



Articles

Burden of Delirium, Sedation, and Pain Discussion and Decision Making on ICU Providers

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Delirium

Background

Delirium is a common and morbid complication of critical illness, particularly among mechanically ventilated patients. Although sedation practices are a known modifiable risk factor for delirium, little is known about how frequently delirium and sedation are discussed during interdisciplinary ICU rounds or the proportion of rounding time devoted to these topics.

Methods

We conducted an observational manifest content analysis study of ICU rounding practices in a 30-bed medical intensive care unit at a tertiary academic medical center. Morning and afternoon ICU rounds were audio recorded over a five-week period. Recordings were transcribed and analyzed using quantitative and qualitative methods to measure the duration and proportion of time spent discussing delirium, sedation, and pain. The primary outcome was the proportion of time per patient encounter devoted to delirium and/or sedation discussions.

Results

A total of 184 recordings were included. The median patient age was 63 years (IQR 50–69), 86 patients (47%) were female, and 45 (24.7%) were mechanically ventilated. Median total rounding time per patient was 541 sec (IQR 365–800 sec) increasing to 738 sec (IQR 494–982 sec) for mechanically ventilated patients. Delirium discussions averaged 3 sec per patients (IQR 0–15 sec; 0.62% of rounding time) and increased to 10 sec (IQR 0–50 sec) among mechanically ventilated patients. Pain discussions averaged 0 sec per patient (IQR 0–5.5 sec). Sedation discussions averaged 0 secs (IQR 0–8.25 sec) overall and 34 sec (IQR 7–84 sec; 6.96% of total rounding time) among mechanically ventilated patients.

Conclusions

Despite the high prevalence and clinical impact of delirium in critically ill patients, delirium accounted for a limited proportion of interdisciplinary ICU rounding discussions, even among mechanically ventilated patients. Sedation received greater attention during rounds, highlighting the central role of sedation management in critical care workflows. These findings suggest an opportunity to better integrate structured delirium-focused discussions into ICU rounds to support consistent recognition and management.

BACKGROUND

Delirium is an acute form of brain dysfunction characterized by disturbances in attention, awareness, and cognition that develop over a short period of time and fluctuate throughout the day.¹ It is associated with multiple adverse outcomes. This includes an increased risk of intensive care unit (ICU) mortality, increased duration of mechanical ventilation, increased hospital length of stay, increased long-

term cognitive decline, and significant healthcare expenditures.^{2–6} Older adults, individuals with pre-existing cognitive impairment, and those exposed to deliriogenic medications such as sedatives, narcotics, and anticholinergic agents are at particularly high risk.^{7,8} Despite its prevalence and consequences, delirium remains challenging to prevent and manage effectively. Its pathophysiology is multifactorial and not fully understood, and pharmacologic therapies such as antipsychotics have limited supporting

evidence.^{6,9} Non-pharmacologic interventions including minimizing sleep disruption, ensuring access to sensory aids, early mobilization, light therapy, and involving families in care have demonstrated benefit but require consistent interdisciplinary coordination.¹⁰

Sedation practices in the ICU also play a fundamental role in delirium risk and management. Sedation is commonly administered to mechanically ventilated patients to promote comfort and safety, yet it is a well-recognized risk factor for delirium.¹¹ Heterogeneity in sedation prescribing, often shaped by individual provider preference rather than standardized protocols creates variation in patient outcomes and may increase the cognitive and time burden placed on ICU teams.¹² Prior studies demonstrate that sedation strategy, including sedative agent selection and depth of sedation, is associated with delirium risk in mechanically ventilated ICU patients, underscoring sedation management as a clinically meaningful and potentially modifiable contributor to acute brain dysfunction.^{13,14}

Discussion of sedation, pain, and delirium management plans during interdisciplinary ICU rounds is commonly used in ICU care as a central process for communication, care coordination, and daily clinical decision making. Increased multidisciplinary involvement and setting of daily goals in the ICU both are associated with improved outcomes.^{15,16} However, these processes and discussions take time. We hypothesize that this would be reflected in increased discussion time on particular topics of interest. As a result, observable communication behaviors, including the amount of time devoted to specific clinical domains, may provide insight into how symptom management priorities are operationalized in routine ICU care. However, little is known about how frequently sedation, pain, and delirium management are addressed during multidisciplinary ICU rounds or how much discussion time interdisciplinary teams devote to these issues relative to other competing clinical priorities.

Given the high prevalence of delirium and the central role of sedation in modulating risk, understanding how ICU teams allocate time to these discussions is essential for designing targeted interventions. To address this gap, we conducted a descriptive qualitative study of ICU rounding practices to quantify the proportion of time dedicated to delirium, pain, and sedation discussions. Based on clinical experience and the recent focus and implementation of care bundles targeting delirium, pain, and sedation, we hypothesized that ICU teams spend more than 40% of total discussion time per patient addressing these issues.¹⁷ Understanding these practices may inform future development of dedicated delirium and sedation management teams within the ICU setting, with the goal of standardizing care and reducing the incidence and prevalence of delirium.

METHODS

We conducted an observational manifest content analysis study of communication patterns during rounds among critically ill adults admitted to a 30-bed medical intensive care unit (MICU) at the University of North Car-

olina–Chapel Hill Medical Center, a tertiary academic teaching hospital. Data were collected between June 4, 2024, and July 3, 2024. The study was reviewed and approved by the University of North Carolina Institutional Review Board (IRB #24-0824). They determined consent was not required.

Data collection occurred during morning teaching rounds. A trained research team member shadowed the interdisciplinary ICU team, which typically included nurses, advanced practice providers (PA/NPs), attending and resident physicians, pharmacists, nutritionists, and respiratory therapists. Audio recordings were made for each patient encounter unless the patient and/or family were physically present, in which case recording was omitted to preserve privacy. No chart review was performed, as the study focused on team communication patterns rather than patient-specific clinical data.

Recordings were transcribed using [Otter.ai](#) and subsequently reviewed for accuracy by the research team. Quantitative variables, including total rounding time and duration of topic-specific discussions were summarized descriptively using medians with ranges for continuous variables and proportions for categorical variables. Time was measured from the beginning of each patient presentation until the conclusion of the interdisciplinary discussion. Each recording was treated individually. Demographics and mechanical ventilation status were obtained from the recorded transcripts

The primary outcome was the proportion of total time per patient encounter spent discussing delirium, sedation, and/or pain during rounds. Conversations pertaining to delirium were identified as any discussion concerning delirium, encephalopathy, orientation, altered mental status, confusion, inattention, acute antipsychotic usage, or medication de-escalation to affect mentation. Discussions pertaining to sedation were identified as any discussion concerning sedation, level of consciousness (i.e. Richmond Agitation and Sedation Scale, RASS), and/or titration of sedation medication. Discussions pertaining to pain were identified as any discussion concerning pain and/or discomfort, pain assessment, and/or pain management via pharmacological or non-pharmacological methods. Categories were mutually exclusive. A single sentence or phrase could be recorded for multiple topics, however, for example, if a provider spoke about delirium and then sedation in the same phrase, the initial part would be coded as delirium and the subsequent as sedation. Adjacent context was used to determine whether an individual topic should be coded for sedation or delirium when there was ambiguity (i.e. discussions of RASS).

RESULTS

We obtained 187 total recordings. Two were excluded due to poor audio quality and one was excluded due to family involvement midway through the recording, yielding 184 total recordings for our analysis. The median age of our sample was 63 years old (IQR 50-69), and 86 (47%) of pa-

Table 1. Characteristics of ICU Rounding Encounters

Characteristic	Value
Total ICU rounding encounters, n	184
Median patient age, years (IQR)	63 (50–69)
Female sex, n (%)	86 (47%)
Mechanically ventilated patients, n (%)	45 (24.7%)
Median total rounding time per patient, seconds (IQR)	541 (IQR 365–800)
Median rounding time for mechanically ventilated patients, seconds (IQR)	738 (IQR 494–982)

IQR = interquartile range

tients were female. 45 (24.7%) were mechanically ventilated (Table 1).

OVERALL ICU ROUNDING TIME AND CONTEXT

A total of 184 patient encounters were observed during interdisciplinary ICU rounds. Median total rounding time per patient was 541 sec (IQR 365–800 sec). Mechanically ventilated patients required longer discussions overall (Med 738 sec, IQR 494–982 sec) compared with non-ventilated patients (Med 488 sec, 343–709 sec) (Table 2).

Pain discussions usually focused around acute issues with pain and medication adjustment strategies to address this pain. Delirium discussions usually pertained to management of hyperactive delirium. Delirium prevention was rarely mentioned. Sedation discussions usually pertained to setting sedation targets, actively weaning or stopping sedation and/or coordinating these efforts with ventilator management adjustments.

DELIRIUM DISCUSSION PATTERNS

Delirium-related discussion occupied a relatively small proportion of total rounding time overall. Across all encounters, the median time devoted to delirium discussion was 3 sec (IQR 0–15 sec), representing 0.62% of total rounding time (Table 2). Delirium was discussed during 102 of 184 patient encounters (55%) (Table 2). Among mechanically ventilated patients, median delirium discussion was 10 sec (IQR 0–50 sec), compared with 3 sec (IQR 0–10 sec) in non-ventilated patients (Table 2).

PAIN DISCUSSION PATTERNS

Pain discussions occurred in 65 of 184 encounters (35%), with a median discussion time of 0 sec (IQR 0–5.5 sec) (Table 2). Among mechanically ventilated patients, pain was discussed in 7 of 45 encounters (16%). Among mechanically ventilated patients, median pain discussion was 0 sec (IQR 0–0 sec). Pain discussions occurred in 40% of non-mechanically ventilated patients with a median discussion time of 0 sec (IQR 0–7 sec).

SEDATION DISCUSSION PATTERNS

Sedation-related discussion occurred in 58 of 184 encounters (32%), with a median discussion duration of 0 sec (IQR 0–8.25 sec) across the full cohort (Table 2). In mechanically ventilated patients, sedation was discussed in 37 of 45 encounters (82%), with a median discussion time of 34 sec (IQR 7–83 sec), accounting for 6.96% of total rounding time (Table 2). By comparison, sedation discussions occurred in 14% of non-ventilated patient encounters, with a median discussion duration of 0 sec (IQR 0–0 sec) (Table 2).

DISCUSSION

In this study of ICU rounding practices; delirium, pain, and sedation discussion accounted for a relatively small propor-

Table 2. Median Times and IQR by MV Status

Variable	Median (sec)	Q1 (sec)	Q3 (sec)	IQR (sec)	Median Total Time (sec)	Patients with Any Time	Median % of Total Time Per Patient
Overall (n=184)							
Delirium	3	0	15.25	15.25	541	102 (55%)	0.62%
Pain	0	0	5.5	5.5	541	65 (35%)	0.00%
Sedation	0	0	8.25	8.25	541	58 (32%)	0.00%
MV = No (n=139)							
Delirium	3	0	10	10	488	76 (55%)	0.61%
Pain	0	0	7	7	488	56 (40%)	0.00%
Sedation	0	0	0	0	488	20 (14%)	0.00%
MV = Yes (n=45)							
Delirium	10	0	50	50	738	26 (58%)	1.28%
Pain	0	0	0	0	738	7 (16%)	0.00%
Sedation	34	7	83	76	738	37 (82%)	6.96%

tion of total discussion time per patient, although mechanically ventilated patients prompted substantially longer discussions overall. Sedation discussions were notably more prominent than delirium discussions among mechanically ventilated patients. Pain discussions occupied the least amount of time across both ventilated and non-ventilated patients, with mechanically ventilated patients having less time dedicated to discussion of this topic. This finding is clinically important because mechanically ventilated patients are often unable to reliably self-report pain and therefore depend on behavioral pain assessment tools and interdisciplinary recognition and management of discomfort.

Delirium-related discussion occupied a relatively small proportion of rounding time in both mechanically and non-mechanically ventilated patients. These findings are clinically notable because mechanically ventilated patients are among the populations at highest risk for delirium and dedicated interdisciplinary care plans are often necessary to minimize the negative effects of delirium. This pattern may reflect lack of clinical prioritization of delirium during rounds, although shorter discussion durations may also represent standardized assessment workflows, greater clinician familiarity, or efficient interdisciplinary communication practices.

Prior literature consistently identifies sedation as a major modifiable contributor to delirium in critical illness.¹⁸ The Society of Critical Care Medicine PADIS guidelines emphasize minimizing deep sedation and using sedation practices that reduce delirium risk when sedation is required.¹⁹ In our cohort, sedation discussions occupied a substantially greater proportion of rounding time than delirium discussions, especially amongst mechanically ventilated patients. This finding likely reflects the dynamic and continuously evolving nature of sedation management in critically ill patients, as sedation decisions are closely linked to ventilator synchrony, agitation management, hemodynamic stability, and patient safety. Previous qualitative studies have additionally demonstrated that sedation practices may receive variable emphasis in ICU settings due to workflow pressures, interdisciplinary communication patterns, and unit culture. Together these findings suggest that sedation management remains a highly operational component of ICU rounds that is associated with frequent discussion and real-time decision making.

Existing literature demonstrates that implementation of delirium prevention bundles remains variable across ICU settings despite evidence of supporting improved patient outcomes.^{17,20-23} This variability may contribute to differences in how consistently delirium prevention and assessment are incorporated into interdisciplinary ICU rounding discussions. In our cohort, delirium discussions remained limited even among mechanically ventilated patients, suggesting that delirium-related communication may occupy less explicit discussion time during rounds than other immediate management priorities such as sedation or ventilator management.

Taken together, existing literature establishes delirium as a common and morbid ICU complication and identifies

sedation as a key modifiable risk factor targeted through ICU guidelines and clinical bundles.²¹ However, far less is known about how interdisciplinary ICU teams allocate discussion time to delirium and sedation management during routine ICU rounds. Our study adds to existing literature by quantifying communication patterns and demonstrating that mechanically ventilated patients prompt substantially greater discussion surrounding sedation and delirium, although these topics still account for only a minority of total rounding time. These findings provide insight into how symptom management priorities may be operationalized during interdisciplinary ICU rounds in real-world practice.

STRENGTHS AND LIMITATIONS

This study has several strengths. First, the study was conducted in a large academic teaching hospital with a diverse patient population and interdisciplinary ICU rounding teams that included physicians, nursing staff, pharmacists, nutritionists, and respiratory therapists. The study population was diverse with respect to race, gender, and age, with people of color accounting for approximately 40% of the cohort. Additionally, inclusion of multidisciplinary ICU teams reduced the likelihood that observed discussion patterns reflected the practice style of a single provider or clinical team. Although the single-center design may limit broader generalizability, these characteristics increase the relevance of our findings to interdisciplinary rounding practices in academic ICU settings. Another strength of this study was the use of direct observation through audio recording of ICU rounds, which allowed for objective measurement of discussion time rather than reliance on self-report.

This study also has limitations. First, the study was conducted within a single medical ICU at a single academic center over a five-week period, which may limit generalizability to other ICU settings, including surgical or specialty ICUs. Prior studies have demonstrated differences in delirium prevalence, sedation practices, and interdisciplinary workflows across ICU environments.²⁴ Additionally, data collection occurred across the July academic year transition, a period associated with changes in trainee experience and rounding practices at teaching hospitals, which may have influenced discussion patterns and rounding behavior. We did not collect patient-level clinical variables such as delirium prevalence, sedation orders, illness severity, or duration of mechanical ventilation. As a result, the clinical significance of discussion time proportions cannot fully be interpreted in relation to patient acuity or the true burden of delirium within the cohort. We sought to be as broad as possible in our inclusion language given the heterogeneity in terms used to discuss delirium (i.e. AMS, encephalopathy, etc.). This approach could have led to some overrepresentation of our outcomes. However, we believe this potential is low, given the low prevalence of our topic discussions overall. Additionally, the presence of a research team member observing, and audio recording ICU rounds may have influenced clinician behavior or altered discussion duration and content (Hawthorne effect). Finally, dis-

cussion duration may not directly correspond to clinical importance or quality of care. Shorter discussions may reflect efficient communication practices, greater clinician familiarity, or standardized workflows rather than under-prioritization.

CONCLUSION

In this observational manifest content analysis study, we quantified the proportion of ICU rounding time devoted to discussions of delirium and sedation. Although mechanically ventilated patients prompted longer overall discussions and greater attention to both sedation and delirium, these topics accounted for a relatively small proportion of total rounding time per patient. Delirium, despite its high prevalence and association with adverse outcomes in critically ill patients, was discussed less frequently and for shorter durations than sedation. These findings suggest that delirium may receive limited explicit attention during interdisciplinary ICU rounds, even among high-risk populations. Future studies should examine whether more structured approaches to sedation, pain and delirium management during rounds, such as dedicated protocols or specialized team involvement will improve recognition, consistency of care and patient outcomes in the ICU setting.

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AUTHORSHIP STATEMENT

AB participated in data collection, analysis, interpretation, and manuscript development. BW participated in methodology development, interpretation and manuscript development. CAA participated in conceptualization, methodology development, data collection, analysis, interpretation and manuscript development.

Deidentified datasets can be made available on request and with appropriate data usage agreements.

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