

Acute Delirium in the Hospitalized Patient

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Basics of Delirium

- Acute disorder of attention and cognition
- Common in the setting of acute medical illness
 - 2.6 M cases/year in those >65 y in US
 - \$164 billion health care expenditure
 - 30 % older medical patients experience delirium during hospitalization
 - Present in half on admission and developed by the other half during stay
 - 10-50 % older surgical patients (higher with frailty/complex procedures)
 - The commonest surgical complication
 - 10-15 % ED
 - 16 % post-acute care
 - 70 % ICU
 - 85 % palliative care settings
- Hard to recognize with diverse/variable abnormalities and insidious onset
 - 55-70 % unrecognized
- Predisposing factors
 - Age, Sensory Impairment, Polypharmacy, and Co-morbidities
 - **Dementia, stroke, or Parkinson** present in <50 % older pts with delirium

DSM-5 Definition

5 features

1. Disturbance in attention (reduced ability to direct, focus, sustain, and shift attention) and awareness. - **CONSCIOUSNESS**
2. The disturbance develops over a short period of time (usually hours to days), represents a change from baseline, and tends to fluctuate during the course of the day. - **FLUCTUATING**
3. An additional disturbance in cognition (memory deficit, disorientation, language, visuospatial ability, or perception). - **COGNITION**
4. The disturbances are not better explained by another preexisting, evolving, or established neurocognitive disorder, and do not occur in the context of a severely reduced level of arousal, such as coma.
5. There is evidence that the disturbance is caused by a medical condition, substance intoxication or withdrawal, or medication side effect.

Additional features that may accompany delirium and confusion include the following:

- Psychomotor behavioral disturbances such as hypoactivity, hyperactivity with increased sympathetic activity, and impairment in sleep duration and architecture.
- Variable emotional disturbances, including fear, depression, euphoria, or perplexity.

Precipitating Factors

- Drugs and Toxins (incl. withdrawal)
 - e.g. hypnotics, anticholinergics, anesthesia
- Infections
- Metabolic Derangements
- Brain Disorders
- Systemic Organ Failure
- Physical Disorders
 - e.g. pain, burns, trauma/surgery, hypo/hyper-thermia, immobility incl. restraints

Predisposing and Precipitating Factors Join Together

- Complex syndrome with multiple causes
- Unlikely a single driving factor in any given episode
 - But the cause(s) may not be apparent
- DDX dementia, depression, psychosis
 - Underlying dementia often unrecognized prior to delirium

Consider Terminal Delirium in Cancer

- Drugs and Toxins
 - Opioids
- Infections
 - Neutropenic sepsis, post-obstructive infections
- Metabolic Derangements
 - Dehydration and malnutrition
- Brain Disorders
 - CNS involvement
- Systemic Organ Failure
- Physical Disorders
 - Cancer Pain, Hospital/ICU delirium

A Variable Presentation

- Change in awareness ('not acting likely usual')
- Distractability (non-linear thinking)
- Lethargy
 - <40 % psychiatry referrals for 'depression' were delirium
 - Hypoactive delirium (75 % elderly) is easily missed but associated with greater M/M
- Change in Cognition
 - Formal testing less important than attentiveness and assessing baseline from reliable sources
 - Delusions and auditory and visual hallucinations can be vague or elaborate
- Onset hours-days but persists for days-months
 - Worse in evening/night so we miss if we rely only on a personal assessment during am rounds
 - (and overlaps with 'sundowning' in dementia)

Confusion Assessment Method (CAM)

- Requires 1 AND 2; AND either 3 OR 4
 1. Acute change in mental status with a fluctuating course
 2. Inattention
 3. Disorganized thinking
 4. Altered consciousness
- 94-100 % sensitivity
- 90-95% specificity - delirium the most likely dx
- Best of a range of bedside instruments
 - Applicable in ED, inpatient and LT care
 - CAM-ICU useful for non-verbal ventilated pts
 - 3D-CAM for dementia
 - bCAM (Brief CAM)

Goals of Evaluation

1. Recognizing the delirium

- Memory and organization of history lacking even if superficial conversation appears intact
- Avoid dismissing lethargy to loss of sleep/fatigue
- Better to assume (reversible) delirium, than allow it to be labelled depression, psychosis, or dementia and be untreated

2. Identifying the underlying cause

- Sherlock Holmes H & P
- Challenge to remain focused and cost-effective
- Made harder by lacking a coherent hx (cf. peds)
 - Febrile illness
 - Medication changes (30 %); always consider OTC/herbal suppl, previously unreconciled/diverted meds
 - Have family clear out the medicine cabinet and bring in the pillbox and bottles.
 - Substance use
- PE (limited by poor cooperation)
 - Focus on vitals, volume status, skin and head injury, focal neurology, neck stiffness/photophobia, tongue bite, incontinence, suprapubic/CVA tenderness
 - Nonrhythmic asynchronous myoclonus, asterixis, and postural tremor are c/w delirium but do NOT point to a specific cause
 - Nystagmus with intact pupillary reflex, ataxia, encephalopathy --> Wernicke
 - Glucose fingerstick marks, needle tracks, cherry lips for CO

Tests

1st Line

- BMP, CBC, UA, Urine cx, CXR, ECG
- CT head (if focal signs/trauma/unable to follow commands)
- LP (if meningo-encephalitis suspected)

2nd Line

- CT head (if no obvious cause OR delayed recovery)
- LP (mandatory when no obvious cause)
- EEG (with altered consciousness)
 - 17-37 % show nonconvulsive status epilepticus (NCSE) but very hard to predict who from H&P
 - Patterns can suggest possible etiologies
- Drug levels where indicated
 - Digoxin, Li, anticonvulsants, anti-arrhythmics
- Tox screen blood/urine when no obvious dx
 - Know what is not captured on your local assay(s)
- ABG
 - Acid-base anomalies can suggest possible etiologies
- BCx, LFT, TFT, B1, B12 etc.
 - Based on H&P and timeline

Decision-Making Capacity

- When brought in by surrogate decision-makers there is 'implied consent'
- Exam should document the cognitive deficits and clarify 'capacity'
- While obtaining collateral hx, make effort to understand the pt's expressed treatment preferences and obtain formal consent from proxies whenever possible
- Take the opportunity to discuss goals of care with the patient during lucid periods e.g. mornings or after medications

Prevention

Minimize

- Polypharmacy and particular agents (AGS Beers criteria)
 - Cholinesterase inhibitors, antipsychotics etc. have no proven preventive role
- Pain
 - Balancing risk/benefit of opioid vs non-opioid/non-pharmacologic Rx
 - Consider long- > short-acting opioids, e.g. methadone for cancer pain with terminal delirium
- Dehydration
- Urine retention and constipation
- Immobility and binders (e.g IV drips, urinary catheters)
- Sensory impairment/disruption of sleep-wake
 - Orientation and sleep protocols
 - Clocks, calendars, windows with access to daylight, verbal reminders/reassurance
 - Regular visits from family & friends
 - Visual and hearing aids
 - Sensory destimulation at night
 - Dark
 - Quiet (incl. earplugs). Bed alarms
 - Avoid meds/vitals/lab/procedures while sleeping

Treatment

- Identify and manage the underlying cause(s)
- Consider liberal nutritional supplementation
 - e.g. empiric thiamine or B12 pending confirmation
- Supportive cares to promote physical and cognitive recovery
- Consider aspiration precautions and assisted feeding
- Control dangerous behavior with minimum short-acting medications
- Physical restraints as a last resort

Agitation

- Hyperactive delirium less common in elderly but can alternate with hypoactive periods
 - Risk for injuries to patient and caregivers
 - Falls
 - Removal/displacement of lines, tubes and drains
 - Elopement
- Manifestation of delirium, pain, or both
 - Consider analgesia when considering treating agitation

Agitation Management

- De-escalation training
 - Redirects pts and keeps patients and staff safe
 - Challenging delusions/hallucinations is not helpful
- Earlier medication use leads to lower overall use, and lower use of restraints
 - No benefit to prophylactic dosing
- Restraint use
 - Immobility (esp. restraints) exacerbates delirium
 - Restraints can themselves lead to injury/death
 - Require documentation showing necessity
 - Careful monitoring
 - Discontinue ASAP

4 Phenotypes of patients with Higher Healthcare Violence Risk

Violence associated with psychosis

1. Schizophrenia

- Responding to command hallucinations or persecutory delusions
- Mental illness advocates remind us this affects a minority of patients
- Greater risk of suicide than harming others

Violence associated with impulsiveness

2. Acute Intoxication

3. Delirium / Dementia

4. Intellectual disability / Autism / TBI / chronic traumatic encephalopathy (CTE)

Tailored Strategies

1. Schizophrenia

1. Start medication
2. Obtain mandatory (Jarvis) court orders that take time
3. Stopping co-existing substance abuse

2. Acute Intoxication

1. Specific to agents
2. Police bring in handcuffed and need multiple people to restrain
3. But they can reorient within hours and may have no specific psychiatric needs

Tailored Strategies

3. Delirium / Dementia

1. The highest risk of violence per day (depending on body habitus maybe a lower risk of serious injury)
2. Usual measures; reminders and reassurance
3. Safe environment; locked unit, camera monitoring, no sharp objects

4. Intellectual disability / Autism / TBI / CTE

1. The **most** challenging as behavior is so unpredictable
2. Often the most serious attacks
3. Staff who are consciously looking out for their safety

Complex Intervention Unit, Mayo Clinic Rochester



- 10 bed secure unit
- Psychiatric specifications
- Sally ports - no throughput
- 2 seclusion rooms
- Universal video monitoring
- Duress alarms
- Secure nursing station
- Patient lounge
- Visitor/family lounge
outside locked area within
sally port
- Interview room to attend
court remotely
- 2 hemodialysis rooms
- 2 bariatric rooms
- Telemetry optional all
beds

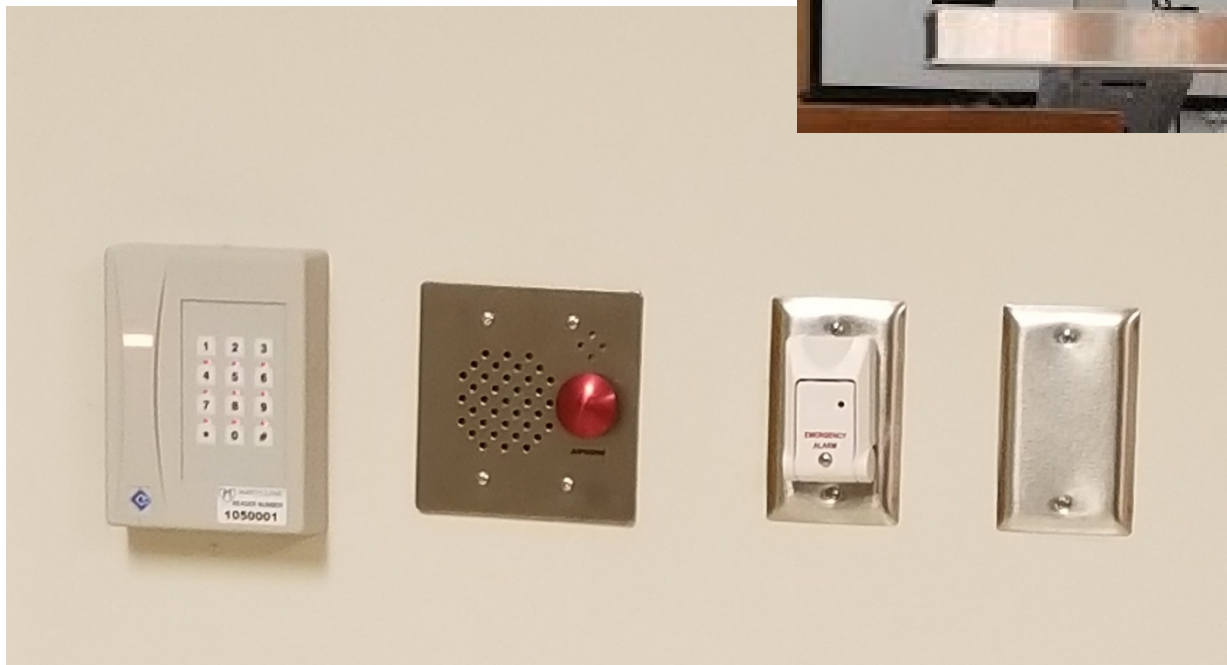
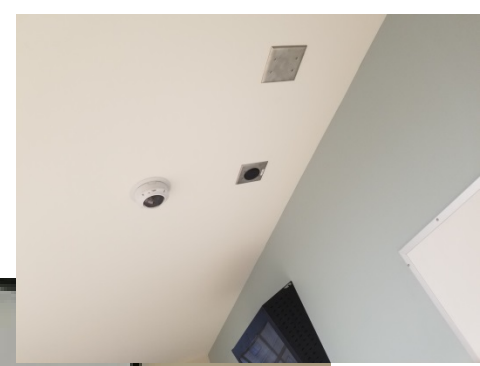


Medical Cabinet

- VS4
- MP30
- Gloves
- Restraints
- Chucks
- PPI
- Sharps container
- Hand sanitizer



Security Technology



Patient Lounge

- Recreation – games/TV
- Dining area
- Dietary kitchen accessible by staff only



Unit Identity Promotes Staff Trust and Innovation

- Advanced de-escalation and simulation training is the start
 - Crafts
 - Decorating rooms
 - Converting hallway to a bowling alley
 - Weighted blankets
 - Squeeze balls
 - Edible utensils
- Patients get treated as individuals again
- Recover their self-esteem and motivation.
- We get lots of thank you notes!

COMPLEX
INTERVENTION
UNIT (CIU)
GUIDELINES AND
EXPECTATIONS



CIU Outcomes

Reach across the campus

- Receive patients from 36 units
- **96 %** reduction in lost/restricted work days due to aggressive patients
- **43 %** drop in BH security calls 2015 → 2018
- Reduced BERT calls – freeing staff to do more unit education and follow up which further decreases emergency calls

- Rate on violence on the unit was **20 % vs 40 %** prior to arrival
- They quickly improve and **43 %** dismiss home
- LOS was **2.06 days shorter** when compared to similar patients before CIU

- All in the context of our strongly promoting increased reporting
- We have regained our Sense of Agency

Delirium Outcomes

- Longer LOS
- <2 X mortality unaffected pts at 22 mths
- Lasting functional and cognitive decline
- Increased need for long-term care
- May not be so transient
 - Persists
 - 45 % at time of hospital dismissal
 - 30 % 1 month later