Delirium Screening and Prevention

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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

Mr. McLaughlin is a 80-year-old, 100 pack-year smoker who underwent a nephrectomy. On post-operative day 1, he exhibited signs of restlessness, agitation, and paranoia. He described seeing bugs on the wall and a cigarette in his bed. He was afraid when watching TV and did not remember watching the Kentucky Derby. When no family members were present, he was restrained.
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

Clinical Characteristics of Delirium
- Disorganized thoughts
- Disorientation
- Sleep disturbances
- Memory changes
- Perception changes
- Psychomotor changes (↑ and ↓)
- Symptom fluctuation
- Transient and reversible (?) symptoms

Types of Delirium
- Hyperactive: 35%
- Hypoactive: 9%
- 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)
- Associated with:
  - Increased mortality
  - Prolonged hospitalization
  - Prolonged duration of mechanical ventilation
  - Increased cost
  - Worse consequences than in non-ICU patients


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. Dasta, MSc; Judy E. Davidson, DNP, RN; John W. Devlin, PharmD, FCCM; John R. Kress, MD; Aaron M. Joffe, DO; Douglas B. Coursin, MD; Daniel L. Herr, 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, FACC, FCCM, Brenda Pun, RN, MSN, AGNP; Yoanna Stroobants, MD, FRCP; Roman Jaeschke, 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).

Delirium and Coma Impact Survival

Duimet S, et al., Inten Care Med, 2007
Worse Long-term Cognitive Performance

- 1/2 of all ICU survivors experience cognitive impairment
- Duration of delirium is an independent predictor of cognitive impairment
  - An increase from 1 day of delirium to 5 days associated with nearly a 5-point decline in cognitive battery scores

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).

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).

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 GL, Puntillo K, et al., CC 2013

Delirium Scales

ICDSC (Intensive Care Delirium Screening Checklist)
Patient scored 0 to 8 points; ≥4/8=delirium

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

ICU Delirium Screening Checklist

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

8 items based on DSM criteria

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%

Ouimet S et al., 2007. Inten Care Med. Subsyndromal delirium in the ICU: Evidence for a disease spectrum
Is delirium= brain failure?
Is sub-syndromal delirium a step on the way to or from delirium, or a different clinical syndrome?

Slide and question from Y. Skrobik

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

Photo with permission from: Needham, D. M. JAMA 2008;300:1685-1690
Barr J, Fraser GL, Puntillo K, et al., CC 2013

“ABCDE Bundle”

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

Vasilevskis et al., Chest, 2007

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

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 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></th>
<th>Intervention</th>
<th>Control</th>
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<tbody>
<tr>
<td>Delirium incidence</td>
<td>65%</td>
<td>76%</td>
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<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>15%</td>
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<tr>
<td>28-day mortality</td>
<td>7.3%</td>
<td>12%</td>
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Significant differences (p < 0.05)

Van den Boogaard et al., Critical Care, 2013

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

An ICU Delirium Initiative at UCSF Medical Center

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

- 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

UCSF ICU Delirium Committee 3/2013

CAM-ICU
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

Non-Pharmacologic Prevention: Consider
- Continue delirium prevention
- Continue sleep promotion

Pharmacologic Rx: Consider
- Discuss etiology of delirium
- Assess for sedative use
- Add psychogenic home meds
- Stop deliriogenic meds
- Add anti-psychotic 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: ____________

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

HYPOactive Delirium

Patient Name: ____________

Integrated PAD Management

Barr J, Fraser CA, Puntillo K, et al., CC 2013
PAD Interdisciplinary Team

Integrated Approach to PAD

MD Champion
RN Champion
RT Champion
Pharmacy Champions
Physical Therapy Champion
MD Champion
RN Champion

Patient

Mr. McLaughlin

With thanks to Drs. Julie Barr and Yoanna Skrobik and other members of the PAD Guidelines Panel.
“It takes a village!”

Thank You
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