Kim Belzberg

Delirium

Delirium - Case

- Patient on our team for 10 days, extensive workup
- 67 year old male admitted with altered mental status, headache, neck pain, and stiffness
- Medical history of diabetes, HTN, HLD, CAD, s/p CABG, remote history of tobacco use and alcohol use disorders
- Found at home in only his underwear sitting on the floor when his wife came home from shopping
- Patient stated he was hot so took off his clothes
- But also stated he took off his clothes to work on the furnace as it was cold outside
- Oriented to self, location, family members but not date and time
- Had occurred before per daughter who also reported patient had a history of anxiety, patient denied previous occurrence but endorsed history of anxiety
- Differentials?

Delirium - Case

- Differential diagnosis includes:
  - transient cerebral vascular event
  - non-convulsive epilepsy
  - Drugs and/or toxins
  - Malignancy or metastasis
  - endocrine disorder
  - infection
  - acute anxiety attack
  - Dementia vs delirium
- What workup do you want?

Delirium - Case

- Labs mostly WNL, no leukocytosis, no elevated troponin, renal panel, LFTs all WNL, POCUS with IVC concerning for mild volume depletion
- CBC WNL except for mild anemia, iron studies showing iron deficiency anemia
- UA with positive leukocyte esterase, negative nitrites, slight WBC, no organisms.
- lumbar puncture was obtained which revealed only mildly elevated protein
- Abdominal bruit lead to abdominal CT: Significant atheromatous changes within the abdominal aorta, no AAA, no other significant findings
- CTA - Basically known 70% narrowing at the origin of the right external carotid artery and 50-70% narrowing at the origin of the left vertebral artery with critical stenosis at the origin of the right vertebral artery
- MRI negative for acute changes, occlusion of the right internal carotid artery which was chronic, small old lacunar infarct in the deep left anterior frontal white matter

Delirium - Case

- Admission diagnosis: altered mental status
- **Consults:**
- Neurovascular surgery: to evaluate need for intervention to carotid artery
- Neurology: echo, hyper coagulation workup, EEG to evaluate for seizure activity
- OT: ADLs, IADLs, cognitive impairment
- Psychology: anxiety vs depression
- Psychiatry: capacity, psychosis vs anxiety vs depression

Delirium - Case

- RESULTS:
- Neurovascular surgery:
  - angiogram : right internal carotid artery occlusion without any signs of vasculitis.
  - “consider diagnosis of vascular dementia secondary to cerebral hypoperfusion. In order to rule out this diagnosis we ordered a SPECT Diamox test”
  - mild perfusion deficits with small area of mildly diminished activity in right posterior parietal/occipal area, no alteration in cerebral perfusion with Diamox challenge
- No intervention recommended by neurosurgery

Delirium - Case

- Neurology: Recommended stroke work up including
  - echo - EF 70%, no structural disease
  - hyper coagulation workup negative
  - Autoimmune workup negative
  - EEG to evaluate for seizure activity was negative
  - Concern for carotid artery disease needing intervention (neurosurgery)
  - Concern for psychosis vs anxiety vs depression
  - Concern for untreated UTI

Delirium - Case

- OT: **MoCA 17/30**, repeat at discharge MoCA 18/30
- recommended 24/7 supervision and outpatient OT
- Further evaluation with **mild deficits in memory, attention, reasoning, and executive functions**.
- Per daughter - ?dementia with one year of poor memory, difficulty with numbers and bills, but was still able to work at his barbershop

Delirium - Case

- Psychology: anxiety vs depression
  - Reading from the bible - new religious awakening vs reflection of a **possible underlying neurocognitive disorder**.
- **Diagnosis**:
  - Axis I: GAD
- Unspecified depressive disorder.
- R/o unspecified neurocognitive disorder.
- Alcohol use disorder, in full sustained remission.
  - Axis II: Deferred.
  - Axis III: Acute change in mental status.
  - Axis IV: Occupational issues

Delirium - Case

- Psychiatry consult
  - noted to be verbally aggressive, and religiously preoccupied
  - Denies symptoms of mania
  - **Waxing and waning symptoms**
  - Axis I: **Delirium**, secondary to likely UTI or other inflammation, Mild neurocognitive disorder, R/o Unspecified bipolar disorder, manic episode, GAD, Alcohol use disorder in full sustained remission.
  - Axis V: psychosis vs anxiety vs depression vs hypomania
  - Does not have decision making capacity

Delirium - Case

- Consult Summary:
- Neurovascular surgery: no lesion needing intervention although may be causing mild hypoperfusion
- Neurology: no acute neurological pathology, concern for early temporal lobe dementia, consider outpatient neuropsychiatric evaluation
- OT: needs help 24/7 with both ADLs & IADLs, definite cognitive impairment
- Psychology: anxiety vs depression vs delirium
- Psychiatry: no capacity, anxiety vs depression, also delirium

Delirium - Case

- **Summary -**
- **# Acute encephalopathy in the setting of memory loss**
- **# Delirium**
- **# Generalized anxiety disorder**
- **# Vertebral artery stenosis, chronic**
- **# Right internal carotid artery occlusion, chronic**
- Differential:
  - dementia and/or psychiatric diagnosis including worsening anxiety vs depression vs hypomania
  - Concurrent delirium

Delirium - Follow Up

- Repeat admission for 1 week, went to psychiatric unit for mania vs severe anxiety
- Discharge diagnosis of mania in addition to significant anxiety, discharged on Zyprexa
- Unable to complete neuropsychologic testing
- Neurology outpatient: concern for frontotemporal dementia given changes in personality and behavior

Delirium - Case

- Did we get any clearer idea about diagnosis than our differential list at admission?
- Did this patient need to be in the hospital for 10 days?
- Did we make him worse by keeping him in the hospital?
- Delirium

in the clinic

Delirium

in the clinic

Annals of Internal Medicine

Ann Int Med. 154 (11): ITC6-1.

What is delirium and how does it differ from dementia?

Delirium: an *acute* state of confusion

- **Fluctating course**
- **Inattention**
- **At times an abnormal level of consciousness**
- **May be agitated BUT may be hypoactive / quiet**

Dementia: a *chronic* condition with slower progression

Delirium may occur in a patient with dementia

Ann Int Med. 154 (11): ITC6-1.

How big a problem is delirium?

- ~1/3 of hospitalized patients > 70 yo admitted to general medicine experience delirium
- ~ 15-25% of seniors after elective surgery
- ? > 75% of ICU patients
- Independently associated poor outcomes
  - 10x risk of death
  - 3 – 5x risk for nosocomial complications, increased LOS, NH placement

Ann Int Med. 154 (11): ITC6-1.

Which patients are at risk for delirium and what are common precipitating factors?

Predisposing factors

- Advanced age
- Preexisting dementia
- History of stroke
- Parkinson disease
- Multiple comorbid conditions
- Impaired vision / hearing
- Functional impairment
- Male sex
- History of alcohol abuse

Ann Int Med. 154 (11): ITC6-1.

Which patients are at risk for delirium and what are common precipitating factors?

Precipitating factors

- New acute medical problem
- Exacerbation of chronic medical problem
- Surgery / anesthesia
- Acute stroke
- Sepsis
- New psychoactive medication
- Pain
- Environmental change
- Urine retention / fecal impaction
- Electrolyte disturbance / dehydration

Ann Int Med. 154 (11): ITC6-1.

Should clinicians screen hospitalized patients for delirium, and if so, how?

- Screen all hospitalized patients at risk for delirium
  - Routine clinical observation is insufficient
- Use standardized mental status assessment test
  - Confusion Assessment Method (CAM) algorithm
  - CAM-ICU if patient is nonverbal
  - Richmond Agitation Sedation Scale
  - Attention test: e.g., recite serial 7s; spell W-O-R-L-D backward

Ann Int Med. 154 (11): ITC6-1.

Are there effective strategies for prevention?

- Target interventions to reduce delirium risk factors
  - Reorient patient each time rather than asking questions
  - Open blinds during the day
  - Avoid opiates, benzos, anticholinergics
- Focus on patient-centered care
- Provide preop geriatrics consult for elderly
  - Preop consultation continued thru hospitalization
  - Daily recommendations to address delirium risk factors
- Prescribe low-dose haloperidol if high-risk hip surgery (one study)
  - Reduced postop delirium severity and duration

Ann Int Med. 154 (11): ITC6-1.

CLINICAL BOTTOM LINE: Screening and Prevention…

- To prevent delirium
  - Aim to reduce common precipitating factors
  - Use proactive, multifactorial, nonpharmacologic interventions
- Assess risk factors for delirium on admission to hospital
  - Screen high-risk patients
  - Screen on admission and at least daily thereafter
  - Use proven methods, such as CAM

Ann Int Med. 154 (11): ITC6-1.

Screening: Use CAM

Confusion Assessment Method (CAM)

Short form

island health

The diagnosis of delirium by CAM requires the presence of BOTH features ***A*** and ***B***		
CAM Confusion Assessment Method	**A.** **Acute onset** and **Fluctuating course**	Is there evidence of an acute change in mental status from patient baseline? Does the abnormal behavior: ➢ come and go? ➢ fluctuate during the day? ➢ increase/decrease in severity?
	B. **Inattention**	Does the patient: ➢ have difficulty focusing attention? ➢ become easily distracted? ➢ have difficulty keeping track of what is said?
	AND the presence of EITHER feature *C or D*	
	C. **Disorganized thinking**	Is the patient's thinking ➢ disorganized ➢ incoherent For example does the patient have ➢ rambling speech/irrelevant conversation? ➢ unpredictable switching of subjects? ➢ unclear or illogical flow of ideas?
	D. **Altered level of consciousness**	Overall, what is the patient's level of consciousness: ➢ alert (normal) ➢ vigilant (hyper-alert) ➢ lethargic (drowsy but easily roused) ➢ stuporous (difficult to rouse) ➢ comatose (unrousable)

Adapted with permission from: Inouye SK, vanDyck CH, Alessi CA, Balkin S, Siegal AP, Horwitz RI. Clarifying confusion: The Confusion Assessment Method. A new method for detection of delirium. Ann Intern Med. 1990; 113: 941-948. Confusion Assessment Method: Training Manual and Coding Guide, Copyright © 2003, Hospital Elder Life Program, LLC.

Please see the **CAM Training Manual**, available at http://www.hospitalelderlifeprogram.org/private/cam-disclaimer.php?pageid=01.08.00

Ann Int Med. 154 (11): ITC6-1.

Screen with CAM Requires A and B

A: Acute and Fluctuating

- develops during hospital stay

- **Patient OK when you pre-round, not OK when you round, OK later in the day, then gets cross cover call at night**
- **Do you remember me?**

B: Inattention

- **can't count backwards from 10 or 100**
- **Ask them what is their understanding of what you just explained**

A.

Acute onset

and

Fluctuating course

Is there evidence of an acute change in mental status from patient baseline?

Does the abnormal behavior: come and go?

fluctuate during the day?

increase/decrease in severity?

B. Inattention

Does the patient:

have difficulty focusing attention?

become easily distracted?

have difficulty keeping track of what is said?

Ann Int Med. 154 (11): ITC6-1.

Screen with CAM: And the presence of C or D

C: Disorganized thinking

- rambles, switches topics, unclear statements, illogical thoughts

C. Disorganized thinking

Is the patient's thinking disorganized

incoherent

For example does the patient have

- ramblingspeech/irrelevantconversation?
- unpredictableswitchingofsubjects?
- unclear or illogical flow of ideas?

D: Altered level of consciousness

Think of a continuum:

- Hyperalert
- Alert
- Lethargic
- Stuporous

D.

Altered level of consciousness

Overall, what is the patient's level of consciousness:

- alert (normal)
- vigilant(hyper-alert)
- lethargic (drowsy but easily roused)
- stuporous (difficult to rouse)
- comatose(unrousable)

Ann Int Med. 154 (11): ITC6-1.

When should clinicians consider a diagnosis of delirium?

- When a hospitalized patient is confused
- When a high-risk patients in any setting is confused

- Better to rule out delirium first than attribute confusion to dementia or other underlying chronic disorder

Ann Int Med. 154 (11): ITC6-1.

What elements of the history and physical examination indicate delirium?

- **Key History Elements for Delirium**
  - **Time course of mental status changes**
  - **Association of mental status changes with other events**
  - **Medication history**
  - **Sensory deprivation (absence of glasses or hearing aids)**
  - **Pain assessment**

Ann Int Med. 154 (11): ITC6-1.

What elements of the history and physical examination indicate delirium?

- **Key Physical Elements for Delirium**
  - **Vital signs, including oxygen saturation**
  - **General medical exam, focused on cardiac and pulmonary**
  - **Neurologic exam, including mental status and focal findings**
  - **Cognitive exam (inattention is hallmark cognitive deficit)**

Ann Int Med. 154 (11): ITC6-1.

What is the role of lab, imaging, and other studies in the diagnosis and evaluation?

- Identify delirium causes + correctable contributing factors
  - Select on basis of history and physical exam
    - CBC
    - Serum electrolytes
    - BUN, creatinine
    - Glucose
    - Albumin, bilirubin, INR
    - Urinalysis, culture
    - Drug levels, toxic screen
    - Chest x-ray
    - ECG
    - Arterial blood gases
    - Cerebral imaging (CT, MRI)
    - Lumbar puncture
    - Electro-encephalography

Ann Int Med. 154 (11): ITC6-1.

What other disorders should clinicians consider in patients with suspected delirium?

- Dementia
- Depression
- Other acute psychiatric syndromes

- In many cases, not truly a "differential" diagnosis
  - Syndromes can coexist + are risk factors for one another

Ann Int Med. 154 (11): ITC6-1.

When should subspecialty consultation be considered for patients with delirium?

- For help with differential diagnosis
- For help evaluating contributing factors
- For help guiding treatment

- Depending on patient characteristics…
  - Consult expert in geriatrics, psychiatry, neurology, or medical/surgical intensive care

Ann Int Med. 154 (11): ITC6-1.

CLINICAL BOTTOM LINE: Diagnosis…

- Hospitalized patients with altered cognition:
  - Assess first for delirium
  - Then, as appropriate, assess (in this order) for:
    - Subsyndromal delirium
    - Depression and other acute psychiatric syndromes
    - Dementia

Ann Int Med. 154 (11): ITC6-1.

When should clinicians consider hospitalization for suspected delirium?

- **Consider hospitalization when:**
  - **Delirium associated with destabilizing medical illness**
  - **Because home support inadequate**
- **Beware of hospitalization risks**
  - **New, unfamiliar environment may exacerbate the delirium**
  - **Introduces high risk for nosocomial complications**

Ann Int Med. 154 (11): ITC6-1.

What nonpharmacologic measures are useful in treatment?

- Remove and reduce contributing factors
  - Psychoactive meds
  - Fluid and electrolyte abnormalities or hypoxemia
  - Severe pain, severe anemia, or infection
  - Sensory deprivation or significant immobility

Ann Int Med. 154 (11): ITC6-1.

What nonpharmacologic measures are useful in treatment?

- **Provide attentive supportive care**
  - **Minimize indwelling catheters, IV lines, ECG leads**
  - **Eliminate physical restraints and mobilize patient ASAP**
  - **Monitor urinary, bowel output**
  - **Address nutritional needs, including assistance with meals**
  - **Provide sensory input and interpersonal contact + orientation**

Ann Int Med. 154 (11): ITC6-1.

Management of Pain and Bowel Movements

- Schedule daily Miralax or Senekot
- If no bowel movement in two days use Doculox suppository or enema (low volume)
- Avoid lactulose —> causes distension
- Avoid high volume enemas and manual impaction both of which are painful
- Pain - schedule acetaminophen 1000 mg three times daily
- Use low dose orals as needed such as oxy 2.5 mg for moderate and 5.0 mg for severe

Ann Int Med. 154 (11): ITC6-1.

When should clinicians consider drug therapy?

- When nonpharmacologic interventions are insufficient
- No FDA-approved drugs to treat delirium
  - Off-label drugs are used for delusions, hallucinations, dangerous behaviors
    - Haloperidol as needed except with Parkinson's and Lewy body dementia
    - Quetiapine at bedtime as it helps with restoring sleep cycle
  - Beware pharmacologic intervention may prolong delirium
  - Verbal comfort, reassurance, and provision of a sitter or family companion may be preferable

Ann Int Med. 154 (11): ITC6-1.

When should clinicians consider drug therapy?

- No evidence for use of melatonin but also no evidence of harm
- olanzapine, risperidone in outpatient setting if concern for co-morbid psychiatric illness (onset too long for use in acute hospital setting)
- Avoid lorazepam or other benzodiazepines as there is definite evidence of harm with use
- No anticholinergics such as Benadryl as there is definite evidence of harm with use

Ann Int Med. 154 (11): ITC6-1.

Are physical restraints ever appropriate?

- To control violent behavior
- To prevent removal of important devices
  - Endotracheal tubes, intra-arterial devices, catheters
- Reassess the indicators for use frequently
  - Remove as soon as possible
  - May increase injury risk
  - May prolong delirium
- Calm reassurance may be more effective than restraints

Ann Int Med. 154 (11): ITC6-1.

When should clinicians consider specialty consultation?

- If the cause of delirium is obscure
- If patient doesn't improve after obvious cause addressed
- Internal medicine consults are the starting point
- Consider consulting geriatrician

Ann Int Med. 154 (11): ITC6-1.

What is the risk for recurrence and how should clinicians follow patients?

- Patients remain vulnerable, even after confusion clears
  - Monitor daily in hospital; weekly when recently discharged
  - Monitor monthly after return to community
- If symptoms persist or worsen, consider:
  - Modifications to treatment plan
  - Geriatrics assessment or neuropsychological testing
  - Hospitalization or increased support services
- Aim to minimize delirium duration
- Even patients with full recovery vulnerable to recurrence
  - Especially when rehospitalized or having surgery

Ann Int Med. 154 (11): ITC6-1.

CLINICAL BOTTOM LINE: Treatment…

- **Key elements of delirium treatment:**
  - **Assess daily using CAM and document**
  - **Identify causative and contributing factors**
  - **Address or reverse these factors to the extent possible**
  - **Provide supportive care to reduce risk for complications**
  - **Attempt to minimize the duration of delirium by avoiding harmful medications such as benzos and anticholinergics**

Ann Int Med. 154 (11): ITC6-1.

Delirium- No Extensive Workup Needed

- Multiple Studies from 1990's - 2010
  - No need for extensive workup unless no obvious cause is found
  - No imaging needed if no evidence of trauma, no new focal neurologic signs are present, and the patient is arousable and able to follow simple commands
  - EEG only if unknown aetiology of the altered consciousness

Delirium - More Studies Needed

The detection of delirium in admitted oncology patients: a scoping review.
Sands MB, Wee I, Agar M, Vardy JL
Eur Geriatr Med. 2022;13(1):33. Epub 2022 Jan 15.

PURPOSE Delirium leads to poor outcomes for patients and careers and has negative impacts on staff and service provision. Cancer rates in elderly populations are increasing and frequently, cancer diagnoses are a co-morbidity in the context of frailty. Data relating to the epidemiology of delirium in hospitalised cancer patients are limited. With the overarching purpose of improving delirium detection and reducing the morbidity and mortality of delirium in cancer patients, we reviewed the epidemiological data and approach to delirium detection in hospitalised, adult oncology patients.

METHODS MEDLINE, EMBASE, CINAHL, PsycINFO, and SCOPUS databases were searched from January 1996 to August 2017. Key concepts were delirium, cancer, inpatient oncology and delirium screening/detection.

RESULTS Of 896 unique studies identified; 91 met full-text review criteria. Of 12 eligible studies, four applied recommended case ascertainment methods to all patients, three used delirium screening tools alone or with case ascertainment tools sub-optimally applied, four used tools not recommended for delirium screening or case ascertainment, one used the Confusion Assessment Method with insufficient information to determine if it met case ascertainment status. Two studies presented delirium incidence rates: 7.8%, and 17% respectively. Prevalence rates ranged from 18-33% for general medical or oncology wards; 42-58% for Acute Palliative Care Units (APCU); and for older cancer patients: 22% and 57%. Three studies reported reversibility; 26% and 49% respectively (APCUs) and 30% (older patients with cancer). Six studies had a low risk of bias according to QUADAS-2 criteria; all studies in the APCU setting were rated at higher risk of bias. Tool selection, study flow and recruitment bias reduced study quality.

CONCLUSION The knowledge base for improved interventions and clinical care for adults with cancer and delirium is limited by the low number of studies. A clear distinction between screening tools and diagnostic tools is required to provide an improved understanding of the rates of delirium and its reversibility in this population.

Delirium -No Benzodiazepines

Benzodiazepines for delirium.

Lonergan E, Luxenberg J, Areosa Sastre A, Wyller TB

Cochrane Database Syst Rev. 2009;

BACKGROUND Delirium occurs in 30% of hospitalised patients and is associated with prolonged hospital stay and increased morbidity and mortality. The results of uncontrolled studies have been unclear, with some suggesting that benzodiazepines may be useful in controlling non-alcohol related delirium.

OBJECTIVES To determine the effectiveness and incidence of adverse effects of benzodiazapines in the treatment of non-alcohol withdrawal related delirium.

SEARCH STRATEGY The trials were identified from a search of the Specialized Register of the Cochrane Dementia and Cognitive Improvement Group on 26 February 2008 using the search terms: (deliri* or confusion) and (benzo* or lorazepam," or "alprazolam" or "ativan" or diazepam or valium or chlordiazepam).The CDCIG Specialized Register contains records from major health databases (including MEDLINE, EMBASE, CINAHL, PsycINFO, CENTRAL, LILACS) as well as many ongoing trial databases and grey literature sources.

SELECTION CRITERIA Trials had to be unconfounded, randomized and with concealed allocation of subjects. Additionally, selected trials had to haveassessed patients pre- and post-treatment. Where crossover design was present, only data from the first part of the trial were to be examined.

DATA COLLECTION AND ANALYSIS Two reviewers extracted data from included trials. Data were pooled where possible, and were to be analysed using appropriate statistical methods. Odd ratios or average differences were to be calculated. Only "intention to treat" data were to be included.

MAIN RESULTS Only one trial satisfying the selection criteria could be identified. In this trial, comparing the effect of the benzodiazepine, lorazepam, with dexmedetomidine, a selective alpha-2-adrenergic receptor agonist, on delirium among mechanically ventilated intensive care unit patients, dexmedetomidine treatment was associated with an increased number of delirium- and coma-free days compared with lorazepam treated patients (dexmedetomidine patients, average seven days; lorazepam patients, average three days; P = 0.01). One partially controlled study showed no advantage of a benzodiazepine (alprazolam) compared with neuroleptics in treating agitation associated with delirium, and another partially controlled study showed decreased effectiveness of a benzodiazepine (lorazepam), and increased adverse effects, compared with neuroleptics (haloperidol, chlorpromazine) for the treatment of acute confusion.

AUTHORS' CONCLUSIONS No adequately controlled trials could be found to support the use of benzodiazepines in the treatment of non-alcohol withdrawal related delirium among hospitalised patients, and at this time benzodiazepines cannot be recommended for the control of this condition. Because of the scarcity of trials with randomization of patients, placebo control, and adequate concealment of allocation of subjects, it is clear that further research is required to determine the role of benzodiazepines in the treatment of non-alcohol withdrawal related delirium.

Delirium - Haloperidol and Quetiapine

Efficacy and safety of quetiapine in critically ill patients with delirium: a prospective, multicenter, randomized, double-blind, placebo-controlled pilot study.
Devlin JW, Roberts RJ, Fong JJ, Skrobik Y, Riker RR, Hill NS, Robbins T, Garpestad E
Crit Care Med. 2010;38(2):419.

OBJECTIVE To compare the efficacy and safety of scheduled quetiapine to placebo for the treatment of delirium in critically ill patients requiring as-needed haloperidol.

DESIGN Prospective, randomized, double-blind, placebo-controlled study.

SETTING Three academic medical centers.

PATIENTS Thirty-six adult intensive care unit patients with delirium (Intensive Care Delirium Screening Checklist score>or = 4), tolerating enteral nutrition, and without a complicating neurologic condition.

INTERVENTIONS Patients were randomized to receive quetiapine 50 mg every 12 hrs or placebo. Quetiapine was increased every 24 hrs (50 to 100 to 150 to 200 mg every 12 hrs) if more than one dose of haloperidol was given in the previous 24 hrs. Study drug was continued until the intensive care unit team discontinued it because of delirium resolution, therapy>or = 10 days, or intensive care unit discharge.

MEASUREMENTS AND MAIN RESULTS Baseline characteristics were similar between the quetiapine (n = 18) and placebo (n = 18) groups. Quetiapine was associated with a shorter time to first resolution of delirium [1.0 (interquartile range [IQR], 0.5-3.0) vs. 4.5 days (IQR, 2.0-7.0; p =.001)], a reduced duration of delirium [36 (IQR, 12-87) vs. 120 hrs (IQR, 60-195; p =.006)], and less agitation (Sedation-Agitation Scale score>or = 5) [6 (IQR, 0-38) vs. 36 hrs (IQR, 11-66; p =.02)]. Whereas mortality (11% quetiapine vs. 17%) and intensive care unit length of stay (16 quetiapine vs. 16 days) were similar, subjects treated with quetiapine were more likely to be discharged home or to rehabilitation (89% quetiapine vs. 56%; p =.06). Subjects treated with quetiapine required fewer days of as-needed haloperidol [3 [(IQR, 2-4)]vs. 4 days (IQR, 3-8; p = .05)]. Whereas the incidence of QTc prolongation and extrapyramidal symptoms was similar between groups, more somnolence was observed with quetiapine (22% vs. 11%; p = .66).

CONCLUSIONS Quetiapine added to as-needed haloperidol results in faster delirium resolution, less agitation, and a greater rate of transfer to home or rehabilitation. Future studies should evaluate the effect of quetiapine on mortality, resource utilization, post-intensive care unit cognition, and dependency after discharge in a broader group of patients.

Delirium

HealthinAging.org

What You Can Do: Caregiving Tips for Older Adults with Delirium

Since you know the older person best, you can quickly pick up on changes in their mental state. Tell the healthcare staff right away if you notice anything unusual.

Stay with the older person as much as possible
Friends and family offer comfort and familiarity. Many hospitals allow family members or friends to stay overnight in the hospital room. Try to provide calm reassurance and comfort. Being there for mealtimes is also important and supports better food and liquid intake.

Keep eyeglasses, hearing aids, and dentures with the older person
They are often put away at the hospital, and this can leave an older person disoriented and less able to function.

Help the older person remember where they are
You can gently and calmly explain why he or she is in the emergency room, hospital, or other facility. Offer frequent, simple explanations of what is happening and of any changes in routine.

Make the person's surroundings feel more familiar
Bring a few family photos and familiar objects to the hospital, such as a favorite blanket.

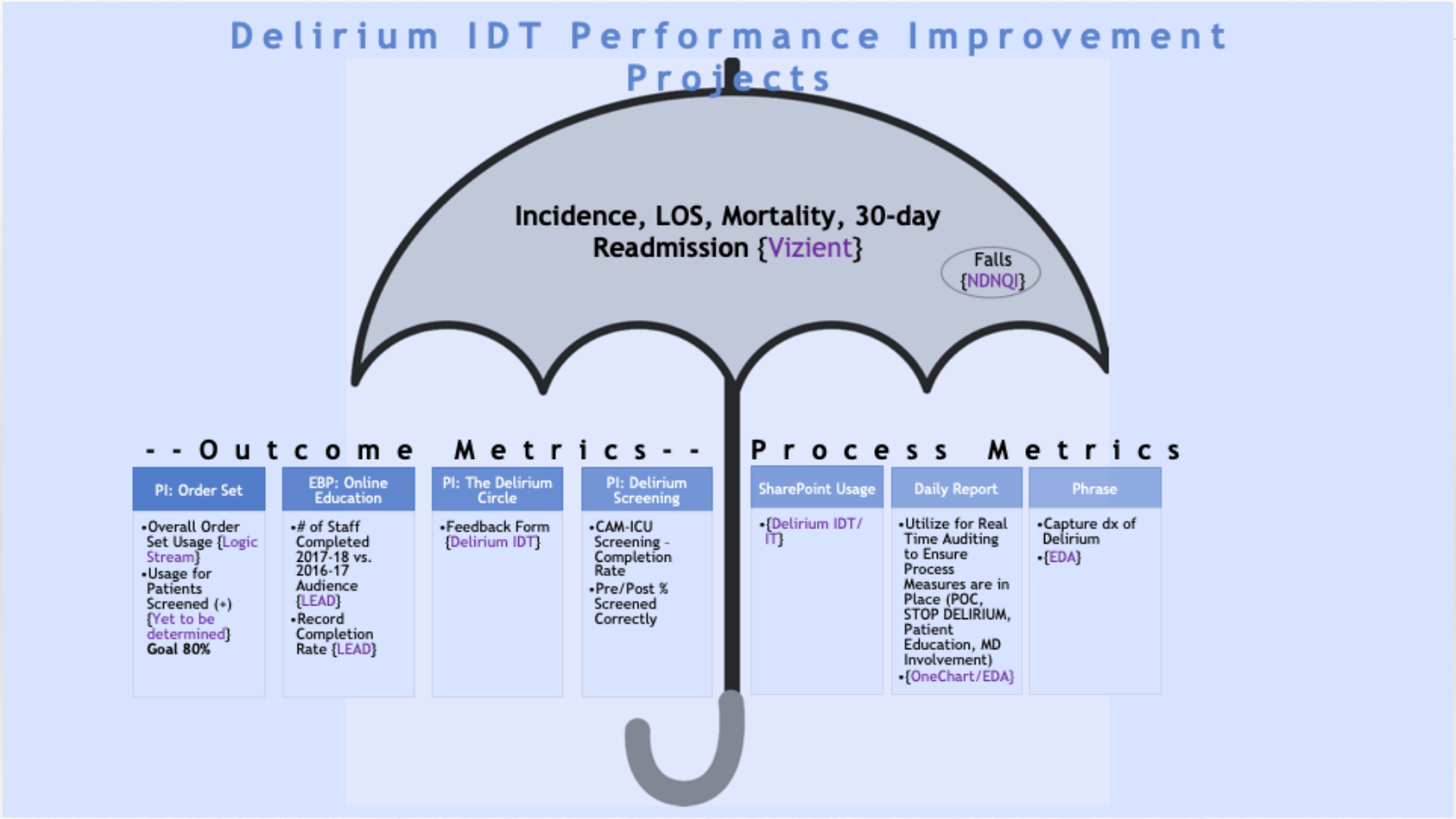
Encourage physical activity, games, and conversation
Ask the hospital staff if you can help the older person sit in a chair or go for a walk. Simple games, quiet conversation, or other pastimes the person enjoys are also helpful.

Bring a current medication list to the hospital
It's important for all healthcare providers to know all the medications an older person is taking, along with the dosages. Be sure to include over-the-counter medications and supplements, such as vitamins and herbal remedies. It's best for an older person to have a medication list with them at all times.

Bring a list of the older person's health issues
Having this information written down and on hand is always helpful for an older person, particularly if they are taken to the emergency room. Don't forget to include any allergies. And also be sure to include contact information for other healthcare professionals involved in the older adult's care.

HIA-TipSheet ManagingDeliriumJuly19

Example of Research Metrics



Question

STOP DELIRIUM©: Establishing an Operational Definition to Support Performance Improvement and Research

Karen A. Baatz, APRN, ACNS, Clinical Nurse Specialist, Office of Nursing Practice
Casey Riedberger, BSN, RN, CPHQ, Improvement Advisor, Department of Quality & Safety

BACKGROUND

The organization's leadership identified delirium prevention and management as a priority. The Delirium Interdisciplinary Team, led by a clinical nurse specialist and psychiatrist, was formed. The team understood great quality efforts must be grounded in a strong foundation. A team charter and objectives were developed. To measure success and ongoing opportunities for performance improvement (PI), data would be abstracted through Vizient. Aligning with organizational priorities, outcome measures included incidence, length of stay (LOS), mortality, and 30 day readmission rates.

LEARNING OBJECTIVES

1. Identify ICD-10 codes used to establish the operational definition of delirium.
2. Explain the significant impact of a secondary diagnosis of delirium on key patient outcomes.

TARGET AUDIENCE

Nurse, Physician, General

CONTACT

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DISCLOSURES

Karen A. Baatz: Nothing to disclose
Casey Riedberger: Nothing to disclose

PROBLEM

METHODS

Figure 1. Selection of ICD-10 Codes

Table 1. Comparison of ICD-10 Codes Utilized

Vizient	Sanford Health - Fargo	State PI Network
➢ Not POA	➢ Not POA	➢ Not POA
➢ Must include ICU stay	➢ All adult patients	➢ Age 70 years & older
R404: Transient alteration of awareness	F05: Delirium due to known physiological condition	F05: Delirium due to known physiological condition
R410: Disorientation, unspecified	G93.40: Encephalopathy, unspecified	G93.40: Encephalopathy, unspecified
R440: Auditory hallucinations	G93.41: Metabolic encephalopathy	G93.41: Metabolic encephalopathy
R441: Visual hallucinations	G93.49: Other encephalopathy	G93.49: Other encephalopathy
R442: Other hallucinations	G92: Toxic encephalopathy	G92: Toxic encephalopathy
R443: Hallucinations, unspecified	E512: Wernicke's encephalopathy	I67.83: Posterior reversible encephalopathy syndrome

RESULTS

Monthly delirium cases ranged from 27 to 62, or approximately 2.4% of total patients discharged. The highest mean LOS in the all delirium group was 15.69 days (N = 142) versus 22.22 days (N = 27) for patients in the MPCG with delirium and 5.32 days (N = 584) for the MPCG without delirium. With the exception of one quarter, 30 day readmission rates were consistently higher in patients with delirium. The all delirium group mortality rate was as high as 17.61% (N = 142). For patients in the MPCG with delirium, mortality ranged from 19.05% (N = 21) to 38.24% (N = 53). Patients with delirium consistently had a mortality index above one. The MPCG with delirium had higher LOS and mortality rates than the all delirium group.

Chart 1. Monthly Delirium Cases Identified

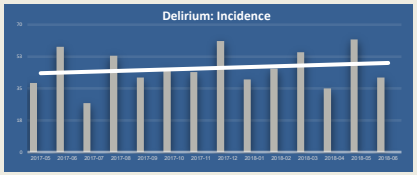
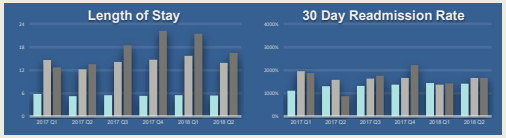


Chart 2-5. All Patients With Delirium Compared to MPCG With & Without Delirium



CONCLUSION

Delirium has significant consequences not only for the patient and family but for the organization as well. To ensure HAD is continuously addressed utilizing PI efforts, a robust and expert process for data abstraction is imperative. This innovative approach provides the necessary standardization to drive improvement. A surgical comparison group is forthcoming.

What Worked Well
- Unwavering executive leadership support
- An engaged interdisciplinary team approach
- Alignment with organizational priorities
- Intentional evidence based approach to define delirium
- Creation of the MPCG to demonstrate real world impact
- Utilization & availability of internal & external Vizient experts
- Development of a delirium dashboard to trend & report data

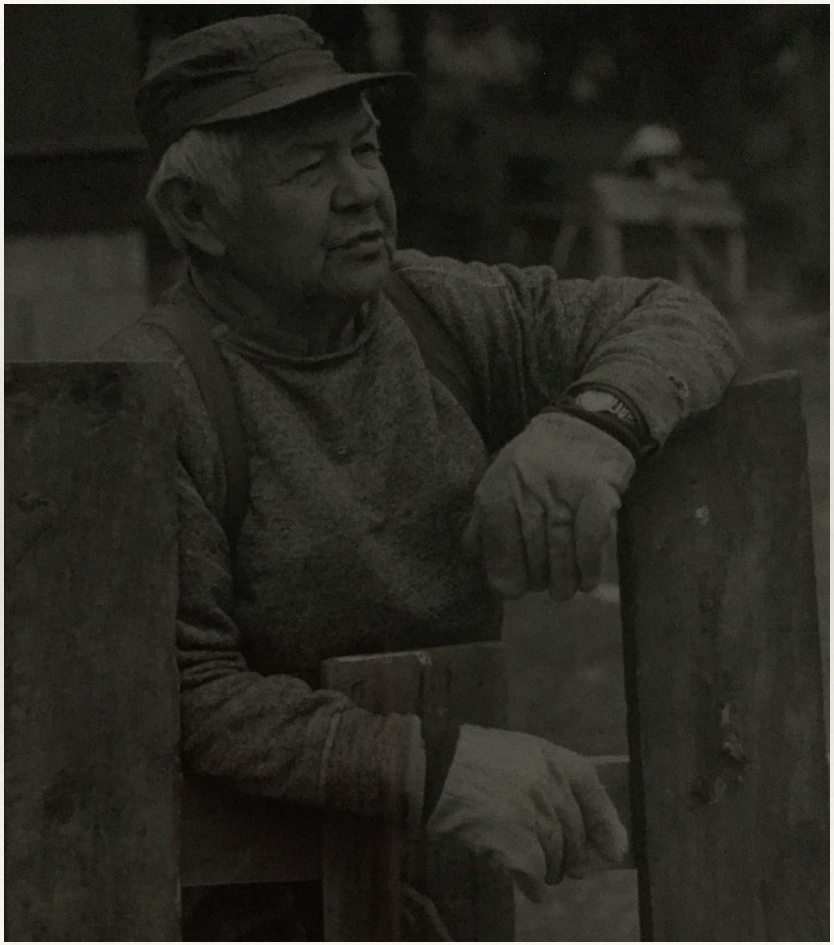
Challenges
- Complexity of delirium identification
- Data dependent upon capturing delirium diagnosis at discharge
- Inability to identify a benchmark hospital

Lessons Learned
- Essential to exclude POA when preparing data reports
- Dedicated data person ensures consistency & accuracy
- Necessary to have a thorough understanding of Vizient data

Delirium: Summary

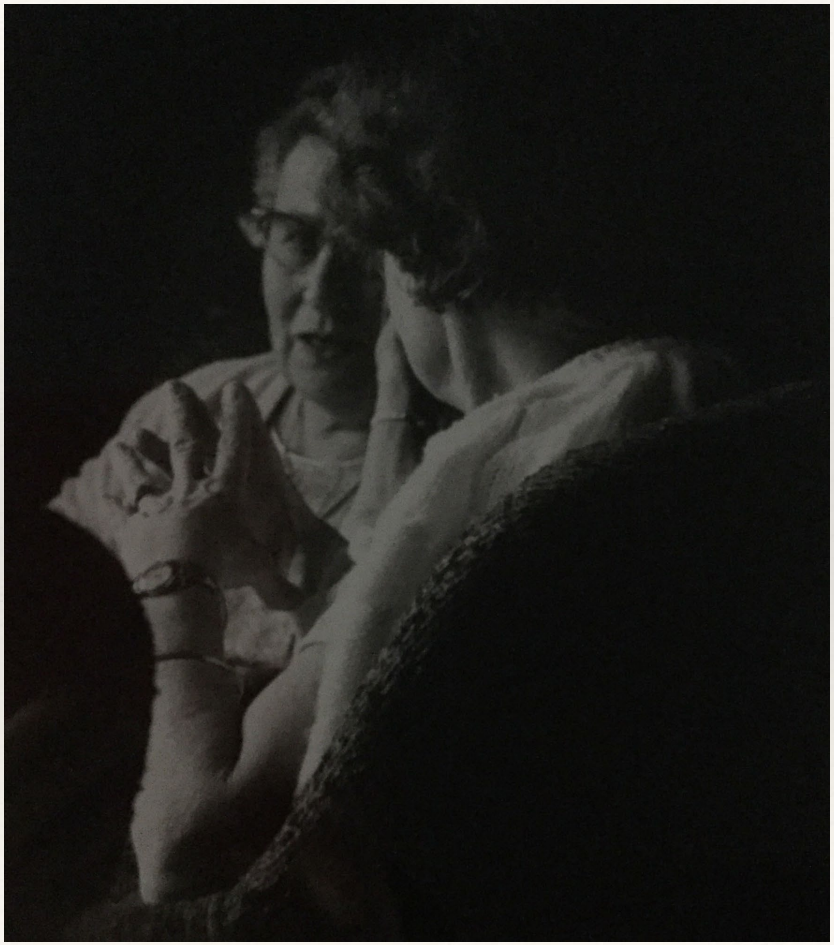
Delirium: an *acute* state of confusion

- **Fluctating course**
- **Inattention**
- **At times an abnormal level of consciousness**
- **May be agitated BUT may be hypoactive / quiet**



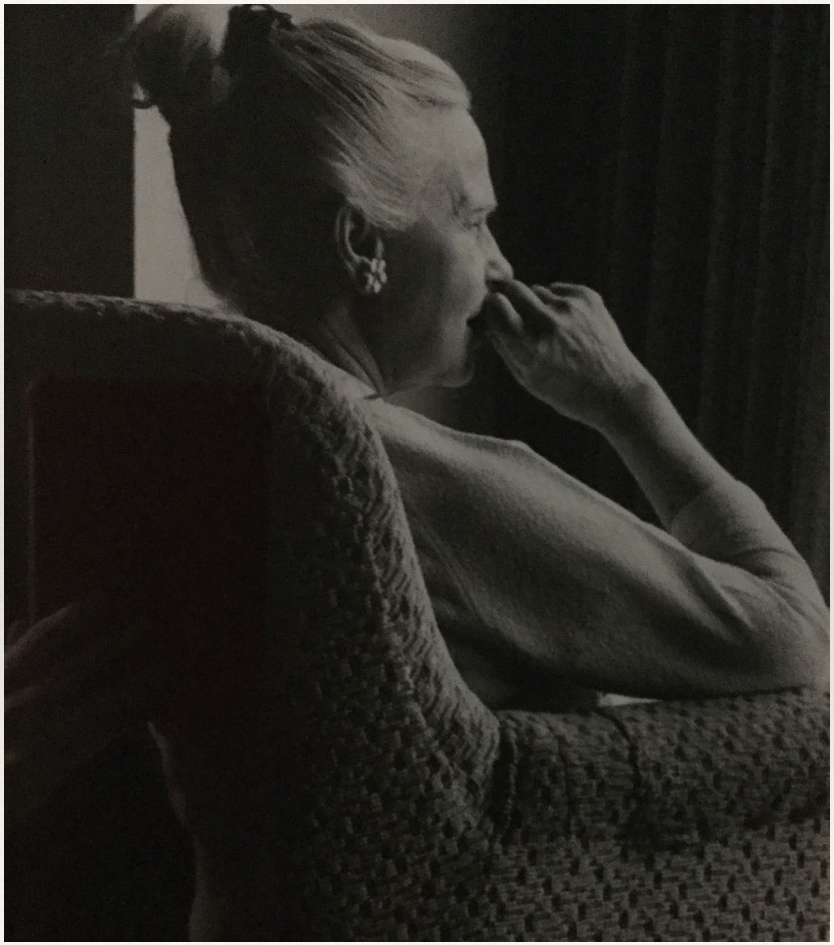
Delirium: Summary

- 1/3 of hospitalized patients > 70 years of age admitted to general medicine experience delirium
- 15-25% of seniors after elective surgery
- > 75% of ICU patients
- Independently associated poor outcomes
  - 10x risk of death
  - 3 – 5x risk for nosocomial complications, increased LOS, NH placement



Delirium: Summary

- **Key elements of delirium treatment:**
  - **Assess daily using CAM and document**
  - **Identify causative and contributing factors**
  - **Address or reverse these factors to the extent possible**
  - **Provide supportive care to reduce risk for complications**
  - **Attempt to minimize the duration of delirium by avoiding harmful medications such as benzos and anticholinergics**
  - **Haldol as needed and seroquel at bedtime have the best evidence**
  - **Delirium orderset if it exists**



Delirium: Summary

Focused Daily Assessment Using CAM

- Feature 1: Acute onset of Fluctuating Course
- Feature 2: Inattention
- Feature 3: Disorganized thinking
- Feature 4: Altered Level of consciousness
- Need 1 and 2 plus either 3 or 4

Delirium: Summary

- Assess and document daily for delirium using CAM
- Use delirium order set to auto populate non-pharmaceutical approaches to prevention
- Family involvement
- Haldol if agitated
- Bedtime seroquel to normalize sleep cycle once delirium dignosed
- Pain - schedule acetaminophen if appropriate
- Bowel movement - schedule daily using a gentle approach

Delirium

Thanks

- Many thanks to:
  - Karen Baatz
  - Dr Thondapi
  - Dr Theige
  - Team members of delirium project
  - Fellow residents

Question

Figure 2. Delirium Through the Patient's Eyes