DELIRIUM ACROSS THE LIFESPAN

Kimberly Byler, APRN-CNS

I have nothing to disclose

WHAT IS DELIRIUM?

Defined in DSM-5 as

acute disturbance in attention and awareness, with additional disturbances in cognition, not explained by pre-existing neurocognitive disorder, and caused by another medical condition

American Psychiatric Association, 2013
Slooter, 2017

WHAT IS DELIRIUM

Disturbance of consciousness with inability to shift attention

Change in cognition

Develops acutely and fluctuates

PEDIATRIC DELIRIUM

Less overall research

Inattentiveness: poor eye contact or difficult with engagement

Irritability

Agitation

Sleep-wake disturbance

Fluctuations of symptoms

“Inconsolable child”

Thom, 2017

Table 1. Manifestations of Delirium at Various Life Stages

Life Stage	Hypoactive Delirium	Hyperactive Delirium
Infants	Unable to fixate on faces Primitive reflexes only Lethargy Little movement when awake, with movement being non-purposeful Not crying when hungry	Unable to fixate on faces Primitive reflexes only Irritability Non-purposeful movements, shaking head Inconsolable, restless Minimal calm awake time
Children	Unable to communicate needs Confusion Decreased coordination Unable to participate in play Non-purposeful actions Not answering questions quickly or appropriately Lethargy Averting eyes or staring Increased effort to sit up and walk around	Unable to communicate needs Confusion Unable to participate in play Non-purposeful actions Not answering questions quickly or appropriately Irritability Inconsolable, restless Unable to make eye contact In hospital, attempting to remove intravenous and monitoring lines
Adolescents/adults	Disoriented Inattentive Impairment of sleep-wake cycle Emotional disturbance Falling asleep inappropriately	Disoriented Inattentive Impairment of sleep-wake cycle Emotional disturbance Irritable, agitated

Burke, Jiang, Stern, 2023

EPIDEMIOLOGY

Extremely common in both Adult and Pediatric ICU

- Studies show up to 80% of adult and up to 40% of pediatric patients in ICU experience delirium
- Higher incidence among more acute/ intubated patients in both populations
- More likely hypoactive in Adults, Hyperactive in children

- Adults can have long term cognitive decline
- Peds can have behavioral problems
- PTSD

Cavallazzi, R., Saad, M. & Marik, P.E., 2012
Twite, et al., 2004

RISK FACTORS- ADULTS

- **Benzodiazepine use**
- Blood transfusions
- Age > 65
- Visual/ hearing/ functional impairment
- Underlying dementia/ psychiatric disorders
- Drug/ ETOH use pre-hospital
- Pre-ICU emergency surgery or trauma
- Lines and tubes
- **Sleep disruption**

Know your BEERS

- alcohol-containing medications
- anticholinergics
- antihistamines
- anti-inflammatory drugs
- barbiturates
- **Benzodiazepines**
- corticosteroids
- Ambien
- Antispasmodics
- Antimicrobials – **cefepime**
- H2-blockers– famotidine
- Metoclopramide
- opiods
- diuretics

RISK FACTORS- PEDS

- Younger age
- Neurodevelopmental delay
- Poor nutritional status
- Cyanotic heart disease

- **Benzo exposure**
- Coma and deep sedation
- Intubation
- Prolonged cardiopulmonary bypass
- Restraints

PREVENTATIVE MEDICATIONS

DO THEY WORK?

MEDICATIONS

- Haloperidol
- Precedex
- Seroquel
- Trazodone
- melatonin

Not recommended for PREVENTION

SCREENING

- CAM-ICU
- ICDSC
- Pre-school - CAM-ICU 6mo- 5yrs
- Pediatric CAM-ICU for >5yrs

DELIRIUM PREVENTION

Prevention is non-pharmacologic

- Sleep strategies – eye masks, ear plugs
- Early mobility
- MAR review
- Manage pain
- ****4 hours of uninterrupted sleep****

- Noise reduction
- Natural light exposure during day
- Minimize light at night
- Ambient temp control
- Improved communication

Cavallazzi, R., Saad, M. & Marik, P.E., 2012

SLEEP AIDS

Melatonin

- Melatonin hormone is naturally produced by body
- Low side effects
- Half-life 20-60 min
- Adult dose 2mg-10mg nightly

Considerations

- Supplements not regulated by FDA
- Studies inconsistent on improvement/ prevention of delirium HOWEVER some indication of usefulness when used with bundled care

Reznik, Slooter (2019)
Burry, Sonneville, Ely (2022)

SLEEP AIDS

Trazodone

- Anti-depressant, unclear pathophys
- Studies show improvement in agitation dementia
- 25mg-50mg nightly up to 200mg nightly

Considerations

- Trazodone has not been studied in delirium when used as sleep aid – some ongoing studies

SLEEP AIDS

Ambien

- Non-benzo sedative hypnotic
- Associated with INCREASED rates of delirium
- Should NOT be used in older adults or in patients at risk for delirium

TREATMENT

SCCM and UK's NICE

- Anti-psychotics for Adults and Peds should be reserved for:
  - Short-term use
  - Agitation that is safety risk for patient or caregivers
  - When patient in distress due to hallucinations, etc

Very limited information or guidelines for infants under 10kg/ 6 months

Reznik, Slooter (2019)

ANTI-PSYCHOTICS

Haloperidol/ Droperidol

- Typical Anti-psychotics
- D2 dopamine receptor antagonist
- Droperidol 2-3x more potent
- Extrapyramidal symptoms
  - Avoid in Parkinson's
- NMS
- **QTc prolongation**

Advantages

- IV administration
- Easily titrated
- No respiratory effect

Dosing

- Extreme agitation- Adult
  - Haldol 5-10mg IV/IM
  - Droperidol 5-10mg IV/IM
- Adult dosing
  - 0.25mg-5mg IV or PO
- Pediatrics --IV
  - LOAD: 0.15-0.25mg over 45 min
  - 0.015-0.025mg/kg every 6
  - Max: 0.45 mg/kg/day

Kukolja, J., Kuhn, 2021
Riviere, et al., 2018

ANTI-PSYCHOTICS

Olanzapine

- Atypical antipsychotic
- Mainly works on the 5-HT-2A receptor
- Wary in elderly, renal/ liver dysfunction – half life can increase up to 50hrs

Advantages

- Can be given ALL routes
- Does NOT cause torsades

Dosing

- Adults
  - 5-10mg IV/ IM/ PO
  - Max dose – 20mg/ 24 hrs
- Pediatrics – PO
  - >3yrs 1.25-5mg at bedtime

Kukolja, J., Kuhn, 2021
Riviere, et al., 2018

ANTI-PSYCHOTICS

Quetiapine

- QTc risk low
- Lowest risk of EPS – can be used in Parkinson's patient's
- Can cause orthostatic hypotension

Advantages

- Low-doses act more like weak sedative rather than anti-psychotic
- Minimal literature in children: some suggest 0.5mg/kg with max 25mg. Can titrate up to 500mg/ day

Dosing

- Insomnia- ADULTS
  - 25-50mg q HS
- Acute agitation
  - 50mg BID and up titrate 50mg/day -> 200mg BID
  - Max dose can be up to 800 BID

Kukolja, J., Kuhn, 2021
Riviere, et al., 2018

ANTI-PSYCHOTICS

Risperidone

- Extrapyramidal symptoms more common
- Contraindicated in QTc prolongation

Advantages

- Less sedating- use in more awake patients with underlying psychiatric disorder
- Half-life 3-4 hours

Dosing

- Adults
  - Start 1mg PO in evening
  - Usual dose 2-4mg in evening
- Infants: 0.05-0.1 mg/d at bedtime
- <5yrs 0.1-0.2mg at bedtime
- >5yrs 0.2- 2.5mg

Kukolja, J., Kuhn, 2021
Riviere, et al., 2018

A2 ANTAGONIST

Dexmedetomidine

- MENDS- dex superior to lorazepam
- SEDCOM- dex superior to midazolam
- PRODEX- dex lower rates of delirium compared to propofol
- Bradycardia/ hypotension

Advantages

- Sedative, anxiolytic and analgesic-sparing properties
- Minimal effects on respiratory drive

Dosing

- 0.15-1.5 mcg/kg/hr
- 0.15-0.7 mcg/kg/hr

Reznik, Slooter (2019)

KEY POINTS

Delirium prevention is non-pharmacologic

- Sleep improvement
- Bundle care
- Up and awake during day
- LIMIT BENZOS and sedation

Limit pharmacologic intervention

- Lowest dose
- Lowest time period
- For safety of patient and staff

RESOURCES

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THANK YOU

Kimberly Byler, APRN-CNS, CCRN

Kbylerrn@gmail.com