynecologic surgery. To provide analgesia after spinal surgery, an opioid analgesia can be given intrathecally at the same time as the local anesthetic.

Acute Pain Management Service

The Acute Pain Management Service (APMS) is an interdisciplinary team that is frequently consulted by surgical services to establish pain management interventions. The APMS is made up of a clinical pharmacist, a Clinical Nurse Specialist, and a small group of anesthesiologists who rotate on APMS on a weekly basis. Patients who have received or are receiving spinal (intrathecal) anesthesia/ analgesia are always followed by APMS for 24 hours. The team usually makes patient care rounds in the morning and again in the afternoon but is available by pager throughout the day. On call anesthesiology staff and residents cover APMS during off-hours.

Medication orders written by APMS for patients under its care that do not have to be co-signed by the attending service include all analgesics, anxiolytics, sedatives, anti-emetics and anti-pruritics. In order to prevent potentially harmful duplication of medications administered, the attending service must seek APMS approval prior to ordering any to these agents.

The APMS team exists to work with the primary nurse and the attending service in ensuring that patients receive the most appropriate and effective pain management.

Precaution

While under APMS, no other analgesics, antiemetics, tranquilizers or sedatives are to be given, unless authorized by APMS. This includes benzodiazepines, phenothiazines, and antihistamines.

Learning Guide

This learning guide has been prepared to assist the Registered Practical Nurse (RPN) to care for patients who have received spinal (intrathecal) anesthesia/analgesia. Skilled nursing assessment is essential to the care for these patients postoperatively.

1.0 AUTHORIZATION

1.1 Care of the Patient Following Spinal (Intrathecal) Anesthesia/Analgesia after Sensory and Motor Block Receded

Care of the patient following spinal (intrathecal) anesthesia/analgesia once the motor and sensory block has completely receded (or returned to pre procedure/surgery motor and sensory function) is an Advanced Competency for RPNs. Authorized RPNs may care for and monitor patients after they have received a perioperative spinal opioid analgesic and/or local anesthetic agent once the sensory and motor block has completely receded (or returned to pre procedure/surgery motor and sensory function).

1.2 Authorization Process

Authorization Requirements for the Care and Monitoring of Patients Following Spinal (intrathecal) Anesthesia/Analgesia after the Motor and Sensory Block has Completely Receded.

The authorization process for the care and monitoring of patients that have received spinal opioid analgesic and/or local anesthetic agent after the sensory and motor block has completely receded include:

- review of the Learning Guide, Care of the Patient Following Spinal (Intrathecal) Anesthesia/Analgesia;
- review of related policies and procedures in the Nursing Policy and Procedure Manual;
- successful completion of the written test (80% or greater)

The authorized RPN will NOT:

- care for patients receiving continuous epidural, paravertebral or peripheral nerve block infusions
- care for patients who have had a single shot nerve block unit the motor and sensory block has completely receded (or returned to pre procedure/surgery motor and sensory function)
- care for patients who are receiving continuous SpO₂ monitoring post-operative

1.3 Expected Competencies for the Learner

Following the review of this learning guide and successful completion of the authorization process, the Registered Practical Nurse (RPN) will be able to care for patients who have received spinal (intrathecal) anesthesia/analgesia, once sensory and motor block has completely receded as follows:

1. Assess patient status and responses at appropriate intervals.
2. Ensure patient safety and comfort throughout the postoperative period.

3. Recognize, respond to, and communicate assessment of complications to charge nurse and/or APMS.
4. Identify patient care needs.
5. Update the plan of care based on the information gathered in assessment/monitoring of patients receiving or who have received spinal (Intrathecal) anesthesia/analgesia
6. Implement the nursing plan of care for the patients.
7. Document monitoring data, care provided and response to care accurately and thoroughly.
8. Evaluate the outcomes of the nursing care provided for the patients.
9. Communicate relevant patient information to other members of the health care team.

2.0 REVIEW OF RELATED ANATOMY AND PHYSIOLOGY

To clearly understand the use of spinal (Intrathecal) anesthesia/analgesia, it is helpful to review the anatomy and physiology of the spinal column and of pain transmission.

2.1 Vertebral Column

The vertebral column is composed of the bony outer structures that house and protect the spinal cord. It consists of 33 vertebrae:

Cervical:	7	Lumbar:	5	Coccygeal:	3-4
Thoracic:	12	Sacral:	5		

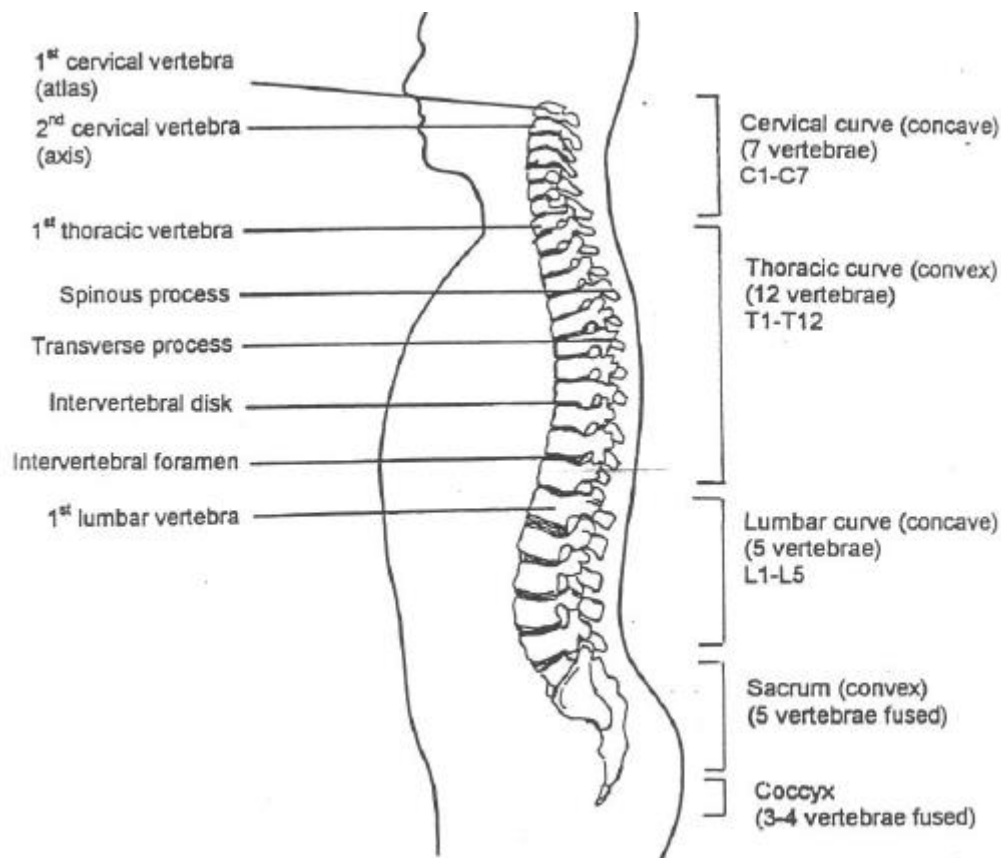


Figure 1: The Vertebral Column

2.2 Spinal Meninges

Three layers of membranous coverings known as **meninges** surround the spinal cord:

- pia mater:
 - innermost layer;
 - adheres directly to the spinal cord;
 - contains many blood vessels to supply the spinal cord.
- arachnoid:
 - middle transparent layer;
 - separated from the pia mater by the CSF-filled subarachnoid space.
- dura mater:
 - strong, tough outer layer;
 - consists of dense, fibrous connective tissue.

Subarachnoid Space

The subarachnoid space is located between the arachnoid and the pia mater. This space contains the cerebrospinal fluid (CSF). The subarachnoid space is also referred to as the **spinal** or **intrathecal** space. In general, the dose of subarachnoid analgesia necessary to achieve pain relief is only **one tenth (1/10th)** of the dose used in the epidural space.

Complications with intrathecal analgesia will occur with smaller drug dosages, and much sooner than complications occurring after epidural infusion because of medication spread in the CSF.

2.3 Spinal Nerve Distribution

There are 31 pairs (eight cervical, twelve thoracic, five lumbar, five sacral and one coccygeal) of spinal nerves, containing motor, sensory, and sympathetic nerve fibers that traverse from the spinal canal through the intervertebral foramina.

Skin segments innervated by specific sensory roots are called dermatomes. Dermatomes are significant in determining the level of sensory deficit by the Registered Nurse (RN) post intrathecal/spinal analgesia/anesthesia. The patient should NOT have any sensory deficits in their lower extremities when cared for by the RPN. The patient should exhibit their pre procedure/surgical sensory function in their lower extremities.

2.4 The Effects of Neuraxial Analgesics on Pain Transmission

Spinal procedures are indicated for surgical procedures below the level of the diaphragm. Agents used in spinal anesthesia include both opioids and local anesthetic agents. Each may be given individually or in combination. Spinal anesthesia is achieved by a single Intrathecal injection of local anesthetic into the subarachnoid space to create sensory, motor, and autonomic blockage of the nerve roots and spinal cord. In addition to assessing the sensory block, the RN is also responsible for assessing and

determining when the motor block has completely receded. The patient should NOT have any motor block when cared for by the RPN. The patient should exhibit their pre procedure/surgery motor function in their lower extremities.

Opioid agents given into the intrathecal (spinal) space spread via the CSF to act directly upon the opioid receptors in the dorsal horn of the spinal cord.

Advantages of Opioid Spinal (intrathecal) Analgesia (as Compared to IV/IM Analgesia)
<ul style="list-style-type: none"> • less opioid required • longer duration of action • minimal sedation • more effective, consistent analgesia

The lipid solubility of the drug injected is a major determining factor affecting the onset and duration of analgesia. The more lipid soluble (lipophilic) the drug, i.e., fentanyl, the more rapidly it passes through the meninges and tissue layers of the cord, and is therefore absorbed more rapidly. Compared to morphine and hydromorphone are less lipophilic. Drugs that are less lipophilic (hydrophilic) have a slower rate of absorption and may persist longer in the CSF offering a more widespread analgesia.

Local Anesthetic Agents: Mechanism of Action

Local anesthetic agents administered neuraxially block impulse conduction within the spinal cord itself (intrathecal). The immediate availability of spinal cord structures and the presence of CSF allow doses of intrathecal local anesthetics to be substantially less than epidural or paravertebral doses.

Frequently a combination of opioid and local anesthetic is used, reducing the total amount of each agent required to relieve pain. Using less drug decreases the side effects associated with each of these agents. The most commonly used local anesthetic agents are lidocaine and bupivacaine (Marcaine). A combination of bupivacaine with hydromorphone or fentanyl is standard at KGH.

2.5 Balanced Analgesia

Balanced analgesia is a term used to describe the use of a combination of medications to produce an analgesia affect. Balanced analgesia is also known as Multimodal Therapy. The goal of balanced analgesia is to use smaller amounts of analgesics to produce pain relief without creating limiting side effects. There are generally four different types of analgesics used by APMS/anesthesiology to achieve this effect.

- **Non-steroidal anti-inflammatory drugs (NSAIDs)** include ketoprofen, ibuprofen, indomethacin and naprosyn;
- **Acetaminophen** is used routinely with an NSAID, can reduce opioid requirements by up to thirty percent;
- **Opioid analgesics** are used for their central effect on pain transmission. These agents may be administered alone for neuraxial analgesia or in combination with a local anesthetic;
- **Local anesthetics** are used for their ability to block pain impulses both in the spinal cord and in nerve roots. These agents may be administered alone for neuraxial analgesia or in combination with an opioid analgesic.

Although smaller dosages of these medications may be used in balanced analgesia, it is still important to assess carefully for known medication side effects.

3.0 NALOXONE ADMINISTRATION

Naloxone is a short acting opioid antagonist. It is given intravenously by the RN to reverse opioid-induced respiratory depression.

For all patients who have received intrathecal Fentanyl or Morphine for the duration of the monitoring period:

1. A vial of Naloxone 0.4 mg IV, a 10 mL vial of normal saline, and a 10 mL syringe/needle will be immediately available during, and for 24 hours after, the administration of intrathecal analgesia/anesthesia including when the patient is transported off the nursing unit.
2. The RPN must seek collaboration with the RN if Naloxone is required for respiratory depression as the patient is no longer stable or predictable

PART B Care of the Patient Following Spinal (Intrathecal) Anesthesia/Analgesia Once Sensory and Motor Block Completely Receded

1.0 Introduction

Opioids and local anesthetics administered intrathecally (spinal) spread within the CSF in close proximity to the spinal cord. Intrathecal dosing is 1/10 that of epidural dosing. Local anesthetics such as bupivacaine, may be used intrathecally to provide sensory and motor blockade for operative procedures instead of or in addition to general anesthetics. The anesthesiologist or resident determines and administers the necessary dose of local anesthetic prior to surgery. The duration of the effect is dose-dependent. Refer to Table 1.3 for a detailed view of the side effects of Intrathecal/spinal local anesthetic administration.

Intrathecal opioid fat solubility affects its duration, onset and spread of effect. The more fat soluble opioids (fentanyl, meperidine) have a quicker onset of action but a shorter duration of effect (approximately 5 hours). Morphine and hydromorphone are more water soluble and thus are slower to act but remain in the CSF for a longer period of time (approximately 24 hours). The anesthesiologist/resident may administer a small dose of opioid intrathecally to provide analgesia for 8-20 hours post-operatively. Refer to Table 1.2 for a detailed view of the side effects of intrathecal opioid administration.

1.1 **Contraindications for the Use of Spinal Anesthesia**

Spinal Anesthesia is contraindicated in the following situations:

- Presence of local and systemic infection
- Inadequate monitoring capability and/or lack of resuscitative equipment and medications
- Coagulopathy or anti-coagulant therapy
- History of adverse reaction to proposed agent
- Patient refusal

Other relative contraindications include:

- Increased intracranial pressure
- Skeletal or spinal abnormalities
- Prior laminectomy with opening of the dura

1.2 Side Effects of Intrathecal (Spinal) Opioid Administration

Side Effects	Etiology	Nursing Assessment	Prevention/Therapy
1. Pruritus	<ul style="list-style-type: none"> tends to develop on face, trunk, and/or upper extremities not an allergy no rash or redness may be related to histamine release 	<ul style="list-style-type: none"> Observe for itching. 	<ul style="list-style-type: none"> Administer diphenhydramine (Benadryl) as ordered. Administer small doses of naloxone as ordered. Administer an antipruritic steroid as ordered.
2. Urinary Retention	<ul style="list-style-type: none"> opioid effect on spinal cord and spinal nerves innervating the bladder. tends to occur more frequently in men than in women more common when opioids are administered in the lumbar area 	<ul style="list-style-type: none"> Monitor inputs and outputs. Palpate the abdomen prn for distended bladder. Observe for symptoms of discomfort i.e., frequency, urgency. 	<ul style="list-style-type: none"> Perform intermittent catheterization as ordered. Administer small doses of naloxone as ordered.
3. Nausea & Vomiting	<ul style="list-style-type: none"> due to vascular absorption of opioid latent effects may occur 6-10h after morphine d/t drug circulating in CSF around vomiting center in brain 	<ul style="list-style-type: none"> Monitor for nausea and vomiting. 	<ul style="list-style-type: none"> Offer support measures. Administer antiemetic, as ordered. Administer naloxone in a low dose as ordered to relieve nausea without analgesia.
4. Respiratory Depression (Initial presentation is often a decreasing level of consciousness. Depth of respiration may first become shallower with little change in rate)	<ul style="list-style-type: none"> most serious, but least frequent side effect (< 1%) EARLY: within 1h after injection due to vascular absorption of opioid via epidural veins LATE: with morphine only. Slow absorption allows morphine to float freely in CSF, reaching the respiratory center of brain 6-24h after injection More likely to occur if: <ul style="list-style-type: none"> large doses are given; age > 70; history of impaired respiratory function; concomitant administration of parenteral opioids, sedatives or antiemetics; residual effects of drugs given during surgery; patient lying flat; and obesity. 	<ul style="list-style-type: none"> Monitor respiratory rate and depth -Q4h and prn for 24 hrs. Monitor level of sedation (LOS) and pain q4h Monitor oxygen saturation prn Assess for opioid toxicity (< 1%, rare) <ul style="list-style-type: none"> -drowsiness -mental clouding -pinpoint pupillary constriction -coma -respiratory depression 	<ul style="list-style-type: none"> Encourage deep breathing. Elevate head of bed 30 degrees Administer NO other opioids, sedatives, or antiemetics, without specific order from anesthesiologist. Encourage early, assisted ambulation Notify Anesthesia if RR < 10 and SpO₂ < 90% Administer oxygen as ordered. Administer naloxone IV as ordered. Patient must have IV access for 24h following therapy with morphine If patient is apneic, insert oral airway Ventilate with ambu bag, call Code Blue

1.3 Side Effects of Intrathecal (Spinal) Local Anesthetic Agents

Side Effects	Etiology	Nursing Assessment	Prevention/Therapy
1. Hypotension	<ul style="list-style-type: none"> Sympathetic nerve blockage and subsequent vasodilation Dose dependent, increased risk with higher doses Accentuated by hypovolemia or blood loss 	<ul style="list-style-type: none"> Assess according to procedural orders 	<ul style="list-style-type: none"> Prior to administration of local anesthetic bolus, place patient in supine position and maintain x 10min. Elevate legs. Administer IV fluid and ephedrine as ordered...collaborate with RN. Notify anesthesiologist.
2. Motor and Sensory Loss	<ul style="list-style-type: none"> Motor & sensory nerve blockade must be completely receded when RPN caring for patient Dose/concentration dependent 	<ul style="list-style-type: none"> RN to assess level of sensory block, using ice, noting dermatome level where temperature sensation is lost. Assess q1h until return of full motor function. Assess for evidence of motor 	<ul style="list-style-type: none"> Protect patient until return of sensory and motor function.

Side Effects	Etiology	Nursing Assessment	Prevention/Therapy
		<p>block, by using the motor strength impairment scale to check patient's ability to flex the feet and knees.</p> <ul style="list-style-type: none"> Check ankle flexion and extension or ability to move toes in orthopedic patients when large casts or immobilization dressings are preventing bending at knees 	
3. Urinary Retention	<ul style="list-style-type: none"> Motor/sensory block of nerve fibers innervating the bladder 	<ul style="list-style-type: none"> Assess abdomen for distention and discomfort prn. Monitor intake and output. 	<ul style="list-style-type: none"> Perform intermittent catheterization as ordered. Administer naloxone as ordered.
4. Nausea and Vomiting	<ul style="list-style-type: none"> Usually will occur only if the patient also experiences hypotension 	<ul style="list-style-type: none"> Monitor/question patient about nausea and vomiting. 	<ul style="list-style-type: none"> Antiemetics may be ordered (e.g. haloperidol, dimenhydrinate, droperidol, metoclopramide, prochlorperazine, ondansetron).

1.4 Complications of Intrathecal (Spinal) Local Anesthetic

Complication	Etiology	Nursing Assessment	Prevention/Therapy
1. Dural Puncture (Spinal Headache)	<ul style="list-style-type: none"> Loss of CSF by accidental puncture of the dura. This often leads to a high incidence of post spinal headache. 	<ul style="list-style-type: none"> Dural puncture is characterized by a severe headache which is exacerbated by sitting upright. Other associated symptoms may include photophobia, nausea and vomiting. 	<ul style="list-style-type: none"> Notify physician Administer IV fluids as ordered Maintain bedrest with head of bed flat Administer analgesics for headache If headache is severe and unresponsive to first line management, an epidural blood patch may be considered to stop the leakage of CSF
2. Epidural Hematoma (Cauda Equina Syndrome – CES)	<ul style="list-style-type: none"> Pressure on the nerve plexus leading to Cauda equina syndrome (CES) 	<ul style="list-style-type: none"> Observe patient for signs and symptoms of CES which include: progressive weakness/paralysis of lower extremities, perineal numbness, and incontinence (patient usually does not realize they have been incontinent). 	<ul style="list-style-type: none"> RN to perform motor and sensory assessments as indicated Perform neurovascular checks as ordered and/or are indicated Notify physician of any abnormal findings Prepare patient for MRI/CT scan to localize hematoma Prepare for emergent surgery to relieve pressure and restore blood flow

2.0 SPINAL (INTRATHECAL) ANALGESIA/ANESTHESIA AFTER SENSORY AND MOTOR BLOCK COMPLETELY RECEDED: PATIENT CARE AND MONITORING

2.1 Nursing Actions Refer to Nursing Policy and Procedure 1-5129 (part B)

For the first **24** hours post intrathecal analgesia/anesthetic:

1. Monitor the respiratory rate q4hr and prn.
2. RN to assess motor and sensory block q1h until return of full motor and sensory function (or pre procedure/surgery motor and sensory function).
3. Monitor the level of sedation and pain q4h.
4. Maintain the head of the bed elevated 30 degrees.
5. Maintain IV access.
6. A vial of Naloxone 0.4 mg IV, a 10 mL vial of normal saline, and a 10 mL syringe/needle will be immediately available during, and for 24 hours after, the administration of intrathecal analgesic/anesthesia including patient absences from the nursing unit. * Note RN administers Naloxone.

2.2 Reporting and Recording

1. Notify Anesthesiology STAT if you observe:
 - Respiratory rate <10 breaths per minute or dyspnea;
 - Systolic blood pressure <90mm Hg;
 - Heart rate <50 beats per minute;
 - Convulsions;
 - Sedation score of 5;
 - Central nervous system changes such as numbness on tongue or lips, vertigo, tinnitus, feeling restless or jittery, difficulty in focusing, slurred speech.
2. Notify Anesthesiology if you observe:
 - Inadequate pain relief or new onset of pain in the back, or complaints of headache or backache that are not relieved with prescribed analgesia;
 - Temperature greater than 38.5°C;
 - Side effects that are not alleviated with nursing interventions; or
3. Document on the APMS analgesia flowsheet:
 - Date and time;
 - Respiratory effort and rate;
 - Patient's subjective description of pain (0-10 at rest and with activity);

- Level of sedation
4. Document in the progress note:
 - Alterations in respiratory status;
 - Evidence of side effects/complication and actions taken to manage those;
 - Evaluation of patient response to interventions; and
 - Communication with Anesthesiology and collaborating RN.
 5. Document on the unit-specific flowsheet:
 - vital signs.

PART C: ASSESSMENT TOOLS

Sedation Scale

- 1. Wide Awake**
- 2. Drowsy**
- 3. Dozing Intermittently**
- 4. Mostly Sleeping**
- 5. Only Awakens When Stimulated
(somnolent)**

Part D: AUTHORIZATION TEST FOR CARE OF THE PATIENT FOLLOWING SPINAL (INTRATHECAL) ANESTHESIA/ANALGESIA

Name: _____ Unit : _____ Date: _____

Multiple Choice

Please circle the most appropriate answer for each question below.

1. The medication administered by the RN to reverse opioid-induced respiratory depression is:
 - a. atropine
 - b. naloxone
 - c. ephedrine
 - d. fentanyl

2. For the first 24 hours following spinal (intrathecal) anesthesia/analgesia, the nurse MUST:
 1. Monitor the level of sedation and pain q4h
 2. Keep the Head of the Bed (HOB) at 30 degrees
 3. Monitor the respiratory rate q 4 h and prn
 4. all of the above
 - a. 1 & 3
 - b. 3 only
 - c. 2 & 3
 - d. 4

3. Advantages of opioid spinal (intrathecal) analgesia compared to IM/IV analgesia include:
 - a. less opioid required
 - b. longer duration
 - c. minimal sedation
 - d. all of the above

4. Unlike epidural analgesia, intrathecal analgesia involves the placement of the agent:
 - a. directly into the subarachnoid space
 - b. between the dura mater and the ligamentum flavum
 - c. directly into the spinal cord
 - d. into an epidural vein

5. Potential side effects following the administration of intrathecal opioids include:
 - a. urinary retention
 - b. respiratory depression
 - c. nausea and vomiting
 - d. all of the above

6. You are receiving report from PACU and your surgical patient is returning to the unit in about one hour. The patients' postoperative period has been stable and his sensory block has receded to T10. As the RPN you should:
 - a. accept report and collaborate with the charge nurse
 - b. refuse report and collaborate with the RN
 - c. assume the block will be gone in one hour and accept care of the patient
 - d. accept report and prepare to receive the patient.

7. The patient who has received spinal (intrathecal) anesthesia will need to be monitored for which complications:
 - a. pruitus and urinary retention
 - b. nausea and vomiting
 - c. spinal headache and epidural hematoma
 - d. respiratory depression and agitation

8. Epimorph (morphine given intrathecally) can provide analgesia for up to:
 - a. up to 6 hours
 - b. up to 24 hours
 - c. up to 10 hours
 - d. up to 8 hours

9. In addition to spinal (intrathecal) analgesia, what other balanced analgesia medications might be prescribed by APMS:
 - a. ketoprofen
 - b. ativan
 - c. morphine
 - d. demerol

10. The first signs of respiratory depression may be a change in level of sedation
 - a. true
 - b. false

**Answer Sheet for Care of Patient Following Spinal (intrathecal)
Anesthesia/Analgesia**

Name _____ Date _____

- | | | | | |
|-----|------|-------|---|---|
| 1. | a | b | c | d |
| 2. | a | b | c | d |
| 3. | a | b | c | d |
| 4. | a | b | c | d |
| 5. | a | b | c | d |
| 6. | a | b | c | d |
| 7. | a | b | c | d |
| 8. | a | b | c | d |
| 9. | a | b | c | d |
| 10. | true | false | | |

PART E: CONCLUSION

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2.0 EVALUATION OF LEARNING GUIDE

Your feedback and comments are most appreciated. Thank you for your time in responding to this questionnaire. It will help us in planning/revising learning materials.

Please circle appropriate response.

		Strongly Agree			Strongly disagree	
		1	2	3	4	5
1.	The content was clear and easy to understand.					
	Comments:					
2.	The content was relevant.					
	Comments:					
3.	My learning needs were met.					
	Comments:					
4.	This guide will help me to meet the knowledge/ Skill requirements relating to the care of patients receiving epidural analgesia/anesthesia and paravertebral nerve blocks.					
	Comments:					

Additional comments/suggestions:

Please return the completed evaluation to your Clinical Educator

Thank you