Griffith UNIVERSITY

Queensland, Australia

Monitoring Delirium

Professor Claire Rickard

Research Centre for Clinical and Community Practice Innovation (RCCCPI)

Thanks to: Brigit Roberts, Sir Charles Gairdner Hospital, Dorrilyn Rajbhandari, Royal Prince Alfred & other team members

Brigit Roberts (centre) and her team with the 1st Prize nursing research poster awarded to the Delirium Study at the 2005 World Critical Care Congress in Buenos Aires, Argentina

Delirium

Delirium is an acute, reversible disorder of attention and cognition and a disrupted sleep/wake cycle.

Such cerebral dysfunction in the intensive care unit is similar to failure of other organs, secondary to the primary disease process.

There are three variants of delirium: the hyperactive and agitated patient; the lethargic or hypoactive patient; and the patient who displays a combination of the two variants

Typically develops 24-72 hours post ICU admission in up to 85% of patients. More likely in elderly & co-morbid patients.

Interest in delirium is growing!

PubMed search of “delirium AND ICU”

- 1981 - 1990: 34 articles
- 1991 - 2000: 88 articles
- 2001 - 2007: 171 articles

Delirium is linked to:

- Quality and safety e.g. line removal, violence
- Higher nursing requirements
- ICU and hospital LOS
- Very unpleasant for patients, relatives, staff
- Mortality & morbidity

50% remain delirious in the ward McNicoll et al 2003 J Am Geri Soc

50% will be dead at 1 year Marshall et al 2003 Cri Care Nurs Quart

?PTSD

- Australian and New Zealand study found 45% of 185 patients in 6 ICUs had delirium
- Excluded short stay, neuro, paeds, dementia
- 1 (27%) or multiple (73%) delirious episodes
- Delirious patients had significantly higher APACHE II, SOFA, haloperidol, sedation and analgesia, longer ICU stay (3 days)
- Delirious patients 2-3% higher ICU and hospital mortality, 4 days longer in hospital

Roberts BL, Rickard CM, Rajbhandari D, Turner G, Clarke J, Hill D, Tauschke C, Chaboyer W, Parsons R. Aust Crit Care 2005 19, 6-16

Screening for delirium

- Delirium is difficult to detect
- Screening as routine is rare – in contrast to haemodynamics, oxygenation, renal function and so on….
- 70% undiagnosed, ↓ prevention/early intervention Ely 2004
- Poor recognition by clinical staff
  - 40% report routine delirium screening, only 16% use specific ICU assessment tool Ely CCM 2004
  - 3.7% of Canadian ICU Drs use a tool Metha CCM 2006
  - Dr vs RN in 300 assessments of 100 patients found 0 and 4 of 5 correct & 4 and 0 incorrect diagnoses. This improved to 8 and 10 of 11 correct after training Devlin 2007

Screening tools for ICU

- ICDSC – Intensive Care Delirium Screening Checklist   Bergeron et al 2001 ICM, DuBois et al 2001 ICM
- CAM-ICU – Confusion Assessment Method for the ICU   Ely et al 2001 CCM, Ely et al 2001 JAMA
- CTG – Cognitive Test for Delirium   Hart et al. 1997 J Psychosomatic Res
- Neecham Scale   Csokasy App Nurs Res 1999

ICU Specific Assessment Tools

Aim at particularly assessing the hypo-active and the patient showing a mixed picture of delirium

The scale should:

- be an instrument that evaluates the primary components of delirium (consciousness, inattention, disorganised thinking, fluctuating course)
- have been validated and shown reliability in the ICU population
- be completed quickly and with ease
- not require presence of specialised personnel

JW Devlin et al. “Delirium assessment in the critically ill.” Intens Care Med 2007;33:929-940

Intensive Care Delirium Checklist (ICDSC)

- Developed in 2001 in Canada by Bergeron et al
- Based on Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) + features of ICU delirium (sleep/wake and psychomotor disturbance)
- Does not require patients to be able to communicate/obey
- Validated ICU nurse vs psychiatrist
- Sensitivity 99%, Specificity 64% (but dementia pts included)
- Internally consistent – alpha 0.71-0.79
- Inter-rater reliability nurse:nurse and nurse:dr >94%

ICDSC	Day 1		Day 2	
	8am	8pm	8am	8pm
Level of Consciousness	A	C (1)	E (1)	D (0)
Inattention	-	1	1	0
Disorientation	-	0	1	0
Hallucination-delusion-psychosis	-	0	1	0
Psychomotor agitation or retardation	-	1	1	0
Inappropriate speech or mood	-	0	0	0
Sleep/wake disturbances	-	0	1	1
Symptoms fluctuating	-	0	1	1
Total (0-8)	-	3	7	2

Level of Consciousness

	Grade	Score
No response. Coma most of the time period	A	-
Response to repeated and intense stimulation (loud voice or pain). Stuporous most of the time	B	-
Drowsy or requires mild-mod stimulation for response. Implies altered LOC	C	1
Normal wakefulness or sleeping state that can be easily roused is considered normal	D	0
Hypervigilance, ‘jumpy’, exaggerated response to normal stimuli	E	1

If A or B → no further assessment

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Total (0-8)	-	3	7	2

Score of 4 or more = delirium

Inattention	Difficulty in following a conversation or instructions. Easily distracted by external stimuli. Difficulties in shifting focus
Disorientation	Any obvious mistake in time, place or person
Hallucination-delusion-psychosis	Unequivocal clinical manifestation of hallucination or behaviour probably due to hallucination (e.g. trying to catch object; seeing non-existing objects) Delusion: refusing medication or treatment due to fear of being harmed; believes s/he is being mistreated or injured by secret enemies. Psychosis: Gross impairment in reality testing. Derangement of personality & loss of contact with reality

Each item scores 0 or 1

Any of these examples = 1 point for the item

Psychomotor agitation or retardation	Hyperactivity requiring the use of additional sedative drugs or restraints in order to control potential dangerous behaviour (e.g. pulling out IV lines, hitting staff). Hypoactivity or clinically noticeable psychomotor slowing.
Inappropriate speech or mood	Inappropriate, disorganised or incoherent speech. Inappropriate display of emotion related to events or situation.
Sleep/wake disturbances	Sleeping <4h or waking frequently at night (do not consider wakefulness initiated by medical staff or loud environment. Sleeping most of the day.
Fluctuations	Fluctuation of any item over 12 hours

Each item scores 0 or 1

Any of these examples = 1 point for the item

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Confusion Assessment Method for the ICU (CAM-ICU)

Nonverbal tasks

- Picture recognition
- Simple yes/no logic questions
- Simple commands

Rates 4 features

a) Acute mental state change
b) Inattention
c) Disorganised thinking
d) Altered level of consciousness

a and b
+ c/d = delirium

CAM-ICU

- Dr. EW (Wes) Ely and the ICU Delirium and Cognitive Impairment Study Group

http://www.icudelirium.org/delirium/CAM-ICUTraining.html

- Vanderbilt University Medical Center
  Veterans Affairs TN Valley Geriatric Research Education and Clinical Center (GRECC)

ICDSC vs CAM-ICU

- ICDSC assesses a time-period, can detect fluctuations & include several staff's observations
- CAM-ICU is a point in time measure
- ICDSC is subjective, CAM-ICU requires RASS -3
- ICDSC does not require physical strength, vision etc
- CAM-ICU probably more specific & reliable
- CAM-ICU can be negative in hallucinating pts

ICDSC vs CAM-ICU

Plaschke et al 2008 CCM

- High agreement between the tools in n=174 pts
- 2 raters - bedside nurse + researcher
- Blinded to each others scores in 374 paired measures done within 30 min in Germany
- Overall 41% delirium
- 8% and 11% false positive/negative
- Kappa 0.80 (CI 95% 0.78-0.84, $p<0.0001$)

NEECHAM vs CAM-ICU

Van Rompaey et al Crit Care 2008

- High agreement between the tools in n=172 non intubated pts in Belgium
- Nurse researcher made 599 paired observations
- NEECHAM – Delirious, Confused, At Risk, Normal
- Overall 20% delirium
- CAM ICU 19.8%, NEECHAM 20.3%
- NEECHAM needs further testing in ICU

Limitations of all screening tools

- Screening not diagnosis (?biological tools to come)
- Inter and intradiscipline disagreement in both psychiatry & ICU physicians
- Limited to dichotomous (yes/no): not validly used as measure of delirium severity
- Do not account for underlying psychiatric conditions
- Not validated in children

Retrospective delirium screening

- 41 patients (44% delirious) from 3 ICUs followed up at 18-24 months via structured telephone interview
- 83% had factual memories, 44% delirium-type memories
- 10% delirium-type memories only, 7% no memory at all
- Delirious significantly less likely to have any factual memory
- 50% of delirious patients recalled dreamlike states in ICU vs 39% of non-delirious. Dreams were significantly associated with ICU LOS and were more negative in delirious patients

Roberts BL, Rickard CM, Rajbhandari D, Reynolds P. 2005 Int Crit Care Nurs
Roberts BL, Rickard CM, Rajbhandari D, Reynolds P. 2007 J Clin Nurs

Mrs AA was in ICU post liver transplant for 3 days. ICDSC was 0. She dreamt she *"… was walking in clouds – big fluffy cotton wool clouds, with a dog and a rabbit, no noise, just quiet....they were friendly and were just peacefully walking with me.*" This felt peaceful and relaxed, she wishes she could again feel the amazing peacefulness.

Mr CC was in ICU following elective bypass graft surgery for 28 days. ICDSC score was 6. He dreamt *"the staff was trying to kill me first in the hospital and ultimately moved me to a basement…. They were extracting my blood by force to sell it and they were doing the same to a friend's daughter. I was in fear of dying… I pleaded for my life."*

Helping the delirious patient…

- Early treatment and ? prevention with haloperidol, dexmedetomidine. Use sedation guidelines
- Reorientiation/reassurance to address misperception of place
- “Soften” the environment…. quieter, darker…kinder
- Intensive and early psychological follow up (debrief)
- ICU diaries and liaison nurses Jones. Acta Anaesthesiol Scand 2007
- Post-ICU rehabilitation care Griffith Curr Opin Anaesthesiol 2007
- Further research into non-pharmacological interventions is urgently required in the ICU setting

Still true today……

"The physician, who is greatly concerned to protect the functional integrity of the heart, liver and kidneys of his patient has not yet learned to have similar regard for the functional integrity of the brain."

Engel GL and Romano J. "Delirium, a syndrome of cerebral insufficiency." J. Chronic Dis. **1959**;9:260-277