

# Confusion Assessment Method for the ICU (CAM-ICU)

## The Complete Training Manual

**Revised Edition: August 31, 2016**

**This is a training manual for physicians, nurses and other healthcare professionals who wish to use the Confusion Assessment Method for the ICU (CAM-ICU). The CAM-ICU is a delirium monitoring instrument for ICU patients. A complete detailed explanation of how to use the CAM-ICU, as well as answers to frequently asked questions and case studies are provided in this manual. More information including videos and materials for downloading are available at the following website [www.icudelirium.org](http://www.icudelirium.org).**



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Dear Colleague,

With the advent of technology and the aging of our society, critical care has quickly become a massive “business” occupying an increasingly large segment of the gross domestic product of industrialized nations worldwide. Hospitals are filled with patients suffering from complex disease processes, and there is a driving unmet need to improve care. Components of patients’ diseases or hospital course that drive mortality, cost of care, and long-term outcomes such as cognitive, mental health and functional outcomes, will serve as increasingly important foci by which to improve not only our efficiency and resource utilization, but more importantly, the ultimate quality of life of millions of humans. It is with this backdrop that I write this introduction to the revised training manual for the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU).

When the CAM-ICU was designed and validated (in concert with long-standing delirium experts in Geriatrics and Neuropsychology such as Dr. Sharon Inouye, Dr. Joseph Francis, and Dr. Robert Hart), we had no idea that the need and desire to monitor delirium around the world would stimulate its translation into over 20 languages and its implementation in dozens of countries. In fact, it is hard to believe the changes that have taken place in recent years regarding our understanding of delirium in critically ill patients. All of us in medicine are resolute in our desire and vocation to serve patients and their families to the best of our abilities. Just a few years ago we could not even objectively diagnose acute brain dysfunction (delirium) in intubated ICU patients in a reliable manner, which meant that delirium could not be routinely diagnosed by bedside nurses, physicians, or other non-psychiatrically trained clinicians. Perhaps this is one of those “if you build it, they will come” stories. Following the publication in 2001 of valid and reliable tools by which to detect the onset or resolution of delirium in non-verbal patients such as those on mechanical, we have seen an explosion of peer-reviewed publications, research teams, and large scale implementation of quality improvement initiatives around the world that reflect the prioritization of the human brain during serious illness. While none of the existing tools is perfect, and while all of them involve changing the culture of ICU bedside care, which is a challenge, the tools have enabled us to learn a tremendous amount of valuable epidemiology and management lessons already.

We have learned, for example, that duration of delirium in ICU patients is one of the strongest independent predictors of (risk factors for) death, length of stay in the hospital, cost of care, and long-term cognitive impairment. Indeed, there are few developments in the course of critical illness that portend “worse news” for a patient or his/her loved ones than the development of delirium that does not readily remit with a quick adjustment of medications or management of obvious causes. While the causes of delirium are legion, and not all delirium is “created equal,” it is safe to say that we should do our best to detect its onset as early as possible in order to rectify any modifiable causes. Since hypoactive delirium generally portends a worse prognosis than hyperactive delirium and is missed in 75% of circumstances in the absence of active monitoring, it is critical to adopt delirium monitoring as standard practice in all critically ill patients, a recommendation emphasized in the 2013 Society of Critical Care Medicine (SCCM) Pain Agitation and Delirium (PAD) guidelines, which determined psychometrically that the CAM-ICU and the ICDSC are the two most valid and reliable delirium monitoring tools in adult ICU patients.

Many ongoing investigations hopefully will continue to edify our understanding of how to handle delirium when it arises, to define subpopulations of patients who may or may not benefit from specific pharmacological and non-pharmacological interventions, and to better communicate better to patients and caregivers prognostic information and long-term planning solutions. In the meantime, the glass is way more than half full. We have much we can do with information gained by using delirium monitoring tools both individually and collectively to improve our care...and that is the ultimate goal. The **ABCDEF Bundle**<sup>2</sup> ([www.icudelirium.org](http://www.icudelirium.org) and [www.iculiberation.org](http://www.iculiberation.org)) is an excellent framework of care built on the 2013 PAD<sup>1</sup> clinical practice guidelines showing improved outcomes and should be incorporated into practice until newer data further guides our care. The ABCDEF bundle elements include: Assess, Prevent and Manage Pain [A], Both Spontaneous Breathing Trials and Spontaneous Awakening Trials [B], Choice of Analgesia and Sedation [C], Delirium: Assess, Prevent and Manage [D], Early mobility and exercise [E], and Family Engagement and Empowerment [F]. Good luck and please allow our team to be of service to you and your team in any way possible.

Sincerely,

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Professor of Medicine at Vanderbilt University  
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## What is new in this training manual?

### **Changes with the 2016 version of the Training Manual:**

There were very minor changes made in the 2016 version of this manual. The ABCDEF bundle elements were updated to match current literature on pages 2 and 31.

### **Changes with the 2014 version of the Training Manual:**

With the publication of the 2013 Society of Critical Care Medicine (SCCM) Pain Agitation and Delirium (PAD) clinical practice guidelines, many institutions have adopted the CAM-ICU to measure delirium. We wanted to take this opportunity in this update to incorporate statements and recommendations from the PAD guidelines and other recent research findings into our training manual. This manual is intended to include all the materials necessary for training and implementation of the CAM-ICU. We envision that the manual would be used by those charged with training and only the flowsheet pocket card would be used at the bedside.

**What has not changed?** The essentials of the CAM-ICU (the four delirium criteria) **have not changed**. In fact, the DSM 5 criteria for delirium, which were based on objective psychometric data and published in 2013, uphold that an objective determination of the presence or absence of Inattention (as found in Feature 2 of the CAM-ICU) is a cardinal and pivotal feature of delirium.

### **What is new in this update?**

- **Sedation vs. Level of Consciousness (LOC)** – Assessing consciousness involves evaluation of arousal (i.e., LOC) and content (i.e., delirium). We have found that some clinicians use the phrases “sedation level” and “level of consciousness” interchangeably. While others reserve the use of the phrase “sedation level” only for patients receiving sedative medication, leading some to question whether a sedation-agitation scale (e.g. RASS) can be utilized with patients in the absence of a continuous sedative infusion. Since the RASS assesses for both agitation and sedation levels it can serve as a LOC assessment in all patients regardless of what medicines they are or are not receiving. The RASS has demonstrated excellent interrater reliability and validity in a broad range of adult medical and surgical ICU patients, both on sedative infusions and in the absence of continuous sedation.<sup>3,4</sup> Thus to provide clarity, we have added the term LOC throughout the manual to reinforce use of the RASS as a method for assessing LOC in both patients receiving sedating medications and those who are not.
- **Frequently Asked Questions (FAQs)** – We have updated the FAQs to include recent clinical practice guideline statements and recommendations and new research findings published since the last training manual update in 2010. See especially FAQ #s 1, 2, 7, 9, 10, and 13.
- **Case Studies** – We modified the previous case studies and added an additional case study.
- **Website links** – The [ICUDelirium.org](http://ICUDelirium.org) website was completely remodeled in the fall of 2013 to coincide with our publication in the *New England Journal of Medicine* (Pandharipande, et al. NEJM 2013; 369(14):1306-16) resulting in the relocation of a several items to different webpage addresses. We have updated all of our embedded links throughout the training manual.

**How to use these materials?** Every institution has different educational needs and implementation struggles. Please review the materials and determine what works for you and your unit. Mix and match to make it fit your team. Please don't hesitate to contact us if we can help in any way at [delirium@vanderbilt.edu](mailto:delirium@vanderbilt.edu).

Sincerely,

### **The 2014 and 2016 CAM-ICU Training Manual Redesign Teams**

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## The Details about Delirium

### What is Delirium?

Delirium is a disturbance of consciousness characterized by acute onset and fluctuating course of inattention accompanied by either a change in cognition or a perceptual disturbance, so that a patient's ability to receive, process, store, and recall information is impaired.<sup>5</sup> Delirium develops over a short period of time (hours to days), is usually reversible, and is a direct consequence of a medical condition, substance intoxication or withdrawal, use of a medication, toxin exposure, or a combination of these factors. Many delirious ICU patients have recently been comatose, indicating a fluctuation of mental status. Comatose patients often, but not always, progress through a period of delirium before recovering to their baseline mental status. **Think: rapid onset, inattention, clouded consciousness (bewildered), fluctuating.**

ICU delirium is a predictor of: ↑ mortality, ↑ length of stay, ↑ time on vent, ↑ costs, ↑ re-intubation, ↑ long-term cognitive impairment, and ↑ discharge to long-term care facility

There are three **subtypes** of delirium: hyperactive, hypoactive and mixed. **Hyperactive** delirium is characterized by agitation, restlessness, and attempts to remove tubes and lines. **Hypoactive** delirium is characterized by withdrawal, flat affect, apathy, lethargy, and decreased responsiveness. **Mixed** delirium is when patients fluctuate between the two. In ICU patients mixed and hypoactive are the most common, and are often undiagnosed (invisible) if routine monitoring is not implemented. Few ICU patients (<5%) experience purely hyperactive delirium.

### What is it not?

Dementia, which is characterized by a state of generalized cognitive deficits in which there is a deterioration of previously acquired intellectual abilities. Dementia usually develops over weeks, months, or even years with varying levels of cognitive impairment from mild to severe.

**Think: gradual onset, intellectual impairment, memory disturbance, personality/mood change, no clouding of consciousness.**

### What is the CAM-ICU?

The Confusion Assessment Method (CAM) was created in 1990, and it was intended to be a bedside assessment tool usable by non-psychiatrists by Dr. Sharon Inouye to assess for delirium.<sup>6</sup> The CAM-ICU is an adaptation of this tool for use in ICU patients (e.g., critically ill patients on or off the ventilator). Delirium is defined in terms of four diagnostic features, and is deemed positive when Feature 1 and Feature 2 and either Feature 3 or 4 are present (see CAM-ICU schematic on next page). The CAM-ICU is one of the recommended ICU delirium screening tools.

### What is the first step in assessing delirium?

Delirium assessment is actually part of the overall consciousness assessment. Consciousness is defined in two parts—**arousal level** plus **content** (see next page). The first step to assessing consciousness is to assess **level of consciousness**. This is best done using a validated sedation/level of consciousness scale. The Richmond Agitation-Sedation Scale (**RASS**) is used in this training manual, though other tools are fine to use with the CAM-ICU. For more information on other sedation-agitation/level of consciousness scales see question #15 on page 20 in the "Putting the CAM-ICU into Practice" section. The next step is assessment of **content of consciousness**. At deeper levels of consciousness (i.e., RASS -4 & -5), it is difficult to ascertain content because the patient is not responsive. These levels are referred to as coma or stupor, and in those situations we do not conduct the CAM-ICU, thus referring to the patient as 'unable to assess'. However, at the lighter levels of consciousness (i.e., RASS -3 to +4), are able to display at least the beginnings of meaningful responsiveness (i.e., response to voice). At these levels you are able to assess for clarity of thought, specifically delirium. The following pages include the CAM-ICU in a worksheet format (page 7) and in a flowsheet format (page 8). Then starting at page 9 are detailed instructions for assessing the four CAM-ICU features.

# Assessing Consciousness: Linking Level of Consciousness & Delirium Monitoring

## Step 1 Level of Consciousness: RASS\*

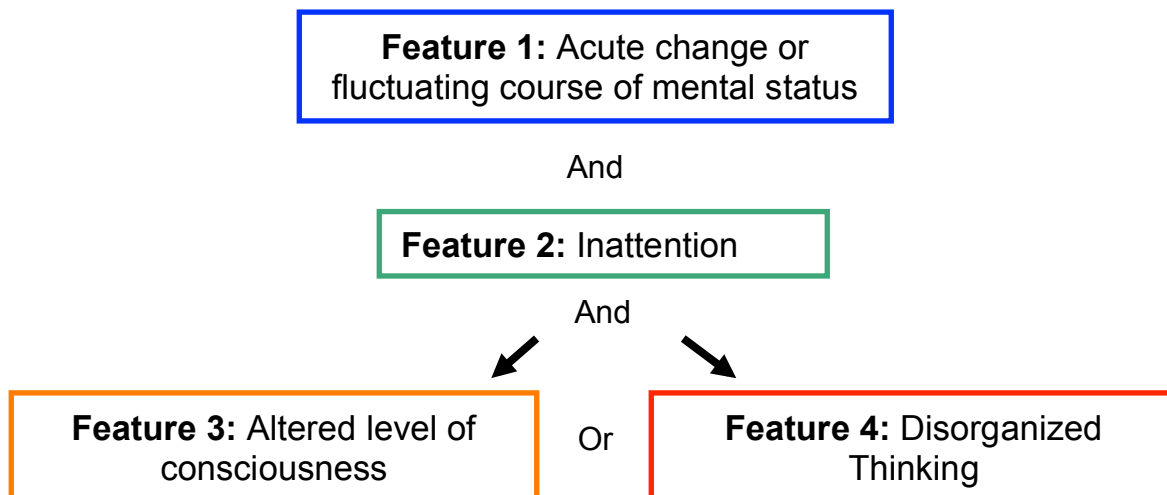
Scale	Label	Description	
+4	COMBATIVE	Combative, violent, immediate danger to staff	VOICE
+3	VERY AGITATED	Pulls to remove tubes or catheters; aggressive	
+2	AGITATED	Frequent non-purposeful movement, fights ventilator	
+1	RESTLESS	Anxious, apprehensive, movements not aggressive	
0	ALERT & CALM	Spontaneously pays attention to caregiver	
-1	DROWSY	Not fully alert, but has sustained awakening to voice (eye opening & contact >10 sec)	
-2	LIGHT SEDATION	Briefly awakens to voice (eyes open & contact <10 sec)	
-3	MODERATE SEDATION	Movement or eye opening to voice (no eye contact)	TOUCH
If RASS is $\geq -3$ proceed to CAM-ICU (Is patient CAM-ICU positive or negative?)			
-4	DEEP SEDATION	No response to voice, but movement or eye opening to physical stimulation	
-5	UNAROUSABLE	No response to voice or physical stimulation	
If RASS is -4 or -5 $\rightarrow$ STOP (patient unconscious), RECHECK later			

<sup>3</sup>Sessler, et al. AJRCCM 2002; 166:1338-1344.

<sup>4</sup>Ely, et al. JAMA 2003; 289:2983-2991.

\*For RASS equivalents to other sedation-agitation scales see FAQs page 20-21.

## Step 2 Content of Consciousness: CAM-ICU



<sup>6</sup>Inouye, et. al. Ann Intern Med 1990; 113:941-948.

<sup>7</sup>Ely, et. al. CCM 2001; 29:1370-1379.

<sup>8</sup>Ely, et. al. JAMA 2001; 286:2703-2710.

## CAM-ICU Worksheet

Feature 1: Acute Onset or Fluctuating Course	Score	Check here if Present
<p>Is the patient different than his/her baseline mental status? OR Has the patient had any fluctuation in mental status in the past 24 hours as evidenced by fluctuation on a sedation/level of consciousness scale (i.e., RASS/SAS), GCS, or previous delirium assessment?</p>	<p>Either question Yes →</p>	<input type="checkbox"/>
<b>Feature 2: Inattention</b>		
<p><b>Letters Attention Test</b> (See training manual for alternate <b>Pictures</b>)</p> <p><u>Directions:</u> Say to the patient, <i>"I am going to read you a series of 10 letters. Whenever you hear the letter 'A,' indicate by squeezing my hand."</i> Read letters from the following letter list in a normal tone 3 seconds apart.</p> <p><b>SAVEAHAART</b> or <b>CASABLANCA</b> or <b>ABADBADAAY</b></p> <p><b>Errors are counted when patient fails to squeeze on the letter "A" and when the patient squeezes on any letter other than "A."</b></p>	<p>Number of Errors &gt;2 →</p>	<input type="checkbox"/>
<b>Feature 3: Altered Level of Consciousness</b>		
<p>Present if the Actual RASS score is anything other than alert and calm (zero)</p>	<p>RASS anything other than zero →</p>	<input type="checkbox"/>
<b>Feature 4: Disorganized Thinking</b>		
<p><b>Yes/No Questions</b> (See training manual for alternate set of questions)</p> <ol style="list-style-type: none"> <li>1. Will a stone float on water?</li> <li>2. Are there fish in the sea?</li> <li>3. Does one pound weigh more than two pounds?</li> <li>4. Can you use a hammer to pound a nail?</li> </ol> <p><b>Errors are counted when the patient incorrectly answers a question.</b></p> <p><b>Command</b> Say to patient: "Hold up this many fingers" (Hold 2 fingers in front of patient) "Now do the same thing with the other hand" (Do not repeat number of fingers) *If the patient is unable to move both arms, for 2<sup>nd</sup> part of command ask patient to "Add one more finger"</p> <p><b>An error is counted if patient is unable to complete the entire command.</b></p>	<p>Combined number of errors &gt;1→</p>	<input type="checkbox"/>
<p><b>Overall CAM-ICU</b></p> <p><b>Feature 1 <u>plus</u> 2 <u>and</u> either 3 <u>or</u> 4 present = CAM-ICU positive</b></p>	<p><b>Criteria Met →</b></p>	<input type="checkbox"/> <b>CAM-ICU Positive (Delirium Present)</b>
	<p><b>Criteria Not Met →</b></p>	<input type="checkbox"/> <b>CAM-ICU Negative (No Delirium)</b>

### 1. Acute Change or Fluctuating Course of Mental Status:

- Is there an acute change from mental status baseline? OR
- Has the patient's mental status fluctuated during the past 24 hours?

NO

CAM-ICU negative  
NO DELIRIUM

YES

### 2. Inattention:

- "Squeeze my hand when I say the letter 'A'."  
Read the following sequence of letters:  
SAVEAHAART or CASABLANCA or ABADBADAAY  
ERRORS: No squeeze with 'A' & Squeeze on letter other than 'A'
- If unable to complete Letters → Pictures

0 - 2  
Errors

CAM-ICU negative  
NO DELIRIUM

> 2 Errors

### 3. Altered Level of Consciousness

Current RASS level

RASS other  
than zero

RASS = zero

### 4. Disorganized Thinking:

1. Will a stone float on water?
2. Are there fish in the sea?
3. Does one pound weigh more than two?
4. Can you use a hammer to pound a nail?

Command: "Hold up this many fingers" (Hold up 2 fingers)  
"Now do the same thing with the other hand" (Do not demonstrate)  
OR "Add one more finger" (If patient unable to move both arms)

CAM-ICU negative  
NO DELIRIUM



## **Feature 1 Specific CAM-ICU Instructions & Questions**

### **1. Acute Change or Fluctuating Course of Mental Status:**

- Is there an acute change from mental status baseline? OR
- Has the patient's mental status fluctuated during the past 24 hours?

### **Basics**

Patients with delirium will display changes from their mental status baseline and/or fluctuation in mental status. Feature 1 assesses for these changes.

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**Feature 1 is present if either of the above questions is answered 'yes'.**

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### **Frequently Asked Questions for Feature 1:**

#### **1. How do you determine baseline mental status?**

This is the patient's **pre-hospital mental status**. Get this information from family, friends, or the H&P and document it in the patient's record to facilitate communication between staff. We encourage you to use critical thinking skills with this Feature. For example:

- If the patient is young (e.g. <65) and is admitted from home with no documented neurocognitive disorder or history of stroke, then you could assume that the patient has a "normal" baseline mental status (i.e., alert and calm).
- If the patient is older, has documentation of a stroke or dementia, or came from a nursing home, then you should probe family or the institution for more information on the patient's pre-hospital baseline mental status.

#### **2. Do you use that same 'baseline' with successive CAM-ICU assessments?**

**Always**, unless a permanent change in baseline occurs (see #3). You should consistently use the patient's established pre-hospital baseline.

#### **3. How do you handle a permanent change of baseline during the hospitalization – e.g., a stroke or anoxic injury? Is that modified and permanent new baseline used for CAM-ICU purposes?**

**Yes.** If there is a permanent change in baseline, the new baseline is used for subsequent CAM-ICU evaluations. This may be difficult to determine because of the difficulty in separating delirium from the new baseline. In practice, it is easiest to gather Feature 1 in such a situation by documenting 'fluctuations' in the mental status. (See more details in the "Putting CAM-ICU into Practice" section, question #2, page 16)

#### **4. Does it still count as fluctuation in mental status or change from baseline mental status when a patient is on sedatives?**

**Yes.** Alteration in mental status includes those that are chemically induced by the healthcare team, including fluctuation due to titration of sedatives. This is not the patient's usual mental status. It is often difficult to completely distinguish a disease-induced change from a drug-induced change in mental status.

## Feature 2 Specific CAM-ICU Instructions & Questions

### 2. Inattention:

- “*Squeeze my hand when I say the letter ‘A’.*”  
Read the following sequence of letters: S A V E A H A A R T  
**ERRORS:** No squeeze with ‘A’ & Squeeze on letter other than ‘A’
- If unable to complete Letters → Pictures

### Basics

Alertness is a basic arousal process in which the awake patient can respond to any stimulus in the environment. The alert, but inattentive patient will respond to any sound, movement, or event occurring in the vicinity, while the attentive patient can screen out irrelevant stimuli. ***All attentive patients are alert, but not all alert patients are attentive.***

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**Feature 2 is present if the patient has >2 errors.  
If both tests are performed, use the Pictures to score Feature 2.**

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### Detailed Instructions

#### Letters

**Directions:** Say to the patient, “I am going to read you a series of 10 letters. Whenever you hear the letter ‘A,’ indicate by squeezing my hand.” Read the following 10 letters in a normal tone (loud enough to be heard over the noise of the ICU) at a rate of one letter every 3 seconds.

**\*Note: Patients with ICU-acquired weakness or other neuromuscular diseases may require more time to respond, or indicate response with another method (e.g., eye blinks, finger taps).**

**S A V E A H A A R T or C A S A B L A N C A or A B A D B A D A A Y**

**Scoring:** Errors are counted when the patient fails to squeeze on the letter “A” and when the patient squeezes on any letter other than “A.”

**\*Attempt Letters first. If unable to complete Letters → Pictures**

#### Alternate: Pictures

**Step 1:** 5 pictures (start with the green card)

**Directions:** Say to the patient, “Mr. or Mrs. \_\_\_\_\_, I am going to show you pictures of some common objects. Watch carefully and try to remember each picture because I will ask what pictures you have seen.” Then show Step 1 of either Packet A or Packet B, naming each item and alternating daily if repeat measures are taken. Show the first 5 pictures for 3 seconds each.

## **Feature 2 continued**

**Step 2:** 10 pictures (start with the red card)

Directions: Say to the patient, "Now I am going to show you some more pictures. Some of these you have already seen and some are new. Let me know whether or not you saw the picture before by nodding your head yes (demonstrate) or no (demonstrate)." Then show 10 pictures (5 new 5 repeat) for 3 seconds each (Step 2 of Packet A or B, depending upon which form was used in Step 1 above).

Scoring: Errors are counted with the patient incorrectly indicates 'yes' or 'no' for a picture during the second step. In order to improve the visibility for elderly patients, the images are printed on 6"x10" buff colored paper and laminated with a matte finish.

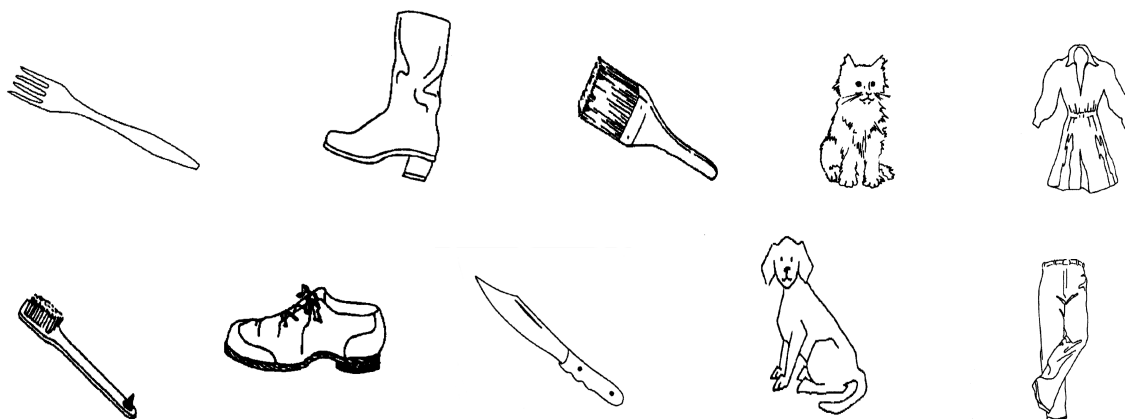
Note: If a patient wears glasses or hearing aids make sure he/she has them on.

### **Pictures**

#### **Step 1**



#### **Step 2**



\*An additional set of pictures is available on the website:

<http://www.icudelirium.org/delirium/monitoring.html>

## **Feature 2 continued**

### **Frequently Asked Questions for Feature 2:**

#### **1. If a patient is RASS -3 or very lethargic, is the CAM-ICU ‘unable to assess’ (UTA)? Is the patient delirious?**

The ability to be tested with the CAM-ICU is wholly based on a patient being at all responsive to verbal stimulation, regardless of sedative use. The 2-step approach to assess consciousness with the RASS and CAM-ICU provides a filter for the majority of patients who cannot participate in the assessment. Comatose patients (i.e., RASS -4/-5) are not tested with the CAM-ICU because they are unconscious. Though it seems like a gray zone, most patients who are a RASS -3 can provide enough data to be rated as delirious by the CAM-ICU. Some sites have used RASS -2 as the lower border for CAM-ICU rating, but most use RASS -3 as the cutoff.

- If a patient has any movement or eye opening to your voice directed to them and doesn't squeeze at all or stay awake long enough to squeeze for more than one letter, then this patient is obviously inattentive. At this point, assess the other CAM-ICU Features as needed to determine if the patient is delirious. Example:
  - If the patient ever squeezed, then count the errors (see Letters instructions).
  - If the patient never squeezed then the patient is inattentive. Also be suspicious for inattention when you have to repeat the instructions more than twice.
- One way to think about this is if there is eye opening or movement to voice, then the “lights are on”. Use the CAM-ICU to see if “anyone is home”.

These concepts also apply to a patient who is agitated (i.e., RASS +1 thru +4) and therefore not participating in assessment or comprehending your instructions.

#### **2. Do you have to complete both Letters and Pictures on every patient?**

**No.** You do not have to use both tests in each assessment. Attempt the Letters first. If the patient is able to perform this test and the score is clear, record this score and move to the Feature 3. If the patient is incapable of performing the Letters or you are unable to interpret the score, perform the Pictures. If you perform both tests, use the Pictures result to determine if the patient is inattentive. See question #1 above for interpretation of scoring. The Pictures are rarely required to assess inattention (only <5% of the time).

#### **3. Are there other Letter sequences that I can use to assess Feature 2?**

**Yes.** Some other sequences that have been used to assess inattention include:

- A B A D B A D A A Y (from the Pediatric CAM-ICU)
- 8 1 7 5 1 4 1 1 3 6 (Chinese traditional translation using numbers instead of letters)
- C A S A B L A N C A
- S A V E A B R A A N

#### **4. How do I obtain Picture packets?**

We will be glad to assist you in ordering the materials. Please contact us at [delirium@vanderbilt.edu](mailto:delirium@vanderbilt.edu). Make the subject of your email “CAM-ICU order”. This ensures your request is processed in a timely manner.

## **Feature 3 Specific CAM-ICU Instructions & Questions**

### **3. Altered Level of Consciousness**

#### **Current RASS level**

#### **Basics**

Patients with delirium experience a disturbance of consciousness and changes in cognition. For the CAM-ICU this is measured by using the RASS scale to assess current level of consciousness. If Features 1 & 2 are absent, you do not need to proceed with this Feature.

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**Feature 3 is present if the patient's current level of consciousness is anything other than alert and calm (RASS 0).**

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#### **Frequently Asked Questions for Feature 3:**

**1. Didn't this used to be Feature 4?**

**Yes.** After other institutions began switching Features 3 & 4, we decided to switch the order for ease of use and common sense. Many users had previously gotten confused thinking the Features had to be assessed in numerical order (i.e. 1, 2, 3, 4). However, there is no rigid rule to the order of assessing CAM-ICU Features. Nothing has changed with the content of this Feature.

**2. Is Feature 3 positive in coma?**

**No.** Coma is not considered delirium. Remember, we do not perform the CAM-ICU if a patient is comatose (i.e. RASS -4 or -5). Many delirious patients have recently been comatose, indicating a fluctuation of mental status. Comatose patients often, but not always, progress through a period of delirium before recovering to their baseline mental status.

**3. What is the difference between Feature 3 and Feature 1?**

- **Feature 3 (Altered Level of Consciousness)** evaluates the patient's current level of consciousness (right now). The current level of consciousness as detected with the actual current RASS regardless of the patient's baseline mental status.
- **Feature 1 (Acute Change or Fluctuating Course of Mental Status)** evaluates the patient's pre-hospital mental status baseline and whether there has been fluctuation in mental status during the past 24 hours.
- **Take home point:** A patient can have an alert/calm baseline, RASS fluctuations (-1 to -2) over the past 24 hours, and currently be RASS 0. Feature 1 is present due to fluctuations, but Feature 3 is absent because the patient is currently alert (RASS 0).

**4. My facility uses a different sedation-agitation/level of consciousness (LOC) assessment scale. Can I still use the CAM-ICU?**

**Yes.** Any validated sedation-agitation/LOC scale can be used for completing the CAM-ICU. The RASS is not the same as other sedation-agitation/LOC assessments, and therefore not exactly equal. For that reason, it is important to determine which values on your current scale correlate with the terms and descriptions of the RASS scale. (See more details in the "Putting CAM-ICU into Practice" section, question #15, page 20-21)

## **Feature 4 Specific CAM-ICU Instructions & Questions**

### **4. Disorganized Thinking:**

1. Will a stone float on water?
2. Are there fish in the sea?
3. Does one pound weigh more than two pounds?
4. Can you use a hammer to pound a nail?

**Command:** “Hold up this many fingers” (Hold up 2 fingers)

“Now do the same thing with the other hand” (Do not demonstrate)

**Or:** “Add one more finger” (If patient is unable to move both arms)

### **Basics**

This is the hardest area to assess in nonverbal patients because it is the most subjective of the four Features. Thought is expressed by verbal or written words. Mechanical ventilation and loss of fine motor movement limit this expressive ability in most ICU patients. Because of this, the CAM-ICU uses easy questions and a simple 2-step command to assess organization of thought. If Features 1 & 2 are absent, you do not need to proceed with this Feature.

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**Feature 4 is present if there is >1 error for the combined Questions + Command.**

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### **Frequently Asked Questions for Feature 4:**

#### **1. Didn't this used to be Feature 3?**

**Yes.** After other institutions began switching Features 3 & 4, we decided to switch the order for ease of use and common sense. Many users had previously gotten confused thinking the Features had to be assessed in numerical order (i.e. 1, 2, 3, 4). However, there is no rigid rule to the order of assessing CAM-ICU Features. Nothing has changed with the content of this Feature.

#### **2. How frequently do you have to use this Feature?**

According to the CAM-ICU a patient is delirious if Features 1 and 2 and either 3 or 4 are present. Many times you will not need to assess this Feature because you will have the information you need from Features 1, 2, and 3. It is only when Features 1 and 2 are present and Feature 3 is absent (patient is alert) that you have to complete this Feature.

#### **3. If a patient answers the four questions correctly, do you still assess the command?**

**Yes.** We encourage you to perform the 2-step command even if the patient scores 100% on the questions because there is a chance the patient had four lucky guesses. The combination of questions and 2-step command gives the clinician more data to make a judgment of whether there is disorganized thinking. If the patient answers all questions correctly, the performance on the 2-step command can help identify subsyndromal delirium.

## **Feature 4 continued**

### **4. Isn't there an alternate set of questions?**

**Yes.** These questions can be used as an alternative to the set listed above. Try to alternate questions with 'yes' then 'no' answers.

- Will a leaf float on water?
- Are there elephants in the sea?
- Do two pounds weigh more than one?
- Can you use a hammer to cut wood?

### **5. Is it necessary to ask all 8 questions during a CAM-ICU assessment?**

**No.** It is only necessary to perform one set of questions for this Feature. The second set is provided as an alternate for repeated use.

### **6. Do you assess the 2-step command if the patient is paralyzed, quadriplegic, or visually impaired?**

**No.** If a patient cannot move his/her arms or is blind, score solely on Feature 4 questions. Therefore, Feature 4 is present if the patient misses more than one question (>1 error).

### **7. Weren't the criteria for this Feature listed differently in your publications?**

**Yes.** The criteria for this Feature were listed incorrectly in our publications (Ely, et al. JAMA 2001; 286:2703-2710 and Truman, et al CCN 2003; 23:25-36).<sup>8,9</sup> Organized thinking is evidenced by 3 or more **correct** answers to the 4 questions. Therefore, Feature 4 is present when a patient answers 2 or more of the 4 questions **incorrectly**.

## **Frequently Asked Questions for Putting the CAM-ICU into Practice**

### **1. Can I use the CAM-ICU outside the Intensive Care Unit?**

Assessing for delirium throughout the entire hospital system is an important part of patient care. The choice of which delirium assessment(s) to use is dependent on your needs, goals, and patient populations. Wong et al. have published an excellent systematic review on a number of delirium assessment tools.<sup>10</sup> Examples of delirium instruments that have been validated outside of the ICU include: the original CAM, CAM-ICU (Han, et al. *Acad Emerg Med* 2014;21(2):180-187), Delirium Rating Scale (DRS-R-98), Memorial Delirium Assessment Scale (MDAS), and Nursing Delirium Screening Scale (NuDESC).

Additionally, there are the following specialty versions of the CAM-ICU:

- **The Pediatric CAM-ICU (pCAM-ICU)**<sup>11</sup>: The pCAM-ICU has been validated in ages 5–17 years for use by the bedside caregiver. The pCAM-ICU provides a simple, quick tool to assess for delirium in the pediatric intensive care patient. The assessment provides a means for early recognition of fluctuations or change in cognitive function, which can allow for more extensive follow-up and assessment that can subsequently confirm the presence of delirium and then evaluate the appropriate response or treatment. For more information see: <http://www.icudelirium.org/pediatric.html>
- **The Delirium Triage Screen (DTS)**<sup>12</sup>: The DTS was designed to be the optional first step of a two-step delirium monitoring process for very busy clinical environments. The DTS is a 20 second assessment designed to rapidly rule-out delirium and reduce number of formal delirium assessments needed. It consists of a measure of level of consciousness and a brief measure of inattention. If negative, no additional testing is needed. If positive, confirmatory testing (Step 2) to rule-in delirium with more specific assessments such as the Brief Confusion Assessment Method (bCAM) (described below) or the Confusion Assessment Method (CAM) are needed. For more information see: <http://www.icudelirium.org/non-icu.html>
- **The Brief CAM (bCAM)**<sup>12</sup>: The bCAM was developed for use in the Emergency Department setting by modifying the CAM-ICU. The bCAM and CAM-ICU are very similar. However, one key difference is the test for attention has been changed to reciting the months backwards from December to July. Though the bCAM has been validated in older emergency department patients, the diagnostic performances appear to be similar in patients who are admitted to hospital and this tool may be promising for use in other non-ICU settings. For more information see: <http://www.icudelirium.org/non-icu.html>

### **2. Can I use the CAM-ICU in my Neuro Intensive Care Unit or in patients with Traumatic Brain Injury?**

The CAM-ICU has been validated in 129 post-stroke patients showing a sensitivity of 76%, a specificity of 98%, and an overall accuracy of 94% with a likelihood ratio of 47 (which is huge).<sup>13</sup> In addition, Naidech and colleagues studied 114 neurosurgical patients with focal neurologic injury (ICH and SAH), and found that delirium symptoms were common despite low rates of infection and sedation exposure and were predictive of subsequent worse functional outcomes and lower quality of life.<sup>14</sup>

One of the ways of more comfortably including delirium into the conversation and thus appropriately expanding the differential diagnosis for Neuro ICU patients experiencing cognitive



changes or abnormalities, is to think of an abnormal CAM-ICU as representing “symptoms of delirium” rather than thinking it is “definitely delirium.” Considering the patient’s findings of a positive CAM-ICU to mean “symptoms of delirium” acknowledges that these symptoms could, yes, be caused by the list of things we know bring on delirium (e.g., diseases like sepsis, drugs like benzodiazepines, or environmental issues like sleep/light/absence of hearing aids or eye glasses) as well as exacerbations of their underlying neurologic admission diagnosis such as vasospasm or bleeding.

**When incorporating delirium ratings into the clinical milieu of the neurosurgical ICU, we must acknowledge that in patients who have structural brain disease, it is not always possible to determine the etiology of cognitive demise, that is, of patients who are CAM-ICU positive.** The “delirium symptoms,” or abnormal test result, could be due to drugs, disease, trauma, ICH, SDH, CVA, etc. What the determination of the presence of delirium symptoms does for you is immediately expand your mind to include other items in the differential diagnosis (beyond the ICH or SAH) so that things are not missed. It also allows you to follow the patient’s clinical course over time in a way that is more objective and inclusive. One must be careful to determine the patient’s baseline and whether there is structural neurologic disease. If so, the CAM-ICU may be positive because of structural disease rather than more reversible causes of delirium. We recommend that the CAM-ICU be used in this population using the patient’s last known baseline and the baseline be adjusted as more information is gained.

Once a patient is evaluated for the presence of delirium symptoms in the Neuro ICU, then we must consider the cause and do whatever we can to reduce the duration of delirium. In all patients it’s good to know if they are delirious or not and to monitor the trends no matter the etiology. If a patient is negative one day and positive the next, something has changed.

### **3. Can you perform a CAM-ICU assessment on a patient with dementia?**

**Yes.** The features of delirium are identifiable even in the presence of dementia. In fact, we performed subgroup assessments of the CAM-ICU in patients with dementia in our validation studies (as did Dr. Inouye in her original CAM validation study). The CAM-ICU was found to be reliable and valid in patients with and without dementia. However, these patients can be more difficult to assess. Varying degrees of baseline dementia may be present, often having gone unrecognized. It is important to correctly identify the patient’s baseline cognitive functional status and differentiate chronic cognitive impairments due to dementia from acute changes in attention and thinking due to delirium. A good question to ask the family to help you get this information is, “Do you think he/she could do this test at baseline?” Watching the trend is also important.

### **4. Can I use the CAM-ICU in patients having alcohol withdrawal?**

**Yes.** Alcohol withdrawal can include a type of delirium which usually manifests as hyperactive delirium. The CAM-ICU can be used to detect delirium in these patients. However, it should not be used by itself as a tool to manage/guide alcohol withdrawal syndrome treatment. The ICUs at Vanderbilt use the CIWA-Ar (Clinical Institute Withdrawal Assessment for Alcohol revised), a commonly used tool in the U.S. to guide therapy for alcohol withdrawal syndrome. It is important to note that the CIWA-Ar has not been validated in ICU patients.<sup>15,16</sup>

CAM-ICU evaluates patients for the presence of delirium. Then we must determine the cause and do whatever we can to reduce the duration of delirium. In all patients it’s good to know if they are delirious or not and to monitor the trends no matter the etiology.

### **5. How do I perform the CAM-ICU if my patient doesn’t speak English?**

The CAM-ICU is available in over 20 languages. They can all be found at this link: <http://www.icudelirium.org/delirium/languages.html>.

**6. How do you identify delirium in a patient who has a flat affect that is secondary to major depression?**

Patients who are depressed will still exhibit features of delirium if it develops, and are assessable using the CAM-ICU. In rare cases, depression can manifest itself in a way that may cause a false positive CAM-ICU. This is because severe depression can mimic inattention and hypoactive delirium. In the majority of circumstances, a depressed patient who is found to be CAM-ICU positive is considered delirious. In general, this sort of distinction should incorporate the expertise of a psychiatrist. Watching the trend is key with these folks.

**7. When should pharmacologic treatment for delirium be discontinued?**

The recently updated clinical practice guidelines for Pain, Agitation, and Delirium (PAD) include no recommendation for the use of any medication for the treatment of delirium.<sup>1</sup> There is a recommendation against the use of rivastigmine for delirium treatment, but no recommendations **for or against** the use of haloperidol, a conventional antipsychotic, or any of the atypical antipsychotics. More research is needed in this area to guide decisions on which drug to choose, if any, to treat delirium.

*If pharmacologic treatment is initiated*, it is important to note that since by definition delirium is a disorder of fluctuations in mental status, a patient is considered free of delirium when CAM-ICU negative for 24 hours. If a patient was positive one shift and negative the next, continue to assess him/her for delirium and consider continuation of pharmacologic treatment initiated for delirium until the patient has been CAM-ICU negative for 24 hours. You could certainly reduce the dose of the drugs being given for delirium during that time.

**8. Is it necessary to do all four Features of the CAM-ICU assessment on every patient?**

**No.** Only do the Features needed to get your answer. Remember a patient is considered delirious (i.e. CAM-ICU positive) when Features 1 and 2 and either Feature 3 or 4 are present. For example:

- If Features 1, 2, & 3 are present, then there is no need to assess Feature 4.
- If either Features 1 or 2 are absent then you do not have to proceed because the patient cannot be CAM-ICU positive without them.

**9. How frequently should patients be assessed for delirium using the CAM-ICU?**

The Pain, Agitation, and Delirium (PAD) clinical practice guidelines recommend routine monitoring of delirium in all adult ICU patients every shift (every 8-12 hours) and as needed.<sup>1</sup> Some ICUs do this more often, and especially with changes in the patient's clinical status.

**10. Should I do a CAM-ICU assessment before, during, or after a Spontaneous Awakening Trial (SAT)?**

For many years, it was unknown whether additional prognostic information is obtained by performing a delirium assessment before and after sedative interruption (i.e., before and after a spontaneous awakening trial [SAT]). Most of the published studies on delirium in the ICU included both sedated and non-sedated patients and did not systemically assess delirium before and after SATs. A recent article in the AJRCCM, however, provided new evidence on the importance of measuring for delirium before and after sedatives are stopped.<sup>17</sup>

Shruti Patel and colleagues (University of Chicago) studied the outcomes of patients with “rapidly reversible sedation-related delirium,” which they defined as delirium (CAM-ICU positive) while

receiving sedation that resolved (CAM-ICU negative) within two hours after stopping sedatives during an SAT. Though this type of delirium was rare—only 12% of the 102 patients studied had the rapidly reversible form—these patients had a prognosis that was similar to patients who never had delirium in the study. That is great news for this small group of patients. Unfortunately, the large majority of patients (75%) who were delirious in this investigation had “persistent delirium” (i.e., they were still CAM-ICU positive more than two hours after sedative interruption) and a higher risk of death and longer length of stay (a consistent message in the literature related to delirium in general). Many sedatives used in the ICU (especially benzodiazepines) can remain in the body for hours or even days after an SAT. The mechanisms by which sedatives may contribute to delirium or potentiate effects of critical illness on the brain are not well understood. It is almost certain that many patients in the persistent delirium group had existing psychoactive medications in their blood stream, although this study did not attempt to quantify this.

The best picture of the patient’s mental status will come from assessing delirium serially throughout the day. Thus, we recommend that you assess patients for delirium both before and after daily sedative interruption (SAT). This approach will provide helpful prognostic information to you and your team who are considering how aggressive to get with non-pharmacological and pharmacological methods of managing delirium. Lastly, the implications of this research are that all of the previous studies that included the “rapidly reversible” patients lumped in with the persistently delirious patients would have, if anything, UNDERESTIMATED the risks of delirium in terms of mortality, length of stay, and potentially long-term cognitive impairment risk. This study tells us more clearly than ever before that this form of organ dysfunction in critically ill patients must be closely monitored and addressed when present. We can’t continue to look away!

**11. My patient does not meet the Features to be CAM-ICU positive, but still acting like he/she is delirious. What does this mean?**

It is possible for patients to never develop all the symptoms of delirium required by the DSM-IV criteria for clinical diagnosis. When a patient exhibits only some of the symptoms of delirium it is considered subsyndromal delirium. This intermediate form of delirium is associated with prolonged ICU and hospital length of stay compared to those who never experience delirium.<sup>18</sup>

**12. Do you have to perform the Features in succession at the bedside?**

**No.** However, when thinking of implementing the CAM-ICU into bedside practice or for research purposes, it is important to consider that many of its components are often already used in practice (i.e., staff are usually assessing for Feature 1 via sedation/level of consciousness scales or other neurologic assessments). A thorough evaluation of the current bedside assessment components will help identify which CAM-ICU Features are already being assessed.

An examination of your current ICU practice will also help to modify some parts of the current assessment to accurately identify delirium. We recommend incorporating the CAM-ICU Features into your regular physical assessment. The raw data are collected throughout the patient assessment and then plugged in to the CAM-ICU algorithm to discern for the presence or absence of delirium.

**13. How should I document the CAM-ICU?**

The first step of adaptation is to decide where the results will be documented. We recommend documenting the CAM-ICU in the hourly portion of the nursing flowsheet. Most institutions document the overall CAM-ICU score and not the individual Features. However, if you have room, the individual Feature documentation may help with compliance and accuracy of the overall

assessment and provide excellent data for chart review when trying to identifying weaknesses in the assessment.

Once you have decided where to document the CAM-ICU findings, the next step is to identify what language you would like to use for the documentation. We have found that different institutions choose to record the overall CAM-ICU as either “positive” or “negative” OR “Yes”, “No” and “UTA.” It is important to note that UTA really means that you were unable to assess delirium because the patient’s level of consciousness was too deep to assess content of consciousness. In other words, UTA = coma/stupor instead of delirium or normal. The table below shows the various terminologies that have been used. We recommend picking the language that your staff best understands.

Overall CAM-ICU score			
Yes	Positive	Present	Delirious
No	Negative	Absent	Not Delirious
UTA*	UTA*	UTA*	UTA*

\*UTA = unable to assess

It is essential to recognize that UTA should only be used with comatose patients. We along with many other institutions have found that bedside staff are prone to overusing UTA when they have misunderstandings about delirium and/or how to perform the CAM-ICU. Swan et al. recently published a helpful report on a process improvement project to decrease inappropriate UTA ratings.<sup>19</sup>

#### 14. How can I determine if my staff is performing the CAM-ICU correctly?

We suggest conducting a CAM-ICU competency. This is a great way to identify misunderstandings with the CAM-ICU as well as provide an opportunity to teach about delirium. This periodic competency could include assessment case studies, delirium facts, and spot checks with CAM-ICU experts. There are spot checking details and a form available on our website at: <http://www.icudelirium.org/delirium/monitoring.html>. Spot checking provides an excellent opportunity to educate regarding mistakes and misconceptions.

#### 15. The CAM-ICU was validated with the RASS, but my hospital uses a different sedation-agitation/level of consciousness (LOC) scale. Can I use a different sedation-agitation/LOC scale with the CAM-ICU? (i.e. SAS [Riker Sedation-Agitation Scale], Ramsay, MAAS [Motor Activity Assessment Scale])

**Yes.** The CAM-ICU was originally validated using the RASS, but any validated sedation-agitation/LOC scale can work for evaluating the level of consciousness for the purpose of CAM-ICU assessment. The RASS is not the same as other sedation-agitation/LOC assessments and therefore the number schematic will be different. For that reason, it is important to determine which values on your current scale correlate with the terms and descriptions of the RASS scale. The problem with some sedation-agitation/LOC scales is the mix of verbal and physical stimulation at the same level. This makes it difficult to distinguish the key feature that allows someone to be assessable for delirium—response to verbal stimulation. For example:

SAS	RASS
7	+4
6	+2, +3
5	+1
4	0
3	-4, -3, -2, -1
2	-4
1	-5

OR

Ramsay	RASS
1	+1, +2, +3, +4
2	-1, 0
3	-3, -2, -1
4	-4, -3, -2, -1
5	-4, -3, -2, -1
6	-5

OR

MAAS	RASS
6	+4
5	+3
4	+2, +1
3	0
2	-3, -2, -1
1	-4
0	-5

#### 16. How do I obtain copyright permission?

We have obtained copyright for the CAM-ICU and its educational materials and have deliberately made it unrestricted in terms of use. We ask that you include the copyright line on the bottom of the pocket cards and other educational materials, but do not require you to obtain a written letter of permission for implementation and clinical use.

Copyright line: "Copyright © 2002, E. Wesley Ely, MD, MPH and Vanderbilt University, all rights reserved"

For information on the copyright for the original CAM, please refer to the following website:

[www.hospitalelderlifeprogram.org](http://www.hospitalelderlifeprogram.org)

#### 17. How do I obtain Picture Packets and/or Pocket Cards?

We will be glad to assist you in ordering the materials. Please contact us at [delirium@vanderbilt.edu](mailto:delirium@vanderbilt.edu). Please make the subject of your email "CAM-ICU order". This will ensure that your request is processed in a timely manner.

#### 18. Where can I learn more about ICU delirium and the CAM-ICU?

Check out our website: [www.icudelirium.org](http://www.icudelirium.org). The site includes lots of helpful links for references, training videos, protocols, patient & family education, etc. Also, feel free to contact our team at [delirium@vanderbilt.edu](mailto:delirium@vanderbilt.edu).

#### 19. How can I arrange for in-person training?

Several members of our staff are available for doing onsite delirium teaching and/or CAM-ICU training at your institution. Additionally we periodically host CAM-ICU training workshops at Vanderbilt. If you are interested in any of this teaching, please contact us at [delirium@vanderbilt.edu](mailto:delirium@vanderbilt.edu).

#### 20. Is there technology available to support CAM-ICU implementation?

The CAM-ICU and RASS are available on an app for phones and tablets called Medcalc (Free) or Medcalc Pro (\$1.99). It is an easy way to learn nuances of how the CAM-ICU and RASS work in daily practice at the bedside via a smart phone or tablet device. The ICU Delirium and Cognitive Impairment Study Group have no financial interest in this company or in app revenues.

## Case Study # 1:

Mrs. G is a 65 y/o admitted for acute respiratory failure. She lives independently in her own home, is active in her church, and still drives herself everywhere. You walk into the room and she looks at you immediately. She appears anxious as she is being ventilated with BIPAP. Her arms are restrained, and she is pulling at them to get her BIPAP mask off. Her lowest RASS in the previous 24 hours was -2, and highest RASS was +2. She made 5 errors on the Letter test for Feature 2. She answers 2 questions correctly and completes the full command of Feature 4.

### STEP 1 - RASS

What is her current RASS Score? \_\_\_\_\_

#### Proceed with Step 2 – CAM-ICU assessment?

- ☐ **Yes** (it is possible to assess delirium at this level)  
☐ **No** (the patient is comatose and cannot be assessed for delirium)

### STEP 2 - CAM - ICU

#### Feature 1: Acute Change or Fluctuating Course of Mental Status

Is there an acute change from mental status baseline? Yes ☐ No ☐

Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

**Feature 1:** Present ☐ Absent ☐

**Proceed with Feature 2?** Yes ☐ No ☐

#### Feature 2: Inattention

Letters > 2 Errors: Yes ☐ No ☐

Pictures > 2 Errors: Yes ☐ No ☐ Not needed ☐

**Feature 2:** Present ☐ Absent ☐

**Proceed with Feature 3?** Yes ☐ No ☐

#### Feature 3: Altered Level of Consciousness

Current RASS (Think back to level of consciousness assessment in Step 1)

**Feature 3:** Present ☐ Absent ☐

**Proceed with Feature 4?** Yes ☐ No ☐

#### Feature 4: Disorganized Thinking

Combined number of Errors > 1 Yes ☐ No ☐

**Feature 4:** Present ☐ Absent ☐

#### Overall CAM-ICU:

- ☐ **Positive** (Feature 1 and 2 and either 3 or 4 present)  
☐ **Negative**

## Case Study # 2:

Your 80 y/o patient was successfully weaned from the ventilator and extubated at 0800 after abdominal surgery. He is alert and calm since all sedatives and analgesic medications had been stopped earlier in the morning. Yesterday evening and last night he had periods of agitation with a documented RASS of -1 to +3. He lives with family due to physical limitations with mobility but is still cognitively intact. He correctly answers all the questions and performs the complete command. He squeezes correctly on all the letters.

### **STEP 1 - RASS**

What is her current RASS Score? \_\_\_\_\_

#### **Proceed with Step 2 – CAM-ICU assessment?**

- ☐ **Yes** (it is possible to assess delirium at this level)  
☐ **No** (the patient is comatose and cannot be assessed for delirium)

### **STEP 2 - CAM - ICU**

#### **Feature 1: Acute Change or Fluctuating Course of Mental Status**

Is there an acute change from mental status baseline? Yes ☐ No ☐

Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

**Feature 1:** Present ☐ Absent ☐

**Proceed with Feature 2? Yes ☐ No ☐**

#### **Feature 2: Inattention**

Letters > 2 Errors: Yes ☐ No ☐

Pictures > 2 Errors: Yes ☐ No ☐ Not needed ☐

**Feature 2:** Present ☐ Absent ☐

**Proceed with Feature 3? Yes ☐ No ☐**

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

Current RASS (Think back to level of consciousness assessment in Step 1)

**Feature 3:** Present ☐ Absent ☐

**Proceed with Feature 4? Yes ☐ No ☐**

#### **Feature 4: Disorganized Thinking**

Combined number of Errors > 1 Yes ☐ No ☐

**Feature 4:** Present ☐ Absent ☐

#### **Overall CAM-ICU:**

- ☐ **Positive** (Feature 1 and 2 and either 3 or 4 present)  
☐ **Negative**

## Case Study # 3:

You enter the room of a 65 y/o patient admitted two days ago after she had emergency abdominal surgery. She is still on the ventilator, her eyes are closed. She does not open her eyes to verbal stimuli but does respond to physical stimuli. She was on paralytics and has been off them for 24 hours. She is still receiving sedatives. She has been RASS -5 to -2 over the past 24 hours. She is unable to follow any commands. Prior to surgery she had just retired from her teaching job.

### **STEP 1 - RASS**

What is her current RASS Score? \_\_\_\_\_

#### **Proceed with Step 2 – CAM-ICU assessment?**

- ☐ **Yes** (it is possible to assess delirium at this level)
- ☐ **No** (the patient is comatose and cannot be assessed for delirium)

### **STEP 2 - CAM - ICU**

#### **Feature 1: Acute Change or Fluctuating Course of Mental Status**

Is there an acute change from mental status baseline? Yes ☐ No ☐

Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

**Feature 1:** Present ☐ Absent ☐

**Proceed with Feature 2? Yes ☐ No ☐**

#### **Feature 2: Inattention**

Letters > 2 Errors: Yes ☐ No ☐

Pictures > 2 Errors: Yes ☐ No ☐ Not needed ☐

**Feature 2:** Present ☐ Absent ☐

**Proceed with Feature 3? Yes ☐ No ☐**

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

Current RASS (Think back to level of consciousness assessment in Step 1)

**Feature 3:** Present ☐ Absent ☐

**Proceed with Feature 4? Yes ☐ No ☐**

#### **Feature 4: Disorganized Thinking**

Combined number of Errors > 1 Yes ☐ No ☐

**Feature 4:** Present ☐ Absent ☐

#### **Overall CAM-ICU:**

- ☐ **Positive** (Feature 1 and 2 and either 3 or 4 present)
- ☐ **Negative**



## Case Study # 4:

You enter the room of a 78 y/o cardiac patient you have been seeing over several days. She lives at home and cares for her husband. She has been RASS -1 to 0 and CAM-ICU negative for the past 24 hours. She is RASS 0 this morning and greets you by saying "How do you think I look?" You exchange pleasantries about how she is doing today. She answers 2 questions correctly, completes the full command, but makes 4 errors with the Letter test and 5 errors with the Picture test.

### STEP 1 - RASS

What is her current RASS Score? \_\_\_\_\_

#### **Proceed with Step 2 – CAM-ICU assessment?**

- ☐ **Yes** (it is possible to assess delirium at this level)  
☐ **No** (the patient is comatose and cannot be assessed for delirium)

### STEP 2 - CAM - ICU

#### **Feature 1: Acute Change or Fluctuating Course of Mental Status**

Is there an acute change from mental status baseline? Yes ☐ No ☐  
Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

**Feature 1:** Present ☐ Absent ☐

**Proceed with Feature 2? Yes ☐ No ☐**

#### **Feature 2: Inattention**

Letters > 2 Errors: Yes ☐ No ☐  
Pictures > 2 Errors: Yes ☐ No ☐ Not needed ☐

**Feature 2:** Present ☐ Absent ☐

**Proceed with Feature 3? Yes ☐ No ☐**

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

Current RASS (Think back to level of consciousness assessment in Step 1)

**Feature 3:** Present ☐ Absent ☐

**Proceed with Feature 4? Yes ☐ No ☐**

#### **Feature 4: Disorganized Thinking**

Combined number of Errors > 1 Yes ☐ No ☐

**Feature 4:** Present ☐ Absent ☐

#### **Overall CAM-ICU:**

- ☐ **Positive** (Feature 1 and 2 and either 3 or 4 present)  
☐ **Negative**

## Case Study # 5:

You have been caring for a 22 year-old male in the PACU. He was in an MVA and went into the OR for internal fixation of a left open anterior acetabular fracture. He is now 30 minutes into his recovery period, and slowly begins moving and moaning. His movements are not aggressive. When you speak to him he opens his eyes briefly, making eye contact for 2 to 3 seconds before closing them again. He was awake, alert and appropriate prior to going to the OR. He makes 3 errors on the Letter A test.

### STEP 1 - RASS

What is her current RASS Score? \_\_\_\_\_

#### **Proceed with Step 2 – CAM-ICU assessment?**

- ☐ **Yes** (it is possible to assess delirium at this level)  
☐ **No** (the patient is comatose and cannot be assessed for delirium)

### STEP 2 - CAM - ICU

#### **Feature 1: Acute Change or Fluctuating Course of Mental Status**

Is there an acute change from mental status baseline? Yes ☐ No ☐

Has mental status fluctuated during the past 24 hours? Yes ☐ No ☐

**Feature 1:** Present ☐ Absent ☐

**Proceed with Feature 2? Yes ☐ No ☐**

#### **Feature 2: Inattention**

Letters > 2 Errors: Yes ☐ No ☐

Pictures > 2 Errors: Yes ☐ No ☐ Not needed ☐

**Feature 2:** Present ☐ Absent ☐

**Proceed with Feature 3? Yes ☐ No ☐**

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

Current RASS (Think back to level of consciousness assessment in Step 1)

**Feature 3:** Present ☐ Absent ☐

**Proceed with Feature 4? Yes ☐ No ☐**

#### **Feature 4: Disorganized Thinking**

Combined number of Errors > 1 Yes ☐ No ☐

**Feature 4:** Present ☐ Absent ☐

#### **Overall CAM-ICU:**

- ☐ **Positive** (Feature 1 and 2 and either 3 or 4 present)  
☐ **Negative**

## Answers for Case Studies

Case #1	
<b>Feature 1: Acute Change or Fluctuating Course of Mental Status</b>	
RASS has been -2 to +2 over the past 24 hours. She lived independently at home prior to hospitalization.	<b>Present</b>
<b>Feature 2: Inattention</b>	
She is restless and has >2 errors on Letters and the pictures were not needed.	<b>Present</b>
<b>Feature 3: Altered Level of Consciousness</b>	
She is restrained and anxious and trying to pull the BIPAP mask off with a RASS of +3	<b>Present</b>
<b>Feature 4: Disorganized Thinking</b>	
She answers 2 questions correctly and does complete the 2-step command with combined number of errors >1.	<b>Present</b>
<b>OVERALL CAM-ICU</b>	<b>POSITIVE</b>

Case #2	
<b>Feature 1: Acute Change or Fluctuating Course of Mental Status</b>	
Although he is at his mental status baseline, RASS has been -1 to +3 over the last 24 hours	<b>Present</b>
<b>Feature 2: Inattention</b>	
He made zero errors with the letters, and the pictures were not needed	<b>Absent</b>
<b>Feature 3: Altered Level of Consciousness</b>	
Current RASS is 0, he is alert and calm	<b>Absent</b>
<b>Feature 4: Disorganized Thinking</b>	
He answers all questions correctly and does complete the 2-step command with zero combined errors.	<b>Absent</b>
<b>OVERALL CAM-ICU</b>	<b>NEGATIVE</b>

Case Study #3	
<b>Feature 1: Acute Change or Fluctuating Course of Mental Status</b>	
RASS has been -5 to -2 over the past 24 hours and she is no longer on paralytics but is still on sedatives. She is currently unresponsive to verbal stimulation.	n/a
<b>Feature 2: Inattention</b>	
She only responds to physical stimuli—unable to assess (UTA)	n/a
<b>Feature 3: Altered Level of Consciousness</b>	
Current RASS is -4, she only responds to physical stimuli	n/a
<b>Feature 4: Disorganized Thinking</b>	
She only responds to physical stimuli – unable to assess (UTA)	n/a
<b>OVERALL CAM-ICU</b>	<b>UTA</b> - Remember we cannot assess CAM-ICU when a patient is RASS -4 or -5

Case Study #4	
<b>Feature 1: Acute Change or Fluctuating Course of Mental Status</b>	
She is RASS 0 today and RASS has been -1 to 0 for the past 24 hours and her mental status baseline appears unchanged. She lives at home and takes care of her husband.	<b>Present</b>
<b>Feature 2: Inattention</b>	
She got >2 errors with letters and >2 errors with pictures	<b>Present</b>
<b>Feature 3: Altered Level of Consciousness</b>	
Current RASS is 0, alert and calm	<b>Absent</b>
<b>Feature 4: Disorganized Thinking</b>	
She answers 2 questions correctly and does complete the 2-step command with combined number of errors >1.	<b>Present</b>
<b>OVERALL CAM-ICU</b>	<b>POSITIVE</b>

Case #5	
<b>Feature 1: Acute Change or Fluctuating Course of Mental Status</b>	
You understand that all patients in the PACU have received some type of anesthesia and have had a change in their mental status due to the anesthesia and therefore Feature 1 is present.	<b>Present</b>
<b>Feature 2: Inattention</b>	
He is restless and has >2 errors on Letters; the pictures were not needed.	<b>Present</b>
<b>Feature 3: Altered Level of Consciousness</b>	
The patient's RASS is -2 because he briefly awakens to voice (eye opening & contact <10 seconds)	<b>Present</b>
<b>Feature 4: Disorganized Thinking</b>	
Did not assess since the patient already meets criteria to be CAM-ICU positive	<b>Did not assess</b>
<b>OVERALL CAM-ICU</b>	<b>POSITIVE</b>

## ROAD MAP FOR INTERDISCIPLINARY COMMUNICATION

*Skipping any of these steps could leave the clinical team wanting more information!*

### Screening – Investigate the following:

1. Where is the patient going? (i.e., sedation/level of consciousness targets/goals)
2. Where is the patient now? (i.e., current CPOT/BPS, RASS/SAS, CAM-ICU/ICDSC)
3. How did they get there? (i.e., drug exposures)

### Presenting– State the following (only takes 10 seconds!):

1. **Pain score (CPOT/BPS)**
2. **Target RASS/SAS**
3. **Actual RASS/SAS**
4. **CAM-ICU/ICDSC**
5. **Drug exposures**

### T. H. I. N. K. about Delirium

Delirium recognition is like a burglar alarm for us. It forces us to consider identifiable, treatable causes earlier, and prevents knee-jerk treatment.

**T**oxic Situations: CHF, shock, dehydration, deliriogenic meds, new organ failure (liver, kidney)

**H**ypoxemia

**I**nfection/sepsis, **I**nflammation, **I**mmobilization, or is there a new nosocomial **I**nfection?

**N**onpharmacologic interventions: Early mobility/early exercise, hearing aids, visual aids (glasses), reorientation, sleep hygiene, music, noise control

**K**<sup>+</sup> or other electrolyte and metabolic problems

### Example ICU patient with ARDS

**Day 1:** **Target RASS** -4, on 70% oxygen/PEEP 14, **actual RASS** +1 to -1 (fighting vent & desaturating), **CAM-ICU** +, intermittent bolus benzodiazepines and fentanyl

*Patient is under-sedated in ARDS, best approach would be to increase drug delivery*

**Day 2:** **Target RASS** -1, on 40% oxygen/PEEP 6, **actual RASS** -3, **CAM-ICU** +, on propofol drip

*Patient is over-sedated and delirious, lighten or stop sedatives if appropriate– using spontaneous awakening trials coordinated with spontaneous breathing trials, also known as the “Wake Up and Breathe” approach from the ABC Trial.<sup>20</sup>*

**Day 3:** **Target RASS** 0, **actual RASS** 0, **CAM-ICU** +, off sedatives and analgesics since last night.

*Patient is delirious and off sedation... Why??? See T. H. I. N. K. above*

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