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# An Effective Cognition Assessment in Ventilated Patients

Gabrielle Lober, OTS and Rachel Walker, OTS

## Case

Ventilated patients have a high prevalence of cognitive dysfunction that often decreases their ability to engage in daily occupations. Occupational therapists have used a variety of strategies and assessments to gain knowledge on a patient's cognitive status. These findings can help therapists develop intervention plans to reach patient goals and improve functional abilities.



### 1 Ask: Research Question

What is the most effective cognitive screening tool for patients on ventilators or recently post-ventilator dependent?

### 2a Acquire: Search Terms

**Patient/Client group:** Ventilator or Post-Ventilator Dependent **Intervention:** Confusion Assessment Method **Comparison:** All Cognitive Assessments **Outcome:** Accurate Assessment of Cognitive Function

### 2b Acquire: Selected Articles

**Leutz et al. (2010):** A prospective cohort study comparing the validity and reliability of the Confusion Assessment Method for the ICU (CAM-ICU), Delirium Detection Score (DDS), and the Nursing Delirium Screening Tool (Nu-DESC), and their ability to detect and assess delirium in intensive care unit patients compared to DSM-IV criteria for diagnosing delirium completed by a delirium expert.

**Smith et al. (2016):** A prospective, observational cohort study to determine the reliability and validity of an objective and developmentally appropriate assessment for delirium, the Preschool Confusion Assessment Method for the ICU (psCAM-ICU), and delirium's prevalence in preschool-aged children.

**Soja et al. (2008):** A prospective, observational study that used the Confusion Assessment Method for the Intensive Care Unit as a way to monitor delirium, testing reliability, and monitoring compliance in a trauma setting.

### 3a Appraise: Study Quality

**Leutz et al. (2010):** Medium sample size (n=156) and the only study to compare the three assessments in the same patients against "the gold standard." Accounted for repeat-observer and expectation bias, and interrater reliability ( $\kappa=.89$ ). Significant differences between CAM-ICU and DDS in sensitivity ( $p<.0001$ ) and significant differences between CAM-ICU and Nu-DESC in specificity ( $p<.0001$ ). A limitation is that the CAM-ICU requires active cooperation from a patient, which may have effected patient fatigue for the remaining of the assessment. Although the sample size in this study is large, interrater reliability was based on only a quarter to a third of the sample.

**Smith et al. (2016):** Medium sample size (n=300) and the most recent study examining delirium assessments with the critically ill population. Controlled for exhaustion when assessing reliability, but this controlled process may have skewed interrater reliability ( $\kappa=.79$ ). psCAM-ICU was accurate (.86), had high sensitivity (.75) and high specificity (.91). The short form of the psCAM-ICU, which takes less than two minutes, was accurate (.83), has a higher sensitivity (.78) and maintained a high specificity (.86) compared to the long form. Ventilated participants (n=185) had a higher sensitivity (.81) and specificity (.96) than other participants.

**Soja et al. (2008):** Large sample size (n=1100) with an expert evaluator during assessment. Strong inter-rater reliability ( $\kappa=.89$ ,  $p<.0001$ ). In mechanical ventilation,  $p<.0001$  in reliability. Study limited because all observations were completed by a single expert evaluator. Other limitations include that the CAM-ICU is not validated for trauma patients and the Kappa values may have been estimated incorrectly, due to possible duplicate participants and assessors.

**3b Appraise: Study Results** The findings of these studies suggest the CAM-ICU is a reliable and valid assessment tool with critical care and trauma patients, including those on mechanical ventilation. The CAM-ICU helps in identifying delirium, and is considered highly sensitive and specific. The CAM-ICU helps to assess fluctuating mental status, inattention, altered levels of consciousness, and disorganized thinking. This tool has strong support from clinicians in trauma settings. The high-inter reliability suggests that the CAM-ICU should be performed with all critical care and trauma patients to implement routine monitoring of cognitive status.

**4 Apply: Conclusions for Practice** The occupational therapist would find it an effective use of time to administer the CAM-ICU daily, as it takes 2-5 minutes for all ages and populations. The results of these studies aim to show the strong reliability and validity of the tool, and its effectiveness in the ICU. The CAM-ICU provides a simple solution to help monitor cognitive changes in patients, including those on mechanical ventilation. The CAM-ICU should be used instead of other assessments because it has shown to be a more sensitive, reliable, and valid tool when assessing cognition. Assessing cognition early in a patient's health journey helps to plan treatment and allow the patient to return to their most functional level of independence in their daily occupations.

## References:

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**The Confusion Assessment Method (CAM-ICU) is a reliable and valid assessment tool to screen cognition in ventilated patients.**

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