Caring for Cognitive Impairment

Webinar No 10: Cognitive Impairment in the Emergency Department (ED) and Intensive Care Unit (ICU)
Presenters

- **Glenn Arendts**
  Associate Professor  Emergency Medicine, University of Western Australia

- **Marghie Murgo**
  Senior Nursing Advisor, ACSQHC

- **Michael Reade**
  Professor of Military Surgery & Medicine, Royal Brisbane Clinical Unit, Faculty of Medicine

Outline

- Cognitive impairment in ED

- Cognitive impairment in ICU

- Questions
Questions

• You can type your questions or comments in the control panel as we go along

• The session will be recorded and the recording and slides uploaded on the campaign website [http://cognitivecare.gov.au/](http://cognitivecare.gov.au/)
Caring for Cognitive Impairment

Cognitive Impairment

- is an important safety and quality issue for all Australian hospitals
- Patients with cognitive impairment such as dementia and/or delirium have more falls, pressure injuries and functional decline
- Dementia and delirium are poorly recognised
- 30-40% of delirium cases can be prevented

Learn how to recognise cognitive impairment

Prevent delirium

Act to keep people with cognitive impairment safe

We can all make a difference
National Safety and Quality Health Service (NSQHS) Standards (second edition)

Standard 1
Clinical Governance Standard

Standard 2
Partnering with Consumers

Standard 3
Preventing & Controlling Healthcare associated infection

Standard 4
Medication Safety

Standard 5
Comprehensive Care Standard

Standard 6
Communicating for Safety

Standard 7
Blood and Blood Products

Standard 8
Recognising and Responding to Clinical Deterioration in Acute Health Care

Screening for risk
Nutrition & hydration
Falls
Pressure injury
Delirium & CI
Self harm & suicide
Aggression & violence
Restraint/seclusion
Preventing delirium and managing cognitive impairment

**Action 5.29**

The health service organisation providing services to patients who have cognitive impairment or are at risk of developing delirium has a system for caring for patients with cognitive impairment to:

a. Incorporate best-practice strategies for early recognition, prevention, treatment and management of cognitive impairment in the care plan, including the Delirium Clinical Care Standard\(^2\), where relevant

b. Manage the use of antipsychotics and other psychoactive medicines, in accordance with best practice and legislation

**Action 5.30**

Clinicians providing care to patients who have cognitive impairment or are at risk of developing delirium use the system for caring for patients with cognitive impairment to:

a. Recognise, prevent, treat and manage cognitive impairment

b. Collaborate with patients, carers and families to understand the patient and implement individualised strategies that minimise any anxiety or distress while they are receiving care
Action 8.5

The health service organisation has processes for clinicians to recognise acute deterioration in mental state that require clinicians to:

a. Monitor patients at risk of acute deterioration in mental state, including patients at risk of developing delirium

b. Include the person’s known early warning signs of deterioration in mental state in their individualised monitoring plan

c. Assess possible causes of acute deterioration in mental state, including delirium, when changes in behaviour, cognitive function, perception, physical function or emotional state are observed or reported

d. Determine the required level of observation

e. Document and communicate observed or reported changes in mental state
Implementation in ED and ICU

• Key elements need to be considered any setting, for example, but not limited to
  – Screening for cognitive impairment
  – Assessment of delirium
  – Re-assessment with any change
  – Investigation of underlying causes, response to additional risks
  – Delirium prevention
  – Partnering with patient, carers and family
  – Appropriate use of antipsychotics and other psychoactive medicines
  – Supportive environment

• The implementation of the system for cognitive impairment will vary according to the setting to take into account the differences in the
  – Environment
  – Patient profile and risks
  – Screening and assessment processes
  – Model of care
The Emergency Department Perspective

glenn.arendts@uwa.edu.au

‘Ideal’ cognitive care in the ED setting
Universal cognitive screening
Taking delirium seriously
Do we know what quality cognitive care looks like?

Structural Quality Indicators to Support Quality of Care for Older People With Cognitive Impairment in Emergency Departments

Process Quality Indicators Targeting Cognitive Impairment to Support Quality of Care for Older People with Cognitive Impairment in Emergency Departments

Schnitker LM et al. Acad Emerg Med 2015
ED Dementia Care Training
Providing best care to older people with dementia in emergency departments
Cognitive screening

Yes please do it

BUT........

Be honest and realistic

Perhaps heed my stern messages
Some “stern” messages from your friendly ED

WHY do you want the ED to screen for you, why can’t you do it yourself? Your convenience is not a reason. Ticking accreditation boxes is not a reason.

WHO is the ED champion? Can you talk their language? Do you understand their fear over workloads, and their conflicting demands?

WHAT resources will you supply rather than consume?

In other words, WHERE and WHEN is the first meeting of your ED geriatric reference group?
AMT4 on nursing assessment

=4

STOP

<4 and being admitted

Delirium prevention Handover/inpatient assessment

<4 and being discharged

4AT mandatory
Clinical reality of delirium (to get attention of the ED folk)

Acute Brain Failure
No predisposing risks

- Pain
- Infection
- Medication
- Physical
- Physiological
Age 65+
Dementia
Functional impairment (sensory, nutritional)
Polypharmacy
Alcoholism

- Pain
- Infection
- Medication
- Physical
- Physiological
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Delirium negative (n=3477)</th>
<th>Delirium positive (n=414)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median (IQR) length of stay</td>
<td>3 (1-6) days</td>
<td>7 (3-13) days</td>
</tr>
<tr>
<td>% mortality</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>% newly discharged to RACF</td>
<td>3%</td>
<td>18%</td>
</tr>
<tr>
<td>Injurious falls / 1000 patient days</td>
<td>0.8</td>
<td>2.2</td>
</tr>
<tr>
<td>In-hosp aspiration pneumonia rate</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Sedation usage</td>
<td>4%</td>
<td>17%</td>
</tr>
</tbody>
</table>
TADA

TOLERATE

ANTICIPATE

DON’T AGGRAVATE
1. Flow factors
   a. Preferentially triage
   b. Minimise room and staffing changes

2. Humanitarian factors
   a. Encourage mobility and engage patients in cognitively meaningful activities
   b. Frequent offering of food and fluids, toilet, access to sensory aids
   c. Actively involve family and caregivers
3. Clinical factors

a. Assess and treat pain using appropriate pain assessment tools

b. Avoid drugs implicated in delirium.

c. Look for a medical cause
Pharmacology

1. Antipsychotics do not reduce delirium severity, resolve symptoms, or improve mortality.

2. No reported data to determine whether antipsychotics altered the duration of delirium, length of hospital stay, discharge disposition, or health-related quality of life.
Comprehensive Care

Delirium and ICU

Marggie Murgo
Senior Nursing Advisor, Partnering with Consumers
Should delirium be a vital sign?

• Why should it be measured?
• When should it be measured?
• How should it be measured?
• Systems and processes
Why should it be measured?

• Approximately one third of ICU patients
• May be associations with:
  • Increased hospital LOS
  • Increases length of mechanical ventilation
  • Increased hospital mortality
• Greater long term consequences for patients (e.g. CI 12 months post D/C)
A Systematic Review of Risk Factors for Delirium in the ICU*

Irene J. Zaal, MD¹; John W. Devlin, PharmD²; Linda M. Peelen, MSc, PhD¹; Arjen J. C. Slooter, MD, PhD¹

• Evidence for:
  • Age
  • Dementia
  • Hypertension
  • Coma
  • Emergency surgery
  • High APACHE II score
  • Delirium previous day
  • Trauma
• These aren’t modifiable…
Executive Summary: Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU

Devlin, John W., PharmD, FCCM\textsuperscript{1,2}; Skrobik, Yoanna, MD, FRCP(c), MSc, FCCM\textsuperscript{3,4}; Gélinas, Céline, RN, PhD\textsuperscript{5}; Needham, Dale M., MD, PhD\textsuperscript{6}; Slooter, Arjen J. C., MD, PhD\textsuperscript{7}; Pandharipande, Pratik P., MD, MScI, FCCM\textsuperscript{8}; Watson, Paula L., MD\textsuperscript{9}; Weinhouse, Gerald L., MD\textsuperscript{10}; Nunnally, Mark E., MD, FCCM\textsuperscript{11,12,13,14}; Rochwerg, Bram, MD, MSc\textsuperscript{15,16}; Balas, Michele C., RN, PhD, FCCM, FAAN\textsuperscript{17}; van den Boogaard, Mark, RN, PhD\textsuperscript{18}; Bosma, Karen J., MD\textsuperscript{19}; Brummel, Nathaniel E., MD, MSc\textsuperscript{20}; Chanques, Gerald, MD, PhD\textsuperscript{21,22}; Denehy, Linda, PT, PhD\textsuperscript{23}; Drouot, Xavier, MD, PhD\textsuperscript{24,25}; Fraser, Gilles L., PharmD, MCCM\textsuperscript{26}; Harris, Jocelyn E., OT, PhD\textsuperscript{27}; Joffe, Aaron M., DO, FCCM\textsuperscript{28}; Kho, Michelle E., PT, PhD\textsuperscript{27}; Kress, John P., MD\textsuperscript{29}; Lanphere, Julie A., DO\textsuperscript{30}; McKinley, Sharon, RN, PhD\textsuperscript{31}; Neufeld, Karin J., MD, MPH\textsuperscript{32}; Pisani, Margaret A., MD, MPH\textsuperscript{33}; Payen, Jean-Francois, MD, PhD\textsuperscript{34}; Pun, Brenda T., RN, DNP\textsuperscript{35}; Puntillo, Kathleen A., RN, PhD, FCCM\textsuperscript{36}; Riker, Richard R., MD, FCCM\textsuperscript{26}; Robinson, Bryce R. H., MD, MS, FACS, FCCM\textsuperscript{37}; Shehabi, Yahya, MD, PhD, FICCM\textsuperscript{38}; Szumita, Paul M., PharmD, FCCM\textsuperscript{39}; Winkelman, Chris, RN, PhD, FCCM\textsuperscript{40}; Centofanti, John E., MD, MSc\textsuperscript{41}; Price, Carrie, MLS\textsuperscript{42}; Nikayin, Sina, MD\textsuperscript{43}; Misak, Cheryl J., PhD\textsuperscript{44}; Flood, Pamela D., MD\textsuperscript{45}; Kiedrowski, Ken, MA\textsuperscript{46}; Alhazzani, Waleed, MD, MSc\textsuperscript{16,47}
How and when should delirium be measured

Delirium

Should we assess for delirium using a valid tool (compared with not performing this assessment with a valid tool) in critically ill adults?

Critically ill adults should be regularly assessed for delirium using a valid tool (Good Practice Statement).

2018 PADIS guidelines
Measurement: CAM-ICU

Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet

1. Acute Change or Fluctuating Course of Mental Status:
   - Is there an acute change from mental status baseline?  **OR**
   - Has the patient’s mental status fluctuated during the past 24 hours?

2. Inattention:
   - "Squeeze my hand when I say the letter ‘A’.");
   - Read the following sequence of letters: **SAVEHAART** or **CASA BLANCA** or **ABAD BADA AAY**
   - **ERRORS**: No squeeze with ‘A’ & Squeeze on letter other than ‘A’
   - If unable to complete Letters → Pictures

3. Altered Level of Consciousness
   - Current RASS level

4. Disorganized Thinking:
   1. Will a stone float on water?
   2. Are there fish in the sea?
   3. Does one pound weigh more than two?
   4. Can you use a hammer to pound a nail?
   - Command: "Hold up this many fingers" (Hold up 2 fingers)
   - "Now do the same thing with the other hand" (Do not demonstrate)
   - **OR** "Add one more finger" (If patient unable to move both arms)

CAM-ICU negative

NO DELIRIUM

RASS other than zero

CAM-ICU positive

DELIRIUM Present

> 1 Error

CAM-ICU negative

NO DELIRIUM
# Intensive Care Delirium Screening Checklist (ICDSC)

Give a score of “1” to each of the 8 items below if the patient clearly meets the criteria defined in the scoring instructions. Give a score of “0” if there is no manifestation or unable to score. If the patient scores ≥4, notify the physician. The diagnosis of delirium is made following clinical assessment; document in the Assessment and Intervention record (RN) and progress note (MD).

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Scoring Instructions</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>1. Altered Level of Consciousness*</td>
<td></td>
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<tr>
<td></td>
<td>• If MAAS portion of VAMAAS is 0 (no response) or 1 (response to noxious stimulus only), record “UA” (unable to score) and do not complete remainder of screening tool.</td>
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<tr>
<td></td>
<td>• Score “0” if MAAS score is 3 (calm, cooperative, interacts with environment without prompting).</td>
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</tr>
<tr>
<td></td>
<td>• Score “1” if MAAS score is 2, 4, 5 or 6 (MAAS score of 2 is a patient who only interacts or responds when stimulated by light touch or voice – no spontaneous interaction or movement; 4, 5 and 6 are exaggerated responses).</td>
<td></td>
</tr>
</tbody>
</table>

If MAAS ≠ 0 or 1, screen items 2-8 and complete a total score of all 8 items.

<table>
<thead>
<tr>
<th>2. Inattention</th>
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<table>
<thead>
<tr>
<th>3. Disorientation</th>
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<table>
<thead>
<tr>
<th>4. Hallucination/ Delusions/ Psychosis</th>
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<tr>
<th>5. Psychomotor agitation or retardation</th>
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<tr>
<th>6. Inappropriate speech or mood</th>
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<table>
<thead>
<tr>
<th>7. Sleep/wake/cycle disturbance</th>
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<table>
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<tr>
<th>8. Symptom fluctuation</th>
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</tbody>
</table>

**TOTAL SCORE (0-8/8):**

A score ≥ 4 suggests delirium. A score > 4 is not indicative of the severity of the delirium.

Adapted with permission (Skrobik, Y)


Last reviewed August 22, 2014
Delirium Management

The primary management strategy is to minimise risk factors and are non-pharmacological. The list below is not in any specific order.

- Maintain haemodynamic and oxygenation endpoints
- Monitor hydration
- Orientate the patients by providing visual and hearing aids
- Encourage communication and repeated reorientation of patients to time, date and place.
- Ensure a clock is visible.
- Avoid moving the patient between bed spaces
- Ask the family to provide familiar objects from home in the patients bed area such as photographs
- Prioritise consistent staff allocation
- Provide music via ear phones
- Provide cognitive stimulation multiple times a day
- Reduce isolation
- Encourage ‘normal’ day/night routines
- Turn as many lights off in the Intensive Care Service at night as practical
- Mobilise patients early and provide range of motion exercises and physiotherapy
- Minimise unnecessary noise
- Remove lines and restraints as soon as practical
How does it stack up?

Should a multicomponent, nonpharmacologic strategy (vs no such strategy) be used to reduce delirium in critically ill adults?

We suggest using a multicomponent, nonpharmacologic intervention that is focused on (but not limited to) reducing modifiable risk factors for delirium, improving cognition, and optimizing sleep, mobility, hearing, and vision in critically ill adults.

Remarks: These multicomponent interventions include (but are not limited to) strategies to reduce or shorten delirium (e.g., reorientation, cognitive stimulation, use of clocks), improve sleep (e.g., minimizing light and noise), improve wakefulness (i.e., reduced sedation), reduce immobility (e.g., early rehabilitation/mobilization), and reduce hearing and/or visual impairment (e.g., enable use of devices such as hearing aids or eye glasses).

2018 PADIS guidelines
## Sustainability?

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of documented assessments</th>
<th>CAM-ICU Positive</th>
<th>CAM-ICU Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3406</td>
<td>667</td>
<td>2739</td>
</tr>
<tr>
<td>2014</td>
<td>4546</td>
<td>739</td>
<td>3807</td>
</tr>
<tr>
<td>2015</td>
<td>2828</td>
<td>409</td>
<td>2419</td>
</tr>
<tr>
<td>2016</td>
<td>2260</td>
<td>285</td>
<td>1975</td>
</tr>
<tr>
<td>2017</td>
<td>2040</td>
<td>195</td>
<td>1845</td>
</tr>
<tr>
<td>2018</td>
<td>1141</td>
<td>121</td>
<td>1020</td>
</tr>
</tbody>
</table>
Barriers and facilitators

- Complexity
- Support and resources
- Time
- Knowledge, belief, skills
- Communication, cooperation
- Culture
- Data, comparators, incentives
- Workflow
Comprehensive Care Standard

**Criterion 1:**
Systems supporting clinicians to deliver comprehensive care

**Criterion 2:**
Developing the plan of care

**Criterion 3:**
Delivering the plan of care

**Criterion 4:**
Minimising harm including identifying and mitigating harm
Criteria 4: Minimising risk of harm

- Minimising patient harm from specific risks including:
  - preventing falls
  - pressure injuries
  - malnutrition
  - delirium and cognitive impairment
  - self harm and suicide
  - restraint and seclusion
  - managing aggression and violence
Conceptual model for Comprehensive Care

Focus on patient experience

Systems, processes and protocols to deliver comprehensive care

Organisational culture and governance to support a comprehensive care approach
Prevention & treatment of delirium in critically-ill patients

Michael Reade, MBBS MPH DPhil DMedSc FANZCA FCICM
Professor of Military Medicine and Surgery, University of Queensland
Consultant Anaesthetist & Intensivist, Royal Brisbane & Women’s Hospital
Potential conflicts

- Unrestricted grant funding from Hospira, the manufacturer of dexmedetomidine, for the ANZICS CTG-sponsored DahLIA study
- Unrestricted grant funding from Hospira for the ANZICS CTG-sponsored SPICE trial of sedation management
- Unrestricted grant funding from Orion for the ANZICS CTG-sponsored SPICE trial of sedation management
- Industry advisory boards for Hospira (dexmedetomidine) and GlaxoSmithKline (remifentanil)
- Speaker fee from AstraZeneca, the manufacturer of quetiapine and Diprivan (propofol)
Delirium in the ICU

Figure 1. Causes and Interactions of Pain, Agitation, and Delirium.

Drugs and other treatments for pain, agitation, and delirium form an “ICU triad” cognitive management analogous to the “triad of anesthesia,” which highlights interactions among hypnotics, analgesics, and muscle relaxants to encourage balanced anesthesia. The “ICU triad” concept highlights that changing one element is unlikely to be as effective as a coordinated approach.
Delirium in the ICU
Current management

Routinely measure pain with CPOT or BPS

IV opioids are first-line analgesics, but always consider analgesia adjuvants

Analgesia-first sedation

Target light sedation using RASS or SAS, using either sedation-interruption or nursing-protocolised targets

Avoid benzodiazepines

Ambivalent on physical restraint (noting prevalence of 0-75%)

Target absence of delirium using CAM-ICU or ICDSC

Prevent delirium by early mobilisation, improving sleep, assisting perception
Prevention of ICU delirium
## Prevention of ICU delirium

### Depth of anaesthesia

#### Depth of Anesthesia and Postoperative Delirium

Terence T. H. Luk · Bo Jia · Etonia Y. T. Pang · Vivian N. M. Lau · Carmen K. M. Lam · Mandy H. M. Chu · Ruquan Han · Matthew T. V. Chan

<table>
<thead>
<tr>
<th>Study (year)</th>
<th>Brain function monitoring</th>
<th>Control</th>
<th>Weights</th>
<th>Odds ratio (Random effect, 95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events/Total</td>
<td>Events/Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sedation; BIS-guided</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sieber, 2010</td>
<td>11 / 57</td>
<td>23 / 57</td>
<td>11.7%</td>
<td>0.35 (0.15-0.82)</td>
</tr>
<tr>
<td><strong>General anesthesia; AEP-guided</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jidenstå, 2011</td>
<td>2 / 224</td>
<td>16 / 226</td>
<td>4.28%</td>
<td>0.12 (0.03-0.52)</td>
</tr>
<tr>
<td><strong>General anesthesia; BIS-guided</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chan, 2013</td>
<td>70 / 450</td>
<td>109 / 452</td>
<td>31.0%</td>
<td>0.58 (0.42-0.81)</td>
</tr>
<tr>
<td>Radtke, 2013</td>
<td>95 / 575</td>
<td>124 / 580</td>
<td>33.4%</td>
<td>0.73 (0.54-0.98)</td>
</tr>
<tr>
<td>Whitlock, 2014</td>
<td>20 / 149</td>
<td>45 / 161</td>
<td>20.3%</td>
<td>0.60 (0.35-1.02)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>193 / 1,174</td>
<td>278 / 1,193</td>
<td></td>
<td>0.65 (0.53-0.80)</td>
</tr>
<tr>
<td></td>
<td>(z value = -4.138, p &lt;0.001; R² =0.0%)</td>
<td></td>
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</tr>
<tr>
<td><strong>Overall effect</strong></td>
<td>206 / 1,455</td>
<td>317 / 1,476</td>
<td></td>
<td>0.56 (0.40-0.77)</td>
</tr>
<tr>
<td></td>
<td>(z value = -4.925, p &lt;0.001; R² =48.5%)</td>
<td></td>
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</tbody>
</table>
Prevention of ICU delirium

Lorazepam Is an Independent Risk Factor for Transitioning to Delirium in Intensive Care Unit Patients


Delirium/Coma or Delirium Only

<table>
<thead>
<tr>
<th>Medication</th>
<th>Transitioning to Delirium Only Odds Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fentanyl</td>
<td>1.2 (1.0–1.5)</td>
<td>0.09</td>
</tr>
<tr>
<td>Morphine</td>
<td>1.1 (0.9–1.2)</td>
<td>0.24</td>
</tr>
<tr>
<td>Propofol</td>
<td>1.2 (0.9–1.7)</td>
<td>0.18</td>
</tr>
</tbody>
</table>

adult, mechanically ventilated patient admitted to the medical or coronary ICUs at Vanderbilt University’s 631-bed medical center from February 2000 to May 2001.
Prevention of ICU delirium

Benzodiazepine vs. no benzodiazepine sedatives

**Dexmedetomidine vs Midazolam for Sedation of Critically Ill Patients**
A Randomized Trial

Richard R. Bicker, MD
Yalda Shethabi, MD
Paulo M. Boloc, MD
Daniel Greco, MD
Wayne Wiseman, MA
Finnan Koura, MD
Patrick Whitten, MD
Benjamin D. Margolis, MD
Daniel W. Byrne, MS
E. Wesley Dy, MD, MPH
Marcelo G. Rocha, MD

for the SEDCOM (Safety and Efficacy of Dexmedetomidine Compared With Midazolam) Study Group

**Table 2. Efficacy Outcomes in Patients Treated With Dexmedetomidine vs Midazolam**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Dexmedetomidine (n = 244)</th>
<th>Midazolam (n = 122)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in target sedation range</td>
<td>77.3 (2-5)</td>
<td>75.1</td>
<td>.18</td>
</tr>
<tr>
<td>(RASS score = 2 to +1), mean, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients completing all daily arousal</td>
<td>225 (92)</td>
<td>103 (84.3)</td>
<td>.09</td>
</tr>
<tr>
<td>assessments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients requiring study drug</td>
<td>222 (91)</td>
<td>112 (91.8)</td>
<td>.85</td>
</tr>
<tr>
<td>interruption to maintain RASS score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2 to +1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of study drug treatment, median</td>
<td>3.5 (2.0-5.2)</td>
<td>4.1 (2.8-6.1)</td>
<td>.01</td>
</tr>
<tr>
<td>(IQR), d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to extubation, median (95% CI), d</td>
<td>3.7 (3.1-4.0)</td>
<td>5.6 (4.6-5.9)</td>
<td>.01</td>
</tr>
<tr>
<td>ICU length of stay, median (95% CI), d</td>
<td>5.9 (5.7-7.0)</td>
<td>7.6 (6.7-8.6)</td>
<td>.24</td>
</tr>
<tr>
<td>Delirium</td>
<td></td>
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</tbody>
</table>

**Less delirium with dexmedetomidine**

**Figure 2. Daily Prevalence of Delirium Among Intubated Intensive Care Unit Patients Treated With Dexmedetomidine vs Midazolam**

More rapid extubation with dexmedetomidine
Prevention of ICU delirium

Benzodiazepine vs. no benzodiazepine sedatives

Early Goal Directed Sedation vs. Standard Care
In Mechanically Ventilated Critically Ill Patients

Early = within 12hr of intubation
Prevention of ICU delirium

Drug-based prophylaxis
Prophylactic antipsychotics: mixed results E.g.

Efficacy of risperidone for prevention of postoperative delirium in cardiac surgery  Anaesth Intensive Care 2007; 35: 714-719

U. PRAKANRATTANA*, S. PRAPAITRAKool†
Department of Anaesthesiology, Siriraj Hospital, Mahidol University, Bangkok, Thailand

Effect of intravenous haloperidol on the duration of delirium and coma in critically ill patients (Hope-ICU): a randomised, double-blind, placebo-controlled trial

Valerie J Page, E Wesley Ely, Simon Gates, Xiao Bei Zhao, Timothy Aice, Ayumi Shintani, Jim Jackson, Gavin D Perkins, Daniel F McAsley
Prevention of ICU delirium

Drug-based prophylaxis

Dexmedetomidine for prevention of delirium in elderly patients after non-cardiac surgery: a randomised, double-blind, placebo-controlled trial

Xian Su, Zhao-Ting Meng, Xin-Hai Wu, Fan Cui, Hong-Liang Li, Dong-Xin Wang, Xi Zhu, Sai-Nan Zhu, Mervyn Maze, Daqing Ma

Methods We did this randomised, double-blind, placebo-controlled trial in two tertiary-care hospitals in Beijing, China. We enrolled patients aged 65 years or older, who were admitted to intensive care units after non-cardiac surgery, with informed consent. We used a computer-generated randomisation sequence (in a 1:1 ratio) to randomly assign patients to receive either dexmedetomidine (0.7 μg/kg/h) (intravenous normal saline). Participants, care providers, and investigators were all masked to group assignment.

<table>
<thead>
<tr>
<th></th>
<th>Placebo group (n=150)</th>
<th>Dexmedetomidine group (n=150)</th>
<th>OR, HR, or difference (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary endpoint</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall incidence of delirium*</td>
<td>79 (52-96%)</td>
<td>32 (51-114%)</td>
<td>OR=0.35 (0.22 to 0.54)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Secondary endpoints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to extubation (h)</td>
<td>6.9 (5.2 to 8.6) (n=151)</td>
<td>4.6 (3.4 to 5.8) (n=191)</td>
<td>HR=1.25 (1.02 to 1.53)</td>
<td>0.031</td>
</tr>
<tr>
<td>Overall incidence of non-delirium complications†</td>
<td>73 (20-94%)</td>
<td>52 (14-98%)</td>
<td>OR=0.66 (0.45 to 0.98)</td>
<td>0.039</td>
</tr>
<tr>
<td>Length of stay in ICU (h)</td>
<td>21.5 (20.7 to 22.3)</td>
<td>20.9 (20.4 to 21.4)</td>
<td>HR=1.18 (1.02 to 1.37)</td>
<td>0.027</td>
</tr>
</tbody>
</table>
Prevention of ICU delirium

Non-pharmacological prophylaxis

Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial

Lancet 2009; 373: 1874-82
Prevention of ICU delirium

Non-pharmacological prophylaxis

The Efficacy of Earplugs as a Sleep Hygiene Strategy for Reducing Delirium in the ICU: A Systematic Review and Meta-Analysis

Edward Litton, MBChB, FCICM, MSc1,2; Vanessa Carnegie, MBBS3; Rosalind Elliott, RN, PhD4; Steve A. R. Webb, MBBS, FRACP, FCICM, MPH, PhD5,6

Randomised Trials
- Foreman, B 2015
- Le Guen 2013
- Van Rompaey, B 2012
- Subtotal (I-squared = 0.0%, p = 0.594)

Non-Randomised Trials
- Kandar, BB 2013
- Patel, J 2014
- Subtotal (I-squared = 90.7%, p = 0.023)

Overall (I-squared = 39.2%, p = 0.160)

NOTE: Weights are from random effects analysis
Treatment of ICU delirium
A total of 635 respondents completed the survey.
Antipsychotic receptor occupancy

Haloperidol is the ‘go to’ drug for delirium, but are atypicals a better option? J.W. Devlin, Slideshare.net

‘Antipsicóticos Atípicos y otros usos en Psiquiatría’. Posted by Salvador Ojeda Fuentes
‘Haloperidol is the ‘go to’ drug for delirium, but are atypicals a better option?’ J.W. Devlin, Slideshare.net
Trials of particular note
Devlin - Quetiapine

Efficacy and safety of quetiapine in critically ill patients with delirium: A prospective, multicenter, randomized, double-blind, placebo-controlled pilot study

John W. Devlin, PharmD; Russel J. Roberts, PharmD; Jeffrey J. Fong, PharmD; Yoanna Skrobik, MD; Richard R. Riker, MD; Nicholas S. Hill, MD; Tracey Robbins, RN; Erik Garpestad, MD

Quetiapine resolves delirium more quickly than placebo

Figure 2. Proportion of patients with first resolution of delirium over time between quetiapine (n = 18) and placebo (n = 18) groups. Both groups of patients were treated using the same as-needed intravenous haloperidol protocol.
Reade et al.: Dexmedetomidine
Dexmedetomidine

Sedative $\alpha_2$ agonist

Less hypotension than clonidine (1/8 $\alpha_1$ effect for equivalent sedation)

Licensed for use in the post-operative period up to 24 hours

Characterised by:
- Analgesia
- Hypotension / bradycardia
- ‘rousable sedation with little respiratory depression’
- Anxiolysis
Dexmedetomidine vs. haloperidol in delirious, agitated, intubated patients: a randomised open-label trial

Michael C Reade, Kim O'Sullivan, Samantha Bates, Donna Goldsmith, William RSTJ Ainslie and Rinaldo Bellomo


p=0.0014
Effect of Dexmedetomidine Added to Standard Care on Ventilator-Free Time in Patients With Agitated Delirium: A Randomized Clinical Trial

Michael C. Reade, DPhil, FCICM; Glenn M. Eastwood, RN, PhD; Rinaldo Bellomo, MD, FCICM; Michael Bailey, PhD; Andrew Bersten, MD, FCICM; Benjamin Cheung, MBBS, FCICM; Andrew Davies, MBBS, FCICM; Anthony Delaney, PhD, FCICM; Angjil Ghosh, MBBS, FCICM; Frank van Haren, PhD, FCICM; Nerina Harley, MD, FCICM; David Knight, MBBS, FCICM; Shay McGuinness, MBChB, FCICM; John Mulder, MBChB, FCICM; Steve O’Donoghue, MBChB, FCICM; Nicholas Simpson, MBBS, FCICM; Paul Young, MBChB, FCICM; for the Dahlia Investigators and the Australian and New Zealand Intensive Care Society Clinical Trials Group

Figure 2. Kaplan-Meier Analysis of the Proportion of Patients Remaining Intubated During the First 7 Days of the Study

Hazard ratio, 0.58 (95% CI, 0.36-0.95); log-rank P = .03

<table>
<thead>
<tr>
<th>Group</th>
<th>No. at risk</th>
<th>0</th>
<th>10</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
<th>110</th>
<th>120</th>
<th>130</th>
<th>140</th>
<th>150</th>
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<tbody>
<tr>
<td>Dexmedetomidine</td>
<td>39</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>Placebo</td>
<td>32</td>
<td>13</td>
<td>6</td>
<td>2</td>
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</tbody>
</table>
Reade et al.: Dexmedetomidine

Effect of Dexmedetomidine Added to Standard Care on Ventilator-Free Time in Patients With Agitated Delirium: A Randomized Clinical Trial

Table 3. Primary and Secondary Study Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Dexmedetomidine (n = 39)</th>
<th>Placebo (n = 32)</th>
<th>Difference Between Groups (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Outcome</td>
<td></td>
<td></td>
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<tr>
<td>Secondary Outcomes</td>
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<tr>
<td>Time taken to achieve a satisfactory sedation score, median (IQR), d&lt;sup&gt;+&lt;/sup&gt;</td>
<td>1 (1 to 1)</td>
<td>1 (1 to 1)</td>
<td>0 (0 to 0)</td>
<td>.90</td>
</tr>
<tr>
<td>Confusion Assessment Method for the ICU</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Required mechanical restraint on any day, No. (%)</td>
<td>10 (26.3)&lt;sup&gt;f&lt;/sup&gt;</td>
<td>15 (46.9)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-20.6 (-42.8 to 1.7)</td>
<td>.07</td>
</tr>
<tr>
<td>ICU length of stay, median (IQR), d</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Postrandomization</td>
<td>2.9 (2.1 to 4.9)</td>
<td>4.1 (3.0 to 7.9)</td>
<td>-1.0 (-2.1 to 0.1)</td>
<td>.09</td>
</tr>
<tr>
<td>Overall</td>
<td>5.9 (3.7 to 10.2)</td>
<td>7.5 (4.7 to 11.7)</td>
<td>-1 (-3 to 1)</td>
<td>.29</td>
</tr>
</tbody>
</table>
Dexmedetomidine for the Treatment of Hyperactive Delirium Refractory to Haloperidol in Nonintubated ICU Patients: A Nonrandomized Controlled Trial

Genis Carrasco, PhD, MD; Nacho Baeza, MD; Lluís Cabré, PhD, MD; Eugenia Portilló, RN; Gemma Gimeno, RN; David Manzanedo, RN; Milagros Calizaya, MD

(Crit Care Med 2016; XX:00–00)
Dexmedetomidine for the Treatment of Hyperactive Delirium Refractory to Haloperidol in Nonintubated ICU Patients: A Nonrandomized Controlled Trial

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(Crit Care Med 2016; XX:00–00)

### TABLE 4. Comparison of Effectiveness During Study Drugs (n = 132)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dexmedetomidine (n = 46)</th>
<th>Haloperidol (n = 86)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
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<tr>
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<tr>
<td><strong>Secondaries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removal of physical restraint during treatment, % (95% CI)</td>
<td>97.8 (92.0–100)</td>
<td>93.1 (87.6–98.3)</td>
<td>0.11</td>
</tr>
<tr>
<td>Mean doses of additional analgesics: mean ± sd (95% CI), mg/kg/d</td>
<td>20.8±5.3 (19.2–22.3)</td>
<td>21.7±7.8 (20.0–23.3)</td>
<td>0.15</td>
</tr>
</tbody>
</table>
Dexmedetomidine for the Treatment of Hyperactive Delirium Refractory to Haloperidol in Nonintubated ICU Patients: A Nonrandomized Controlled Trial

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(Crit Care Med 2016; XX:00–00)

Figure 3. Evolution of sedation level (level of arousal) during the 72 hr of group comparison. Both drugs maintained all patients in the desired range of sedation (level of arousal) assessed as Richmond Agitation Sedation Scale score of 0, −1, or −2 to the end of treatment but dexmedetomidine achieved greater stability in sedative effect compared with the more fluctuating profile of haloperidol.
Non-pharmacological delirium treatment

• Address the affective component of pain: talk to the patient!

• Noise reduction
• Pressure area care
• Good medical care: adequate hydration, medication optimisation, bladder/bowel care
• Early mobilisation

• Mechanical restraint vs. drug treatment??
Treatment of hypoactive delirium

- Find & treat the cause (like fever!)
- Avoid sedatives
- Avoid sedating antipsychotics (probably …)
“Real world” practice in Brisbane
Protocol

Specific indication for sedation

- Status epilepticus
- Intracranial hypertension
- Severe respiratory failure with or without neuromuscular blockade

Assess pain and treat with opioid or other drug or technique

- Pain controlled

No

Assess pain and treat with opioid or other drug or technique

- Pain controlled

No

Target sedation to indication:
- Seizure control
- Acceptable intracranial pressure
- Tolerance of hypercarbia or necessary ventilator settings
- No awareness when being treated with neuromuscular blocking agent

Regularity assess the need for this level of sedation

The target sedation level is likely to be best communicated using the RASS scale

Assess need for sedative medication to achieve target RASS score of -2 to 0 (lightly sedated but responsive at least to voice)

- Target sedation to RASS score of -2 to 0

- Reassess analgesic, antidelirium, and sedative requirement regularly (e.g., every 4 hr or with observed change)

- Do not use sedative medication

Mainly hyperactive delirium

- Treat with antidelirium medication (or nonpharmacologic measures)

- Delirium controlled

- No delirium

Mainly hypoactive delirium

- Treat with nonpharmacologic measures (e.g., physical therapy, earplugs or quiet room, cognitive stimulation, repeated reorientation)

- No delirium

Pain controlled

Yes

Assess for delirium

- No

- Pain controlled

- Yes

- Assess for delirium
Resources

- **NSQHS Standards Online Resource Portal** - webpage
- **The ED Dementia Care Training Program: Providing best care to older people with dementia in emergency departments** - resource
- **Recognising delirium in ED – a nurse’s perspective** - video
- **Dementia and delirium: Providing a safe and supportive environment in hospital** - video
- **Delirium in Intensive Care** – video
- **Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU 2018** - guideline
- **Rates of Delirium Diagnosis Do Not Improve with Emergency Risk Screening: Results of the Emergency Department Delirium Initiative Trial** - research article
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cognitive.impairment@safetyandquality.gov.au
AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

Please provide your feedback by participating in a short survey after this webinar

Thank you