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Continuous intrathecal infusions for the management of cancer pain procedure

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Continuous intrathecal infusions for the management of cancer pain

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Purpose

This procedure details the management of adult patients receiving continuous intrathecal infusions for the management of cancer pain. This modality of analgesia may be necessary for those patients who cannot have their pain controlled adequately with conventional forms of analgesia or for those who experience intolerable adverse effects to conventional analgesic regimes.

Intended Audience

This procedure applies to all health professionals who are involved in the care of patients with continuous intrathecal analgesic infusions.

Expected outcomes

- An intrathecal analgesic infusion will be administered safely and accurately
- Patients receiving an intrathecal infusion will receive optimal analgesia
- Patients receiving an intrathecal infusion will be assessed for any adverse effects of the medications given. If evident, these will be managed appropriately

Definitions

APS	Acute Pain Service
LV Infusor	Large Volume Infusor
RN	Registered Nurse
EEN	Refers to medication Endorsed Enrolled Nurse
NIMC	National Inpatient Medication Chart
CSF	Cerebrospinal Fluid

Procedure Statement

Medications to be administered as an infusion via the intrathecal route must be prescribed by an anaesthetist or medical officer on the hospital approved medication chart in accordance with the Handling of Medication in NSW Hospitals Policy PD2007_077. $^{\rm 1}$

Additional intrathecal bolus doses may be administered only by those registered nurses who have received educational guidance on its delivery by a member of the Acute Pain Service. Education for registered nurses will consist of theoretical and clinical components with associated competency based assessment

Endorsed enrolled nurses are permitted to check but NOT administer intrathecal medications in accordance with Western Sydney LHD Medication procedure for nurses and midwives (2012) $\frac{2}{2}$

Procedure

Insertion

- Intrathecal catheters are inserted by an anaesthetist in the operating suite under sedation or general anaesthesia
- The intrathecal catheter is inserted at the appropriate level, the catheter is then tunnelled subcutaneously through a series of puncture sites to exit on the anterior abdominal wall (catheter exit site). The catheter is secured there with an anchor suture which is a long lasting suture material.
- The subcutaneous puncture sites are either sutured or steri-striped with a dressing covering these for 7 days post insertion. After 7 days the dressing covering the insertion site and puncture sites can be removed and the sutures removed. If skin union is good these sites can be left uncovered, if not they should be steri-striped and reviewed again in 3 days. (The anchor suture securing the intrathecal catheter in place on the abdominal wall should not be removed).

Administration

Initially the intrathecal infusion is delivered via a dedicated yellow Hospira Gemstar pump clearly labelled "Intrathecal". The giving set has a yellow stripe and is portless. Intrathecal infusion solution bags for delivery via Gemstar pumps are made up in the hospital pharmacy department under laminar flow conditions. The intrathecal solutions are prescribed by the Acute Pain Service (APS)

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Intrathecal solution titrated until optimal analgesia achieved

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Intrathecal infusion then delivered via a Large Volume (LV) Infusor which are loaded offsite at Baxter pharmaceuticals. These bottles are a portable delivery elastometric pump that deliver a set rate dose and can provide a 7 day supply of infusion solution. These infusors need to be stored in the supplied carry bag at all times. The LV Infusor should not be exposed to extremes of temperature including direct sunlight or heating devices such as radiators or electric blankets. The infusor should be carried at approximately the same height as the insertion site.

Medications delivered via the intrathecal infusion

- The medications delivered via the intrathecal infusion are individualised to each patients pain, tolerance and adverse effects
- The solutions usually include a local anaesthetic drug, Bupivacaine, an opioid, usually hydromorphone and clonidine. If pain is refractory midazolam and/or ketamine are sometimes also added to the intrathecal solutions

Observations

- Observation of the patients' pain score (rest and movement), sedation level, respiratory rate, blood pressure and pulse rate should be documented on the Epidural Infusion observation chart (SWHR - 2177) hourly for the first 6 hours after commencement of an intrathecal infusion then second hourly until otherwise ordered by the APS or treating Palliative Care team
- Patients temperature should be checked at least once daily, temperatures above 38.5° should be reported to the treating palliative care team
- The infusion delivery rate should be checked and documented on the same chart whenever the observations are done and on change of shift

Management of inadequate analgesia

- If the patient has pain an intrathecal bolus dose / clinician loading dose can be administered if ordered on the Epidural Infusion observation chart (SWHR - 2177) by the APS.
- Bolus / clinician loading doses can only be administered by an RN who has received educational guidance on its delivery by a member of the APS. Education for registered nurses will consist of theoretical and competency based assessment
- A second RN or EEN must witness the delivery of the bolus dose / clinician loading dose
- The bolus dose and time delivered should be recorded on the Epidural Infusion observation chart (SWHR-2177)
- Following an intrathecal bolus dose the patient should have their blood pressure, pulse rate, sedation level and respiratory rate observed and recorded every 5 minutes post delivery of the bolus for 20 mins unless otherwise ordered by the APS / Palliative Care team
- Patient's pain should be reassessed 30 minutes post intrathecal bolus dose. If the patient still has pain the second line analgesic prescribed for breakthrough pain should be administered. If the patient remains in pain 30 minutes post administration of the second line analgesic the APS anaesthetist should be contacted

Assessing motor block prior to mobilisation

- Many patients receiving intrathecal analgesia will have impaired mobility prior to the insertion of the intrathecal catheter either due to their disease state or from general deconditioning
- Once an intrathecal infusion is commenced the local anaesthetic in the solution can cause some motor block of the lower limbs. This needs to be assessed whilst the patient is in bed, prior to attempts to mobilise, to prevent the patient falling. Whilst in bed asking the patient to straight leg raise is a good way to assess lower limb strength. If unsure have a physiotherapist assess the patient.
- Even if lower limb function is normal on assessment it is advisable to have at least 2 assistants to supervise the patient moving out of the bed to mobilise as the patient may experience some postural hypotension on standing.

Change of intrathecal infusion bag for Gemstar pump

Equipment:

- Dressing pack
- Chlorhexidine 0.5% in Alcohol 70% solution
- Sterile gloves
- Intrathecal solution

Method:

- Check new intrathecal solution, prescription and patient details to ensure the 5 rights principle of medication administration are followed
- Hang new solution bag on pole next to existing bag
- Wash hands
- Open dressing pack, sterile gloves, pour chlorhexidine and alcohol solution
- Wash hands and don gloves
- Clean around giving set connection to the existing solution bag with 3 chlorhexidine and alcohol soaked guaze squares, allow 60 seconds for the solution to dry
- Using a non touch technique spike giving set into new intrathecal solution bag
- Reprogram pump as for new container with appropriate volume. Change infusion rate as ordered if necessary
- Sign for the administration on the National Inpatient Medication Chart (NIMC)
- If necessary, discard any remaining solution in accordance with Handling of Medication in NSW Hospitals Policy PD2007_077. 1

Change of intrathecal infusion bag and giving set for Gemstar pump

(This must be done at least weekly and whenever the solution drugs and or doses are changed)

Equipment:

- Dressing pack
- Chlorhexidine 0.5% in Alcohol 70%
- Sterile gloves
- Intrathecal solution
- Gemstar giving set

Method:

- Check new intrathecal solution, prescription and patient details to ensure the 5 rights of medication administration are followed
- Hang new solution bag on pole next to existing bag
- Wash hands

- Open dressing pack, sterile gloves pour chlorhexidine and alcohol solution
- Using non touch technique connect two pieces of giving set and spike new intrathecal solution bag
- Clamp existing giving set, turn Gemstar pump off and remove giving set from pump
- Reprogram the Gemstar pump ensuring delivery rate and volume of bag are correct for the new bag. This needs to be checked by a second nurse (RN or EEN).Using "purge" function on pump prime the new giving set (Giving set must not be attached to patient whilst line is being purged)
- Wash hands
- Remove section of exit site dressing necessary to access the connection of the giving set to the catheter filter
- Wash hands, don sterile gloves
- Clean around connection of giving set to catheter filter with 3 x chlorhexidine and alcohol soaked guaze squares, allow solution 60 seconds to dry
- Disconnect old infusion giving set and attach new one
- Resecure exit site dressing
- Start infusion
- Sign for the administration on NIMC
- Discard any remaining solution in accordance with Handling of Medication in NSW Hospitals Policy PD2007_077.1 if necessary

Change of exit site dressing

(This is done at least weekly and usually done with change of solution)

Equipment:

- Dressing pack
- Chlorhexidine 0.5% in Alcohol 70% solution
- Comfeel® Plus transparent dressing (10x10cm)
- Hyperfix[™] or Fixomul[™] tape
- Sterile gloves

Method:

- Wash hands
- Open equipment
- Gently remove existing exit site dressing being careful not to apply tension on the intrathecal catheter
- Clean exit site with 3 x chlorhexidine and alcohol soaked gauze squares in a circular motion cleaning from the inside out, covering the area that will be under the Comfeel® dressing
- Observe site for any signs of infection
- Observe integrity of anchor suture (Do not remove anchor suture)

- Allow 60 seconds for the solution to dry on the skin
- Apply Comfeel® dressing to exit site ensuring catheter is not kinked
- Cover area with Hyperfix[™] or Fixomul[™] ensuring catheter is secure and not kinked

Change of LV Infusor

(Usually done weekly)

Equipment:

- Dressing pack
- LV Infusor (+ thermal bag)
- Sterile gloves
- Chlorhexidine 0.5% in Alcohol 70% solution

Method:

- Remove LV infusor from plastic outer bag checking content of infusor matches patient details and order prescribed. Check the delivery rate written on the luer lock connection of the LV infusor matches the prescribed delivery rate
- Wash hands
- Open equipment
- Remove dressing enough to allow access to the connection of the existing giving set to the intrathecal filter
- Wash hands, don sterile gloves
- Clean around connection of the giving set / line to the filter 3 times
- Allow 60 seconds for solution to dry
- Disconnect existing line, reconnect new line
- Resecure exit site dressing
- Sign for the administration on NIMC
- Discard any remaining solution in accordance with Handling of Medication in NSW Hospitals Policy PD2007_077. ¹/₂ if necessary

Changing intrathecal antimicrobial filter

(This is done monthly and will require change of exit site dressing. Usually done at change of Gemstar giving set or LV Infusor)

Equipment:

- Dressing pack
- Sterile gloves
- Epidural antimicrobial filter
- Chlorhexidine 0.5% in Alcohol 70% solution

- Comfeel® plus transparent dressing (10 x10cm)
- Hyperfix[™] or Fixomul[™] tape

Method:

- Wash hands
- Open equipment
- Remove exit site dressing being careful not to apply tension to intrathecal catheter
- Wash hands don sterile gloves
- Clean around connection of intrathecal catheter to filter 3 times with chlorhexidine and alcohol
- If changing Intrathecal giving set / line connect line to new filter
- If not changing infusion giving set / line, clean the connection between the giving set / line side to the filter 3 times with chlorhexidine and alcohol
- Allow 60 seconds for solution to dry
- Disconnect old filter from the intrathecal catheter
- Connect new filter using luer lock action
- Complete exit site dressing

Risk Rating

High

Implementation Plan

- Endorsement and approval of the procedure by the area Nursing and Midwifery executive
- Endorsement and approval of the procedure by the WSLHD Area Drug Committee
- Broadcast of new policy via WSLHD Broadcast
- Distribution to Acute Pain Services and Palliative Care Services at Westmead, Blacktown and hospitals

Education Notes

- Most patients with cancer pain achieve good analgesia using traditional analgesics and adjuvant medications however an important minority of patients (2-5%) suffer from severe and refractory cancer pain. For these individuals spinal analgesics (intrathecal or epidural) provide significant hope for pain relief to improve the quality of their life. 3
- Intrathecal (or subarachnoid) administration deposits drugs into the cerebrospinal fluid (CSF) inside the thecal sac, enabling direct access of drug to the substantia gelatinosa cells in the dorsal horn of the spinal cord. ⁴
- Intrathecal drug administration permits the use of considerably lower doses than any other route of administration. Equivalent or superior analgesia is achieved with reduced systemic effects. ⁴

- Intrathecal drug delivery can offer rapid and effective analgesia with less toxicity related to other routes of administration. Intrathecal drug delivery can be highly effective in a variety of patient settings including cases of refractory pain, poor tolerability of oral medications, polyanalgesia for complex pain and intolerable adverse effects to analgesia. ⁵
- Intrathecal catheters and delivery devices must be clearly identified to ensure they are clearly distinguished from the intravenous route of administration. ⁵ At Westmead hospital if a pump and line are used for intrathecal drug delivery a yellow faced Gemstar pump clearly labelled "Intrathecal" is used with a yellow striped portless giving set.
- Strict aseptic technique must be used when interrupting the intrathecal system in anyway
 as this route has direct access to the CSF. Infection of the CSF could be life threatening.
 The patient and their carers should be educated and prompted to report any signs or
 symptoms of epidural space infection. These include headache, photophobia, neck
 stiffness.

References and Related Policies

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19/12/2011	1.1	Original	Suzanne Pagett
24/1/2012	1.2	Grammatical corrections	Suzanne Pagett
14/5/2012	1.3	Grammatical corrections following input from Karen Blunden and David Pearce	Suzanne Pagett
18/7/2012	1.4	Changes made to administration section as requested by the ADC	Suzanne Pagett
1/8/2012	1.5	Information on the drugs used in the intrathecal infusions added as requested by the ADC. Drug Committee approved	Suzanne Pagett

Version History