Dexmedetomidine (Precedex) Continuous Infusion ICU/ED---

PURPOSE: To outline the nursing management of the patient receiving Dexmedetomidine (Precedex) infusion in the ICU and ED.

SUPPORTIVE DATA:

Dexmedetomidine (Precedex) is a sedative that allows the patient to be cooperative while sedated, does not depress the respiratory drive as other sedatives do, and is useful when extubation is planned. It is a short-acting alpha2 agonist with anxiolytic, anesthetic, hypnotic and analgesic properties, its action is different from other sedatives.

Dexmedetomidine as an anxiolytic can assist with decreasing anxiety for life saving interventions such as being placed on a BiPAP with minimal respiratory drive depression.

Dexmedetomidine is given by continuous infusion. It should be titrated every 30 minutes to specified goal. More frequent titration is associated with hypotension.

Does **NOT** provide adequate and reliable amnesia; If used in conjunction with paralytics, additional agents with amnestic properties (e.g., benzodiazepines, propofol) must be added.

When used for sedation on mechanically ventilated patients, there is no need for a sedation holiday, and may be continued post extubated if needed.

Dexmedetomidine may be used in the non-mechanically ventilated patient for the treatment of delirium or mild agitation.

Dexmedetomidine is titrated to maintain ~~a~~ light sedation utilizing the Richmond Agitation Sedation Scale (RASS). Titrate RASS score as ordered 0 or to clinical effect (e.g., ventilator synchrony). Sedation in pediatric and NICU patients are titrated per provider order.
NOTE: Deep sedation (e.g., RASS score -5 to -4) is not achievable with dexmedetomidine monotherapy.

The usual maximum dosage is 1.4mcg/kg/hr.

Dexmedetomidine IV bolus shall not be administered by nursing staff.
Bradycardia and/or hypotension may occur with loading doses.

ASSESSMENT:

1. Assess the following immediately prior to initial administration and a minimum of every hour:
   - Vital signs (VS) & oxygen saturation
   - Presence of arrhythmias
   - Pain score
   - Respiratory status

2. Verify correct dose upon initiation, within 1 hour of assuming care of the patient, and with each dose change.

3. Assess VS and oxygen saturation before and after each titration

4. Assess sedation level by obtaining RASS score for adult patients a minimum of every 2 hours.

5. Assess Pain score
   - Before and after initiation and each titration to document justification
     Note: Pain and RASS score may not be documented more than 30 minutes prior to initiation and titration.

6. Assess for adverse reactions a minimum of every 4 hours including the following:
   - Allergic reaction
   - Bradycardia
   - Hypotension
   - Hypertension
   - Seizure activity
   - Nausea/vomiting
   - Constipation/diarrhea
   - Urinary retention

7. Assess for delirium every shift using the CAM-ICU method.

ADMINISTRATION:

8. Verify provider order and pump settings:
   - Dosage of medication

9. Administer Dexmedetomidine as ordered. Order to include:

   - Dose (range orders are not acceptable; must be weight based in kilograms for pediatrics/NICU)
   - Usual dosage range 0.2 to 1.4mcg/kg/hour; titrate by 0.2 mcg/kg/hour every 30 minutes to sedation goal or clinical effect
   - Duration of administration
     - Order must be renewed a minimum of every 7 days
   - Desired RASS score (Adults only)
   - Incremental increase or decrease in dose based on RASS (Adults only)

DISCONTINUATION:

10. Discontinue as ordered
11. Monitor for withdrawal symptoms (e.g., nausea, vomiting, agitation, hypertension, tachycardia-especially within 48 hours)

SAFETY:

12. Ensure the following:
    - Infusion pump with Guardrails is used for administration of continuous infusion(s)
    - Drug concentration and dosage calculation are correct and within prescribed parameter(s)
    - Drug compatibility

REPORTABLE CONDITIONS:

13. Discontinue infusion and notify provider immediately for the following:
    - Significant change in VS & oxygen saturation
    - Respiratory depression
    - Allergic reaction
    - Inability to achieve/maintain desired effect within ordered parameter(s)
    - Unexpected change in LOC
    - Bradycardia
    - Hypotension
    - Hypertension

14. Notify the provider for:
    - Nausea/vomiting/diarrhea/constipation
    - Urinary retention
    - Seizure activity

PATIENT/CAREGIVER EDUCATION:

15. Instruct on the following:
- Rationale for sedative/analgesic
- Side effects including need to notify nurse for the following:
  - Dizziness/change in LOC
  - Seizures
  - Difficulty breathing
  - Nausea/vomiting/diarrhea/constipation
  - Persistent pain
  - Persistent anxiety/ agitation

ADDITIONAL STANDARDS

16. Refer to the following as indicated:
- Sedation and Analgesia (Intravenous) ICU/ED
- Neuromuscular Blocking Agents continuous infusion ICU
- Pain Management
- Central Venous Catheter & Midline Peripheral Catheter (part 1 & 2)
- Intravenous Therapy
- Restraints: Non-Violent or Violent Behavior

DOCUMENTATION:

17. Document in accordance with "Documentation Standards"

Richmond Agitation Sedation Scale (RASS) *

Score	Term	Description	
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive	
+2	Agitated	Frequent non-purposeful movement, fights ventilator	
+1	Restless	Anxious but movements not aggressive vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to *voice* (**≥10 seconds**)	Verbal Stimulation
-2	Light sedation	Briefly awakens with eye contact to *voice* (**<10 seconds**)	Verbal Stimulation
-3	Moderate sedation	Movement or eye opening to *voice* **(but no eye contact)**	Verbal Stimulation
-4	Deep sedation	No response to voice, but movement or eye opening to *physical* stimulation	Physical Stimulation
-5	Unarousable	No response to *voice or physical* stimulation	Physical Stimulation

Procedure for RASS Assessment

1. Observe patient
   a. Patient is alert, restless, or agitated. **(score 0 to +4)**
2. If not alert, state patient's name and *say* to open eyes and look at speaker.
   b. Patient awakens with sustained eye opening and eye contact. **(score –1)**
   c. Patient awakens with eye opening and eye contact, but not sustained. **(score –2)**
   d. Patient has any movement in response to voice but no eye contact. **(score –3)**
3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum.
   e. Patient has any movement to physical stimulation. **(score –4)**
   f. Patient has no response to any stimulation. **(score –5)**

* Sessler CN, Gosnell M, Grap MJ, Brophy GT, O'Neal PV, Keane KA et al. The Richmond Agitation-Sedation Scale: validity and reliability in adult intensive care patients. Am J Respir Crit Care Med 2002; 166:1338-1344.

* 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.

REFERENCES:

Consult: LAC+USC Medical Center Pharmacy
LAC+USC Clinical Resources: Micromedix and UptoDate drug info (Lexi-comp)
Short, J. (2010). Use of Dexmedetomidine for Primary Sedation in a General Intensive Care Unit. Critical Care Nurse, 30(1), 29-39.
Fuchs, B, & Bellamy, C. (2016). Sedative-analgesic medications in critically ill patients: Selection, initiation, maintenance, and withdrawal. Retrieved from Uptodate.com
Addendum A: Dexmedetomidine (Precedex) Continuous Infusion ICU/ED Reference Table

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Addendum A: Dexmedetomidine (Precedex) Continuous Infusion ICU/ED

Dexmedetomidine (Precedex) Continuous Infusion ICU/ED	
Pharmacologic Category	Sedative
Mechanism of Action	• Short acting alpha 2 agonist • Has anesthetic and sedative properties **NOTE:** Does **NOT** provide adequate and reliable amnesia; If used in conjunction with paralytics, additional agents with amnestic properties (e.g., benzodiazepines, propofol) must be added.
Indication/Use	• Sedation • Agitation/ anxiolytic
Administration	• Titrate to provider ordered Richmond Agitation Sedation Scale (RASS)- usual RASS score ordered 0 or to clinical effect (e.g., ventilator synchrony). **NOTE:** Deep sedation (e.g., RASS score -5 to -4) is not achievable with dexmedetomidine monotherapy. • There is no need for a spontaneous awakening trial (SAT) while on dexmedetomidine • Dexmedetomidine may be continued post-extubation for agitation as ordered • In patients on higher doses and longer duration, avoid abrupt discontinuation; Gradually titrate off while monitoring for withdrawal symptoms. • Assess Pain score • Before and after initiation and each titration to document justification **NOTE**: Pain and RASS score may not be documented more than 30 minutes prior to initiation and titration.
Usual Dosage	Adult • Dosage range: - Sedation: 0.2-1.4 mcg/kg/hour - Max dose: 1.4mcg/kg/hour • Titrate by 0.2 mcg/kg/hour every 30 minutes to sedation goal or clinical effect • Bolus may only be given by the provider in extremely agitated patients who are hemodynamically stable as a one-time dose of 1 mcg/kg over 10 minutes • For NICU/Pediatrics dose range orders not acceptable: must be weight based in

	kilograms
Nursing Physical Assessment/Monitoring	• Assess the following prior to initial administration and a minimum of every hour - VS & Oxygen saturation - Respiratory status - Presence of arrythmia - Pain score • Assess VS and oxygen saturation prior to each titration • Assess sedation level (obtain RASS score): - Every 2 hours - Prior to initiation and with each titration - The RASS score must be documented within 30 minutes prior to initiation/titration • Assess for delirium every shift using the CAM-ICU method.
Adverse Reactions	• Allergic reaction • Bradycardia • Hypotension • Hypertension • Seizure activity • Nausea/vomiting • Constipation/diarrhea • Urinary retention