Continuous Subcutaneous Midazolam Infusion- Clinical Practice Guideline in Acute Palliative Care Settings -Adult Only

Site Applicability

Richmond Health Services (RHS) Supportive Palliative Care Unit (SPCU) to be used in palliative care settings only.

Practice Level

1. Basic Skill
2. Registered Nurse (RN)

Policy Statement

1. Must have physician orders prior to administering continuous subcutaneous midazolam infusion
2. Physician to complete midazolam continuous subcutaneous infusion pre-printed orders
3. Resuscitation equipment must be readily available and accessible when administering continuous subcutaneous midazolam infusion
4. Flumazenil, a benzodiazepine antagonist must be readily available on the unit
5. Renal function and hepatic function lab work should be done as baseline as well as during administration as per physician discretion
6. Monitor and assess CVS, CNS status, Respiratory system, as per recommendation within this guideline
7. Dedicate subcutaneous site for midazolam Infusion only. Do not infuse or administer any other medication through the dedicated site
8. Midazolam Infusion must be delivered via infusion pump
9. If patient receiving midazolam infusion only use Richmond Agitation Sedation Scale (RASS) (In accordance with CPD-P-075)(Appendix A)
10. If a patient is concurrently receiving opioids as well as midazolam the patient sedation level should be assessed using the Pasero Opiod- Induced Sedation Scale (POSS) (In accordance with CPD-P-075) (Appendix B)
11. Must use recommended pain scale: Numeric Rating Pain Scale (See Appendix C), or Faces Pain Scale (See Appendix C), or Behavioral Pain Scale (See Appendix C) for patients who cannot communicate when monitoring and/or assessing and/or adjusting infusions for the treatment of pain

Need to Know

- Mechanism of Action: Acts at many levels of the CNS to produce generalized CNS depression
- Midazolam is a benzodiazepine used in the palliative care setting to provide sedation, anxiolysis, and amnesia at end of life
- Midazolam is used for the management of refractory symptoms that do not respond to other symptoms management treatments
- Midazolam is also used for palliative emergencies that may lead to decreased quality of life
- Midazolam may be used as an adjunct to other medications such as opioid and non-opioid analgesics
- Administration of midazolam can lead to serious complications (see adverse affects); therefore, continuous subcutaneous infusion requires close monitoring for drug toxicity and adverse affects
- When infused subcutaneously, midazolam may accumulate in the tissues, especially in elderly people, making dosing unreliable
- Midazolam is almost exclusively metabolized by the liver, and metabolites are excreted by the kidneys via urine

Key Definitions:

- **Continuous Subcutaneous Infusion**: A route of medication administration characterized by the continuous controlled delivery of medication(s) into the subcutaneous tissue via an infusion pump
- **Refractory Symptom**: A symptom is considered refractory if it cannot be adequately controlled despite aggressive therapies that do not compromise consciousness
- **End of Life Care**: The supportive and palliative care needs of both patients and their families must be identified and met throughout the last phase of life and into the bereavement phase. It includes the management of pain and other symptoms and the provision of psychological, social, spiritual and practical support

Indications

- As a continuous infusion midazolam provides sedation for palliative patients at the end of life
- Midazolam will be used in the management of the following conditions and refractory symptoms:
  - Refractory dyspnea
  - Refractory pain

- Refractory nausea and vomiting
- Agitation and restlessness associated with delirium

Contraindications

- Hypersensitivity; cross-sensitivity with other benzodiazepines

Considerations/Precautions

- Use cautiously in: pulmonary disease; heart failure, renal impairment; severe hepatic impairment
- May cause hypotension
- Enhanced effect if given concurrently with Clarithromycin, Diltiazem, Erythromycin, Fluconazole, Itraconozole, ketoconazole, and grapefruit juice

Adverse effects

CNS

- Agitation, drowsiness
- Headache
- In rare cases extrapyramidal symptoms have been associated with subcutaneous midazolam infusion

Respiratory

- Apnea, laryngospasm, respiratory depression, bronchospasm, coughing

CVS

- Cardiac arrest, arrhythmia

Skin

- Site swelling, rash

Equipment & Supplies

Refer to Subcutaneous Butterfly Canula- Insertion, Maintenance and Medication Administration Guideline

- Patient chart – doctor's pre printed orders
- Obtain pre-prepared midazolam infusion bag from pharmacy
- Infusion pump and tubing

Procedure Guideline

Medication Administration

1. Refer to subcutaneous butterfly cannula-insertion maintenance and medication administration guideline
2. Two RN's must check physician's orders against the prepared medication solution IV bag. Flag midazolam order with yellow sticker on physician notes form within the patient chart
3. Document on Medication Administration Record (MAR)
4. Prime tubing's with midazolam infusion medication using infusion pump and correct tubing's
5. Two RN's must double check correct pump settings against the physician medication orders prior to attaching pump into the patient pre inserted needle-free cap
6. Connect tubing directly to the pre inserted needle-free cap
7. Unclamp tubing and commence infusion at prescribed rate (refer to table below for pre administration assessment)

Assessment & Monitoring

Pre Administration Assessment	• Obtain baseline vitals including blood pressure, heart rate, temperature, respiratory rate and oxygen saturation • Complete a thorough respiratory assessment: Depth, effort and sounds • Obtain baseline pain assessment using the Numeric Pain Scale or Faces Pain Scale or Behavioral Pain Scale (Appendix C) • If patient is only receiving midazolam use the Richmond Agitation Sedation Scale (RASS) to assess sedation level. (Appendix A) • If patient is concurrently receiving opiods, assess cognition and obtain baseline sedation level using Pasero Opioid-Induced Sedation Scale (POSS) (Appendix B)
Assessment During-Administration	• Assess vitals, including temperature, pulse, respirations, blood pressure and SPO2, along with pain, sedation and adverse reactions • See table below re frequency

Assessment Post Medication Discontinuation	• Assess vitals, including temperature, pulse, respirations, blood pressure and SPO2, along with pain, sedation and adverse reactions • See table below re: monitoring frequency
NOTE	• **Note: If dosage changes repeat vital signs every 15 min x 1 hour then q4H** • Document assessment, monitoring and findings on relevant documents

Monitoring Frequency

Hemodynamic: BP, HR, Temp	**Respiratory: RR, O2 sat**	**CNS: sedation, cognition, RASS or Pasero**	**Pain Scale**
Q 15 mins x 1 H	Q 15 mins x 1 H	Q 15 mins x 1 H	Q 15 mins x 1 H
Q 4 H x 24 H	Q 4 H x 24 H	Q 4 H x 24 H	Q 4 H x 24 H
Q shift	Q shift	Q shift	Q shift
Post Medication Discontinuation One hour and PRN	Post Medication Discontinuation One hour and PRN	Post Medication Discontinuation One hour and PRN	Post Medication Discontinuation One hour and PRN

Expected Patient Outcomes

- The expected outcome of the use of midazolam via continuous subcutaneous infusion is increased. Patient is comfortable as well as experiencing relief from refractory symptoms at the end of life

Patient Education

- Physician/ RN to inform patient and family regarding purpose of midazolam continuous subcutaneous infusion, potential and expected outcomes
- Administering midazolam via continuous subcutaneous infusions will cause light to deep sedation. Patients and family members/ significant others need to be consulted prior to administration of this medication. The conversation should include burdens and benefits of this course of care to the patient and their family/significant others
- Ongoing family meetings to discuss burdens and benefits of treatment, and evaluation of patient's condition

Evaluation

- Refractory symptoms have been decreased or controlled based on ongoing patient assessments utilizing the RASS and/or Pasero scoring

Documentation

- Document in:
    - Kardex the date of insertion, site location, midazolam dosage and concentration
    - Chart patient's response to procedure as well as teaching
    - Chart regarding family's/ significant others coping and response to treatment
    - Document the assessment findings on the Continuous Subcutaneous Infusion Analgesic/Sedative Record Log
    - Medication Administration Record
- Document assessment data prior to infusion, during treatment, and after the medication is discontinued

Related Documents/Appendices

1. Subcutaneous butterfly canula- insertion, maintenance and mediation administration
2. Pasero Opioid-Induced Sedation Scale (Appendix A) (CPD-P-075)
3. Richmond Agitation Sedation Scale (Appendix B) (CPD-P-075
4. Numeric Rating Pain Scale (Appendix C) (CPD-P-075)
5. Faces Pain Scale (Appendix C) (CPD-P-075)
6. Behavioral Pain Scale Appendix C) (CPD-P-075)

Developed By

Developed By: RHS, CRN , SPCU	**Date: November 13, 2014**
Reviewed By: Palliative Medicine Medical Director	**Date: Nov 19,2014**
Approved By: Palliative Medicine Medical Director	**Date: Dec 01, 2014**

Date of Approval/Review/Revision

Appendices:

A) Richmond Agitation Sedation Scale

Score	Term	Description
+4	Combative	Overly combative or violent. Immediate danger to staff.
+3	Very Agitated	Pulls/removes tubes or catheters. Has aggressive behaviour toward staff
+2	Agitated	Frequent non-purposeful movement
+1	Restless	Anxious or apprehensive but movements not aggressive or vigorous
0	Alert and Calm	
-1	Drowsy	Not fully alert, but has sustained (>10sec) awakening with eye contact to voice
-2	Light sedation	Briefly (>10 sec) awakens with eye contact to voice
-3	Moderate Sedation	Any movement (but no eye contact) to voice
-4	Deep Sedation	No response to voice, but any movement to physical stimulation
-5	Unrousable	No response to voice or physical stimulation

Procedure

1. Observe patient. Is patient alert and calm (score 0)?
Does patient have behavior that is consistent with restlessness or agitation (score +1 to +4 using the criteria listed in the above table under column 3, titled description?)
2. If patient is not alert, in a loud speaking voice state patient's name and direct patient to open eyes and look at speaker. Repeat once if necessary. Can prompt patient to continue looking at speaker.
Patient has eye opening and eye contact, which is sustained for more than 10 seconds (score −1)
Patient has eye opening and eye contact, but this is not sustained for 10 seconds (score −2)
Patient has any movement in response to voice, excluding eye contact (score −3)
3. If patient does not respond to voice, physically stimulate patient by shaking shoulder and then rubbing sternum if there is no response to shaking shoulder.
Patient has any movement to physical stimulation (score −4)
Patient has no response to voice or physical stimulation (score −5)

B) Pasero Opioid-Induced Sedation Scale (POSS)

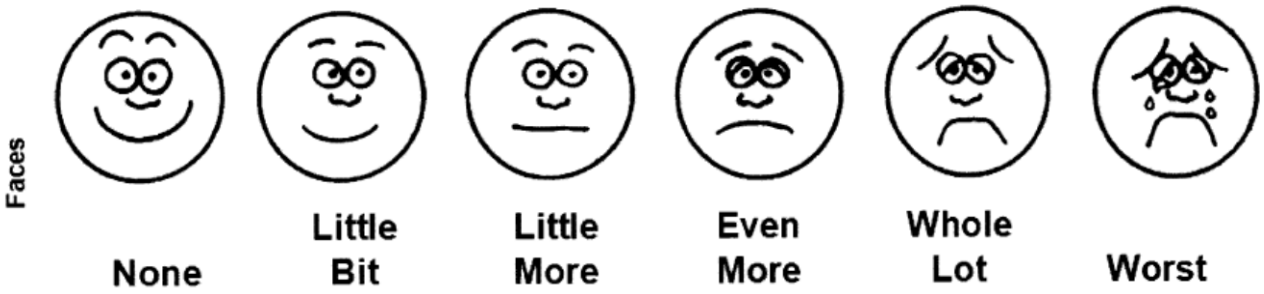
Pasero Opioid-Induced Sedation Scale (POSS)		
Score		**Meaning of Score**
S	Sleep, easy to rouse	**Acceptable**; no action necessary; may increase opioid dose if needed
1	Awake and alert	**Acceptable**; no action necessary; may increase opioid dose if needed
2	Slightly drowsy, easily roused	**Acceptable**; no action necessary; may increase opioid dose if needed
3	Frequently drowsy, rousable, drifts off to sleep during conversation	**Unacceptable;** • stop infusion, hold next oral dose of opioid **and** NOTIFY prescriber for adjustment of opioid orders • monitor respiratory status and sedation level closely until sedation level is stable at less than 3 and respiratory status is satisfactory • consider administering a non-sedating, non-opioid analgesic for pain i.e. acetaminophen or NSAID
4	Somnolent, minimal or no response to verbal and physical stimulation (use trapezius muscle squeeze for physical stimulation - do not use sternal rub)	**Unacceptable;** • stop opioid • oxygen by mask 10L/min and monitor vital signs • administer naloxone as per order • IMMEDIATELY page Prescribing Service STAT • **PROVIDE AIRWAY and BREATHING SUPPORT** • **DO NOT re-commence opioid therapy prior to patient being seen by the prescribing physician**

C) Pain Scales

If patient can communicate, use 0 to 10 Numeric Rating Scale (NRS):

0	No pain
1to 3	Mild pain
4 to 5	Moderate pain
6 to 7	Severe pain
8 to 9	Very severe pain
10	Worst possible pain

If patient is unable to use the numeric pain scale but is able to communicate, use the Faces Pain Scale:



If patient is unable to communicate, use the Behavioral Pain Scale (BPS):

Observation	Description	Score
Facial expression	Relaxed Partially tightened Fully tightened Grimacing	1 2 3 4
Upper limbs	No movement Partially bent Fully bent with flexation of fingers Permanently retracted	1 2 3 4
Compliance with ventilation	Tolerating movement Coughing Fighting ventilator Unable to control ventilation	1 2 3 4

E) Continuous Subcutaneous Infusion Analgesia and/or Sedation

Richmond Hospital
Part of the Vancouver Coastal Health Authority

CONTINUOUS SUBCUTANEOUS INFUSION ANALGESIA AND/OR SEDATION RECORDING LOG

PCIS LABEL

DATE	TIME	SEDATION SCORE ☐RASS ☐POSS	PAIN SCORE	ANALGESIC Drug: _____		SEDATION Drug: _____		OTHER Drug: _____		RN INITIAL
				Infusion Rate	Bolus	Infusion Rate	Bolus	Infusion Rate	Bolus	
Baseline										

Monitoring Frequency

Hemodynamic: BP, HR, Temp	Respiratory: RR, O2 sat	CNS: sedation, cognition, RASS or Pasero	Pain Scale
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Post Medication Discontinuation	Post Medication Discontinuation	Post Medication Discontinuation	Post Medication Discontinuation
One hour and PRN	One hour and PRN	One hour and PRN	One hour and PRN

If the patient is Analgesic as well as Sedative Infusion use the POSS scale

Pasero Opioid-Induced Sedation Scale (POSS)	
S	Sleeping, easily roused
1	Awake, alert
2	Occasionally drowsy, easy to rouse
3	Frequently drowsy, rousable, drifts off to sleep during conversation
4	Somnolent, minimal or no response to stimuli

If the patient is only receiving midazolam, use the modified Richmond Agitation Sedation Scale (RASS):

Score	Term	Description
+4	Combative	Overly combative or violent. Immediate danger to staff.
+3	Very Agitated	Pulls/removes tubes or catheters. Has aggressive behaviour toward staff
+2	Agitated	Frequent non-purposeful movement
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Procedure

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   Does patient have behavior that is consistent with restlessness or agitation (score +1 to +4 using the criteria listed above, under DESCRIPTION)?
2. If patient is not alert, in a loud speaking voice state patient's name and direct patient to open eyes and look at speaker. Repeat once if necessary. Can prompt patient to continue looking at speaker.

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Pain Scale

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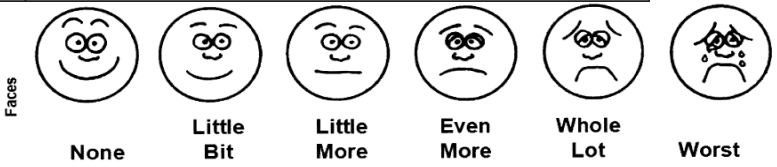

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