

Use of Rounding Checklists to Improve Communication and Collaboration in the Adult Intensive Care Unit: An Integrative Review

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BACKGROUND Intensive care units are complex settings that require effective communication and collaboration among professionals in many disciplines. Rounding checklists are frequently used during interprofessional rounds and have been shown to positively affect patient outcomes.

OBJECTIVE To identify and summarize the evidence related to the following practice question: In an adult intensive care unit, does the use of a rounding checklist during interprofessional rounds affect the perceived level of staff collaboration or communication?

METHODS An integrative review was performed to address the practice question. No parameters were set for publication year or specific study design. Studies were included if they were set in adult intensive care units, involved the use of a structured rounding checklist, and had measured outcomes that included staff collaboration, communication, or both.

RESULTS Seven studies with various designs were included in the review. Of the 7 studies, 6 showed that use of rounding checklists improved staff collaboration, communication, or both. These results have a variety of practice implications, including the potential for better patient outcomes and staff retention.

CONCLUSIONS Given the complexity of the critical care setting, optimizing teamwork is essential. The evidence from this review indicates that the use of a relatively simple rounding checklist tool during interprofessional rounds can improve perceived collaboration and communication in adult intensive care units.

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The length of stay and overall acuity of patients admitted to the intensive care unit (ICU) are increasing.^{1,3} For patient needs to be met, attention must be given to the efficiency of care delivery. A common strategy to improve efficiency and outcomes in the ICU is to implement daily interprofessional rounds, which allow health care professionals from various disciplines to meet, share their perspectives, synthesize data, and work together to formulate a plan of care for the patient.⁴ Interprofessional rounds have been proven to be both effective and efficient, reducing length of stay, mortality, and health care costs.⁴⁻⁶ Checklists—or rounding checklists, as they are referred to in the context of

interprofessional rounds—are instruments used to guide the rounding process and ensure that all necessary components are addressed. The exact elements contained in a rounding checklist can vary widely. Scoping reviews from the literature indicate that some rounding checklists use components that have been developed locally at the unit level, whereas others incorporate elements from evidence-based validated tools such as the FASTHUG⁷ and ABCDEF⁸ bundles.^{9,10}

Similarly, there is variation in how the rounding checklist is incorporated into interprofessional rounds. Some units use the checklist to guide the structure of rounds, whereas others rely on it as a safety net toward the end of rounds to catch any missed elements.^{9,10} Despite the differences in use, rounding checklists provide standardization in the interprofessional rounding process and have consistently been shown to improve patient outcomes.⁹⁻¹¹

Teamwork is of paramount importance in the ICU. The illness complexity of patients in this setting requires the involvement of many different individuals from various disciplines, further underscoring the importance of communication and collaboration. A recent study by The

Joint Commission indicated that 80% of serious medical errors resulted from mis-

communication.¹² In contrast, encouraging collaboration and open communication among all parties, especially nonphysician professionals, is associated with decreased staff turnover, adverse events, hospital-acquired infections, and unexpected death.¹³⁻¹⁶

The use of rounding checklists during interprofessional rounds increased the likelihood that clear patient goals would be delineated and understood by all, increasing perceived collaboration.

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The current literature is rife with evidence and reviews on the association between the use of rounding checklists during interprofessional rounding and patient outcomes. However, there is a paucity of articles on its impact on staff communication and collaboration. Therefore, the primary objective of this integrative review was to identify and summarize the evidence related to the following practice question: In an adult ICU, does the use of a rounding checklist during interprofessional rounds affect the perceived level of staff collaboration or communication?

Methods

A comprehensive literature search was completed in October 2022 using the PubMed, Embase, and CINAHL (Cumulative Index of Nursing and Allied Health Literature) databases. The keywords and subject headings used in the search are shown in Table 1. No parameters were set for publication year or specific study type. Studies were included if they were set in adult ICUs, involved use of a structured rounding checklist, and had measured outcomes including staff collaboration, communication, or both. Articles not written in English, those without available abstracts or full text, and nonhuman studies were excluded. Initially, 331 articles were available after duplicates were removed. After articles were screened for setting and relevancy, 77 articles were available for full-text review. Additionally, 2 articles were found through citation cross-referencing. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram shown in Figure 1 illustrates the search and selection of articles for review.¹⁷ After full-text review, 7 articles published from 2003 to 2021 were included for final evaluation: 1 randomized clinical trial,¹⁸ 3 pre-post observational quantitative studies,^{1,11,21} 1 mixed-methods study,¹⁹ 1 qualitative phenomenology study,²⁰ and 1 quality improvement project.²² The articles were evaluated using the Johns Hopkins Nursing Evidence-Based Practice model.²³ According to this model, 1 article was level I, quality B¹⁸; 4 articles were level III, quality B^{1,11,19,20}; 1 article was level III, quality C²¹; and 1 article was level V, quality B.²²

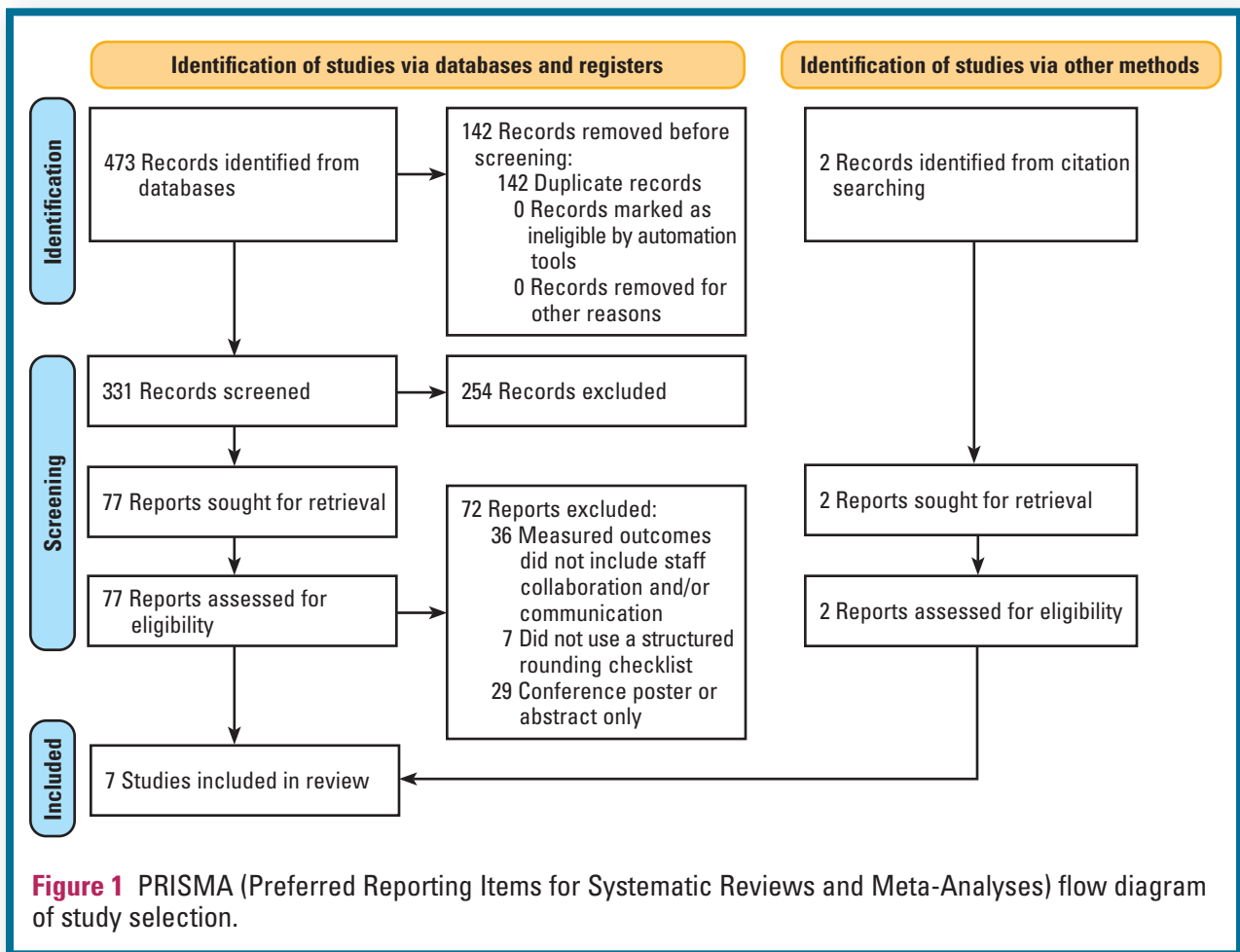
Findings

All studies reported in the articles were set in an adult ICU with minor variations in ICU type.^{1,11,18-22} The sample size varied from 56 to 6375.^{1,11,18-22} Most of the studies were conducted in the United States,^{1,11,20-22} with 1 conducted in Canada¹⁹ and 1 in Brazil.¹⁸ After review,

Table 1 Search strategy

Database	Search terms	No. of results
PubMed	<i>intensive care units</i> [MeSH] OR <i>critical care</i> [MeSH] OR <i>critical care nursing</i> [MeSH] OR <i>intensive care</i> [tiab] OR <i>critical care</i> [tiab] AND <i>checklist</i> [MeSH] OR <i>checklist</i> [tiab] AND <i>teaching rounds</i> [MeSH] OR <i>rounds</i> [tiab] OR <i>rounding</i> [tiab]	121
Embase	<i>intensive care/exp</i> OR <i>intensive care unit/exp</i> OR <i>intensive care nursing/exp</i> OR <i>intensive care</i> [tiab] OR <i>critical care</i> [tiab] AND <i>checklist/exp</i> OR <i>checklist</i> [tiab] AND <i>teaching round/exp</i> OR <i>rounds</i> [tiab] OR <i>rounding</i> [tiab]	292
CINAHL	<i>intensive care units</i> [MeSH] OR AB <i>intensive care</i> OR AB <i>intensive care unit</i> OR AB <i>critical care</i> OR <i>critical care</i> [MeSH] OR <i>critical care nursing</i> [MeSH]) AND <i>checklists</i> [MeSH] OR AB <i>checklist</i> AND <i>teaching rounds</i> [MeSH] OR AB <i>rounds</i> OR AB <i>rounding</i>	60
Total		473

Abbreviations: CINAHL, Cumulative Index of Nursing and Allied Health Literature; MeSH, medical subject headings; tiab, title/abstract.



the following main concepts emerged: (1) rounding checklists improve communication among rounding participants; (2) rounding checklists influence perceived collaboration among rounding participants. Specific information on each study's measured outcomes and limitations is provided in Table 2.

Rounding Checklists Improve Communication

Five articles discussed rounding checklists and their relationship with communication in the context of inter-professional rounding.^{1,11,19,20,22} Rounding checklists used during interprofessional rounding result in increased communication primarily through the organization and

Table 2 Sources included in the literature review

Source	Design	Sample and setting	Findings
Cavalcanti et al, ¹⁸ 2016	Multicenter randomized clinical trial	Conducted in 118 Brazilian ICUs with 13638 patients in 2 phases: 6656 Staff members in the observational/baseline phase 6375 Staff members in the randomized phase	Perceptions of collaboration increased significantly after implementing a rounding checklist. Perceptions of the patient safety climate increased significantly after implementing a rounding checklist.
Centofanti et al, ¹⁹ 2014	Single-center mixed-methods	Conducted in a 15-bed closed medical-surgical ICU 80 Field observations 72 Rounding checklists analyzed 56 Clinicians interviewed	The rounding checklist was viewed as an efficient tool for morning ICU rounds. The checklist improved communication by providing a systematic approach that was intradisciplinary and interdisciplinary.
Chapman et al, ¹ 2021	Single-center pre-post observational	Conducted in 3 ICUs in an academic tertiary care center 222 Rounding occurrences	The implementation of collaborative patient rounds increased verbalization of patient care goals and perceptions of collaboration.
Hallam et al, ²⁰ 2018	Multicenter qualitative phenomenology	Conducted in 32 ICUs in 14 hospitals 114 Hours of direct observation 89 Clinicians interviewed	Units that used checklists showed that they facilitated fluid and organized discussions among team members. Checklists serve to create an understanding among the care team about the patient. Checklists increase the efficiency of rounds.
Marshall et al, ²¹ 2018	Single-center pre-post observational	Conducted in a surgical ICU in a quaternary academic medical center	Postintervention NDNQI results showed a decrease in nurse-physician interaction, cooperation, teamwork, and appreciation.
Newkirk et al, ²² 2012	Single-center pre-post quality improvement project	Conducted at a 20-bed surgical trauma ICU and 16-bed burn ICU at a military academic medical center 600 Rounding observations in the preintervention phase 761 Rounding observations in the postintervention phase	The frequency of discussing all checklist items increased significantly. The use of a daily checklist alters communication patterns among rounding participants. Checklists have a positive effect on team communication.
Pronovost et al, ¹¹ 2003	Single-center pre-post observational	Conducted at a 16-bed surgical oncology ICU at a large academic medical center 56 Nurses and 56 providers were surveyed over more than 8 weeks. The LOS of an undisclosed number of patients was recorded for 1 year.	Before checklist implementation, less than 10% of clinicians and nurses understood the daily goals of therapy and the daily tasks to be completed. After checklist implementation, clinicians' and nurses' understanding increased to more than 95%.

Abbreviations: DGC, daily goals checklist; ICU, intensive care unit; LOS, length of stay; NDNQI, National Database of Nursing Quality Indicators.

Observable measures	Limitations	Level of evidence and quality
<p>Patient-focused measures: In-hospital mortality, care process, clinical outcomes</p> <p>Staff-focused measures: Teamwork climate, safety climate, job satisfaction, stress recognition, management perception, work conditions</p>	<p>Four items targeted by the checklist were not assessed because of feasibility constraints.</p> <p>Qualitative assessments of the root causes of a suboptimal safety climate were not conducted.</p> <p>Results may not apply to settings with different baseline levels of safety climate.</p>	IB
<p>Field observations on the use of the DGC during morning rounds</p> <p>Analysis of the DGC after rounds, including the sections completed and any notes written on the checklist</p> <p>Participants in the daily rounds engaged in semistructured individual interviews and focus groups to explore opinions about the DGC.</p>	<p>Variable use of the DGC among interviewees: Some clinician groups did not heavily use the DGC, so their perspectives were based on less direct experience.</p> <p>The observational data gathered during the field observations were subject to observer bias.</p> <p>Although the team observed and elicited perspectives about the impact of the DGC, the objective was not to directly evaluate patient outcomes.</p> <p>Single-site study limiting generalizability</p>	IIIB
<p>Nurse participation during rounds</p> <p>Verbalization of goals during rounds</p> <p>Discussion of the inclusion of applicable bundle items</p> <p>Perceptions of collaboration</p> <p>Frequency of rounding tool completion</p>	<p>A χ^2 test was used to compare process measures, which assumes the comparison groups are unrelated. However, a relationship existed between the 2 groups creating a limitation in the analysis.</p> <p>Single-site study limiting generalizability</p> <p>Not all providers responded or could be reached for the education delivery.</p> <p>No randomization or comparison group was completed at a single site, limiting generalizability.</p>	IIIB
<p>ICU providers' knowledge, attitude, and practices regarding checklist use were gathered via direct observations and semistructured interviews.</p> <p>ICU characteristics, checklist characteristics, and provider demographics</p>	<p>As in all qualitative research, there was potential for bias on the part of researchers, respondents, and rounding team member.</p> <p>Despite the research team seeking input from a variety of clinicians, the majority of the respondents were nurses, potentially limiting the generalizability.</p>	IIIB
<p>Results from the NDNQI on nurse-physician interaction, collaboration, teamwork, and appreciation</p> <p>If specific daily rounding questions were addressed</p> <p>Survey measuring if nighttime residents did an in-person check-in with nurse</p>	<p>Only 65% of nurses who completed the baseline NDNQI completed the postintervention NDNQI.</p> <p>Unclear sample characteristics and size</p> <p>Single-site study limiting generalizability</p> <p>An aggregate data survey was used as a measurement tool.</p>	IIIC
<p>The probability of a provider addressing a checklist item before (without) checklist prompting</p>	<p>No demographic information was collected on participants, limiting the generalizability.</p> <p>Single-site study, limiting generalizability</p> <p>No dedicated staff was used to ensure compliance with the planned methodology.</p> <p>There was not 100% compliance with the methodology.</p> <p>This project did not address the reasons for the modified communication; the Hawthorne effect could have influenced it.</p>	VB
<p>At week 2 of the 8 weeks, a rounding checklist was implemented, and patient LOS and survey scores before and after implementation were compared.</p> <p>The survey consisted of 2 questions: (1) How well do you understand the goals of care for this patient today? (2) How well do you understand what work needs to be accomplished to get this patient to the next level of care?</p>	<p>The study type cannot establish a causal relationship between checklist use and LOS.</p> <p>There was relatively limited preintervention data, potentially biasing the results.</p> <p>Single-site study, limiting generalizability</p> <p>The survey used was not validated before use.</p>	IIIB

efficiency they bring to the process.^{19,20} Specifically, rounding checklists' organizational quality helps to standardize the presentation of patient data and their subsequent interpretation, mitigating any confusion about who should present what information and thus improving communication during interprofessional rounds.^{19,20}

The authors of the articles reviewed and measured the construct of communication in several ways. Two articles used a qualitative approach to measure communication through a combination of observations and themes identified during interviews with interprofessional teams.^{19,20} Chapman and colleagues¹ captured the changes in communication by measuring goal verbalization before and after checklist implementation; their findings showed an increase in goal verbalization from 60% to 89% ($P < .05$). Additionally, through direct observation and measurement of item discussion, Newkirk and colleagues²² found that use of rounding checklists changed the communication pattern among interprofessional rounds participants and

significantly increased item discussion (surgical trauma ICU, 36% vs 77%, $P < .001$;

Rounding checklists should be used as a guide and a reminder to mitigate errors of omission and commission and ensure the consistency and completeness of care delivered to each patient.

burn ICU, 47% vs 72%, $P < .001$). Finally, the last of the 5 articles identified used a pre-post survey containing questions on communication.¹¹ This prospective cohort study showed an increase in communication and goal understanding from less than 10% to greater than 95%.¹¹ All 5 studies measuring communication indicated that use of rounding checklists improved this construct.^{1,11,19,20,22}

Rounding Checklists Influence Perceived Collaboration

Four studies focused on the effect of the use of rounding checklists on perceived collaboration during interprofessional rounds.^{1,18,19,21} The use of rounding checklists during interprofessional rounds increased the likelihood that clear patient goals would be delineated and understood by all, increasing perceived collaboration.^{1,19} In addition, the structured nature of rounding checklists highlighted each profession's contribution to rounds, which increased interprofessional attendance and collaboration.¹

There was some variation in how the concept of collaboration was measured in the 4 identified studies. The authors of 3 studies used validated instruments to measure perceived collaboration among staff members before and after interventions with rounding checklists.^{1,18,21} Cavalcanti et al¹⁸ used the Safety Attitudes Questionnaire²⁴ and found an increase in perceived positive staff collaboration from 45.8% to 53.8% (95% CI, 1.08-1.57; $P = .01$). Chapman and colleagues¹ used the Collaboration and Satisfaction About Care Decisions²⁵ tool, with an increase in mean (SD) score from 32.7 (7.71) to 37.7 (6.93). Finally, Marshall et al²¹ reported a 6% decrease in collaboration based on aggregate data from the National Database of Nursing Quality Indicators (NDNQI)²⁶ scorecard. The authors of the remaining study measured collaboration using direct observation and themes identified during interviews.¹⁹ In total, 3 out of 4 studies^{1,18,19} indicated that use of rounding checklists improved perceived collaboration.

Discussion

The primary aim of this integrative review was to identify and summarize the evidence related to use of rounding checklists during interprofessional rounds and its effect on the perceived level of staff collaboration and communication. Effective communication has been shown to reduce the incidence of medical errors and improve patient outcomes.^{10,12,27} All of the studies included in this review that addressed the relationship between the use of rounding checklists and communication showed that using rounding checklists during interprofessional rounds improved communication.^{1,11,19,20,22} Various mechanisms have been proposed for how rounding checklists improve communication during interprofessional rounds. The most frequently proposed mechanisms include a standardized structure and process, prompting, and a predetermined time for each professional to contribute.^{1,10,28,29} The overall predictability and standardization that rounding checklists provide trigger a complete and consistent information exchange among professionals from various disciplines.^{10,28} An example of a rounding checklist is provided in Figure 2.

The benefits of staff collaboration are also well documented as having positive implications for both patient outcomes and staff satisfaction.^{1,13,15,30} As detailed in Table 2, 4 studies focused on perceived collaboration,^{1,18,19,21} and of those 4, only 1 showed that rounding checklists had

Neurologic	<input type="checkbox"/> Orientation level <input type="checkbox"/> Delirium scale <input type="checkbox"/> Sedation and pain control	Notes
Respiratory	<input type="checkbox"/> Current oxygen needs <input type="checkbox"/> Spontaneous breathing trial <input type="checkbox"/> Extubation plan	Notes
Cardiac	<input type="checkbox"/> Devices/central catheters <input type="checkbox"/> Blood pressure goals <input type="checkbox"/> Cardiac drips reviewed <input type="checkbox"/> Laboratory tests ordered	Notes
GI/GU	<input type="checkbox"/> Fluid status/nutrition <input type="checkbox"/> Urinary catheter <input type="checkbox"/> Bowel regimen <input type="checkbox"/> Gastric ulcer prophylaxis	Notes
Skin	<input type="checkbox"/> DVT prophylaxis <input type="checkbox"/> Skin integrity <input type="checkbox"/> Mobility plan	Notes

Figure 2 Example of a rounding checklist.
 Abbreviations: DVT, deep vein thrombosis; GI, gastrointestinal; GU, genitourinary.

a negative impact on collaboration.²¹ The single-site pre-post observation study by Marshall and colleagues²¹ took place in a single trauma-surgical ICU, and the authors selected their hospital's NDNQI scorecard as the instrument with which to measure collaboration. From a methodological perspective, using existing aggregated data sources, such as the NDNQI survey, is a convenient way to capture data. However, because of the aggregation and broadness of these surveys, this measurement method can affect the validity of the captured data when used in a different context. Furthermore, caution must be used in drawing individual conclusions from aggregate data to avoid the "ecological fallacy": the drawing of false inferences about individual behavior on the basis of population-level ("ecological") data.³¹ Marshall and colleagues²¹ acknowledged this measurement method's limitations and reported that only 65% of the staff members who took the preintervention NDNQI survey also took the postintervention NDNQI survey.

The 3 remaining studies indicated that rounding checklists increased perceived collaboration during

interprofessional rounds. The literature elucidates several ways that rounding checklists facilitate collaboration, including clear role delineation and structure that requires participation from representatives of each discipline.^{1,10,32} Overall, rounding checklists are tools that define explicit roles, provide standardization, and create an environment conducive to open and collaborative discussion.^{1,10,32}

Implications

The evidence from this integrative review suggests that the use of rounding checklists during interprofessional rounds improves perceived collaboration and communication in adult ICUs. This improvement is likely the result of the underlying standardization and goal delineation that rounding checklists provide.^{1,10,11,18-20} The use of rounding checklists and the standardization they provide could be perceived by some as practicing "cookie-cutter" medicine.²⁰ Yet this archaic way of thought discredits what rounding checklists are at their core: a tool. Tools should never be applied in isolation or used to substitute for the critical thinking of clinicians. Rather, rounding checklists

should be used as a guide and a reminder to mitigate errors of omission and commission and ensure the consistency and completeness of care delivered to each patient.^{19,20,33}

Additionally, the efficacy of rounding checklists can be maximized by ensuring that their contents are specific to the unit they are implemented to support.^{11,19,20} Specifically, modifying rounding checklists to ensure that all elements are pertinent to the setting and patient population improves adoption and user buy-in and reduces barriers connected with time-wasting.^{11,20} Finally, increased communication and perceived collaboration have implications for promoting staff retention.³⁴ The literature consistently reveals the relationship between interprofessional communication and teamwork and increased job satisfaction and retention of health care staff members.³⁴⁻³⁸ Focusing on retention efforts is vital in the context of the current global health care worker shortage.³⁹

Limitations

This review has some limitations. Articles published in languages other than English were not included, which may have reduced the thoroughness of the review. Additionally, several articles included were conducted in an ICU at a single center, potentially reducing the generalizability of the results. Finally, this integrative review included only studies conducted in adult ICUs.

Conclusion

The evidence from this integrative review indicates that the use of rounding checklists during interprofessional rounds improves perceived collaboration and communication in adult ICUs. In today's complex health care environment, this finding has multifaceted and major clinical implications. Future studies are needed to add to the nascent evidence base and further elucidate the effects of rounding checklists on interprofessional teamwork. [CCN](#)

Financial Disclosures
None reported.

See also

To learn more about collaboration in the critical care setting, read "Healthy Work Environment Standards in Tele-Critical Care Nursing" by Williams et al in *AACN Advanced Critical Care*, 2023;34(4):350-358. <https://doi.org/10.4037/aacnacc2023407>. Available at www.aacnconline.org.

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Use of Rounding Checklists to Improve Communication and Collaboration in the Adult Intensive Care Unit: An Integrative Review

Intensive care units (ICUs) are complex settings that require effective communication and collaboration among professionals in many disciplines. Rounding checklists are frequently used during interprofessional rounds and have been shown to positively affect patient outcomes. The authors identify and summarize the evidence related to the practice question, in an adult ICU, does the use of a rounding checklist during interprofessional rounds affect the perceived level of staff collaboration or communication?

- Effective communication has been shown to reduce the incidence of medical errors and improve patient outcomes.
- All of the studies included in this review that using rounding checklists during interprofessional rounds improved communication.
- The overall predictability and standardization that rounding checklists provide trigger complete and consistent information exchange among professionals from various disciplines.
- The benefits of staff collaboration are also well documented as having positive implications for both patient outcomes and staff satisfaction.
- The evidence from this integrative review suggests that the use of rounding checklists during interprofessional rounds improves perceived collaboration

and communication in adult ICUs. This improvement is likely the result of the underlying standardization and goal delineation that rounding checklists provide.

- The use of rounding checklists could be perceived by some as practicing “cookie-cutter” medicine. Yet this archaic way of thought discredits what rounding checklists are at their core: a tool. Tools should never be applied in isolation or used to substitute for the critical thinking of clinicians. Rather, rounding checklists should be used as a guide and a reminder to mitigate errors of omission and commission and ensure the consistency and completeness of care delivered to each patient.
- The efficacy of rounding checklists can be maximized by ensuring that their contents are specific to the unit they are implemented to support. Specifically, modifying rounding checklists to ensure that all elements are pertinent to the setting and patient population improves user buy-in and reduces barriers connected with time-wasting.
- Finally, increased communication and perceived collaboration have implications for promoting staff retention. The literature consistently reveals the relationship between interprofessional communication and teamwork and increased job satisfaction and retention of health care staff members. **CCN**

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