Instrument	Confusion Assessment Method for the Emergency Department NOTE: This card is populated with information from the instrument's original validation study only.
Acronym	CAM-ED
Primary use	Delirium screening
Area assessed (Number of questions)	Addresses 4 core features: Acute onset or fluctuating course; Inattention; Disorganized thinking; Altered level of consciousness 10 items
Description	The CAM-ED uses a modified CAM algorithm to determine delirium in the Emergency Department. Differs from the CAM only in the presence of a scoring system (from 1 to 4) that allowed more flexibility in assigning the diagnosis of delirium (acute or fluctuating course to be a feature for "probable" delirium). The instrument requires use of the Mini-Mental State Examination (MMSE).
Versions	1
Scoring information	Delirium scored as 'delirium' (scoring 4/4), 'probable' (3/4), 'possible' (2/4), or 'No' (1/4) based on question responses; CAM is considered positive based on the CAM algorithm: presence of acute onset or fluctuating course –AND/OR- inattention -AND EITHER- disorganized thinking or altered level of consciousness.
Cognitive testing	Mini-mental State Examination (MMSE) before CAM-ED administration
Administer to	Patients, in person
Estimated time to rate	5-6 minutes
Require trained rater	Yes – trained lay raters or ED physicians
How to obtain	Available in https://doi.org/10.1016/0735-6757(95)90080-2 (Note-article may be behind paywall) MMSE available at https://www.parinc.com/products/pkey/237
Licensing Fee*	None for instrument; MMSE has licensing fee for use (see link above).
Languages available	English
Highest COSMIN** rating	2.5/6†
Test Performance Characteristics	Lewis et al (1995) compare CAM-ED designations to delirium (or synonym) diagnoses evident in the chart and resulting from "patients [being] assessed by an attending ED physician in the customary fashion." This was not designed as a criterion validity study. The authors conclude "[t]hese results suggest that the diagnosis of delirium may frequently be missed by the use of a conventional work-up in elderly patients who present to the ED." 17% (6/35) Positive Predictive Value [CAM-ED for physician diagnosis of "delirium (or an acceptable synonym)"] Predictive validity supported by higher 3-month mortality in patients with CAM-ED delirium (20%) vs those without CAM-ED delirium (8%) (P = .20)

* Fees and licensing information is effective as of 2021, but is subject to change over time

** COSMIN is used to rate a study's evaluation of a survey or test's measurement properties. COSMIN does NOT rate the instrument itself, but helps readers understand if they can have confidence in the results of studies evaluating measurement properties of surveys and tests. For example, a rigorous study evaluating a test with poor measurement properties will receive a "good" COSMIN rating, while a poorly-conducted study evaluating a test with good measurement properties will receive a "poor" COSMIN rating. Small sample size can impact all COSMIN ratings. You must consider both the COSMIN rating and the results of studies provided when forming your opinion about that test. *COSMIN ratings shown are based solely on the instrument's original validation study.*

Last updated on **July 29, 2021.** If you are aware of any updates required for this document, please notify us via nidus@hsl.harvard.edu

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† COSMIN breakdown: content validity: FAIR, effect indicators: GOOD, internal consistency: NONE, inter-rater reliability: NONE, construct validity: NONE, external validity: GOOD

Reference:

Lewis LM, Miller DK, Morley JE, Nork MJ, Lasater LC. Unrecognized delirium in ED geriatric patients. The American journal of emergency medicine. 1995;13(2):142-5.

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