**My Messages Today**

- What do we know about DSD?
- What don’t we know about DSD?
- What we can do to help manage, prevent & understand DSD?
- What new resources exist?

**Why Care About DSD?**

- It is the MOST COMMON risk factor for delirium—occurring in over 50% of PWD
- Poor outcomes/connection with dementia
  - ↑ rates of long-term cognitive impairment (Saczynski et al., 2012)
  - ↑ LOS & rates of re-hospitalization within 30 days
  - ↑ risk of permanent admission to LTC facilities
  - Higher mortality and functional decline (Fick et al., 2013)
  - Cost as much as diabetes and CHF—$152 billion
  - DSD HIGHEST COST—higher than delirium alone and dementia alone

**Few Studies of DSD—Delirium Alone**

- Fick & Foreman, 2000—65% medical patients with DSD were re-admitted to the hospital within 30 days
- McCusker, 2001—DSD more likely to be admitted to NH compared to delirium alone (OR 3.18)
- McCusker 2002—Predicted 12 month mortality
- Jackson, 2015—HR death at 12 months-2.3
- Baker, 1999—Retrospective AD study—50% with delirium died within one year
- Fick et al., 2013, increased LOS, increased mortality, decreased function for DSD
- Morandi et al., 2014—decreased mobility

**We Should Study DSD Alone & in Well-Controlled Large Studies**

- DSD likely under-addressed in clinical care & poorly understood due to lack of dementia DX
GOOD NEWS—OF N=250 RESPONDERS 60% FELT CONFIDENT IN DX DSD (40% DID NOT!)

MOST WERE NOT CONFIDENT IN DX DSD IN MORE SEVERE STAGES OF DX OR IN DEMENTIA WITH LEWY BODY AND THERE WAS NO CONSENSUS ON A TOOL SPECIFIC TO DX DSD

WE NEED TO MAKE THE “CASE” (business & human) FOR DSD

WE HAVE TO CONSIDER BOTH THE DEMENTIA & DELIRIUM

WE NEED TO KNOW MORE ABOUT MECHANISMS & PATHOPHYSIOLOGY

- ARE THEY THE SAME AS DELIRIUM ALONE?
- ARE THEY INTERCONNECTED?
- ARE THERE SEPARATE ISSUES?

- WE NEED EPIDEMIOLOGICAL, CLINICAL-PATHOLOGICAL, NEUROIMAGING, BIOMARKER AND EXPERIMENTAL STUDIES

“LIKELY BOTH SHARED AND DISTINCT PATHOLOGICAL MECHANISMS”—FONG ET AL., LANCET, 2015

DSD Needs to Move Upstream

“I am standing by the shore of a swiftly flowing river and hear the cry of a drowning man. I jump into the cold waters. I fight against the strong current and force my way to the struggling man. Holding on to the man, I gradually pull him to the shore. I lay him out on the bank and revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help. I jump into the cold waters. I fight against the strong current, and swim forcefully to the struggling woman. I grab hold and gradually pull her to shore. I lift her out onto the bank beside the man and work to revive her with artificial respiration. Just when she begins to breathe, I hear another cry for help. I jump into the cold waters. Fighting against the strong current, I force my way to the struggling man. I am getting tired, so with great effort I eventually pull him to shore. I lay him out on the bank and try to revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help. Near exhaustion, it occurs to me that I’m so busy jumping in, pulling them to shore, applying artificial respiration that I have no time to see who is upstream pushing them all in....”


DSD Needs to Move Upstream

WE NEED TO MAKE THE “CASE” (business & human) FOR DSD

Delirium Superimposed on Dementia: A 3-Year Retrospective Study of Occurrence, Costs, and Utilization

Diana M. Pick, 1,2 Am M. Kulinowski, 3 Jennifer L. Waltz, 1 and Shae K. Inouye 6

Medical College of Georgia School of Medicine, Center for Healthcare Improvement, and Office of Residency and Bioethics, Augusta, Georgia. Georgia Institute of Nursing, The Pennsylvania State University, University Park.

Table 4
Key aspects of the delirium experience as reported by patients after delirium resolution

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotions</td>
<td>Concern, anxiety, fear, anger, threat, shame</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>Confusion, disorientation, difficulties in comprehension, altered perception of time</td>
</tr>
<tr>
<td>Psychosis</td>
<td>Disturbing and rambling thoughts, hallucinations, delusions, nightmares, depersonalization, feeling confined</td>
</tr>
<tr>
<td>Memories</td>
<td>Memories of parents, delightful memories</td>
</tr>
<tr>
<td>Awareness of change</td>
<td>Sudden change, change back to reality, loss</td>
</tr>
<tr>
<td>Physical</td>
<td>Restricted, falls, constraint, drowsiness</td>
</tr>
</tbody>
</table>
WE NEED TO TAKE AN ACTIVE-APPROACH TO PROVIDING PERSON-CENTERED CARE—TOOLS AND TIME

CASE OF MR. JAMES & ALL ABOUT ME BOARD

<table>
<thead>
<tr>
<th>Disease or Syndrome</th>
<th>Drug (s)</th>
<th>Recommendation &amp; Rationale</th>
<th>Quality of Evidence</th>
<th>Strength of Rec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia or cognitive impairment</td>
<td>Anticholinergics</td>
<td>Avoid because of adverse CNS effects. Antipsychotics for behavioral problems of dementia or delirium unless non-pharmacological options (behavioral, environmental) have failed or are not possible AND the older adult is threatening substantial harm to self or others. Antipsychotics are associated with &gt; risk of stroke and mortality in PWD.</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>

WE NEED TO MAKE INITIAL SCREENING SIMPLE & SENSITIVE
What Should We Do At The Bedside?

- Nurses and Physicians often do not have TIME to do CAM plus another TOOL. Many competing tools but CAM is only 4 features & still the most widely used for delirium at bedside.
- Whose responsibility is it to screen/dx?
- Should we start with a short screen—progress to CAM then a Gold Standard Clinical Assessment?
- Fit into workload—can it be part of care already done?

How do we do at the bedside?

- 2012 review by Marcantonio et al. on DSD & 2010 JAMA review and recommended CAM as the best bedside assessment for delirium.
- Highest sensitivity with DSD but NOT for severity & different types of dementia.
- Not clear who is the best to perform the CAM.
- Algorithm—thus not OPERATIONALIZED as assessment.
- Performs poorly using routine observations from clinical care (sensitivity~31%).
- Requires structured assessment to complete.
- Mental status questions & interviewer observations.
- Time, training and resources.

Aim & Methods

- To determine the best-performing single and two item pairs of cognitive screening items to identify delirium by a clinical reference (gold) standard.
- We utilized the 3D-CAM study cohort of 201 patients (Marcantonio and colleagues). Participants were age 75 or older, admitted to the general medicine service of a large teaching hospital. Patients underwent cognitive screening (items, such as orientation, word recall, digits spans, days of week and months of year backwards) by trained interviewers.

Single Item Screeners (best 5)

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Item Positive (%)</th>
<th>Sensitivity (95% C.I)</th>
<th>Specificity (95% C.I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months of year backwards</td>
<td>42</td>
<td>0.83 (0.69, 0.93)</td>
<td>0.69 (0.61, 0.76)</td>
</tr>
<tr>
<td>Four digits backwards</td>
<td>56</td>
<td>0.83 (0.69, 0.93)</td>
<td>0.52 (0.44, 0.6)</td>
</tr>
<tr>
<td>What is the day of the week?</td>
<td>21</td>
<td>0.71 (0.55, 0.84)</td>
<td>0.92 (0.87, 0.96)</td>
</tr>
<tr>
<td>What is the year?</td>
<td>16</td>
<td>0.55 (0.39, 0.7)</td>
<td>0.94 (0.9, 0.97)</td>
</tr>
<tr>
<td>Have you felt confused during the past day?</td>
<td>14</td>
<td>0.5 (0.34, 0.66)</td>
<td>0.95 (0.9, 0.98)</td>
</tr>
</tbody>
</table>

Two Item Screeners (best 5)

<table>
<thead>
<tr>
<th>Test Item 1</th>
<th>Test Item 2</th>
<th>Item Positive (%)</th>
<th>Sensitivity (95% C.I)</th>
<th>Specificity (95% C.I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the day of the week?</td>
<td>Months backwards</td>
<td>48</td>
<td>0.93 (0.81, 0.99)</td>
<td>0.64 (0.56, 0.7)</td>
</tr>
<tr>
<td>What is the day of the week?</td>
<td>Four digits backwards</td>
<td>60</td>
<td>0.93 (0.81, 0.99)</td>
<td>0.48 (0.4, 0.56)</td>
</tr>
<tr>
<td>Four digits backwards</td>
<td>Months backwards</td>
<td>65</td>
<td>0.93 (0.81, 0.99)</td>
<td>0.42 (0.34, 0.5)</td>
</tr>
<tr>
<td>What type of place is this?</td>
<td>Four digits backwards</td>
<td>58</td>
<td>0.9 (0.77, 0.97)</td>
<td>0.51 (0.43, 0.5)</td>
</tr>
<tr>
<td>What is the year?</td>
<td>Four digits backwards</td>
<td>59</td>
<td>0.9 (0.77, 0.97)</td>
<td>0.5 (0.42, 0.5)</td>
</tr>
</tbody>
</table>
**2-ITEM QUESTION:**
What is the day of the week?

Please Tell Me The Months of the Year Backwards

IT HAS 96% SENSITIVITY TO DETECT DSD 93% DELIRIUM ALONE

**BOTH A GAP AND OPPORTUNITY IN LTC & HOMECARE**
- Transfers to acute care from LTC
- Caregiver support AND HOME HEALTH/COMMUNITY
- Technology—Steis et al., 2012 Online Journal of Nursing Informatics
  - http://www.biomedcentral.com/1472-6955/14/19

**ANA DELIRIUM INITIATIVE**
- MEMBER SURVEY—3.4 MILLION RN’s
- WEBSITE
- EDUCATION
- ANA WEBINARS
- PARTNERSHIP WITH ADS

**OVERALL CHALLENGES FOR DSD**
- Individualizing care—Toolkits-choosing activities for patients & behavior, valuing input and preferences, ethical issues in EOL delirium
- Communication--across transitions and getting ALL health professionals to use “THE WORD DELIRIUM”
- System leadership--Making the Business Case—still cost avoidance, need aligned goals/incentives, Health Economist in studies
- Understanding PATHOLOGY and RESERVE
- Measurement issues---how patients move in and out of dementia, MCI, delirium, homecare, ED, family/caregiver detection

**Delirium Choosing Wisely AAN**
- **1. Don’t Statement:** Don’t assume a diagnosis of dementia in an older adult who presents with an altered mental status and/or symptoms of confusion without assessing for delirium or delirium superimposed on dementia (DSD) using a brief, sensitive, validated assessment tool.
Place & Person Matter

- Address translation and implementation issues—testing these in diverse settings—delirium interventions tested in AMC often do not work well in community settings—in the real world-need use of implementation frameworks (Rycroft-Malone, 2013).

- Most older adults receive care in settings with little or no geriatric expertise—we must consider the ROLE OF CONTEXT in intervention design.

TAKE HOME MESSAGES

- WE HAVE MANY STUDIES AND BEST PRACTICES FROM DELIRIUM TO INFORM DSD BUT WE ALSO NEED TO STUDY IT ALONE & IN LARGE CONTROLLED STUDIES

- WE NEED TO INCORPORATE PERSON-CENTERED APPROACHES TO THE CARE OF PERSONS WITH DEMENTIA WITH DSD & POSSIBLY DIFFERENT TX

- WE NEED TO MINIMIZE MEDICATION USE—UNTIL THE EVIDENCE IS THERE AND SIDE EFFECTS LOW—FIRST DO NO HARM

VISIT US AT PENN STATE & PA

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