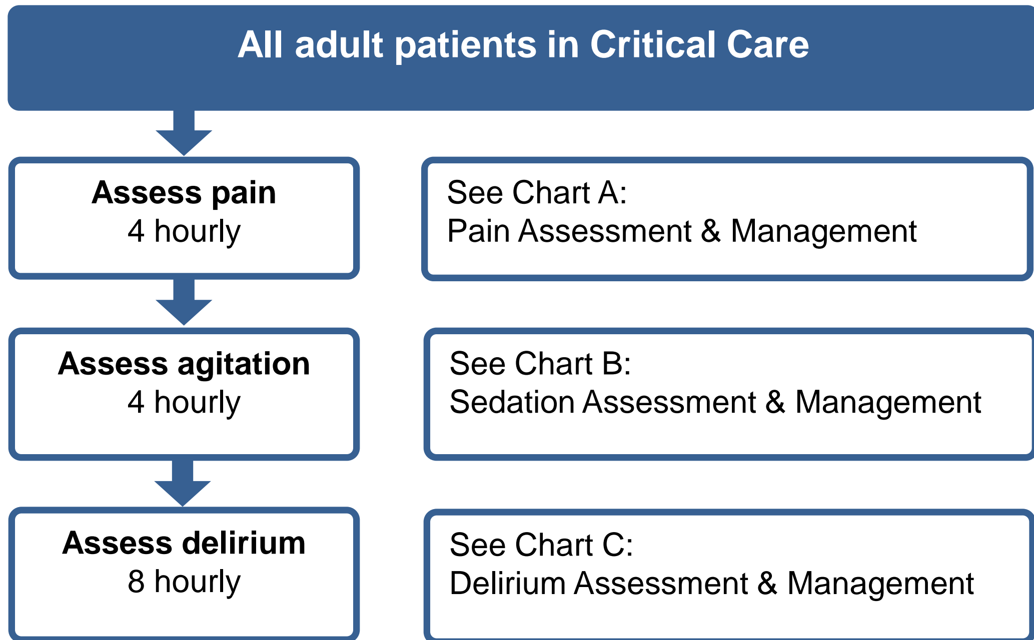
Sedation and Delirium in Critical Care

Aim: To provide guidance on the management of pain, agitation and delirium in Critical Care for junior doctors
Scope: All adult patients in Critical Care.



Key Principles

Control pain first
Moderate-severe pain is common in ICU, even at rest in non-trauma patients.

Use the minimum sedation necessary
Excess sedation harms patients and delays extubation and discharge from ICU.

Optimise non-drug measures
Sedatives and antipsychotics are poor substitutes for good general care and control of excess noise, light and night-time disturbance.

Key Practices

Treat discomfort with careful positioning and attention to the causes of pain.

Give regular analgesia plus additional drugs as required for breakthrough pain.

Maintain light sedation only unless deeper sedation needed for specific clinical reason.

Daily sedation breaks unless contraindicated.

Maintain orientation with regular communication.

Minimise light, noise and disturbance between 22:00 and 06:00 to encourage natural sleep.

This guideline has been adapted from an original document by the Academic Department of Critical Care, Queen Alexandra Hospital, Portsmouth, UK www.portsmouthicu.com

Chart A: Pain Assessment & Management

Assess pain 4 hourly for all patients in Critical Care

Self-Reported Pain Score

if communication is possible

Ask the patient if they have:

- No Pain?
- Mild Pain?
- Moderate Pain?
- Severe Pain?

The pain score is based on the patient's description of their own pain.

Behavioural Pain Score

if communication is not possible

Behaviour	No Pain	Mild Pain	Moderate Pain	Severe Pain
Restless	Quiet	Slightly restless	Moderately restless	Very restless
Tense muscles	Relaxed	Slight tenseness	Moderate tenseness	Extreme tenseness
Frowning / grimacing	No frowning / grimacing	Slight frowning / grimacing	Moderate frowning / grimacing	Constant frowning / grimacing
Patient sounds	Talking in normal tone / no sound	Sigh, groans, moans softly	Groans, moans loudly	Cries out or sobs

The pain score is based on the single highest behaviour observed.

Optimise non-drug measures for pain management including:

- Re-positioning
- Relief of gastric distension
- Reassurance
- Relief of urinary retention

No Pain

Repeat pain score after 4 hours (or sooner if new signs develop)

Mild Pain

Review analgesia and adjust if needed.

Repeat pain score after 4 hours (or sooner if new signs develop)

Moderate Pain

Consider bolus analgesia +/- increased regular analgesia.

Repeat pain score after 30 minutes.

Severe Pain

Seek medical review, give bolus +/- increased regular analgesia.

Repeat pain score after 30 minutes.

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Chart B: Sedation Assessment & Management

Assess and treat pain first (see Chart A)

Assess Richmond Agitation and Sedation Score (RASS) 4 hourly in all patients

Score	Term	Description
+4	Combative	Overly 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 or vigorous
0	Alert & calm	
-1	Drowsy	Not fully alert, but sustained awakening (eye opening/ eye contact to **voice** >10 secs)
-2	Light sedation	Briefly awakens with eye contact to **voice** (<10 seconds)
-3	Moderate sedation	Movement or eye opening to **voice** (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to **physical** stimulation
-5	Unarousable	No response to voice or physical stimulation

If using IV sedation, titrate based on RASS

Score	Adjustment
+4	Bolus & increase infusion by 30%
+3	Bolus & increase infusion by 30%
+2	Bolus & increase infusion by 20%
+1	Bolus & increase infusion by 10%
0	No change
-1	No change
-2	Reduce infusion by 20%
-3	Reduce infusion by 30%
-4	Reduce infusion by 75%
-5	Hold infusion

Manage agitation according to goals

- Control pain first
- Optimise non-drug measures
- Use the minimum sedation necessary
- Titrate constantly to achieve **green light**

Daily sedation break unless contraindicated eg by:

- Neuromuscular blockade (paralysis)
- Severe CVS / respiratory instability
- Sedation for neuro-protection/ cooling

Standard drugs for continuous IV analgesia & sedation

- Fentanyl and Propofol are the first-line agents in Critical Care
- Consider Midazolam instead of Propofol if CVS instability or risk of Propofol Infusion Syndrome (Propofol >3-4 mg/kg/hr, metabolic acidosis & cardiac dysfunction +/- raised CK or renal failure)
- Consider adding regular Clonidine to other sedatives in difficult to sedate patients

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Chart C: Delirium Assessment & Management

Assess and treat pain & agitation first (see Charts A & B)

Assess CAM-ICU 8 hourly in all conscious patients

Feature 1: Acute onset or fluctuating course	Score
Is the patient different from his/her baseline mental status? OR Has the patient had any fluctuation in mental status over the past 24 hours as evidenced by fluctuation in RASS, GCS, or previous delirium assessment?	Feature 1 is present if "Yes" to either question.
Feature 2: Inattention	
Say to the patient, *"I am going to read you a series of 10 letters. Whenever you hear the letter "A," indicate by squeezing my hand."* Read letters from the following list in a normal tone 3 sec apart: S A V E A H A A R T Errors are counted when a patient fails to squeeze on the letter "A" and when the patient squeezes on any letter other than "A."	Feature 2 is present if more than 2 errors.
Feature 3: Altered level of consciousness	
Present if the current RASS score is anything other than alert and calm (zero)	Feature 3 is present if RASS is not zero.
Feature 4: Disorganised thinking	
Ask: 1. Will a stone float on water? 2. Are there fish in the sea? 3. Does one kilogram weigh more than two kilograms? 4. Can you use a hammer to hit a nail? Errors are counted when the patient incorrectly answers a question Say: "Hold up this many fingers" (hold 2 fingers in front of patient) "Now do the same with the other hand". If the patient is unable to move both arms, for second part of command ask patient to "Add one more finger". An error is counted if the patient is unable to complete the entire command	Feature 4 is present if the combined number of errors is more than 1.

CAM-ICU is positive (delirium present) if Features 1 & 2 and *either* 3 *or* 4 are present.

If no delirium, repeat CAM-ICU after 8 hours

If delirium is present, treat first with non-drug measures

Treat potential causes of delirium
- Hypoxia & Hypercapnia
- Hypoglycaemia
- Sepsis & hypotension
- Drug, alcohol & nicotine withdrawal

Optimise environmental factors
- Reduce noise, reassure & re-orientate
- Use communication aids
- Encourage normal sleep by minimising excess light & disturbance overnight.

If non-drug measures fail and patient unsafe, consider drug therapy

Haloperidol (short term use only)
- Standard first-line antipsychotic for ICU delirium, although evidence very limited.
- Contraindicated if risk of Torsades des Pointes (long QT_c, other QT_c-prolonging drugs, history of Torsades des Pointes)

Benzodiazepines (Lorazepam /Midazolam)
- 2nd line, eg if Haloperidol contraindicated or ineffective despite adequate dose.
- May be effective for short-term patient safety but can contribute to more delirium later.

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