Assessment of Pain, Agitation, Sedation and Delirium

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Objectives

- Review the benefits of implementing validated assessment tools for pain, agitation, sedation and delirium
- Discuss the bedside limitations of validated assessment tools.

Assessment of Pain

- Behavioral Pain Scale
- Critical Care Pain Observation Tool
- NonVerbal Pain Scale
- Numerical Rating Scale

Utilization of pain scales:

- Allow for better use of analgesic agents and sedatives
- Decrease the duration of mechanical ventilation
- Reduce the number of nosocomial infections

Payen et al. (2009) Anesthesiology ; 1308-1316.

Behavioral Pain Scale (BPS)

- Benefits
  - Easy 4-point Scale
  - Valid and Reliable Tool
- Limitations
  - Presence of Pain Only
  - Moderate to Severe Pain Only
  - Only Ventilated Patients
  - Intact Upper Limbs

Behavioral Pain Scale (BPS)

Item	Description	Score
Facial expression	Relaxed	1
	Partially tightened (e.g., brow lowering)	2
	Fully tightened (e.g., eyelid closing)	3
	Grimacing	4
Upper limb movements	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with mechanical ventilation	Tolerating movement	1
	Coughing but tolerating ventilation for the most of time	2
	Fighting ventilator	3
	Unable to control ventilation	4

BPS score ranges from 3 (no pain) to 12 (maximum pain).

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 contracted	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) OR Vocalization (extubated patients)	Alarms not activated, easy ventilation	Tolerating ventilator or movement	0
	Alarms stop spontaneously	Coughing but tolerating	1
	Asynchrony: breathing ventilator, alarms frequently activated	Fighting ventilator	2
	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
Total, range			0-8

- Benefits:
  - Valid and Reliable Tool
  - Intubated and Extubated patients
- Limitations:
  - Presence of Pain Only
  - Moderate to Severe Pain Only

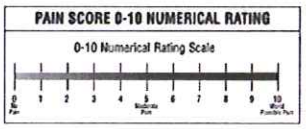
NonVerbal Pain Scale (NVPS)

- Benefits
  - Some Objective Data
  - Valid and Reliable Tool
- Limitations
  - Presence of Pain Only
  - Moderate to Severe Pain
  - Ventilated Patient

Categories	0	1	2
Face	No particular expression or smile	Occasional grimace, tearing, frowning, wrinkled forehead	Frequent grimace, tearing, frowning, wrinkled forehead
Activity (movement)	Lying quietly, no rmal position	Seeking attention through movement or slow, cautious movement	Restless, excessive activity and/or withdrawal reflexes
Guarding	Lying quietly, no positioning of hands over areas of body	Splinting areas of the body, tense	Rigid, stiff
Physiology (vital signs)	Stable vital signs	Change in any of the following: * SBP >20 mm Hg * HR >20/min	Change in any of the following: * SBP >30 mm Hg * HR >25/min
Respiratory	Baseline RR/SpO_2, Compliant with ventilator	RR >10 above baseline, or 5% $\downarrow SpO_2$, mild asynchrony with ventilator	RR >20 above baseline, or 10% $\downarrow SpO_2$, severe asynchrony with ventilator

Numerical Rating Scale

- Benefits
  - Ease
  - Intensity Measure
  - "Gold Standard"
- Limitations
  - Extubated Patients
  - Often Exaggerated
  - No universal Spectrum



Assessment of Agitation and Sedation

- Richmond Agitation-Sedation Scale
- Sedation Agitation Scale

Utilization of Agitation and Sedation Scores:
- Improved quality of sedation
- Decreased length of mechanical ventilation
- Decreased ICU length of stay

Arias-Rivera et al. (2008) Critical Care Medicine, 36:2054–2060.
Robinson et al. (2008). Journal of Trauma, 65:517–526.

Richmond Agitation-Sedation Scale

Score	Term	Description	
+4	Combative	Overtly 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 but movements not aggressive vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (>10 seconds)	Verbal Stimulation
-2	Light sedation	Briefly awakens with eye contact to voice (<10 seconds)	Verbal Stimulation
-3	Moderate sedation	Movement or eye opening to voice (but no eye contact)	Verbal Stimulation
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation	Physical Stimulation
-5	Unarousable	No response to voice or physical stimulation	Physical Stimulation

- Benefits
  - Valid and Reliable Tool
  - Easy to use (Numerical Scale)
  - Commonly Used
- Limitations
  - Not appropriate for those with auditory or visual impairments
  - Requires verbal and physical stimulation

Sedation Agitation Scale

Score	Characteristic	Examples of patients' behavior
7	Dangerous agitation	Pulls at endotracheal tube, tries to remove catheters, climbs over bed rail, strikes at staff, thrashes side to side
6	Very agitated	Does not calm despite frequent verbal reminding of limits, requires physical restraints, bites endotracheal tube
5	Agitated	Is anxious or mildly agitated, attempts to sit up, calms down in response to verbal instructions
4	Calm and cooperative	Is calm, awakens easily, follows commands
3	Sedated	Is difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off again, follows simple commands
2	Very sedated	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously
1	Unarousable	Has minimal or no response to noxious stimuli, does not communicate or follow commands

- Benefits:
  - Valid and Reliable Tool
  - Easy to use (Numerical Scale)
- Limitations:
  - Not appropriate for those with auditory or visual impairments
  - Requires verbal and physical stimulation
  - Lower validity Scores (Compared to RASS)

Assessment of Delirium

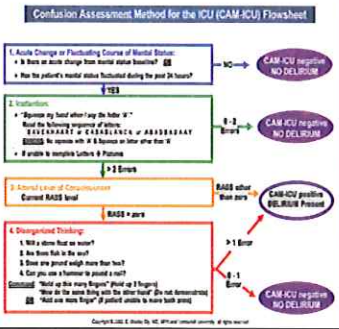
- Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)
- Intensive Care Delirium Screening Checklist

Utilization of Delirium Scores:
- Serves as a predictor of negative clinical outcomes in ICU patients
- Reduces mortality, hospital LOS and cost of care

Ely et al. (2004) JAMA, 291:1753–1762.
Ely et al. (2001) Intensive Care Medicine, 27:1892–1900.

Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)

- Benefits
  - DSM-IV
  - Ventilated and Nonventilated
  - Widely Used
- Limitations
  - Single Day assessment
  - No Severity scale



Intensive Care Delirium Screening Checklist

- Benefits
  - DSM-IV
  - Ventilated and Nonventilated
  - Continuity with RASS
  - Able to score presence and severity
  - Observations over time
- Limitations
  - Up to 5 min to complete
  - Content Validation not established

≥ 4 is positive for delirium

1. Altered level of consciousness:
A) Not responsive or B) the need for vigorous stimulation in order to obtain any response signifies a severe alteration in the level of consciousness preceding evaluation. If there is coma (A) or stupor (B) most of the time period then a dash (-) is entered and there is no further evaluation during that period.
C) Drowsiness or requirement of a mild to moderate stimulation for a response implies an altered level of consciousness and scores 1 point.
D) Wakefulness or sleeping state that could easily be aroused is considered normal and scores no points.
E) Hypervigilance is rated as an abnormal level of consciousness and scores 1 point.
2. Inattention: Difficulty in following a unitx creation or instructions. Easily distracted by external stimuli. Difficulty in shifting focuses. Any of these scores 1 point.
3. Disorientation: Any obvious mistake in time, place or person scores 1 point.
4. Hallucination, delusion or psychosis: The unequivocal clinical manifestation of hallucinations or of behavior probably due to hallucination (e.g., trying to untch a nonexistent object) or delusion. Gross impairment in reality testing. Any of these scores 1 point.
5. Psychomotor agitation or retardation: Hyperactivity requiring the use of additional sedative drugs or restraints or verbal to control potential danger to oneself or others (e.g., pulling out lines, hitting staff). Hyperactivity or distinctly noticeable psychomotor slowing. Any of these scores 1 point.
6. Inappropriate speech or mood: Inappropriate, disorganized or incoherent speech. Inappropriate display of emotion related to events or situation. Any of these scores 1 point.
7. Sleep-wake cycle disturbance: Sleeping less than 4 h or waking frequently at night (do not consider wakefulness initiated by medical staff or loud environment). Sleeping during most of the day. Any of these scores 1 point.
8. Symptom fluctuation: Fluctuation of the manifestation of any item or symptom over 24 h (e.g., from one shift to another) scores 1 point.

Key Points

- Pain: **Numerical Rating Scale** is "gold standard" followed by **Behavioral Pain Score** and **Critical-Care Pain Observation Tool** as the most valid and reliable sedation assessment tools
- Agitation and Sedation: The **Richmond Agitation-Sedation Scale** and **Sedation-Agitation Scale** are the most valid and reliable sedation assessment tools
- Delirium: **Confusion Assessment Method for the Intensive Care Unit** and **Intensive Care Delirium Screening Checklist** are the most valid and reliable assessment tools for delirium
- Utilization of Assessment Tools for Assessment of Pain, Agitation, Sedation and Delirium helps to: **Decrease the duration of mechanical ventilation, reduce infection rates, decrease hospital and ICU LOS, improve quality of sedation,** and **improves use of analgesic agents and sedatives.**

Review Question

Benefits of implementing validated assessment tools for pain, agitation, sedation and delirium include all of the following except:

A) Ability to adjust therapy to established clinical goals
B) Ability to optimize patient comfort and safety
C) Potential increase in length of mechanical ventilation
D) Ability to accurately communicate between ICU caregivers

Review Question

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B) Ability to optimize patient comfort and safety
C) **Potential increase in length of mechanical ventilation**
D) Ability to accurately communicate between ICU caregivers