Prevention & Management of Delirium in the Surgical Environment: A Review of the Evidence

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Objectives

1. Describe one extrinsic risk factor that has been associated with the development of post-operative delirium

2. Describe one contributing factor that has been associated with the development of pre-operative delirium

3. Identify three resources for KP SCAL Nursing Research
Cecelia is probably NOT going to heaven…
Types of Evidence Reviews

- **Narrative or Literature Review**: Critical research summary on a topic of interest, often to put a research problem into context.

- **Integrative Review**: A systematic review using a detailed search strategy to find relevant evidence to answer a clinical question. Does not use summary statistics.

- **Systematic Review**: Comprehensive search strategies and rigorous research appraisal methods surrounding a clinical issue. Used to summarize, appraise, and communicate contradictory results or unmanageable amounts of research.

(Melnyk & Fineout-Overholt, 2005)
Clinical Question

“What is the quantity, quality, and consistency of the evidence for effective interventions for acute care medical/surgical patients at high risk of delirium and falls with injury?”
Searchable Question

- **Search Terms:** Delirium, falls, injury
- **Inclusion:** Delirium, Med/Surg, acute care setting, adults 18 or older, 2000-2012
- **Exclusion:** ETOH withdrawal delirium, settings other than acute care; pediatrics
- **Databases:** Cochrane, BMJ, JBI, Ovid/Medline, Proquest, PubMed, Science Direct
Database Search Results

- 27 Relevant hits
  - 4 duplicates; 23 articles for review
  - 3 additional articles via context links
  - Total for Review = 26 articles
    - 12 articles eliminated (did not answer the clinical question; targeted inappropriate patient populations and/or institutional settings)
  - Remaining 14 articles reviewed over 2 months
Evidence Result Limitations

- Difficulty in defining delirium across healthcare specialties
- Lack of RCTs
- Multiple methodologies with conflicting results, dissimilar population settings
- Varying sample & effect size
- Unable to capture accurate cost savings
- Multitude of diverse interventions
- Inability to generalize some research results
- Difficulty aligning delirium interventions with fall interventions
  - Review focused on effective interventions for patients at high risk of delirium
# Levels of the Evidence

## CCIRES© Evidence Leveling System (ELS)

Adapted from Canadian Medical Association & Centre for Evidence-Based Medicine, Levels of the Evidence (2001) and AACN Evidence Leveling System (2009)

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>DESCRIPTION</th>
<th>RELEVANT ARTICLES</th>
<th>ARTICLE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Meta-analysis of multiple large sample or small sample* randomized controlled studies, or meta-synthesis of qualitative studies with results that consistently support a specific action, intervention, or treatment</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Well-designed controlled studies, both randomized and nonrandomized, prospective or retrospective studies, and integrative reviews with results that consistently support a specific action, intervention, or treatment</td>
<td>2</td>
<td>#5, #12</td>
</tr>
<tr>
<td>C</td>
<td>Qualitative studies, descriptive or correlational studies, integrative reviews, systematic reviews, or randomized controlled trials with inconsistent results</td>
<td>2</td>
<td>#8, #9</td>
</tr>
<tr>
<td>D</td>
<td>Peer-reviewed professional organizational standards, with clinical studies to support recommendations</td>
<td>3</td>
<td>#2, #6, #11</td>
</tr>
<tr>
<td>E</td>
<td>Theory-based evidence from expert opinion or multiple case reports, case studies, consensus of experts, and literature reviews</td>
<td>7</td>
<td>#1, #3, #4, #7, #10, #13, #14</td>
</tr>
<tr>
<td>MA</td>
<td>Manufacturer’s recommendation; Anecdotes</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td></td>
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</tr>
</tbody>
</table>

*includes meta-analysis of randomized controlled trials and qualitative studies.
Evidence Quality & Strength

Grading the Evidence

- "Good" (1) = 2 articles
- "Fair" (2) = 2 articles
- "Insufficient" (3) = 10 articles

Strength of the Body of Evidence

- 3 = Insufficient

*Information in the review provides the best evidence to date for clinicians to structure innovative interventions & programs for delirium*
Delirium

- 2 geriatric syndromes, delirium + falls, are associated with prolonged LOS, increased costs, and substantial morbidity\textsuperscript{1,3,4,7,9,13}

- Delirium – multiple combinations of: \textsuperscript{1,4,5,7,9,10,12,13,14}
  - Physiological, psychological, sociological, environment factors
  - Various healthcare settings
  - Patient conditions
Delirium in the OR

The evidence revealed that delirium is a particular concern in the surgical arena$^{3,5,12}$
Key Summary of the Evidence

**Extrinsic Risk Factors associated with Delirium**

- **Decreased oral intake**\(^4,13\)
  - Dehydration\(^4,13\)
  - Malnutrition\(^4,13\)
  - Volume depletion + sodium imbalance\(^9\)*

- **Cognitive impairment + indoor injury** are independent risk factors associated with pre/post-op delirium\(^5\)

*1998-2005 U.S. Inpatient Hospitalization Data Analysis*
Key Summary of the Evidence

**Extrinsic Risk Factors associated with Delirium**

**Low BMI (underweight)**
- Independent risk factor for post op delirium in hip fracture patients
- BMI < 20.0 kg/m² odds of delirium by a **factor of almost 3**
- Aligns with intervention studies indicating malnutrition is significantly associated with pre and post-op delirium
Key Summary of the Evidence

Extrinsic Risk Factors associated with Delirium

- Time from admission to operation\textsuperscript{5,12}
  - Associated with pre-op delirium\textsuperscript{5}
  - 43% of elderly hip fx patients who waited over 48 hours before surgery develop post-op delirium\textsuperscript{12}
Key Summary of the Evidence

Contributing Factors associated with Delirium

- Fracture or Trauma$^{12,14}$
  - Post-op confusion caused by delirium can occur in older patients following hip fx$^{12}$
  - Elderly hip fx patients with premorbid and comorbid problems are at high risk of developing delirium$^{14}$
Key Summary of the Evidence

**Contributing Factors associated with Delirium**

- **Types of Surgery**
  - Orthopedic
  - Cardiac
  - Prolonged cardiopulmonary bypass
  - Noncardiac

*Drug-induced delirium + non-dementia non-drug delirium had the strongest association with hospitalizations of patients who had:

- Lower extremity orthopedic surgery
- UTI/kidney infections

*1998-2005 U.S. Inpatient Hospitalization Data Analysis
### Other Contributing Factors

#### Premorbid Factors
- ADL dependency
- Psychiatric comorbidities
  - Including dementia

#### Predisposing Factors
- Age: mean 82 yrs
- Gender: 87% female
- Sensory impairment
- Function impairment *before* hip fx
- Residency before admission
- Pre-existing cognitive impairment
- Comorbidities
- Medication use
Key Summary of the Evidence

**Delirium Rates**

- **Prevalence**\(^4,13\)
  - Age: Increases with age; rises to 14% for those > 85 years old\(^4\)
    - General hospital admissions: 14 to 24%\(^4,13\)
    - Community: 1-2%\(^4\)

- **Incidence**\(^4,7,13\)
  - Up to 60% hospitalized elderly patients\(^7\)
  - 10-30% post-admission\(^13\)
  - 15-53% of older patients post-op\(^4\)
Conflicts in the Findings

- Conflicting evidence regarding specific delirium interventions $^{3,4,12,13}$
  - Re-orientation therapy $^{13}$
  - Delirium rooms $^3$
  - Gender $^{4,12}$
Nursing Care Implications

- Nurse are often the first to recognize subtle behavioral and cognitive changes\textsuperscript{13}
  - Best positions the nurse to detect delirium\textsuperscript{13}
- Nurses should be aware of the development of delirium for patients:\textsuperscript{12}
  - \(> 80\) years of age
  - Premorbid psychiatric diagnoses
    - Including cognitive decline
  - High number of other comorbidities
Nursing Care Implications

- **Assessment** *(MDs rely on our observations!)*[^12][^13]
  - Patients’ pre-fx functional + cognitive capabilities[^12]
  - Type of comorbidities[^12]

- **Surveillance of Mental Status[^13]**
  - Be alert to post-op delirium in “healthy” elderly[^12]
  - Monitor post-op sx in all elderly patients[^12]

- **Staff Awareness[^13]**
  - Increase knowledge and awareness for early detection and management of delirium
Conclusions

Effective delirium strategies require finding the right combination of therapies to design easy-to-use interventions that can be applied across the inpatient care continuum\textsuperscript{13}
Recommendations

Use an evidence-based programmatic framework to establish a caring culture of safety in order for the hospitalized patient at risk for delirium to *feel, act, and be safe*

- Design
- Prevention
- Rescue
- Protection
Design

- Nurse-driven delirium prevention and management program\textsuperscript{3,4,7,8,9,13,14}
  - Involves Quality Improvement & Risk Management
  - Assessment, implementation, monitoring, reporting, evaluation systems

- Dedicated interdisciplinary interprofessional delirium prevention team (including a pharmacist)\textsuperscript{4,5,6,9,10,11,13}
  - Evidence-based strategies, guidelines, protocols
Prevention

- Geriatric Syndrome Screening\textsuperscript{1,4,5,7,8,9,11,12,13,14}
  - Delirium risk assessment
  - Falls risk assessment
    - Admission, every shift, every transfer, any clinical status change

- Nonpharmacological approaches\textsuperscript{2,4,6,7,11,13}
  - Medication reconciliation/review with pharmacy

- Assess surgical populations, particularly orthopedic cases\textsuperscript{1,4,5,9,12}
  - Detect and recognize cognitive changes during pre/post-op monitoring period
Prevention

- Tailored education for: 1,3,4,5,6,7,8,9,10,12,13,14
  - Patient, family, interprofessional staff
  - Population-based risk factors, staff surveillance, prevention/management strategies

- Collaborative relationships with family/friends 4,6,11,13,14
  - Describe fall patterns and behavioral baseline
  - Recognize patient behavioral changes
Rescue

Evidence-based Delirium Programs

4,7,8,13

- Customize patient care
- Facilitate early detection + recognition
- Manage delirium sx
- Respond promptly to delirium escalation

Pharmacy Consultation

2,4,7,9

- Specific pharmacologic approaches for patients deemed a safety risk
  - Delirium sx threaten patient safety, safety of others, and/or result in interruption of essential therapy
Protection

Open Communication & Disclosure\textsuperscript{4,7,11,14}

- Patients, family, interprofessional staff, hospital departments
- Delirium risk upon admission and throughout the hospital stay
  \textit{wherever the patient may be}

Safe & Stable Care Environment\textsuperscript{4,8,11,13,14}

- Support nurse surveillance
- Rapid and complete assessment and treatment of at risk patients
Forward Momentum with the Evidence

• Evidence-based nursing care
• Customized to surgical patient populations
• Protocols, guidelines, interventions for our at risk surgical patients

“A healthy attitude is contagious, but don’t wait to catch it from others. Be a carrier!”

Tom Stoppard (British playwright)
Dedication

To Kaiser Permanente surgical nurses, past and present, who keep our patients safe


Other References

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