

# Evidence-Based Strategy to Improve Delirium Detection in Elderly Postsurgical Patients

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## Abstract



## Introduction

### Delirium

- Common occurrence in elderly patients after surgery.
- Presents as a change in awareness, with rapid development, with cognitive impairment not due to a preexisting neurologic condition, caused by a toxin or medical condition.
- Not well understood.

### Clinical Significance

- \$44,000 more in healthcare costs when a patient develops delirium.
- Poorer long-term outcomes among patients with delirium.

### Impact to Anesthesia Professionals

- Aging surgical population means patient with more complex physiology.
- Careful drug selection for at-risk patients.
- PACU delirium assessment is not yet the standard of care.

## PICOT Statement

- **P** Among elderly (>65 years old) surgical patients
- **I** How does routine postoperative delirium assessment in the post anesthesia care unit
- **C** Compare to no routine delirium assessment
- **O** Affect delirium detection
- **T** In the post anesthesia care unit?

## Objectives

- Determine best practice guidelines for postoperative delirium screening.
- Increase anesthesia provider awareness of postoperative delirium.
- Develop hypothetical postoperative delirium screening guidelines if indicated as feasible by the literature review.
- Develop a comprehensive plan to implement and monitor positive delirium screening occurrence and subsequent associated delirium outcomes.
- Use the Iowa Model Revised (2015) to guide project implementation.
- Use the continuous cycle of the Iowa Model Revised to adjust guidelines if outcomes are unsatisfactory.

## Literature Review Summary

### Delirium Screening Trends

- Delirium screenings not commonly performed in PACU setting.
- High number of patients who were not recognized as having delirium.

### Delirium Tools

- CAM-ICU, 4AT, and NuDESC assessment tools are popular delirium assessments.
- 4AT has the highest sensitivity and specificity for delirium present in the PACU, or greatest area under the curve.

### Delirium Outcomes

- Delirium present in the PACU is associated with:
  - Increased postoperative mortality
  - Longer length of hospital stay
  - More frequent 30-day readmission
- Structured delirium screenings after surgery are associated with:
  - Improved delirium detection
  - Reduced length of hospital stay
  - No improvement in additional patient outcomes

### Delirium Assessment Feasibility

- Delirium assessments are easily implemented in PACU and post surgical units.
- Increased staff knowledge about delirium.

## Delirium Assessment Guideline

### Timing

- Upon achieving Aldrete score  $\geq 9$ , or deemed ready for PACU discharge, a PACU nurse will complete the delirium assessment.

### Delirium Screening Tool

- All patients aged 65 years and older will be assessed with the 4AT delirium assessment tool.

### Documentation

- The 4AT delirium assessment will be recorded in the patient's electronic medical record.
- A 4AT score of  $\geq 1$  requires anesthesia provider notification with documented follow-up.

### Follow-up

- Ambulatory surgery patients: complete follow-up with the responsible anesthesia provider.
- Inpatient surgery patients: nurses must notify the covering anesthesia provider and in-patient nurse.

## Implementation Plan

### Planning for Practice Change

- Partner with:
  - PACU shared governance council
  - Hospital leadership
  - IT department
  - Quality Improvement department
  - Anesthesia department
  - PACU nursing department leadership
- Obtain policy approval
- Education for PACU nurse and anesthesia providers
- Implement 4AT into electronic healthcare record
- Begin QI department baseline analysis

### Pilot Practice Change and Unit-Wide Adoption

- One training week, three-week pilot, one week for feedback and plan adjustment
- Core group of PACU nurses and all anesthesia staff follow the proposed delirium assessment guidelines for three weeks
- Will utilize one week for feedback.
- Plan will adjust as required.

### Implementation and Sustainment

- One-week go-live with a ten-week implementation and sustainment phase
- PACU nurse and anesthesia provider education
  - Department in-services for initial training
  - Training plan for future department hires
- Daily coaching, KPI reporting, and feedback for PACU nurses
  - KPI pareto chart to identify barriers to implementation success
- PACU and QI department relationship
  - QI department reports delirium detection success indicators
  - PACU shared governance reports daily delirium assessment compliance

## Budget

Table 3 Summary of costs associated with project implementation			
Item	Cost	Multiplier	Total
Staff RN	\$35/hour	1 hour x 60 RNs	\$2,100
Anesthesiologist	\$160/hour	0.25 hours x 30 Anesthesiologists	\$1,200
CRNA/CAA	\$90/hour	0.25 hours x 30 CRNA/CAA	\$675
Policy Review Committee	\$335/hour	3 hours	\$1,005
Legal Review	\$100/hour	2 hours	\$200
Information Technology Department	\$46/hour	120 hours	\$5,520
Quality Improvement Department	\$40/hour	68 hours	\$2,720
Shared Governance Council	\$140/hour	2 hours	\$280
Large bag of candy	\$34.50	2	\$69
Color ink cartridge	\$65	1	\$65
Printer paper	\$53	1	\$53
Construction paper	\$7	1	\$7
Color marker pack	\$20	1	\$20
Large box of pens	\$10	1	\$10
			<b>\$13,924</b>

## Outcomes Monitoring

### Delirium Screening Compliance

- Key Performance Indicator (KPI) measured by the PACU nursing team
- Goal:  $\geq 90\%$  compliance by the end of the implementation phase, 100% compliance by one year

### Delirium Detection Success

- International Classification of Diseases (ICD) code monitoring for unexpected admissions related to delirium after surgery
    - ICD 10 codes: F05, F05.0, F05.8, F05.9
  - Retrospective analysis of the prior to project implementation to establish a statistically significant baseline
  - Record indicators on a monthly basis
  - Record in a control chart to watch for significant trends over time
  - Note: ICD-11 is now available but not yet universally adopted, will adjust indicators when appropriate
  - Incident report monitoring for events related to postoperative delirium
- ### Anticipated Outcomes
- Decreased number of unexpected admissions after surgery with delirium present.
  - Increased number of patients with detected delirium.

## Limitations

### Novel Concept

- Delirium assessments not routine in most PACU settings.
- May not capture patients discharged home after surgery who develop next day delirium.

### Treatment Algorithm

- Treatment guidelines not within the scope of this project.

### Further Data Evaluation

- Medications known to precipitate delirium can easily be tracked by the electronic medical record.
- Delirium incidence among patients who received specific medications may provide an additional opportunity for a quality improvement initiative in the anesthesia department.

## Conclusion

- Nurse-driven delirium assessments are a simple intervention which are validated for use in the PACU.
- PACU nursing and anesthesia departments must partner to better identify delirium.
- Delirium identification may reduce unexpected hospital readmission after surgery.
- **Future work**
  - Anesthesia providers drug selection feedback
  - Delirium assessment process for patients who do not receive care in the PACU after surgery.

## References



## Additional Documents



Delirium Assessment Policy



Literature Review and Evidence Synthesis Tables



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