

## FAST FACTS AND CONCEPTS #34 SYMPTOM CONTROL FOR VENTILATOR WITHDRAWAL IN THE DYING PATIENT

Charles von Gunten MD, PhD and David E Weissman MD

**Introduction** This is the second of a three-part series. *Fast Fact #33* reviewed a protocol for removing the ventilator, and *Fast Fact #35* will review information for families.

The most common symptoms related to ventilator withdrawal are breathlessness and anxiety. Opioids and benzodiazepines are the primary medications used; concerns about unintended hastened death are exaggerated, particularly if established dosing guidelines are followed (see *Fast Fact #8*). There is no medical or ethical justification for withholding sedating medication when death following ventilator withdrawal is the expected outcome. However, increasing doses beyond the levels needed to achieve comfort/sedation, *with the intention of hastening death*, is euthanasia and is not acceptable/legal medical practice.

A 2004 study suggests that opioids and benzodiazepines do not shorten survival but do help minimize respiratory distress in terminal extubations. Therefore, pre-bolus doses should be strongly considered even for those who are comatose, in order to control labored breathing. The doses needed to control symptoms depend on the neurological status of the patient and presence of drug tolerance (these same drugs are commonly used in routine ICU care). In all cases, a senior-level physician should remain at the bedside prior to and immediately following extubation until adequate symptom control is assured.

### Medication Protocol

1. Discontinue paralytics; do not use paralytic agents for ventilator withdrawal. Besides ensuring a patient cannot breathe, they do not prevent or treat any discomfort in patients off ventilators, and prevent patients from communicating or demonstrating distress. When patients have multi-organ failure, some paralytics may not be cleared for 2-18 hours. Therefore, if there is doubt as to whether the paralytics have worn off, utilize a peripheral nerve stimulator. It is ok to extubate when you see muscle twitches with 4 consecutive nerve stimulations.
2. Administer glycopyrrolate (Robinul®) 0.2 to 0.4 mg IV 20-30 minutes prior to the extubation to minimize secretions.
3. Administer an IV bolus dose of an opioid (i.e. morphine 2-10 mg IV) and a benzodiazepine (lorazepam 1-2 mg IV) if anxiety is anticipated. Consider an IV continuous infusion of sedating medication (see below). Do not rely on subcutaneous or enteral drug administration as these take longer to work. *For children, obtain dosing advice from a pharmacist or pediatric intensivist.*
4. Titrate medications to control labored respirations and achieve the desired state of sedation prior to extubation. Testing the eyelid reflex is a common method of quickly assessing level of consciousness.
5. Have additional medication drawn up and ready to administer at the bedside if needed.
6. After ventilator withdrawal: Most respiratory distress ensues in the first few hours after the extubation. If distress is noted, utilize additional bolus doses of opioids and benzodiazepines (e.g. morphine 5-10 mg IV push q 10 min, and/or midazolam, 2-4 mg IV push q 10 min, until distress is relieved). You can adjust infusion rates to maintain relief, but remember infusion rates have a delayed effect. Therefore, avoid relying on infusion rates to control distress seen after the extubation.
7. Specific dosages are less important than the goal of symptom relief. A goal should be to keep the respiratory rate < 30 and eliminate grimacing, agitation, and labored respirations.
8. Orders such as “*morphine drip 1-20 mg/hr, titrate as needed*” are inappropriate as they will likely mismanage the acute symptom distress and place undue burden on the bedside nurse to make clinical management decisions.

**NOTE:** The following regimens are commonly used; all require a bolus dose commonly followed by a continuous infusion. Dose ranges are approximations and depend in part on patients' prior exposure to opioids and benzodiazepines. Clinicians should use clinical judgment when deciding on what specific drugs and doses to use. Many institutions have policy and clinical guidelines about the use of opioids and sedatives in these circumstances. *Clinicians unfamiliar with the use of these agents in the setting of ventilator withdrawal are urged to consult with an anesthesiologist, critical care specialist, or pain/palliative specialist prior to use.*

**Regimen A: Morphine plus Midazolam (Adult doses)**

Good for comatose patients or patients with limited consciousness and/or patients with little prior exposure to these drugs (and thus less risk of tolerance).

Bolus: Morphine 2-10 mg; Midazolam 1-2 mg

Infusion: Morphine 50% of the bolus dose in mg/hr; Midazolam 1 mg/hr

**Regimen B: Pentobarbital (Adult doses)**

Good for the awake patient who can be expected to have respiratory distress following ventilator withdrawal.

Bolus: 1-2 mg/kg (at rate of 50 mg/min)

Infusion: 1-2 mg/kg/hr

**Regimen C: Propofol (Adult doses)**

Good for the awake patient who can be expected to have demonstrable respiratory distress following ventilator withdrawal.

Bolus: 20-50 mg

Infusion: 10-100 mg/hr

**References**

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