

By Christine M. Waszynski, MSN, APRN, BC

# Detecting Delirium

*The short Confusion Assessment Method quickly identifies four distinguishing features of the disorder.*

**Overview:** For patients and their loved ones, delirium can be a frightening experience. A fluctuating mental status is important to identify because it often signals a need for additional treatment. The Confusion Assessment Method (CAM) diagnostic algorithm enables nurses to assess for delirium by identifying the four features of the disorder that distinguish it from other forms of cognitive impairment. It can be completed in five minutes and is easily incorporated into ongoing assessments of hospitalized patients. (This screening tool is included in the series *Try This: Best Practices in Nursing Care to Older Adults*, from the Hartford Institute for Geriatric Nursing at New York University's College of Nursing.) For a free online video demonstrating the use of this tool, go to <http://links.lww.com/A209>.




**S**eventy-three-year-old Albert Fenn is admitted to the orthopedic unit with a left intertrochanteric fracture, which occurred when he tripped over his chihuahua, Wilma, when rushing to answer his doorbell. (This case is a composite, based on my clinical experience.) His niece, Shirley McFarland, was at the door; when her uncle did not answer, she peered through the window and saw him lying on the floor. She dialed 911 and followed the ambulance to the ED.

Never married, Mr. Fenn lives alone and drives, has dinner with family every Sunday, and plays cards with friends every Friday. His medical history includes diabetes, which is treated with metformin (Glucophage) 500 mg twice daily, and no sign of cognitive impairment.

At the time of hospitalization, his blood pressure is 116/80 mmHg, apical pulse is 92 beats per minute with a regular rhythm, respiratory rate is 20 breaths per minute, and oxygen saturation is 95% on room air. He is afebrile. Ms. McFarland says that her uncle is acting normally. Nonetheless, nurses use the Confusion Assessment Method (CAM) diagnostic algorithm to screen for delirium, which reveals that there's no sign of it: he speaks clearly, is socially appropriate, and concisely describes how he came to be hospitalized, as well as details of his past. He is oriented to time and place and reports his age and birth date. He expresses concern for Wilma and has a plan for her care. He asks about his impending surgery. He is attentive and is able to spell the word *world* backward.

Mr. Fenn reports that on a scale of 0 to 10, his pain level is 7. After confirming that he has no history of drug allergies or adverse drug reactions, the nurse administers hydromorphone (Dilaudid and others) 2 mg iv for pain and methocarbamol (Robaxin) 1,500 mg by mouth for spasm. Mr. Fenn will be assessed with the CAM regularly throughout his hospitalization; his age, injury, pain, medications (the opioid and the antispasmodic), urinary catheterization, immobility, and impending surgery all place him at risk for developing delirium.

#### WHY USE THE CAM?

The CAM is a standardized instrument developed for clinicians to identify delirium, an acute change in mental status from baseline, quickly and accurately. It can be used in both clinical and research settings and also distinguishes dementia and delirium. (For a comparison of instruments that can be used to screen for delirium in clinical settings, go online to <http://links.lww.com/A332>.) 



#### Web Video

Watch a video demonstrating the use and interpretation of the short Confusion Assessment Method at <http://links.lww.com/A209>.

Please note that because the video will also discuss the tool on assessing delirium superimposed on dementia, which will be the focus of one of the *How To Try This* articles in the January issue, it is not yet available. Please try the link after January 1, 2008, to access this video.



#### A Closer Look

Get more information about the incidence and prevalence of delirium in older adults, as well as difficulties in diagnosis.



#### Try This: The Confusion Assessment Method Diagnostic Algorithm

This is the tool in its original form. See page 55.



#### Online Only

Unique online material is available for this article. Direct URL citations appear in the printed text; simply type the URL into any Web browser.

Initially developed by Sharon Inouye and colleagues in the late 1980s and early 1990s from the definition of delirium provided in the *Diagnostic and Statistical Manual of Mental Disorders*, third edition,<sup>1</sup> the CAM has been found to agree more closely with the definition of delirium in the fourth edition, text revision.<sup>2,3</sup> A long and a short version of the CAM are available. The short version, the CAM diagnostic algorithm—also known as the short CAM—includes only the four features found to best distinguish delirium from other types of cognitive impairment.<sup>4</sup> The long version is a comprehensive tool used to screen for clinical features of delirium and includes additional questions that further define the four features of delirium identified in the short CAM; for example, one of the 10 questions asks whether the patient has shown evidence of increased level of activity, such as picking at bedclothes or tapping her or his fingers. Another asks whether the patient has exhibited any decrease in activity level (by, say, staring into space or not moving for long periods). While the long form may be a more complete assessment and provide additional detail about a patient's behavior, the short form has

### Delirium: An Overview of the Problem

*Incidence, prevalence, and the difficulties of diagnosis.*

**D**elirium is a significant problem that can accompany illness and hospitalization in older adults; in 1994 Inouye and colleagues reviewed studies conducted over several decades and found that delirium occurred in 14% to 56% of older hospitalized medical patients.<sup>5</sup> A more recent metaanalysis of delirium in patients with hip fracture found an incidence of 4% to 53%.<sup>6</sup> Delirium is often present by the time a patient seeks ED care; indeed, Elie and colleagues found the prevalence of delirium in elderly ED patients to be 9.6%.<sup>7</sup>

Delirium can occur at any time during hospitalization, often in response to a worsening illness or new insults, including urinary catheterization, use of physical restraints, malnutrition, any iatrogenic event, or administration of more than three new medications.<sup>8</sup> Many factors usually contribute to its development, although patients with advanced age, severe illness, or dementia may develop delirium in response to a single factor.<sup>8-10</sup> Delirium is often reversible once its causes are identified and treated.

Delirium is found on general or specialty medical and surgical units, with the highest incidence seen in postoperative patients undergoing cardiac or orthopedic surgery,<sup>6,11</sup> in the ICU,<sup>12,13</sup> and during the last weeks of terminal illness.<sup>14</sup> Delirium during hospitalization is associated with increased rates of illness and death, nursing home placement, and readmission, as well as prolonged and costly hospitalizations.<sup>5</sup> In fact, delirium may act as a prognostic indicator for death for up to 12 months after hospitalization.<sup>15</sup> And it can cause significant stress in patients, spouses, and caregivers.<sup>16</sup>

Delirium can be difficult to identify because of its transient nature and varied presentation—hypoactivity, hyperactivity, or both—especially when it's superimposed on dementia or depression.<sup>17,18</sup> Delays in diagnosis may be caused by clinicians' ignorance of signs and symptoms, the absence of formal assessment protocols, the clinicians not considering delirium to be a significant diagnosis, and the condition's fluctuating nature.<sup>17</sup>

In a major study involving hospital nurses educated on the features of delirium, Inouye and colleagues found that nurses failed to identify 69% of patients with delirium.<sup>19</sup> Compared with trained researchers who used formal cognitive testing, nurses using the short CAM did poor jobs of recognizing and documenting signs of disorientation, poor memory, inattention, disorganized thinking, and altered level of consciousness during routine care. Four independent risk factors were associated with the underrecognition of delirium: the patient had the hypoactive form of delirium, was 80 years of age or older, had impaired vision, or had dementia. The risk of underrecognition increased as the number of risk factors increased. In fact, the hypoactive form of delirium was seven times more likely to be unrecognized by nurses than was either the hyperactive or mixed form.<sup>19</sup> In practice, nurses often notice patients' lethargy but don't recognize it as a feature of hypoactive delirium.

Research has shown that early identification and treatment of delirium result in improved outcomes,<sup>20-22</sup> including decreased mortality rates and shorter hospital stays.<sup>23</sup>

been proven to be adequate in identifying delirium. Time constraints make the short form more practical for clinical use; it can be completed in five minutes. The clinician assesses for the presence or absence of delirium by assessing for the following four features:

1. mental status altered from baseline (acute onset or fluctuating)
2. inattention
3. disorganized thinking
4. altered level of consciousness

Delirium is identified only if there's evidence of features 1 and 2, and either 3 or 4 (or both). Patients should be assessed with the short CAM on admission and during each shift. In addition, it should be considered a routine part of assessment of all hospitalized adults (delirium is not isolated to older

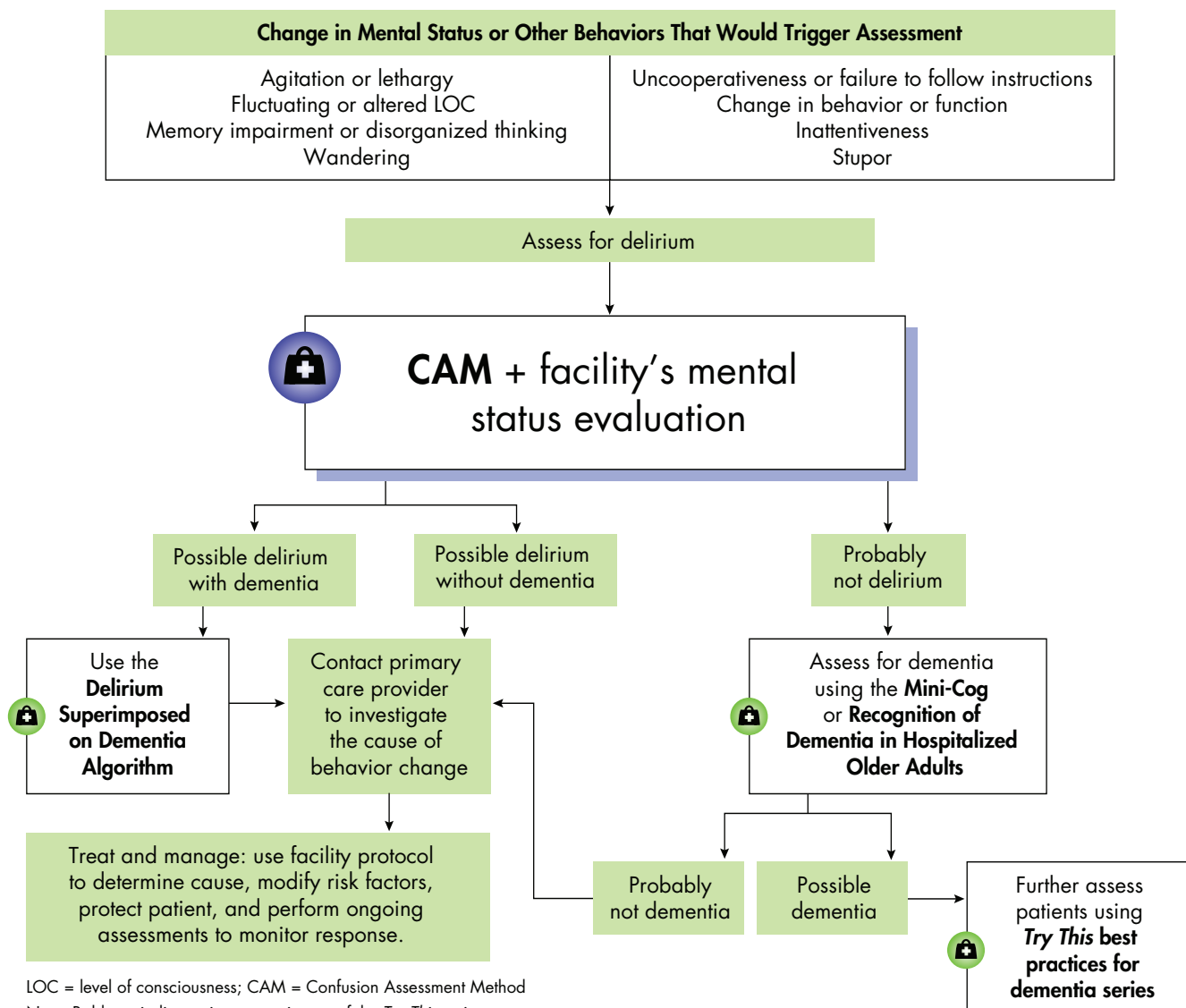
adults). For more information on the incidence and prevalence of delirium, see *Delirium: An Overview of the Problem*, above.

#### ADMINISTERING THE SHORT CAM

Assessment with the short CAM is made through both observation and interview. Inouye found that the sensitivity and specificity of the short CAM are improved when clinicians use standardized questions from formal cognitive-testing tools such as the Mini-Mental State Exam or the Orientation-Memory-Concentration Test (OMCT).<sup>3</sup> Both tools assess orientation to time and place, short-term memory, and concentration.

If standardized questions are not used, another approach is to engage the patient in conversation for about one minute about the reason for her or his hos-

# How to Use the *Try This* Series for Assessing Delirium and Dementia



Understanding changes in behavior in older adults is often challenging. This algorithm is designed to help you use the instruments in the *Try This* series to determine whether older adults whose behavior changes have delirium, dementia, delirium superimposed on dementia, or some other problem. Delirium is an acute emergency and must be identified and treated immediately. Delirium occurs more frequently in those with a diagnosis of dementia. Dementia cannot be diagnosed until the existing delirium is resolved. Identifying changes in behavior demands knowledge of “usual status,” so be sure to use all available resources to identify the baseline cognitive status (for example, the patient, medical records, family, primary care providers, and facility caregivers, should the individual reside in an assisted living facility or a nursing home). Use this algorithm as a roadmap in assessing your patient’s cognitive status. Be sure to work with and share your findings with other members of the interdisciplinary team so that older adults can receive safe and effective care.

pitalization and status of symptoms. For example, questions such as “What brought you to the hospital?” or “How are you feeling now?” help the nurse assess orientation to time and place, test concentration, and evaluate the patient’s ability to hold a coherent conversation.

**Feature 1.** The short CAM begins with evaluating whether mental status has changed from baseline and is accomplished through observation (for conditions

such as memory impairment, disorientation, or paranoia) and the input of family members or close acquaintances. Other sources of information include reports from emergency medical services, previous hospital records, the patient’s primary care provider, home care agency staff, or clinicians in other settings who’ve had recent contact with the patient. Family input can be sought to determine whether mental status has returned to baseline.



### Online Resources

#### For more information on the Confusion Assessment Method

and other geriatric assessment tools and best practices, go to [www.hartfordign.org](http://www.hartfordign.org), the Web site of the John A. Hartford Foundation-funded Hartford Institute for Geriatric Nursing at New York University College of Nursing. The institute focuses on improving the quality of care provided to older adults by promoting excellence in geriatric nursing practice, education, research, and policy. Download the original *Try This* document on the Confusion Assessment Method by going to [www.hartfordign.org/publications/trythis/issue13.pdf](http://www.hartfordign.org/publications/trythis/issue13.pdf).

For more information on best practices in the care of older adults go to [www.ConsultGerRN.org](http://www.ConsultGerRN.org). The site lists many related resources and offers continuing education opportunities.

Go to [www.nursingcenter.com/AJNolderadults](http://www.nursingcenter.com/AJNolderadults) and click on the *How to Try This* link to access all articles and videos in this series.

It's very important that the details of the baseline mental status be documented in a specific spot in the patient's record so that it can be used in subsequent CAM screenings. If a patient has no cognitive impairment at the first CAM assessment, it can be assumed that the patient's baseline mental status is normal and unimpaired. But screening becomes more complex when a patient displays any sign of altered mentation at the time of admission. For example, disorientation to time may be an early symptom of dementia that's normal for the patient. But it could also signify delirium. Therefore, the patient's baseline mental status must be confirmed with a reliable source in order to determine whether the current signs and symptoms are alterations from the norm.

**Feature 2** is inattention. Obvious signs of inattention are an inability to focus on a task or on conversation because of lethargy or agitation. Inattentive patients may be easily distracted by noises in the immediate environment, or they may have trouble keeping track of what's being said. Other signs of inattention may be more subtle. A patient may be quiet and subdued, rarely initiating conversation. She or he should be asked to spell the word *world* backward, recite seven digits forward or five digits in reverse, count backward from 20 to one, or recite the days of the week or months of the year backward. A patient with attention deficits will make errors or will be unable to complete these tasks. This feature may help to differentiate signs of dementia and those of delirium. Patients who have dementia and no delirium at baseline can perform simple attentional tests (counting backward from 20 to one), unless the dementia is advanced.

**Feature 3**, disorganized thinking, can be assessed by asking standard orientation questions. For example, questions from the OMCT include "Do you know what year it is? What season we're in? Do you know today's date? Do you know what month it is? About what time is it now? Where are we?"<sup>24</sup> Disorganized thinking makes answering these question difficult, eliciting evasive, rambling, or irrelevant conversation; an illogical flow of ideas; paranoid statements; or evidence of hallucination. (Remember that in patients with dementia, such signs may be a part of baseline status.)

**Feature 4**, determined by behavioral assessment, is altered level of consciousness. If the patient's level of consciousness is determined to be anything other than alert (vigilant or restless, lethargic, stuporous or comatose) the patient is considered positive for this feature. Restlessness, agitation, and fearfulness are symptoms of hyperactive delirium, while lethargic or stuporous states may reflect hypoactive delirium. In mixed delirium, patients fluctuate among hypoalert, hyperalert, and normal levels of consciousness. Clinicians frequently don't recognize hypoalert states, often because of their subtle presentation.<sup>19</sup>

**Mr. Fenn.** Margorie Wyman, a nurse on the unit, is called into Mr. Fenn's room. His niece is worried about his behavior. After introducing herself, Ms. Wyman explains, "Your brain can be affected by illness, and we need to monitor how well your brain is working. I'd like to ask you a few questions." Mr. Fenn says, "What am I doing here? It's time to feed the dog. Where's Wilma?" Ms. Wyman, who admitted him earlier in the day, sees a distinct change in his mental status from the baseline assessment; she notes that he is positive for feature 1. "Mr. Fenn," she asks, "would you like your niece to remain in the room while we talk?" (The patient should always be given the choice to complete the assessment in private.) "She should stay!" he says. "Am I going crazy?" "You're just fine," Ms. Wyman assures him. "Your niece can stay, but please," she says, turning to the woman, "don't help him answer any questions. We'll get better information if he does this on his own." His niece nods. "Mr. Fenn, can you spell the word *world* backward for me?" He begins but is soon distracted by the items on his bedside table. Ms. Wyman notes that he is positive for inattention, feature 2 on the short CAM. "Mr. Fenn, do you know today's date?" she asks next. He seems confused by the question, and again, asks for his dog and for a can opener to open her food. He has feature 3, disorganized thinking. Finally, the nurse notes that his anxiety and vigilance are not abating; she notes the presence of "altered level of consciousness."





# try this:

**Best Practices in Nursing  
Care to Older Adults**

from **The Hartford Institute for Geriatric Nursing**  
New York University, College of Nursing

Issue Number 13, Revised 2007

Series Editor: Marie Boltz, PhD, APRN, BC, GNP  
Managing Editor: Sherry A. Greenberg, MSN, APRN, BC, GNP  
New York University College of Nursing

## **The Confusion Assessment Method (CAM)**

*By: Christine M. Waszynski, MSN, APRN, BC, Hartford Hospital*

**WHY:** Delirium occurs in 25-60% of older hospitalized patients, and is associated with an increased risk of nursing home admission, increased costs, length of stay, mortality rates, functional decline, and increased use of chemical and physical restraints. Risk factors for delirium include older age, dementia, infection, severe illness, multiple co-morbidities, dehydration, psychotropic medication use, alcoholism, vision impairment, and fractures. Delirium is often unrecognized by clinicians. Therefore, patients should be assessed frequently using a standardized tool to facilitate prompt identification and management of delirium and underlying etiology.

**BEST TOOL:** The Confusion Assessment Method (CAM) was intended to provide a new standardized method to enable non-psychiatrically trained clinicians to identify delirium quickly and accurately in both clinical and research settings. Both a long and short version of the CAM are available. The long version is a comprehensive assessment instrument that screens for clinical features of delirium and correlates to DSM IV criteria. The short version includes only those four features that were found to have the greatest ability to distinguish delirium from other types of cognitive impairment. There is also a CAM-ICU version for use with non-verbal mechanically ventilated patients.

**VALIDITY AND RELIABILITY:** Both the CAM and the CAM-ICU have demonstrated sensitivity of 94-100%, specificity of 89-95% and high inter-rater reliability. Several studies have been done to validate clinical usefulness.

**STRENGTHS AND LIMITATIONS:** The CAM can be incorporated into routine assessment and has been translated into several languages. The CAM was designed and validated to be scored based on observations made during brief but formal cognitive testing, such as the Mini-Mental State Examination (or other brief mental status evaluations). There is a false positive rate of 10%. Training to administer and score the tool is necessary to obtain valid results. The tool identifies the presence or absence of delirium but does not assess the severity of the condition, making it less useful to detect clinical improvement or deterioration.

**FOLLOW-UP:** The presence of delirium warrants prompt intervention to identify and treat underlying causes and provide supportive care. Vigilant efforts need to continue across the healthcare continuum to preserve and restore baseline mental status.

### **MORE ON THE TOPIC:**

Best practice information on care of older adults: [www.ConsultGerIRN.org](http://www.ConsultGerIRN.org).

The Hospital Elder Life Program (HELP), Yale University School of Medicine. Home Page: <http://elderlife.med.yale.edu>.

Useful websites for clinicians including the CAM Training Manual: <http://elderlife.med.yale.edu/public/doclinks.php?pageid=01.02.03>.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4<sup>th</sup> ed.). Washington D.C.

Ely, E. Wesley, Margolin, R., Francis, J., May, L., Truman, B., Dittus, R., Speroff, T., Gautam, S., Bernard, G., & Inouye, S. (2001). Evaluation of delirium in critically ill patients: Validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). *Critical Care Medicine*, 29(7), 1370-1379.

Inouye, S.K. (2006). Delirium in older persons. *NEJM*, 354, 1157-65.

Inouye, S.K., Foreman, M.D., Mion, L.C., Katz, K.H., & Cooney, L.M. (2001). Nurses' recognition of delirium and its symptoms: Comparison of nurse and researcher ratings. *Archives of Internal Medicine*, 161, 2467-2473.

Inouye, S., van Dyck, C., Alessi, C., Balkin, S., Siegel, A. & Horwitz, R. (1990). Clarifying confusion: The confusion assessment method. *Annals of Internal Medicine*, 113(12), 941-948.

Laurila, J.V., Pitkala, K.H., Strandberg, T.E., & Tilvis, R.S. (2002). Confusion assessment method in the diagnostics of delirium among aged hospital patients: Would it serve better in screening than as a diagnostic instrument? *International Journal of Geriatric Psychiatry*, 17(12), 1112-1119.

Rapp, C., Wakefield, B., Kundrat, M., Mendes, J., Tripp-Reimer, T., Culp, K., Mobily, P., Akins, J. & Onega, L. (2000). Acute confusion assessment instruments: Clinical versus research usability. *Applied Nursing Research*, 13(1), 37-45.

Schuurmans, M.J., Deschamps, P.L., Markham, S.W., Shortridge-Baggett, L.M. & Duursma, S.A. (2003). The measurement of delirium: Review of scales. *Research and Theory for Nursing Practice: An International Journal*, 17(3), 207-224.

Permission is hereby granted to reproduce, post, download, and/or distribute, this material *in its entirety only* for not-for-profit educational purposes only, provided that The Hartford Institute for Geriatric Nursing, College of Nursing, New York University is cited as the source. This material may be downloaded and/or distributed in electronic format, including PDA format. Available on the internet at [www.hartfordign.org](http://www.hartfordign.org) and/or [www.ConsultGerIRN.org](http://www.ConsultGerIRN.org). E-mail notification of usage to: [hartford.ign@nyu.edu](mailto:hartford.ign@nyu.edu).

## The Confusion Assessment Method Instrument:

1. **[Acute Onset]** Is there evidence of an acute change in mental status from the patient's baseline?
- 2A. **[Inattention]** Did the patient have difficulty focusing attention, for example, being easily distractible, or having difficulty keeping track of what was being said?
- 2B. **(If present or abnormal)** Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?
3. **[Disorganized thinking]** Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?
4. **[Altered level of consciousness]** . Overall, how would you rate this patient's level of consciousness? (Alert [normal]; Vigilant [hyperalert, overly sensitive to environmental stimuli, startled very easily], Lethargic [drowsy, easily aroused]; Stupor [difficult to arouse]; Coma; [unarousable]; Uncertain)
5. **[Disorientation]** Was the patient disoriented at any time during the interview, such as thinking that he or she was somewhere other than the hospital, using the wrong bed, or misjudging the time of day?
6. **[Memory impairment]** Did the patient demonstrate any memory problems during the interview, such as inability to remember events in the hospital or difficulty remembering instructions?
7. **[Perceptual disturbances]** Did the patient have any evidence of perceptual disturbances, for example, hallucinations, illusions or misinterpretations (such as thinking something was moving when it was not)?
- 8A. **[Psychomotor agitation]** At any time during the interview did the patient have an unusually increased level of motor activity such as restlessness, picking at bedclothes, tapping fingers or making frequent sudden changes of position?
- 8B. **[Psychomotor retardation]**. At any time during the interview did the patient have an unusually decreased level of motor activity such as sluggishness, staring into space, staying in one position for a long time or moving very slowly?
9. **[Altered sleep-wake cycle]**. Did the patient have evidence of disturbance of the sleep-wake cycle, such as excessive daytime sleepiness with insomnia at night?

## The Confusion Assessment Method (CAM) Diagnostic Algorithm

### Feature 1: Acute Onset or Fluctuating Course

This feature is usually obtained from a family member or nurse and is shown by positive responses to the following questions: Is there evidence of an acute change in mental status from the patient's baseline? Did the (abnormal) behavior fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?

### Feature 2: Inattention

This feature is shown by a positive response to the following question: Did the patient have difficulty focusing attention, for example, being easily distractible, or having difficulty keeping track of what was being said?

### Feature 3: Disorganized thinking

This feature is shown by a positive response to the following question: Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

### Feature 4: Altered Level of consciousness

This feature is shown by any answer other than "alert" to the following question: Overall, how would you rate this patient's level of consciousness? (alert [normal]), vigilant [hyperalert], lethargic [drowsy, easily aroused], stupor [difficult to arouse], or coma [unarousable])

**The diagnosis of delirium by CAM requires the presence of features 1 and 2 and either 3 or 4.**

CAM Instrument and Algorithm adapted from Inouye, S., van Dyck, C., Alessi, C., Balkin, S., Siegel, A. & Horwitz, R. (1990). Clarifying confusion: the confusion assessment method. *Annals of Internal Medicine*, 113(12), 941-948. Reprinted with permission.



A SERIES PROVIDED BY  
**The Hartford Institute for Geriatric Nursing**  
EMAIL: [hartford.ign@nyu.edu](mailto:hartford.ign@nyu.edu)  
HARTFORD INSTITUTE WEBSITE: [www.hartfordign.org](http://www.hartfordign.org)  
CONSULTGERI RN WEBSITE: [www.ConsultGeriRN.org](http://www.ConsultGeriRN.org)



## Versions of the CAM

**Challenges that may arise.** Some patients may feel threatened by standardized questions that test mental status. In such a case, engage the patient in conversation and listen closely for errors, repetitions, language problems, and lethargy or agitation. Finally, the CAM is not appropriate for comatose patients; patients must be able to respond to the examiner in order to complete the assessment.

### SCORING AND INTERPRETING THE RESULTS

A positive result on the short CAM requires evidence of both features 1 and 2 and either 3 or 4 (patients with dementia who do not have delirium will not display features 1, 2, or 4). If delirium is superimposed on dementia, the patient will display features 1 and 2 and either 3 or 4. Results of the short CAM do not reflect the severity of delirium.

**Mr. Fenn has delirium,** having exhibited each of the four features on the CAM. Ms. Wyman considers causes and discusses the following with the team:

- discontinuing the urinary catheter immediately
- performing urinalysis with reflex culture
- discontinuing methocarbamol and beginning acetaminophen 650 mg orally every six hours while awake for discomfort, perhaps allowing a reduction in hydromorphone dosage
- mobilizing him as soon as possible after surgery
- anticipating postoperative delirium

Ms. Wyman also puts into place measures to maintain Mr. Fenn's safety and function until the delirium is resolved. These include

- reviewing vital signs, bowel and bladder records, sleep patterns, and medications.
- assessing his pain level.
- implementing fall-prevention measures.
- keeping his glasses within his reach.
- activating the bed alarm.
- placing a sign nearby stating, "Stay in bed. Push the red button for help."
- placing the call button in his lap and moving him to a room that's closer to the nurses' station.
- inviting family to spend more time with him, especially during mealtimes.
- instructing aides to offer food and drink hourly.
- arranging activities that stimulate cognition and socialization, such as card games and visits from volunteers.

**Reassessment.** The CAM should be administered at predetermined intervals in order to identify any fluctuating or subtle signs of delirium. Assessment at every shift can track the patient's mental status over the course of hospitalization. A resolving delirium may indicate a patient's improvement, while a newly occurring delirium can be a sign of a new complication or the worsening of the underlying problem.

**The Confusion Assessment Method for the ICU (CAM-ICU)** allows the examiner to assess attention and disorganized thinking in nonverbal (ventilated) patients.<sup>13, 30, 31</sup> It assesses the same four features as the short CAM but incorporates nonverbal tasks such as picture recognition and yes-or-no logic questions.

**The specific method (SPEC).** Feature 1 reads "acute onset and fluctuating course." This is used to increase the certainty of the diagnosis, but some cases may be missed. Inouye suggests using this in a research setting. The diagnosis is "probable or definite delirium."<sup>3</sup>

**The sensitive method (SENS).** Feature 1 reads "acute onset or fluctuating course. This will detect as many cases of delirium as possible, and is probably more practical in the clinical setting when the CAM is being used as a screening tool. The diagnosis is "possible or probable delirium."<sup>3</sup>

**CAM and the telephone.** This is the standard CAM used over the phone.<sup>29</sup> Observation is not possible. Researchers assessed 41 patients by telephone and followed up with face-to-face assessment. Eight patients were diagnosed with delirium after the phone assessment; this diagnosis was confirmed in six of these patients upon personal interview. None of the 33 patients who tested negative for delirium by phone were found to have delirium upon face-to-face assessment.

### OTHER CONSIDERATIONS

If a translator is used, ask that person to translate the patient's responses literally, not by interpretation. Family members may have trouble doing this; therefore, whenever possible, a translator should be used who is not a relative or close friend.

**Training.** To improve accuracy in the use of the short CAM, nurses should be trained.<sup>25, 26</sup> In a study of 25 nurses, Lacko and colleagues found that those trained in the use of the short CAM along with a brief but formal cognitive assessment were able to improve their identification of delirium significantly.<sup>25</sup> Tabet and colleagues found that formal presentations, group discussions, and one-on-one teaching with staff helped reduce the prevalence of delirium and improved detection.<sup>27</sup>

**Translations.** The CAM has been translated into six languages. It has also been adapted for use in the ICU,<sup>13</sup> in the ED,<sup>28</sup> and over the telephone.<sup>29</sup> (See *Versions of the CAM*, above.)

### COMMUNICATING THE RESULTS

When a nurse identifies delirium using the CAM, other team members must be made aware of it immediately; the cause may be a new complication requiring immediate treatment. Patients who remain delirious from shift to shift must be discussed in rounds so that the cause is treated and the patient's basic needs—nutrition, hydration, comfort, mobility, elimination, and safety—are continually met.

Delirium can be very stressful to families, who need explanations of its causes and projected course. Family members' help can be enlisted in promoting safety, calm, and normalcy until underlying causes are treated and the delirium resolves. They can bring





### Watch It!

Go to <http://links.lww.com/A209> to watch a nurse use the Confusion Assessment Method to screen for delirium in a hospitalized patient and discuss how to administer it and interpret results. Then watch the health care team plan preventive strategies. The video also covers screening for delirium when it's superimposed on dementia, a topic that will be discussed in the January issue of *AJN*.

View this video in its entirety and then apply for CE credit at [www.nursingcenter.com/AJNolderadults](http://www.nursingcenter.com/AJNolderadults). Click on the *How to Try This* series link. All videos are free and in a downloadable format (not streaming video) that requires Windows Media Player.

familiar items to the patient, sit with the patient during procedures, reminisce, reassure the patient of her or his safety, and encourage the patient to eat and drink. Some patients with delirium will recognize that their thought processes are faulty, and they should be told that this is temporary.

**Mr. Fenn, continued.** Testing reveals that he has a urinary tract infection, which is treated with an antibiotic and discontinuation of the urinary catheter. Both the hydromorphone and methocarbamol are discontinued, and he remains comfortable with acetaminophen 650 mg every six hours. Within 24 hours of the new interventions, Mr. Fenn's delirium begins to clear. He undergoes surgery without complication and without recurrence of delirium. His mental status returns to baseline within 24 hours of the surgery. He begins walking on his first postoperative day and is discharged to a subacute rehabilitation facility on his third day. His discharge paperwork notes the episode of delirium, which clinicians believe to have been caused by a combination of hydromorphone, methocarbamol, and a urinary tract infection. After two weeks, he returns home with a prescription for home care services. Within three months of his accident he is living independently again.



#### CONSIDER THIS

**What is the evidence that clinicians can rely on the short CAM to identify patients experiencing delirium?** The CAM is widely used in a variety of clinical settings, including the ED.<sup>32</sup> In general, it has been found to be a valid tool for screening for delirium, with a high degree of sensitivity and specificity, while being easy to administer.

- **Reliability.** The reliability and validity of the short CAM depend on the training of those administering it. In one study, interrater reliability was 84% to 100%.<sup>4</sup>
- **Validity.** Studies done to assess the validity of the

CAM vary according to how the tool is administered (with or without formal cognitive testing), the method of scoring, who is administering it, and whether the tester was trained in the use of the tool.<sup>19, 26, 33</sup>

- **Sensitivity.** In one study using the short CAM, 86% of patients were correctly identified as having delirium.<sup>32</sup>
- **Specificity.** Using the short CAM, 90% to 100% of patients without delirium were correctly identified.<sup>4, 32</sup>

For further discussion of the studies on the psychometric properties of the CAM and on telephone and ICU versions of the tool, as well as a comparison of delirium-assessment tools, go to <http://links.lww.com/A333> and <http://links.lww.com/A332>.  

*Christine M. Waszynski is a geriatric NP, Division of Geriatric Medicine, Hartford Hospital in Hartford, CT. Contact author: [cwaszyn@harthosp.org](mailto:cwaszyn@harthosp.org). The author has no significant ties, financial or otherwise, to any company that might have an interest in the publication of this educational activity.*

*How to Try This is a three-year project funded by a grant from the John A. Hartford Foundation to the Hartford Institute for Geriatric Nursing at New York University's College of Nursing in collaboration with AJN. This initiative promotes the Hartford Institute's geriatric assessment tools, Try This: Best Practices in Nursing Care to Older Adults: [www.hartfordign.org/trythis](http://www.hartfordign.org/trythis). The series will include articles and corresponding videos, all of which will be available for free online at [www.nursingcenter.com/AJNolderadults](http://www.nursingcenter.com/AJNolderadults). Nancy A. Stotts, EdD, RN, FAAN ([nancy.stotts@nursing.ucsf.edu](mailto:nancy.stotts@nursing.ucsf.edu)), and Sherry A. Greenberg, MSN, APRN, BC, GNP ([sherry@familygreenberg.com](mailto:sherry@familygreenberg.com)), are coeditors of the print series. The articles and videos are to be used for educational purposes only. The CAM Diagnostic Algorithm is © 2003 Sharon K. Inouye, MD, MPH.*

*Routine use of a Try This tool may require formal review and approval by your employer.*

#### REFERENCES

1. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-III-R*. 3rd ed., rev. Washington, DC: The Association; 1987.
2. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. 4th ed., text revision. Washington, DC: The Association; 2000.
3. Inouye SK. *The confusion assessment method (CAM): training manual and coding guide*. New Haven, CT: Yale University School of Medicine; 2003 Feb. <http://elderlife.med.yale.edu/pdf/The%20Confusion%20Assessment%20Method.pdf>.
4. Inouye SK, et al. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. *Ann Intern Med* 1990;113(12):941-8.
5. Inouye SK. The dilemma of delirium: clinical and research controversies regarding diagnosis and evaluation of delirium in hospitalized elderly medical patients. *Am J Med* 1994; 97(3):278-88.
6. Bruce AJ, et al. The incidence of delirium associated with orthopedic surgery: a meta-analytic review. *Int Psychogeriatr* 2007;19(2):197-214.
7. Elie M, et al. Prevalence and detection of delirium in elderly emergency department patients. *CMAJ* 2000;163(8):977-81.
8. Inouye SK, Charpentier PA. Precipitating factors for delirium in hospitalized elderly persons. Predictive model and interrelationship with baseline vulnerability. *JAMA* 1996;275(11): 852-7.

9. Camus V, et al. Etiologic and outcome profiles in hypoactive and hyperactive subtypes of delirium. *J Geriatr Psychiatry Neurol* 2000;13(1):38-42.
10. Elie M, et al. Delirium risk factors in elderly hospitalized patients. *J Gen Intern Med* 1998;13(3):204-12.
11. Dyer CB, et al. Postoperative delirium. A review of 80 primary data-collection studies. *Arch Intern Med* 1995;155(5):461-5.
12. Balas MC, et al. Delirium in older patients in surgical intensive care units. *J Nurs Scholarsh* 2007;39(2):147-54.
13. Ely EW, et al. Evaluation of delirium in critically ill patients: validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). *Crit Care Med* 2001; 29(7):1370-9.
14. Casarett DJ, Inouye SK. Diagnosis and management of delirium near the end of life. *Ann Intern Med* 2001;135(1):32-40.
15. McCusker J, et al. Delirium predicts 12-month mortality. *Arch Intern Med* 2002;162(4):457-63.
16. Breitbart W, et al. The delirium experience: delirium recall and delirium-related distress in hospitalized patients with cancer, their spouses/caregivers, and their nurses. *Psychosomatics* 2002;43(3):183-94.
17. Inouye SK. Delirium in older persons. *N Engl J Med* 2006; 354(11):1157-65.
18. Schuurmans MJ, et al. Early recognition of delirium: review of the literature. *J Clin Nurs* 2001;10(6):721-9.
19. Inouye SK, et al. Nurses' recognition of delirium and its symptoms: comparison of nurse and researcher ratings. *Arch Intern Med* 2001;161(20):2467-73.
20. Inouye SK, et al. A multicomponent intervention to prevent delirium in hospitalized older patients. *N Engl J Med* 1999; 340(9):669-76.
21. Milisen K, et al. A nurse-led interdisciplinary intervention program for delirium in elderly hip-fracture patients. *J Am Geriatr Soc* 2001;49(5):523-32.
22. Naughton BJ, et al. A multifactorial intervention to reduce prevalence of delirium and shorten hospital length of stay. *J Am Geriatr Soc* 2005;53(1):18-23.
23. Rockwood K, et al. Increasing the recognition of delirium in elderly patients. *J Am Geriatr Soc* 1994;42(3):252-6.
24. Katzman R, et al. Validation of a short Orientation-Memory-Concentration Test of cognitive impairment. *Am J Psychiatry* 1983;140(6):734-9.
25. Lacko L, et al. Changing clinical practice through research: the case of delirium. *Clin Nurs Res* 1999;8(3):235-50.
26. Lemiengre J, et al. Detection of delirium by bedside nurses using the confusion assessment method. *J Am Geriatr Soc* 2006;54(4):685-9.
27. Tabet N, et al. An educational intervention can prevent delirium on acute medical wards. *Age Ageing* 2005;34(2): 152-6.
28. Lewis LM, et al. Unrecognized delirium in ED geriatric patients. *Am J Emerg Med* 1995;13(2):142-5.
29. Marcantonio ER, et al. Diagnosing delirium by telephone. *J Gen Intern Med* 1998;13(9):621-3.
30. Ely EW, et al. Delirium in mechanically ventilated patients: validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU). *JAMA* 2001;286(21): 2703-10.
31. McNicoll L, et al. Detection of delirium in the intensive care unit: comparison of confusion assessment method for the intensive care unit with confusion assessment method ratings. *J Am Geriatr Soc* 2005;53(3):495-500.
32. Monette J, et al. Evaluation of the Confusion Assessment Method (CAM) as a screening tool for delirium in the emergency room. *Gen Hosp Psychiatry* 2001;23(1):20-5.
33. Laurila JV, et al. Confusion assessment method in the diagnostics of delirium among aged hospital patients: would it serve better in screening than as a diagnostic instrument? *Int J Geriatr Psychiatry* 2002;17(12):1112-9.



**2** HOURS

Continuing Education

## EARN CE CREDIT ONLINE

Go to [www.nursingcenter.com/CE/ajn](http://www.nursingcenter.com/CE/ajn) and receive a certificate within minutes.

**GENERAL PURPOSES:** To present registered professional nurses with detailed guidelines for using the Confusion Assessment Method to screen for delirium.

**LEARNING OBJECTIVES:** After reading this article and taking the test on the next page, you will be able to

- identify the four features the Confusion Assessment Method (CAM) assesses.
- describe the administration and scoring of the CAM.
- outline the effectiveness and the outcomes of the CAM.

### TEST INSTRUCTIONS

To take the test online, go to our secure Web site at [www.nursingcenter.com/CE/ajn](http://www.nursingcenter.com/CE/ajn).

### To use the form provided in this issue,

- record your answers in the test answer section of the CE enrollment form between pages 48 and 49. Each question has only one correct answer. You may make copies of the form.
- complete the registration information and course evaluation. Mail the completed enrollment form and registration fee of \$19.95 to **Lippincott Williams and Wilkins CE Group**, 2710 Yorktowne Blvd., Brick, NJ 08723, by December 31, 2009. You will receive your certificate in four to six weeks. For faster service, include a fax number and we will fax your certificate within two business days of receiving your enrollment form. You will receive your CE certificate of earned contact hours and an answer key to review your results. There is no minimum passing grade.

### DISCOUNTS and CUSTOMER SERVICE

- Send two or more tests in any nursing journal published by Lippincott Williams and Wilkins (LWW) together, and deduct \$0.95 from the price of each test.
- We also offer CE accounts for hospitals and other health care facilities online at [www.nursingcenter.com](http://www.nursingcenter.com). Call (800) 787-8985 for details.

### PROVIDER ACCREDITATION

LWW, publisher of *AJN*, will award 2 contact hours for this continuing nursing education activity.

LWW is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

LWW is also an approved provider of continuing nursing education by the American Association of Critical-Care Nurses #00012278 (CERP category A), District of Columbia, Florida #FBN2454, and Iowa #75. LWW home study activities are classified for Texas nursing continuing education requirements as Type 1. This activity is also provider approved by the California Board of Registered Nursing, provider number CEP 11749, for 2 contact hours.

Your certificate is valid in all states.

**TEST CODE: AJNT05**