



Towards evidence-based emergency medicine: Best BETs from the Manchester Royal Infirmary

Edited by Kerstin Hogg

BET 1: SCREENING FOR DELIRIUM WITHIN THE EMERGENCY DEPARTMENT

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ABSTRACT

A shortcut review was carried out to see if the abbreviated mental test score was better than other cognitive screening tools to diagnose delirium in the ED. Fourteen papers were identified reporting on 10 separate ED studies. Only one small study used the abbreviated mental test score and did not compare the diagnostic performance to any other test. There is very little published research on the use of the abbreviated mental test score in the ED setting.

THREE-PART QUESTION

In (patients, greater than 75 years, presenting to the emergency department) is (an abbreviated mental test score assessment better than other cognitive screening tools) at (identifying delirium)?

CLINICAL SCENARIO

A confused patient presents to the ED. Is the abbreviated mental test score the best method to screen for delirium/acute confusional state?

SEARCH STRATEGY

MEDLINE 1946 to June week 2 2016, EMBASE 1974–June 2016 and the COCHRANE LIBRARY (2016).

[exp delirium/or impaired cognition.mp. or acute confusional state.mp.] AND [Emergency Department.mp]

SEARCH OUTCOME

In total, 129 papers were identified, and 14 were relevant to the clinical question (see [table 1](#)).

COMMENT

Sensitivity of delirium detection in the ED is variable. Various factors could cause this, for instance, patients presenting with hypoaffective delirium are difficult to

identify. The ideal ED screening instrument would be time efficient and require minimal operator training while providing high levels of specificity to ensure accurate exclusion of disease. Many screening tools have been studied including the confusional assessment method, which can take less than 5 min to complete. The abbreviated mental test is reported to take 3 min, and the Ottawa 3DY, less than 5 min. The CAM-ICU has been documented to take less than 1 min.

Clinical bottom line

The abbreviated mental test score has been largely adopted as a delirium screening tool within UK hospitals and there is little evidence in the literature evaluating its use within the ED setting.

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Table 1 Relevant papers

Author, date and country	Patient group	Study type	Outcomes	Key results	Study weaknesses
Elie <i>et al</i> ¹ Canada 2000	447 ED patients >70 years with four or fewer incorrect answers with the Short Portable Mental Status Questionnaire	Prospective cohort study	Prevalence of confusion assessment method (CAM) score of 4 or 5 out of 5	Prevalence of delirium 28/447 (9.6%, 95% CI 6.9% to 12.4%)	Study reports the prevalence of CAM-diagnosed delirium. No comparison with other diagnostic tools
Monett <i>et al</i> ² 2001 Canada	110 ED patients aged >66 years	Prospective convenience sample, cases and controls hand picked	Geriatrician and lay interviewer conducted assessment with CAM	Using the geriatrician-conducted CAM as the gold standard, the diagnostic sensitivity of the lay interviewer was 96%, specificity 100%	Convenience sample taken and screening of patients before entering study. Therefore, population was not representative of ED. Geriatrician-conducted CAM not compared with other diagnostic tools
Hustey <i>et al</i> ³ 2003 USA	271 ED patients aged >70 years	Prospective convenience sample study	Prevalence of delirium and cognitive impairment as measured by CAM and OMC (orientation-memory-concentrated test)	71/271 (26%) had +ve OMC 35/271 (13%) had +ve CAM 16 had both +ve OMC and CAM	No details of definition criteria for delirium and cognitive impairment No gold standard applied
Hare <i>et al</i> ⁴ 2008 Australia	22 ED patients aged >65 years	Prospective convenience sample study	AMT (abbreviated mental test) assessment of cognitive deficit and CAM in all patients who were positive for a cognitive deficit as measured by AMT	9/22 (41%) patients had an AMT <8 1/9 of these patients had delirium diagnosed using the CAM	Small sample size Only nine patients had the CAM assessment No assessment of either AMT or CAM as a diagnostic tool
Han <i>et al</i> ⁵ 2009 USA	303 ED patients aged >65 years Non-English speakers and those with dementia excluded	Prospective convenience sample	CAM-ICU (confusional assessment method-ICU) performed at 0 and 3 h of presentation	25/303 identified as having delirium	Convenience sampling CAM-ICU not compared with other diagnostic tools
Carpenter <i>et al</i> ⁶ 2010 USA	163 ED patients >65 years who were English speakers, non-critically ill and without sedation	Prospective convenience sample	Performance of the Ottawa 3DY (O3DY), CAM-ICU, Brief Alzheimer's Screen (BAS), short blessed test (SBT) and caregiver AD8 (cAD8) mini-mental status examination (MMSE) score ≤23 as the gold standard	Cognitive dysfunction was present in 60/163 (37%) according to the MMSE Sensitivity O3DY 95% (85–99) Sensitivity BAS 95% (88–98) Sensitivity SBT 95% (88–98) Sensitivity cAD8 83% (71–91) Specificity O3DY 51% (46–53) Specificity BAS 52% (48–54) Specificity SBT 65% (61–67) Specificity cAD8 63% (55–68)	Convenience sample
Han <i>et al</i> ⁷ 2013 USA	406 ED patients >65 years who had been in the ED for <12 h and not in a hallway bed	Prospective convenience sample	Performance of the delirium triage score (DTS) and brief confusion assessment method (bCAM) A consultant psychiatrist assessed for delirium as the gold standard	Delirium diagnosed in 50/406 (12%) patients by the psychiatrist Physician administered DTS Sensitivity 98% (90–100) Specificity 55% (50–60) Physician administered bCAM Sensitivity 84% (72–92) Specificity 96% (93–97)	Convenience sample
Emerson <i>et al</i> ⁸ 2014 USA	406 ED patients >65 years	Prospective convenience sample	Clock face drawing scored by the emergency physician using the CAMDEX or Schulman scoring methods	Sensitivity Shulman <5 100% Sensitivity Shulman <1 62% Sensitivity CAMDEX <3 94% Sensitivity CAMDEX <1 64% Specificity Shulman <5 20% Specificity Shulman <1 78% Specificity CAMDEX <3 43% Specify CAMDEX <1 78%	Convenience sampling Same cohort as Han <i>et al</i> ⁷ 2013

Continued

Table 1 Continued

Author, date and country	Patient group	Study type	Outcomes	Key results	Study weaknesses
Grossmann <i>et al</i> ⁹ 2014 Switzerland	207 ED patients aged >65 years	Before-after study	Identification of delirium with mCAM (modified confusional assessment method) The gold standard was the emergency physician's assessment	Delirium diagnosed in 16% of patients Populations were analysed before and after an educational intervention; however, the sensitivity of physician mCAM-recognised delirium was only 0.40 postintervention and specificity 0.94	Emergency physicians did not assess all the patients, but only those who the research assistants thought had delirium
Kennedy <i>et al</i> ¹⁰ 2014 USA	676 ED patients aged >65 years who had been in the ED for <4 h and spoke English	Prospective convenience sample	Derivation of a clinical model to predict delirium (as diagnosed by CAM)	Age, dementia, prior stroke, respiratory rate >20, suspected infection and diagnosis of intracranial haemorrhage C statistic 0.79 (0.73–0.84)	Well conducted This was a trauma centre, which may explain the presence of intracranial haemorrhage in the model Convenience sampling Same cohort as Han <i>et al</i> ⁷ 2013
Han <i>et al</i> ¹¹ 2014 USA	406 ED patients aged >65 years who had been in the ED for <12 h and not in a hallway bed	Prospective convenience sample	Performance of physician-administered CAM-ICU A consultant psychiatrist assessed for delirium as the gold standard	Sensitivity 72% Specificity 96%	
Singler <i>et al</i> ¹² 2014 Germany	133 consecutive ED patients aged >75 years who spoke German and were in a stable condition	Prospective cohort	Prevalence of CAM-diagnosed cognitive impairment	19/133 (14%)	No comparison of the CAM score to another diagnostic tool
Han <i>et al</i> ¹³ 2015 USA	406 ED patients aged >65 years who had been in the ED for <12 h and not in a hallway bed	Prospective convenience sample	Performance of physician-administered Richmond agitation sedation score (RASS) diagnosing delirium A consultant psychiatrist assessed for delirium as the gold standard	RASS either >0 or <0 as a +ve score Sensitivity 82% Specificity 85%	Convenience sampling Same cohort as Han <i>et al</i> ⁷ 2013
Wilding <i>et al</i> ¹⁴ 2016 Canada	238 ED patients >75 without history of cognitive impairment	Prospective convenience sample	O3DY and animal fluency test (AFT) MMSE was the gold standard to diagnose cognitive impairment (<25)	O3DY sensitivity 94% (78–99) O3DY specificity 73% (66–79) AFT sensitivity 91% (74–98) AFT specificity 39% (33–46)	Convenience sampling

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BET 1: Screening for delirium within the emergency department

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