

# The 3D-CAM Training Manual

(For Clinical and Research Use)

The 3D-CAM is a brief verbal assessment tool that can be used to test patients and study participants for delirium. The 3D-CAM can be completed in an average of 3 minutes and performs very well compared to an expert evaluation. This document will explain how to use the 3D-CAM in a clinical and research setting and will provide some background on delirium and how this tool came to be. We hope you find this manual very easy to use. If you have any questions, please do not hesitate to contact:

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*Dear Colleagues,*

*We are very pleased that you are considering using the 3D-CAM: the 3-Minute Diagnostic Interview for Confusion Assessment Method (CAM) defined delirium.*

*The 3D-CAM was developed with support from the National Institute on Aging. Sophisticated measurement and biostatistics methods were used to identify the best assessment items for each of the 4 diagnostic features of delirium in the CAM. The resulting 3D-CAM interview can be completed in a median of 3 minutes, and has excellent diagnostic test characteristics with a sensitivity of 95% and specificity of 94% compared to a reference standard based on an extensive clinical evaluation..*

*We hope that the following Users Guide will assist in your use of the 3D-CAM in your clinical practice or research study. If you have any suggestions how to make this manual better, please send us feedback using the contact information above.*

*Thank you again for choosing the 3D-CAM.*

*Sincerely yours,*

*Edward R. Marcantonio, M.D. S.M.*

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**Acknowledgments**

This manual was developed incorporating information and materials (with permission) from the following sources:

1. Marcantonio ER, Ngo L, O'Connor MA, Jones RN, Crane PK, Metzger ED, Inouye SK. 3D-CAM: Validation of a 3-Minute Diagnostic Interview for CAM-defined Delirium. Ann Int Med. 2014; 161(8): :554-61 PubMed PMID: 25329203
2. Inouye SK. The Confusion Assessment Method (CAM): Training Manual and Coding Guide. 2003; Boston, Hospital Elder Life Program, LLC <[www.hospitalelderlifeprogram.org](http://www.hospitalelderlifeprogram.org)>.
3. Inouye SK. The Confusion Assessment Method (CAM): Short CAM Training Manual and Coding Guide. 2014; Boston: Hospital Elder Life Program, LLC <[www.hospitalelderlifeprogram.org](http://www.hospitalelderlifeprogram.org)>.
4. The SAGES Study: Training Manual and Questionnaires; 2010; Boston, Aging Brain Center.
5. Vasunilashorn SM, Devinney MJ, Marcantonio ER, Berger, M. A New Severity Scoring Scale for the 3-Minute Confusion Assessment Method (3D-CAM). JAGS. August 2020 - VOL. 68, NO. 8

## Introduction

Delirium is a sudden change in someone's thinking ability that can have devastating consequences and can be very easily missed due to its frequent subtlety. This common condition remains distressingly under-recognized, with average detection rates of 12-35% in most clinical settings. The 3D-CAM, which stands for: "3-minute diagnostic interview for CAM-defined delirium", will provide an efficient and reliable way to determine if a patient is delirious. The 3D-CAM can be completed in a median of 3 minutes, and has excellent diagnostic test characteristics with a sensitivity of 95% and specificity of 94% compared to a reference standard based on an extensive clinical evaluation\*.

The 3D-CAM is a short interview that uses verbal responses and allows completion of the Confusion Assessment Method (CAM) diagnostic algorithm†. By providing a short, reproducible method for detecting delirium, the 3D-CAM facilitates needed systematic case-finding for delirium among vulnerable hospitalized elders.

This manual includes the 3D-CAM instrument to be used in a clinical and research setting and includes possible skip patterns that can shorten the instrument even further. Please use this manual in any way that fits the needs of you and your team. During training, we have found that assessing patients in teams of two and discussing the scoring afterwards helps tremendously with understanding of the instrument and helps with consistency in the diagnosis of delirium.

\*Marcantonio ER, Ngo L, O'Connor MA, Jones RN, Crane PK, Metzger ED, Inouye SK. 3D-CAM: Validation of a 3-Minute Diagnostic Interview for CAM-defined Delirium. *Ann Int Med.* 2014; 161(8): 554-61 PubMed PMID: 25329203

† Inouye SK, van Dyck CH, Alessi CA, Balkin S, Siegal AP, Horwitz RI. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. *Ann Intern Med.* 1990;113(12):941-8. PubMed PMID: 2240918.

## Delirium Assessment Specifics

There are 4 key features of delirium that are identified in 2 ways 1) By asking the patient questions and 2) By observing the patient's speech and behavior.

Overview: Each item in the 3D-CAM instrument directly informs one of the 4 CAM features in the algorithm that leads to determining the presence or absence of delirium. For all items, if the patient's answer is 'incorrect', 'yes', 'don't know', 'no response', or 'non-sensical response', then the appropriate (unshaded) column on the right side is checked. Each of the 4 columns designates a CAM feature. If ANY ONE box in a column is checked, the feature is considered present and should be checked in the CAM Summary row near the bottom of the instrument. The CAM algorithm is considered positive if the following features are present: Feature 1) Acute onset or fluctuating course **and** Feature 2) Inattention **and either** Feature 3) Disorganized thinking **or** Feature 4) Altered level of consciousness. Here are some general guidelines:

- Make sure the patient has GLASSES and HEARING AIDS on.
- Prepare yourself to CODE WHAT YOU SEE AND HEAR. Make no assumptions as to the cause of the behavior and take ample notes as necessary.
- Each question can be stated twice.
- 'I don't know', no response at all or a non-sense response all count as 'incorrect'.
- Refused is only used when a patient actively refuses to answer the question.

## 3D-CAM ITEM BY ITEM GUIDE

These training instructions will provide item-by-item guidance for the 3D-CAM instrument when the full instrument is administered with no skip patterns:

1. **Please tell me the year we are in right now.**
  - A correct answer must be exact
2. **Please tell me the day of the week.**
  - A correct answer must be exact
3. **Please tell me what type of place is this.**
  - A correct answer must be exact, for example: hospital, a rehabilitation center and/or nursing home, or home as appropriate. The patient does not have to know the actual name of the facility, just that it is a facility providing care to those who are acutely ill (if in a hospital). However, if the patient voluntarily gives the wrong name for the facility, then code incorrect

**\*\*If any of 3 items above are anything other than correct, feature 3 is present – check the unshaded box in the column on the right**

### 4. and 5. Digits Backwards

- Make eye contact and attempt to gain the patient's attention. Say digits at a rate of one per second. Numbers may not be repeated. If asked to repeat, say, "I'm sorry I can only say them once. Let's try the next one." Directions may be repeated once.
- Score of 'correct' is given only if completely correct and 'error' if not. Please go through both items regardless of whether or not preceding item is done correctly.

### 6. Days of the Week Backwards

- If the patient does not seem to understand the task, an initial prompt for clarification is allowed: "What is the day that comes before Saturday?"
- If the patient cannot continue after they have been prompted once, mark as incorrect and proceed to the next question.
- If the patient starts to give the days of the week backward and stops midway through or makes ANY other error (omits a day, transposes days), mark the task as incorrect and proceed to the next question.
- If patient is able to complete through Sunday after initial clarifying prompt, count as correct even if they didn't say Saturday

### 7. Months of the Year Backwards

- If the patient does not seem to understand the task, an initial prompt for clarification is allowed: "What is the month that comes before December?"
- If the patient cannot continue after they have been prompted once, mark as incorrect and proceed to the next question.
- If the patient starts to give the months of the year backward and stops midway through or makes ANY other error (omits a month, transposes months), mark the task as incorrect and proceed to the next question.

- If patient is able to complete through January after initial clarifying prompt, count as correct even if they didn't say December

**\*\*If any of items 4, 5, 6, or 7 above are anything other than correct, feature 2 is present– check the unshaded box in the column on the right**

#### **PATIENT-REPORTED SYMPTOMS**

##### **8. During the past day have you felt confused?**

- Can prompt with “Any time in the last 24 hours” if they say “Well not today but I was last night”. Can also rephrase to say “Have you felt mixed up about anything you normally wouldn't feel mixed up about?”
- Code only if confused about basic information like where they are, the date, or reason for hospitalization, not details of medical condition and/or treatment.

##### **9. During the past day did you think that you were not really here [in the hospital]?**

- Can give an example ‘For example, did you wake up in the middle of the night or this morning and think you were at home?’
- Transient disorientation upon waking should not be counted (i.e. <15 seconds after waking).

##### **10. During the past day, did you see things that were not really there?**

- If the patient does not understand the question or if you feel you need to rephrase the question, say “Sometimes in the hospital, people feel mixed up and think strange things have happened to them. I want to know whether any of these things have happened to you. For example, did you think you saw a cup on the table and when you reached for it, it wasn't there”?
- If the patient reports no perceptual disturbances in response to this question but verbally reports having a disturbance later at another point in the interview, rephrase the appropriate questions and ask whether the patient did actually have the experience. For example say, “Now let me make sure that I understand you. Did you say that you thought you saw....?” Then find out exactly when it happened, that is, whether it happened within the last 24 hours. If the response is yes, within 24 hours, change the appropriate response category to reflect this.

**\*\*If any of items 8, 9, or 10 above are anything other than ‘no’, feature 1 is present– check the unshaded box in the column on the right**

#### **OBSERVATIONAL ITEMS**

##### **11. A. Was the patient sleepy during the interview? (requires evidence of falling asleep at least once; examples: head bob, twitch, eyes roll back, snore; but easy to arouse)**

- See text below item B for more information

##### **B. Was the patient stuporous or comatose during the interview? (Difficult to impossible to arouse)**

- When entering the room and waking a patient up the first time, reduced level of consciousness (LOC) should not be coded. Even if you have to prod them strongly to wake them, this first 'wake up' is allowed as normal. A reduced LOC should only be coded when there is evidence of falling asleep while you are still in the room.
- Assessing level of consciousness: Utilize the following 3 successive stimuli for arousal:
  - i. Loud voice
  - ii. Gentle touch (hand, then arm)
  - iii. Loud voice and gentle shaking of one shoulder

Examples: If the patient is any of these, altered level of consciousness will be 'yes'.

- Sleepy: Patient arouses readily to voice or gentle touch.
- Stupor: Patient requires loud voice and shaking repeatedly.
- Coma: Patient is unarousable by any of these means.

Additional hints:

- If patient keeps eyes closed for entire interview but answers questions correctly and none of the stimuli described above are needed, do not score as sleepy. Evidence of actually falling asleep is needed to be coded as sleepy (see below).
- To determine if someone is really asleep, you will need to be patient. If you do not get a response to a question and the patient has their eyes closed, please wait up to 15 seconds to see if they respond spontaneously. If they do not respond, carefully look for additional signs of sleep (eyes rolled back, head bobbing, snoring, twitching, etc.).
- If eyes are closed with no signs of sleep, say their name and ask them if you should repeat the question or if they were 'just thinking'

**12. Did the patient show hypervigilance (having excessively strong responses to ordinary objects/stimuli in the environment, being inappropriately startled)?**

- If the patient seems extremely watchful, and is constantly scanning the environment and focusing on objects, he is hypervigilant. If he becomes excessively absorbed with objects, he may be hypervigilant. When the patient appears hypervigilant because he is carrying out a specific task, for example, repetitively folding sheets during interview, only code as hypervigilant if the patient is absorbed with examining the sheets at the same time. The patient would have to be examining the sheets as he was folding them for this behavior to be coded as hypervigilance. The patient can be grasping and picking the sheets but not be fixated on them. There is often a foreboding quality to the hypervigilance, with the patient appearing fearful. An example of hypervigilance with this foreboding quality is when a patient seems fixated on a cardiac monitor and cringes from it, or looks afraid.

**\*\*If any of items 11A, 11B or 12 above is 'yes', feature 4 is present– check the unshaded box in the column on the right. If 11B is 'yes' and patient is stuporous throughout entire interview, mark 13-20 as 'unable to assess' and check the unshaded boxes in the column to the right. This will appropriately assign a very high severity score. If patient is stuporous for only parts of the interview, then code 13-20 according to observations.**

**13. Was the patient's flow of ideas unclear or illogical? (nonsensical speech, inappropriate answers to questions, contradictory statements or shifting unpredictably from subject to subject)**

- Non-sense answer: You ask the patient if they needed help with eating, and the response is: "All the bags are here."
- Contradictory statement: Patient said they slept through the night, and then later indicated the nurse kept coming in and waking them up throughout the night.
- Code illogical flow if a persistent thought(s) prevents patient from answering the interviewer's question.
- Note: Patient must be able to speak (e.g., not comatose, intubated) to assess this item.

**14. Was the patient's conversation rambling, inappropriately verbose, or tangential (off target responses or telling a story unrelated to the interview)?**

- Did the patient respond with rambling conversation, for example tells a story upon answering the question which is inappropriately verbose or long. Some patients are just loquacious (talkative) and take a longer time to answer the interviewer's question. The talking must be excessive and off target (something minimally related to the question) to be coded as rambling.
- Some patients are just loquacious (talkative) and take a long time to answer the interviewer's question. Although the patient's answer might at first appear tangential, if the stories are related to the questions and the patient eventually responds to the question, this is not coded as tangential. The talking must be about something unrelated to the question, or a change of subject to be coded as tangential. For example, the interviewer is asking questions about sleep problems and the patient responds by telling you about his family or asks you whether you are married.
- Note: Patient must be able to speak (e.g., not comatose, intubated) to assess this item.

**15. Was the patient's speech unusually limited or sparse? (inappropriately brief or stereotyped answers)?**

- For limited or sparse speech, the patient doesn't initiate any conversation, but responds adequately to questions, with only yes/no responses. The interviewer might have to repeat the questions several times before the patient responds with anything more than yes/no answers. In severe cases, there is almost no conversation from the patient.

**\*\*If any of items 13, 14, or 15 above are 'yes', feature 3 is present– check the unshaded box in the column on the right**

**16. Did the patient have trouble keeping track of what was being said during the interview? (repeatedly asking the interviewer to repeat questions)**

- If the interviewer has to ask questions repeatedly before the patient responds, this is a case of the patient having trouble keeping track of the interview. Additional inattentive behaviors are as follows: a) The patient does not follow what is being said during the interview, that is, he may be answering a question and in the middle looks away from the interviewer or just stops talking and does not finish responding; b) The patient loses track of the fact that he is being interviewed. For example, the patient starts to speak to someone else and doesn't come back to the interview; c) The

patient can also lose track of what he is saying. The patient often has little eye contact with the interviewer. This item can also be present when the patient answers each question with the exact same response, even though it is no longer appropriate to the question.

**17. Did the patient appear inappropriately distracted by environmental stimuli (such as television, people outside the room, roommate's conversations)?**

- If the patient seems inappropriately diverted by normal stimuli, code him as distractible. Such patients are generally unable to screen out easily recognizable sounds or sights. For example, the patient stops answering questions because he hears people in the hall talking, running water, or beepers. He is easily sidetracked by these sounds and turns his head away from the interviewer. If the patient is appropriately distracted by momentary noise, like something dropping outside his door or loud talk, do not code this as positive. A sure sign that the patient is not inappropriately distracted is when the interviewer is also distracted by the noise.

**\*\*If either item 16 or 17 above are 'yes', feature 2 is present– check the unshaded box in the column on the right**

\*\*Note for final 3 items below: Fluctuation refers to consistency of a symptom or symptoms across the interview. If symptom(s) are consistent throughout, then fluctuation is not present. If symptoms tend to come and go, fluctuation is more likely present.

**18. Did the patient's level of consciousness fluctuate during the interview? (frequently falling asleep for part of the interview, but wide awake for part of the interview)**

- Example: For part of the interview, patient is alert and responsive to all questions, while at other times patient is sleepy and difficult to arouse.

**19. Did the patient's level of attention fluctuate during the interview? (very inattentive for part of the interview, but attentive for part of the interview –Note: just getting some questions correct and others incorrect is insufficient to code this feature)**

- Note: just getting some questions correct and others incorrect is insufficient to code this feature.
- Did patient demonstrate a fluctuating level of attention or inattention on either informal or formal tasks of attention? Formal tasks (digit span, DOW and MOY backwards): Was attention variable within or between items? Was the patient able to do the harder tasks but struggled with the easier ones?
- Example: For part of the interview, the patient is able to focus on questions and keep track of what is being said; at other times, interviewer cannot engage the patient, who perseverates or answers inappropriately.

**20. Did the patient's speech/thinking fluctuate during the interview (speaks very slowly during part of the interview then very fast, or speech was coherent for part of the interview and then nonsensical)?**

- Example: For part of the interview, patient gives clear, coherent answers, and at other times, gives non-sense, incoherent answers

**\*\*If any of items 18, 19, or 20 above are 'yes', feature 1 is present– check the unshaded box in the column on the right**

**SUPPLEMENTARY QUESTIONS: To be asked only if Feature 1 is NOT present, Feature 2 is present, and either Feature 3 or Feature 4 are present.**

**21. IF IT IS THE FIRST DAY OF HOSPITALIZATION OR NO PREVIOUS 3D-CAM RATINGS ARE AVAILABLE: Consult the medical record or contact a family member, friend, or health care provider who knows the patient well to find out if the patient is experiencing an acute change. “Is the patient experiencing an acute change in their memory or thinking?”**

- This question is asking about a recent change in behavior. Is his/her relative confused? Does he/she seem disoriented? An example would be if his/her friend or relative suddenly does not make sense at times when talking. Code the item as 'yes' if these changes are NEW and have occurred mainly in the past few hours to days. If they have been problems for many months, answer NO. If the answer is 'yes', then CAM feature 1 should be coded as positive which would confirm delirium positive.
- In the medical record look for an explanation of a change in behavior from baseline or presence of delirium “trigger” words such as “altered mental status”, “mental status changes”, “acute confusion”, “disorientation”, “hallucinations” or “reorientation”. Please refer to these background articles for further information:

Inouye SK, Leo-Summers L, Zhang Y, Bogardus ST, Leslie DL, Agostini JV. A chart-based method for identification of delirium: validation compared with interviewer ratings using the Confusion Assessment Method. *J Am Geriatr Soc.* 2005;53:312-318

Saczynski JS, Kosar CM, Xu G, Puelle MR, Schmitt E, Jones RN, Marcantonio ER, Wong B, Isaza I, Inouye SK. A Tale of Two Methods: Chart and Interview Methods for Identifying Delirium. *J Am Geriatr Soc.* 2014; 62:518-524.

**22. IF SECOND DAY OF HOSPITALIZATION OR LATER AND PREVIOUS 3D-CAM RATINGS ARE AVAILABLE: Review previous 3D-CAM assessments and determine if there has been an acute change in performance, based on ANY new "positive" items.**

- For example, if the patient scored worse on any of the attention items on interview Day #2, acute change can be coded on that day. The same applies for any of the 4 CAM features. If the answer is 'yes', then CAM Feature 1 should be coded as positive, which would confirm delirium positive.

**Scoring the 3D-CAM**

The 3D-CAM is considered positive if the following features are present: 1) acute onset or fluctuating course **and** 2) inattention **and** 3) either disorganized thinking **or** 4) altered LOC

<b>Feature</b>	<b>Question #</b>	<b>Positive Answer – <i>Any answer in yellow shade</i></b>
1. Acute Onset  -OR-  Fluctuation	<b>Any of the items 8, 9, 10</b>    <b>Any of the items 18,19 &amp; 20</b>	<b>Yes, Don't Know, No response, Non-sensical response</b>    <b>Answer is 'yes'/Unable to assess</b>
-AND-		
2. Inattention	<b>Any of the items 4, 5, 6, 7</b>    <b>Either of the items 16 &amp; 17</b>	<b>Incorrect, Don't Know, No response, Non-sensical response</b>    <b>Answer is 'yes'/Unable to assess</b>
-AND EITHER-		
3. Disorganized Thinking	<b>Any of the items 1, 2, 3</b>    <b>Any of the items 13, 14, 15</b>	<b>Incorrect, Don't Know, No response, Non-sensical response</b>    <b>Answer is 'yes'/Unable to assess</b>
-OR-		
4. Altered Level Of Consciousness	<b>Either of the items 11A, 11B or 12</b>	<b>Answer is 'yes'</b>
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**3D-CAM FLOW DIAGRAM**

Feature 1: Acute Change/Fluctuating Course  
 Any ONE of the following present?  
 Assessment questions: Self report of confusion OR disorientation OR hallucinations  
 Observed fluctuations in: consciousness OR attention OR speech

**YES/NO**

Feature 2: Inattention  
 Any ONE of the following present?  
 Assessment questions incorrect: Digit Span 3 backwards OR 4 backwards OR days of week backwards OR months of year backwards  
 Observed: Trouble keeping track of interview or inappropriately distracted

**NO**

**DELIRIUM NOT PRESENT**

**YES**

Feature 3: Disorganized Thinking  
 Any ONE of the following present?  
 Assessment questions incorrect: Orientation to year, day of week, type of place  
 Observed: Flow of ideas unclear/illogical, conversation rambling/off target or abnormally sparse

**YES**

**DELIRIUM PRESENT**  
 (only if the first box, feature 1, is a yes. If not, see last box)

**NO**

**YES**

Feature 4: Altered Level of Consciousness  
 Any ONE of the following present?  
 Observed: Patient sleepy, stuporous, comatose and/or hypervigilant

**NO**

**DELIRIUM NOT PRESENT**

\*Feature 1 Supplementary Questions: To be asked only if feature 2 is present and either feature 3 or feature 4 is present, but feature 1 is uncertain:  
 Contact a family member, friend or health care provider and ask, "Is there evidence of acute (sudden) change in mental status (memory or thinking) from the patient's baseline?"  
 OR  
 If 2nd day of hospitalization or later and previous 3D-CAM ratings are available: Has there been an acute change in performance, based on ANY new "positive" items?

**YES**

**DELIRIUM**

## Severity Supplement/Instructions

Recent literature emphasized the importance of measuring delirium severity in addition to determining its presence. A delirium severity score may be useful for tracking the severity of delirium over time within individual patients, in both clinical practice and research studies. Thus we developed and validated a new delirium severity scoring method based on the 3D-CAM instrument that yields a raw severity score ranging from 0 to 20 points. This raw score is the sum of positive items present on 20 questions of the original 3D-CAM instrument, where positivity is defined as an incorrect response to a cognitive test item (3D-CAM items 1-7), patient endorsement of a symptom probe (items 8-10), or interviewer endorsement of an observational feature (items 11-20).

Vasunilashorn SM, Devinney MJ, Marcantonio ER, Berger, M. A New Severity Scoring Scale for the 3-Minute Confusion Assessment Method (3D-CAM). JAGS. August 2020 -VOL. 68, NO. 8

**Optional 3D-CAM-S Severity Score: Add 1 point for each positive item 1-20 above (add up total number of check marks under CAM Features 1-4 at the right above).**

**If items 21 or 22 are asked and are positive, add 1 additional point to the overall score, keeping denominator at 20.**

**Total 3D-CAM-S Score = \_\_\_\_\_/20**

\*For example, if the patient gets the day of the week incorrect, the digits backwards incorrect and the rater answers yes to #17 (Did the patient appear distracted?), the severity score would be 3 out of 20.

NOTE: The full instrument needs to be administered in order to calculate the raw severity score. If the skip pattern is implemented (as described in the next section), the raw score cannot be obtained.

## Supplemental and Skip Pattern Instructions

The 3D-CAM instrument is in the form of a bedside, user-friendly chart. This chart is divided into 2 overall sections with the first being patient assessment questions 1-10 and the second being 'Observer Ratings' items 11-22. Secondly, there are sub-sections by feature divided by a bold line (For example, the first sub-section is questions 1-3 which informs Feature 3). Start by asking the patient questions 1-10. The remainder of the items should be completed immediately after concluding the patient interview.

For all items, if the patient's answer is 'incorrect', 'yes', 'Don't know', 'no response', 'non-sensical response', then the appropriate (unshaded) column on the right side is checked. Each of the 4 columns designates a CAM feature. If ANY ONE box in a column is checked, the feature is considered present and should be checked in the CAM Summary row near the bottom of the instrument. The CAM algorithm is considered positive if the following features are present: Feature 1) Acute onset or fluctuating course **and** Feature 2) Inattention **and either** Feature 3) Disorganized thinking **or** Feature 4) Altered level of consciousness.

### **SKIP PATTERN**

For an even shorter instrument, the following skip pattern can be utilized:

If ANY item in a sub-section is answered incorrectly or endorsed as yes, then the rest of the questions in that sub-section and corresponding Observer Rating section can be skipped.

For example: If the patient does not know what day of the week it is, disorganized thinking (Feature 3) is automatically present so the rater does not need to ask the question directly below (#3. Can you tell me what type of place this is?) and also does not need to complete observation ratings questions #13, 14 or 15. The rater would then skip to question #4, the first question in the attention section of the chart and apply the same pattern.

NOTE: The 3D-CAM has now been validated using the skip pattern. It has been shown that the skip pattern does not degrade performance for clinicians who know the patient's baseline but if the patient's baseline is not known, we recommend using the full 3D-CAM at least for the first administration. ALSO, utilizing the skip pattern does not allow a measurement of severity. To calculate the 3D-CAM-S Raw, the full instrument needs to be administered.

## Research Addendum

When using the 3D-CAM instrument for research purposes, consider assigning numeric codes for columns/responses within the database. For example: 1 – correct/no, 2 – incorrect/yes, don't know, no response, non sensical, 7 – refused, 9 - missing, skipped, unable to assess. Tip: Try to avoid any skipped or missing data whenever possible.

We have found that assessing patients in teams of two and discussing the scoring together afterwards helps tremendously with understanding of the instrument and helps with consistency in the diagnosis of delirium.

We recommend the following procedure to train research staff on the use of the 3D-CAM:

1. Practice administering the instrument while coding the answers to get familiar and comfortable with the flow of the instrument.
2. Practice administering the instrument with older patients in pairs. Discuss any coding discrepancies that might occur.
3. We recommend a minimum of 5 delirious and 5 non-delirious patients be rated in pairs and discussed for the study team members to be standardized. Reminder: The team members must not know the delirium status of the patients before the assessment.

To ensure ongoing coding consistency between multiple research team members, we recommend that 5-10% of the interviews be simultaneously rated by 2 assessors. While one RA leads the patient interview, both RA's should code the CAM features separately and without discussion. This provides ongoing training and informs inter-rater reliability.

\*Marcantonio ER, Ngo L, O'Connor MA, Jones RN, Crane PK, Metzger ED, Inouye SK. 3D-CAM: Validation of a 3-Minute Diagnostic Interview for CAM-defined Delirium. *Ann Int Med.* 2014; 161(8): :554-61 PubMed PMID: 25329203

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## 10 TIPS FOR DELIRIUM INTERVIEW SUCCESS

1. The interview “begins” at the door as you observe the patient and his/her behavior on approach. It ends when you leave sight of the patient.
2. When approaching a patient, first observe patient response as he/she sees you approach. If no engagement made, seek patient’s attention with progressively stronger stimuli: speak to patient, lightly touch, gently shake or tap, and lastly shake moderately to arouse.
3. Speak slowly and clearly. Do not rush.
4. In assessing for disturbance of behavior remember the comparison is to the norm of human behavior. No excuses because in hospital, ill, older, just got medication, etc...
5. If patient shows increasing impatience with interview and seems to be tiring of questions, offer positive reinforcement and insure that there are just a few more questions remaining.
6. Complete observational scoring sections of interview as soon as interview ends.
7. Review each item of the interview before completing the diagnostic algorithm.
8. The assessment of attention is key in delirium detection. Carefully observe patient’s ability to maintain and appropriately shift attention during both informal and formal testing items.
9. In cases of incomplete patient questioning the observational items should still be completed.
10. Jot notes describing patient behavior and performance to support observations