Implementation of a Delirium Screening Protocol in an Intensive Care Unit in a Community Hospital: Incidence and Associated Outcomes

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- Saint Francis Hospital
  - ICU nurses
  - ICU patient care committee
  - Hospitalists

Background: Delirium

- Delirium
  - Disorientation, confusion, memory dysfunction
  - Fluctuating course
- Risk Factors
  - Serious medical, surgical or neurologic illnesses
  - Drug intoxication or withdrawal

Carnahan et al, *Psychopharmacology Bulletin* 2002;36(2):24-39

Background: Delirium

- Incidence/Prevalence
  - 10% hospitalized patients over 65 on admission
    - Additional 10-15% while in hospital
  - 22-89% of hospitalized elderly with dementia
- Cost
  - $4-16 billion/year in U.S.
- Limited understanding of pathophysiology and treatment

Carnahan et al, *Psychopharmacology Bulletin* 2002;36(2):24-39

Thomason and Ely, *Crit Care Med* 2004;32:2352-4

Background: Delirium

- Associated with adverse outcomes

- Morbidity and mortality
- Functional and cognitive decline
- Increased length of hospitalization
- Requirements for additional care

Carnahan et al, *Psychopharmacology Bulletin* 2002;36(2):24-39

Thomason and Ely, *Crit Care Med* 2004;32:2352-4

Background: Delirium Screening

- Guidelines
  - Recommend screening for delirium as the standard of practice
    - Most hospitals have yet to do this
- Benefits of screening
  - Early recognition and intervention
    - To improve comfort, address underlying causes
- Quality improvement project
  - Saint Francis Hospital

Jacobi et al, *Crit Care Med* 2002;30:119-41

Goals

1. Enhance patient care at St. Francis

2. Assess the feasibility of future research at St. Francis

3. Implement a clinical practice framework which is advantageous to conducting delirium research

Specific Aims

1. To estimate the prevalence and duration of delirium in an intensive care unit (ICU) at a community hospital by reviewing data from a quality improvement project

2. To compare outcomes in patients who do or do not experience delirium in the ICU

Methods

- 2 month observation period
  - In one selected ICU
- Confusion Assessment Method for the ICU
  - CAM-ICU, administered twice daily, ~2 min
- Retrospective chart review
  - Evaluating outcomes and risk factors
  - Only patients with stays within the window

Ely et al, *JAMA* 2001;286:2703-10

CAM-ICU

Sedation and Delirium Assessments: A Two Step Approach

Step One: Sedation Assessment (SAS)

If SAS is 1 or 2, then **Stop** & **Reassess** patient at later time
If SAS is above 2 (3 through 7), then **Proceed to Step 2**

Step Two: Delirium Assessment (CAM-ICU)

Feature 1: Acute Onset of Mental Status Changes or a Fluctuating Course

And

Feature 2: Inattention

And

Feature 3: Disorganized Thinking

Or

Feature 4: Altered Level of Consciousness

= DELIRIUM

Ely, JAMA 2001; 286:2703-10
Ely, Crit Car Med 2001; 29:1370-9

Feature 1: Acute Onset or Fluctuating Course

Feature 1 is **positive if either question is answered yes.

A. Is there an acute change from mental status baseline?
B. Did the patient's mental status fluctuate during the past 24 hours as evidenced by fluctuation on a sedation scale (SAS)?

Feature 2: Inattention

Feature 2 is **positive if ASE score is less than 8.

Assess using the **Attention Screening Examination (ASE)—Letters or Pictures.** Attempt ASE Letters first. If pt is able to perform this test and the score is clear, record this score and move to Feature 3. If pt is unable to perform this test or the score is unclear, perform the ASE Pictures. If you perform both tests, use the ASE pictures results to score the Feature.

ASE Letters: Auditory/Random Letter "A" Test

Directions: Say to the patient, *"I am going to read you a series of 10 letters. Whenever you hear the letter 'A,' indicate by squeezing my hand."* Read letters from the following letter list in a normal tone.

S A V E A H A A R T

Scoring: Errors are counted when patient fails to squeeze on the letter "A" and when the patient squeezes on any letter other than "A."

ASE Pictures: Visual/Picture Recognition

Directions and Scoring are located on the picture packet.

Feature 3: Disorganized Thinking

Feature 3 is **positive if the <u>combined</u> (Questions + Command) score is less than 4.

<u>Questions:</u> Use either set A <u>or</u> Set B, alternate on consecutive days if necessary.

Set A	Set B
1. Will a stone float on water?	1. Will a leaf float on water?
2. Are there fish in the sea?	2. Are there elephants in the sea?
3. Does one pound weigh more than two pounds?	3. Does two pounds weigh more than one pound?
4. Can you use a hammer to pound a nail?	4. Can you use a hammer to cut wood?

Score: Patient earns 1 point for each correct answer out of 4.

<u>Command</u>

Say to patient: *"Hold up this many fingers"* (Examiner holds two fingers in front of patient) *"Now do the same thing with the other hand"* (Not repeating the number of fingers).

Score: Patient earns 1 point if able to successfully complete the entire command.

Feature 4: Altered Level of Consciousness

Feature 4 is **positive if patient's current level of consciousness is anything <u>other than **alert**</u> (e.g., SAS other than 4 at time of assessment.)

Riker Sedation Agitation Scale (SAS)

7	**Dangerous Agitation**	Pulling at ET tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side to side
6	**Very Agitated**	Requiring restraint and frequent verbal reminding of limits, biting ET tube
5	**Agitated**	Anxious or physically agitated, calms to verbal instructions
4	**Calm and Cooperative**	Calm, easily arousable, follows commands
3	**Sedated**	Difficult to arouse but awakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again
2	**Very Sedated**	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously
1	**Unarousable**	Minimal or no response to noxious stimuli, does not communicate or follow commands

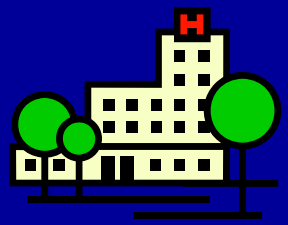
Riker, Crit Care Med 1999;27:1325-9

Results: Demographics

- Age
  - Mean 59 (S.D. 22) years
  - Range 18-100 years
- Gender
  - 44% female (34/77)

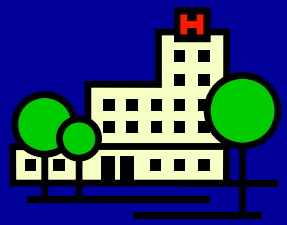
Results: Delirium

- Delirium
  - 22% (17/77)
- Number of days delirious (among cases)
  - Median 1 day
  - Interquartile range 0.5-2.5
  - Range 0.5-6.5 days



Results: Hospital Stay

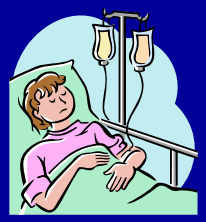
	Cases Median (IQ range) [range]	**Non-cases** Median (IQ range) [range]	**p-value** Wilcoxon Rank Sum
Total Hospital Stay	12 days (9-26) [4-61]	7 days (4-16) [1-57]	0.0145
Total ICU Stay	5 days (3-7) [2-26]	2 days (2-4) [1-20]	0.0091



Results: Hospital Stay

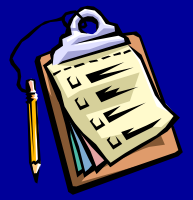
Spearman Rank Correlations Among Cases

- Total hospital stay vs. duration of delirium
  - $r_s^2 = 0.245$, $p = 0.0435$
- Total ICU stay vs. duration of delirium
  - $r_s^2 = 0.276$, $p = 0.0304$



Results: Frequency Data

	Cases % (n)	**Non-cases** % (n)	**p-value** Fisher Exact
In-hospital mortality	6% (1/17)	20% (12/60)	0.2759
4-week readmission	29% (5/17)	10% (6/60)	0.0580
Line compromised	18% (3/17)	3% (2/60)	0.0685



Next Steps

- Other outcomes
  - Placement to higher level of care
- Risk factor assessment
  - Drugs, diagnoses, severity of illness
- Perceptions of usefulness among providers

Future Research

- Delirium pathophysiology
- Prevention
  - Removing medications in high-risk patients
  - Medication treatment in high-risk patients
- Treatment

Questions?