

oxygen therapy serves as the minimum necessary care to patients facing imminent death.

There are several limitations to this study. First, this was a survey of physician-reported practices. Thus, there might be a discrepancy between their reported practice and actual practice in the real-world clinical setting. Second, as we did not collect the background information of participating palliative care physicians, the findings of this survey cannot be generalized.

Conclusion

A significant number of Japanese palliative care physicians still administer oxygen therapy for dyspnea in terminal cancer patients without hypoxemia. To overcome this evidence-practice gap, we believe qualitative research that explores the physicians' thoughts or policies about oxygen therapy toward the end of a patient's life is necessary. Moreover, clinical research to explore the efficacy and adverse events of oxygen therapy for dyspnea at the end of life of patients with cancer, with or without hypoxemia, is warranted.

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Rating Delirium Severity Using the Nursing Delirium Screening Scale: A Validation Study in Patients in Palliative Care



To the Editor,

Delirium has a high prevalence in the medically ill, especially in inpatient palliative care.¹ The fluctuation in clinical features of delirium over time has been a strong argument for developing rapid delirium

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assessment tools, particularly for use by nurses. Nurses' continuity of closer patient contact means they are ideally placed to observe and report on the presence and severity of the clinical features of delirium.² However, many existing delirium severity rating tools validated in palliative populations are potentially burdensome for patients and not suited to repeated administration within a 24-hour period. The Nursing Delirium Screening Scale (Nu-DESC) is a brief delirium screening tool that is administered by nurses. The Nu-DESC requires no patient participation, with scores based on observed behaviors by nurses over their shifts. It is a low-burden tool that takes one minute to complete.³ While developed and validated for delirium screening, the Nu-DESC has properties that may support its use for severity measurement. The aim of this study was to assess the validity of the Nu-DESC as a delirium severity rating tool in an inpatient palliative care population.

Methods

We conducted a prospective, observational study to assess the association between Nu-DESC and Memorial Delirium Assessment Scale (MDAS) scores, a delirium severity tool that has been validated in palliative care settings.⁴ Secondary outcomes included the associations between Nu-DESC scores and ratings of the intensity of the medication approach used to symptomatically manage delirium, and between Nu-DESC scores and delirium severity measured by the Clinician Global Rating (CGR).⁴

Eligible patients were those admitted to the 31-bed inpatient palliative care unit from November 2012 to December 2013 at Bruyère Continuing Care, Ottawa, Canada. Patients were ineligible if they were delirious on admission, unable to converse in English, including those with hearing impairments that limited their verbal communication, had a Palliative Performance Scale version 2 (PPSv2)⁵ score of 10%, or if consent was not provided within 24 hours of delirium diagnosis.

This study was approved by two local institutional research ethics boards. Informed consent was obtained in a two-step process. First, permission to approach patients was sought by attending physicians from patients, or substitute decision makers when patients were deemed incapable. Subsequently, informed consent was sought by the research nurse from patients or their substitute decision makers. We aimed to recruit 46 patients, which would allow us to detect a correlation of 0.40 (power = 0.80, $\alpha = 0.05$).

Consented patients who were subsequently diagnosed with delirium were activated for data collection.

Delirium was diagnosed by attending physicians using the Confusion Assessment Method (CAM) as part of routine care.⁶ Upon diagnosis, attending physicians also documented patient's functional status using the PPSv2 and rated delirium severity as mild, moderate, or severe using the CGR. Palliative care unit nurses completed an Nu-DESC assessment at the end of each 8-hour shift, according to routine care. Nu-DESC data analyzed in this study included scores from the shift when delirium was diagnosed and the two subsequent shifts. A trained research nurse or physician study investigator, blinded to patients' Nu-DESC and CGR ratings, performed an MDAS assessment within 24 hours after delirium diagnosis. Research assistants extracted data from patient charts, including Nu-DESC scores, age, sex, diagnosis, admission PPSv2, care direction, and information on antipsychotic and benzodiazepine medications administered within 24 hours after delirium diagnosis, including drug name, dose, frequency, and number of doses administered. Three physician study investigators, blinded to patients' Nu-DESC, MDAS, and CGR results, rated the intensity of the medications administered to symptomatically manage delirium using a scale of 0 (no dose given) to 10 (extremely high use). This was a standardized, ad hoc measure specifically for this study.

Delirium medication management intensity was described using the mean of the three raters' intensity scores, which had strong agreement (intraclass correlation coefficient = 0.89). Pearson correlation coefficients were calculated for correlations between Nu-DESC and MDAS scores, and Nu-DESC and medication intensity scores. Welch's ANOVA was used to analyze the association between Nu-DESC scores and CGRs. Analyses were conducted using patients' maximum and mean Nu-DESC scores from the 24-hour observation period. Post hoc analyses were conducted using Nu-DESC scores obtained from Items 2 through 4 (inappropriate behavior, inappropriate communication, and illusions/hallucinations), as we hypothesized these features were indicators of patient distress and most likely correlated with delirium severity.

Results

Forty-six patients completed the study, with three excluded from statistical analyses due to missing Nu-DESC data, leaving a final analytic sample of 43 patients. Just over half (56.5%) were female, with a median age of 73 years, and 93.5% had cancer. The median PPSv2 was 40% on admission (range 10% to 60%) and 30% at delirium diagnosis (range 20% to 50%). Goals of care at delirium diagnosis were

Table 1
Associations Between Nursing Delirium Screening Scale Scores and Memorial Delirium Assessment Scale Scores, Delirium Medication Intensity, and Clinician Global Rating of Delirium Severity

Nu-DESC Score	MDAS	Medication Intensity Rating	Mean Nu-DESC Score by CGR Delirium Severity			
			Mild	Moderate	Severe	P
Mean score from Nu-DESC: 24-hour maximum	$r = 0.41$ ($P = 0.006$)	$r = 0.58$ ($P = 0.0001$)	2.5	4.0	2.7	0.08
Mean score from Nu-DESC: 24-hour mean	$r = 0.40$ ($P = 0.008$)	$r = 0.63$ ($P < 0.0001$)	1.9	2.9	2.3	0.20
Mean score from Nu-DESC Items 2–4: 24-hour maximum	$r = 0.27$ ($P = 0.07$)	$r = 0.53$ ($P = 0.0002$)	0.7	1.8	0.7	0.11
Mean score from Nu-DESC Items 2–4: 24-hour mean	$r = 0.29$ ($P = 0.06$)	$r = 0.64$ ($P < 0.0001$)	0.4	1.1	0.6	0.14

MDAS = Memorial Delirium Assessment Scale; CGR = Clinician Global Rating; Nu-DESC = Nursing Delirium Screening Scale.

medical (treatment of precipitating factors and symptom management) in 45.6% and comfort care (symptom management only) in 54.4%. Most (71.7%) delirium episodes were hypoactive subtype, with 4.3% hyperactive, and 15.2% mixed.

Nu-DESC scores were positively correlated with MDAS scores, both using the 24-hour maximum Nu-DESC score ($r = 0.41$) and 24-hour mean Nu-DESC score ($r = 0.40$) (Table 1). These correlations were lower and nonsignificant when Nu-DESC scores were calculated using only Items 2 through 4. Nu-DESC scores were positively correlated with medication management intensity, both using the maximum Nu-DESC score ($r = 0.58$) and mean Nu-DESC score ($r = 0.63$). Similar correlations were observed when Nu-DESC scores were calculated using only Items 2 through 4. Although mean Nu-DESC scores were higher in patients with moderate versus mild delirium severity based on the CGR, this association was not statistically significant.

Discussion

Among patients with delirium admitted to an inpatient palliative care unit, Nu-DESC scores were positively correlated with MDAS delirium severity scores and delirium medication intensity. Mean Nu-DESC scores were higher for patients with moderate, compared to mild delirium as measured by the Clinician Global Rating of severity.

This study addresses an important gap in the literature, namely the lack of validated tools to measure delirium severity in palliative care settings. A 2018 systematic review on this topic found that of 228 studies evaluating delirium severity tools published between 1974 and 2017, only 4.8% were conducted in palliative care settings.⁷ Many of the commonly used tools in palliative care have a relatively high burden, requiring time and training. Other brief severity measurement tools, such as the CAM-S, Delirium-O-Meter, and

Delirium Observation Scale, have not yet been validated in palliative settings.⁸⁻¹⁰ Furthermore, many of the existing validation studies for these tools conducted outside of palliative care include nondelirious and delirious patients, thereby limiting conclusions of whether these tools capture variations in delirium severity within delirious patients.⁸

Strengths of this study included the recruitment process, which minimized selection bias, and the use of blinded assessments, which minimized reporting bias. Limitations included our small sample size, and we may have been underpowered to detect correlations less than 0.4, or associations between Nu-DESC scores and CGR severity ratings. Further, the small number of patients with severe delirium limited our ability to detect associations by narrowing the range of observed values on the study tools. To our knowledge, the CGR has not been validated. However, it was used in the original MDAS validation study and its categories reflect routine classification in clinical practice, suggesting high face validity.⁴ Delirium medication management intensity may have a stronger correlation with severity in hyperactive delirium because higher medication doses are used to target key symptoms of hyperactive delirium, including agitation and hallucinations, while patients with severe hypoactive delirium may not require such high doses for symptom management. This correlation may have been higher had our sample included more cases of hyperactive delirium. We did not capture data on comorbid dementia and so we cannot examine whether the validity of the Nu-DESC tool as a severity measurement differs according patients' cognitive status.

Our findings suggest that the Nu-DESC may be a useful tool to monitor delirium severity in inpatient palliative care settings. However, when more precise measures of delirium severity are required, as in research settings, other tools are more appropriate to capture the diverse features of delirium severity.

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Behavioral Economics: Applying Defaults, Social Norms, and Nudges to Supercharge Advance Care Planning Interventions



To the Editor,

Care that people receive at the end of their lives is not always consistent with their goals and values.¹ Incongruent care can have emotional and financial