Hackettstown Regional Medical Center

MEDICATION USE POLICY

TITLE: **Protocol for Sedation and Analgesia of Mechanically Ventilated Patients**		
EFFECTIVE DATE: 1/2007	**POLICY #: PN.04a**	**PAGE:** 1 of 6
CREATED BY: R. Thelin, PharmD, A. Savite', RN	**Reviewed date: 7/10 RT** **Revision: 8/13 A Savite' RN, V Anselmo RPh**	DISTRIBUTION: **PHARMACY, NURSING, MEDICAL STAFF**

Purpose:

To provide adequate sedation, analgesia, and treatment of psychosis/delirium during mechanical ventilation in the most efficacious and safe manner.

Policy:

1. This policy applies to critical care patients ≥ 18 years old and are on or about to be placed on a ventilator.

2. A therapeutic plan and goal for analgesia should be established in conjunction with the sedative plan. Orders for pain management should be acquired for appropriate patients since neither Propofol nor benzodiazepines provide analgesia.

3. Utilizing **Physician Order form for Sedation & Analgesia in Mechanically-Ventilated Adult Patients** will address both pain and agitation.

4. Establishing goals and dosing guidelines for sedation is a collaborative process involving the physician, nurse, respiratory therapist and pharmacist. This is discussed daily during pre and post spontaneous breathing trials. The Richmond Agitation Sedation Scale (RASS) is the tool used to assist with this evaluation.

5. The registered nurse will provide education to patient/family about the purpose of the medications and related assessment procedures.

Procedure:

1. **SEDATION**: Richmond Agitation Sedation Scale (RASS) will be used to evaluate all patient sedation levels (unless patient is receiving a neuromuscular blocker, requiring train of four [TOF] monitoring). T**he Richmond score should be documented in the medical record every 1 hour x 2 after starting therapy, and with each rate change, then every 2 hours, or more frequently as needed**. The RASS goal is -2 to 0 unless otherwise ordered.

Richmond Asiontion Sedation Scale (RASS) Scale	**(Goal is -2 to 0 unless ordered otherwise)**
Combative	+4 =Overtly combative, violent, immediate danger to staff
Very agitated	+3 = Pulls or removes tubes(s) or catheters(s); aggressive
Agitated	+2 = Frequent non-purposeful movement, fights ventilator
Restless	+1 = Anxious but movements not aggressive vigorous
Alert and calm	**0**
Drowsy	-1 = Not fully alert, but has sustained awakening (eye-opening/eye contact) to *voice* (>= 10 seconds)
Light Sedation	-2 = Briefly awakens with eye contact to voice (>= 10 seconds)
Moderate Sedation	-3 = Movement or eye opening to voice (but no eye contact)
Deep Sedation	-4= No response to voice, but movement or eye opening to *physical* stimulation
Unarousable	**-5=** No response to *voice or physical* stimulation

2. **PAIN**: A variety of scales will be utilized by the registered nurse to evaluate and quantify pain and related treatment efficacy. The nurse will follow HRMC Pain Management Scales and select and use the one most appropriate for the scale (refer to PC 28).

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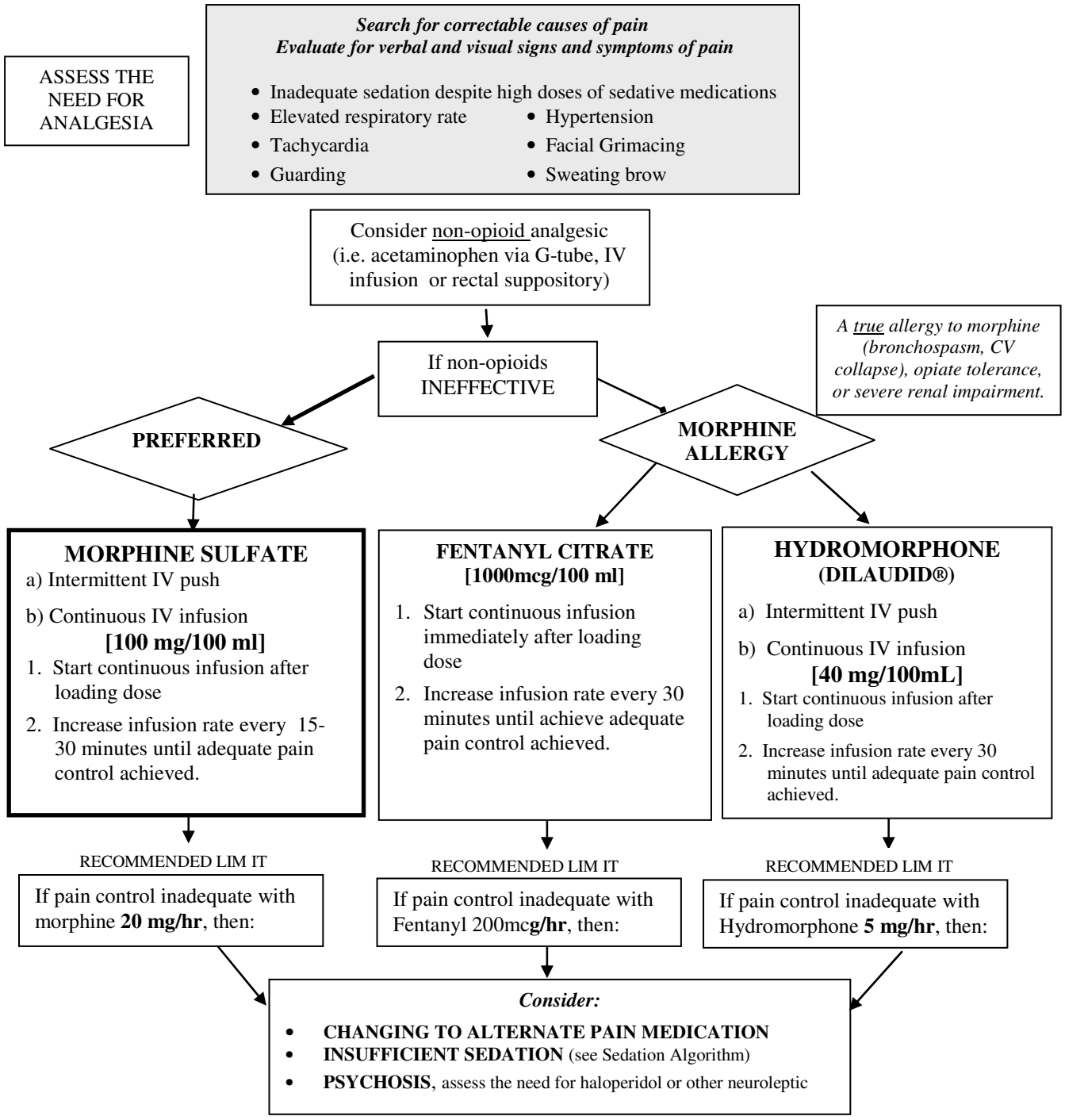
HRMC Analgesia Algorithm



NOTE: Severe respiratory depression may occur with these medications. Use caution in patients being weaned from mechanical ventilation. This protocol is not intended to preclude the use of other specialized analgesia (e.g. PCA; epidural).

3. **Glasgow Coma Score (GCS)**
The GCS is scored between 3 and 15, 3 being the worst, and 15 the best. It is composed of three parameters: Best Eye Response, Best Verbal Response, Best Motor Response, as given below.
(In non-intubated patients, a total GCS of ≥ 13 correlates with a mild brain injury, 9 -12 is a moderate injury and ≤ 8 a severe brain injury)

Best Eye Response. (4)
1. No eye opening.
2. Eye opening to pain.
3. Eye opening to verbal command.
4. Eyes open spontaneously.

Best Verbal Response. (5)
1. No verbal response
2. Incomprehensible sounds.
3. Inappropriate words.
4. Confused
5. Orientated

Best Motor Response. (6)
1. No motor response.
2. Extension to pain.
3. Flexion to pain.
4. Withdrawal from pain.
5. Localising pain.
6. Obeys Commands

A **PRE-SEDATION GCS** should be obtained if possible, and is the most useful predictive baseline value of outcome after sedation is discontinued. While mechanical ventilation is continued, the GCS should continue to be assessed (with a zero (0) value for verbal response)

4. **Agent selection: [see algorithm]**

To facilitate Daily Wake Up Assessments, all patients requiring continuous intravenous sedation should receive Dexmedetomidine (Precedex®) for the first 36 hours or Propofol for the first 72 hours (unless contraindicated). Propofol provides the ability for frequent assessment due to its short half-life. Dexmedetomidine (Precedex®) provides ability to evaluate patient without discontinuation of the drug. Barr J, Fraser GL, Puntillo K, et al, "Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit," *Critical Care Med*, 2013, 41(1):263-306.[PubMed 23269131]

5. After 72 hours, Propofol is continued only if the patient is weanable and extubation is planned or if frequent neurological assessments are required. Triglycerides are monitored every 72 hours per protocol for patients receiving Propofol. Contact the physician for triglyceride levels greater than 400 unless other goals are defined by the physician. For all other patients, the physician should be contacted for conversion of the sedative to Lorazepam unless otherwise previously specified by the physician, or the patient is displaying signs of prolonged renal dysfunction (consider Midazolam)..

6. **When prolonged (greater than or equal to 5 days) or high dose continuous sedation has been required, it is highly recommended that reductions be made gradually to prevent drug withdrawal.** This is achieved by reducing the dose by 25% every 24 hours for moderate down-titration or a reduction of 50% of the dose every 24 hours for aggressive down-titration. With each titration, the patient's RASS score pre and post dose adjustment is documented.

7. **Conversion from Diprivan (propofol) to Midazolam or Lorazepam:**
If converting the patient from Diprivan, begin Midazolam or Lorazepam infusion ½ hour before discontinuing the Diprivan infusion. No benzodiazepine bolus is needed unless immediate discontinuation of the Diprivan infusion is required.

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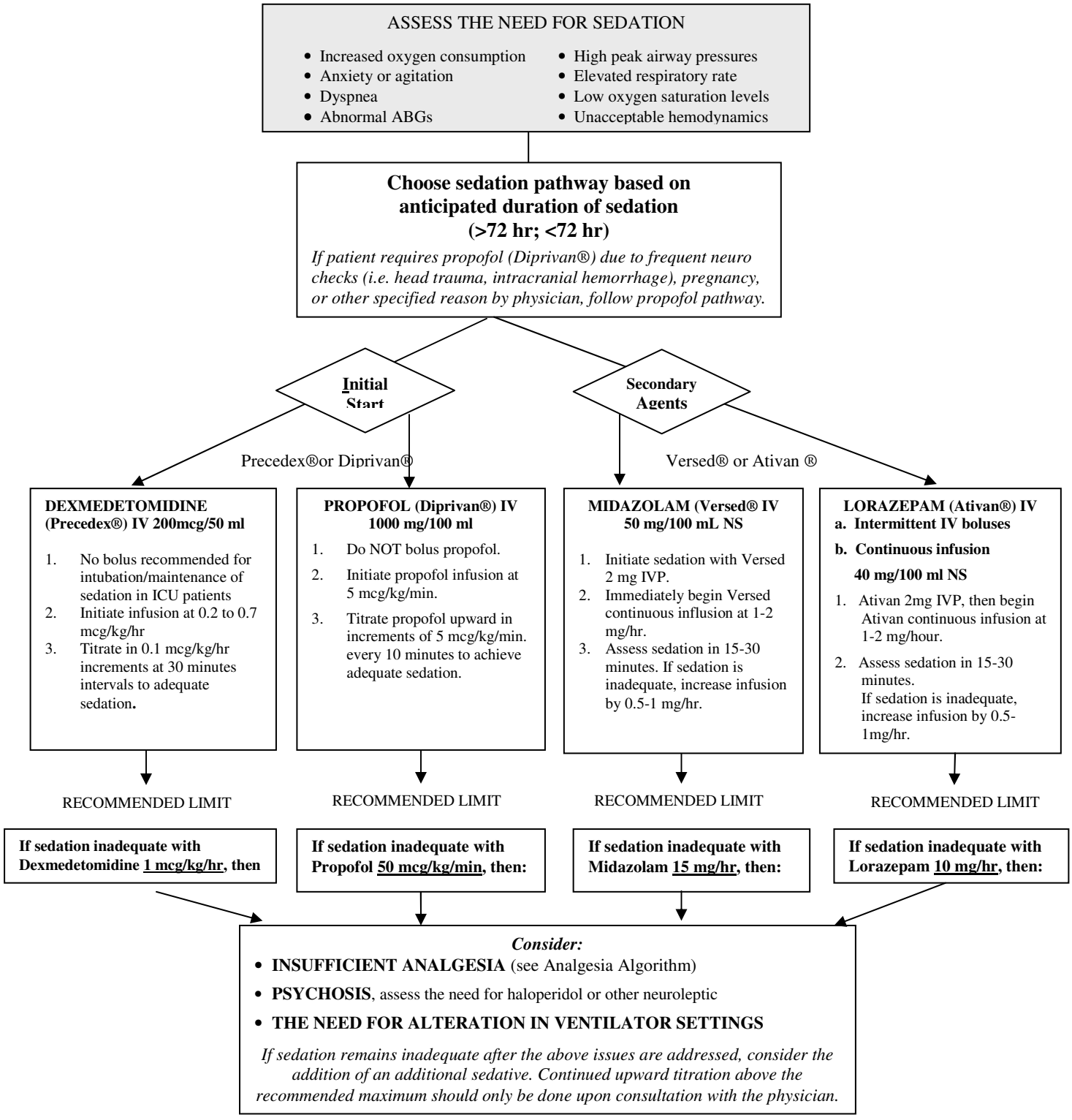
HRMC Sedation Algorithm



SEDATION GOAL = Richmond Agitation Sedation Scale (RASS) -2 to 0

******Perform DAILY Interruption (Wake-Up) Of Sedatives To Assess Neurologic Status******

8. **Daily Wake-Up Assessment: preparation for Spontaneous Breathing Trial**
   a) Sedation response is assessed **DAILY** (every 24 hours) through the established collaborative multidisciplinary assessment process. The nurse, respiratory therapist, physician (if available), and pharmacist (if available) perform the Wake-Up Assessment procedure daily in order to align clinical goals, assess neurologic status, attempt complete weaning of the patient off of mechanical ventilation and/or attempt to maintain the desired sedative effect to avoid prolonged sedation. The respiratory therapist and/or nurse will discuss the results of this assessment with the physician if not present for assessment.
   b) **Contraindications to Wake-Up Assessment:**
      1. Neuromuscular blockade (unless the physician permits the neuromuscular blocking infusion be stopped and placed on hold for the assessment); head trauma or neurosurgical patients.
      2. Mechanical ventilation for anaphylactic shock (or other conditions characterized by laryngeal edema)
      3. Specific physician order for medical reasons, as supported by documentation in the Progress Notes.
   c) **Sedation and analgesia should be addressed concurrently:** sedation should be titrated down gradually to wean patient. **Never stop sedation abruptly.** Since analgesia may also cause respiratory depression, infusions or boluses of opioids should also be reduced by titrating to lowest infusion rate for patient comfort.
   d) During the wake-up period, complete a full neurological assessment using the Glasgow Coma Scale.
   e) **Goal: RASS 0 to -1** – Awake and alert to lightly sedation.
   f) **Preparing for Wake-Up Assessments**
      - For patients who are at a RASS of 0 before wake-up is initiated and are appropriately communicative (eg. through head nodding or eye blinking), reduce the current rate by 25% within 15 minutes of trial

PRECEDEX® (Dexmedetomidine) [200 mcg/50 ml]	**DIPRIVAN® (propofol) 1000mg/100mL [10 mg/mL]**	**VERSED®(midazolam) 50 mg/100mL [0.5 mg/mL]**	**ATIVAN® (lorazepam) 40 mg/100mL [0.4 mg/mL]**
❖ **Start reducing infusion 30 minutes prior to breathing trial assessment** ❖ Decrease Dexmedetomidine infusion by **25%** every 15 minutes to achieve a RASS level of 0. ❖ Once the patient is at the RASS Goal of 0, proceed with weaning protocol to initiate the 3-5 minutes of spontaneous breathing**.**	❖ **Start reducing infusion 30 minutes prior to breathing trial assessment** ❖ Decrease Propofol infusion by **10 mcg/kg/minute every 15 minutes** to achieve a RASS level of 0 ❖ Once the patient is at the RASS Goal of 0, proceed with weaning protocol to initiate the 3-5 minutes of spontaneous breathing**.**	❖ **Start reducing infusion 30-60 minutes prior to breathing trial assessment** **1. Infusion rate is ≤ 10 mg/hr:** ❖ Decrease Midazolam infusion rate by **50% every 15 minutes** to achieve a RASS level of 0 **2. Infusion rate is > 10mg/hr:** ❖ Decrease Midazolam infusion rate by **25% every 15 minutes** to achieve a RASS level of 0.	❖ **Start reducing infusion 60-90 minutes prior to breathing trial assessment** **1. Intermittent IV bolus:** ❖ Administer last dose within 60-90min of trial if needed. **2. Infusion rate is ≤ 5 mg/hr:** ❖ Decrease Lorazepam infusion rate by **25% for the first hour** to achieve a RASS level of 0. ❖ If patient's RASS level is not at 0 after 1 hour, decrease Lorazepam infusion rate by **50% every hour** to achieve a RASS level of 0. **3. Infusion rate is > 5 mg/hr:** ❖ Decrease Lorazepam infusion rate by **50% every hour** to achieve a RASS level of 0.
	Once at RASS of 0, proceed with weaning protocol to initiate 3-5 minutes of spontaneous breathing.		

9. Weaning: ONLY if patient passes Spontaneous Breathing Trial

PRECEDEX® (dexmedetomidine) [200 mcg/ 50ml]	DIPRIVAN® (propofol) 1000mg/100mL [10 mg/mL]	VERSED®(midazolam) 50 mg/100mL [0.5 mg/mL]	ATIVAN® (lorazepam) 40 mg/100mL [0.4 mg/mL]
If the spontaneous breathing trial is tolerated and MD agrees to wean the patient from the ventilator then: ❖ Discontinue Dexmedetomidine.	If the spontaneous breathing trial is tolerated and MD agrees to wean the patient from ventilator, then: ❖ To wean from ventilator, continue to decrease Propofol infusion by **50% every 15 minutes**. After patient is fully weaned from ventilator, discontinue Propofol infusion (5 minutes) prior to extubation.	If the spontaneous breathing trial is tolerated and MD agrees to wean the patient from ventilator, then: ❖ To wean from ventilator, continue to decrease Midazolam infusion rate by **50% every 15 minutes**. After the patient is fully weaned from ventilator, discontinue Midazolam infusion (10 Minutes) prior to extubation.	If the spontaneous breathing trial is tolerated and MD agrees to wean the patient from ventilator, then: To wean from ventilator, ❖ Intermittent IV bolus: Only administer dose if patient displays symptoms of withdrawal. ❖ Continuous Infusion: Continue to decrease Lorazepam infusion rate by **50% every 30 minutes**. After the patient is fully weaned from ventilator, discontinue Lorazepam infusion (15 Minutes) prior to extubation

10. If patient FAILS Spontaneous Breathing Trial (SBT): Retitration of drip

PRECEDEX® (dexmedetomidine) [200 mcg / 50 ml]	DIPRIVAN (propofol) 1000mg/100mL [10 mg/mL]	VERSED (midazolam) 50 mg/100mL [0.5 mg/mL]	ATIVAN (lorazepam) 40 mg/100mL [0.4 mg/mL]
If the patient fails spontaneous breathing trial(s), gradually titrate Dexmedetomidine infusion back up to achieve a RASS of -2 ❖ Restart infusion at 50% of original rate.	If the patient fails spontaneous breathing trial(s), gradually titrate Propofol infusion back up to achieve a RASS -2 ❖ Restart infusion at 50% of original rate.	If the patient fails spontaneous breathing trial(s), gradually titrate Propofol infusion back up to achieve a RASS -2 ❖ Restart infusion at 50% of original rate	If the patient fails spontaneous breathing trial(s), gradually titrate Propofol infusion back up to achieve a RASS -2 ❖ Restart infusion at 50% of original rate