Measuring delirium- how bad is it?

Yoanna Skrobik MD FRCP(c)
Conflicts of interest

- Member, SCCM Sedation, Analgesia, delirium guidelines writing committee
- Investigator initiated research funding, Hospira
The problem of definition and classification

- Introduction
- Standardized delirium screening in the ICU setting
- Potential confounders:
  - other psychiatric diagnoses
  - wakefulness
- Do clinicians identify delirium adequately?
- Conclusion
Introduction
delirium and distress

Breitbart W et al. *Psychosomatics* 2002;43:183
Standardized ICU delirium screening
Standardized ICU Delirium screening

- Monitoring for delirium should be routine in adult ICU patient.
- Routine monitoring of delirium in ICU patients is feasible in clinical practice.
DSM IV criteria

DSM-IV requires the following essential criteria for a diagnosis of delirium:

- **Disturbance of consciousness** (i.e. reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.
- **Change in cognition** (e.g. memory deficit, disorientation, language disturbance and perceptual disturbance) that is not better accounted for by a preexisting, established, or evolving dementia.
- **Development over a short period of time** (usually hours to days) and disturbance **tends to fluctuate** during the course of the day.
- There is **evidence** from the history, physical examination, or laboratory findings that the **disturbance is caused by the direct physiological consequences of a general medical condition.**
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DSM IV criteria

- Phenomenologists include:
  - Sedation
  - Neurologic dysfunction
  - Cognitive dysfunction

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Intensive Care Delirium Screening Checklist: evaluation of a new screening tool

Abstract: Objective: Delirium is the most frequent neurobehavioral complication in the ICU, and has significant clinical implications. The Intensive Care Delirium Screening Checklist (ICDSC) is a brief and easy-to-use tool that is useful for screening patients for delirium in the ICU. The aim of this study was to evaluate the diagnostic performance of the ICDSC in detecting delirium in ICU patients.

Methods: This was a prospective study conducted in a 15-bed mixed ICU. The ICDSC was administered to all patients who were intubated and mechanically ventilated, and who had a Glasgow Coma Scale score of 15. Delirium was defined as a score of 4 or more on the ICDSC.

Results: A total of 53 patients were enrolled, of whom 15 developed delirium (28%). The sensitivity of the ICDSC was 85%, with a specificity of 89%. The positive and negative predictive values were 83% and 88%, respectively. The area under the ROC curve was 0.917. Predicted sensitivity was 98% and specificity was 84%.

Conclusions: The ICDSC is a useful tool for screening patients for delirium in the ICU, with a high sensitivity and specificity.

Keywords: Delirium, Intensive Care Unit, Screening, Delirium Assessment.

Delirium in Mechanically Ventilated Patients

Validity and Reliability of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)

Delirium is a common problem in the ICU and can have significant implications for patient outcomes. The Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) is a validated tool for detecting delirium in ICU patients. The CAM-ICU is a brief and easy-to-use tool that can be administered by healthcare professionals with minimal training.

The CAM-ICU includes a 3-question screening tool that assesses the patient's attention, disorganization, and recent memory. If any of these criteria are met, a more detailed assessment is performed to confirm the diagnosis of delirium.

The CAM-ICU has been shown to have excellent validity and reliability in detecting delirium in ICU patients. The tool has been extensively validated in various settings, including surgical and medical ICUs, and has been shown to be as effective as more complex diagnostic tools, such as the Delirium Rating Scale.

The CAM-ICU is a valuable tool for identifying delirium in ICU patients and for guiding treatment decisions. Its use can help prevent adverse outcomes associated with delirium, such as prolonged hospitalization and increased mortality.

ICDSC (Intensive Care Delirium Screening Checklist)

CAM-ICU (Confusion Assessment Method-ICU)
# Intensive Care Delirium Screening Checklist (ICDSC)

<table>
<thead>
<tr>
<th>Patient Evaluation</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
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<td>Altered level of consciousness* (A-E)</td>
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* If A or B do not complete patient evaluation for the period

**Total score (0-8)**

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Bergeron, N. Dubois M.J. Skrobik, Y.
*Intensive Care Medicine*, 2001
Different levels of delirium symptoms

Intensive Care Med
DOI 10.1007/s00134-007-0618-y

Subsyndromal delirium in the ICU: evidence for a disease spectrum

Sébastien Ouimet
Richard Riker
Nicolas Bergeon
Marie-Cossette
Brian Kavanagh
Yoanna Skrobik
ICDSC Score vs. Outcome

Comparison of mortality (%) and ICU length of stay (LOS) according to DSC score

Subsyndromal delirium in the ICU: evidence for a disease spectrum
Delirium scales

ICDSC (Intensive Care Delirium Screening Checklist)

http://www.icudelirium.co.uk/

CAM-ICU (Confusion Assessment Method-ICU)

www.icudelirium.org
Assessment Tools may Disagree:

A Prospective Clinical Trial Comparing the CAM-ICU and the ICDSC

Richard R. Riker MD
Gilles L. Fraser PharmD, FCCM
Tracy N. Robbins RN
Heidi G. Bruce RN
Heather L. Addor RN

- Hypothesis: The CAM-ICU and ICDSC will show excellent agreement in ICU patients
Methods

- Convenience sample of 150 patients studied independently using both scales
- ICDSC-trained RN at bedside and able to assess patient
- Assessed pt whole shift – blind to CAM-ICU
- 2 of 3 investigators independently assessed with CAM-ICU blind to ICDSC - staggered
Agreement by Assessment

Agreement 71%, kappa 0.54 (0.46 – 0.63)

<table>
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<tr>
<th></th>
<th>DSC +</th>
<th>DSC -</th>
<th>DSC UA</th>
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<tr>
<td>CAM-ICU +</td>
<td>73</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>CAM-ICU -</td>
<td>48</td>
<td>96</td>
<td>1</td>
</tr>
<tr>
<td>CAM-ICU UA</td>
<td>14</td>
<td>2</td>
<td>36</td>
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+ delirium, - not delirium, UA = unassessable
Conclusions

- CAM-ICU and DSC show only moderate agreement – may not be interchangeable
- Assess different criteria over different timeframes
- CAM-ICU assessments separated by more than 2 hours agree less often than those occurring simultaneously or back-to-back
Delirium diagnosis vs. severity vs. clinical features

- **Diagnosis**: you are or you are not (clinical assessment, binary issue)
  
  Can be screened with a scale (CAM-ICU or ICDSC)

- **How severe** it is can be assessed by other validated tools (e.g.) DRS, validated only in verbal patients

- **Clinical features** (agitated, quiet)
Individual delirium symptoms: Do they matter?

François Marquis, MD, FRCP(C); Sébastien Ouimet; Richard Riker, MD; Mariève Cossette, MSc; Yoanna Skrobik, MD, FRCP(C)

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Table 4. Results of time to mortality analysis for mean daily occurrence of each symptom

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Incremental scores and outcome

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✓ Other psychiatric diagnoses
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- Other psychiatric diagnoses
- Wakfullness
Other psychiatric diagnoses
Other psychiatric diagnoses

✓ Delirium
Other psychiatric diagnoses

✔ Delirium
✔ Depression
Other psychiatric diagnoses

- Delirium
- Depression
- Post-Traumatic stress disorder
depression

- Variable methodology
  - Questionnaires (HADS)
  - Clinical assessment
Depression
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- Associated with benzodiazepines and illness severity
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Depression

- Associated with benzodiazepines and illness severity
- 28% of 66,000 VA ICU patients had depression or other psychiatric illness on admission
- ICU survivors with depression were far more likely to be diagnosed with depression or PTSD post-ICU than non-depressed at baseline patients
- Diabetes may be a risk (more likely to end up in ICU if depressed, more likely to exit depressed than non-diabetics)
PTSD

- Highly variable methodology
- Diagnosis linked with absence of recall and severity of illness
PTSD

- Cut-off in screening may be different in ICU patients
- Important to consider, since readily amenable to intervention if detected early


Other psychiatric diagnoses
Other psychiatric diagnoses

May be confounders: only one small study documented no correlation between PTSD and delirium
Other psychiatric diagnoses
Other psychiatric diagnoses
Other psychiatric diagnoses
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Delirium

PTSD
Other psychiatric diagnoses

Delirium  PTSD
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Depression
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Delirium  PTSD  Depression
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- There is **evidence** from the history, physical examination, or laboratory findings that the disturbance is caused by the direct physiological consequences of a general medical condition.
wakefulness
Table 1: Matched-pair CAM-ICU Assessments

<table>
<thead>
<tr>
<th>CAM-ICU before DSI</th>
<th>CAM-ICU after DSI</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DCF</td>
<td>Delirium</td>
<td>Coma</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>DCF</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Delirium</td>
<td>20</td>
<td>20</td>
<td>0</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Coma</td>
<td>2</td>
<td>7</td>
<td>5</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>27</td>
<td>5</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>

*Test for symmetry $X^2 = 29, p<0.001$*
Assessment of Delirium Relative to Daily

- Test of symmetry demonstrates a significant difference between assessment before and after DSI (Table 1)
Table 2: Delirium and Coma-Free Days (%)

<table>
<thead>
<tr>
<th>CAM-ICU used from Matched-pair data</th>
<th>CAM-ICU Before DSI</th>
<th>CAM-ICU After DSI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilator days (n=177)</td>
<td>27%</td>
<td>39%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ICU days (n=228)</td>
<td>37%</td>
<td>46%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total days (n=284)</td>
<td>48%</td>
<td>56%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
This difference persisted for analysis of MV days, ICU days, and total hospital days (Table 2)
wakefullness

- **Summary**
  - Delirium has high incidence and prevalence
  - Delirium assessment is sensitive to the timing of evaluation relative to sedative/analgesic infusion and interruption
  - This robust effect can cause significant differences in assessed days of delirium well beyond the time of sedative/analgesic infusion

- **Important Implications**
  - A standard methodology of assessment accounting for sedative/analgesic infusion and daily interruption should be utilized for future investigation
  - Delirium due solely to sedative/analgesic infusion may portend a different prognosis than delirium that persists in its absence
Do clinicians identify delirium adequately?
Do clinicians identify delirium adequately?
Do clinicians identify delirium adequately?

Recognition and labeling of delirium symptoms by intensivists: Does it matter?

Catherine Z. Cheung
Shabbir M. H. Alibhai
Michael Robinson
George Tomlinson
Dean Chittock
John Drover
Yoanna Skrobik
What is the patient’s diagnosis?
What is the patient’s diagnosis?

<table>
<thead>
<tr>
<th>Delirium By DSM IV criteria</th>
<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
</tr>
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<td></td>
<td><img src="image.png" alt="Image" /></td>
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<tbody>
<tr>
<td></td>
<td>![Lung Image]</td>
<td>![Medication Image]</td>
<td></td>
</tr>
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What is the patient’s diagnosis?

Delirium
By DSM IV criteria

Scenario A

Scenario B

Scenario C
What’s *your* diagnosis?

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<td>Delirium</td>
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<td>37 (44%)</td>
<td>70 (83%)</td>
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<tr>
<td>Etiology:</td>
<td>70 (83%)</td>
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*Base: 132 responders*
What’s *your* diagnosis?

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<td>![Image of medication]</td>
<td>![Image of medical procedure]</td>
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<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
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**Base: 132 responders**
Do clinicians identify delirium adequately?
Standardized delirium screening
Standardized delirium screening

- Should absolutely do it
Standardized delirium screening

- Should absolutely do it
- Not perfect
Funded & Supported By

Delirium and Medication Reconciliation Collaborative

Enrolment deadline extended

safer healthcare now!

Nov-25-11
A Call to Action

The Canadian ICU Collaborative and Safer Healthcare Now! invite interested teams from intensive care units to participate in a 12-month Collaborative to work on one or both of the following aims:

- Improve care for critically ill patients through implementation of standardized screening tools and prevention and management strategies for delirium
- Reduce avoidable adverse drug events for critically ill patients by following a medication reconciliation process.

Accreditation Canada has included both topics in its accreditation process in Standard 9.8 and Required Organizational Practice (ROP) 7.4 and 11.5.
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lcouves@telus.net
Information Session – November 30
Enrolment Deadline – December 15

To request details and an Enrolment Package, contact Ardis Eliason
aeliasong@telus.net

Learning Sessions begin January 18 2011
the problem of definition and classification

- Standardized delirium screening tools exist and are applicable in the ICU setting
- Potential confounders include other psychiatric diagnoses and patient wakefulness
- Clinicians may not identify delirium adequately
conclusion

- Screening for delirium symptoms is as important as any other aspect of patient care
- We are just beginning to define the issues
- Dialogue with our patients, human empathy and curiosity and scientific rigor in symptom measurement and biological markers are all likely to contribute to advances in this field
Thank you