Designing Interventions For Delirium Superimposed on Dementia: U13 Delirium Conference, February 11, 2014

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Disclosures

- **Current funding**: PI, Donna M. Fick: National Institute of Nursing Research Early Nurse Detection of Delirium Superimposed on Dementia (END-DSD) (Grant: 5 R01 NR011042 04); National Institute of Nursing Research Reserve for Delirium Superimposed on Dementia (RESERVE-DSD) (Grant: 5 R01 NR012242 04). MPI with Ann M. Kolanowski: National Institute of Nursing Research Reserve for Delirium Superimposed on Dementia (RESERVE-DSD) (Grant: 5 R01 NR012242 03)

- **Other financial relationships**: I am a paid consultant and Editor for SLACK, Inc. and a consultant for the American Geriatrics Society /AGS Beers Criteria and a member of the AGS. NIH funding is also acknowledged.

- **Conflicts of interest**: None
Delirium Superimposed on Dementia (DSD)

OVER HALF OF HOSPITALIZED OLDER ADULTS WITH DEMENTIA WILL DEVELOP DELIRIUM—OVER 80% SUBSYNDROMAL DELIRIUM
Evidence Base for Delirium and Dementia Connection is Growing

- New cognitive impairment:
  - Increased risk in new development of dementia over the next 4 years

- Worsening function, LOS & mortality in hospital patients with dementia after a delirium episode

- Patients with Alzheimer’s who develop delirium:
  - Rate of cognitive decline is doubled in the year after delirium compared to those without delirium
    - More rapid rate of decline persists for 5 years
    - DEMENTIA IS THE BIGGEST RISK FACTOR FOR DELIRIUM

YET...

- MOST INTERVENTION TRIALS HAVE EXCLUDED PERSONS WITH DEMENTIA
DSD Research Literature/Scope

(Pubmed-57 hits using DSD, 31 relevant after abstract review, 0 large scale tx trials DSD--all hits before 2000-limitations-narrow database/word search missed studies with dementia subjects)

- **Acute care**--Sacynski, et al., 2012 Fick et al., 2013, McCusker,
- **Home care/outpatients**--Voyer, Bull et al., 2013, Hasegawa et al., 2013 found delirium in 19% dementia outpatients
- **LTC, Pathology**--Voyer studies, McCuskerField, et. Al., 2012
- **Interventions for DSD-NO LARGE SCALE TRIALS, No prevention trials, FEW PILOT STUDIES**-Fick et al., 2011; Kolanowski, et al., 2012; Bull et al., 2013
Though Delirium Occurs Most Commonly in Persons With Dementia—Recognition and MEASUREMENT of DSD Is MORE Difficult than delirium alone—Impacting DSD TX Trials & Results
Study of Accuracy of Nursing Documentation

- Retrospective descriptive study from a larger prospective study
- Chart audit examining nursing documentation of delirium and delirium features
- **Sample**: 104 inpatients with dementia. 53 experienced some delirium/51 did not (based on trained RA assessment)

**Findings:**

- The word “Delirium” **NEVER** used
- Nurses used other terms to describe delirium features

Reference: Steis & Fick, 2012
Tools to Detect Delirium Superimposed on Dementia: A Systematic Review

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OBJECTIVES: To identify valid tools to diagnose delirium superimposed on dementia.

DESIGN: Systematic review of studies of delirium tools that explicitly included individuals with dementia.

SETTING: Hospital.

PARTICIPANTS: Studies were included if delirium assessment tools were validated against standard criteria, and the presence of dementia was assessed according to standard criteria that used validated instruments.

MEASUREMENTS: PubMed, Embase, and Web of

Intensive Care Unit (CAM-ICU) reported 100% sensitivity and specificity for delirium in 23 individuals with dementia. One study using electroencephalography reported sensitivity of 67% and specificity of 91% in a population with a 100% prevalence of dementia. No studies examined potential effects of dementia severity or subtype on diagnostic accuracy.

CONCLUSIONS: The evidence base on tools for detection of delirium superimposed on dementia is limited, although some existing tools show promise. Further studies
Why is it hard to recognize AND MEASURE DSD?

- Lack understanding of THRESHOLD for DSD
  Baseline & recovery
- Quiet Patients Often Overlooked-
  STUPOR in delirium debated
- Objective Tool to Assess Mental Status Not Used
- OVERLAP with Dementia Sx & Lack of understanding of PATHOLOGY
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Results</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Nurse led protocol &amp; education for detection with nurse aide measures</td>
<td>n = 80 matched patients, 15% with dementia. Delirium post-protocol decreased from 37.5% to 13.8%. 12 patients with dementia, 6 pre &amp; 1 post developed delirium</td>
<td>Robinson et al. 2008 (observational, matched comparison) Chart-CAM</td>
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<td>targeted to-dementia, sensory, mobility, pain</td>
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<td>Delirium Abatement Program-Post-acute care-detect, treat causes, prevent,</td>
<td>n=457, Improved detection of delirium (41% vs 12%), no impact on delirium persistence-129 (46%) had dementia in intervention group</td>
<td>Marcantonio 2010 (C-RCT) Screened over 5,000, 12 sites</td>
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<td>restore function</td>
<td></td>
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<td>Education to increase delirium recognition in persons with Alzheimer’s</td>
<td>Pilot, n= 6 (all dementia) Improved detection of delirium by families using case vignettes--better detection by daughters</td>
<td>Bull et al. 2013 &amp; personal</td>
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<tr>
<td>targeting families in home setting</td>
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<td>communication</td>
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# NIH Delirium Trials at PSU


## RESERVE
- Focus on DSD
- RCT Intervention
- SINGLE Component
- Post-acute Care
- Patient Centered

## END-DSD
- Focus on DSD
- C-RCT Intervention
- MULTI-Dimensional
- Acute Hospitalization
- Nurse & Pt Centered
END DSD STUDY AIMS

1. To determine whether the intervention “END-DSD” improves nurse detection and management of delirium superimposed on dementia (DSD)

2. To determine the effect of the “END-DSD” intervention on patient clinical outcomes (LOS, function, psychoactive meds and inappropriate meds).
MULTI-DIMENSIONAL APPROACH: 4 COMPONENTS/BUNDLE
“Adaptive versus Technical Fix”

- Education—initial/ongoing-staff nurse driven--> 300 nurses-100%
- Electronic Health Record-3 Screens-different sites and systems but same content
- Weekly Rounds on every shift with Unit Champions who are direct care nurses
- Feedback loop to UCs and nurses on CAM use, delirium—ADAPTIVE versus TECHNICAL fix
**Medications**

☐ Sedative-hypnotics  ☐ Benzodiazepines
☐ Antipsychotics  ☐ Systemic Corticosteroids
☐ H2 Blockers (Cimetidine)  ☐ Narcotics (Meperidine)
☐ Anticholinergics  ☐ Antihistamines

**Medications Reviewed**

**Review all the patient's medications.**

Check any drug classes that patient is taking

Some examples of medication groups are in parentheses. An antihistamine example is Diphenhydramine.

**Infection**

Evaluate For Infection

☐ Urine  ☐ Lungs  ☐ Skin

Guide for assessing delirium risk factors is available in Delirium Study folder in External Links.

**Dehydration**

Assess For Dehydration Signs

☐ Skin Turgor  ☐ Mucous Membranes
☐ BUN/Creatinine Ratio>20:1

**Environmental/Sensory**

Assess Environmental and Sensory Causes

☐ Noise  ☐ Vision  ☐ Hearing  ☐ Pain

Assess and check if any are abnormal

**Laboratory Values**

☐ Glucose  ☐ Sodium  ☐ Potassium  ☐ Thyroid

Check those tests listed that are ABNORMAL

****Normals**

Glucose 70-99
Sodium 136-145
Potassium 3.5-5.1
Thyroid
CONSORT Flow Diagram END-DSD

END-DSD Trial Flow Diagram for Cluster-RCT

Informed Consent Obtained: Baseline Measures Dementia (N=390)

Randomized to Conditions by 3

END-DSD (N=195)
Duration: up to discharge

Usual Care (N=195)
Duration: up to discharge

Site 1
N=65

Site 2
N=65

Site 3
N=65

Site 1
N=65

Site 2
N=65

Site 3
N=65

Primary Measures: CAM, DRS, MMSE, MBDRS, CDR, Charlson, IADL, Cornell, PAIN AD, CNS-active medications, non-drug alternatives used

Intervention measures: Adherence to EMR screens and CAM agreement, rounding data

END-DSD and usual Care (N=390)
Intent to treat Analysis
RESERVE for DSD*

- **RESERVE** For Delirium Superimposed on Dementia (DSD) is an ongoing, five-year clinical trial ending in 2015.

- **Purpose:** to test the efficacy of cognitive stimulation for resolving delirium in persons with dementia subsequent to a hospitalization.

Cognitively Stimulating Activities To Do at the Bedside

- Word or object searches
- Crossword puzzles
- Name that tune
- Identify sounds
- Sorting objects

- Best if individualized to interests, “PRESCRIBED”
- & targeted to current mental status areas—attention, thinking, memory…
Hypothesis

Compared to participants with DSD who receive usual care, participants who receive RESERVE-DSD will have:

• decreased severity and duration of delirium
• greater gains in attention, orientation, memory, and executive functioning
• greater gains in physical function

We also evaluate potential moderators of intervention efficacy (cognitive lifestyle and APOE status).

Describe the costs associated with RESERVE-DSD.
OUR STUDY CHALLENGES

Recruitment & Workflow
- Culture
- CAM Fit into front line

Non-Drug, Rounds & Education
- Uptake versus EMR
- Non-Drug Fit & adherence

Communication
- Who owns it?
- Why care about DSD?
CLINICAL SCHOLARSHIP

The Triple Challenge of Recruiting Older Adults With Dementia and High Medical Acuity in Skilled Nursing Facilities

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Key words
Recruitment strategies, skilled nursing facilities, dementia

Abstract

Purpose: To describe strategies, culled from experience, for responding to several recruitment challenges in an ongoing randomized clinical trial of delirium in persons with dementia.

Organizing Construct: Delirium in people with dementia is common across all cultures. Little research supports the use of specific interventions for delirium. Recruitment of an adequate sample is critical to the validity of findings from intervention studies that form the foundation for evidence-based
What we need for stronger intervention trials in DSD

- Need to test how much we need to target delirium causes and/or enhancement & quality of dementia care in DSD. To know this, we need to develop a better understanding of mechanism, pathology, and overlap with dementia—i.e., overstimulate/understimulate—do we address dementia needs over delirium (can’t do it all).

- Need a better understanding of components and dynamic state of **COGNITIVE RESERVE** as this may be key to prevention & interventions for DSD.
What we need for DSD Interventions

- We NEED both “clean” single and multi-dimensional approaches to uncover the best approach

- Non-drug approaches may be more important (FIRST DO NO HARM) in DSD—BUT need rigorous RCTs with controlled dosage and adherence so we know what is in the non-drug black box and what helped the most (AVOID THE KITCHEN SINK APPROACH)

- May need different methodologies and frameworks for this—EX- multiphase optimization strategy (MOST) approach (Linda Collins, 2013)—the briefest intervention that achieves a reasonable goal/effective
PERSON-CENTERED TX

- Though we need more work to build a rigorous body of evidence in DSD—studies such as Robinson (2008) & work by Kolanowski & Van Haitsma (2013) suggest a person-centered & well-being (positive) approach is important in Delirium and DSD;

- Focus on UNMET NEEDS--needs and response based behaviors (NOT behavior as “problematic”)

- www.nursinghometoolkit.com

- Facilitating patient values and preferences

- Individualized cognitive activities geared to INTERESTS & COGNITION

- Getting to KNOW THE PERSON—All About Me Board

- Focusing on STRENGTHS and POSITIVE behaviors (not negative outcomes and behaviors)
TODAY IS

___________________________

ALL ABOUT ME

I am from ___________________

The names of my
family members are ___________________

I worked as a ___________________

I enjoy ___________________

Things that make me feel happy are ___________________

I have hearing/vision impairment & have glasses/hearing aids ___________________

I feel relaxed and calm when ___________________

I enjoy listening to ___________________

My favorite TV channel is ___________________

I don't like ___________________

YOUR NURSE TODAY IS: ___________________

YOUR NURSING ASSISTANT TODAY IS: ___________________
CONSIDER ROLE THAT CONTEXT PLAYS

- 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-use of PARIHS framework (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.
FUTURE CHALLENGES FOR DSD Intervention Trials

- **Measurement issues**---how patients move in and out of DSD, MCI, delirium. What is the homecare, ED, family/caregiver role in detection? the-threshold for change from baseline? Measurement of mediators and moderators-APOe status, lifetime experience.

- **Improved understanding of neuropathology**--for both conditions-need this to target interventions more precisely.

- **Recruitment patients & proxies and collaborative IRB process**—harder in community, HIPPA constraints, use of evening and weekend staff, lay friendly materials (Kolanowski et al., 2013)
Other Questions For U13 Group (Specific to DSD)

- What are the most common (or best and difficult) Features & Sx in DSD - Acute/baseline, stupor, inattention...
- What is the threshold for change/abnormal/recovery in DSD for use in practice and in intervention trials?
- What are the unique contributions of delirium and dementia that are important for treating DSD?
- Can we currently reliably measure DSD and intervene with DSD right now? Or is it the Emperors new clothes? (Devlin et al., 2013)
Gratitude & Acknowledgements

Our sites, patients, investigators, study team and hospital staff

- Vanderbilt Medical Center
- Mount Nittany Health System
- Altoona Regional Health System
- Harvard, Aging Brain Center, Hebrew Senior Life

Co-investigators--Dr. Lorraine Mion, Dr. Sharon Inouye, Dr. Ann Kolanowski
More Gratitude & Acknowledgements

- Ann Kolanowski, RN PhD, FAAN
- Linda Clare PhD
- Malaz Boustani MD, MPH
- Mark Litaker PhD
- Doug Leslie PhD
- Keith Whitfield PhD
- Paula Mulhall, RN, BSN
- Jane McDowell, RN, MS, APRN
- Assessors, screeners & intervention staff
- Patients, families and nursing staff