Intrathecal Analgesia: Continuous Administration, Palliative Care & Chronic Pain Patients (SPH Only)

Site Applicability

SPH – Palliative Care and Chronic Pain Patients only

Practice Level

Specialized: RNs with additional education including Epidural/intrathecal pump education with Q2yearly review

Need to Know

1. Intrathecal infusions of pain medications are indicated in patients with a tolerance to and/or adverse effects from, high dose opioids or other pain medications via other routes.
2. Common medications used in intrathecal pumps for pain management are: opioids e.g. morphine, HYDROmorphone; fentanyl and local anesthetics e.g. BUpivacaine; clonidine and baclofen. See Appendix A
3. Smaller doses of intrathecal pain medication(s) can be used because these medications are directly infused into the cerebral spinal fluid within the intrathecal (subarachnoid) space.
4. Lower dose(s) of pain medication(s) allows for the preservation of sensation, strength and autonomic function, and a decreased potential for adverse effects.
5. Intrathecal catheters are inserted in the OR by the anesthesiologist. RN's can reinforce intrathecal catheter dressings, but cannot change the dressing.
6. Palliative care physicians will manage orders for all other pain medications in palliative care i.e. other than Intrathecal medications ordered by the Chronic Pain anesthesiologist/APS anesthesiologist.
7. Intrathecal pump tubing and filter is:
   - Not usually left in place percutaneously longer than 7 days due to potential for infection.
   - Not changed unless intrathecal catheter site changed
8. Intrathecal medication bags are changed a minimum of Q72 hours
9. Continuous intrathecal administration of analgesia is via a Smith CADD Solis pump.
10. **Independent Double Check (IDC)** is required at initial set up, any bag changes and with any changes in pump programming by 2 RN's then cosigned on the MAR or in the pain modalities section in Cerner PowerChart.
11. The patients may have one of the following:
    a) A screening trial:

- To have an intrathecal catheter inserted by chronic pain anesthesiologist under fluoroscopy.
- To have intrathecal medication(s) infusion(s) using a Smith CADD Solis pump as a trial to determine the dosage, response and tolerance to the pain medication(s) infused
- To determine if patient may be considered candidates for implantable intrathecal pumps if the screening trial is successful

b) An intrathecal pump

- Surgically Implanted
- The type of implanted intrathecal pump is a programmable pump i.e. Synchromed pump with range of rates and flexible dosage adjustment

Protocol

A: Assessment Intrathecal Drug Trial

Assessment	Frequency
Respiratory Rate, Pain Intensity, and Sedation assessment (POSS)	On initiation and then Q1H for 12 hour then Q2H for 12 hour then PRN
Vital Signs	On initiation and then Q15min for 1 hour then q30min for 1 hours then q4h and PRN
Blood Pressure	Prior to first ambulation
Motor sensory assessment	Q8H; monitor motor function of legs and numbness weakness
Monitor for bladder distention/urinary output	Monitor bladder distension Q6H PRN. Bladder scan or ensure void quantity sufficient
In and out catheterization	PRN; bladder volume 200 mL or more (bladder scanner) AND symptoms of retention/difficulty voiding. See Urinary Catheterization
Intrathecal Insertion Site and dressing Redness, swelling, leakage	Q12H and PRN, reinforce dressing as necessary
Side Effects Pruritis, nausea, vomiting, urinary retention, headache, local anesthetic systemic toxicity (rare) (see Appendix C)	Q4H & PRN

B: Post OP for Implanted Intrathecal pump

Initial & Ongoing assessment:

- See assessment & monitoring for intrathecal trial (see above) – (same monitoring)
- Check abdominal, *flank* and back dressings, reinforce if necessary

Interventions

1. Reinforce abdominal and back incision dressings PRN and change if saturated 1st day post-op. Otherwise change Q2 days.
2. Apply **abdominal binder** The abdominal binder needs to stay on approximately 1 week.
3. Treat post-op incisional pain with PRN pain medications
4. Maintain IV or saline lock
5. Activity restrictions are the same as for intrathecal trial
    - No bending forward, backward or from side to side
    - No twisting from side to side
    - No reaching to floor or above head.
    - Provide reacher for patient to use and continue to encourage general movement i.e. walking etc.
    - Engage PT/OT as required
6. **Notify the Chronic Pain Anesthesiologist on call or Acute Pain Service for the following:**
    - Decrease in diastolic BP more than 20 mmHg
    - Postural BP drop of 15 mmHg systolic or pulse increase of 20/minute
    - If POSS 3 and RR less than 6/min or POSS 4 give naloxone as ordered.
    - Inadequate analgesia or other problems related to intrathecal infusion.
    - Numbness and /or inability to bend knees or weakness in the legs.
    - If patient has spinal headache that worsens when upright. Check back dressing for cerebral spinal fluid (CSF) leak, which is the usual cause of a spinal headache

    Note: Spinal headaches are characterized by increased head pain, nausea and dizziness especially when upright, symptoms decrease when supine.

1. Intrathecal infusion set up or change of medication.	• Set up CADD Solis infusion pump with:
	  ○ medication bag (ensure correct solution as ordered on the PowerPlan)
	  ▪ ensure NO AIR in the tubing
	  ○ yellow-striped non - ported CADD administration set with filter. Refer to B-00-12-10001 for CADD Solis pump instructions.
	• Label intrathecal catheter and intrathecal pump with yellow tape marked "INTRATHECAL CATHETER".

	• Ensure that the intrathecal tubing is free of kinks. Securely tape the connector on the intrathecal tubing with waterproof tape to prevent accidental disconnection or secure with Stat lock device.
2. Infusion Maintenance	• Assess insertion site Q12H and PRN • Ensure all connections are intact • Check infusion rate at start of shift and when clearing totals at end of shift and with any changes. • Maintain IV access until intrathecal infusion discontinued
3. Notify Chronic pain Anesthesiologist or APS (acute pain service)	• RR less than 8/min. • POSS 3 or 4 • Inadequate analgesia or other problems related to intrathecal • Decrease in diastolic BP more than 20 mmHg • Postural BP drop of 15 mmHg systolic or pulse increase of 20/minute • Numbness above nipple line and/or inability to bend knees or weakness in legs
4. Side Effect Management	POSS 3 or greater and/or RR less than 8/min, o give naloxone 0.1 mg IV stat (as per order) o stop intrathecal infusion o call the Chronic pain anaesthesiologist on call or call APS immediately Nausea and Vomiting – administer antiemetics (if ordered on PowerPlan) Pruritis – administer diphenhydrAMINE (if ordered on PowerPlan) Urinary Retention – in and out catheter (as ordered on PowerPlan)
5. Accidental disconnection of intrathecal catheter from filter	• Wrap the catheter end in sterile gauze • Call the Chronic pain anaesthesiologist on call or APS immediately
6. Accidental removal of intrathecal catheter	• Place sterile dressing over the insertion site, • Wrap catheter tip and save for anesthesiologist to examine, • Call the Chronic pain anaesthesiologist on call or call APS immediately
7. Accidental removal of dressing	• Place a temporary sterile dressing over the insertion site, • Call the Chronic pain anaesthesiologist on call or call APS immediately
8. Discontinuing intrathecal	• Catheter may NOT be removed by RN. • Catheter needs to be discontinued/removed by Chronic pain anesthesiologist or by APS anesthesiologist

9. Ambulation	• Assist with first attempt to ambulate • Assess leg strength prior to ambulation prn and reassess after every dose adjustment
10. Activity restrictions	• No bending forward, backward or from side to side • No twisting from side to side • No reaching to floor or above head. • Provide reacher for patient to use and continue to encourage general movement i.e. walking etc. • Engage PT/OT as required

C. Post –Op PALLIATIVE Patient with Intrathecal Infusion Using an External Pump Via Implanted Internal Dome

Interventions as per intrathecal pump trial plus:

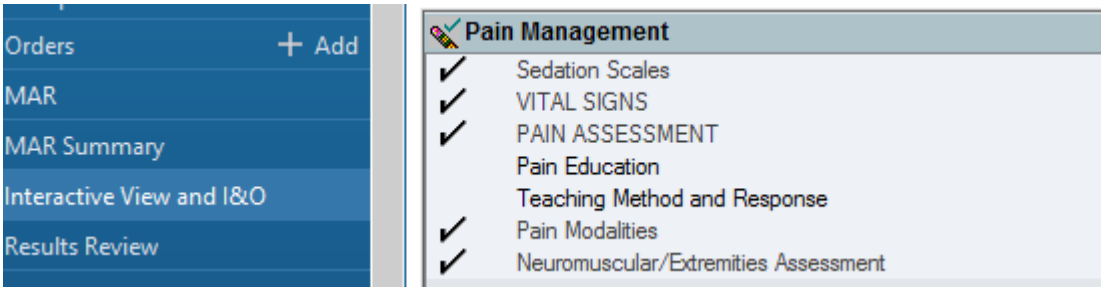
Check dome insertion site and dressing Q shift and reinforce PRN. Dome is only accessed by Chronic Pain Anesthesiologist/Anesthesiologist or MD

D. PALLIATIVE Patient with Intrathecal Infusion Via an External Pump Via Tunneled Intrathecal Catheter

1. Interventions as per intrathecal pump trial

Documentation

See Cerner specific resources. All required documentation can be found in the pain management band in the interactive View and I & O section.



Patient and Family Education

- Teach patient and family about pain control via intrathecal analgesia according to method used and their learning needs PRN, these include:
- Patients will require assistance with the first ambulation. Ask patient to inform staff right away if they experience any new onset motor weakness, back pain or any untoward symptoms or side effects.

- Encourage patients to contact staff if their pain level is worsening or unacceptable so staff may assess and intervene.
- Pain assessment – explain the pain scale and how to use it

- Reinforce activity restrictions:
  - No bending forward, backward or from side to side
  - No twisting from side to side
  - No reaching to floor or above head.
  - Provide reacher for patient to use and continue to encourage general movement i.e. walking etc.

Related Documents

1. B-00-12-10099 – Urinary Catheterization

References

1. Aman, M, Mahmoud, A., Deer, T., et al. (2021). The American society of pain and neuroscience (ASPN) best practices and guidelines for the interventional management of cancer-associated pain. *Journal of Pain Research, 14, 2139-2164.*
2. Chalil A, Staudt MD, Harland TA, Leimer EM, Bhullar R, Argoff CE. (2021) A safety review of approved intrathecal analgesics for chronic pain management. Expert Opinion Drug Safety. 20(4):439-451. doi: 10.1080/14740338.2021.1889513. Epub 2021 Mar 8. PMID: 33583318.
3. Clement, K., Dynov, I & Gulati, A. (2019). Intrathecal drug therapy for cancer-related pain. : an update on key considerations for oncology and pain practitioners. *Practical Pain Management, 18, (2).*
4. Deer, T. et al. (2012) Polyanalgesic consensus conference 2012: Recommendations for the management of pain by intrathecal (intraspinal) drug delivery: Report of an interdisciplinary expert panel. Neuromodulation: Technology at the Interface 15, (5) 436-466.
5. Deer, T. et al. (2012) Polyanalgesic consensus conference 2012: Recommendations to reduce morbidity and mortality intrathecal drug delivery in the treatment of chronic pain. Neuromodulation: Technology at the Interface 15, (5) 467-482.
6. Deer, T. et al. (2012) Polyanalgesic consensus conference 2012: Consensus on diagnosis, detection, and treatment of catheter-tip granulomas (inflammatory masse) Neuromodulation: Technology at the Interface 15, (5) 483-496.
7. Deer, T.; Krames, E; et al (2008). Neuromodulation: technology at the neural interface. 11(2), 92-97, International Neuromodulation Society publication.
8. Di Napoli R, Esposito G, Cascella M. Intrathecal Catheter. (2022) Feb 5. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 31747197
9. Dupoiron, D. (2019) Intrathecal therapy for pain in cancer patients. Current Opinion in Supportive and Palliative Care, 13, 75-80. Doi: 10.1097/SPC.0000000000427

10. FHA Clinical Protocol (2013). Assessment and Management of Sedation and Respiration During Opioid Therapy for Adult Patients in Acute Care (Non Palliative)
11. Hawley, P., Beddard-Huber, E., Grose, C., McDonald, W., Lobb, D., & Malysh, L. (2009).Intrathecal infusions for intractable cancer pain: A qualitative study of the impact on a caseseries of patients and caregivers. Pain Research and Management, 14 (5), 371-379.
12. Hocking, G. & Wildsmith, J.A. (2004). Intrathecal drug spread. British Journal of Anaesthesia, 93 (4), 568-78
13. Kalso, E. (2005). Pharmacological management of pain: anticonvulsants, antidepressants and adjuvant analgesics. In Pain 2005—an updated review: refresher course syllabus, Justin,D.M. (ed), Seattle, WA: IASP press, 19—29.
14. Kirkpatrick, A. & Herndon, M. (2000) Intrathecal morphine in chronic pain management. Anesthesiology, 96(6), 1553-1554.
15. McCaffery, M. & Pasero, C. (2011). Intraspinal analgesia in Pain Assessment and Pharmacological Management, St. Louis, Missouri, Mosby Inc.
16. Turner, M.S (2003) Intrathecal drug delivery. Acta Neurochirurgica Supplementum, 87: 29-35.
17. www.medtronic.com (2012).

Appendix A: Intrathecal Medications for Chronic Pain Management

Opioid(s)

Intrathecal preservative free opioids (most common opioids used are **morphine, HYDROmorphone and fentanyl**) are deposited close to and bind to the opioid receptors in the dorsal horn of the spinal cord. The intrathecal dose of opioid needed is from 1/10 to 1/20th that required by the epidural route or 1/300th that required of oral opioid. Because excellent analgesia is achieved with minute intrathecal doses, patients are less sedated and have fewer side effects.

Local anesthetic

Local anesthetics, such as **bupivacaine** block the spinal nerves which carry motor, sensory and sympathetic fibres exiting through the intrathecal space. The intensity of the block depends on the concentration and volume of the local anesthetic used, the level of the intrathecal catheter within the intrathecal space (e.g. T 10) and the patient's position (e.g. lying on right side drug may pool more to right side).

Gabanergic/Antispasmodic

Baclofen acts on the G-aminobutyrate (GABA) receptors and can produce excellent analgesia for many chronic pain conditions, particularly those that are accompanied by muscle spasms. GABA is an inhibitory neurotransmitter released by the body and it is localized in the dorsal horn of the spinal cord and interferes with the transmission of pain impulses. Baclofen like GABA binds to the GABA receptors thereby interfering with the transmission of pain impulses.

Alpha-2-adrenoceptor

Clonidine acts on the alpha-2-adrenoceptors as an antagonist helping with the descending inhibition of pain. However, clonidine can cause sedation and can have cardiovascular effects (e.g. may decrease blood pressure and pulse rate). Alpha-2 adrenoceptor antagonists may have a role in spinal analgesia and are sometimes used in combination with epidural/intrathecal opioids to help manage neuropathic pain.

Appendix B: Pasero Opioid Induced Sedation Scale (POSS)

PASERO OPIOID-INDUCED SEDATION SCALE (POSS)
1 = Awake and alert
2 = Slightly drowsy, easily aroused
3 = Frequently drowsy, arousable, drifts off during conversation
4 = Somnolent, minimal or no response to physical stimulation
S = normal sleep, easy to arouse**

****NOTE**: During the **first 24hours** after surgery or implantation of an intrathecal pump, patient must be woken to assess sedation level. **S score is not acceptable during this time period.**

Appendix C: Local Anesthetic Systemic Toxicity

SIGNS AND SYMPTOMS OF LOCAL ANESTHETIC SYSTEMIC TOXICITY (LAST)		
Mild Symptoms	**Moderate Symptoms**	**Severe Symptoms**
☐ Perioral numbness and tingling	☐ Nausea and vomiting	☐ Drowsiness
☐ Metallic taste in mouth	☐ Severe dizziness	☐ Confusion
☐ Ringing in ears	☐ Decreased hearing	☐ Muscle twitching
☐ Lightheadedness	☐ Tremors	☐ Convulsions
☐ Dizziness	☐ Changes in heart rate and blood pressure (hyper/hypotension)	☐ Loss of consciousness
☐ Visual disturbances	☐ Confusion	☐ Cardiac arrhythmias
☐ Confusion		☐ Cardiac arrest

Groups/Persons Consulted:

RN Neuromodulation, Pain Clinic

Chronic Pain Management Specialist Physician.

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