Delirium Screening and Prevention

Kathleen Puntillo RN, PhD, FAAN, FCCM
Professor Emeritus
School of Nursing, UCSF

Faculty Disclosures

I have nothing to disclose

Objectives

• Discuss prevalence, risk factors and outcomes related to delirium
• Present 2 delirium screening tools recommended by recent SCCM guidelines
• Propose interventions to prevent delirium development or decrease duration in ICU patients
• Discuss a delirium prevention initiative at UCSF Medical Center ICU
Case Study

- Mr. McLaughlin
- 80 years old, 100 pk yr smoker
- Surgery: nephrectomy
- P.O. day 1:
  - Restless, agitated
  - Bugs on wall, cigarette in bed
  - Afraid when watching TV
  - Watched Kentucky Derby but didn’t remember
  - Restrained when no family present

Case Study (cont’d)

- Daughters present almost 24 hrs/day x 2 days
- Evening of P.O. day 2:
  - Haloperidol
  - Dilaudid
  - Midazolam
- Slept all night, with RN daughter at bedside
- Awoke cognitively clear

Cardinal Symptoms of Delirium & Coma

[Diagram showing symptoms]

Types of Delirium

- Hyperactive: 9%
- Hypoactive: 35%
- Mixed: 56%

Delirium in the Critically Ill

- Occurs frequently (16-83%)
- Mechanisms numerous and not clearly understood
  - Neuroinflammation
  - Impaired oxidative metabolism
  - Abnormal levels of large neutral amino acids (e.g., tryptophan)

Delirium in the Critically Ill

- Associated with:
  - Increased mortality
  - Prolonged hospitalization
  - Prolonged duration of mechanical ventilation
  - Increased cost
  - Worse consequences than in non-ICU patients

References:

What is the state-of-the-science on delirium in the ICU?

Screening and Prevention

Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit

Authors: Juliana Barr, MD, FCCM; Gilles L. Fraser, PharmD, FCCM; Kathleen Puntillo, RN, PhD, FAAN, FCCM; E. Wesley Ely, MD, MPH, FACP, FCCM; Céline Gélinas, RN, PhD; Joseph F. Davis, MSc; Judy E. Davidson, DNP, RN; John W. Hedden, PharmD, FCCM; John P. Ely, MD; Aaron M. Joffe, DO; Douglas B. Coussis, MD; Daniel L. Hare, MD, MS, FCCM; Avery Tung, MD; Bryce RH Robinson, MD, FACS; Dorrie K. Fontaine, PhD, RN, FAAN; Michael A. Ramsay, MD; Richard R. Riker, MD, FCCM; Curtis N. Sessler, MD, FCCP, FCCM; Brenda Pun, RN, MSN, ACNP; Yvonne Skrobik, MD, FRCP; Roman Laczak, MD, MSc.

**Interpreting the PAD Guidelines**

**Statements and Recommendations**

**GRADE** Methodology: (www.gradeworkinggroup.org)

*Grading of Recommendations Assessment, Development and Evaluation*

**Quality of evidence:** statements and recommendations

- High (A)
- Moderate (B)
- Low/Very Low (C)

**Strength of recommendations:** recommendations only

- Either strong (1), weak (2), or none (0)
- Either in favor of an intervention (+) or against an intervention (−)

**Outcomes Associated with Delirium in ICU Patients**

i. Delirium is associated with increased mortality in adult ICU patients (A).

ii. Delirium is associated with prolonged ICU and hospital lengths of stay in adult ICU patients (A).

iii. Delirium is associated with the development of post-ICU cognitive impairment in adult ICU patients (B).

Barr J, Foster GL, Puntillo K, et al., CC 2013

**Worse Long-term Cognitive Performance**

- ½ of all ICU survivors experience cognitive impairment
- Duration of delirium (“the delirium dose”) is an independent predictor of cognitive impairment
  - An additional 1 day of delirium is 1.5 days associated with nearly 5-point decline in cognitive battery scores
- “Delirium dose” independent predictor of disability:
  - of ADLs (bathing, dressing, incontinence)
  - Motor-sensory function (eyesight, movement, hearing)


Delirium Risk Factors in ICU Patients

i. Four baseline risk factors positively and significantly associated with the development of delirium (B):
   . dementia
   . hypertension
   . alcoholism
   . high severity of illness

ii. Coma is an independent risk factor. Definitive relationship between various subtypes of coma and delirium in ICU patients requires further study (B).

Barr J, Fraser GL, Puntillo K, et al., CC 2013

Delirium Med Risk Factors in ICU Patients

iii. Conflicting data surround the relationship between opioid use and development delirium (B).

iv. Benzodiazepines may be a risk factor (B).

v. Insufficient data on relationship between propofol use and delirium (C).

Barr J, Fraser GL, Puntillo K, et al., CC 2013

Delirium Med Risk Factors in ICU Patients (cont.)

vi. In MV patients at risk for delirium, IV dexmedetomidine for sedation may be associated with a lower prevalence of delirium compared to IV benzodiazepines (B).
Delirium Screening

CAUTION!!
If you don’t know where you’re going...

Any road will take you there!

Delirium Monitoring in ICU Patients

i. Recommend routine monitoring for delirium (+1B).

ii. Routine monitoring of delirium is feasible in clinical practice (B).

iii. The Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the most valid and reliable (A).

Barr J, Fraser S, Puntillo K, et al. CC 2013
ICDSC (Intensive Care Delirium Screening Checklist)
Patient scored 0 to 8 points, ≥4 = Delirium

CAM-ICU (Confusion Assessment Method-ICU)
Binary scale

Delirium Scales

Delirium Assessment
CAM-ICU

ICU Delirium Screening Checklist
8 items based on DSM criteria

- Altered LOC
- Inattention
- Disorientation
- Hallucination, delusion, psychosis
- Agitation or psychomotor retardation
- Inappropriate speech or mood
- Sleep/Wake cycle disturbance
- Symptom fluctuation

Total score (0–8) 6/8
Score 0 = No Delirium, 1-3 = Subsyndromal, ≥4 = Delirium

Sub-syndromal Delirium (per ICDSC)

- Frequency:
  - 604 consecutively admitted patients
  - No delirium 31.5%
  - Sub-syndromal delirium 33.3%
  - Clinical delirium 35.2%

  Subsyndromal delirium in the ICU: Evidence for a disease spectrum

- But:
  - LOC/sedation could be a critical confounder [Devlin et al., ICM, 2013]

Delirium Prevention in ICU Patients

i. Recommend early mobilization whenever feasible to reduce the incidence and duration of delirium (+1B).

“ABCDE Bundle”

“Early mobilization might be any beneficial strategy in preventing delirium” Devlin 2013

[Photo with permission from: Needham, D. M. JAMA 2008;300:1685-1690]

Barr J, Fraser GL, Puntillo K, et al., CC 2013
Sleep Promotion

ii. Recommend promoting sleep by optimizing patients’ environments: control light and noise, cluster patient care activities, decreasing stimuli (+1C).

Effect of Earplugs on Delirium Onset

- RCT
- Hypothesis: reduction of sound during night using earplugs could be beneficial in prevention of early onset delirium
- Earplugs positioned on experimental group patients at 2200 hours and removed at 0600.
- Blinded researcher assessed delirium and sleep perception in morning.

Percent of patients in each category of cognitive status as measured by NEECHAM scale.

Patients sleeping with earplugs reported significantly better sleep after 1st night, but effect didn’t last

Van Rompaey et al., Criti Care, 2012
Delirium Prevention in ICU Patients (cont.)

iv. No recommendation for pharmacological delirium prevention protocol, no compelling data on reduction of incidence or duration (0,C).

iv. No recommendation for combined non-pharmacological and pharmacological delirium prevention protocol (0,C).

Barr J, Fraser GL, Puntillo K, et al., CC 2013

Delirium Prevention in ICU Patients (cont.)

vi. Do not suggest that either haloperidol or atypical antipsychotics prevent delirium (-2C).

vii. No recommendation for dexmedetomidine to prevent delirium (0,C).

Barr J, Fraser GL, Puntillo K, et al., CC 2013

Haloperidol prophylaxis in critically ill patients with a high risk for delirium

- Mixed medical-surgical-trauma-neuro patient ICU
  - Intervention (n=177) vs. historical control (n=299)
- High delirium risk; dementia; alcohol abuse
- Intervention: haloperidol 1 mg/8hr (or lower) within 24 hours after ICU admission

<table>
<thead>
<tr>
<th>Significant differences (p &lt; 0.05):</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delirium incidence</td>
<td>65%</td>
<td>76%</td>
</tr>
<tr>
<td>Delirium-free days</td>
<td>median 20 [IQR 8,27]</td>
<td>median 13 [IQR 3,27]</td>
</tr>
<tr>
<td>ICU re-admissions</td>
<td>11%</td>
<td>18%</td>
</tr>
<tr>
<td>Unplanned tube/line removals</td>
<td>12%</td>
<td>19%</td>
</tr>
<tr>
<td>28-day mortality</td>
<td>7.3%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Van den Boogaard et al., Critical Care, 2013
An ICU Delirium Initiative at UCSF Medical Center

ICU Delirium Workgroup

University of California, San Francisco Medical Center ICU Delirium Prevention and Management Bundle (based on SCCM 2013 guidelines)

Delirium Prevention
- Frequent reorientation
- Activity level optimized
- Minimize physical restraints
- Eyeglasses on when patient awake
- Hearing aids in place and on
- Adjust environment to maintain sleep/wake cycle

Sleep Promotion
- Decrease light
- Decrease noise
- Offer eyeshades/earplugs
- Cluster patient care activities
- Determine patient preferences:
  - Music
  - Fan
  - Warm blanket
  - TV on/off

UCSF ICU Delirium Committee 3/2013
Determine Baseline Neuro Status
Screen for Risk of ICU Delirium
- Preexisting dementia/ cognitive impairment
- History of hypertension
- History of alcoholism (≥3 drinks/day)
- High severity of illness at admission

Delirium Prevention
- Frequent reorientation
- Activity level optimized
- Minimize physical restraints
- Eyeglasses on when patient awake
- Hearing aids in place and on
- Adjust environment to maintain sleep/awake cycle

Sleep Promotion
- Decrease light
- Decrease noise
- Offer eyeshades/ earplugs
- Cluster patient care activities
- Determine patient preferences:
  • Music
  • Fan
  • Warm blanket + TV on/off

Confusion Assessment Method (CAM-ICU) Result
Performed at the start of each shift (0700, 1900)
and PRN for changes in mental status

Unable to Assess (UTA)  Negative (-)  Positive (+)

RN to Document Reason:
- RASS: -4 or -5
- Language barrier
- Developmental delay

Pharmacologic Prevention: Consider
- Assess for sedative use
- Add psychogenic home meds
- Stop deliriogenic meds

Pharmacologic Rx: Consider
- Discuss etiology of delirium
- Assess for sedative use
- Add psychogenic home meds
- Stop deliriogenic meds
- Add antipsychotic prn

Non-Pharmacologic Rx: Consider
- Continue delirium prevention
- Continue sleep promotion
- Initiate delirium care plan
- Provide family education
- Record daily entries in patient diary
ICU DELIRIUM ACTION PLAN

HYPERactive Delirium
Decrease Stimuli:
- Cluster patient activities
- Family presence
- Reduce noise levels (TV, music, voices)
- Decrease lights
- Other: ____________

HYPOactive Delirium
Increase Stimuli:
- TV on to news channel
- Family presence
- Pet therapy
- Offer cognitive activities (cards, puzzles, dominoes)
- Other: ____________

Patient Name: ____________

Cognitive Rehabilitation: UCSF Pilot Proposal

- Purpose
  - To evaluate the feasibility and impact of early cognitive rehabilitation (occupational and speech therapy) on delirious ICU patients in the setting of an early mobilization program
- Pilot goals
  - Increase ICU staff awareness of the role for OT/ST in ICU delirium
  - Increase OT/ST referrals for delirious patients
  - Determine feasibility of engaging OT/ST in delirious patients
  - Determine impact of early cognitive rehabilitation in delirium

Slide from D. Barchas, UCSF ICU

Mr. McLaughlin
With thanks to Drs. Julie Barr and Yoanna Skrobik and other members of the PAD Guidelines Panel and to Denise Barchas from UCSF ICU.

“It takes a village!”

Thank You
kathleen.puntillo@nursing.ucsf.edu

School of Nursing