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Compassionate Ventilator Discontinuation Protocol

Step 1: Decision-Making

Ensure that a family meeting has been held with surrogate decision maker; include patient if appropriate.

RN can review COVID Visitor Policy re End of Life patients to determine if family members may visit. If unable to visit in person, explore virtual means for family to say good bye.

Step 2: Communicate the Plan

Confirm the ventilator withdrawal plan with bedside RN, Respiratory Therapist (RT), Responding MD/NP, and Attending

Step 3: Considerations & Preparation

- Discontinue alarms and cardiac monitoring.
- Stop enteral feedings as early as possible before extubation and aspirate from the feeding tube.
- Stop neuromuscular blockade (i.e. Cisatracurium) 30-60 minutes prior to extubation.

Step 4: Pre-Medication

- Administer necessary medications in preparation for vent wean (see Pre-Medication box).
- Note: these medications should be administered even if patient is comatose.
- If patient does not appear comfortable, follow “Titration for uncontrolled symptoms” box until patient is comfortable before moving to next step.

Step 5: Wean Ventilator Settings Stepwise, Assess Comfort, and Titrate Meds Prior to Vent Discontinuation

- Gradually wean existing ventilator sedation infusions as tolerated, monitoring for worsening of symptoms. Maintain lowest level of pre-existing sedation infusions that still allows for patient comfort.
- Work with RT to gradually reduce ventilator to minimal settings (PS 5 or, if patient is not breathing spontaneously, to low IMV rate of 4 per minute) monitoring and aggressively treating symptoms at each step with bolus doses of opioids for dyspnea and benzodiazepines for anxiety.
- Ensure patient can tolerate minimal ventilator support for 5 minutes with good symptom control prior to ventilator discontinuation.
- Titrate comfort medications as needed (see “Titration for Uncontrolled Symptoms” box).

Step 6: Disconnecting ET tube from Ventilator:

- If COVID+, and staying in ICU, keep ET tube in place, clamp tube carefully, disconnect tube from ventilator and place viral filter on end of tube after disconnection. Then remove clamp, being careful not to damage tube throughout.
- If plans to transfer to Palliative Care Unit or Floor, ETT should be removed with RT guidance to reduce risk of COVID transmission.
- Place patient on supplemental oxygen via nasal cannula. Remove any unnecessary medical paraphernalia (restraints, tape, etc.) leaving IV access in place.

Step 7: Ensuring Post-Extubation Comfort:

- Monitor the patient’s comfort frequently
- May need frequent medication titration for any sign of non-verbal distress (follow “Titration for Uncontrolled Symptoms” box).

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PRE-MEDICATION: (Note: Patients need to be on both analgesics and anxiolytics)

1. OPIOIDS (for dyspnea or pain):

   If patient is already on an opioid infusion:
   - If patient is already receiving PRN IV opioid doses, give 2x the most recent effective dose prior to extubation. Then use 1-2x the recent effective dose Q10-15min as needed.
   - If patient is not already receiving a PRN IV opioid dose, give a bolus of 2x the hourly infusion rate at least 10 minutes prior to extubation. Then set the PRN bolus dose at 1-2x the hourly infusion rate Q10-15 min.
   - Increase the continuous infusion by 25-50% prior to extubation.
     E.g.: A patient is on a hydromorphone infusion at 1 mg/hr. Ten minutes prior to extubation, give 2 mg IV hydromorphone and use 1-2 mg IV Q15min PRN for dyspnea and pain. Increase the infusion to 1.25-1.5mg/hr.

   If patient is NOT already on opioids:
   - Morphine – Give a bolus dose of 5-10 mg IV at least 10 minutes prior to extubation and start a continuous infusion at 50% bolus dose given. See below for titration if needed. Use morphine 5-10 mg IV Q10min PRN for dyspnea/pain.
   - Hydromorphone (preferred choice in AKI) – Give a bolus of 1-2 mg IV at least 10 minutes prior to extubation and start a continuous infusion at 50% bolus dose given. See below for titration if needed. Use hydromorphone 1-2 mg IV Q10min PRN for dyspnea/pain.
   - Fentanyl (preferred choice in AKI) – Give a bolus of 50-100 mcg IV at least 10 minutes prior to extubation and start a continuous infusion at 50% bolus dose given. See below for titration guidelines. Use fentanyl 75-150 mcg IV Q10min PRN for dyspnea/pain.

2. BENZODIAZEPINES (for anxiety):

   If the patient is NOT already on a benzodiazepine infusion:
   - Lorazepam – Give a bolus of 1-2 mg IV at least 10 minutes prior to extubation, and 1-2 mg IV Q15 min PRN thereafter for anxiety/restlessness. If needed, can start a continuous infusion of lorazepam at 1-2mg/hr.
   - Midazolam – Give a bolus of 2-4 mg IV at least 5 minutes prior to extubation, and 2-4mg IV QS min PRN thereafter. Given short half-life, may consider transition to lorazepam if patient requiring frequent boluses. If needed, can start continuous infusion of midazolam at 2-4 mg/hr.

   If the patient is already on a benzodiazepine infusion:
   - Bolus 1x the hourly rate prior to extubation as above, and then continue 0.5-1x the hourly rate Q1H PRN for anxiety/restlessness.

3. SECRETIONS: Give glycopyrrolate 0.2 mg IV 20-30 minutes prior to extubation, and then 0.2-0.6mg IV Q6H as needed for secretions.

**TITRATION OF MEDICATIONS FOR UNCONTROLLED SYMPTOMS**

Aim to keep RR < 30 (if possible) and alleviate signs/symptoms of discomfort (monitor for and treat grimacing, agitation due to pain or dyspnea, and labored breathing)

1. OPIOIDS:
   - As a rule of thumb, if a given bolus dose of IV opioid has not improved symptoms in 10 minutes, the dose should be increased by 50-100% and re-administered every 10-15 minutes until effective dose achieved.
   - The NEW effective IV bolus dose should become the NEW PRN dose and can be administered Q10-15 min PRN.
   - If PRN doses are effective but are needed more than once per hour, the continuous infusion rate should be increased based on the bolus doses administered. (Total mg of boluses given / # hours = amount to increase rate)
     E.g.: A patient is given IV hydromorphone of 1mg x 1 followed by 2mg x 2 over a period of two hours and is now comfortable. This would be a total of 5mg over 2 hours. Hence, the patient’s infusion should be increased by 2.5mg/hr.
   - Infusions take hours to reach a new steady state. **Acute symptoms must continue to be managed with bolus doses.** Infusions can be increased every 2-3 hours based on the hourly requirement of PRN doses.

2. BENZODIAZEPINES:
   - Can increase bolus dose of benzodiazepine by 50-100%. If not already on a continuous infusion, would initiate based on guidance in green box.
   - If patient requiring frequent boluses, increase infusion by 25-50% every 2-4 hours as needed.
   - If lorazepam or midazolam seem ineffective in managing anxiety/restlessness, can add haloperidol 2.5-5 mg IV Q2H PRN agitation. Restlessness can also be a sign of pain and may respond to opioids.