




Comfort and Sedation

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◆ Patient in the critical care unit experience pain from diseases ,invasive procedures ,trauma ,monitoring devices ,endotracheal tubes, routine nursing care ,suctioning ,dressing changes, patient positioning and prolonged immobility

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- ◆ Unrelieved pain may contribute to inadequate sleep ,exhaustion ,anxiety ,disorientation and agitation
 - ◆ Pain and anxiety are major contributors to patient morbidity and length of stay

Physiological responses to pain and anxiety

- ◆ Tachycardia
- ◆ Tachypnea
- ◆ Hypertension
- ◆ Increased cardiac output
- ◆ Pallor and flushing
- ◆ Pupillary dilation
- ◆ Diaphoresis and sleep disturbance
- ◆ Increased glucose production
- ◆ Nausea ,urinary retention and constipation

Psychological negative effects of pain and anxiety

- ◆ Depression
- ◆ General anxiety
- ◆ PTSD
- ◆ Delirium
- ◆ Agitation

- Half of critically ill patients recall having pain ,anxiety and fear as a stressful experiences during ICU hospitalization

Preventing and treating pain and anxiety

- ◆ Pain assessment

- ◆ Assessment of agitation

- ◆ Assessment of delirium

Pain assessment

- ◆ For patients who can communicate use PQRST for assessing chest pain and visual analog scale (VAS)
- ◆ Patients who unable to communicate use Behavioral pain scale (BPS) and the critical-care pain observation tool (CPOT)

Behavioral pain scale (BPS)

Item	Description	Score
Facial expression	Relaxed	1
	Partially tightened	2
	Fully tightened	3
	Grimacing	4
Upper limbs	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with ventilation	Tolerating movement	1
	Coughing but tolerating ventilation for most of the time	2
	Fighting ventilator	3
	Unable to control ventilation	4

CPOOT

Critical Care Pain Observation Tool

Indicator	Description	Score	
Facial expression	No muscular tension observed	Relaxed, neutral	0
	Presence of frowning, brow lowering, orbit tightening, and levator contraction	Tense	1
	All of the above facial movements plus eyelid tightly closed	Grimacing	2
Body movements	Does not move at all (does not necessarily mean absence of pain)	Absence of movements	0
	Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements	Protection	1
	Pulling tube, attempting to sit up, moving limbs/ thrashing, not following commands, striking at staff, trying to climb out of bed	Restlessness	2
Muscle tension Evaluation by passive flexion and extension of upper extremities	No resistance to passive movements	Relaxed	0
	Resistance to passive movements	Tense, rigid	1
	Strong resistance to passive movements, inability to complete them	Very tense or rigid	2
Compliance with the ventilator (intubated patients)	Alarms not activated, easy ventilation	Tolerating ventilator or movement	0
	Alarms stop spontaneously	Coughing but tolerating	1
	Asynchrony: blocking ventilation, alarms frequently activated	Fighting ventilator	2
OR			
Vocalization (extubated patients)	Talking in normal tone or no sound	Talking in normal tone or no sound	0
	Sighing, moaning	Sighing, moaning	1
	Crying out, sobbing	Crying out, sobbing	2

Assessment of agitation

- ◆ Agitation produces hyperactive psychomotor functions including tachycardia ,hypertension and movement.
- ◆ The goal is to maintain light levels of sedation ,which is associated with shorter duration of mechanical ventilation and shorter of ICU length of stay
- ◆ Sedation measurement tools are (RASS) and (SAS)

Richmond Agitation and Sedation Scale (RASS)

+4	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, apprehensive but movements not aggressive or vigorous
0	Alert & calm	
-1	Drowsy	Not fully alert, but has sustained awakening to <i>voice</i> (eye opening & contact \geq 10 sec)
-2	Light sedation	Briefly awakens to <i>voice</i> (eye opening & contact < 10 sec)
-3	Moderate sedation	Movement or eye-opening to <i>voice</i> (but no eye contact)
-4	Deep sedation	No response to <i>voice</i> , but movement or eye opening to <i>physical</i> stimulation
-5	Unarousable	No response to <i>voice or physical</i> stimulation

Sedation-Agitation Scale (SAS)

Score	State	Behaviors
7	Dangerous Agitation	Pulling at ET tube, climbing over bedrail, striking at staff, thrashing side-to-side
6	Very Agitated	Does not calm despite frequent verbal reminding, requires physical restraints
5	Agitated	Anxious or mildly agitated, attempting to sit up, calms down to verbal instructions
4	Calm and Cooperative	Calm, awakens easily, follows commands
3	Sedated	Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off
2	Very Sedated	Arouses to physical stimuli but does not communicate or follow commands
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

Riker RR, et al. *Crit Care Med.* 1999;27:1325-1329.

Brandl K, et al. *Pharmacotherapy.* 2001;21:431-436.

Assessment of delirium

- ◆ Delirium (Acute brain dysfunction) is described as mental shift or fluctuation, marked by an altered level of consciousness and agitation
- ◆ Subtypes of delirium include Hyperactive, Hypoactive and mixed
- ◆ Assessment tools including the CAM-ICU (ICU confusion assessment method) and the ICDSC (Intensive Care Delirium Screening Checklist)

CAM-ICU (ICU confusion assessment method)

1. Acute onset of mental status changes
or a fluctuating course

and

2. Inattention

and

3. Disorganized thinking

or

4. Altered level of
consciousness

= Delirium

ICDSC (Intensive Care Delirium Screening Checklist)

Level of consciousness

A	No response
B	Response to intense and repeated stimulation
C	Response to moderate stimulation
D	Normal wakefulness
E	Exaggerated response to normal stimulation

Scoring for delirium checklist

Description

Inattentiveness	Difficulty following instructions or easily distracted
Disorientation	To time, place, or person
Hallucination–delusion– psychosis	Clinical manifestation or suggestive behaviour
Psychomotor agitation or retardation	Agitation requiring the use of drugs or restraints, or slowing
Inappropriate speech or mood	Related to events or situation or incoherent speech
Sleep/wake cycle disturbance	Sleeping <4 h day ⁻¹ , waking at night, sleeping all day
Symptom fluctuation	Above symptoms occurring intermittently
Total score	0–8

Delirium management-non pharmacologic

- ◆ Identify and treat the cause
- ◆ Early physical and occupation therapy
- ◆ Early ambulation
- ◆ Encourage interaction with family
- ◆ Decrease disturbance like noise and light to enhance sleep

Management of pain and anxiety

- ◆ Non pharmacological management
- ◆ Environmental manipulation- Family
- ◆ Complementary and alternative therapy
 - Guided imagery
 - Music therapy
 - Aromatherapy
 - Animal –assisted therapy
- ◆ Pharmacological management

Pharmacological management

- ◆ Opioids
- ◆ Patient – controlled analgesia
- ◆ Epidural analgesia
- ◆ NSAID
- ◆ Other pain reliver (Acetaminophen)
- ◆ Sedative agents (Benzodiazepines and propofol)
- ◆ Neuromuscular blockade

Opioids

- ◆ Fentanyl ,morphine ,tramadol ,methadone
- ◆ Side effects : hypotension ,bradycardia ,respiratory depression and constipation
- ◆ Titrate infusion slowly

Pharmacological management of agitation

- ◆ Midazolam ,lorazepam (Benzodiazepines) sedative, hypnotic (sleep-inducing), anxiolytic (anti-anxiety), anticonvulsant, and muscle relaxant properties
- ◆ propofol (diprivan) used to sedate a patient who is under critical care and needs a mechanical ventilator.

Pharmacological management of delirium

Antipsychotic drug

- ◆ Haloperidol (Haldol).
- ◆ Risperidone (Risperdal).
- ◆ Olanzapine (Zyprexa).
- ◆ Quetiapine (Seroquel).

Neuromuscular blockade drugs

- ◆ Tracrium ,pavulon , Norcuron,Succinylcholine
- ◆ Used adjunctively to anesthesia to produce paralysis, firstly to paralyze the vocal cords, and permit intubation of the trachea, and secondly to optimize the surgical field by inhibiting spontaneous ventilation, and causing relaxation of skeletal muscles

Patient – controlled analgesia

- ◆ (PCA) is a method of pain control that gives patients the power to control their pain.
- ◆ Patients recovering from surgery often are equipped with PCA pumps. The machines also can be used by people coping with other kinds of pain.

PCA

