

## Analysis of the Current Application Status of Delirium Assessment Scales at Home and Abroad: Postprint

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### Abstract

Delirium has a high incidence rate in clinical settings and is associated with severe long-term adverse outcomes. This study summarizes and analyzes the current usage of delirium tools both domestically and internationally, aiming to provide a basis for further standardization and precision in delirium assessment and treatment.

### Full Text

## Analysis of the Application Status of Delirium Assessment Scales at Home and Abroad

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### Abstract

Delirium has a high incidence rate in clinical practice and leads to serious long-term adverse outcomes. This study summarizes and analyzes the current application status of delirium assessment tools both domestically and internationally, aiming to provide a basis for further standardizing and refining delirium assessment and treatment.

**Keywords:** delirium; assessment tools; nursing; sensitivity; specificity

### Introduction

Delirium is an acute or subacute onset disorder characterized by disturbances in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and consciousness (i.e., reduced orientation to the environment), with symptom

fluctuation within days, accompanied by other cognitive impairments that can affect the sleep-wake cycle. In recent years, the incidence of delirium has been as high as %, but its recognition rate remains low. The long-term adverse consequences are severe, and clinical practice lacks standardized delirium nursing protocols. Although treatment protocols for delirium have not been clearly defined in clinical practice, and compliance with nursing assessment is poor—often considered a low-priority nursing task—the long-term harm caused to patients cannot be ignored. This study summarizes and analyzes the current application of delirium assessment tools both domestically and internationally, aiming to provide a basis for standardized and precise delirium assessment and treatment.

## 1. Sensitivity and Specificity of Assessment Scales

Currently, commonly used assessment tools both domestically and internationally include the Confusion Assessment Method (CAM), Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), Intensive Care Delirium Screening Checklist (ICDSC), Nursing Delirium Screening Scale (NU-DESC), and the 3-minute Delirium Diagnostic CAM (D-CAM). Researchers from the Netherlands, Australia, Scotland, Canada, Lanzhou, Germany, Denmark, Malaysia, Italy, India, the United States, and other countries have widely adopted translated versions of CAM-ICU. Germany has utilized DEMS for assessment with sensitivity % and specificity %. Researchers from Switzerland, Australia, and Sweden have applied NU-DESC for evaluation. Canadian researchers developed the CHART-DEL-ICU chart-based detection tool based on ICDSC and CAM-ICU. Switzerland and the United Arab Emirates have also used these tools. U.S. studies have applied the Delirium Observation Screening Scale (DOS) for assessment, with sensitivity % and specificity %.

Some researchers believe that a single scale is insufficient for accurate delirium assessment and often combine two scales for comparison. Finnish studies compared the Neecham Confusion Scale and NU-DESC, finding that Neecham can grade delirium severity to identify early delirium. Indiana researchers compared DRS-R-98. Australian studies reported differences between SQeec and SQiD, with SQeec showing sensitivity % and specificity %, while SQiD demonstrated sensitivity % and specificity %. Different studies show significant variations in sensitivity and specificity for the same assessment tool.

For intubated and ICU patients, CAM-ICU is recommended as it adds objective assessment criteria for attention and thought processes, enabling even untrained assessors to capture delirium fluctuations after multiple assessments. Research indicates that NDSC has high sensitivity for identifying hyperactive and mixed-type delirium but poor sensitivity for hypoactive delirium. The Delirium Early Monitoring System (DEMS), based on improved DEMS-CAM and DEMS-DOSS descriptions, has not been evaluated for sensitivity and specificity in studies. Variations in delirium assessment are related to the choice of scales and their specificity and sensitivity.

## 2. Assessors and Study Subjects

In domestic and international delirium research, assessors primarily include bedside nurses, physicians, research assistants, and psychiatrists. Some have received delirium-related training while others have not, resulting in varying levels of understanding among assessors. Most study subjects are ICU patients, post-cardiac surgery patients, post-orthopedic surgery patients, neurosurgery patients, and elderly patients.

Australian researchers have conducted delirium assessments in palliative care units. There are significant differences in staffing across studies: the Netherlands surveyed a geriatric ward with beds using healthcare assistants and support staff; UK studies involved medical staff; a German anesthesia center evaluated patients by clinical doctors; an Australian ICU had separate assessments by medical and nursing staff; a Swiss anesthesia center evaluated patients on beds; a Scottish general hospital ICU screened patients through a nursing team; a Canadian medical center ICU assessed patients by physician assistants and senior research assistants; a Canadian university hospital assessed post-cardiac surgery patients by nurses; Finnish university hospital surgery patients were evaluated by nurses; Indiana hospital ICUs assessed patients by research assistants; Arabian hospitals evaluated ICU patients by psychiatrists; and a Lanzhou university hospital in China assessed patients in ICUs by trained doctors and nurses.

The variability in delirium assessment results is related to assessors' knowledge of delirium, which inevitably leads to differences between studies.

## 3. Assessment Timing and Frequency

Detailed descriptions of assessment timing and frequency in studies are relatively limited, with most descriptions focusing on time ranges. Due to the complexity of clinical work and uncertainty in patient conditions, it is difficult to conduct assessments at fixed times. Delirium's fluctuating nature makes it challenging to capture through observation.

In Arabian studies, observers conducted only assessments. Italy, Canada, and Australia's clinical practice guidelines state that patients should be assessed for delirium upon admission, at least daily, or when their condition changes. Turkey and India report daily assessments, while Italy also describes daily assessments between AM and PM. Swiss studies selected weekdays for assessment, with screening times between points, making the timing relatively vague and potentially leading to repeated assessments. In an Iowa study, nurses assessed elderly patients over years. Finland assessed patients on postoperative day. Malaysia reported assessments between points. Canadian studies applied ICDSC daily assessments at points and CAM-ICU daily assessments. A Lanzhou study selected points for assessment. A Tianjin hospital study assessed cardiac surgery patients postoperatively using CAM-ICU daily. Swiss and Swedish reports conducted daily assessments. German anesthesiologists mostly performed daily

assessments.

Each scale has different assessment frequencies, time points, and durations. Most studies apply CAM-ICU every hours, while ICDSC is used daily. In an Australian study, nurses continuously assessed patients. Before delirium-related guidelines, there were no descriptions of assessment frequency, specific timing, or accurate duration. Future large-scale, multicenter studies are needed for further exploration.

#### 4. Conclusion

In 2014, the Chinese Society of Anesthesiology published the Chinese Expert Consensus on Prevention and Treatment of Postoperative Delirium in Adults, and in 2016, the Chinese Society of Geriatrics published the Chinese Expert Consensus on Prevention and Treatment of Postoperative Delirium in Elderly Patients. However, scientific, systematic, and standardized prevention measures remain lacking. A Dutch study found that screening scales are rarely used, with influencing factors including lack of trust in tools, insufficient assessor knowledge, and poor collaboration between medical and nursing staff. UK studies report that assessments are time-consuming, some professional terminology is difficult to understand, and there is no sensitivity or specificity for assessment scales. Australian medical and nursing staff do not conduct assessments simultaneously, while delirium has fluctuating characteristics, leading to differences in results and physicians' negative attitudes toward the necessity of scale-based assessments. Scottish and Canadian researchers summarized three major barriers in the assessment process: inability to assess intubated and sedated patients, and lack of further action by physicians on assessment results. Canadian studies report that nurses feel stressed and overworked when caring for delirium patients. Current delirium assessment tools cannot capture all symptoms of delirium severity. Indiana studies describe that delirium diagnosis relied solely on observation and inquiry, with varying assessment methods.

The development of delirium assessment scales is related to national conditions, nurses' knowledge of delirium, patient disease types, use of sedative and analgesic drugs, assessment timing, and other factors. In clinical implementation, assessments should be stratified according to different delirium risk levels to adopt different nursing measures. Standardized and precise delirium assessment and treatment processes are of great significance for further reducing delirium incidence and alleviating the psychological burden on nurses and family members.

**Conflict of Interest Statement:** The authors declare no conflict of interest.

#### References

*Note: The reference list in the original source contains significant formatting errors and incomplete information. Several citations appear in the main text as*

*empty or corrupted markers (e.g., □ ). The references below represent those that could be reasonably identified from the source material.*

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