

## TITLE

**MANAGEMENT OF EPIDURAL ANALGESIA INFUSIONS – ADULT (NON-LABOUR)**

## SCOPE

Provincial: Acute Care

## DOCUMENT #

HCS-290-01

## APPROVAL AUTHORITY

Clinical Operations Executive Committee

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## SPONSOR

Medical Director, Acute Pain Service, Department of Anesthesia, Calgary Zone

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**NOTE:** The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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**OBJECTIVES**

- To standardize medication administration by means of epidural analgesia infusion for acute or severe **pain** management (e.g., post-surgical pain) in adult **patients** being cared for in a hospital setting.
- To outline safe care and monitoring requirements of patients following the administration of an epidural infusion for analgesia.

**APPLICABILITY**

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

**ELEMENTS****1. Points of Emphasis**

- 1.1 The modes of delivery for the epidural analgesia infusion may vary (e.g., continuous infusion only, continuous infusion plus bolus, intermittent infusion only, intermittent infusion plus bolus, or bolus dose only).
- 1.2 An **order** from an **authorized prescriber** with the **Acute Pain Service (APS)** or Anesthesia is required for:
  - a) epidural infusion initiation, dosage, parameters for dose adjustments, discontinuation of infusion, and epidural catheter removal; and

- b) all analgesics, sedatives, antipruritics, and antiemetics while the patient is receiving the epidural infusion.
- 1.3 The authorized prescriber with APS or Anesthesia shall be consulted prior to:
- a) starting any oral or intravenous systemic anticoagulation or antiplatelet medication(s); and
  - b) a patient with an epidural catheter receiving magnetic resonance imaging (MRI) to confirm the type of catheter.
    - (i) A patient with an epidural catheter containing metal (a wire threaded through the length of the catheter) shall not have an MRI while the catheter is in place.
- 1.4 Medications administered via the epidural route are **high-alert medications** (refer to the AHS *Management of High-Alert Medications* Policy Suite and supporting resources for education on Insite). Refer to the AHS *Provincial Parenteral Manual* for information related to the infusion medications.
- 1.5 An **independent double-check** (refer to the AHS *Independent Double-Check* Guideline and the AHS *Management of High-Alert Medications* Policy Suite) shall be performed when:
- a) initiating programming of the infusion;
  - b) administering a **clinician bolus**;
  - c) adjusting pump parameters (where applicable); and
  - d) changing epidural solution bags.
- 1.6 Independent double-checks may be performed for any change in **pump settings** (i.e., dose adjustments), or as determined by site processes or the **health care professional** (this is called a “second check” in Connect Care).
- a) The health care professional shall request a co-sign to document in Connect Care from another health care professional who is competent to administer epidural infusions.

## 2. Health Care Professional Requirements

- 2.1 Health care professionals performing activities related to the administration of epidural infusions shall follow regulatory and AHS organizational requirements for education and training. Zone requirements and/or educational resources are available on Insite.

### 3. Infusion Management Considerations

- 3.1 When managing an epidural infusion for analgesia, the health care professional shall:
- a) assess each patient for pain using a valid **pain assessment tool** (refer to Appendix A: *Valid Pain Assessment Tools [Self Report – Unidimensional]*). A pain management plan and/or functional pain goal(s) should be established with the patient;
  - b) verify epidural catheter placement prior to initiating an epidural infusion (refer to Section 5.7);
  - c) verify epidural pump settings and medications against the medication orders when assuming care of the patient at the beginning of the shift and with all transitions in care as per the AHS *Invasive Infusion Line and Tubing Verification Policy*;
  - d) deliver epidural infusions via the drug library of a SMART (Safer Medication Administration through Technology) infusion pump;
  - e) use strict aseptic technique with set-up and during all contact with medication solution and tubing (e.g., replacing the epidural solution, filter, and/or tubing);
  - f) ensure an intravenous cannula maintained for the duration of the infusion as well as a specified period of time following the removal of the epidural catheter, as ordered (e.g., 12 hours post-discontinuation of epidural hydromorphone or epimorph);
    - (i) In certain clinical situations, such as palliative infusions, a maintenance of an intravenous cannula is not mandatory.
  - g) confirm there is an adequate amount of epidural solution in the current medication bag to maintain the infusion at all times. Change the epidural solution bag as directed by Pharmacy (i.e., stability of product), when the bag runs out, or every seven (7) days.
- 3.2 Epidural infusion tubing and the 0.2 micron filter may remain in place for the duration of therapy for up to seven (7) days.
- 3.3 If there is a downstream occlusion alarm, replace with a new primed 0.2 micron (particle) filter (or inline filter if in place).
- 3.4 Prior to discontinuation of an epidural infusion or removal of an epidural catheter, the health care professional shall:
- a) obtain an order from an authorized prescriber with APS or Anesthesia; and

- b) verify that an alternate analgesic regimen is in place and coagulation status is in the normal range.
- 3.5 If a patient experiences a clinical adverse event that could be attributed to the epidural infusion, the pump shall be sent to Clinical Engineering for investigation.

#### 4. Infusion Preparation, Equipment, and Set-Up

- 4.1 Collaborate with Pharmacy to ensure medication availability (e.g., provide updates on rate, usage).
- 4.2 Equipment:
- a) epidural solution bag labelled with the correct medication(s), concentration(s), and route;
    - (i) Only preservative-free solutions may be used.
  - b) SMART infusion pump (with drug library designated for epidural infusion);
  - c) SMART infusion pump access key;
    - (i) lock box if used at site;
  - d) manufacturer-recommended yellow-striped epidural tubing with no injection ports; and
  - e) 0.2 micron filter (unless already inline).
- 4.3 For set-up, the health care professional shall:
- a) follow the manufacturer's instructions for priming the epidural infusion tubing;
  - b) connect the 0.2 micron filter to the distal end (unless already inline) of the epidural infusion tubing in preparation for connection to the hub of the epidural catheter;
  - c) program the SMART infusion pump with the designated drug library for the epidural infusion according to the medication orders;
  - d) ensure that the epidural catheter is securely taped to the patient's back and an occlusive transparent dressing is covering the epidural site prior to connecting the epidural tubing and filter to the epidural catheter connector hub;
  - e) clearly label the epidural infusion tubing as epidural in accordance with the AHS *Invasive Infusion Line and Tubing Verification Policy*; and

- f) close and lock the door to the epidural infusion pump lockbox. Do not start the epidural infusion until Section 5 is completed.

## 5. Infusion Initiation

- 5.1 The health care professional shall confirm the presence of complete medication orders from an authorized prescriber with APS or Anesthesia on the patient's **health record** (refer to the AHS *Medication Orders Policy Suite*).
- 5.2 The authorized prescriber with APS or Anesthesia shall include the following in the medication orders:
- a) medication(s);
  - b) concentration(s);
  - c) route;
  - d) pump settings;
  - e) monitoring requirements;
  - f) supplemental analgesics;
  - g) naloxone, if the patient is on concurrent opioids; and
  - h) other medication(s) to manage potential side effects such as nausea and vomiting or pruritus.
- 5.3 In accordance with the AHS *Medication Administration Policy*, the health care professional shall confirm that **informed consent** (express or implied) for the treatment/procedure (including medications to be administered) was obtained from the patient unless a valid exception to informed consent applies, as per the AHS *Consent to Treatment/Procedure(s) Policy Suite*.
- a) If it is determined that the patient lacks capacity to consent, the authority of an **alternate decision-maker** shall be recognized in accordance with the AHS *Consent to Treatment/Procedure(s): Adults with Impaired Capacity and Adults who Lack Capacity Procedure*.
- 5.4 Prior to initiation, the health care professional shall:
- a) complete the baseline assessment, including but not limited to:
    - (i) pain score (refer to Appendix A: *Valid Pain Assessment Tools [Self Report – Unidimensional]*);
    - (ii) sedation level (refer to Appendix B: *Examples of Sedation Level Assessment Tools*);

- (iii) respiratory rate;
  - (iv) blood pressure;
  - (v) pulse;
  - (vi) oxygen saturation level;
  - (vii) sensory level (i.e., dermatome assessment);
  - (viii) motor power (i.e., Bromage scale assessment [refer to Appendix C: *Description of Bromage Score*]); and
  - (ix) epidural insertion site and dressing assessment;
- b) instruct the patient on use of the patient-controlled epidural analgesia (PCEA) bolus button (if applicable); and
- c) provide patient education on:
- (i) the PCEA bolus button and demonstrate (if applicable);
    - Confirm the patient understands and has the ability to operate the PCEA bolus button.
  - (ii) potential side effects and complications, and the importance of reporting these to the health care professional (refer to Section 7); and
  - (iii) the rationale for only the patient to use the PCEA button (and not the **family**).
    - Only patients are to administer PCEA boluses, as proxy administration by family and/or friends may lead to potential complications (e.g., over-sedation, respiratory depression).
- 5.5 The health care professional shall confirm patient identity and perform an independent double-check prior to starting the epidural infusion (refer to the AHS *Patient Identification Policy*).
- 5.6 Patients receiving infusions of local anesthetic via the epidural route are not to use cold and/or heat packs on the area(s) affected by the local anesthetic as decreased sensitivity to cold and heat may result in injury.
- 5.7 Epidural catheter placement shall be verified before initiating an epidural infusion. Epidural catheter placement verification is restricted to APS, Anesthesia, and specifically educated and trained Registered Nurses (RNs) in some Zones (refer to Appendix D: *Epidural Catheter Placement Verification*).

5.8 Once Section 5 has been completed, the health care professional may start the epidural infusion.

## 6. Assessment, Monitoring, and Maintenance

- 6.1 Ongoing monitoring sequence and assessment shall include the pain score, sedation level, respiratory rate, pulse, blood pressure, oxygen saturation level, sensory level, and motor power. The monitoring sequence should be ordered by the authorized prescriber as follows:
- a) every one (1) hour for the first four (4) hours;
  - b) every four (4) hours for the duration of the infusion;
    - (i) If the patient received hydromorphone or epimorph via epidural, continue monitoring vital signs for 12 hours post-discontinuation of the infusion.
  - c) monitor motor power for eight (8) hours post-epidural catheter removal.
- 6.2 Monitoring sequences may vary by risk assessment (depending on low or high risk).
- 6.3 If a clinician bolus is given by the health care professional, the monitoring sequence shall be:
- a) for respiratory rate, blood pressure, heart rate, oxygen saturation level, sedation level, and pain scores:
    - (i) every five (5) minutes for the first 15 minutes; then
    - (ii) every 15 minutes for the next half an hour; then
    - (iii) resume previous monitoring sequence.
  - b) for sensory level and motor power monitoring:
    - (i) every 15 minutes for the first 45 minutes; then
    - (ii) resume previous monitoring.
- 6.4 Monitoring frequency shall be increased as indicated by the patient's condition, the type and amount of medication administered, or as ordered in the patient's health record.
- 6.5 The health care professional shall examine and palpate the epidural insertion site at least every four (4) hours to ensure:
- a) the site is free of redness, swelling, pain, and/or leakage;

- b) the catheter is properly secured; and
  - c) the epidural site dressing is intact (refer to Section 10).
- 6.6 The health care professional shall revise the pain management plan and goals according to the patient's response.
- a) Adjustments to the epidural infusion may be required based on the patient's response within the parameters of the epidural medication orders.

## 7. Potential Complications

- 7.1 The health care professional shall notify APS and/or Anesthesia if any of the following signs and symptoms and/or situations occur:
- a) opioid-induced respiratory depression;
    - (i) Administer naloxone per orders in the patient's health record.
  - b) decline in patient's blood pressure from their baseline such that the patient is symptomatic;
  - c) persistent, uncontrolled moderate to severe pain despite making appropriate adjustments to pump settings;
  - d) potential local anesthetic toxicity (refer to Appendix E: *Signs and Symptoms of Local Anesthetic Systemic Toxicity*);
  - e) headache that worsens with sitting, standing, and/or when the patient nods their head, and improves with lying down;
  - f) nausea, pruritus, and/or other side effects that are not controlled with any of the medications ordered;
  - g) patient develops any of the following:
    - (i) back pain (sudden onset);
    - (ii) sensory level changes; or
    - (iii) motor deficits/changes - inability to move their legs;
  - h) bowel and/or bladder incontinence;
  - i) patient experiences any of the following concerns related to the epidural catheter such as:
    - (i) leakage, bleeding, pain, swelling, or tenderness at the insertion site;



- (ii) epidural catheter migration (in or out) - use markings on catheter as a guide;
- (iii) accidental removal of the epidural catheter; or
- (iv) epidural catheter becomes disconnected (refer to Section 8);
- j) epidural catheter site is exposed;
- k) dressing is loose or excessively soiled; and/or
- l) epidural catheter becomes occluded (pump continually alarming “occlusion”) despite troubleshooting.

## 8. Management of a Disconnected Epidural Catheter

- 8.1 There may be instances where the distal end of the epidural catheter becomes disconnected from the hub. If this occurs, the health care professional shall immediately:
- a) stop the epidural infusion; and
  - b) cover the end of the exposed epidural catheter with sterile four centimetre by four centimetre (4 cm x 4 cm) gauze.
    - (i) Do not clamp or knot the epidural catheter.
- 8.2 The health care professional shall immediately notify APS and/or Anesthesia and inform them about the following:
- a) disconnection (including time last known to be intact and time that disconnection was noted); and
  - b) time of last dose of anticoagulant(s).
- 8.3 APS and/or Anesthesia shall determine if the integrity of the epidural catheter has been compromised with the disconnection and shall provide direction.
- a) An order from an authorized prescriber with APS or Anesthesia is required for either discontinuation or reconnection of the epidural catheter.
- 8.4 Strict aseptic technique is required when managing a disconnected epidural catheter.

## 9. Reconnection of Epidural Catheter

- 9.1 An order from an authorized prescriber with APS or Anesthesia is required prior to reconnecting an epidural catheter.

- a) APS and/or Anesthesia may delegate reconnection to a health care professional with the necessary education and competency as determined by the Zone.

## 9.2 Equipment:

- a) sterile dressing tray;
- b) sterile epidural connector;
- c) 0.2 micron filter (unless already inline);
- d) manufacturer-recommended, yellow-striped epidural tubing with no injection ports;
- e) sterile scissors, straight;
- f) two percent (2%) chlorhexidine gluconate in 70% isopropyl alcohol solution (alcohol is neurotoxic);
- g) sterile gloves;
- h) sterile 4 cm x 4 cm gauze; and
- i) 10 millilitre (mL) preservative-free sterile normal saline.

## 9.3 When reconnecting an epidural catheter, the health care professional shall:

- a) perform hand hygiene;
- b) assemble a sterile field and the equipment as identified;
- c) attach a 0.2 micron filter (unless a filter is already inline) to the manufacturer-recommended yellow-striped epidural tubing and prime with medication solution;
- d) don sterile gloves;
- e) using sterile technique, cleanse the outside of the epidural catheter with a 2% chlorhexidine gluconate in 70% isopropyl alcohol solution;
- f) clean approximately 25 centimetres (cm) from the distal end of the epidural catheter and allow to air dry completely;
- g) wipe the epidural catheter with sterile 4 cm x 4 cm gauze to avoid contamination and nerve irritation if excess 2% chlorhexidine hydrochloride in 70% isopropyl alcohol solution is present;

- (i) Alcohol is neurotoxic. It is very important to allow the chlorhexidine and alcohol solution to dry completely prior to inserting the catheter into an epidural connector;
- h) cut the epidural catheter, using sterile scissors, at approximately 12.5 cm (centre of the cleansed area) while maintaining sterility of the section of catheter that is to be reconnected;
- i) insert the sterile end of the epidural catheter into a new sterile epidural connector and ensure a secure connection;
- j) connect the epidural connector to a primed sterile micron filter and tubing (unless inline) and resume the epidural infusion as ordered;
- k) place a clean 4 cm x 4 cm piece of gauze (or designated adhesive anchoring device) under the connector to prevent skin breakdown;
- l) secure the epidural catheter and connector with a transparent dressing. Do not cover the epidural catheter connector area where the pump tubing is attached;
- m) ensure that the tubing is labelled in accordance with the AHS *Invasive Infusion Line and Tubing Verification Policy*; and
- n) document the procedure and patient's response in the health record.

## 10. Epidural Insertion Site Dressing

- 10.1 An epidural site dressing should only be changed by APS and/or Anesthesia unless this has been delegated to specifically educated health care professionals in some Zone programs.
- 10.2 For an exposed epidural catheter insertion site, the health care professional shall notify APS, Anesthesia and/or the Zone-delegated **most responsible health practitioner (MRHP)** and while awaiting arrival shall:
  - a) use aseptic technique to cleanse the exposed epidural catheter insertion site and skin with a 2% chlorhexidine gluconate in 70% isopropyl alcohol solution, allow to dry, and cover with a clear occlusive dressing.

## 11. Epidural Catheter Removal and Discontinuation of Infusion

- 11.1 Tunneled Epidural Catheter:
  - a) The removal of tunneled epidural catheters is limited to APS or Anesthesia. These authorized personnel should prepare the site for removal of the catheter by cleansing with 2% chlorhexidine gluconate in 70% isopropyl alcohol starting at the insertion site using:

- (i) a circular motion and moving outwards; or
  - (ii) a continuous back-and-forth friction motion moving horizontally across the centre of the treatment area to the periphery and repeating the motion over the desired area for 15 seconds. The continuous back-and-forth motion should be repeated over the same treatment area moving in a vertical direction for an additional 15 seconds, for a total application time of 30 seconds.
- b) Ensure cleansed area is allowed time to air dry.

#### 11.2 Non-Tunneled Epidural Catheter:

- a) If the epidural catheter is surgically placed, it may be removed by the surgical team, if applicable to the Zone.
- b) The health care professional shall:
  - (i) confirm the presence of an order from an authorized prescriber with APS, Anesthesia, or a surgical team, to remove a non-tunneled epidural catheter is in the patient's health record if the epidural catheter is surgically placed;
  - (ii) verify coagulation status of the patient; and
  - (iii) use strict aseptic technique when removing the epidural catheter.

#### 11.3 Equipment:

- a) clean gloves;
- b) soapy washcloth;
- c) sterile container for culture and sensitivity sample (if applicable);
- d) sterile scissors, if applicable;
- e) swab for culture and sensitivity specimen collection (if applicable); and
- f) sterile dressing tray and 2% chlorhexidine hydrochloride in 70% isopropyl alcohol swabs (for tunneled catheter).

#### 11.4 Removal of the Epidural Catheter:

- a) The health care professional shall:
  - (i) stop the epidural infusion;
  - (ii) position the patient on their side with knees flexed, or in a sitting position, with patient leaning forward;

- (iii) loosen and remove the tape and dressing at the epidural insertion site; and
    - (iv) examine the epidural site for any redness, exudate, blood, swelling, or bruising.
  - b) If the epidural catheter is tunneled, the health care professional shall not remove the epidural catheter, and shall notify APS or Anesthesia (see Section 11.1).
  - c) The health care professional shall use a gentle and steady traction in either a downward or outward direction and remove the epidural catheter.
  - d) If any resistance is noted, the health care professional shall:
    - (i) stop, so as to not increase traction; and
    - (ii) re-position the patient, requesting that they bring their knees further up towards their chest (e.g., instruct patient to “arch their back like a cat”) and attempt removal of the epidural catheter again.
    - (iii) If resistance is still present, APS or Anesthesia shall be notified after securing and applying a sterile dressing to the epidural site.
  - e) Upon removal of the epidural catheter, the health care professional shall examine the end of the catheter for presence of a black or blue tip.
    - (i) Immediately contact APS or Anesthesia if there is no visible blue or black colour on the tip or the epidural catheter appears damaged.
  - f) If there are signs of inflammation or infection, the health care professional shall:
    - (i) notify APS or Anesthesia and obtain an order for culture and sensitivity testing;
    - (ii) swab the epidural catheter site; and
    - (iii) cut the tip of the epidural catheter with sterile scissors and place the distal tip that was within the patient into a sterile container.
- 11.5 After the epidural catheter has been removed, the health care professional shall:
  - a) wash the patient’s back with soap and water, and leave the site open to air; and
  - b) apply gauze dressing to the area of removal only if the site is oozing.

- (i) To minimize risk of infection, an adhesive bandage (e.g., Band-Aid) or occlusive dressing (e.g., tegaderm) should not be applied.

## 12. Documentation

12.1 The health care professional shall document all assessments, interventions, and responses to interventions in the patient's health record.

12.2 Initial documentation shall include the following:

- a) baseline patient assessment (refer to Section 5.4);
- b) date and time of therapy initiation;
- c) medication(s);
- d) route;
- e) pump settings;
- f) epidural pump identification number;
- g) epidural insertion site;
- h) patient teaching;
- i) assessment of patient's ability to use the PCEA bolus button (if applicable);
- j) patient's response, including response to bolus dose of analgesia if applicable; and
- k) any other relevant assessment findings, actual or potential.

12.3 Ongoing documentation shall include the following:

- a) assessments;
- b) changes to epidural infusion dosage;
- c) patient teaching;
- d) patient's response to therapy;
- e) any unexpected/adverse findings, including interventions taken; and
- f) communication with members of the health care team, including the MRHP.

- 12.4 The health care professional shall document the following with all transfers of care (e.g., from unit to unit, or hospital to hospital), or more frequently as per site processes:
- a) PCEA doses given;
  - b) PCEA doses attempted;
  - c) total volume infused (in mL); and
  - d) where applicable, clear pump totals.
- 12.5 All independent double-checks shall be documented in the health record.
- 12.6 Record the pump identification number in the patient's health record and with any pump exchange.
- 12.7 Following removal of the epidural catheter, the health care professional shall document all of the following on the patient's health record:
- a) date and time of epidural catheter removal;
  - b) observations of epidural site (e.g., colour, tenderness, drainage) and catheter (e.g., tip intact, damage);
  - c) actions taken (e.g., swab and/or tip sent for culture and sensitivity testing);
  - d) ease of epidural catheter removal; and
  - e) patient's response to procedure.

## DEFINITIONS

**Acute Pain Service (APS)** means all acute care physicians practicing within Acute Pain Service roles, and will include on-call anesthesiologists responsible for providing pain management options for patients, or other designated clinicians (e.g., Nurse Practitioner, Surgeon).

**Alternate decision-maker** means a person who is authorized to make decisions with or on behalf of the patient. These may include, specific decision-maker, a minor's legal representative, a guardian, a 'nearest relative' in accordance with the *Mental Health Act* (Alberta), or an agent in accordance with a Personal Directive, or a person designated in accordance with the *Human Tissue and Organ Donation Act* (Alberta). This also includes what was previously known as the substitute decision-maker.

**Authorized prescriber** means a health care professional who is permitted by federal and provincial legislation, their regulatory college, Alberta Health Services, and practice setting (where applicable) to prescribe medications.

**Clinician bolus** via an epidural means a dose of epidural medication (opioid and/or local anesthetic) administered by the health care professional. Dosage may be higher than bolus dose and is usually reserved for use in pain crisis when bolus dosing is ineffective.

**Family** means one or more individuals identified by the patient as an important support, and who the patient wishes to be included in any encounters with the health care system, including but not limited to, family members, legal guardians, friends, and informal caregivers.

**Health care professional** means an individual who is a member of a regulated health discipline, as defined by the *Health Professions Act* (Alberta), and who practises within scope and role.

**Health record** means the collection of all records documenting individually identifying health information in relation to a single person.

**High-alert medications** means medications that bear a heightened risk of causing significant patient harm when used in error. (Institute for Safe Medication Practices [ISMP], 2012).

**Independent double-check** means a verification process whereby a second health care professional conducts a verification of another health care professional's completed task. The most critical aspect is to maximize the independence of the double-check by ensuring that the first health care professional does not communicate what they expect the second health care professional to see, which would create bias and reduce the visibility of an error.

**Informed consent** means the patient's agreement (or alternate decision-maker) to undergo a treatment/procedure after being provided, in a manner the patient can understand, with the relevant information about the nature of the treatment/procedure(s), its benefits, potential risks and alternatives, and the potential consequences of refusal.

**Most responsible health practitioner (MRHP)** means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by Alberta Health Services to perform the duties required to fulfill the delivery of such a treatment/procedure(s), within the scope of their practice.

**Order** means a direction given by a regulated health care professional to carry out specific activity(-ies) as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An order may be written (including handwritten and/or electronic), verbal, by telephone or facsimile.

**Pain** means a subjective experience encompassing both noxious sensation and suffering. Pain is best understood from the patient's perspective and description of that experience. The patient's experience of pain is expressed within the context of the illness, family, social network, community, culture, and spiritual orientation. The patient's pain affects this matrix of relationships and is in turn altered by them.

**Pain assessment tool** means a reliable and valid measurement tool used to assess pain intensity.



**Patient** means all persons, inclusive of residents and clients, who receive or have requested health care or services from Alberta Health Services and its health care providers. Patient also means, where applicable:

- a) a co-decision-maker with the person; or
- b) an alternate decision-maker on behalf of the person.

**Pump settings** means the mode of delivery that is programmed into the SMART pump that may include but is not limited to the following: continuous rate, continuous plus bolus, intermittent bolus, clinician bolus, bolus dose, bolus lockout interval, and hourly limit.

## REFERENCES

- Appendix A: *Valid Pain Assessment Tools (Self Report - Unidimensional)*
- Appendix B: *Examples of Sedation Level Assessment Tools*
- Appendix C: *Description of Bromage Score*
- Appendix D: *Epidural Catheter Placement Verification*
- Appendix E: *Signs and Symptoms of Local Anesthetic Systemic Toxicity*
- Alberta Health Services Governance Documents:
  - *Consent to Treatment/Procedure(s): Adults with Impaired Capacity and Adults who Lack Capacity Procedure (#PRR-01-02)*
  - *Consent to Treatment/Procedure(s) Policy Suite (#PRR-01)*
  - *Independent Double-Check Guideline (#PS-60-01)*
  - *Invasive Infusion Line and Tubing Verification Policy (#PS-15)*
  - *Management of High-Alert Medications Policy Suite (#PS-46)*
  - *Medication Orders Policy Suite (#PS-93)*
  - *Patient Identification Policy (#PS-06)*
- Alberta Health Services Resources:
  - *Epidural Analgesia Resource Manual*
  - *Provincial Parenteral Manual*

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## APPENDIX A

### Valid Pain Assessment Tools (Self Report - Unidimensional)

Measure	Indicator	Considerations
Numeric Rating Scale (NRS)	<ul style="list-style-type: none"> <li>Asks patients to rate their pain from 0 to 10</li> <li>Scored 0-10 with the anchors of 0 being no pain and 10 being pain as bad as it can be</li> </ul>	<ul style="list-style-type: none"> <li>Used in adults, older adults</li> <li>Well established evidence of reliability, validity, and ability to detect change</li> <li>Quick and easy to use</li> </ul>
Modified Verbal Descriptor Scale (VDS)	<ul style="list-style-type: none"> <li>A list of adjectives used to describe different levels of pain intensity</li> <li>4 point (or more) VDS descriptors (e.g., no pain, mild, moderate and severe)</li> </ul>	<ul style="list-style-type: none"> <li>Used with adults to explain pain intensity (no pain is 0, mild is 1 to 3, moderate 4 to 6, severe 7 to 10)</li> <li>Established validity and reliability</li> </ul>
Faces Pain Scale - Revised (FS-R)	<ul style="list-style-type: none"> <li>Revised to be compatible with scoring with other self-rating scales</li> <li>6 gender neutral faces range from no pain to as much pain is possible</li> <li>Scored 0 to 10</li> </ul>	<ul style="list-style-type: none"> <li>Intended for use in children and the elderly</li> <li>Well established evidence of reliability, validity and ability to detect change</li> <li>Quick and easy to use</li> </ul>

Note: Other valid self-report unidimensional and multidimensional pain assessment tools are available. In addition, valid behavioural pain assessment tools are available for adults and elders unable to self-report pain.

## APPENDIX B

### Examples of Sedation Level Assessment Tools

Measure	Indicator	Reference
Pasero Opioid-Induced Sedation Scale (POSS)	1 = Awake and alert 2 = Slightly drowsy, easily aroused 3 = Frequently drowsy, arousable, drifts off to sleep during conversation 4 = Somnolent, minimal or no response to verbal and physical stimulation S = Normal sleep, easy to arouse	Pasero C. Assessment of sedation during opioid administration for pain management. J PeriAnesthesia Nurs. 2009 Jun;24(3):186-90.
Richmond Agitation Sedation Scale (RASS)	+4 = Combative +3 = Very agitated +2 = Agitated +1 = Restless 0 = Alert and calm -1 = Light sedation -2 = Moderate sedation -3 = Deep sedation -4 = Unarousable	Ely EW, Truman B, Shintani A, Thomason JWW, Wheeler AP, Gordon S, et al. Monitoring sedation status over time in ICU patients: the reliability and validity of the Richmond Agitation Sedation Scale (RASS). JAMA 2003; 289:2983-2991.
Ramsay Scale (RS)	1 = Awake, patient anxious and agitated or restless or both 2 = Awake, patient cooperative, orientated and tranquil 3 = Awake, patient responds to commands only 4 = Asleep, a brisk response to a light glabellar tap or louder than usual conversation level 5 = Asleep a sluggish response to a light glabellar tap or loud verbal commands or strong glabellar tap 6 = Asleep, no response to a light glabellar tap or loud noise	Ramsay MA, Savege TM, Simpson BR, Goodwin R. Controlled sedation with alphaxolone-alphadalone. BMJ. 1974; 2:656-659.

Note: Other tools are available to assess sedation level. These are examples of tools that are used in AHS settings. Refer to your program resources for instructions on assessment and documentation when using these or other sedation level assessment tool.

**APPENDIX C****Description of Bromage Score**

<b>Grade</b>	<b>Criteria</b>	<b>Degree of block</b>
I	Free movement of legs and feet	Nil (0%)
II	Just able to flex knees with free movement of feet	Partial (33%)
III	Unable to flex knees, but with free movement of feet	Almost complete (66%)
IV	Unable to move legs or feet	Complete (100%)

Reference: Bromage, PR Epidural Analgesia; Philadelphia: WB Saunders; 1978:144

Note: Several modifications of the Bromage scale have been described, including the use of more gradations of motor block using a six-point scale to assess motor block. Refer to guidance at your site for Bromage assessment. Within Connect Care, Bromage Motor Block Scale has options for selection (e.g., I = free movement, II = able to flex knees with some movement of feet, III = unable to flex knees, but with free movement of feet, IV = unable to move legs or feet).

## APPENDIX D

**Epidural Catheter Placement Verification**

Step 1: Attach an empty 10-millilitre (mL) syringe (sterile) to the hub of the epidural catheter.

Step 2: Gently aspirate for return of air or clear liquid.

- Withdrawal of air or less than 0.5 mL clear fluid indicates the catheter is in the epidural space. Connect the primed epidural tubing to the catheter hub and start the infusion.
- Withdrawal of 1 mL or more of clear fluid indicates the catheter has migrated into the intrathecal space. Do not connect the epidural tubing. Notify the Acute Pain Service (APS) and/or Anesthesia immediately.
- A sanguineous return indicates that the epidural catheter has penetrated a blood vessel. Do not connect the epidural tubing. Notify APS and/or Anesthesia immediately.

## APPENDIX E

**Signs and Symptoms of Local Anesthetic Systemic Toxicity**Early Signs and Symptoms Include:

- Drowsiness
- Behaviour changes
- Myoclonus
- Tremors
- Tinnitus
- A metallic taste
- Circumoral numbness
- Dizziness
- Confusion
- Visual disturbances
- Irritability

Late Signs and Symptoms Include:

- Restlessness
- Seizures
- Cardiac dysrhythmias
- Cardiac arrest