Instrument	Confusion Assessment Method – Severity Scale NOTE: This card is populated with information from the instrument's original validation study only.	
Acronym	CAM-S	
Primary Use	Delirium Severity	
Area assessed (Number of questions)	*Short Form* – 4 items pertaining to the following core features: Acute Onset or Fluctuating Course; Inattention; Disorganized Thinking; Altered Level of Consciousness	*Long Form* – 10 items, includes the following features in addition to Short Form: Disorientation; Memory Impairment; Perceptual Disturbances; Psychomotor Agitation/Retardation; Altered Sleep-Wake Cycle
Description	A severity scale based on the additive scoring of symptoms rated in the CAM (Confusion Assessment Method). The CAM-S is intended to be used in addition to the original CAM algorithm. The instrument is suggested for clinical and research purposes to track the level of severity of delirium symptoms.	
Versions	2 (Short and Long forms)	
Scoring information	Rate each symptom of delirium listed in the instrument as absent (0), mild (1), or marked (2), except acute onset or fluctuating course which was rated as absent (0) or present (1). The severity score is created by an additive summary of the ratings ranging from 0-7 (short form) and 0-19 (long form). Higher scores indicate more severe delirium.	
Cognitive testing	To rate the CAM-S, you must perform brief (5-10 min) formal cognitive testing; recommended instruments include: Short Portable Mental Status Questionnaire or Mini-Cog.	
Estimated time to rate	Short form: <5 mins (includes cognitive testing); Long form: 10-15 min	
Require trained rater	Yes – trained lay raters or clinicians	
Administer to	Patient, in-person	
How to obtain	Detailed instructions (registration required) at https://help.agscocare.org/	
Licensing Fee*	None for nonprofit or educational use	
Languages available	English	
Highest COSMIN rating**	Overall: 5/6[†]	
Test Performance Characteristics	**Inouye 2014** *[short form, long form]* **Study 1: Patients scheduled for elective major noncardiac surgery, n=300** **Study 2: General medicine at Yale-New haven Hospital, n=919** •Reliability (Inter-rater, Intraclass Correlation Coefficient = 0.92, 0.88) COSMIN: GOOD •Construct Validity (Compared to Daily Confusion Rating [r=0.78, 0.80 in Study 1; r=0.45, 0.64 in Study 2], Brief Cognitive Screen [r=0.62, 0.72], Mini-Mental State Examination [MMSE] [r=0.41, 0.64]) COSMIN: GOOD •Predictive Validity (Nursing home placement [RR=1.0, 1.4, 2.1, 2.5 across CAM-S short form severity levels, RR=1.0, 1.4, 2.3, 3.9 long form, p-trend<0.001 for both]) COSMIN: GOOD	

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

Reference:

Inouye, S. K., Kosar, C. M., Tommet, D., Schmitt, E. M., Puelle, M. R., Saczynski, J. S., . . . Jones, R. N. (2014). The CAM-S: development and validation of a new scoring system for delirium severity in 2 cohorts: the CAM-S score for delirium severity. Annals of Internal Medicine, 160(8), 526-533. doi:10.7326/M13-1927. PMC4038434

** 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.*

† internal consistency: FAIR, inter-rater reliability: GOOD, content validity: FAIR, construct validity: GOOD, effect indicators: GOOD, external validity: GOOD

Additional Test Performance Characteristics:

Inouye 2014

•Predictive validity across CAM-S severity levels (Length of stay [adjusted mean 6.5-12.7 days short form, 5.6-11.9 days long form]; Hospital costs [adjusted mean $5,100 no delirium symptoms, $13,200 severe delirium short form; $4200 - $11,400]; Functional decline [increase from baseline 36% to 68% short form, 25% to 61% long form]; Cognitive decline ([increase from baseline 16% to 65% short form, 10% to 50% long form]; Cumulative rates of death within 90 days [7% no delirium symptoms – 27% high severity for short form, 7% to 22% for long form])

Reviews:

Wei, L.A., Fearing, M.A., Sternberg, E.J., Inouye, S.K. (2008). The Confusion Assessment Method (CAM): A Systematic Review of Current Usage. *J Am Geriatr Soc*, 56(5):823-30. doi:10.1111/j.1532-5415.2008.01674.x