

# **Brief Confusion Assessment Method (bCAM)**

**Instruction Manual v1  
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**For videos about the bCAM and information about other delirium  
assessments, please visit:**

**[www.eddelirium.org](http://www.eddelirium.org)**

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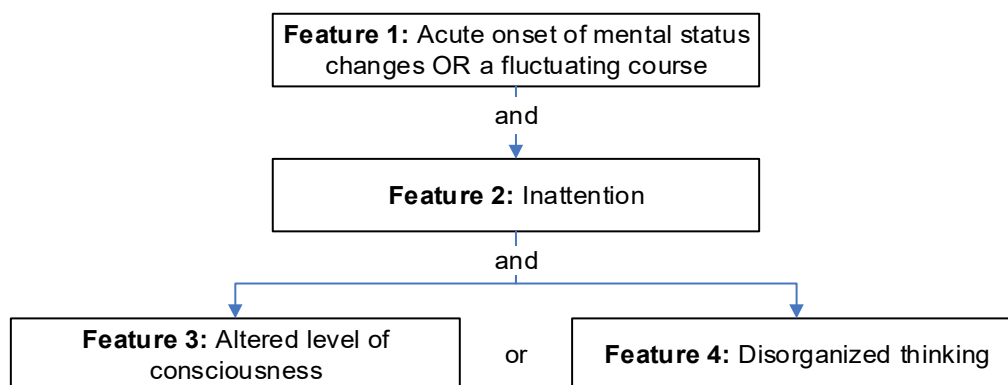
The bCAM uses the Confusion Assessment Method Algorithm: Inouye SK, et al. *Ann Intern Med.* 1990; 113: 941-948. Confusion Assessment Method. Copyright ©2003, Hospital Elder Life Program, LLC.

## 1. Overview

Delirium is defined as a disturbance in attention and awareness that is accompanied by an acute change (hours to days) in cognition that cannot be better accounted for by a preexisting or evolving neurocognitive disorder such as dementia.<sup>1</sup> Delirium is a form of acute brain dysfunction that affects up to 10% of older emergency department (ED) patients<sup>2,3</sup> and up to 25% of older, non-critically-ill hospitalized patients.<sup>4-9</sup> Delirium in the ED is also a potential safety concern. Patients with delirium are unlikely to provide an accurate history of why they are the ED, which may lead to inadequate diagnostic workups and inappropriate dispositions.<sup>10,11</sup> If discharged, they may not be able to comprehend their discharge instructions,<sup>10</sup> which may lead to non-compliance.

Delirium is a harbinger of death,<sup>12-14</sup> and for those who survive, it has a profound impact on the older patient's quality of life. Delirium has been associated with accelerated cognitive and functional decline,<sup>6,9,15-18</sup> which can lead to subsequent loss of independence and nursing home placement.<sup>5,9</sup> Hospitalized patients with delirium have a higher likelihood of developing urinary incontinence and decubitus ulcers,<sup>8,19-21</sup> which can then lead to prolonged hospital length of stays and increased health care costs.<sup>6,8,22,23</sup> Once discharged from the hospital, delirious patients are more likely to be rehospitalized compared with non-delirious patients, further adding to the financial burden.<sup>5,8,9,24</sup>

Unfortunately, delirium is missed in up to 80% of older patients in the ED<sup>2,3,25-29</sup> and hospital settings.<sup>30-34</sup> This is because delirium is not routinely screened for in most clinical settings. In an effort to feasibly improve delirium recognition in busy clinical environments such as the ED, the Brief Confusion Assessment Method (bCAM) was developed. The bCAM is a brief delirium screening tool that is a modification of the Confusion Assessment Method of the Intensive Care Unit (CAM-ICU).<sup>35</sup> Both the bCAM and CAM-ICU use the Confusion Assessment Method algorithm developed by Inouye et al.<sup>36</sup> The bCAM (and CAM-ICU) incorporates objective measures with prespecified cutoffs to test for inattention and disorganized thinking. Like the CAM and CAM-ICU, the bCAM has four features: (1) altered mental status or fluctuating course, (2) inattention, (3) altered level of consciousness, and (4) disorganized thinking. For a patient to meet criteria for delirium, a patient must be positive for features 1 and 2 and positive for either feature 3 or 4 (**Figure 1**).<sup>2,3</sup>

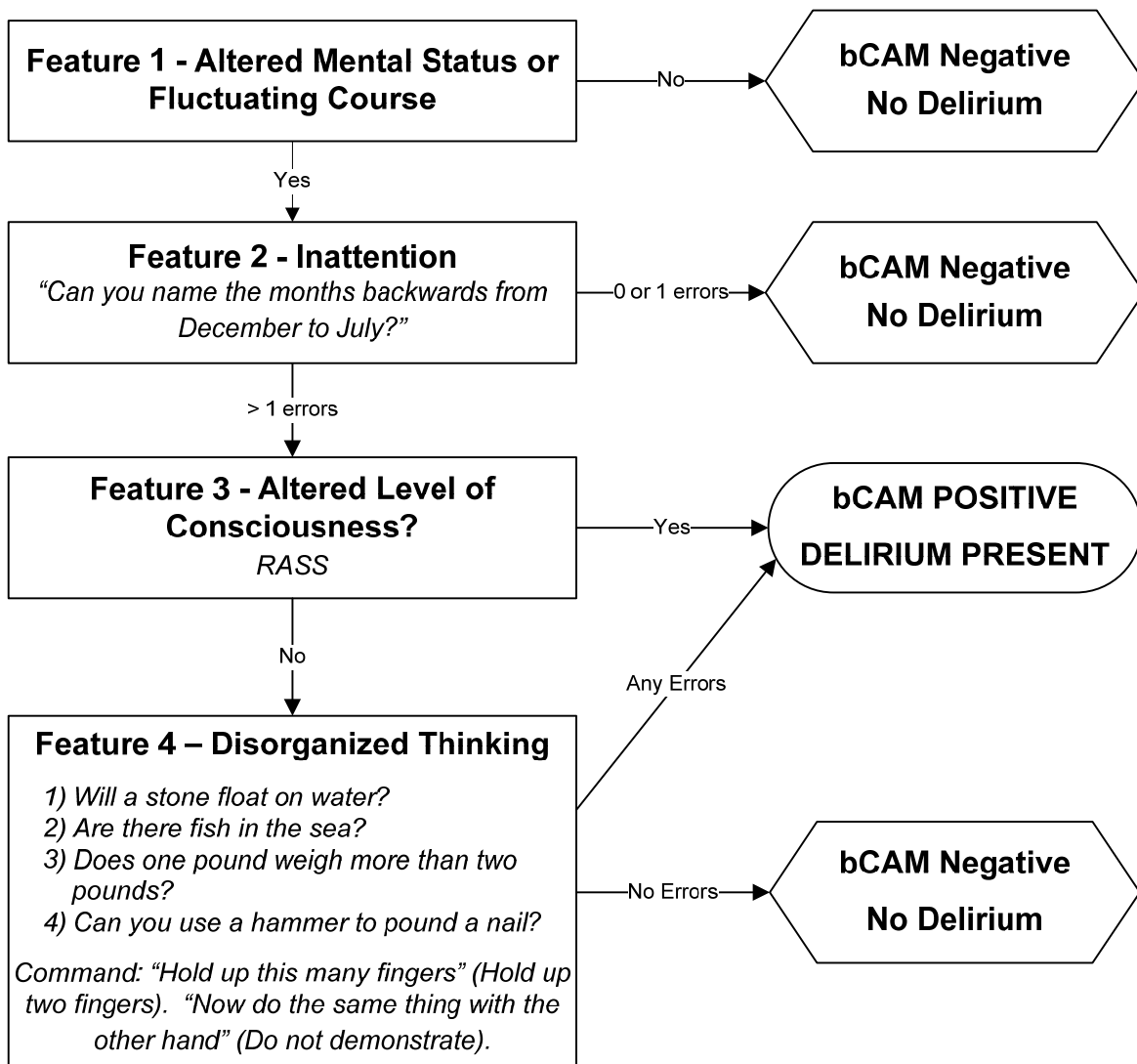


**Figure 1.** The four features of the Brief Confusion Assessment Method (bCAM). The bCAM is a modification of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU).<sup>35</sup> The bCAM and CAM-ICU use the CAM algorithm from: Inouye SK et al. *Ann Intern Med.* 1990; 113: 941-948.<sup>36</sup> Confusion Assessment Method. Copyright ©2003, Hospital Elder Life Program, LLC.

## 2. Performing the Brief Confusion Assessment Method

Performing all four features of the bCAM usually takes less than 2 minutes to perform, especially if a proxy (family member or caregiver that knows the patient well) is present. The bCAM worksheet can be seen at the end of this manual. Performing the bCAM algorithmically (**Figure 2**) allows for early stoppage, and as result, it can often be performed in less than one minute in the majority of older patients. In older ED patients, the bCAM is 84% sensitive and 96% specific for delirium when performed by a physician, and 78% sensitive and 97% specific when performed by a non-physician (paramedics, college graduates, EMT basics).<sup>37</sup> The sensitivities and specificities are similar for older patients who are admitted to the hospital.<sup>37</sup>

Delirium can only be assessed for in patients who are arousable to verbal stimuli. If you can only get the patient to open their eyes to painful stimuli or if the patient does not respond to pain, then the patient is considered to be in a stupor or coma. Stupor and coma are the most severe forms of acute brain dysfunction and are considered distinct entities from delirium. We cannot assess for delirium when patients are in these states. Because comatose or stuporous patients frequently transition into delirium, they should be reevaluated for delirium an hour or two later.



**Figure 2.** The Brief Confusion Assessment Method algorithm allows for early stoppage.

### 3. Detailed Procedures for Each bCAM Feature

#### **a) Feature 1: Acute change in mental status or fluctuating course**

Either an acute change in mental status or fluctuating course needs to be present for a patient to be feature 1 positive. In the ED, this is typically obtained from a family member or caregiver. If a proxy is not readily available, then feature 1 can be determined after features 2, 3, and 4 of the bCAM have been performed. The determination of feature 1 (altered mental status or fluctuating course) obviously becomes much less important if feature 2 (inattention), feature 3 (altered level of consciousness), and feature 4 (disorganized thinking) are negative. However, if the patient is feature 2 positive (inattention) and either feature 3 (altered level of consciousness) or feature 4 (disorganized thinking) is positive, then determining the presence or absence of feature 1 becomes more important.

- 1) To determine if the patient has an acute change in mental status or fluctuating course when there is a proxy present:
  - a. Ask the proxy: “Has the patient been more confused to you lately?” A positive response indicates that the patient is feature 1 positive.
  - b. Alternatively, to specifically determine altered mental status, ask the proxy: “Is the patient acting normally to you right now or does he/she seem more confused than usual? If the patient is not acting normally or is more confused than usual, then the patient likely has altered mental status and is feature 1 positive.
  - c. To determine a fluctuating course, several questions can be asked: “Have you noticed any fluctuations in the patient’s mental status where he/she appears to be more confused at some moments and less confused at other moments throughout the course of the day?” A positive response indicates that the patient has a fluctuating course, and as a result, the patient is feature 1 positive.
  - d. Remember, a patient can have either altered mental status or a fluctuating course to be positive for feature 1.
  
- 2) If a proxy is not present in the ED:
  - a. You can call a person who knows the patient well (i.e. family member or caregiver) by phone to determine feature 1. If they have not seen the patient for some time, they may still be useful in helping to establish what the patient’s baseline mental status is.
  - b. If the patient is from a skilled nursing facility, then the patient’s nurse at that facility can be contacted. You can also review the transfer documents to see if there is any documentation of altered mental status.
  - c. If available, review the medical records to establish the patient’s baseline mental status. If the patient seems to be different from what is stated in the medical record, then assume the patient has an acute change in mental status.
  - d. If transported by ambulance, you can use the ambulance run sheet to see if there was any documentation of altered mental status.
  - e. You can also call the patient’s primary care provider to establish what the patient’s mental status is.
  - f. If the patient is feature 2 (inattention) positive and either feature 3 (altered level of consciousness) or feature 4 (disorganized thinking) is positive, but you are still unable to determine feature 1 (altered mental status/fluctuating course), it is always safer to assume that feature 1 is positive until proven otherwise. Delirium is considered a medical and psychiatric emergency.
  - g. If a patient lives at home alone and is clearly altered to you, it is probably safe to assume that the patient has altered mental status and is feature 1 positive.
  
- 3) Determining feature 1 for experienced raters:
  - a. A delirious patient’s mental status can often fluctuate during the patient interview. If such fluctuations are noted, then the patient is likely feature 1 positive. Fluctuations can also occur

over several hours. For example, a patient may be mildly confused when you initially evaluated the patient only to be more confused several hours later. This patient is likely having a fluctuation in mental status and would be considered feature 1 positive.

### **b) Feature 2: Inattention**

Inattention is considered a cardinal feature of delirium.<sup>38</sup> Asking the patient to recite the months backwards from December to July is a simple and brief method to assess for inattention. Most patients (delirious and not delirious) should be able to recite the months forwards. However, reciting the months backwards requires concentration which can be impaired in patients with delirium. The following are the instructions for determining feature 2 (inattention) using the bCAM:

- 1) Have the patient recite the months backwards from December to July. Based upon our preliminary data, non-delirious patients should be able to recite the months backwards without stopping. As a result, we recommend that the task is stopped if there is a significant pause (>15 seconds) or if the patient perseverates on a specific month (i.e. “December, November, October.... October... October”) for a significant amount of time (>15 seconds). Similarly, if the patient keeps repeating a sequence of months (December, November, October.... December, November, October.... December...) for >15 seconds, then the task can be stopped.
- 2) Error Coding
  - a. Each missing month is assigned one error. A patient who recites “December, November, September, August, July” would be considered to have made one error since October was not recited.
  - b. If a patient switches two months (December, October, November, September, August, July) then this is counted as two errors since two of the months are in the incorrect order.
  - c.
- 3) A patient is considered to have inattention (feature 2 positive) if they make 2 or more errors.
- 4) If the patient refuses to recite the months backwards or is unable to perform this task, then the patient is considered to have made 6 errors and is feature 2 positive.
- 5) Determining feature 2 for experienced delirium raters: Reciting the months backwards from December to July is not 100% sensitive; some delirious patients will be able to perform this task perfectly. Inattention can also be observed during your assessment:
  - a. Patients who are easily distractible or have difficulty keeping track of what you say are likely inattentive.
  - b. If you frequently have to repeat your questions to the patient and he/she does not have a history hearing impairment, then the patient is likely inattentive.
  - c. Patients who fall asleep during your assessment are likely inattentive.

### **c) Feature 3: Altered Level of Consciousness**

Level of consciousness (or arousal) is the patient’s responsiveness to the environment and is determined by simply observing the patient during the bCAM assessment. The Richmond Agitation Sedation Scale (RASS, **Box 1**) is typically used to determine altered level of consciousness and ranges from -5 (comatose) to +4 (combative).<sup>39</sup> A RASS of 0 indicates normal level of consciousness. A RASS other than “0” indicates that the patient has altered level of consciousness and feature 3 is considered positive.

In most cases, the patient’s altered level of consciousness can be subtle where the patient can appear slightly sleepy as if he/she was up all night (RASS = -1) or fidgety as if he/she has ants in his/her pants (RASS = + 1).

| RASS | Description   |
|------|---|
| +4   | Overtly combative, violent, immediate danger to staff                                       |
| +3   | Very agitated, pulls or removes tube(s) or catheter(s); aggressive                          |
| +2   | Agitated, frequent non-purposeful movement  |
| +1   | Restless, anxious but movements not aggressive or vigorous                                  |
| 0    | Alert and calm  |
| -1   | Mildly drowsy, not fully alert, but has sustained awakening ( <b>&gt;10 seconds</b> )       |
| -2   | Moderate drowsy, briefly awakens with eye contact to <i>voice</i> ( <b>&lt;10 seconds</b> ) |
| -3   | Very drowsy, movement or eye opening to <i>voice</i> ( <b>but no eye contact</b> )          |
| -4*  | No response to voice, but movement or eye opening to <i>physical</i> stimulation            |
| -5*  | No response to <i>voice or physical</i> stimulation   |

**Box 1.** Richmond Agitation Sedation Scale (RASS). Note that a patient with a RASS of -1 or +1 can have subtle presentation. If the patient has a RASS of -4 or -5, then these patients are considered stuporous or comatose. These are the most severe forms of acute brain dysfunction and you cannot assess for delirium in these states.

The patient must respond to voice in order for you to diagnose delirium. If the patient has a RASS of -4 or -5, then these patients are considered to be in a stupor or coma which is the most severe form of acute brain dysfunction. In these states, a patient cannot be assessed for delirium. Because stuporous and comatose patients frequently transition into delirium, these patients should be reassessed for delirium several hours later.

**d) Feature 4: Disorganized Thinking**

Disorganized thinking is assessed for by asking four yes/no questions and a command (**Box 2**). Either set A or B can be performed. If the patient makes any errors, then the patient is considered to have disorganized thinking (feature 4 positive). If the patient makes incomprehensible sounds or does not attempt to answer the questions, then the patient is also considered to be feature 4 positive.

| Feature 4: Disorganized Thinking   |  |
|--|--|
| (Use either Set A or Set B, alternate on consecutive days if necessary):   |  |
| <b>Set A</b>   | <b>Set B</b>                           |
| 1. Will a stone float on water?  | 1. Will a leaf float on water?         |
| 2. Are there fish in the sea?  | 2. Are there elephants in the sea?     |
| 3. Does one pound weigh more than than two pounds?   | 3. Do two pounds weigh more one pound? |
| 4. Can you use a hammer to pound a nail?   | 4. Can you use a hammer to cut wood?   |
| Command: Say to patient: “Hold up this many fingers” (Examiner holds two fingers in front of patient). “Now do the same thing with the other hand” (Do not demonstrate). If patient is unable to move both arms, for the second part of the command ask patient “Add one more finger”. |  |

**Box 2.** Assessing for feature 4 (disorganized thinking).

Feature 4 for Experienced Raters: The yes/no questions and command is not 100% sensitive for disorganized thinking. Disorganized thinking can be observed during these assessment. If a patient’s speech is nonsensical, or he/she displays tangential thoughts or an illogical flow of ideas, then he/she likely has disorganized thinking.

## 4. Frequently Asked Questions

A) Question: The patient is positive for feature 1 (altered mental status or fluctuating course), feature 3 (altered level of consciousness) and feature 4 (disorganized thinking), but is negative for feature 2 (inattention), shouldn't the patient be bCAM positive since 3 out of the 4 features are present?

Answer: No, the bCAM is negative in this instance. Feature 2 (inattention) is considered to be a cardinal feature of delirium and is required to be present for the patient to be delirious. Similarly feature 1 (altered mental status or fluctuating course) is also a core delirium feature. As a result feature 1 (altered mental status or fluctuating course) and feature 2 (inattention) must both be present for a patient to be bCAM positive. If either feature 1 or 2 is negative, then the patient is bCAM negative regardless of what the other features are.

B) Question: The patient briefly opens his/her eyes to verbal stimuli (RASS -3), but is just making incomprehensible sounds. I ask the patient to name the months backwards and he/she just falls back asleep. Isn't the patient considered to "Unable to Assess"?

Answer: The only circumstance where the patient would be "Unable to Assess" for delirium if he/she had a RASS is -4 or -5. A patient with a RASS of -3 is likely so inattentive that he/she is unable to engage you enough to complete the task. In this case, the patient's score would be "6 errors" and Feature 2 (inattention) would be positive. Similarly, if the same thing happened during the feature 4 (disorganized thinking) assessment, then the score would be "5 errors" and feature 4 would be positive.

C) Question: The patient received morphine or a benzodiazepine before the assessment. The patient is slightly drowsy. Does it matter that the patient received a medication that may have affected his/her assessment for feature 3 (altered level of consciousness)?

Answer: Feature 3 (altered level of consciousness) is based upon your observation of the patient regardless of the medications received.

D) Question: What if a patient's family member or other proxy is not available to determine feature 1.

Answer: The determination of feature 1 (altered mental status or fluctuating course) becomes much less important if feature 2 (inattention), feature 3 (altered level of consciousness) and feature 4 (disorganized thinking) are negative. The absence of a proxy may be problematic if the patient is feature 2 positive (inattention) and if either feature 3 (altered level of consciousness) or feature 4 (disorganized thinking) is positive. In these cases, it is always safer to assume that feature 1 is positive until proven otherwise. Delirium is considered a medical and psychiatric emergency.

E) Question: Do I need to determine all the bCAM features?

Answer: No, the bCAM can be performed algorithmically (**Figure 2**) if you are pressed for time. For example, if the patient can recite the months backwards perfectly (feature 2 negative), then you can stop the assessment.

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**bCAM Worksheet**

|  |   |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
|--|---|-----------------|---------------------------------|--------------------------------|-------------------------------|------------------------------------|---|---|--|--------------------------------------|--|--|
| <b>1A:</b> Is the patient different than his/her baseline mental status (obtain from proxy)?   | <b>No</b>   | <b>Yes</b>      |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>1B:</b> Has the patient had any fluctuation in mental status in the past 24 hours (obtain from proxy)?  | <b>No</b>   | <b>Yes</b>      |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>Feature 1: Acute Onset or Fluctuating Course</b><br>Positive if you answer “yes” to either 1A or 1B.  | <b>Negative</b>   | <b>Positive</b> |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <p><b>2: Months backwards test for inattention</b></p> <p><u>Directions:</u> Say to the patient, “Can you name the months backwards starting from December to July?”</p> <p>_____</p> <p><u>Scoring:</u> Stop recording after the patient has a significant pause (&gt;15 seconds) or perseverates on a month. Each missed month is considered an error. If the patient switches two months, then that is considered two errors.</p>   | <p><b># of Errors</b></p> <p>_____</p> <p><b>(Max 6):</b></p> |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>Feature 2: Inattention</b><br><i>Positive if 2 or more errors are made.</i>   | <b>Negative</b>   | <b>Positive</b> |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>3: Richmond Agitation and Sedation Score (RASS)</b>   |   |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| What is the patient’s actual RASS? In patients with a RASS of -4 or -5, the bCAM is not assessable.  | <p><b>Score (-3 to +4): _____</b></p>                         |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>Feature 3: Altered Level of Consciousness</b><br><i>Positive if the RASS is anything other than “0”.</i>  | <b>Negative</b>   | <b>Positive</b> |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <p><b>4A: Yes/No Questions</b><br/>(Use either Set A or Set B, alternate on consecutive days if necessary):</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><b>Set A</b></td> <td style="text-align: center;"><b>Set B</b></td> </tr> <tr> <td>1. Will a stone float on water?</td> <td>1. Will a leaf float on water?</td> </tr> <tr> <td>2. Are there fish in the sea?</td> <td>2. Are there elephants in the sea?</td> </tr> <tr> <td>3. Does one pound weigh more than two pounds?</td> <td>3. Do two pounds weigh more than one pound?</td> </tr> <tr> <td>4. Can you use a hammer to pound a nail?</td> <td>4. Can you use a hammer to cut wood?</td> </tr> </table> <p><b>Score:</b> _____ (Patient earns 1 error for each wrong answer out of 4).</p> <p><b>4B: Command</b><br/>Say to patient: “Hold up this many fingers”. (Examiner holds two fingers in front of patient). “Now do the same thing with the other hand” (Do not demonstrate). If patient is unable to move both arms, for the second part of the command, ask patient “Add one more finger”.</p> <p><b>Score:</b> _____ (Patient earns 1 error if unable to successfully complete the entire command)</p> | <b>Set A</b>  | <b>Set B</b>    | 1. Will a stone float on water? | 1. Will a leaf float on water? | 2. Are there fish in the sea? | 2. Are there elephants in the sea? | 3. Does one pound weigh more than two pounds? | 3. Do two pounds weigh more than one pound? | 4. Can you use a hammer to pound a nail? | 4. Can you use a hammer to cut wood? | <p><b># of Errors (4A+4B)</b></p> <p>_____</p> <p><b>(Max 5)</b></p> |  |
| <b>Set A</b>   | <b>Set B</b>  |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| 1. Will a stone float on water?  | 1. Will a leaf float on water?                                |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| 2. Are there fish in the sea?  | 2. Are there elephants in the sea?                            |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| 3. Does one pound weigh more than two pounds?  | 3. Do two pounds weigh more than one pound?                   |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| 4. Can you use a hammer to pound a nail?   | 4. Can you use a hammer to cut wood?                          |                 |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>Feature 4: Disorganized Thinking</b><br><i>Positive if the patient makes any errors.</i>  | <b>Negative</b>   | <b>Positive</b> |                                 |                                |                               |                                    |   |   |  |                                      |  |  |
| <b>Overall bCAM</b> (Features 1 and 2 and either Feature 3 or 4 positive)  | <b>Negative</b>   | <b>Positive</b> |                                 |                                |                               |                                    |   |   |  |                                      |  |  |

## **bCAM Worksheet**

### **Perform the Richmond Agitation and Sedation Scale**

#### **Score Term Description**

|    |                        |  |
|----|------------------------|--|
| +4 | Combative              | Overtly combative, violent, immediate danger to staff  |
| +3 | Very agitated          | Pulls or removes tube(s) or catheter(s); aggressive  |
| +2 | Agitated               | Frequent non-purposeful movement   |
| +1 | Restless               | Anxious but movements not aggressive or vigorous   |
| 0  | Alert and calm         |  |
| -1 | Mildly Drowsy          | Not fully alert, but has sustained awakening (eye-opening/eye contact) to <i>voice</i> ( <b>&gt;10 seconds</b> ) |
| -2 | Moderate drowsy        | Briefly awakens with eye contact to <i>voice</i> ( <b>&lt;10 seconds</b> )                                       |
| -3 | Very drowsy            | Movement or eye opening to <i>voice</i> ( <b>but no eye contact</b> )  |
| -4 | Arousable to pain only | No response to voice, but movement or eye opening to <i>physical</i> stimulation                                 |
| -5 | Unarousable            | No response to <i>voice or physical</i> stimulation  |