Teaching Staff Nurses the CAM-ICU for Delirium Screening

Leslie S. Nelson, MN

The confusion assessment method for the intensive care unit (CAM-ICU) is a tool for screening for delirium in ventilated patients that with proper training can be administered quickly by staff nurses in the ICU. Unrecognized delirium can have a range of negative consequences, and in the elderly patients, it may be the first sign of an acute illness that, if left untreated, could result in death. Appropriate and early recognition is therefore imperative. Training staff to use the CAM-ICU requires not only a basic understanding of delirium and a firm orientation to the tool’s features but also some preparatory decisions about tool usage and a defined approach to integrate the tool into the physical assessment process. Preparatory decisions include (1) how the tool will be used, (2) defining the process for identifying and recording baseline mental status, and (3) defining how documentation will occur. On the basis of the experience of teaching this tool to staff nurses, a 6-step process is explicated to facilitate integration: (1) putting it in context, (2) defining the features, (3) talking about tough cases, (4) doing the assessment, (5) documenting the assessment, and (6) continuing to discuss. Key words: CAM-ICU, delirium, RASS, teaching

NANCY is completing her physical assessment on Mr Jeffries, a 75-year-old man who is in the ICU, for pneumonia. He is currently intubated and on the ventilator and on IV antibiotics, has a central catheter, and is being tube-fed via a peg tube. In spite of being very ill, he has remained alert and oriented 3 times and cooperative with his care. Today, however, something is different. He is disoriented to place and time and has difficulty keeping his eyes open. What could be happening here?

Such cognitive changes may be casually attributed to “ICU syndrome,” which may be viewed as an “expected, inconsequential, complication of critical illness.” In fact, something else, of consequence, may be happening. The patient may be delirious, and unrecognized delirium can have negative consequences. In a review of research on delirium from 1990 to 2000, Schuurmans et al reported death, prolonged stay in the hospital, functional decline, and new nursing home placement after admission, as independent outcomes of delirium.

The confusion assessment method for the intensive care unit (CAM-ICU) is a tool that can be used by nurses to quickly screen for delirium in mechanically ventilated patients. Although the tool has been described as “easy to administer and requiring minimal training,” implementing the tool requires not only a basic understanding of delirium and firm orientation to the tool’s features but also some preparatory decisions about tool usage and a defined approach to meld the tool into the current physical assessment process. It is important that the screen be viewed as integral part of the assessment process and not simply as something that has been added on. After defining delirium and the key features
of the CAM-ICU, this article identifies the necessary preparatory steps for tool implementation and a 6-step process that evolved out of the experience of teaching nurses how to use this tool.

DELIURIUM DEFINED

Delirium is a disturbance of consciousness with inattention accompanied by a change in cognition or by a perceptual disturbance, such as visual hallucinations, which comes on suddenly and fluctuates over time.\textsuperscript{2–4} There are 3 subtypes: hyperactive, hypoactive, and mixed. In the hyperactive state, the patient is restless and combative, may pull on tubes, and has an increased reaction to stimuli. In the hypoactive state, the patient is lethargic, speech or movements may be slowed, and the patient may appear apathetic.\textsuperscript{4} In the mixed type, patients fluctuate between the 2 states. In non-ICU settings, the prevalence of the subtypes is 30\% for hyperactive, 24\% for hypoactive, and 46\% for mixed,\textsuperscript{3} with the hypoactive form being more common in older persons.\textsuperscript{5}

A key feature of delirium is that this is a preventable or treatable situation.\textsuperscript{5} In a study by Inouye and Charpentier\textsuperscript{6} of elderly medical patients, immobility, malnutrition, more than 3 medications added, use of a bladder catheter, and any treatment or procedure event during hospitalization were independent predicting factors for delirium development. In elderly patients, delirium can sometimes be the first sign of an acute physical illness and, if left untreated, could result in death.\textsuperscript{4} There is no doubt that patients in the ICU are at high risk to develop delirium. Chemical imbalances arise from the disease processes that bring these patients into the ICU and from medications such as sedatives, opiates, and other psychoactive agents used to calm and to provide pain relief.

THE CAM-ICU TOOL

History

The CAM-ICU is a nonverbal adaptation of the confusion assessment method (CAM), a tool widely used for diagnosing delirium and known for its ease of administration, speed, reliability, and validity.\textsuperscript{7} The assessment component was changed to allow use in nonverbal, mechanically ventilated patients by bedside clinicians such as nurses and physicians.\textsuperscript{3} The tool is cited by the American Psychiatry Association\textsuperscript{8} for its sensitivity to delirium and can be used with difficult populations of patients including patients with dementia, patients older than 65 years, and those with a very high severity of illness.\textsuperscript{5}

Overview of the tool’s four features

Four individual features are assessed and then a final determination is made whether delirium is present or absent: feature 1, change in baseline mental status or fluctuation in last 24 hours; feature 2, inattention; feature 3, disorganized thinking; and feature 4, altered level of consciousness.\textsuperscript{5,9} Delirium is present when both features 1 and 2 are positive and either feature 3 or feature 4 is positive.

Assessment begins with the Richmond Agitation and Sedation Scale (RASS), which is used to assess both sedation/agitation and feature 4, level of consciousness, at the same time.\textsuperscript{9} Earlier versions of the tool had a different scale for assessing level of consciousness.\textsuperscript{3,7} RASS scores range from +4 to −5. A positive score indicates agitation and a negative score indicates sedation, with 0 being alert and calm. Any score other than 0 is a positive value for feature 4. If the patient is not rousable (−5) or responding only to physical stimulation (−4), the delirium assessment cannot be completed at this time; otherwise, the assessment then proceeds through the other features.

Feature 1 (mental status) has 2 components: (1) assessment of baseline mental status and (2) fluctuation in mental status over the last 24 hours. Baseline mental status refers to what the patient was like at home or in the nursing home before he or she got ill.\textsuperscript{9} A “normal” baseline is one commensurate with a Glasgow Coma Scale (GCS) score of 15 and a
RASS = 0. Fluctuation is a change in the RASS or GCS over the last 24 hours. If either one is tested positive, the feature is positive.

Feature 2 (inattention) can be completed using an auditory or a visual test (not both). For the auditory test, the nurse slowly says a series of letters, SAVEAHAART, and asks the patient to squeeze only on the A’s. The visual test is a series of 5 pictures of common objects that must be remembered and identified from a series of 10 pictures shown next. For each picture, the nurse provides a verbal cue to accompany the visual cue, such as “This is a ___(name of object)” and in the final test of 10, says “Did you see a ___(name of object), before?” Scoring is accomplished by subtracting the number of incorrect responses from 10 (a perfect score). A score less than 8 is positive for this feature.

Feature 3 (disorganized thinking) consists of 4 simple “yes” or “no” questions and a gesture or command that must be completed. To the person who is orientated and thinking clearly, these questions may appear “too simple.” Three of the 4 questions are quite straightforward. In completing the delirium assessment on patients, however, one question—Does 1 pound weigh more than 2 pounds?—seems to cause the person with disorganized thinking to pause or falter. This question requires more complex thinking processes—a comparison must be made and then a decision reached. A score of less than 4 is considered positive for this feature. Once the tests of relevant features are complete, the final score is tabulated and delirium is considered present if features 1 and 2 plus feature 3 or 4 are positive.

### Table 1. Determining delirium: A targeted approach

<table>
<thead>
<tr>
<th>Feature 1</th>
<th>Feature 2</th>
<th>Feature 3</th>
<th>Feature 4</th>
<th>Delirium screen results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>NT(^a)</td>
<td>NT</td>
<td>Negative</td>
<td>Absent</td>
</tr>
<tr>
<td>Positive</td>
<td>Negative</td>
<td>NT</td>
<td>Negative</td>
<td>Absent</td>
</tr>
<tr>
<td>Positive</td>
<td>Positive</td>
<td>NT</td>
<td>Positive</td>
<td>Present</td>
</tr>
</tbody>
</table>

\(^a\) Feature not tested.

### THE TEACHING APPROACH

#### Preparatory decisions

Three decisions need to be made before using this tool to facilitate its use: (1) how will the tool be used, (2) what is the process for determining and recording baseline mental status, and (3) how will documentation occur?

#### How will the tool be used?

Is the intent to complete all features on all patients and then determine whether delirium is present or absent—a total approach? Or, is the goal to simply assess for the presence of delirium—more of a targeted approach? If so, then stop the assessment once the requirement for determining delirium has been met. See Table 1 for situations in which completion of all features is not required for determination. One will note that features 1 and 4 are always completed. This is because these features are part of a routine neurological assessment.

#### Process for determining baseline mental status

This is a part of the admission process and, given the illness of the patient, the family will likely be the source of the information. What was this person like cognitively at home or in the nursing home, before becoming ill? What if the patient has suffered a hypoxic brain injury or a major neurological event? They may never return to the preillness baseline. The interdisciplinary team will then need to reassess this patient and establish the new baseline.
Table 2. Documenting the delirium screen: A detailed approach example

<table>
<thead>
<tr>
<th>Feature 1</th>
<th>Baseline/ fluctuation</th>
<th>Feature 2</th>
<th>Score</th>
<th>Feature 3</th>
<th>Score</th>
<th>Feature 4</th>
<th>Score</th>
<th>Delirium screen results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Negative/positive</td>
<td>Negative</td>
<td>8/10</td>
<td>Negative</td>
<td>5/5</td>
<td>Negative</td>
<td>0</td>
<td>Absent</td>
</tr>
</tbody>
</table>

Additional columns could be added to include the date and time of the screen and the initials of the staff completing the screen. For feature 1, baseline refers to the assessment of the baseline mental status and fluctuation refers to any change in the RASS or GCS in the last 24 hours.

Documentation of this baseline could then be placed on the nursing kardex for all staff members to refer.

**How will documentation occur?**

Will documentation include the scoring and results for each feature (Table 2) or only whether delirium is present or absent? The advantage of recording all the features is that this will allow assessment that the tool is being completed properly. One hospital included both the features and final determination of delirium as present or absent in a revision of the 24-hour flow sheet (L. Nelson, personal knowledge). Others have just included the final determination in the nursing flow sheet documentation.3

The six steps

As the author worked with training staff nurses to use the CAM-ICU tool, teaching eventually settled into a pattern of 6 steps: (1) putting it in context, (2) defining the features, (3) talking about tough cases, (4) doing the assessment, (5) documenting the assessment, and (6) continuing to discuss.

**Putting it in context**

The tool is presented as an extension of neurological assessment done every shift. In fact, nurses have always assessed the agitation or sedation level of patients, as they walk in the room. The RASS scale simply provides a common language to quantify that assessment. Feature 1 is also not new. This is the beginning of the neurological examination and of proper patient identification. Can the patient say his or her name and birth date? Does he or she know where he or she is? What has the patient been like—any change? What has been hidden—it is a window into the mind, which helps quantify the term *confusion*. In completing the tool, each feature is completed first—this is the assessment. Then a decision is made regarding the conclusion, that is, whether delirium is present or absent in the given patient. The delirium assessment is likened to the process of completing respiratory assessment: one first assesses the lungs and then documents lung sounds. A final part of the context is defining how each feature impacts the final determination of delirium (for delirium to be present, features 1 and 2 must be positive plus feature 3 or 4); the frequency of the assessment (eg, every shift and as needed), and whether a total or targeted approach is required.

**Defining the features**

Teaching of the features begins with the RASS and then proceeds in order starting with feature 1. Staff members are orientated to the location of the baseline mental status and of their responsibility to obtain this information on admission, then they practice feature 2, the SAVEHAART and the pictures with each other as well as the “simple questions” and gesture for feature 3. There are 2 sets of pictures (A & B) and 2 sets of questions...
Teaching Staff Nurses the CAM-ICU for Delirium Screening

(A & B). One set is generally designated for the day shift and the other for night shift.

Talking about tough cases

Staff members are made aware that not all patients can be assessed for delirium using this tool. Patients who cannot be included are those whose RASS score is –4 or –5. Other patients, like the patient with traumatic brain injury or a stroke, require a reassessment of their baseline mental status so the assessment can proceed in a consistent fashion. What about the patient with Alzheimer disease? Again, the answer is to establish through discussion with family/prior caregivers and with members of the interdisciplinary team the baseline and compare to that.

Doing the assessment

Staff members complete the delirium screen monitored by the educator or by a staff trainer, followed by debriefing and remediation if required. Before staff members begin the screen, the baseline mental status is identified by checking the kardex. In the event that a baseline mental status cannot be established at this time, fluctuations in mental status alone will be used to assess feature 1.

A review of delirium screens, the Glasgow Coma Scale, and the RASS over the last 24 hours serve as the base for comparison. Staff members are taught to incorporate the screen in the physical assessment. As staff members approach the bedside, arousal of the patient by voice alone is attempted to begin assessment of the RASS (sedation or agitation, and feature 4). Next, patient identification is completed, which begins assessment of feature 1 (mental status). When a staff member tests the patient’s grips and ascertains that they can squeeze and release, testing of feature 2, squeezing to SAVEAHAART, is initiated. If they cannot squeeze and release, the use of the pictures is attempted instead. This is then followed by feature 3, the 4 questions and the gesture or command, and the delirium screen is complete.

Documenting the assessment

At the end of the screen, 1 of 3 outcomes is possible: delirium is present, delirium is absent, or the patient could not be assessed by the delirium tool, at this time. Again, patients who cannot be assessed are those with a RASS of –5 (unrousable) or –4 (rousable only to touch). Staff members are also made aware that a change to a positive delirium score should prompt a search for causes and requires physician notification.

Continuing to discuss

While technically the screen is not difficult to complete, understanding how to score patient variations can initially be challenging. Having specific guidelines and written examples of how to document variations is helpful. Here is an example: The patient demonstrates that he or she physically can squeeze, but when the SAVEAHAART is attempted (squeeze only on the A’s), he or she does not squeeze at all and keeps falling asleep, despite attempts to arouse. His or her RASS is –3 (opens eyes to voice briefly but does not focus on your face). In this instance, for feature 2, he or she would be scored as 0 of 10. It appears unlikely that not squeezing...
on the non-A's was a conscious decision. From
the time he stopped attending, he received no
credit for his inaction. The *Confusion Assess-
ment Method for the ICU (CAM-ICU) Train-
ing Manual* from Vanderbilt University has
a “Frequently Asked Question” section and
is a valuable resource for dealing with these
variations.9 As staff members are learning this
tool, brief inservices with mock patient sce-
narios can be helpful. Staff members are en-
couraged to discuss scoring questions that
arise in subsequent screens with their peers
and/or educators as needed.

**WHAT ABOUT MR JEFFRIES?**

The nurse assesses Mr Jeffries, using the
CAM-ICU tool. He briefly opens his eyes to
voice and looks at the nurse, but then closes
his eyes again. His RASS is therefore –2. Given
that anything other than zero is positive for
feature 4, Mr Jeffries is tested positive for
this feature. The nurse proceeds to assess
feature 1. Mr Jeffries' baseline mental status is
alert and orientated; however, today he is con-
fused as to time and place. While fluctuation
in mental status in the last 24 hours is also
evident, the change from his baseline status
alone is sufficient to make the screen positive
for feature 1. His score on feature 2, using the
SAVEAHAART, is 3 of 10, which is tested pos-
itive for this feature. The nurse has to repeat
the questions a couple of times for feature
3. Mr Jeffries manages to answer 2 questions
correctly but has difficulty completing the
gesture. His score of 2 of 5 is tested positive
for this feature. For Mr Jeffries, all features of
the screen are tested positive. The nurse cor-
correctly concludes that for Mr Jeffries, delirium
is present. If the nurse had been looking only
for evidence of delirium, completion of fea-
ture 3 was not needed. Feature 4 plus feature
1 and Feature 2 were already positive, which
is enough to indicate delirium. The decision
to complete all features may be a requirement
of the facility or may be an individual nurse’s
decision. The nurse has not finished per-
forming the test. A positive delirium screen
requires action, in the same manner that a sig-
nificant change in other physical parameters
requires action. Completion of the CAM-ICU
tool is only the beginning. Documentation of
Mr Jeffries' delirium screen is seen in Table 3.

**PUTTING IT ALL TOGETHER**

The CAM-ICU tool is designed to allow
nurses in the ICU to screen ventilated pa-
tients for delirium. The features of the tool
can be easily taught and the tool once under-
stood requires very little time for administra-
tion. To be successful in implementing this
tool, decisions about how the tool will used
(a total approach vs a targeted approach),
the process for determining and recording
baseline mental status, and the documenta-
tion requirements must preface implementa-
tion. The challenge of teaching nurses is to
assist them to embrace the tool as part of
their routine assessment, rather than as some-
thing to be added on to existing procedures.
The 6-step approach outlined in this article is
one approach to educating staff nurses to that
end.

**REFERENCES**

1. Girard TD, Pandharipande PP, Ely EW. Delirium in the
2. Schuurmans MJ, Duursma SA, Shortridge-Baggett LM.
   Early recognition of delirium: review of the literature.
3. Truman B, Ely EW. Monitoring delirium in criti-
cally ill patients. Using the confusion assessment
   method for the intensive care unit. *Crit Care Nurse*.
6. Inouye SK, Charpentier PA. Precipitating factors for
   delirium in hospitalized elderly persons: predictive
   model and interrelationship with baseline vulnerabil-
7. Ely EW, Inouye SK, Bernard GR, et al. Delirium in

