Instrument	Confusion Assessment Method for the Intensive Care Unit
	NOTE: This card is populated with information from the instrument's original validation study only.

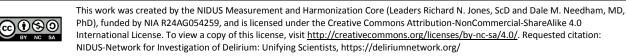|	
Acronym	CAM-ICU
Core Domain	Delirium Screening
Area assessed (Number of questions)	*Addresses 4 core features:* Acute onset or fluctuating course (feature 1); Inattention (feature 2); Disorganized thinking (feature 3); Altered level of consciousness (feature 4) 8 items total
Description	An adaptation of the Confusion Assessment Method (CAM) to be usable by clinicians to screen for delirium in the intensive care unit setting, particularly for nonverbal (intubated) patients. The CAM-ICU utilizes the CAM diagnostic algorithm.
Versions	1 (training manual updated periodically)
Scoring information	3 of the 4 features must be present for CAM-ICU to be considered positive (1 and 2, and either 3 or 4), according to the original CAM algorithm. Items are rated absent/present based on specific thresholds.
Cognitive testing	Embedded in instrument; also requires use of a validated level of consciousness/sedation scale, such as Richmond Agitation-Sedation Scale (RASS)
Estimated time to rate	2-3 mins
Require trained rater	Yes – trained lay raters or clinicians
Administer to	Patient in ICU setting, in-person
Special resources required	CAM-ICU Picture Packets (optional)
How to obtain	Detailed free instructions at http://www.icudelirium.org/delirium/monitoring.html
Licensing Fee*	None
Languages available	Arabic, Chinese, Czech, Danish, Dutch, Egyptian, French, German, Greek, Hindi, Italian, Japanese, Korean, Malayalam, Marathi, Norwegian, Persian, Polish, Portugese, Russian, Serbian, Spanish, Swedish, Thai, Zulu
Highest COSMIN** rating	5/6†
Test Performance Characteristics	**Ely 2001 (Crit Care Med)** Reference standard: interview and diagnosis of delirium according to DSM-IV criteria determined by delirium expert (geriatrician or geriatric consult-liaison psychiatrist) Ranges reflect results as conducted by three raters: two nurses and one intensivist • Reliability (Inter-rater), kappa=0.95 • Sensitivity: Compared to reference standard 95-100%; in subgroup of mechanically ventilated patients, 92-100% • Specificity: Compared to reference standard 89-93%; in mechanically ventilated patients, 88-100% • Accuracy: 95-96%

*Fees and licening information is effective as of 2018, but is subject to change over time

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**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.*

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

Reviews:
Gélinas, C., Bérubé, M., Chevrier, A., Pun, B. T., Ely, E. W., Skrobik, Y., & Barr, J. (2018). Delirium Assessment Tools for Use in Critically Ill Adults: A Psychometric Analysis and Systematic Review. *Critical care nurse*, *38*(1), 38-49.

Gusmao-Flores, D., Salluh, J.I., Chalhub, R.A., Quarantini, L.C. (2012). The confusion assessment method for the intensive care unit (CAM-ICU) and intensive care delirium screening checklist (ICDSC) for the diagnosis of delirium: a systematic review and meta-analysis of clinical studies. *Crit Care*, 16(4):r115. doi:10.1186/cc11407

LaMantia, M.A., Messina, F.C., Hobgood, C.D., Miller, D.K. (2014). Screening for Delirium in the Emergency Department: A Systematic Review. *Annals of Emergency Medicine*, 63(5):551-60. doi:10.1016/j.annemergmed.2013.11.010

Luetz, A., Heymann, A., Radtke, F. M., Chenitir, C., Neuhaus, U., Nachtigall, I., ... & Wernecke, K. D. (2010). Different assessment tools for intensive care unit delirium: which score to use?. *Critical care medicine*, *38*(2), 409-418.

Mariz, J., Castanho, T.C., Teixeira, J., Sousa, N., Santos, N.C. (2016). Delirium Diagnostic and Screening Instruments in the Emergency Department: An Up-to-Date Systematic Review. *Geriatrics*, 1,22. doi:10.3390/geriatrics1030022

Neto, A.S., Nassar, A.P. Jr., Cardoso, S.O., Manetta, J.A., Pereira, V.G.M., Esposito, D.C., Damasceno, M.C.T., Slooter, A.J. (2012). Delirium screening in critically ill patients: A systematic review and meta-analysis. *Crit Care Med,* 40(6): 1946-1951. doi:10.1097/CCM.0b013e31824e16c9

Shi, Q., Warren, L., Saposnik, G., MacDermid, J.C. (2013). Confusion assessment method: a systematic review and meta-analysis of diagnostic accuracy. *Neuropsychiatr Dis Treat*, 9:1359-70. doi:10.2147/NDT.S49520

Van den Boogaard, M., Pickkers, P., Schoonhoven, L. (2010). Assessment of delirium in ICU patients: a literature review. *Netherlands J of Crit Care*, 14(1):10-15.

Van Velthuijsen, E.L., Zwakhalen, S.M., Warnier, R.M., Mulder, W.J., Verhey, F.R., Kempen, G.I. (2016). Psychometric properties and feasibility of instruments for the detection of delirium in older hospitalized patients: a systematic review. *Int J Geriatr Psychiatry*, 31(9):974-89. doi:10.1002/gps.4441