

RHSC 501

Section 002-2010W

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Critically Appraised Topic

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**Does mobilization of the acutely ill elderly patient on day of admission
decrease their risk for developing delirium?**

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CLINICAL SCENARIO:

The Acute Care of the Elderly (ACE) unit admits patients directly from Emergency. When an acutely ill elder is admitted to an ACE unit the expectation is that they receive interdisciplinary specialized geriatric care based on the ACE model designed in 1995 by Landefeld, Palmer, Kresevic and colleagues at the University Hospitals of Cleveland. This care delivery model is based on the provision of holistic specialized geriatric care through an interdisciplinary team in an environment aimed at reducing the impact of the normal physiological changes related to aging. The patient's medical care is led by a Geriatrician, and is implemented by staff, predominately Registered Nurses (RNs), specialized in the assessment and care of the acutely ill medical complex older adult.

The admission criteria are: acutely ill, medically complex elders over the age of 75, with a frailty estimation of five to six out of seven on the Clinical Frailty Scale as established by the Canadian Study of Health and Aging Clinical Frailty Scale (CSHA), (Rockwood 2005).

At one acute care hospital, practice traditions states a physiotherapist requires a physician's order for mobilization and a physiotherapist's assessment must be completed before any nurse may mobilize a patient. As a mobility assessment can take up to four days on the ACE unit, this practice results in all of the admissions remaining on complete bed-rest for those initial days post admission.

Fourteen to 56 percent of older adults admitted to acute care will develop a delirium (Inouye, 1999). This researcher began to question if this delay in mobilization could be a factor linked to increasing the patients' risk for developing delirium. If immobilization is an identified risk factor for the development of delirium in the older adult, could the opposite be true? Does early mobilization of the acutely ill elderly patient on day of admission, decrease their risk for developing delirium?

FOCUSED CLINICAL QUESTION:

Does mobilization of the acutely ill elderly patient on day of admission decrease their risk for developing delirium?

SUMMARY of Search, 'Best' Evidence' Appraised, and Key Findings

- Five articles were found that met the inclusion/exclusion criteria
 - 2 cohort design studies
 - 2 supplied evidence based on single case study or a review of 5 pathways
 - 1 case study
 - 1 clinical practice guideline
- The article by Robinson, S., Rick, C., Weitzel, T., Vollmer, C., Eden, B., (2008) provided the most rigorous methodology of research.
- The physiological changes associated with aging put the older adult at the highest risk of developing delirium of any patient.
- All of the articles and especially the clinical guidelines readily declare that delirium is a preventable syndrome dependant on the presence of many interrelated factors, some internal and some environmental in relation to the patient.
- All of the articles speak to the poor outcome; longer length of stay, higher risk of institutionalization and the high risk of mortality once the older adult develops delirium.
 - Early recognition of delirium is key to prevention
 - All older adults admitted to acute care at any hospital are at a high risk (50-75%) of developing a disability due to immobilization during a hospital stay.
 - Immobilization is listed in all of the articles as a risk factor leading to the development of delirium.
 - Most signs of delirium develop within the first two days post admission to an acute care hospital.
- ACE units are the established environments best suited to prevent the development of delirium in the acutely ill older adult.

CLINICAL BOTTOM LINE:

The older adult requiring admission to an acute care hospital is at a high risk of developing delirium. There is not a standard instrument for measuring a patient's risk for developing delirium. The risk of developing delirium is much greater if the patient has restricted mobility, especially during the first few days of admission. Immobility through the use of, physical or chemical restraints, or antiquated facility practices is a precursor to many other factors felt to contribute to the development of delirium such as: constipation, urinary retention, urinary or pulmonary infections, poor sleep hygiene, poor nutritional intake, dehydration, and skin breakdown.

Removal of the immobility risk factor from the equation decreases the risk of an older adult admitted to any unit in an acute care facility for developing delirium, but especially when the patient is admitted to an ACE unit.

Limitation of this CAT: This critically appraised topic was prepared for a graduate course assignment and has not been peer-reviewed by one other than an instructor.

SEARCH STRATEGY:**Terms used to guide Search Strategy:**

- **P**atient Group: Older Adult; medically complex, acutely ill, risk for immobility or functional decline.
- **I**ntervention: On admission to the ACE unit, the Registered Nurse (RN) assesses the patient's ability to safely mobilize, through the use of an early mobility screening tool. This information is then posted above the patient's head of bed for all staff and visitors to use. Included on this document is the date of the assessment and any mobility aids required to safely mobilize the patient. The assumption is that every time a patient is mobilized, both patient and staff safety is a priority.
- **C**omparison: Older adults admitted to acute care but not to an ACE unit.
- **O**utcome(s): Older adults admitted to acute care where an early mobilization screening tool is performed on day of admission will have a decreased risk of developing delirium.

Databases, Sites Searched	Search Terms	Limits Used
OVID SP	Older adults, delirium, mobilization, immobility, causes of delirium, ACE units, functional decline, acute hospitalization.	Ovid full text, full text available, English, human, aged >65, publication years up to an including 2010.
Google Scholar	Older adults, causes of delirium, delirium, mobilization, immobility, ACE units, functional decline acute hospitalization.	

INCLUSION and EXCLUSION CRITERIA

- Inclusion:
 - Studies involving older adults greater than 65
 - Studies involving delirium
 - Studies involving functional decline, immobility, use of restraints

- Exclusion:
 - Adults younger than 65
 - Patients requiring or recovering from surgery, (pre or post operative)
 - Studies involving critical care delirium
 - Studies involving alcohol, or medication related delirium

RESULTS OF SEARCH**Table 1:** Summary of Study Designs of Articles Retrieved

Level of evidence	Study Design/ Methodology of Articles Retrieved	Number Located	Author (Year)
Level 1	Randomized Controls Trials,	0	
Level 2	Cohort designs	2	Inouye, S. et al, (1999) Robinson, S., Rick, C., Weitzel, T., Vollmer, C., Eden, B., (2008)
Level 3	Evidence is based on Single case study or review of 5 pathways.	2	Miller, S. (2002) Inouye, S. et al, (1999)
Level 4	Opinion of respected authorities,	0	
Level 5	Expert opinion	1	Graf, C. (2006)
N/A	Evidence-based clinical guidelines	1	Potter, J., George, J., on behalf of British Geriatrics Society. (2006)

BEST EVIDENCE

The following paper by Robinson, S., Rick, C., Weitzel, T., Vollmer, C., Eden, B., (2008) was identified as the best evidence and selected for critical appraisal.

Reasons for selecting this study were:

- Prospective cohort study involving 160 patients over the age of 65
 - Analytical observational study
 - Level two out of five for confidence that recommendations are valid (Law and MacDermid 2008).
- To ensure groups were matched for equal presence of the criteria, groups were subjected to the Chi-square test (Fisher's exact test).
- Records were reviewed through the chart-based method for the identification of delirium, (Inouye, S., et al., 2005).
 - Sensitivity of this method for reviewing charts is 74%.
 - Decreased the possibility of interrater unreliability and potential for bias.
- Sufficient literature searched, to support the undertaking of this study.
- Limits for the study were dependant on the recognition of patterns of delirium.

SUMMARY OF BEST EVIDENCE

Study - Robinson, S., Rick, C., Weitzel, T., Vollmer, C., Eden, B., (2008)

Aim/Objective of the Study/Systematic Review:

To determine if a delirium prevention protocol targeting three specific risk factors, (the presence of dementia, hearing and/or visual impairment and limited mobility) could prevent the development of delirium in older adults on a renal unit.

Study Design:

Pre-intervention and post-intervention study

Data collected using retrospective record review

Approval received from the research committee of a Midwestern United States hospital.

Setting:

A urology/nephrology unit, urban acute care hospital in Midwestern United States.

Participants:

Participants were admitted to same unit

- All patients had some degree of renal impairment
- Pre-implementation of protocol group matched on all criteria with post-implementation of protocol group.
- Matching of participants using Fisher's exact test was according to:
 - Age
 - Mean age group 1, 79.18 years ($p < 0.779$)
 - Mean age group 2, 78.82
 - Gender
 - Both groups composed equally of 37 men (46%) and 43 women (54%)
- No significant difference in presence of dementia ($p = 1.00$), vision loss ($p = 1.00$), hearing loss ($p = 1.00$) and mobility loss ($p = 1.00$).
 - In each group
 - 12 (15%) suffered from dementia
 - 34 (42.5%) were vision impaired
 - 29 (36.3%) were hearing impaired
 - 58 (72.5%) were mobility impaired

Intervention Investigated:

Nursing assistants performed a series of measures aimed at decreasing the patients' risk factors for the development of delirium. These interventions specifically targeted enhancing the patients' abilities to interact with their environment, through visual and auditory perception, and the continuance of activities of daily living.

Outcome Measures/Qualitative Methods:

- Delirium was defined according to Inouye, (2005) using the chart based method for identifying delirium
- Chi-square test (Fisher's exact test).

Main Findings:

Findings	Pre- Intervention group	Post- Intervention Group	Difference between pre/post intervention
Number/percentage of patients demonstrating symptoms of delirium	30 37.5%	11 13.8%	19 23.7% ($p < .001$)
Number of patients demonstrating symptoms of delirium by day 2	28 (93%)	9 (82%)	19 (32%)

Original Authors' Conclusions:

Whereas the establishment of these protocols did decrease the development of delirium in a significant number of patients, delirium still developed in some. Delirium is a preventable syndrome, believed to be the result of a cascade of events such as; medications, change in environment, infections, pain etc.

The HELP program (Inouye, S.K., Bogardus, S.T. Jr., Baker, D.I., Leo-Summers, L., Cooney, L.M. Jr., 2000) is the most comprehensive program for the prevention of delirium. Yet, this is a very resource intense program and many smaller facilities are unable to support such a costly program.

This study supports the establishment of simple nursing protocols that do not require a physician's order. Nursing support staff were able to implement the interventions with minimal additional education.

Critical Appraisal:**Validity**

- The authors have sufficient knowledge of this subject and the use of accepted standards of measurement such as the chart review (Inouye 2005) and the Fisher exact test have created a valid study.
- This is an ethical study, as no treatment was withheld from any participant once the preventative measures were initiated.
- There were no biases listed, nor could this researcher find any.
- There were no drop outs noted.

Strengths:

- Groups were matched equally using established methods for identification.
 - Use of Fisher's exact test, provided clean group data.
- Use of chart-based method for identification of delirium (Inouye 2005), decreases potential for integrator unreliability and bias
- Use of statistician decreased potential for bias
- Ethically safe

Weaknesses:

- Retrospective study design
 - Retrospective chart review was dependant on nurses identification of mental status (not a previously established part of nursing documentation on this unit)
- Education provided at initiation of study increased nursing sensitivity to delirium thus increased documentation of mental status post-intervention.
 - Increased potential for underestimation of findings
- Patients were not subjected to any formal assessment of sensory impairments using validated instruments use as a Functional Independence Measure (FIM) or the Confusion Assessment Model (CAM).
- Relatively small sample of patients
- Added risk factor of renal impairment not openly admitted
 - Degree of renal impairment could be considered as a constant or a variable dependant on the degree of renal impairment of the participants.
- Nurses failed to document when there was a delay in implementing the interventions.
 - Delay of implementation further implies underestimation of results.

Interpretation of Results

This study is highly suggestive that delirium can be prevented in significant numbers by the implementation of nursing interventions aimed at decreasing impairments in the areas of cognitive, sensory and mobility.

Summary/Conclusion:

This is a clinically significant study as it identifies the potential for preventing delirium using basic nursing support staff and does not require significant organizational financial support. Seventy-two point five of the patients in the study had some degree of mobility impairment supporting this researcher's preconception that interventions aimed at early mobilization does aid in the prevention of developing delirium in the older adult.

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

As the population ages, and health care continues to consume more of public and private resources, it is essential that organizations seek interventions aimed at outcome measures and length of stays of all patients while maintaining fiscal responsibility.

This study is easily applicable in any acute care unit. Providing RNs and nursing support staff with education, focussing on the skills to identify and decrease sensory and mobility impairments, creates an environment focussed on reducing a patient's risk factors for developing delirium. Encouraging patients to use the bathroom instead of relying on nurses for commodes and bedpans and to sit up in chairs for mealtimes, addresses a few of the aspects of immobility felt to contribute significantly to the development of delirium.

Addendum to the Critically Appraised Topic

As of October 6, 2010, the ACE unit at our hospital initiated a trial. All of the RNs on this unit attended a 2-hour education session, enabling them to assess the ability of their patients to safely mobilize using a mobility screening tool on the day of admission. The information gleaned from the use of this screening tool is then posted at the head of the patient's bed. Included on this document is the date of the assessment and any mobility aids required to safely mobilize the patient. The assumption clarified with the staff is that every time a patient is mobilized, patient and staff safety is a priority. At a recent follow up staff meeting on November 4, 2010, the nurses voted overwhelmingly in favour of continuing the implementation of the early mobility screening on admission.

As well as the perception of a reduction in our development of delirium, this change of practice is also yielding some very-unanticipated rewards. An overwhelming sense of empowerment by the frontline nurses, and a concept of interdisciplinary team is

developing on a unit where it did not previously exist. The unit has also discovered a profound reduction in the number of patient falls as well as injuries related to falls.

A recent sharing of the successes, at our Fraser Health Authority Older Adult Program Manager meeting last month, is encouraging the development of a more rigorous study into the unexpected benefits of implementing early mobilization screening on admission.

Critique of search strategy:

- Multiple attempts on various search engines, seeking supporting documentation resulted in the re-working of the question multiple times.
- Strengths:
 - This researcher has expert level knowledge of the subject of delirium, both in terms of causes and in theories of prevention.
 - OVIDSP is a familiar site.
 - Original search resulted in hundreds of articles
 - Substantial evidence supporting preconception
 - Finding the right inclusion and exclusion criteria took additional time.
 - Critically reviewed article came the closest to supporting critically appraised topic, (CAT)
- Limitations:
 - The article summarized does not directly support the CAT however; it is the article with best methodology found, with data linking directly with the CAT.
 - Delirium articles tended to be less research or study based but more of a case study format.

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