Delirium in Older Persons:
Clinical Pearls and Pitfalls

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What do we know about delirium?
(Acute confusional state)
DSM5 CRITERIA FOR DELIRIUM

• Disturbance in attention and awareness (reduced orientation to the environment)
• Disturbance develops acutely and tends to fluctuate
• An additional disturbance in cognition, (e.g., memory deficit, language, visuoperceptual)
• Not better explained by a preexisting dementia
• Not in face of severely reduced level of arousal or coma
• Evidence of an underlying organic etiology or multiple etiologies

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In U.S. hospitals today

5 older patients become delirious every minute

2.6 million older adults develop delirium each year

U.S. Dept HHS, AoA Report, Profile of Older Americans 2011
Why is delirium important?

• Common problem
• Serious complications
• Often unrecognized
• Typically multifactorial etiology
• Up to 40% cases preventable
Delirium is common

Delirium Rates

Hospital:
• Prevalence (on admission) 14-24%
• Incidence (in hospital) 6-56%
Postoperative: 15-53%
Intensive care unit: 70-87%
Nursing home/post-acute care: 20-60%
Palliative care: up to 80%

Mortality

Hospital mortality: 22-76%
One-year mortality: 35-40%

Delirium has serious complications

- Delirium associated with:
  - Increased morbidity and mortality
  - Functional and cognitive decline
  - Increased rates of dementia
  - Institutionalization
  - Increased LOS and healthcare costs
  - Post-traumatic stress disorder
  - Caregiver burden
### Adverse Outcomes with Delirium

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Rate When Delirium:</th>
<th>Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Present n/N (%)</td>
<td>Absent n/N (%)</td>
</tr>
<tr>
<td>Mortality</td>
<td>217/714 (30%)</td>
<td>616/2243 (27%)</td>
</tr>
<tr>
<td></td>
<td>HR = 2.0 (1.5-2.5)</td>
<td></td>
</tr>
<tr>
<td>Institutionalization</td>
<td>176/527 (33%)</td>
<td>219/2052 (11%)</td>
</tr>
<tr>
<td></td>
<td>OR = 2.4 (1.8-3.3)</td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td>35/56 (63%)</td>
<td>15/185 (8%)</td>
</tr>
<tr>
<td></td>
<td>OR = 12.5 (1.9-84)</td>
<td></td>
</tr>
</tbody>
</table>

Ref: Witlox J et al. JAMA 2010;304:443-51
Delirium is expensive

Hospital costs (> $8 billion/year)
Post-hospital costs (> $150 billion/year)

- Rehospitalization
- Institutionalization
- Rehabilitation
- Home care
- Caregiver burden

Delirium is often unrecognized

Previous studies: 32-66% cases unrecognized by physicians and nurses

Pearl: We cannot manage delirium or decrease its complications unless we recognize it
How do we recognize delirium?

• Many methods currently exist
• Important to distinguish between:
  – Diagnostic evaluation
    (reference standard rating)
  – Delirium screening
• In the clinical setting, typically focus on delirium screening with high sensitivity
## Standardized Delirium Tests

- Confusion Assessment Method (CAM)
- CAM for the Intensive Care Unit (CAM-ICU)
- 3-Minute Diagnostic Interview for CAM delirium (3D-CAM)
- Intensive Care Delirium Screening Checklist (ICDSC)
- Delirium Index (DI)
- Delirium Observation Screening Scale (DOSS)
- Delirium Rating Scale (DRS)-Revised-98
- Delirium Symptom Interview (DSI)
- Memorial Delirium Assessment Scale (MDAS)
- Neelon/Champagne Confusion Scale (NEECHAM)
- Nursing Delirium Screening Scale (NuDESC)

...and more
Confusion Assessment Method (CAM)

• Most widely used method worldwide
• Used in >4500 original studies to date, translated into over 17 languages
• Short CAM (4-item)—diagnostic algorithm
  – Commonly used for screening
• Long CAM (10-item):
  – Provides information on severity/subtypes
  – Diagnostic/Reference standard purposes
CONFUSION ASSESSMENT METHOD (CAM)

(1) acute onset and fluctuating course
   -and-
(2) inattention
   -and either-
(3) disorganized thinking
   -or-
(4) altered level of consciousness

[score based on cognitive testing]

KEY CAM FEATURES

• Acute onset and fluctuating course: symptoms tend to come on abruptly and wax/wane over the course of a day
  – Pearl: History is essential (family member, caregiver)

• Inattention: inability to maintain attention on external stimuli or shift attention to new stimuli
KEY CAM FEATURES (cont)

• Disorganized thinking: symptoms reveal disorganization of thought (disconnected or nonsensical speech, illogical thinking, unpredictable switching of subject), or severe degrees of cognitive impairment.
  – Tests: orientation, memory, abstraction

• Altered level of consciousness:
  – Typically reduced
## SAGES COGNITIVE SCREENING FOR DELIRIUM

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cognitive Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation to time and place</td>
<td>Temporal/Spatial orientation</td>
</tr>
<tr>
<td>Immediate repetition (4 words)</td>
<td>Registration</td>
</tr>
<tr>
<td>• Digit spans backwards (3,4-digit spans)</td>
<td>Sustained attention</td>
</tr>
<tr>
<td>• Days of week backwards</td>
<td>Sustained attention</td>
</tr>
<tr>
<td>• Months of year backwards</td>
<td>Sustained attention</td>
</tr>
<tr>
<td>Recall</td>
<td>Short-term memory</td>
</tr>
</tbody>
</table>

Schmitt EM et al.  JAMDA 2012; 13: 818e1-10
SPECTRUM OF DELIRIUM

Ranging from:

Hypoactive delirium (lethargy, excess somnolence) -- often missed
to:

Hyperactive delirium (agitated, hallucinating, inappropriate)

Pearl: Hypoactive form is more common in older persons (75%) and associated with higher mortality.
## COMPARATIVE FEATURES OF DELIRIUM AND DEMENTIA

<table>
<thead>
<tr>
<th>Feature</th>
<th>DELIRIUM</th>
<th>vs.</th>
<th>DEMENTIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Abrupt</td>
<td></td>
<td>Insidious</td>
</tr>
<tr>
<td>Duration</td>
<td>Hours to days</td>
<td></td>
<td>Months to years</td>
</tr>
<tr>
<td>Attention</td>
<td>Impaired</td>
<td></td>
<td>Normal unless severe</td>
</tr>
<tr>
<td>Consciousness</td>
<td>Fluctuating, reduced</td>
<td></td>
<td>Clear</td>
</tr>
<tr>
<td>Speech</td>
<td>Incoherent, disorganized</td>
<td></td>
<td>Ordered, anomic/aphasic</td>
</tr>
</tbody>
</table>
What causes delirium?

Major mechanistic hypotheses
– Neurotransmitter dysregulation
– Neuro-inflammation
– Aberrant stress response
– Oxidative stress
– Metabolic disorders
– Sleep-wake dysregulation
– Network disconnectivity
– Genetic factors
Delirium is typically multifactorial

Ref: Inouye SK et al. JAMA 1996; 275:852-857
# Predisposing Factors from Predictive Models

<table>
<thead>
<tr>
<th>Predisposing Factors</th>
<th>General Medicine</th>
<th>Surgery</th>
<th></th>
<th></th>
<th>ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non-cardiac</td>
<td>Cardiac</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative Risks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td>2.3-4.7</td>
<td>2.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>2.1-2.8</td>
<td>3.5-4.2</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of delirium</td>
<td></td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional impairment</td>
<td>4.0</td>
<td>2.5-3.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision impairment</td>
<td>2.1-3.5</td>
<td>1.1-3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing impairment</td>
<td></td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbidity/severity of illness</td>
<td>1.3-5.6</td>
<td>4.3</td>
<td></td>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td>Depression</td>
<td>3.2</td>
<td></td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of transient ischemia/ stroke</td>
<td></td>
<td></td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>5.7</td>
<td>1.4-3.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older age</td>
<td>4.0</td>
<td>3.3-6.6</td>
<td></td>
<td></td>
<td>1.1</td>
</tr>
</tbody>
</table>

## Precipitating Factors from Predictive Models

<table>
<thead>
<tr>
<th>Precipitating Factors</th>
<th>Medicine</th>
<th>Surgery</th>
<th>ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non-cardiac</td>
<td>Cardiac</td>
</tr>
<tr>
<td><strong>Medications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple medications added</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychoactive medication use</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedative-hypnotics</td>
<td></td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>Use of physical restraints</td>
<td>3.2-4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of bladder catheter</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physiologic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevated BUN/creatinine ratio</td>
<td>2.0-5.1</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Abnormal sodium, glucose, potassium</td>
<td></td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>Metabolic acidosis</td>
<td></td>
<td></td>
<td>1.4</td>
</tr>
<tr>
<td>Infection</td>
<td></td>
<td></td>
<td>3.1</td>
</tr>
<tr>
<td>Any iatrogenic event</td>
<td>1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td></td>
<td>3.5-8.3</td>
<td></td>
</tr>
</tbody>
</table>

Who is at risk for delirium?

• Identifies who we need to be extra cautious about during hospitalization
• Allows us to proactively put into place prevention strategies
• Some targeted vulnerability factors are amenable to intervention
Medications Associated with Delirium
[2012 AGS Beers Criteria: Potentially Inappropriate Medications for Elderly]

• All tricyclic antidepressants
• Anticholinergics (eg, diphenhydramine)
• Benzodiazepines
• Corticosteroids
• H2-receptor antagonists
• Meperidine
• Sedative hypnotics
• Thioridazine/chlorpromazine
MINIMIZE PSYCHOACTIVE MEDICATIONS

Pearl: Evaluating drug usage is a high-yield intervention for delirium in the hospital

1) Frequently review medication list
2) Minimize psychoactive medications
   • Avoid PRN’s
   • Use nonpharmacological approaches
   • Substitute less toxic alternatives
     (e.g. antacid or Carafate for H$_2$ blocker/PPI Metamucil/Kaopectate for Lomotil/Imodium)
   • Reduce dosage
3) Re-evaluate chronic medication usage
   • Hospital ideal time to make changes
   • Substrate is not the same
**SLEEP**

- One of your most important roles: help your patients get sleep at night
- Nonpharmacologic protocol: warm milk/herbal tea, relaxation music, massage
- Schedule medications, vital signs, procedures to allow uninterrupted sleep
- Lights off and decreased noise at night
- No naps during the day
Delirium is a preventable medical condition

• Previous studies documented at least 30-40% of delirium is preventable
• Multiple successful strategies:
  – Hospital Elder Life Program \( (\text{Inouye 1999, 2000; Chen 2012}) \)
  – Proactive geriatric consultation \( (\text{Marcantonio 2001}) \)
  – Exercise and rehabilitation interventions \( (\text{Caplan 2006, Schweickert 2009}) \)
## Nonpharmacologic Delirium Prevention: Hospital Elder Life Program (HELP)

Multicomponent intervention strategy targeted at 6 delirium risk factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Impairment</td>
<td>Reality orientation</td>
</tr>
<tr>
<td></td>
<td>Therapeutic activities protocol</td>
</tr>
<tr>
<td>Sleep Deprivation</td>
<td>Nonpharmacological sleep protocol</td>
</tr>
<tr>
<td></td>
<td>Sleep enhancement protocol</td>
</tr>
<tr>
<td>Immobilization</td>
<td>Early mobilization protocol</td>
</tr>
<tr>
<td></td>
<td>Minimizing immobilizing equipment</td>
</tr>
<tr>
<td>Vision Impairment</td>
<td>Vision aids</td>
</tr>
<tr>
<td></td>
<td>Adaptive equipment</td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>Amplifying devices</td>
</tr>
<tr>
<td></td>
<td>Adaptive equipment and techniques</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Early recognition and volume repletion</td>
</tr>
</tbody>
</table>

### HELP Impact on Outcomes

<table>
<thead>
<tr>
<th>Reference</th>
<th>No. of Patients</th>
<th>Rate in HELP</th>
<th>Rate in Controls</th>
<th>Improvement with HELP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREVENTION OF DELIRIUM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubin 2011</td>
<td>&gt;7,000</td>
<td>18%</td>
<td>41%</td>
<td>23%</td>
</tr>
<tr>
<td>Chen 2011</td>
<td>179</td>
<td>0%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>37</td>
<td>6%</td>
<td>38%</td>
<td>32%</td>
</tr>
<tr>
<td>Rubin 2006</td>
<td>704</td>
<td>26%</td>
<td>41%</td>
<td>15%</td>
</tr>
<tr>
<td>Inouye 1999</td>
<td>852</td>
<td>10%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>REDUCED COGNITIVE DECLINE</strong> (MMSE decline by 2+ points)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inouye 2000</td>
<td>1,507</td>
<td>8%</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>REDUCED FUNCTIONAL DECLINE</strong> (ADL decline by 2+ points)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inouye 2000</td>
<td>1,507</td>
<td>14%</td>
<td>33%</td>
<td>19%</td>
</tr>
<tr>
<td><strong>DECREASED HOSPITAL LENGTH OF STAY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubin 2011</td>
<td>&gt;7,000</td>
<td>5.3 days</td>
<td>6.0 days</td>
<td>0.7 days</td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>37</td>
<td>22.5 days</td>
<td>26.8 days</td>
<td>4.3 days</td>
</tr>
<tr>
<td>Rubin 2006</td>
<td>704</td>
<td>---</td>
<td>---</td>
<td>0.3 days</td>
</tr>
<tr>
<td><strong>REDUCED INSTITUTIONALIZATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>37</td>
<td>25%</td>
<td>48%</td>
<td>23%</td>
</tr>
<tr>
<td><strong>DECREASED FALLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inouye 2009</td>
<td>--</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Inouye 2009</td>
<td>--</td>
<td>3.8/1000 p-y</td>
<td>11.4/.1000 p-y</td>
<td>7.6/1000 p-y</td>
</tr>
<tr>
<td>Inouye 2009</td>
<td>--</td>
<td>1.2/1000 p-y</td>
<td>4.7/1000 p-y</td>
<td>3.5/1000 p-y</td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>37</td>
<td>6%</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td><strong>DECREASED SITTER USE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>37</td>
<td>330 hours</td>
<td>644 hours</td>
<td>314 hours</td>
</tr>
</tbody>
</table>
## HELP Impact on Costs

<table>
<thead>
<tr>
<th>Reference</th>
<th>No. of Patients</th>
<th>Impact on Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubin 2011</td>
<td>&gt;7,000</td>
<td>&gt;$7.3 million per year savings in hospital costs (&gt; $1000 savings per patient)</td>
</tr>
<tr>
<td>Rizzo 2001</td>
<td>852</td>
<td>$831 cost savings per person-yrs in hospital costs</td>
</tr>
<tr>
<td>Leslie 2005</td>
<td>801</td>
<td>$9,446 savings per person-yrs in long-term nursing home costs</td>
</tr>
<tr>
<td>Caplan 2007</td>
<td>111</td>
<td>$121,425 per year savings in sitter costs</td>
</tr>
</tbody>
</table>
HELP and Fall Prevention

• Delirium/Altered mental status is the leading risk factor for falls in the hospital
• Evidence-based program that can prevent hospital falls; part of AHRQ Hospital Falls Toolkit
  http://www.ahrrq.gov/professionals/systems/hospital/fallpfxtoolkit/
• At 29 hospitals with HELP, 95% of sites track fall rates and all noted a reduction in the rate of falls

Inouye SK et al. NEJM 2009;360: 2390-3
Meta-analysis Results: Falls

• Meta-analysis of 14 studies with nonpharmacologic multicomponent interventions for delirium (12 HELP-based)

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Odds Ratio (95% CI)</th>
<th>Weight, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babine et al,14 2013</td>
<td></td>
<td>0.49 (0.19-1.27)</td>
<td>10.9</td>
</tr>
<tr>
<td>Caplan and Harper,20 2007</td>
<td></td>
<td>0.33 (0.04-2.93)</td>
<td>2.5</td>
</tr>
<tr>
<td>Martinez et al,39 2012</td>
<td></td>
<td>0.11 (0.01-2.05)</td>
<td>3.3</td>
</tr>
<tr>
<td>Stenvall et al,18 2007</td>
<td></td>
<td>0.38 (0.23-0.65)</td>
<td>38.2</td>
</tr>
<tr>
<td>Fixed-effect model: P &lt; .001</td>
<td></td>
<td>0.38 (0.25-0.60)</td>
<td>100</td>
</tr>
</tbody>
</table>

Hshieh TT et al. JAMA IM. 2015; 175: 512-520
## Delirium Management: Nonpharmacologic Intervention

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Results</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proactive geriatric consultation</td>
<td>Decreased incidence of delirium</td>
<td>Marcantonio 2001</td>
</tr>
<tr>
<td>Systematic detection and specialized care</td>
<td>Trend towards cognitive improvement</td>
<td>Cole 2002</td>
</tr>
<tr>
<td>Delirium Room</td>
<td>Reduced use of sedative drugs</td>
<td>Flaherty 2003</td>
</tr>
<tr>
<td>Comprehensive Geriatric Assessment</td>
<td>Reduced delirium severity and duration</td>
<td>Pitkala 2006</td>
</tr>
<tr>
<td>Delirium Abatement Program</td>
<td>Improved detection of delirium by nurses in post-acute setting</td>
<td>Marcantonio 2010</td>
</tr>
</tbody>
</table>
PHARMACOLOGIC APPROACHES

• 16 high quality RCTs of:
  – Haloperidol, olanzapine, risperidone
  – Melatonin
  – Rivastigmine, donepezil
  – Dexmedetomidine (OR, ICU)

• Studies hampered by methodologic limitations (nonblinded outcomes, dropouts, measurement)
  – 6 trials: no difference in delirium rates
  – 8 trials: delirium reduced; no impact on any clinical outcomes
  – 2 trials: clinical outcomes worsened (increased delirium duration or severity, increased LOS or mortality)
PHARMACOLOGIC APPROACHES (cont)

• Drug treatment may reduce agitation but prolong delirium and cognitive decline
• Conclusion reached by several systematic review and guideline panels:

  No recommendation for drug treatment for prevention or management of delirium at this time

Ref: NICE 2010, VA HSRD 2011
DELIRIUM MANAGEMENT
PHARMACOLOGIC (cont)

Pearl: Reserve for patients with severe agitation which will:
1. cause interruption of essential medical therapies (e.g., intubation)
2. pose safety hazard to patient or staff

Recommended Approach:
• Haloperidol 0.25-0.50 mg po or IM (IV short acting, risk of torsades)
• Repeat dose Q 30 minutes until patient manageable (maximum haloperidol dose 3-5 mg/24 hours)
• Maintenance: 50% loading dose in divided doses over next 24 hours
• Taper dose over next few days
American Geriatrics Society Delirium Guidelines

– Focus on postoperative delirium, however, systematic review was comprehensive

– Followed IOM Approach for Trustworthy Guidelines, with systematic literature review and adjudication by a 23-member expert panel

AGS Clinical Practice Guideline: Strong Recommendations

- Multicomponent nonpharmacologic interventions should be implemented to prevent delirium
- Ongoing education for all healthcare professionals
- Medical evaluation to identify underlying contributors
- Pain management (preferably with non-opioids) should be optimized to prevent postoperative delirium
- Medications with high risk for delirium should be avoided
- Benzodiazepines should not be used for first-line treatment of agitation in delirium
- Antipsychotics and benzodiazepines should be avoided in hypoactive delirium
- Cholinesterase inhibitors should not be newly prescribed for delirium prevention or treatment
Why is addressing delirium important?

- Tremendous clinical impact
- Healthcare costs and policy implications
- Indicator of quality of care for elders
- Helps us understand the brain
- Prevention of cognitive impairment and dementia
Delirium sheds light on brain function

- Delirium = "Acute Brain Failure"
- Final common pathway of many different and disparate etiologies
- Understanding how the brain fails will shed light on many brain disorders
Short-Term Impact of Delirium
(N=225 cardiac surgery patients)

Impact of Delirium (cont)

• Delirium occurred in 46% patients following cardiac surgery

• Cognitive trajectory characterized by abrupt initial decline followed by gradual recovery over 6 months

• Delirious patients (>3 days) did not get fully back to baseline even at one year follow-up

• Implications for rehab and management of delirium; importance of prevention of delirium.
BRAIN-USA: Impact of Delirium after ICU stay
[N=821 ICU survivors]

Pandharipande PP et al, NEJM 2013;369:1306-16
Impact of Delirium post-ICU

• 74% developed delirium during ICU stay
• Longer duration of delirium associated with worse global cognition at 3 and 12 months follow-up
• Longer duration of delirium associated with worse executive function at 3 and 12 months follow-up
• >30% with deficits at 12 months
• No true baseline measures of cognition
Preventing delirium may offer the unprecedented opportunity to prevent or ameliorate future cognitive decline.
BACK TO THE BEDSIDE:  
*Pearls for Practice*

1. Assess *for delirium* in all older hospitalized patients: cognitive screening and CAM. Find out baseline.
2. *Evaluate medications* and reduce psychoactive drugs.
3. *Use nonpharmacologic approaches* to manage sleep, anxiety, and agitation.
4. Reserve *pharmacologic approaches* for patients with severe agitation or psychosis.
5. *Involve family members* for reorientation.
6. *Avoid bedrest orders*; encourage mobility.
7. Make sure patients have their *glasses, hearing aids, and dentures*.
8. *Communicate*: Keep patients/families involved.