

Utility of the 4AT assessment of delirium in acute care: a multi-centre blinded independent rater diagnostic test accuracy study

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Background

Delirium remains underdetected

The 4AT is a rapid delirium detection tool that is designed for routine clinical use

4AT
Assessment test for delirium & cognitive impairment

Form fields: Patient name, Date of birth, Patient number, Date, Time, Tester.

[1] ALERTNESS
This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient; if asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

[2] AMT4
Age, date of birth, place (name of the hospital or building), current year.

[3] ATTENTION
Ask the patient: "Please tell me the months of the year in backwards order, starting at December." To assist initial understanding one prompt of "what is the month before December?" is permitted.

[4] ACUTE CHANGE OR FLUCTUATING COURSE
Evidence of significant change or fluctuation in alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs.

4AT SCORE

The 4AT (4 "A"s Test):

- A**lertness
- A**ttention
- A**bbrev Mental Test-4
- A**cute change

Download:
www.the4at.com

- ✓ Takes <2 minutes
- ✓ Suitable for use in normal clinical practice
- ✓ No special training is required
- ✓ Allows assessment of 'untestable' patients (with severe drowsiness / agitation)
- ✓ Includes brief cognitive tests

Objectives

Primary

Diagnostic accuracy of the 4AT for delirium detection in acute patients aged ≥ 70

Secondary

To compare performance with the Confusion Assessment Method (CAM)

Performance of individual 4AT test items in the 4AT in relation to cognitive status and outcomes

To determine if 4AT scores predict outcomes

Methods

Randomized, double-blind diagnostic test accuracy multi-site study

785 patients aged ≥ 70

In the Emergency Department <12 hours, or acute wards < 96 hours

(1) DSM-IV reference standard delirium assessment informed by the Delirium Rating Scale-Revised-98, and (2) randomized to 4AT / CAM (with randomized order of reference standard, and 4AT / CAM).

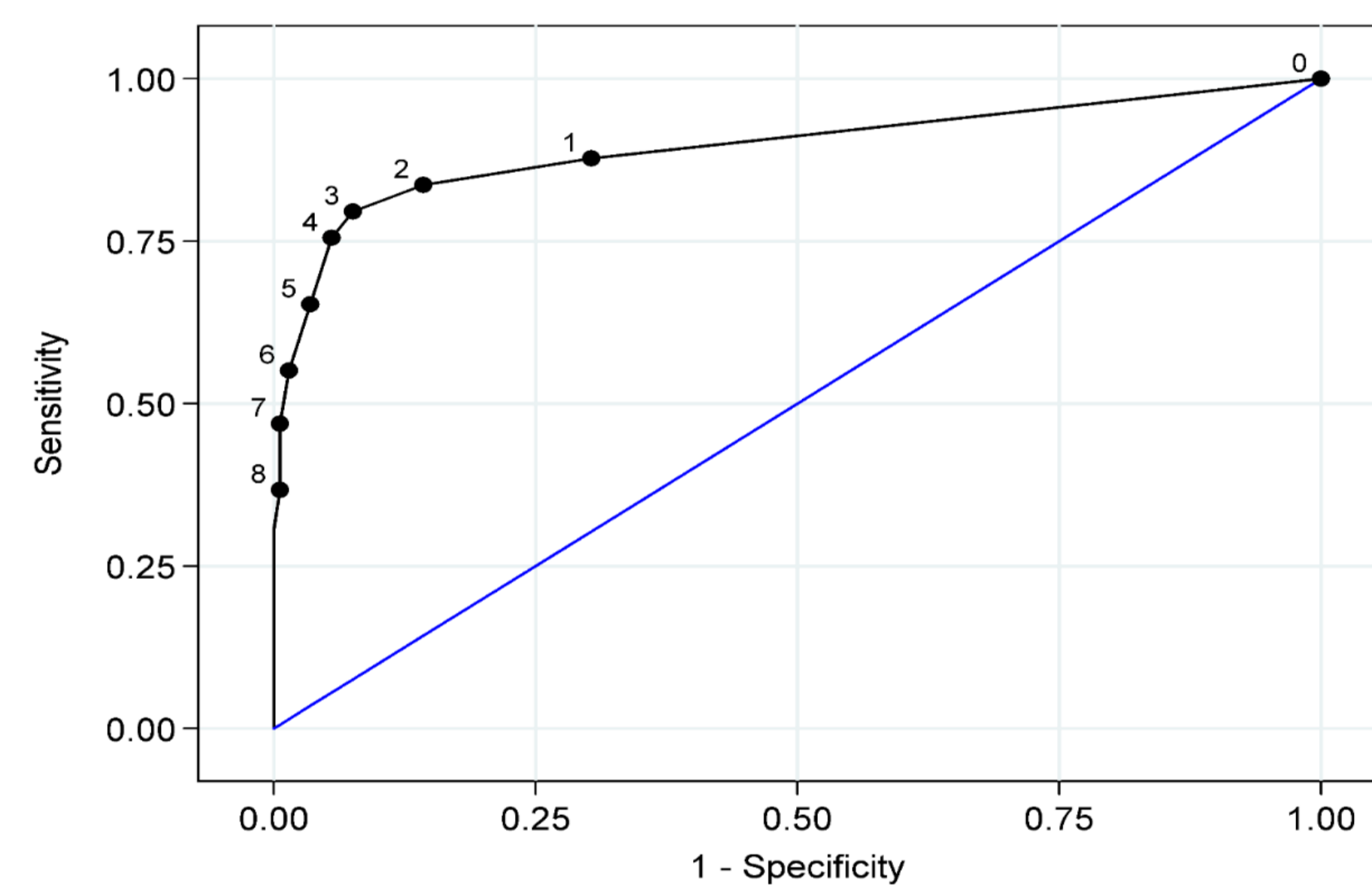
Results

Mean age 81.4 (SD 6.4) years

55% female

9% known dementia

Delirium prevalence:
Reference standard = 11.7%
4AT >3 = 14.3%
CAM+ = 4.7%



4AT had area under the receiver-operator characteristic curve of 0.90 (95% CI 0.84-0.96).

	Specificity	Sensitivity
4AT >3	94% (91-97%)	76% (61-87%)
CAM positive	100% (98-100%)	41% (26-57%)

Diagnostic test accuracy of 4AT and CAM for diagnosis of delirium

	4AT >3	4AT ≤ 3
Length of stay (median, IQR)	5 (2-14) days	2 (1-6) days
Mortality	16.1%	9.2%

Clinical outcomes & 4AT score

Scores on the cognitive test items of the 4AT were moderately sensitive and highly specific in relation to dementia diagnosis.

Conclusions

The 4AT has good overall diagnostic accuracy for delirium

Feasible in routine care, acute illness, dementia

Positive score (>3) associated with poor outcomes

Higher sensitivity than CAM in acute care patients