

EDITORIAL



What language conveys distress and reassurance?

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Delirium is associated with serious intensive care unit (ICU) and post-ICU complications that substantially burden patients, their families, and caregivers [1]. Its frequent occurrence, and the importance of differentiating delirium from other causes of agitation or evident discomfort, led practice guidelines [1] to advocate for routine delirium assessments. Although no treatment alters outcomes once delirium is established, its recognition can drive implementation, and track effectiveness, of useful non-pharmacological prevention measures [1, 2]. The clinical acumen of engaged clinicians may not be enhanced by systematic screening [3]. Multiple studies, however, describe absent or poorly documented delirium assessments; this led to recommending routine use of validated screening tools [1]. The inherent and benefit-determining premise is that ICU clinicians assiduously evaluate patients, administer tools correctly, document assessments, and remain motivated to engage all ICU professionals on rounds in discussing delirium, in addition to the hard work of implementing non-pharmacologic management strategies [1, 2].

Patients experiencing delirium suffer from fear, paranoia, and anxiety [4]. These unsettling symptoms disturb patients, their families, and caregivers, who may find the delivery of safe and effective ICU care challenging with delirious patients. Family presence and flexible visiting hour policies help mitigate ICU delirium [5]; both patients and families value expressions of empathy and kindness to alleviate delirium-associated distress. Even the most rigorously conducted Confusion Assessment

Method for intensive care unit (CAM-ICU) assessment fails to capture how delirium ‘feels’ [5].

Compassion and reassurance are at the core of caring. In non-ICU settings, they improve outcomes [6]; regrettably, the critical care literature addressing caring is largely limited to level-of-care discussions. Reassurance and systematic reorientation are untested as a delirium-modifying intervention in the critically ill [1]. Recent compelling evidence nonetheless suggests clinician engagement and systematic delivery of reassurance prevents delirium effectively, and improves outcomes, in older surgical patients [7]. Few ICU patients receive such care. Since the onset of the coronavirus disease 2019 (COVID-19) pandemic, the incremental worsening mental health and resilience in ICU healthcare workers may diminish their capacity to provide it if compassion fatigue is prevalent [8]. Moreover, the pandemic essentially barred families from accessing their loved ones. In parallel, ICU teams reduced their bedside presence during interprofessional rounds [9].

Delirium symptoms occur solely at night in 40% of patients [10]. If the bedside nurse were to accurately document these symptoms, would the following shift’s daytime nurse note and integrate their presence in the care plan? In the current efforts to promote efficiency in ICUs, interprofessional rounds focus on ‘problem lists’; their review cannot comprehensively integrate what’s documented in health records, and information gets lost. Incomplete or missed information transmission ranks second only to medication errors as a source of ICU iatrogenic morbidity [11]. It follows that individual delirium symptoms are likely to be missed, or remain unaddressed, during ICU team discussions.

In this issue of Intensive Care Medicine [12], Young and colleagues present study results from an ICU cohort evaluated twice daily with the CAM-ICU. In parallel, behavioral disturbances were identified with natural language

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processing (NLP) using 24 previously validated words documented in ICU chart notes. Over twice as many patients had a behavioral disturbance for at least one day (54%) compared to those with a CAM-ICU assessment (25%). Among patients with behavioral disturbance(s), 43% were CAM-ICU positive in the ICU; among CAM-ICU positive patients, 93% manifested behavioral disturbance(s). On their first ICU day, 32% had a behavioral disturbance; only 11% were CAM-ICU positive. The cumulative number of notes describing behavioral disturbance was nearly twice as high in patients who were CAM-ICU positive. Regardless of CAM-ICU positivity, after controlling for age, type of admission, and severity of illness, and using time-dependent Cox modeling, behavioral disturbance(s) were associated with significantly greater antipsychotic use, a longer ICU stay, and increased mortality.

We applaud the authors for conducting one of the first NLP study focused on characterizing behavioral disturbances as they relate to delirium in the ICU. The small cohort size ($n=2313$) and the high 'behavioral disturbance day(s)' prevalence precluded their ability to develop and calibrate a deep learning model to predict behavioral disturbance occurrence, an important next research step. For example, in one study of 101,196 critically ill adults, deep learning models predicted ICU mortality with an Area Under the Receiver Operating Characteristics (AUROC) of 0.922 [13]. In this NLP study, behavioral disturbances focused on agitation, combativeness, and aggression. Unfortunately, neither pain, a significantly under-evaluated and inaccurately reported finding in ICU settings [14], nor sedation exposure or effect (e.g., Richmond Agitation-Sedation Scale (RASS) scores, a potential CAM-ICU confounder) [1] were captured. Why antipsychotics were chosen as a primary outcome in the analysis remains unclear; they do not reduce delirium [1] or constitute a first-line treatment for ICU agitation [1] and would not palliate any other reason for agitation or aggression. Common symptoms which plague delirious patients, such as anxiety, fear and delusions, were not considered [4]. Behavioral symptom severity was not documented, and may have biased results if clinicians are more likely to note symptoms more manifest because of their gravity. Lastly, the clinicians documenting the behavioral disturbances were also the ones screening patients for delirium with the CAM-ICU.

Despite these limitations, this paper has important implications for improving ICU practices and guiding future research efforts. Delirium and other patient features are associated with clinically relevant poor outcomes [1]. However, beyond agitation, ICU behavioral symptoms were not previously recognized as outcome predictors. The best-validated delirium scales,

the CAM-ICU and Intensive Care Delirium Screening Checklist, are no panacea [15]. Two decades of ICU delirium screening research on protocolized assessments have yet to prove their unequivocal value in improving patient care in rigorous trials [1]. Recognizing scale-based or clinical delirium assessments can be incomplete, undocumented, or poorly communicated, this report offers an alternative approach. Extracting behavioral disturbance data from clinical charts, using apparently clinically important features, may help us do better, particularly if behavioral disturbance NLP terms are refined using larger cohorts that would permit better modeling when deep learning approaches are applied. Whether Young et al.'s approach can then translate into higher quality patient symptom monitoring, and even perhaps provide feedback, incentive and triggers to foster reassurance and compassion in ICU clinicians, allowing them to evaluate which are most useful, remains to be established.

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Declarations

Conflicts of interest

The authors have no conflicts of interest.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Accepted: 18 March 2022

Published online: 29 March 2022

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