Delirium – How Do I Recognize It and What Do I Do Next?
A Case-Based Approach

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Objectives

1) Understand the key signs and symptoms of delirium
2) Be able to distinguish delirium from other common and often co-occurring healthcare conditions
3) Know the common non-pharmacological approaches to care

What is delirium?

- An acute state of confusion with frequent fluctuation in behavior
- Neurotransmitter imbalance theories:
  - Acetylcholine deficiency & dopamine excess premise for use of antipsychotics
  - Would logically suggest antipsychotic use
Why not just treat with antipsychotics?

- Antipsychotics (AP) and especially atypical APs are nonselective for several neurotransmitters – may miss underlying mechanism (large inter-patient variability)
- Use of antipsychotics in delirium is common – 66% to 77%

Flaherty et al. JAGS 2011;59:S269-S276

Lack of Evidence for Antipsychotics

- Systematic Review of 13 studies
- 6 were single agent and 7 comparison
- 8 had fewer than 25 patients per arm
- All single agent were open label
- Only placebo controlled study was negative trial
- Other 12 reported improvements but no controls leading one to ask what would have happened without antipsychotics?

Flaherty et al. JAGS 2011;59:S269-S276

Does Mrs. Lewis have delirium?

- 83 year old woman living in assisted living facility, widowed 3 years earlier
- Physician notes 15 pound weight loss over past 6 months
- Patient appears apathetic, not always listening to physician during interview
- Facility notes loss of appetite for past 4 months
Staff Impressions of Mrs. Lewis

- No acute changes were noted
- No fluctuations in behavior have been noted
- With cognitive assessment, thinking is logical and answers are appropriate
- Though she is apathetic and even seems somewhat sad, she remains alert and staff notes no change in conscious state
- Does she have a delirium?

Essentials of a Delirium Diagnosis

DSM-IV Delirium Definition
- Disturbance of consciousness
- Cognitive change not accounted for by preexisting dementia
- Develops over short time period
- Symptoms fluctuate over the day


Delirium is not hard to recognize

- Requires anticipation of a potential problem
- Have to be thinking about it
- Subtle signs and symptoms – often “atypical”
- Clinical diagnosis
- Requires “objective assessment”
Confusion Assessment Method

1) Acute onset and fluctuating course
   AND
2) Inattention
   AND EITHER
3) Disorganized thinking
   OR
4) Altered level of consciousness

95% sensitivity and specificity


Mrs. Lewis

- About six months earlier, Mrs. Lewis’ granddaughter went to college
- She used to visit Mrs. Lewis almost every weekend but school is too far away to visit on a regular basis
- Further assessment supports a diagnosis of depression.
- Mrs. Lewis does not have a delirium!

Why So Much Interest in Delirium?

- It is a highly prevalent condition
- It is often unrecognized
- It leads to prolonged hospital stays
- It is associated with high rates of mortality
- It can be prevented
Why Should Delirium Be Considered in Our Assessment of Behavior Change?

- Delirium - most frequent geriatric inpatient complication?
  - Prevalence: 14% - 24% at time of admission
  - Post-op delirium occurs in 10% to 52%
- Occurrence in hospitalized older adults 14 – 56%
- Prospective hip fracture cohorts: 10-65%

Delirium Often Missed – 2 Studies

- Hospitalized patients > 70 yrs (n=797)
  - Delirium present in 239 of 2721 assessments (9%)
  - Nurses recognized only 46 of these (19.3%)% (using paired researchers as gold standard)
- Urban academic ED – 12 months
  (297/337 eligible)
  - 30 (10%) with delirium
  - 11 (37%) discharged home


Economic and Societal Costs

- Economic cost of delirium attributed to:
  - Longer hospital stays (48% of all hospital days are for those 65 years and older)
  - More long term functional impairment
  - Higher likelihood of institutionalization
- Societal costs closely tied to disability
  - 62% greater risk of mortality within one year of hospital discharge
  - Lost an average of 13% of a year of life
Dementia and Delirium –Related?

- Dementia strongest risk factor: up to 75% of patients with delirium have dementia (5-fold risk increase)
- Cohort of 193 older patients diagnosed with delirium at admission or 1st week of hospitalization

<table>
<thead>
<tr>
<th>Delirium Type</th>
<th>Overall (N=193)</th>
<th>Dementia (N=136)</th>
<th>No Dementia (N=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalent</td>
<td>165 (85.5)</td>
<td>123 (90.4)</td>
<td>33 (73.3)</td>
</tr>
<tr>
<td>Incident</td>
<td>28 (14.5)</td>
<td>13 (9.6)</td>
<td>12 (26.7)</td>
</tr>
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</table>


Persistence of Symptoms

12-month deaths: 57 (29.5%)

“Causal Factors” for Delirium

- Medications
- Under and over-treated pain
- Immobility (restraints)
- Sensory deprivation (hearing and vision)
- Infection
- Dehydration
- Sleep disturbance
- Other physiologic challenges (any illness)
Delirium Prevention

- Remove the causative agent(s)
- Restore familiar routines
- Orientation
- Don’t add medications for symptom control at least as a first resort
- Increase mobility
- Establish sleep and other behavioral routines

Mr. Roberts

- 91 year old individual who lives in an apartment with his wife; 2 daughters live nearby
- Diagnosed with Alzheimer’s disease 3 years earlier characterized by significant memory loss; no longer able to manage finances
- Still helps with household chores and reads short stories
- About 3 months ago developed evening behavior of pacing, some anxiousness, and mumbling

Mr. Roberts (2)

- This behavior is stereotypic and now predictable for Mr. Roberts, occurring after he developed some sleep disturbance with noisy neighbors moving in next door.
- Is this delirium?
**“Sun-downing”**

- Poorly understood phenomenon of behavioral deterioration in the evening hours
- Impaired circadian regulation
- Environmental factors
- Most typical in demented and or institutionalized patients
- Presume delirium if a new pattern
  - Relationship between the two?
- Otherwise (if pattern is established and no obvious medical precipitant) it’s sundowning

**Sun-downing Treatment**

- Sleep hygiene
- Remove precipitants
- Trazodone 50 mg QHS
- Melatonin

**Mr. Roberts 6-months later**

- Falls and suffers a right hip fracture
- Seen on 2nd post-op day after reduction (plates and screws) – less communicative, “seems depressed”
- Current Medications
  - HCTZ 25mg QD
  - Warfarin 5mg (started post-op)
  - Metoprolol 50 mg QD
  - Oxycodone/Acetaminophen Q6 hrs prn
- PMH
  - Hypertension, BPH
Differential Diagnosis

- Depression
- Dementia
- Delirium NOS
- Alcohol withdrawal delirium
- Cerebrovascular accident (delirium)

Confusion Assessment Method

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Comparative Features

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<tr>
<th>Condition</th>
<th>Delirium</th>
<th>Dementia</th>
<th>Depression</th>
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</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Required sensorium</td>
<td>Global decline in cognitive capacity in clear consciousness</td>
<td>Disturbance in mood, affect, and self-esteem</td>
</tr>
<tr>
<td>Core Symptoms</td>
<td>Inattention</td>
<td>Amnesia, aphasia, agnosia, apraxia, disordered executive function</td>
<td>Delirium, agitation, crying</td>
</tr>
<tr>
<td>Common Symptoms</td>
<td>Confusion, disorientation, delirium</td>
<td>Depression, delusions, hallucinations, amnesia</td>
<td>Fatigue, insomnia, weakness, guilt, self-blame, hopelessness, hallucinations</td>
</tr>
<tr>
<td>Temporal Features</td>
<td>Acute or sub-acute onset</td>
<td>Chronic onset, usually gradual</td>
<td>Episodic, sub-acute onset</td>
</tr>
<tr>
<td>Diurnal Patterns</td>
<td>Usually worse in evening and night</td>
<td>No clear pattern</td>
<td>Usually worse in morning</td>
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Hip Fracture

- Prototypic geriatric illness
- Shared risk factors with other geriatric illness/disabilities – falls
- Associated comorbidities and older age
- Recovery is variable and requires multiple disciplines for greatest effectiveness


Mr. Roberts’ Exam

- BP 147/79; HR 82 and regular; RR 16;
- RA O₂ sat 96%
- Denies any pain, no complaints
- The remainder of physical exam is normal
- What else do you want to look for?

Diagnostic Strategies

- Physical inspection
- Additional environmental inspection
- Medication and laboratory review
- Confusion Assessment Method
- Establish baseline if possible
  - How was this person functioning before hospitalization?
Evaluation Results

- Physical inspection
  - Foley catheter in place
  - Soft wrist restraints (to prevent pulling on catheter)
  - Room poorly lit – windows look at brick wall
  - Roommate was yelling during night
- Labs normal except for UA; (sent earlier in day because of cloudy appearance)
  - 50 - 100 WBS with clumps, few RBCs

CAM Administered

- Patient had normal interactive behavior through noon that day, intermittently less so since
- Some tangential, illogical answers to questions
- Failed A-test

Tests for Inattention

- The “A” Test
  - Read a list of letters (up to 60) with the letter “A” occurring more frequently and in the same tone. Ask the patient to indicate every time they hear an “A”.
  - Count errors of omission and commission
  - > 2 errors considered abnormal
- Your Diagnosis?
Mr. Roberts has a Delirium

- Necessitates follow up evaluation
  - especially baseline cognitive functioning
- What do you propose for treatment?

Treatment

- Precipitants:
  - UTI
  - Immobilization
  - Sensory "deprivation"
  - Narcotics
- Therapies:
  - Send urine culture / DC Foley
  - Start antibiotics / Hold Percocet
  - Mobilize!
  - Change room / arrange for sitter
- Follow-up evaluation

Delirium Risks and Aging

- Like other geriatric syndromes, multi-factorial
- Combination of vulnerability (e.g., dementia) and noxious insult or precipitant
- The greater the vulnerability, the more benign a precipitant can be
  - Geriatrics 101!
- Delirium may be the only presenting symptom of a life-threatening disorder
Recent Nursing Home Admission

- 87 year old woman, Mrs. Allen, admitted to SNF rehab after 5-day hospitalization for pneumonia
- Became de-conditioned in hospital
- On day 4 of her NH stay, she refused physical therapy and her medications. She seemed slightly more lethargic.
- Diagnostic possibilities?

Mrs. Allen Has?

- Could be depression, noncompliance, fatigue from hospital stay and poor sleep conditions
- To the physician, she appeared as she had a few days earlier
- The nurse insisted that Mrs. Allen appeared differently a few hours earlier
- Could this be delirium in the absence of overt confusion or agitation?

Hypoactive Delirium

- Frequently missed subtype of delirium
  - Lethargy
  - Lack of interest
  - Reduced motor activity
  - Incoherent speech
- Confusion Assessment Method still applies
Mrs. Allen’s Precipitants
- Careful medication review (especially with transition and risk for errors)
- Daughter had insisted that she be given “Acetaminophen PM” which contains two medications (25 mg Diphenhydramine)
- No bowel movement since hospitalization
- Dehydration
- New surroundings

Treatment
- Removal of anticholinergic medications
- Hydration
- Therapy for constipation
- Re-orientation from family
- Within 3 days, Mrs. Allen is back in therapy and discharged home 10 days later to continue her recovery

Conclusion
- Delirium is often missed yet may be the only sign of a life threatening condition
- Despite increasing research and understanding about prevention, few programs are in place to reduce prevalence
- Diagnosis requires a simple but engaged approach and usually simple changes provide benefit