Delirium in the ICU

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Patient Case

- JJ is 75 Yo male admitted to the MICU on 12/10 with acute SOB
- Cares for ill wife at home, drives, manages finances, volunteers with Meals on Wheels
- RVP + Influenza A
- Sputum + MRSA
- Intubated 12/11 6am

Patient Case

- PMH
  - HTN – Lisinopril 20 mg daily
  - Diabetes- Diet controlled
  - Lower back pain- Oxycodone 5 mg po q6 hr PRN Pain (usually takes 1 tablet at bedtime most nights)
- 12/11 Medication list
  - Scheduled medications
    - Chlorhexidine
    - Famotidine 20 mg BID Gastric Tube
    - Heparin 5000 units subq Q8H
    - Vancomycin 1.5 gm IV q24 hr
    - Oseltamivir 75 mg BID Gastric Tube
  - PRN Medications
    - Fentanyl 50 mcg IV Q1 HR prn Riker 4
    - Midazolam 2 mg IV Q2 HR prn AGITATION, Target Riker 4
    - Fentanyl 50 mcg IV q5 min PRN Breakthrough pain (max 3 doses in 1 hr)
    - Midazolam 1 mg iv q5 MIN PRN breakthrough agitation (max 3 doses IN 1 HR)

Patient case

- 12/11 afternoon
- You arrive at the bedside and the nurse reports that the patient has not been directable with a noticeable change in mental status
- What should you consider?

What is going on?

1. Hypercapnia?

   Nope, arterial blood gas: 7.35/40/25/80

2. Over sedation with PRNs? Is the midazolam dose too high? Is it being used too frequently?
   - No PRNs were given

3. Delirium?

Delirium Assessment

1. Assess level of arousal
   Riker score?
   Ask nurse what has lead them to give the Riker scores that they gave
   Must be a Riker >2 to continue with delirium assessment. If < 2, further assess why.

2. Is the patient in Pain?

   CCPOT (see handout)

   CCPOT Positive (score >2)

   Treat pain

   Reassess CCPOT. Did score decrease?

   Still not directable

3. Delirium Assessment

   CAM-ICU (see handout)

   CAM-ICU negative

   ICDSC (see handout)

   The bedside nurse completed an ICDSC

CAM-ICU

- Handout
- Negative

ICDSC

Score 5

	Date/Time
Delirium Assessment	
LOC (Stop and reassess later if patient is a Riker ≤ 2)	Score 1
Inattention	Score 1
Disorientation	Score 1
Hallucination/delusion	Score 0
Agitation/hypoactive	Score 0
Inappropriate speech/mood	Score 0
Sleep/wake cycle disturbance	Score 1
Symptom Fluctuation	Score 1
Total Score (Delirium present if score is ≥ 4)	Score 5

ICDSC: Level of Consciousness

- Consider Riker score over the entire shift
- Pt. Riker = 3

LOC
No score = No response (Riker=1); reassess in 4 hrs
No score = Response to intense and repeated stimulation (loud voice and pain) (Riker=2); reassess in 4 hrs
1 = Response to mild or moderate stimulation (Riker=3)
0 = Normal wakefulness (Riker=4)
1 = Exaggerated response to normal stimulation (Riker>4)

ICDSC: Inattention

- Score 1 for any of the following abnormalities:
  - A. Does not follow commands (i.e., wiggle toes)
  - B. Easily distracted by external stimuli
  - C. Difficulty in shifting focus
    - ❖ Does the patient follow you with their eyes when you move to the opposite side of the bed?

Inattention
0 = Not present
1 = Does not follow commands and/or easily distracted and/ or does not follow with eyes

ICDSC: Disorientation

- Score 1 for any obvious mistake in place and/or person

Example: Does the patient know they are in the hospital and not elsewhere (i.e. at home)?

Disorientation
0 = Not present
1 = Does not recognize previous caregivers and/or location

ICDSC: Hallucinations/delusions

- Score 1 for any of the following abnormalities:
  - Evidence of hallucinations or behavior due to a hallucination
  - Delusions or gross impairment of reality
    - False belief that is fixed or unchanging

Hallucinations/delusions
0 = Not present
1 = Exhibits behavior consistent with hallucinations/delusions and/or gross impairment in reality testing

ICDSC: Agitation/hypoactive

- Score 1 for any of the following abnormalities:
  - Hyperactivity (i.e. pulling at endotrachial tube or lines)
  - Hypoactivity (noticeable slowing)
    - A delayed response to questions or commands
    - Assess if due to recent analgesia/sedation: Score 0 instead of 1
- Family members can be a good resource for establishing the patient's baseline!

Agitation/hypoactive
0 = Not present
1 = Hyperactivity requiring sedatives or restraints to prevent harm to self or others
1 = Clinically noticeable psychomotor slowing

ICDSC: Inappropriate speech/mood

- Score 1 for any of the following abnormalities:
  - Inappropriate, disorganized, or incoherent speech
  - Inappropriate mood related to events or situation (Is the patient apathetic about the situation?)

Inappropriate speech/mood
0 = Not present
1 = Inappropriate, disorganized, or incoherent speech
1 = Inappropriate display of emotion or apathy related to current situation

ICDSC: Sleep/wake cycle disturbance

- Sleep/wake cycle disturbance scoring may need to include information reported from the previous shift.
- Patient awake all night

Sleep/wake cycle disturbance
0 = Not present
1 = Sleeping < 4 hours at night OR waking frequently (not due to loud environment or initiated by staff)
1 = Sleep 4 hours or more during the day

- Sedation ≠ Sleep
- Emerging data on DEX potentially allowing non-REM sleep

Impact of Sleep on Delirium

- 97% of 1,223 ICU physicians and nurses agreed that poor sleep in the ICU is a risk factor for delirium in a global survey
- PAD Guidelines "promoting sleep in adult ICU patients by optimizing patients' environments, using strategies to control light and noise, clustering patient care activities, and decreasing stimuli at night to protect patient's sleep cycles" (+1C) as a strategy to manage pain, agitation, and delirium

Crit Care Med 2013;41:263-6
Ann Am Thorac Soc 2016;13(8):1370-7

Impact of Sleep on Delirium

- Systematic review of ICU studies involving sleep-promoting interventions to improve delirium
  - 6/10 studies demonstrated reductions in occurrence rate of ICU delirium
  - 4 studies used sleep bundles which also resulted in improvements in delirium

Crit Care Med 2106;44:2231-40

ICDSC: Symptom fluctuation

- Fluctuation of any of the first 7 items over 24 hours (over the course of your shift or from one shift to another)

Symptom fluctuation
0 = Not present
1 = Fluctuation of the presence of any above item over 24 hours

Patient Case

- Why the difference between CAM-ICU scores and ICDSC??

What to do now?

- STOP and THINK

“STOP”

- “**STOP**” unnecessary medications
- Review sedatives and streamline if possible
  - Use minimal amount of sedative and pain medication necessary
    - Sedation interruption daily
    - Use of a targeted pain plan
  - Optimize sedation medications
    - Minimize benzodiazepine use
    - Utilize dexmedetomidine if appropriate

Malik, A. J Clin Nurs 2016
Pohlman AS. http://s3.proce.com/res/pdf/DeliriumAssessment_monograph.pdf

"THINK"

- "**THINK**" about alternative causes of delirium
  - **T**oxic Situations
    - Dehydration, CHF, shock, new organ failure
    - Deliriogenic medication use
      - Examples:
        - Anticholinergic medications (Diphenhydramine, promethazine)
        - Benzodiazepines
        - Narcotics
        - Corticosteroids
        - Sleep agents (ex. Zolpidem)
  - **H**ypoxemia
  - **I**nfection/Sepsis
  - **I**mmobilization
  - **N**eglected Nonpharmacologic interventions ("MORE Protocol")
  - **K**+ or electrolyte abnormalities

Malik, A. J Clin Nurs 2016
Pohlman AS. http://s3.proce.com/res/pdf/DeliriumAssessment_monograph.pdf

Delirium Prevention
Non-Pharmacologic Protocol

Give your patients M.M.O.R.E.

M — Mobility Protocol

- Initiate the Protocol
- Daily huddle (PT, RN & Respiratory Therapist)
- Early and Regular Ambulation

M — Music Therapy

- Play at least 1 hour of relaxing music per shift
- Turn off TV if patient is unable to view

O — Opening and Closing Blinds

- Open blinds in morning, close blinds at night
- Angle patients in chairs to have a view of the window

R — Reorientation and Cognitive Stimulation

- Ask the patient how they would like to be addressed
- Reorient patient to their plan of care and progress
- Ask cognitive stimulation questions:
  - What is your favorite sports team, movie? Did you watch their most recent one?

E — Eye and Ear Protocol

- If patient wears contacts or glasses and hearing aids at home, encourage use
- In evening, offer the patient an eye mask and ear plugs to increase sleep

Environmental Contributors?

- Did any one ask if he wears glasses or hearing aids?

Family involvement

- When asked, his daughter discloses he has a very “strong” eye prescription and cannot see without his glasses
- He has also been wearing hearing aids for the past 20 years due to ear damage from his work in the Steel Mill. She has to shout at him for him to be able to hear her without his hearing aids.

- She didn’t even think to bring in the eye glasses. She was afraid the hearing aids would get lost since they are very expensive.

- You encourage her t bring in the hearing aids and alert nursing leadership that this patient will have hearing aids brought in.

Pharmacologic therapy

Antipsychotics Handout

- Lancet Respir Med 2013;1:515-23
- Intensive Care Med. 2004;(30):444-9
- Crit Care Med. 2010;38(2):428-37
- Crit Care Med. 2010;38(2):419-27
- Pharmacotherapy.2015;35(8):731-39
- J Crit Care. 2017;41:234-9

Receptor handout

Patient Case

- You start JJ on olanzapine 20 mg gastric daily– but he doesn't have oral access right now.
- Could the Zydis (orally disintegrating product) be used and absorded through the moral mucosa?
- Patient gains oral access- medication given
- He develops rigidity and an increased temperature to 38.9 C
- NMS

Patient Case Option 2

- Patient gains oral access
- Instead of starting olanzapine you identify sleep as an issue, so you start Quetiapine 50 mg gastric qhs
- Bases upon the Devlin 2010 study, quetiapine 50 mg gastric BID was the starting dose.

Patient Case

- JJ improves on the quetiapine 50 mg gastric qhs and is extubated on 12/13.

- On 12/14, JJ's ICDSC scores are the following:

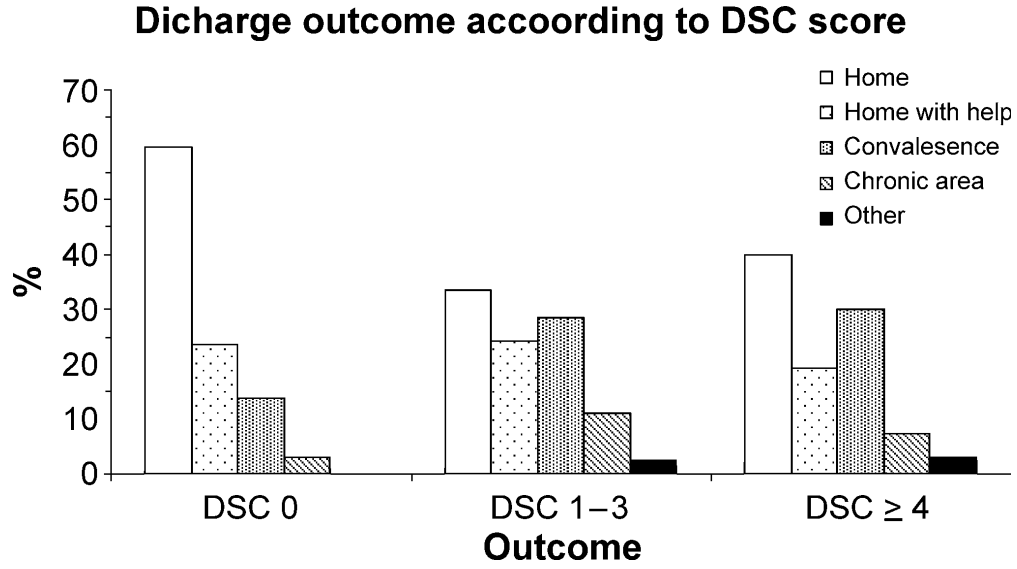
    4am: 3

    4pm: 3

What do these scores mean?

Subsyndromal delirium

- Pts that fall short of the diagnostic threshold for delirium (ICDSC ≥ 4)
- ICU patients without delirium compared to those with subsyndromal delirium were more likely to be discharged home (p=0.0004) and less likely to need long-term care (p <0.0001)



Intensive Care Med 2007;33:1001-13

Patient Case- Subsyndromal Delirium

- Increase non-pharmacologic preventative measures to decrease ICDSC score