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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 therapist 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 repeater-observer and expectation bias, and interrater reliability (κ=.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 (κ=.79). psCAM-ICU was accurate (.86), had high sensitivity (.75) and high specificity (.91). The short from 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 (κ=.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: