

PAD Protocol - Pain, Agitation, and Delirium Management



Objectives

- ▶ Describe the evidence supporting the HFHS PAD policy
- ▶ Describe the process for utilizing the EPIC order set to care for critically ill patients



Patient Perspective of the ICU and Mechanical Ventilation

Commonly cited negative experiences:

- ▶ Impaired cognitive function, inability to participate in care
- ▶ Problems with sleeping, pain, and anxiety
 - ▶ 38.5% remember being in pain (i.e. line placement)
 - ▶ 55.2% remember feeling tense or keyed up



PAD Protocol: Analagosedation approach

- ▶ The purpose of the PAD Protocol is to guide the bedside clinicians in ordering medications to appropriately treat pain, agitation and delirium in the intubated patient and to decrease adverse drug events
- ▶ Patients that are excluded from the protocol:
 - ▶ Patients who are pharmacologically paralyzed
 - ▶ Patients whose life support is being withdrawn
 - ▶ Patients not on the ventilator
 - ▶ Patients who are actively withdrawing from alcohol
 - ▶ Patients in status epilepticus



Definitions

Pain

- Unpleasant sensory and emotional experience associated with actual or potential tissue damage

Agitation

- Syndrome of excessive motor activity, usually non-purposeful and associated with internal tension

Delirium

- Disturbance of consciousness and cognition that develops over a short period of time and fluctuates



Identifying Pain in the Critically Ill

- ▶ Physiologic indicators (hypertension, tachycardia) poorly correlate with pain
- ▶ Self-report of pain is the “gold standard” (VAS: 0-10)
 - ▶ ≥ 4 : significant pain
 - ▶ Goal NRS is ≤ 4
- ▶ The Society of Critical Care Medicine (SCCM) recommends using the critical care pain observation tool (CPOT)
 - ▶ Most valid and reliable behavioral measures of pain in those unable to self-report
- ▶ Frequency of pain assessment with VAS or CPOT:
 - ▶ ≥ 4 times per 8 hour shift and as needed



Identifying Pain in the Critically Ill

▶ Critical Care Pain Observation Tool (CPOT):

- ▶ 0 – 8 scale
- ▶ 0 indicates no pain
- ▶ Treat pain if score ≥ 3
- ▶ Goal CPOT: 1-2
- ▶ Treat within 30 minutes and reassess

Item	Description	Score
Facial Expression	Relaxed, neutral	0
	Tense	1
	Grimacing	2
Body Movements	Absence of movements	0
	Protection	1
	Relentlessness	2
Muscle Tension	Relaxed	0
	Tense, rigid	1
	Very tense or rigid	2
Compliance with MV – or – Vocalization	Tolerating MV or normal breaths	0
	Coughing with MV or moaning	1
	Fighting MV or crying out	2



Monitoring Agitation in the ICU

- ▶ The SCCM recommends using the Richmond agitation-sedation scale (RASS)
- ▶ Frequency of agitation assessment:
 - ▶ ≥ 4 times per shift (8 hour) and as needed



Monitoring Sedation in the ICU: RASS

RASS

Score	Term	Description
+ 4	Combative	Overtly combative, violent
+ 3	Very agitated	Removes devices, aggressive
+ 2	Agitated	Non-purposeful movements
+ 1	Restless	Anxious, but not vigorous
0	Alert and calm	
- 1	Drowsy	Sustained awakening by voice
- 2	Light sedation	Awakes, eye contact to voice
- 3	Moderate sedation	Movement/eyes open to voice
- 4	Deep sedation	Movement to physical stimulus
- 5	Unable to rouse	No response to voice/physical stimulus



PAD Protocol Overview

PAD protocol has been split into two separate sections / orders

1. Light sedation

- ▶ This will be ordered for most ventilated patients
 - ▶ Goal CPOT of 1-2 (NRS \leq 4) and RASS -2 to 0

2. Deep Sedation

- ▶ This will be ordered on select patients:
 - ▶ Patient that will be paralyzed
 - ▶ Patients with tenuous airways or hemoptysis
 - ▶ Patients requiring prone position
- ▶ Goal CPOT of 1-2 is RASS of -4 or -5



Evidence for Goal Level of Sedation in the ICU

- ▶ Sedatives should be titrated to maintain a light rather than deep level of sedation, unless clinically contraindicated
 - ▶ Light sedation: RASS: -2 to 0
 - ▶ Deep sedation: RASS: -5 to -4
- ▶ Pharmacologic induced coma (deep sedation) is associated with delirium and increased ventilator days
- ▶ Multiple studies have demonstrated that light vs. deep sedation dose not impact self-extubation rates



HFHS PAD Protocol Goal Sedation Levels

- ▶ Light Sedation:
 - ▶ CPOT goal of 1-2 (NRS \leq 4) and a RASS goal of -2 to 0, CAM-ICU negative
 - ▶ Scheduled oral oxycodone is first line if GI tract is functioning
 - ▶ Patients that are not able to self report a NRS and patient is NPO or lacks GI tolerance; Fentanyl will be the medication of choice and ordered PRN based on CPOT scores.
 - ▶ If a patient fails PRN dosing of fentanyl, a continuous infusion can be ordered.



HFHS PAD Protocol Goal Sedation Levels

- ▶ Deep Sedation:
 - ▶ CPOT goal of 0-2 RASS goal of -5 to -4
- ▶ Options:
 1. IV analgesic & sedative continuous infusions



Pharmacologic Management of Pain

Opiates	Mechanism of action	Onset (IV)	Half-life (t 1/2)	Metabolism (Active metabolite)
1 st Line if functioning GI Tract: Oxycodone	mu-receptor agonist	1-2 hrs	5.5 hr	CYP3A4 and CYP2D6 (yes)
Fentanyl	mu-receptor agonist	1-2 min	2-4 hr	C3A4/5 (none)
Morphine	mu-receptor agonist	5-10 min	3-4 hr	Glucuronidation (6 & 3-glucuronide metabolite)
Hydromorphone	mu-receptor agonist	5-15 min	2-3 hr	Glucuronidation (none)



Selection of Sedative Agent

- ▶ Guidelines recommend using non- BZD sedatives (dexmedetomidine or propofol) over BZD to improve clinical outcomes in MV patients
- ▶ A meta-analysis including six trials (n = 1,235) found that non-BZD sedatives compared to BZD were associated with a shorter ICU LOS (1.62 days; $p < 0.05$) and duration of MV (1.9 days; $p < 0.05$)



Sedative Agents

Agent	Mechanism of action	Onset (IV)	Elimination t _{1/2} (context sensitive t _{1/2})	Metabolism	Active metabolite
Dexmedetomidine	α ₂ agonist	5–10 min	1.8–3.1 hr	Hepatic	No
Propofol	GABA agonist, NMDA antagonist	1–2 min	3–12 hr (50 ± 18.6 hr)	Hepatic	No
2 nd line: Midazolam	GABA agonist	2–5 min	3–11 hr	Hepatic	Yes



Adverse Effects of Sedatives

Midazolam

Respiratory depression,
hypotension

Delirium

Lorazepam

Respiratory depression,
hypotension

Propylene glycol-related
acidosis

Delirium

Propofol

Respiratory depression,
hypotension,
bradycardia

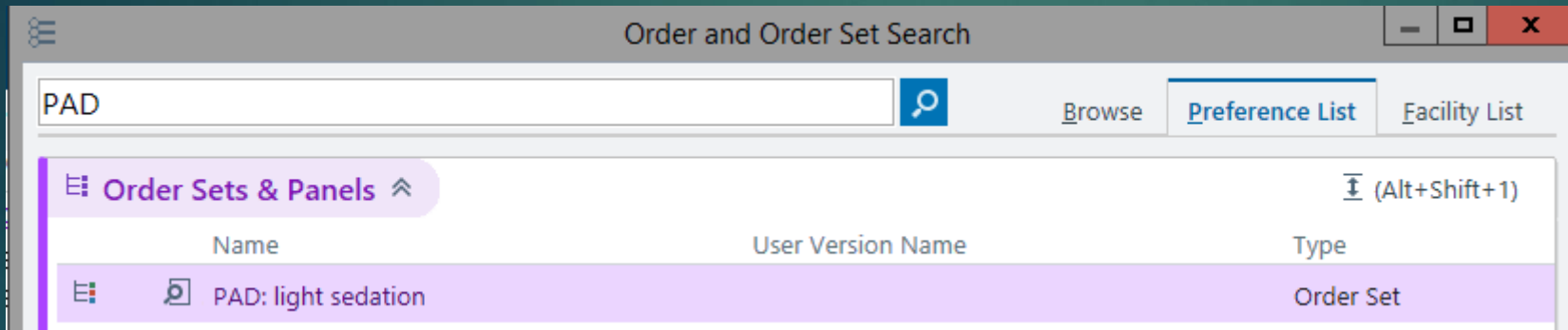
hypertriglyceridemia,
pancreatitis, propofol
infusion syndrome

Dexmedetomidine

Bradycardia,
hypotension



Ordering the PAD Light Sedation Protocol in EPIC



PAD: light sedation ^

- PAD for the ventilated patient

Medications

Light Sedation

- Light Sedation - Has gastric tolerance and is able to intermittently communicate needs
- Light Sedation - Has gastric tolerance and unable to communicate needs
- Light Sedation - NPO/lacks gastric tolerance and is unable to communicate needs

Special Circumstances Medications - Light Sedation

- Light Sedation - Morphine
- Light Sedation - HYDROMORPHONE
- Light Sedation - Ketamine infusion



Light Sedation Options: Functioning GI Tract

PAD: light sedation ^

- PAD for the ventilated patient

▼ Medications

▼ Light Sedation

Light Sedation - Has gastric tolerance and is able to intermittently communicate needs

oxyCODONE (ROXICODONE) immediate release tablet 5 mg
5 mg, Oral, Every 4 hours PRN, pain, Pain score > 4 or CPOT > 2, starting today at 1006, For 7 days
Dose range: oxycodone 5-30 mg
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 45 mg MEDD for this order

PAD: light sedation ^

- PAD for the ventilated patient

▼ Medications

▼ Light Sedation

Light Sedation - Has gastric tolerance and is able to intermittently communicate needs

Light Sedation - Has gastric tolerance and unable to communicate needs

oxyCODONE (ROXICODONE) immediate release tablet 5 mg
5 mg, Oral, Every 4 hours, Next dose today at 1100, For 7 days
Dose range: oxycodone 5-30 mg

CPOT 0 and RASS -3 to -5: Notify provider for potential reduced dose or frequency adjustment

CPOT 0 to 2 and RASS -2 to 0: Maintain current dose and frequency

CPOT > 2: Notify provider for increased dose or frequency adjustment

Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 45 mg MEDD for this order



Light Sedation Options: Non-functioning GI Tract

ⓘ PAD: light sedation ⤴

- PAD for the ventilated patient

▼ Medications

▼ Light Sedation

- Light Sedation - Has gastric tolerance and is able to intermittently communicate needs
- Light Sedation - Has gastric tolerance and unable to communicate needs
- ⓘ Light Sedation - NPO/lacks gastric tolerance and is unable to communicate needs

- Light Sedation - fentaNYL intermittent dosing
- Light Sedation - fentaNYL bolus and continuous infusion
- Light Sedation - Adjunct Medications once fentaNYL is at maximum dose and CPOT is > 2



Light Sedation Options: Non-functioning GI Tract

Light Sedation - NPO/lacks gastric tolerance and is unable to communicate needs

Light Sedation - fentaNYL intermittent dosing

fentaNYL (PF) (SUBLIMAZE) injection 50 mcg
50 mcg, Intravenous, Every 1 hour PRN, other, prior to noxious activities/events, Starting today at 1013, For 7 days
LIGHT SEDATION

Dose range: fentaNYL 50-100 mcg - based on provider order.

To be given if needed prior to noxious activities/events - such as wound care, turning, x-rays, mobilization, line/tube removal, etc.
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 360 mg MEDD for this order

And

fentaNYL (PF) (SUBLIMAZE) injection 50 mcg
50 mcg, Intravenous, Once as needed, CPOT > 2, Starting today at 1013, For 1 dose
LIGHT SEDATION

Dose range: fentaNYL 50-100 mcg - based on provider order.

If CPOT > 2 - Give initial first dose of fentanyl. Reassess in 10 minutes.
If CPOT is less than or equal to 2 in 10 minutes, doses can be administered as often as every 60 minutes. If patient requires more infusion beginning at 25 mcg/hour.
If CPOT > 2 in 10 minutes, begin fentanyl infusion at 25 mcg/hour.
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 15 mg MEDD for this order

And

fentaNYL (PF) (SUBLIMAZE) injection 50 mcg
50 mcg, Intravenous, Every 1 hour PRN, CPOT > 2, Starting today at 1013, For 7 days
LIGHT SEDATION

Dose range: fentaNYL 50-100 mcg - based on provider order.

CPOT 0-2 = no dose required

CPOT > 2 = Give initial dose of fentanyl based on provider order. Reassess CPOT in 10 minutes.
If CPOT > 2, begin fentanyl infusion at 25 mcg/hour.
If CPOT is < /= 2 in 10 minutes, doses can be administered as often as every 60 minutes. If patient requires more frequent doses
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 360 mg MEDD for this order

Light Sedation - fentaNYL bolus and continuous infusion

fentaNYL bolus from bag 50 mcg
50 mcg, Intravenous, Every 1 hour PRN, other, prior to noxious activities/events, Starting today at 1014, For 7 days
LIGHT SEDATION

Dose range: fentaNYL 50-100 mcg - based on provider order.

To be given if needed prior to noxious activities/events - such as wound care, turning, x-rays, mobilization, etc.
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 360 mg MEDD for this order

And

fentaNYL bolus from bag 50-100 mcg
50-100 mcg, Intravenous, Every 10 min PRN, CPOT > 2, Starting today at 1014, For 7 days
LIGHT SEDATION

TITRATION DOSE:

CPOT 3-5: Give fentanyl 50 mcg and increase infusion by 25 mcg/hour.
CPOT 6-8: Give fentanyl 100 mcg IV bolus and increase infusion by 25 mcg/hour.
TITRATION FREQUENCY: As often as every 10 minutes.
Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 2,160-4,320 mg MEDD for this order

And

fentaNYL (SUBLIMAZE) 1000 mcg in 0.9% Sodium Chloride infusion PREMIX
at 2.5-30 mL/hr, Intravenous, Continuous, Starting today at 1100, For 7 days
LIGHT SEDATION

GOAL EFFECT: CPOT 1-2

STARTING DOSE: 25 mcg/hour based on provider order.

DOSE RANGE: 25-300 mcg/hour

TITRATION DOSE:

CPOT 0: Decrease infusion by 25 mcg/hour
CPOT 1-2: Maintain current infusion rate
CPOT 3-5: Give fentanyl 50 mcg IV bolus and increase infusion by 25 mcg/hour.
CPOT 6-8: Give fentanyl 100 mcg IV bolus and increase infusion by 25 mcg/hour.
RASS -3 to -5: Infusions must be stopped until the patient's RASS is -2 to 0.
TITRATION FREQUENCY: as often as every 10 minutes. While actively dosing and titrating fentanyl, the

Fentanyl infusion can be titrated to a maximum dose of 300 mcg/hour if used as a stand alone infusion.

CONTACT PROVIDER: If maximum infusion rate is reached and CPOT remains > 2, notify provider for dex adjunct medication.

Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.
If applicable, assess total MOSS score prior to administration to avoid unintended sedation.
Maximum MEDD: 180-2,160 mg MEDD for this order



Light Sedation Options: Non-functioning GI Tract

! PAD: light sedation ⤴

- PAD for the ventilated patient

▼ Medications

▼ Light Sedation

- Light Sedation - Has gastric tolerance and is able to intermittently communicate needs
- Light Sedation - Has gastric tolerance and unable to communicate needs
- Light Sedation - NPO/lacks gastric tolerance and is unable to communicate needs
 - Light Sedation - fentaNYL intermittent dosing
 - Light Sedation - fentaNYL bolus and continuous infusion
 - ! Light Sedation - Adjunct Medications once fentaNYL is at maximum dose and CPOT is > 2**
 - Light Sedation - Dexmedetomidine (drug of choice)
 - Light Sedation - Propofol



Light Sedation Options: Non-functioning GI Tract

Light Sedation - Dexmedetomidine (drug of choice)

✓ dexmedetomidine (PRECEDEX) 200 mcg in sodium chloride 0.9 % infusion ⓘ
0.2-1.5 mcg/kg/hr × 74.8 kg (3.74-28.05 mL/hr, rounded to 3.7-28.1 mL/hr), Intravenous, at 3.7-28.1 mL/hr, Continuous, Starting today at 1100

LIGHT SEDATION

GOAL EFFECT: Richmond Agitation Assessment Score (RASS) Score -2 to 0

STARTING DOSE: 0.5 mcg/kg/hour

DOSE RANGE: 0.2-1.5 mcg/kg/hour

TITRATION DOSE:

30 minutes after dexmedetomidine is started, decrease narcotic infusion by 50% every 10 minutes until infusion is off. If unable to titrate narcotic for patient and narcotic should be restarted.

RASS 1-4 = Increase dexmedetomidine infusion by 0.1 mcg/kg/hour

RASS -2 to 0 (goal score) = Continue same dose

RASS -5 To -3 = decrease infusion by 0.1 mcg/kg/hour.

WEANING INSTRUCTIONS: Decrease infusion by 0.1 mcg/kg/hour every 10 minutes until 0.2 mcg/kg/hour is reached. Keep this rate until bag is empty.

TITRATION/WEANING FREQUENCY: As often as every 10 minutes.

While actively dosing and titrating dexmedetomidine, the RASS will be assessed every 10 minutes until goal reached. Then, every 4 hour RASS assessments.

If maximum dose is reached and RASS is > 0, dexmedetomidine should be discontinued and fentanyl be restarted. Once dexmedetomidine is discontinued, fentanyl should be restarted at 0.5 mcg/kg/hour. Fentanyl should be discontinued if goal is not met.

CONTACT PROVIDER: If patient is extubated and dexmedetomidine is to be continued for further orders.

HIGH ALERT Medication, Fall Risk Medication

Light Sedation - Propofol

propofol (DIPRIVAN) infusion ⓘ

5-80 mcg/kg/min × 74.8 kg (2,244-35,904 mL/hr, rounded to 2.2-35.9 mL/hr), Intravenous, at 2.2-35.9 mL/hr, Continuous, Starting today at 1100

LIGHT SEDATION

GOAL EFFECT: RASS -2 to 0

STARTING DOSE: 5 mcg/kg/minute based on provider order.

DOSE RANGE: 5-80 mcg/kg/minute

TITRATION/WEANING DOSE:

RASS > than 0 = Increase propofol infusion by 5 mcg/kg/minute

RASS -2 to 0 (goal score) = Continue same dose

RASS -5 To -3 = decrease infusion by 5 mcg/kg/minute

TITRATION/WEANING FREQUENCY: As often as every 10 minutes.

While actively dosing and titrating propofol, the RASS will be assessed every 10 minutes until goal reached. Then, every 4 hour RASS assessments.

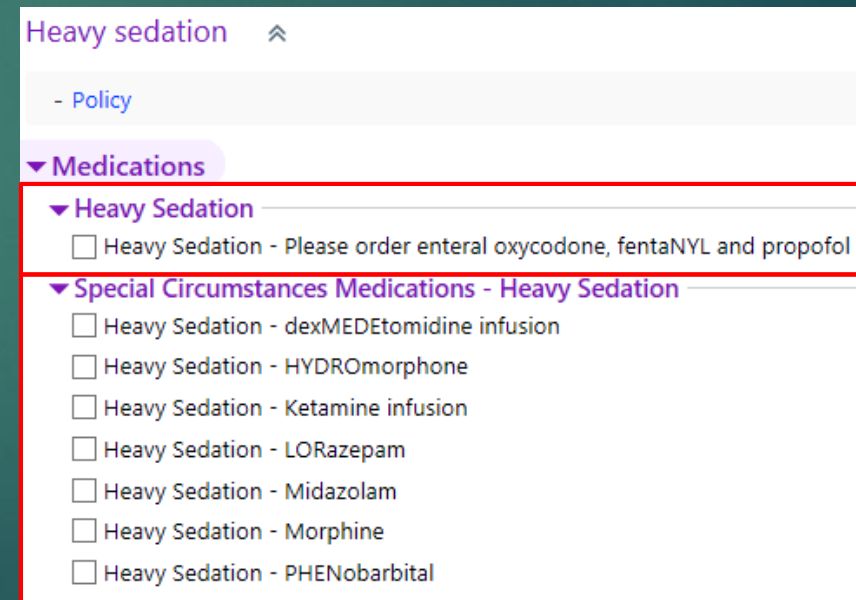
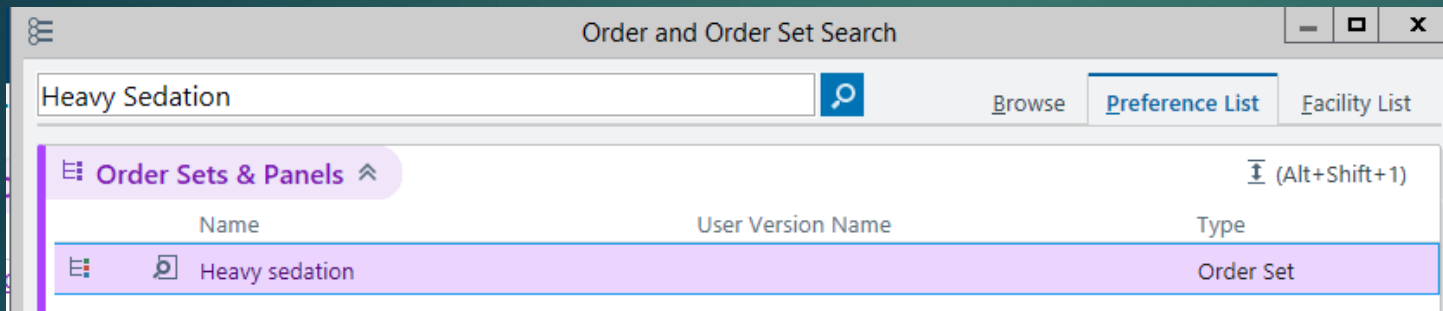
Stop propofol for sedation vacation or spontaneous awakening trial every morning at 0500.

CONTACT PROVIDER: If maximum dose of 80 mcg/kg/minute is reached and RASS remains greater than 0.

Fall Risk Medication



Ordering the PAD Heavy “Deep” Sedation Protocol in EPIC



Deep Sedation Options



! Heavy sedation ^

- Policy

▼ Medications

▼ Heavy Sedation

! Heavy Sedation - Please order enteral oxycodone, fentaNYL and propofol

Enteral Oxycodone - Should be ordered on all patients who can tolerate enteral meds

fentaNYL bolus and continuous infusion - Heavy Sedation

Propofol - Heavy Sedation

Scheduled enteral benzodiazepine - consider in patients on higher doses of sedative infusions or on a benzodiazepine infusion

Scheduled enteral antipsychotic - consider in patients on higher doses of sedative infusions and/or those with uncontrolled agitation.



Deep Sedation Orders

Heavy Sedation - Please order enteral oxycodone, fentaNYL and propofol

Enteral Oxycodone - Should be ordered on all patients who can tolerate enteral meds

fentaNYL bolus and continuous infusion - Heavy Sedation

fentaNYL (PF) (SUBLIMAZE) injection 50 mcg ⓘ

[50 mcg, Intravenous, Once, today at 1100, For 1 dose](#)

[HEAVY SEDATION](#)

[Dose range 50-100 mcg - based on provider order](#)

[Fall Risk Medication, HIGH ALERT Medication, Look Alike/Sound Alike Medication,](#)

[If applicable, assess total MOSS score prior to administration to avoid unintended sedation,](#)

[Maximum MEDD: 15 mg MEDD for this order](#)

And

fentaNYL bolus from bag 100 mcg

100 mcg, Intravenous, Every 10 min PRN, RASS -3 to +4, Starting today at 1035, For 7 days

HEAVY SEDATION

GOAL EFFECT: RASS = -4 to -5

TITRATION DOSE:

RASS = -3 to 0: Give fentaNYL 100 mcg bolus and increase fentaNYL infusion by 25 mcg/hr.

RASS = +1 to +4: Give fentaNYL 100 mcg bolus and increase fentaNYL infusion by 50 mcg/hr. Reassess RASS in 10 minutes.

TITRATION/WEANING FREQUENCY: As often as every 10 minutes.

Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.

If applicable, assess total MOSS score prior to administration to avoid unintended sedation.

Maximum MEDD: 4,320 mg MEDD for this order

And

fentaNYL (SUBLIMAZE) 1000 mcg in 0.9% Sodium Chloride infusion PREMIX

at 2.5-30 mL/hr, Intravenous, Continuous, Starting today at 1100, For 7 days

HEAVY SEDATION

GOAL EFFECT: RASS = -4 to -5

STARTING DOSE: 25 mcg/hour based on provider order.

DOSE RANGE: 25-300 mcg/hour

TITRATION DOSE:

RASS = -3 to 0: Give fentaNYL 100 mcg bolus and increase fentaNYL infusion by 25 mcg/hr.

RASS = +1 to +4: Give fentaNYL 100 mcg bolus and increase fentaNYL infusion by 50 mcg/hr. Reassess RASS in 10 minutes.

TITRATION/WEANING FREQUENCY: As often as every 10 minutes.

Each time sedation infusion is titrated, the opioid infusion will be titrated.

Once maximum dose of fentaNYL 300 mcg/hour is reached, continue to titrate the sedation infusion based on the MAR administration instructions.

CONTACT PROVIDER: Once both opioid and sedative infusions are maxed and RASS is +4 to -3.

Fall Risk Medication. HIGH ALERT Medication. Look Alike/Sound Alike Medication.

If applicable, assess total MOSS score prior to administration to avoid unintended sedation.

Maximum MEDD: 180-2,160 mg MEDD for this order

Heavy Sedation

Heavy Sedation - Please order enteral oxycodone, fentaNYL and propofol

Enteral Oxycodone - Should be ordered on all patients who can tolerate enteral meds

fentaNYL bolus and continuous infusion - Heavy Sedation

Propofol - Heavy Sedation

propofol (DIPRIVAN) infusion

10-80 mcg/kg/min × 92.8 kg (5,568-44,544 mL/hr, rounded to 5.6-44.5 mL/hr), Intravenous, at 5.6-44.5 mL/hr, Continuous, Starting today at 1100

HEAVY SEDATION

GOAL EFFECT: RASS -4 to -5.

STARTING DOSE: 10 to 20 mcg/kg/minute based on provider order.

DOSE RANGE: 10 to 80 mcg/kg/minute

TITRATION DOSE:

RASS = -3 or greater = Increase propofol infusion by 10 mcg/kg/minute.

TITRATION FREQUENCY: As often as every 10 minutes.

Each time sedation infusion is titrated, the opioid will be bolused and the infusion will be titrated based on the MAR administration instructions.

Once maximum dose of propofol 80 mcg/kg/minute is reached, continue to titrate opioid agent based on MAR administration instructions until maximum dose is reached.

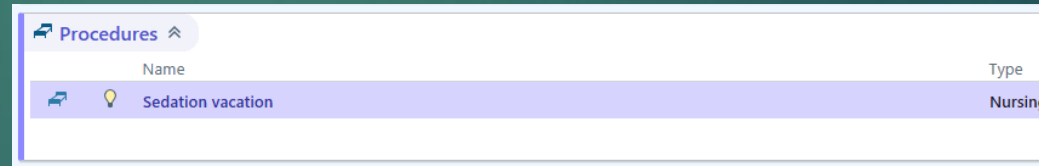
CONTACT PROVIDER: If both opioid and sedative infusions are maxed and RASS is +4 to -3.

Fall Risk Medication



Sedation Awakening Trials

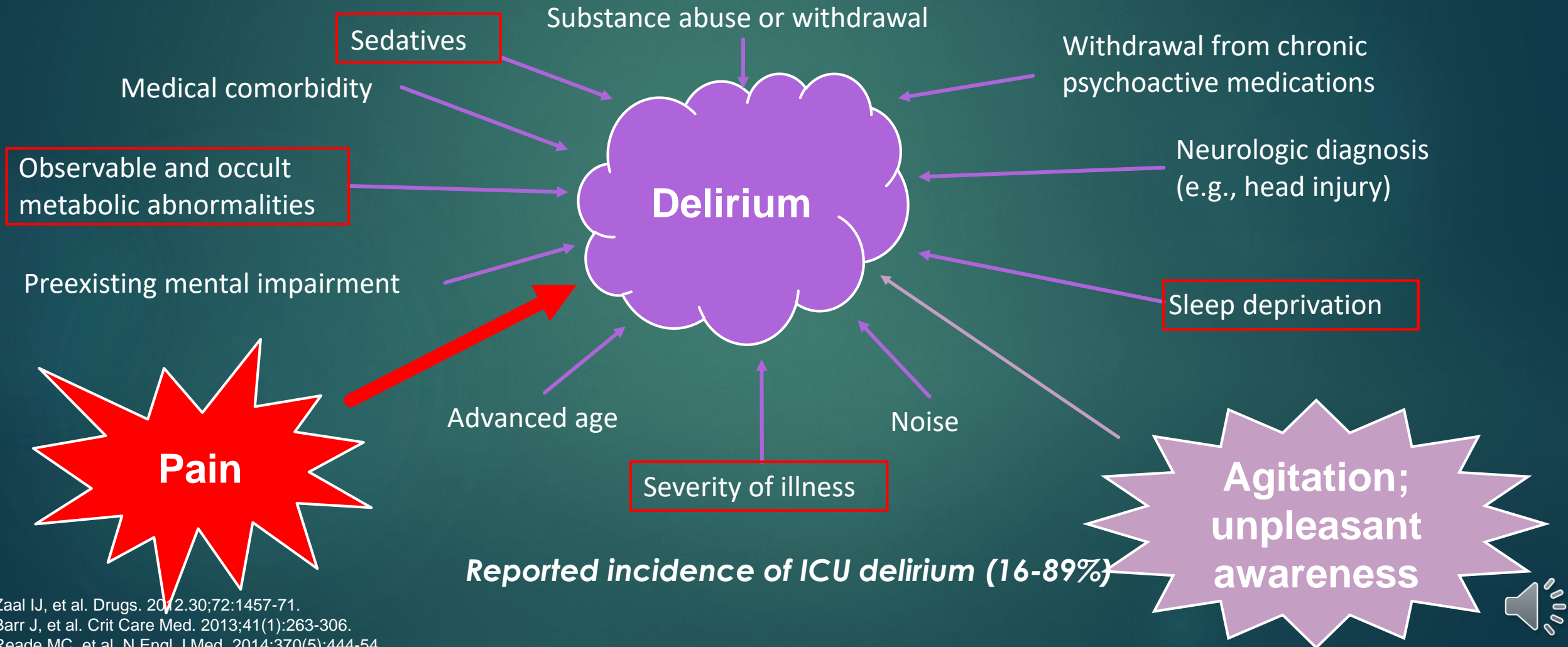
- ▶ For light sedation there should be no need to order a SAT or Sedation Vacation
 - ▶ The goal is to always have an interactive patient
 - ▶ If patient is on enteral medications, the nurse will notify provider to decrease dose or increase frequency of medication administration
 - ▶ If on an infusion, the nurse will titrate medication so that RASS is -2 to 0.
- ▶ For Heavy Sedation, the provider will enter an order to perform an SAT or Sedation Vacation
 - ▶ The nurse will turn off all sedation and pain medication and keep off unless:
 - ▶ RASS >0
 - ▶ CPOT > 2
 - ▶ Sat<88%
 - ▶ Respiratory distress
 - ▶ Acute arrhythmias
 - ▶ If any of those occur, the medications will return to the previous rate and the provider will be notified



Procedures ^	
Name	Type
Sedation vacation	Nursing

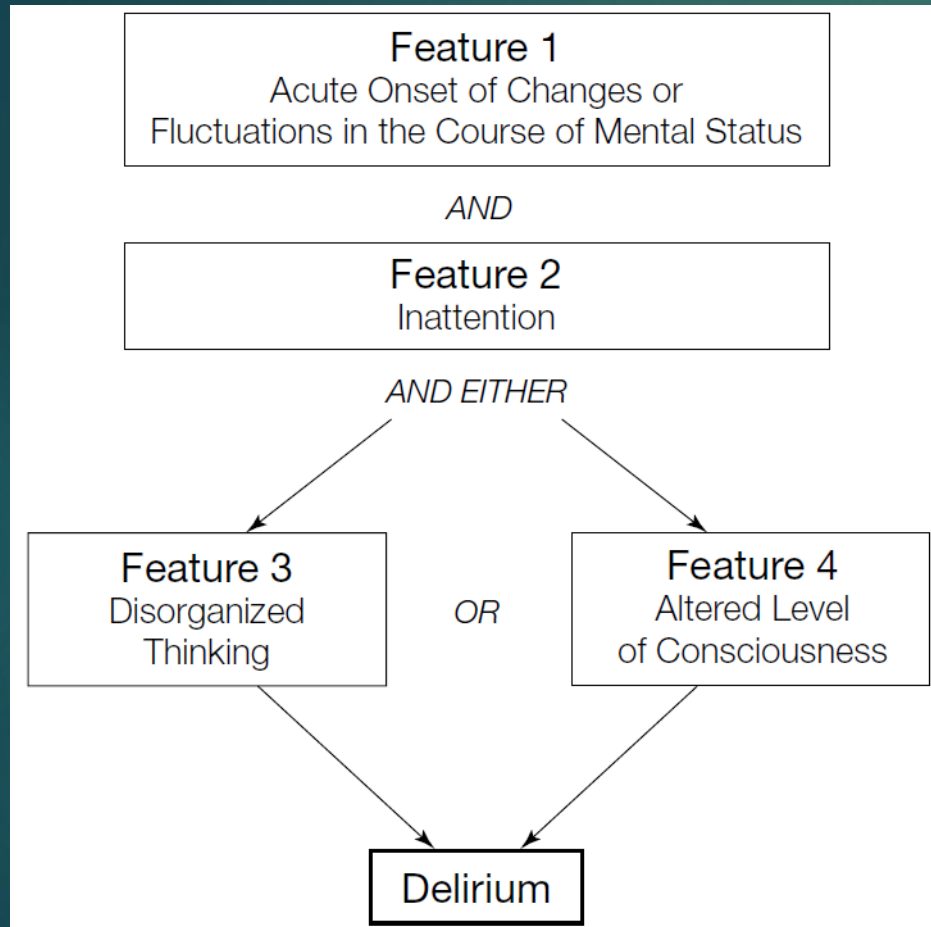


Sources of Delirium in the ICU



Zaal IJ, et al. *Drugs*. 2012;30;72:1457-71.
Barr J, et al. *Crit Care Med*. 2013;41(1):263-306.
Reade MC, et al. *N Engl J Med*. 2014;370(5):444-54.

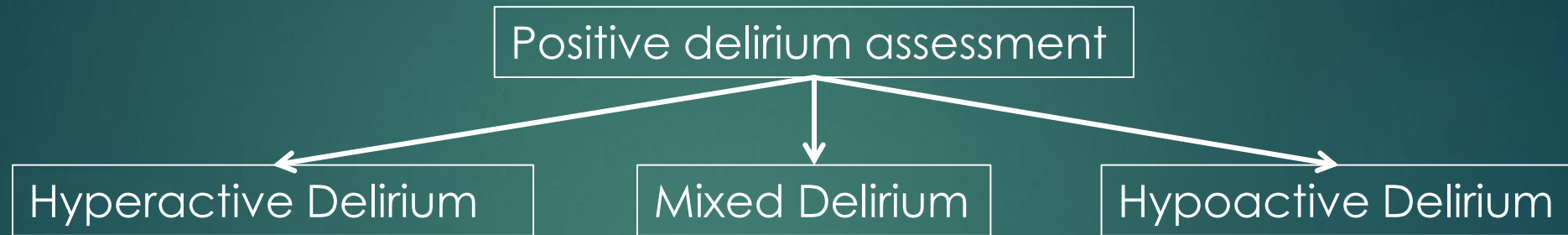
CAM-ICU Scale



- ▶ Scale is either negative (not delirious) or positive (delirium present)
 - ▶ Done every 8-12 hours
 - ▶ Snapshot of mental status at time of assessment
- ▶ Patients must have features 1 & 2 with either feature 3 or 4 to score positive



Subtypes of Delirium



Hyperactive characteristics:

- Agitation (RASS +1 to + 4)
- Associated with hallucinations/delusions
- Prevalence: 1-1.6%



Mixed:

- Prevalence: 6-54.9%



Hypoactive characteristics:

- Apathetic, calm or lethargic (RASS -3 to 0)
- Associated with confusion and sedation
- Prevalence: 43.5-64%



Guideline Recommendations: Treatment

- ▶ Atypical antipsychotics may reduce the duration of delirium
 - ▶ A pilot study (n = 36) of **quetiapine** demonstrated a 3.5 day reduction in delirium
 - ▶ No difference in ICU LOS, MV days or mortality
 - ▶ Large randomized trials have failed to show benefit of olanzapine and haloperidol
- ▶ Delirious patients that require continuous IV sedation can receive dexmedetomidine rather than BZD to reduce the duration of delirium
 - ▶ Significant daily reduction (~20%) in delirium



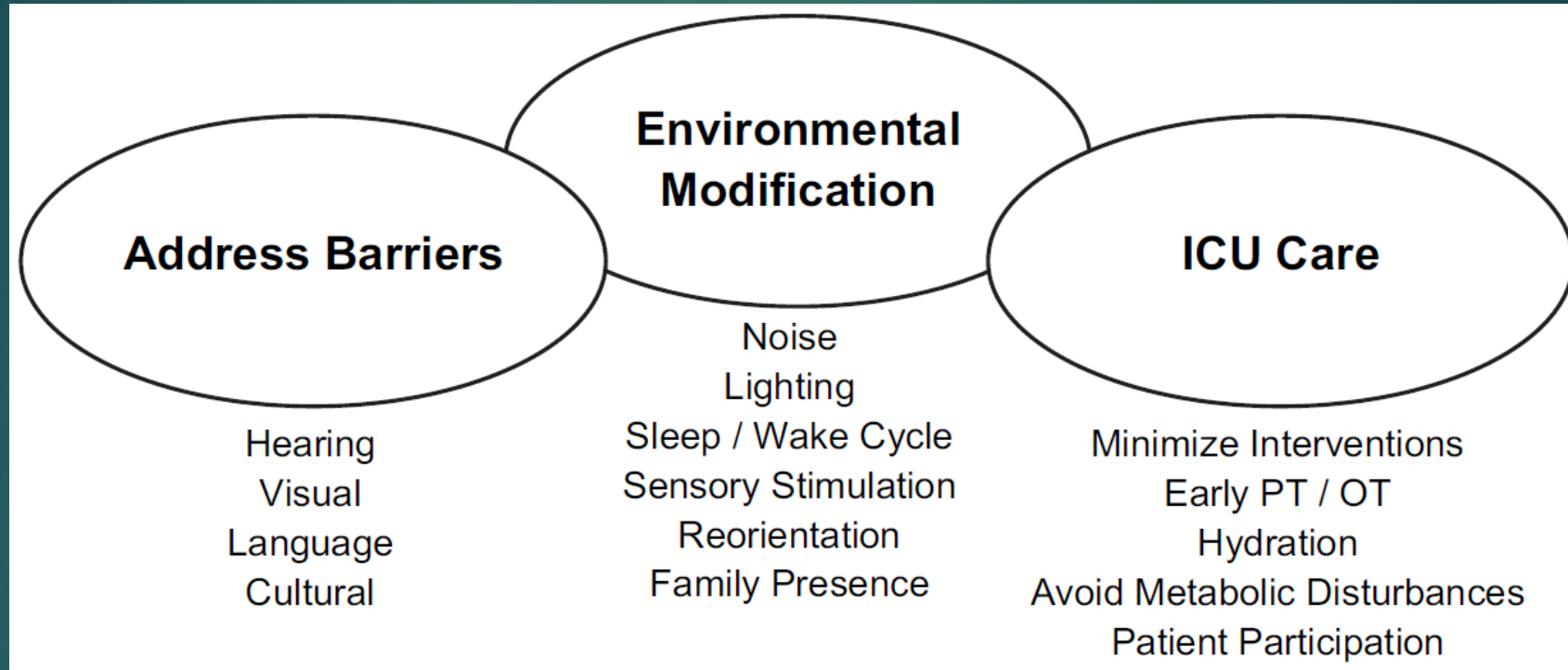
Pharmacotherapy of Hyperactive Delirium

Drug	Antipsychotic Class	Route	Dosing for ICU Delirium	Duration studied	Adverse effects
Quetiapine	Atypical	PO	50 mg PO Q 12 Hrs	10 days	QT prolongation, TdP, NMS

Consider discontinuation of antipsychotic at the resolution of delirium
Agents should be discontinued before leaving the ICU



Non-pharmacologic Management



Removal of unnecessary deliriogenic medications:

- Continuous infusion BZD, corticosteroids, anticholinergics



Home Medications

- ▶ When home psychiatric medications are held, patients are less likely to be at RASS goal and have increased risk of ICU delirium
 - ▶ If no contraindication exists, home psychiatric medications should be continued
- ▶ Neuropathic home medications should be continued
 - ▶ Opioid agents are inferior for management of neuropathic pain



Summary

- ▶ Light sedation is the most common strategy that should be employed for most mechanically ventilated ICU patients
 - ▶ Light sedation goal: CPOT of 1-2 and a RASS of -2 to 0
- ▶ The HFHS PAD protocol uses an analagosedation approach
 - ▶ GI tract functioning: scheduled oxycodone
 - ▶ GI tract not functioning: Fentanyl IVP PRN or continuous infusion
 - ▶ If RASS is not at goal despite adequate pain control (CPOT 0-2), a sedative agent can be added
- ▶ If a patient is agitated they should be screened for ICU delirium

