

# **CAM**

## ***Confusion Assessment Method***

**Purpose** : Test for delirium

**Admin time** : 10 min

**User Friendly** : High

**Administered by** : Healthcare professional

**Content** : The original 9-item CAM identifies delirium using the following criteria: acute onset and fluctuation, inattention, disorganized thinking, altered level of consciousness, disorientation, memory impairment, perceptual disturbances, psychomotor agitation or retardation, and altered sleep-wake cycle.

**Author** : Inouye SK, 1990

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<https://www.cgakit.com/p-2-cam>

# CONFUSION ASSESSMENT METHOD (CAM) LONG FORM

## **OBSERVATIONS BY INTERVIEWER**

Interviewer: Immediately after completing the interview, please answer the following questions based on what you observed during the interview, Short Portable Mental Status Questionnaire (SPMSQ) (Pg 25), and Digit Span Test.

### ACUTE ONSET

1. a. Is there evidence of an acute change in mental status from the patient's baseline?

Yes	- 1
No	- 2
Uncertain	- 8

- b. (IF YES) Please describe change and source of information:

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### INATTENTION

2. a. Did the patient have difficulty focusing attention, for example being easily distractible, or having difficulty keeping track of what was being said?

Not present at any time during interview	- 1
Present at some time during interview, but in mild form	- 2
Present at some time during interview, in marked form	- 3
Uncertain	- 8

- b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

Yes	- 1
No	- 2
Uncertain	- 8
Not Applicable (NA)	- 9

- c. (IF PRESENT) Please describe this behavior:

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DISORGANIZED THINKING

3. a. Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow or of ideas, unpredictable switching from subject to subject?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase or decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe this behavior:

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ALTERED LEVEL OF CONSCIOUSNESS

4. a. Overall, how would you rate this patient's level of consciousness?

- GO TO Q5 ← Alert (Normal) - 1
- Vigilant (Hyperalert, overly sensitive to environmental stimuli, startled very easily) - 2
- Lethargic (Drowsy, easily aroused) - 3
- Stupor (Difficult to arouse) - 4
- Coma (Unarousable) - 5
- Uncertain - 8

b. (IF OTHER THAN ALERT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF OTHER THAN ALERT) Please describe this behavior:

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**DISORIENTATION**

5. a. Was the patient disoriented at any time during the interview, such as thinking he/she was somewhere other than the hospital, using the wrong bed, or misjudging the time of day?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe this behavior:

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MEMORY IMPAIRMENT

6. a. Did the patient demonstrate any memory problems during the interview, such as inability to remember events in the hospital or difficulty remembering instructions?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe this behavior:

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PERCEPTUAL DISTURBANCES

7. a. Did the patient have any evidence of perceptual disturbances, for example, hallucinations, illusions, or misinterpretations (such as thinking something was moving when it was not)?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe these perceptual changes:

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PSYCHOMOTOR AGITATION

8. a. (Part 1) At any time during the interview, did the patient have an unusually increased level of motor activity, such as restlessness, picking at bedclothes, tapping fingers, or making frequent sudden changes of position?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe this behavior:

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PSYCHOMOTOR RETARDATION

8. a. (Part 2) At any time during the interview, did the patient have an unusually decreased level of motor activity, such as sluggishness, staring into space, staying in one position for a long time, or moving very slowly?

- Not present at any time during interview - 1
- Present at some time during interview, but in mild form - 2
- Present at some time during interview, in marked form - 3
- Uncertain - 8

b. (IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?

- Yes - 1
- No - 2
- Uncertain - 8
- NA - 9

c. (IF PRESENT) Please describe this behavior:

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ALTERED SLEEP-WAKE CYCLE

9. a. Did the patient have evidence of disturbance of the sleep-wake cycle, such as excessive daytime sleepiness with insomnia at night?

Yes	- 1
No	- 2
Uncertain	- 8

b. (IF YES) Please describe the disturbance:

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## **CONFUSION ASSESSMENT METHOD (CAM)** **TRAINING INSTRUCTIONS**

### **General Explanation**

CAM was originally validated for use based on observations made during a brief, structured interview that included the Mini-Mental State Examination (Reference: Folstein MF et al; J Psychiatr Res. 1975; 12:189-98) and Digit Span Test. Currently, some formal cognitive assessment is recommended, since the validity of using CAM for unstandardized observations (e.g., routine clinical care) is poor (Reference: Inouye SK, et. al; Arch Int Med. 2001; 161: 2467-73). We recommend the Modified Mini-Cog test and digit span test.

This section is intended to evaluate for evidence of delirium (acute confusional state) based on observations you made before, during, or after the interview. This section must be completed immediately after completing the interview to assure accurate information. Your answers should be based on observations of the respondent's behavior or statements during any part of your contact with the respondent (e.g., consent, conversation, interview) that day, and need not be limited to the interview period alone.

### **General Guidelines**

In general, each question has three parts (a, b, c). Note that questions 1 (acute onset) and 9 (sleep-wake cycle) may require information from an outside observer and follow a slightly different format. Specific details on Parts a-c for each question will be presented below. General scoring is as below:

- a.--“Not present at any time during interview” - means the behavior was absent or not observed during the interview process.
- “Present at some time during the interview, but in mild form” - means the behavior was present or observed during the interview process, but did not significantly interfere with the interview process.
- “Present at some time during the interview, in marked form” - means the behavior was present or observed during the interview process, and did significantly interfere with the interview process.
- Score as “Uncertain” when cannot assess behavior, for example, due to incomplete interview, intubation, coma, etc.

- b. --“(IF PRESENT) Did this behavior fluctuate during the interview, that is, tend to come and go or increase and decrease in severity?”

If observed, note whether there were times when the respondent was clear, while other times were abnormal (come and go); or did the behaviors tend to get worse and better at times (increase and decrease in severity). Not applicable (9) should be circled if the behavior was not present (skip question).

Specific examples of fluctuation:

INATTENTION -- At times, respondent is able to focus on questions and keep track of what is being said; at other times, interviewer cannot engage respondent, who perseverates answers or answers inappropriately.



SPEECH -- At times, respondent gives lucid, coherent answers, and at other times, gives nonsensical, incoherent answers.

LEVEL OF CONSCIOUSNESS -- At times, respondent is alert and responsive to all questions, while at other times respondent is lethargic, unresponsive, and difficult to arouse.

Note: fluctuation requires that the patient switch back and forth between states at least twice (a full cycle).

c.--“(IF PRESENT) Please describe the behavior.”

Describe the actual observed behavior (s) or statement (s) by respondent that led you to rate the behavior as present. Describe the behaviors in detail. For observed behavior, DO NOT GIVE YOUR IMPRESSION OR INTERPRETATION OF THE BEHAVIOR, RECORD THE ACTUAL BEHAVIOR OBSERVED.

Examples:

(i) Incorrect - “Respondent disoriented to place.”

Correct - “Respondent thought she was on a ship in Hawaii.”

(ii) Incorrect - “Respondent seemed inattentive.”

Correct - “Respondent’s attention darted around to every noise or voice in the environment. Eye contact was never made, and each question needed to be repeated 3-4 times.”

For statements, DO NOT GIVE YOUR INTERPRETATION OF THE STATEMENT, GIVE RESPONDENT’S ACTUAL WORDS, VERBATIM.

Examples:

(i) Incorrect - “Respondent’s speech incoherent.”

Correct - “In response to ‘what is the date?’, respondent replied, ‘Time. Time to go. Get the sailor suits. Be good boys and girls.’”

(ii) Incorrect - “Respondent repeated answers.”

Correct - “Respondent answered ‘1913’ to each of the orientation questions on cognitive function testing.”

Note: Although answers to Cognitive Function tests may be used as supporting evidence, do not rely on these alone. Examples of other observed behaviors should be given here.

## Specific Instructions

### **Q1a. ACUTE ONSET**

- (i) Question: Is there evidence of an acute change in mental status from the patient's baseline?
- (ii) Definition: Alteration in mental status (e.g., attention, orientation, cognition) that was new or worse for this patient, usually over hours to days.
- (iii) Examples:
  - Family reports patient has been lethargic and incoherent for two days prior to admission
  - Nurse reports that a patient with poor short-term memory and disorientation to time alone, suddenly became agitated, calling out to her dead husband, tearing off her clothes, and completely disoriented to time, place and person.
- (iv) Note: This information must usually be obtained from a family member, caretaker, or nurse, who knows the patient's baseline mental status and has observed the patient over time.

### **Q2a. INATTENTION**

- (i) Question: Did the patient have difficulty focusing attention, for example being easily distractible, or having difficulty keeping track of what was being said?
- (ii) Definition: Reduced ability to maintain attention to external stimuli and to appropriately shift attention to new external stimuli. Respondent seems unaware or out-of-touch with environment (e.g., dazed, fixated, or darting attention).
- (iii) Examples:
  - Questions must be frequently repeated because attention wanders, NOT because of decreased hearing.
  - Unable to gain respondent's attention or to make any prolonged eye contact. Respondent's focus seems to be darting about room.
  - Respondent keeps repeating answer to previous question (perseveration).
  - Respondent is dazedly staring at the TV. When you ask a question, he looks at you momentarily but does not answer. He then continues to stare at the TV.
- (iv) Cognitive function tests: errors on digit spans, Modified Mini-Cog Test, attention tasks, or other attention tests.

Note: Should be assessed separately from level of consciousness. A subject who is lethargic or stuporous may still have intact attention during periods of arousal.

### **Q3a. DISORGANIZED THINKING**

- (i) Question: Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?
- (ii) Definition: Disorganized thinking, as indicated by rambling, irrelevant or incoherent speech.
- (iii) Examples:
- (Irrelevant or nonsense answer) You ask the respondent if they needed help with eating, and the response is: "Let's go get the sailor suits!"
  - (Illogical flow of ideas) You ask the respondent, "How tall are you?" The reply is: "Tall? I need to get to the yellow brick road out there. Where's the party? My, oh no...."
- (iv) Note: Patient must be able to speak or write (e.g., not comatose, intubated) to assess this item.

### **Q4a. ALTERED LEVEL OF CONSCIOUSNESS**

- (i) Question: Overall, how would you rate this patient's level of consciousness?

Alert (Normal)	- 1
Vigilant (Hyperalert, overly sensitive to environmental stimuli, startled easily)	- 2
Lethargic (Drowsy, easily aroused)	- 3
Stupor (Difficult to arouse)	- 4
Coma (Unarousable)	- 5
Uncertain	- 8

- (ii) Definition: Defined above.

- (iii) Examples:

- Vigilant: The respondent startles easily to any sound or touch. Her eyes are wide open.
- Lethargic: The respondent repeatedly dozes off while you are asking questions. Difficult to keep respondent awake for interview, but does respond to voice or touch.

- Stupor: The respondent is very difficult to arouse and keep aroused for the interview, requiring shaking and/or repeated shouting.
- Coma: The respondent cannot be aroused despite shaking and shouting.

#### **Q5a. DISORIENTATION**

- (i) Question: Was the patient disoriented at any time during the interview, such as thinking he/she was somewhere other than the hospital, using the wrong bed, or misjudging the time of day?
- (ii) Definition: Impaired ability to locate oneself in one's environment, in reference to time, place or person.
- (iii) Examples:
  - During the interview in the hospital, respondent thinks she is at home.
  - Respondent thinks it is night-time, during the day.
  - Respondent repeatedly thinks you are her grand-daughter (NOT due to vision problems).
- (iv) Cognitive function tests: errors on orientation items.

#### **Q6a. MEMORY IMPAIRMENT**

- (i) Question: Did the patient demonstrate any memory problems during the interview, such as inability to remember events in the hospital or difficulty remembering instructions?
- (ii) Definition: Inability to learn new material or to remember past or recent events.
- (iii) Examples:
  - During the interview, respondent cannot recall how many children she has, nor her height and weight.
  - Although respondent is alert and attentive, with intact vision and hearing, he cannot follow the instructions on the performance tasks.
  - Respondent cannot state why or for how long he has been in the hospital.
- (iv) Cognitive function tests: errors on memory or recall items.

### **Q7a. PERCEPTUAL DISTURBANCES**

- (i) Question: Did the patient have any evidence of perceptual disturbances, for example, hallucinations, illusions, or misinterpretations (such as thinking something was moving when it was not)?
- (ii) Definition: Visual or auditory misinterpretations, illusions, or hallucinations.
- (iii) Examples:
  - (Auditory hallucinations) Respondent heard spouse and children speaking to him. No one was there.
  - (Visual hallucination) Respondent saw wife in room. No one was there.
  - (Auditory misinterpretation) Respondent hears beeper in hall, and thinks it is a siren.
  - (Visual misinterpretation) Respondent sees pile of laundry next to bed and thinks it is someone sitting there.
- (iv) Note: Illusions and misinterpretations arise from a false impression of an actual stimulus. With hallucinations, no stimulus is actually present.

### **Q8a. (Part 1) PSYCHOMOTOR AGITATION**

- (i) Question: At any time during the interview, did the patient have an unusually increased level of motor activity, such as restlessness, picking at bedclothes, tapping fingers, or making frequent sudden changes or position?
- (ii) Definition: Greatly increased level of activity as compared with the norm. These behaviors would indicate restlessness or agitation. Cardinal features include: repeated or constant shifting of position, increased speed of motor responses, repetitive movements (e.g., grasping/picking behaviors). May be voluntary or involuntary.
- (iii) Examples:
  - The respondent appears “antsy”, and is constantly shifting his position in bed.
  - The respondent is repeatedly pulling at her sheets and IV tubing (NB: behavior appears inappropriate and purposeless).
  - The respondent is pacing about the room during the interview.
- (iv) Note: Should be assessed separately from level of consciousness. Psychomotor agitation may be present even in the face of stupor.

### **Q8b. (Part 2) PSYCHOMOTOR RETARDATION**

- (i) Question: At any time during the interview, did the patient have an unusually decreased level of motor activity, such as sluggishness, staring into space, staying in one position for a long time, or moving very slowly?
- (ii) Definition: Greatly reduced or slowed level of activity as compared with the norm. These behaviors indicate sluggishness, slowing. Cardinal features include: decreased movement, slowness of motor responses, staring (but still aware of environment). May be voluntary or involuntary.
- (iii) Examples:
- Prolonged delay between when interviewer asks question and respondent begins to answer.
  - Respondent moves body very slowly to pick up a glass.
  - Respondent stares into space, but is still aware of the environment.
- (iv) Note: Respondent need not be lethargic (altered level of consciousness) to have slowness of response. Should be assessed separately from level of consciousness. Psychomotor retardation may be present with normal level of consciousness; also, patients with lethargy, stupor do NOT necessarily have psychomotor retardation.

### **Q9a. ALTERED SLEEP-WAKE CYCLE**

- (i) Question: Did the patient have evidence of disturbance of the sleep-wake cycle, such as excessive daytime sleepiness with insomnia at night?
- (ii) Definition: Alteration in the patient's usual sleep-wake cycle, ranging from hypersomolence to insomnia to reversal of the sleep-wake cycle (e.g., frequent napping during the day and insomnia at night.)
- (iii) Examples: as per definition.
- (iv) Note: Information must sometimes be obtained from nurse or caretaker.

## **SCORING THE CAM INSTRUMENT**

- a. Scoring: Delirium scored as 'present' (1) or 'absent' (0), based on the following criteria. These definitions are based on the validated Confusion Assessment Method (CAM) criteria. [Reference: Inouye SK et al; Annals of Internal Medicine. 1990; 113:941-8].

Score delirium as present (1) if meets the following criteria:

- (i) Acute onset

CAM 1a = 1 (Yes)

-OR-

Fluctuating course

CAM 2b OR 3b OR 4b = 1 (Yes)

-AND-

- (ii) Inattention

CAM 2a = 2, 3

-AND EITHER-

- (iii) Disorganized thinking

CAM 3a = 2, 3

-OR-

- (iv) Altered level of consciousness

CAM 4a = 2, 3, 4, 5

- b. Calculation Notes:

1. For CAM 1a, set 8 to missing. For CAM 2b, 3b, 4b -- set 8 to missing. 'Not applicable' (9) is equivalent to 'No' (2) (since this would be a skip question). If any one of these items has a non-missing value, can still rate 'acute onset/fluctuating course'. If all are missing, cannot rate 'acute onset/fluctuating course and delirium score is missing.
2. For CAM 2a, set 8 to missing. If this item is missing, delirium score is missing.
3. For CAM 3a and 4a, set 8 to missing. Can score delirium as long as one of these items has a non-missing value.