Confused on the Wards...

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Major Objectives

1. Describe common causes of delirium

2. Recognize risk factors, and means of prevention of delirium in hospitalized patients

3. Work up and treatment of delirium when it does occur, and management of behavioral problems
Mrs. Friday
Mrs. Friday

- 84 yo female, living at the Durand RH for the last 8 years after a stroke; was having problems managing at home
- also has Type II Diabetes and hypertension
- Active in her RH, using her walker; also a little more forgetful and repetitive, and this has been getting slowly worse over the last year or so
In the ER...

- Came into ER after being found on the floor of her RH
- Unable to get up and complaining of L hip and abdominal pain
- In the ER, very muddled up & disoriented
- Incontinent of foul smelling urine
- Picking at imaginary things, scared, and very frightened
Initial work up...

- No fracture on X-ray
- Normal CBC, lytes and troponins
- CT head shows mild atrophy
- Urine collected from foley inserted shows *E. coli*; started ABX
- Admitted to Medicine for further assessment and work up of confusion

*Alas! It’s been a week later, and she’s still not better!*
What would you do?

Is this Delirium?

Dementia??

Or something else???
Cognitive Impairments

• A cognitive impairment is an abnormal change in how a person thinks, emotionally responds, or behaves.

• It may involve changes in one or more domains including:
  - Memory
  - Language
  - Perception
  - Judgment & insight
  - Attention
  - Ability to perform self care and normal social/vocational tasks and roles (ADLs & IADLs)
Cognitive Impairments

- The most common causes of cognitive impairment in seniors are:

  **Dementia** (chronic, irreversible)
  **Delirium** (acute, reversible)
  **Depression** (chronic, usually reversible)
Delirium

Definition:

- a disturbance of consciousness with inattention that develops over a short time & fluctuates
Clinical Features of Delirium

- Acute onset *
- Poor attention *
- Fluctuating course *
- Disorganized thinking *
- Altered Level of Consciousness *

* Features screened by the CAM

- Disorientation
- Memory impairment
- Sleep/wake disturbance
- Psychomotor agitation/retardation
- Hallucinations/misperceptions
Psychomotor Variants of Delirium:

- **Hyperactive** ("wild man"); 25%

- **Hypoactive** ("out of it!", “pleasantly confused”); 50%

- **Mixed delirium** (features of both), with reversal of normal day-night cycle ("sundowning")
Differential Diagnosis for Delirium?

- Dementia
- Psychosis
- Mood disorder
- Stroke
- Previous Brain Injury
- Post Ictal States
- Communication Barrier (deafness, language)
- “Weird” Syndromes (Anton’s, Charles Bonnet)
Delirium versus Dementia?

**DELIRIUM**
- Acute
- Inattention
- AbN LOC
- Fluctuations/minutes
- Reversible
- Hallucinations common

**DEMENTIA**
- Gradual
- Memory disturbance
- N LOC
- None/days
- Irreversible
- Hallucinations common only in advanced disease

*It is common for Delirium to be superimposed on Dementia!*
Even patients with advanced dementia are able to focus and attend!

• suspect delirium if:
  – Acute change in N behaviours or BADLs
  – No longer sleeping, or much more sleepy
  – SSx suggestive of new UTI or pneumonia; fever, SOB, new incontinence
So What? **Why** is Delirium Important?

3 criteria:

**Common, Morbidity & Costly!**

- on admit? 15-20%
- in hospital? 7-31%
- Ortho? 25-65%
- ICU: 90%!
- Death ~20-35%
- Cognitive drop in 40%
- Premature institutionalization
- LOS doubles
- ++ hospital $
- Caregiver burden
Causes of Delirium?

- brain’s way of demonstrating “acute organ dysfunction”

- Anything that hurts the brain or impairs its proper functioning can provoke a delirium!
In other words, anything that makes an older person very very sick...

...can cause a delirium in a vulnerable older person!
Basic Pathophysiology

- Multiple mechanisms:
- Reversible impairment of cerebral oxidative metabolism and multiple neurotransmitter abnormalities* caused by acute medical illness

*Cholinergic inhibition/5HT deficiency/excess dopaminergic activity/increased inhibitory GABA/etc.
Frail Elderly persons are particularly vulnerable to delirium:

**WHY?**

- Decreased physiological reserves (*homeostenosis*)
- Greater fragility of normal Blood Brain Barrier
- Age related changes to excretion, metabolism and to response to meds
- Increased # meds = more med: med interactions and med: disease interactions
- Higher chronic disease burden
Risk factors for Delirium in the Elderly in the community?

- Dementia or cognitive impairment
- Low serum albumin
- Multiple, severe, acute or unstable medical problems
- Multiple medications
- Metabolic disturbance
- Advanced age (>80)
- Renal Impairment
- Infection (especially UTI)
- Fractures
- Visual/Hearing impairment
- Fever / hypothermia
- Psychoactive substance use
- Fecal impaction
- Few social interaction
Top 4 predisposing factors of delirium in the community

**Previous Cognitive impairment:** RR=2.8 (1.2-6.7)

**Vision impairment:** RR=3.5 (1.2-10.7)

**High Urea/Creatinine:** RR=2.0 (0.9-4.6)

**Any severe illness:** RR=3.5 (1.5-8.2)

Added Risk factors in Hospital (i.e., bad things WE do to elderly patients):

- NPO status (RR 4.0)
- Restraints (RR 4.4)
- Foley catheter (RR 2.4)
- 3+ new med (RR 2.9)
- Any iatrogenic event (RR 1.9)

Management of Delirium

- Consider the possibility; recognizing & naming delirium is the 1st step to treating it

- But how? Screening SMMSE is not very sensitive to pick it up...

- However the **CAM** is...
Confusion Assessment Method (CAM)

1. History of acute onset of change in patient’s normal mental status & fluctuating course?

   AND

2. Lack of attention?

   AND EITHER

3. Disorganized thinking?
4. Altered Level of Consciousness?

*Sensitivity: 94-100%*
*Specificity: 90-95%*
*Kappa: 0.81*

*Inouye SK: Ann Intern Med 1990;113(12):941-8*

*Arch Intern Med. 1995; 155:301*
Serial testing of Attention:

- Serial 7s/DRLOW on SMMSE
- Digit span
- Clock Drawing Test
Once you identify Delirium, now what?

- Identify the acute medical problem/s could be either triggering the delirium, or prolonging it!

- Clarify pre-morbid functional status and sequence of events

- Identify all predisposing and precipitating factors, and consider the differential
Causes of Delirium?

mnemonic

I   WATCH   DEATH
I WATCH DEATH

• I Infection: Most common are pneumonias & UTI in elderly, but sepsis, cellulitis, SBE and meningitis can also occur
I WATCH DEATH

- I Infection

- W Withdrawal:
  benzodiazepines, ETOH, typical neuroleptics, anticholinergics
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic: electrolytes, para-lytes, renal failure, acid-base disorders, abnormal glycemic control, pancreatitis, CTD
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma: head injury (SDH, SAH), pain, vertebral or hip fracture, concealed bleed, urinary retention, fecal impaction
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology:
  tumor, AVM, encephalitis, meningitis, abscess
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology
- H Hypoxia from COPD exacerbation, CHF, PNA
I WATCH DEATH

- **I** Infection
- **W** Withdrawal
- **A** Acute metabolic
- **T** Trauma
- **C** CNS pathology
- **H** Hypoxia
- **D** Deficiencies: B-12, folate, protein, calories, water
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology
- H Hypoxia

- D Deficiencies
- E Endocrine (thyroid, cortisol, cancer cytokines)
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology
- H Hypoxia

- D Deficiencies
- E Endocrine
- A Acute vascular/MI: stroke, intracerebral bleed
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology
- H Hypoxia

- D Deficiencies
- E Endocrine
- A Acute vascular/MI
- T Toxins-drugs

Really anything, but anti-cholinergics, long acting benzos narcotics (meperidine) and other psychotropics are common bad actors
I WATCH DEATH

- I Infection
- W Withdrawal
- A Acute metabolic
- T Trauma
- C CNS pathology
- H Hypoxia
- D Deficiencies
- E Endocrine
- A Acute vascular/MI
- T Toxins-drugs:
- H Heavy metals
Delirium Workup

• On History:
  – time course of mental status changes?
  – association with other events (i.e., meds, illness)?
  – Pre-existing impairments of cognition or sensory modalities?
Medication review:

• Look at all prescriptions
• include PRNs, regular, ETOH and OTC meds
• Ask if anything has been added, changed or stopped
• Particularly bad are long acting narcotics (demerol is the worst!), anticholinergics (Gravol), benzo and older psychotropics.
Physical Exam

- **Vitals**: normal range of BP, HR Spo2, Temp?

- **Good physical exam**: particular emphasis on Cardiac, pulmonary and neurologic systems

- **Hydration status**? (dry axilla=dehyd!; + LR ~3)

- **Also rule out**
  - fecal impaction (DRE)
  - urinary retention (bladder U/S, in-and-out catheter)
  - Infected decubitis ulcer
Delirium workup: Lab testing

- **Basic labs most helpful!**
  - CBC, lytes, BUN/Cr, glucose
  - TSH, B-12, LFTs, Calcium, & albumen

- **Infection workup**
  (Urinalysis, CXR) +/- blood cultures
Other Investigations

- selected additional testing; drug levels, toxic screen, ABG
- EKG
- CT Head if focal signs
- ? EEG (if suspect seizure)

? role for LP (do last, and only if history suggests)
Helping to improve Delirium

Once it starts, needs to ride its course; but you can make a difference!
Things to avoid

- **RESTRAINTS**; physical or chemical
- **High dose or IV Haldol** (*risk of NMS, hypotension, CVA, arrhythmia*)
- **Excess anticholinergics or sedatives**, (TCAs, Gravol) which can trigger or maintain delirium
- **PRN** analgesics
- **Premature** labelling of dementia
- Stopping cholinesterase inhibitors in demented patients
Delirium Reduction:

- You can get up to a 30% reduction of delirium with such simple measures as:
  - cleaning glasses
  - Using hearing aids
  - feeding
  - reducing noise
  - Early mobility
  - Non drug sleep

*S Inouye A multicomponent intervention to prevent delirium in hospitalized older patients.*

Pharmacological Rx: Goals

- Reverse psychotic signs and symptoms
- Stop dangerous or potentially dangerous behavior
- To calm the patient sufficiently to conduct the necessary evaluation and treatment
Pharmacological Rx

- **To help sleep, may need:**
  - short acting benzos (Ativan 0.5 mg, Serax 7.5 mg),
  - or SSRI Trazodone (25 mg po QHS)

- **If scared or frightened, consider atypical neuroleptic** (Olanzapine (Zydis) 5.5-5 mg po QHS, or Rispiridone 0.25 to 0.5 mg po QHS)

- **If pain use non-prn non-narcotic analgesics first;**
  Acetaminophen 500 mg po QID

- **If ETOH withdrawal delirium, give Thiamine/Folate, and**
  benzodiazapines.
IF SEVERE AND LIFE THREATENING, consider conservative Rx w/ high potency antipsychotic:

- **Haloperidol**: 0.25-0.5 mg IM; AND
- **Lorazepam**: 1 mg SL/IM

  - Observe patient for 20-30 minutes: if patient remains unmanageable without adverse events, repeat dose and continue monitoring
  - Repeat cycle until acceptable response or adverse events occur
  - Max suggested Haldol dose in frail elderly 2 mg/24 hr

**May also try:**

- Respiridone 0.25-0.5 mg po
- Olanzapine 2.5-5 mg po SL or IM
When to Involve Geriatrics?

- Persistent delirium
- Delirium with aggression/Safety risks
- Complicated pre-admission history
- Polypharmacy or many psychotropics
- Help with complications of delirium; bed ulcers, injury, injury to staff, discharge issues
- Pre-op assessment in patients with previous delirium while hospitalized
- Family request
Back to Mrs. T...

- Admitted, but delirium not clearing over the last 7 days
- Still seeing strange men in room that frighten her
- Not sleeping at night, sleeping all day, and not wanting to mobilize for PT or OT (“bed bug”)
- Picking at things, pulling at IVs and foley and now restrained in Geri Chair
Case: Mrs. T

**PMHx:**
- CVA 1995; poor balance and mobility since
- Type II DM
- HTN
- OA
- Poor hearing (refuses to wear hearing aids)
- Cataracts

**Meds (home):**
- ECASA 325 mg
- Glyburide 5 mg po BID
- HCTZ 50
- Celebrex 100 BID

**Meds here:**
- ECASA 325 mg
- HCTZ 50
- Glyburide 5 mg BID
- Nitrofurantoin ABX
- Gravol 50 mg po/IV/IM BID
- Imovane 7.5 mg QHS
On Interview:

- When seen, restrained in Geri-Chair, foley to urometer, IV running at 125 cc/hr
- Very vague, distractible, irritable
- Glasses not on
- Does not know why here in hospital; can’t remember when told
- Kept falling asleep through your questioning, then tells you to buzz off and leave her alone
How to find out more? One of the most useful and underused medical tools:
Telephone call to staff at RH:

- Progressive forgetfulness for the last few years
- Having problems with language, mixing up words
- Over last few months thinking that her own clothes were not her own and throwing them out
- Over last few months, having visual and hallucinations
- More reclusive and withdrawn
- Started falling after Quetiapine was started for verbal aggression four weeks ago!
On Exam:

- **Vitals**  
  BP 120/70 supine, HR=90; BP 88/60 standing, and dizzy, HR=122, Temp=37.5. Weight 45 kg.

- IV running at 50cc/hr, foley *in situ*
- Dry mouth and axilla and low JVP
- Clear chest, N cardiac exam, lax abdomen.
- Very sleepy and distractible, unable to follow instructions to do CN or Cerebellar testing.
- Bilateral up-going toes. Brisk DTRs. Increased tone on L. Positive L palmomental.
Cognitive Testing

- **CAM positive**
- SMMSE 18/30, attention 0/5, recall 0/3
- CDT abN; digits up to 14 on R side of clock, no hands attempted
- Digit span of only 3 consistently.
Labs

- Screening lab work was only CBC, lytes and BUN/CR

- Normocytic anemia of 85; WBC=8, Grans 6, Lymphys 0.9

- Urea 10, Cr=145 (which makes the CrCl ???]

- Albumen of 33

- Urinalysis shows scanty RBCs, cultures shows mixed microbial flora

- CT head shows old bilateral lacunar infarcts
So...

- Impression?
- Plan??
• **Impression:** Delirium on substrate of dementia
What Now?

Plan:

- D/C the frickin’ foley! Check post void volumes w/ US or serial ins and outs!
- Stop graval and hold HCTZ (low BP; dehydrated)
- Reduce dose of benzo
- EKG, and repeat blood work that includes CBC, lytes, BUN/CR, glucose, TSH, B-12, calcium, albumen, LFTs, & troponins.
What Now?

- Quiet room, provide glasses, HA, early mobility (get out of restraints), promote nutrition, keep hydrated and allow time for delirium to resolve

- Ideally have health care aid or one-one-one care to keep safe in room
Summary

• Delirium is common: screen for it (or miss the hypoactive sub-type), especially for those persons at higher risk

• Look for and treat underlying medical causes; I WATCH DEATH

• Stop offending medications and environmental factors that may be maintaining (Demerol/Gravol/Foleys)
Summary

- Promote refreshing sleep, nutrition, early mobility, sensory optimization by involving OT/PT/Dietary early

- Only if aggressive and ++ safety risks, may use low dose IM haldol 0.5 mg/Ativan 1.0 mg

- Consider GERIATRIC MEDICINE or GERIATRIC PSYCHIATRY consult if above not working
Good luck!

Lauren Hope Misiaszek, born October 16th 2003