Clinical Evidence Review

DAILY GOALS WORKSHEETS AND OTHER CHECKLISTS: ARE OUR CRITICAL CARE UNITS SAFER?

By Margo A. Halm, RN, PhD, CNS-BC

In *To Err Is Human*,[1] the Institute of Medicine (IOM) reported that system failures are responsible for 44 000 to 98 000 deaths of patients each year. Communication issues have been cited as a top safety incident that causes harm in medical and surgical intensive care units (ICUs), with training and team factors as major contributors.[2] Health care professionals are confronted with multiple communications (pagers, phone calls, wireless phones), interruptions and distractions, escalating noise, and limits to human performance in short-term memory from multitasking and stress/fatigue. Although it may seem that safe communication does not stand a chance against these odds, researchers in a recent ICU study[3] found that nurses interrupted 42% of serious errors.

In their 2001 publication, *Crossing the Quality Chasm*,[4] the IOM called for radical redesign of the health care system to make it easier for clinicians to keep patients free from harm. The Joint Commission's National Patient Safety goals[5] have unquestionably brought acute focus to patient safety as every patient's right and everyone's responsibility. AACN's Standards for a Healthy Work Environment also advocate that "nurses must be as proficient in communication skills as they are in clinical skills."[6(p16)] As a result of these forces, a culture of safety has become a strong ethic in health care organizations. Human factor science addresses interpersonal interactions implicated in adverse outcomes. The family of human factors skills—communication, briefings, cross-checking/verifying, addressing red flags with constructive assertion—is about detecting threats to patient safety as well as avoiding and managing errors in a team-based environment. As one approach, daily goals worksheets and checklists may reduce error by avoiding reliance on memory and transforming complex diagnostic and therapeutic decisions into a series of simple yes/no tasks.[7-11] This clinical review discusses the evidence behind these tools for increasing reliability in the delivery of care.

Methods

The search strategy included searching MEDLINE, CINAHL, and Cochrane data bases. Key words included *daily goals*, *checklists*, *structured communication*, and *ICUs*. Recent primary research and quality improvement reports were included if focused on critical care.

Results

As summarized in the Table, 14 reports describe evaluations of whether human factor tools eliminated communication gaps in the plan of care and promoted adherence with evidence-based practice guidelines. Daily goals worksheets and checklists were associated with improvements in all of the following: knowledge of the plan of care among clinicians; a culture of teamwork and safety; bundle adherence; and clinical (catheter-related bloodstream infection, ventilator-associated pneumonia, weaning, delirium screening, pain assessment/treatment, end-of-life care, mortality), financial (reduced length of stay), and service (patient/employee satisfaction) outcomes.

Recommendations

According to the evidence available, use of daily goals worksheets and checklists resulted in

Table
Summary of studies

Topic	Study	Unit	Methods	Results	
				Team processes	**Clinical/financial outcomes**
Daily goals	Uhlig et al[12]	Cardiac surgery	Structured communication with daily rounds	Increased quality of work life/employee satisfaction	Decreased mortality Increased satisfaction of patients
	Pronovost et al[13]	Surgical oncology intensive care unit	Daily goals worksheet	Nurse/resident goal understanding increased from <10% (baseline) to >95% (after)	Length of stay in intensive care unit decreased 50%
	Dobkin[14]	Medical intensive care unit/ surgical intensive care unit	Daily goals worksheet	Nurse's goal understanding increased 50% (baseline) to 98% to 100% (after)	Ventilator time decreased 1 day Mortality decreased 25% Length of stay in intensive care unit decreased 1.5 days
	Narasimhan et al[15]	Medical intensive care unit	Daily goals worksheet	Goal understanding increased from 3.9 to 4.8 (nurses) and from 4.6 to 4.9 (physicians) from baseline to 6 weeks; sustained at 9 months	Length of stay in intensive care unit decreased 25%
	Wolff et al[16]	Myocardial infarction/ stroke inpatients	Daily checklists/ reminders	Increased bundle adherence (aspirin/β-blockers, dysphagia screening)	
Ventilator-associated pneumonia	Berenholtz et al[17]	Surgical intensive care unit	Intervention bundle, including daily rounds checklist	% ventilator days bundle implemented increased 30% to 90%; sustained at 1 year	
Weaning	Walsh et al[18]	Intensive care unit	Daily weaning checklist		83% of patients achieving ventilator independence met criteria
Catheter-related blood-stream infection	Berenholtz et al[19]	Surgical intensive care unit/ control intensive care unit	Catheter-related blood-stream infection bundle, including checklist for adherence	62% of physicians followed bundle (baseline)	Catheter-related blood-stream infection decreased 11.3 to 0/1000 catheter days (vs 5.7 to 1.6/1000 catheter days in the control intensive care unit); improvement sustained
	Wall et al[20]	Medical intensive care unit	Central catheter insertion checklist, monitoring real-time care processes		Catheter-related blood-stream infection decreased 7.0 to 3.8/1000 catheter days; sustained at 2 years
	Pronovost et al[21] Goeschel et al[22]	127 intensive care units (rural, small, non-teaching, community, teaching hospitals)	Daily goals communication	Increased safety/teamwork climate at 1 year	Catheter-related blood-stream infection/ ventilator-associated pneumonia decreased 50th to 10th percentile; 63% of intensive care units eliminated both
Delirum	Bergeron et al[23]	Medical/ surgical intensive care unit	Delirium screening checklist	>90% of patients in whom delirium develops had high screening score	

continued

Topic	Study	Unit	Methods	Results	
				Team processes	**Clinical/financial outcomes**
Pain	Erdek and Pronovost[24]	2 Surgical intensive care units	Plan-Do-Study-Act cycles, including standard rounds communication	Pain assessment /treatment for visual analog scale ≥3 were 42% and 59% (baseline) vs 71% and 97% (5 weeks)	
End-of-life care	Hall et al[25]	2 Medical/ surgical intensive care units	Withdrawal of life support/do not resuscitate checklists	80% nurses believed checklists improved end-of-life process	Fewer patients received cardiopulmonary resuscitation, comfort medications, diazepam; Increased pastoral care during discussions of withdrawal of life support
	Clarke et al[26]	15 adult intensive care units (8 medical, 2 surgical, 5 mixed)	Triggering clinical behavior for end-of-life domains with intensive care unit guidelines/documentation		Symptom management and comfort care integrated consistently Patient/family-centered decision making, communication, emotional support, continuity of care, spiritual care domains not well represented

standardized delivery of care through higher adherence with evidence-based practice guidelines and promotion of teamwork cultures that enhanced effective communication. According to Pronovost et al,[21] the leading national experts in the use of safety checklists, the single most important aspect of successful change in health care settings is engaging the culture. "Safety first" is the hallmark of high-reliability units, where communications are structured and rewarded, team contributions valued, and protocols founded on evidence-based practice are used. Staff respectfully speak up when encountering red flags—for instance, when a colleague lacks required skills or deviates from established protocol—honoring Florence Nightingale's[27] maxim "do the sick no harm." Memory aids are recognized not as signs of incompetence, but as useful tools to preserve safety in environments where complexity reigns—environments like our high-tech ICUs, where invasive diagnostic tests and treatments are the name of the game.

About the Author
Margo A. Halm is a clinical nurse specialist and director of nursing research and quality at United Hospital in St Paul, Minnesota, where she leads and mentors staff in principles of clinical research and evidence-based practice.

Corresponding author: Margo A. Halm, RN, PhD, CNS-BC, United Hospital - Mailstop 60231, 333 N. Smith Ave, St Paul, MN 55102 (e-mail: margo.a.halm@allina.com).

Critical care professionals are continually challenged to deliver care safely and effectively. With the hundreds of activities that ICU patients endure, daily goals and checklists could undoubtedly address complexities to reduce types of harm: physiological changes, discomfort, physical injury, family dissatisfaction, psychological distress, anticipated/prolonged length of stay, or even death.[2] Although clinicians must attend to the intricacies of physiology, the aviation field's track record with using human factors checklists[28] provides important examples for health care because both industries are keenly responsible for the lives of millions of people.

Problems common to critical care populations—skin breakdown, delirium, hypoxia, altered hemodynamics, pain/anxiety, infection potential—might be preventable or have their severity at least reduced, if they were proactively assessed for on admission and if appropriate interventions were incorporated into the plan of care. Further, if caregivers indicated whether goals had been met for common problems by a simple yes/no check on a daily goals worksheet each shift, additional interventions could be addressed in multidisciplinary rounds. By creating redundancies that ensure each task occurs and is done correctly, complexities prone to error can be eliminated.[10]

Given that clinical reminders at the point of care are the most effective strategy for affecting practice,[20] developing checklists for "mission critical"

nursing interventions that, if not performed correctly, could lead to adverse events and substantial harm tightens the safety net. Checklists may also have value for situations where several tasks must be completed at one time. Titrating infusions; administering sedatives or analgesics; tightly controlling glycemic levels; preventing skin breakdown and delirium; turning patients prone or mobilizing patients receiving mechanical ventilation; weaning trials; caring for the insertion site for hemodynamic catheters; removing femoral sheaths; inserting small-bowel feeding tubes; relaying critical values or status changes to physicians and other departments, not to mention family members; and verbal hand-offs during crises or supporting families at the bedside during resuscitation—these are just a few critical priorities that come to mind.

As Dobkin[14] contends, checklists are simple and cost-effective tools, but the greatest challenge rests with the commitment of the team to use them. With round-the-clock presence at the bedside, nurses must continue to seize their pivotal role in monitoring for situations of risk and skillfully executing not only clinical but also communication interventions that preserve a safety net. Patients are counting on us.

REFERENCES
1. *To Err Is Human: Building a Safer Health System.* Washington, DC: Institute of Medicine; 1999.
2. Spinoli D, Needham D, Thompson D, et al. Intensive care unit safety incidents for medical versus surgical patients: a prospective multicenter study. *J Crit Care.* 2007;22:177-183.
3. Rothschild J, Landrigan C, Cronin J, et al. The critical care safety study: the incidence and nature of adverse events and serious medical errors in intensive care. *Crit Care Med.* 2005;33(8):1694-1700.
4. *Crossing the Quality Chasm.* Washington, DC: Institute of Medicine; 2001.
5. Joint Commission National Patient Safety Goals. The Joint Commission Web page. http://www.jointcommission.org/ PatientSafety/NationalPatientSafetyGoals/. Accessed September 3, 2008.
6. American Association of Critical Care Nurses. *AACN Standards for Establishing and Sustaining Healthy Work Environments.* Aliso Viejo, CA: AACN; 2005.
7. Leape L. Error in medicine. *JAMA.* 1994;272(23):1851-1857.
8. Pronovost R, Thompson D. Reducing defects in the use of interventions. *Intensive Care Med.* 2004;30:1505-1507.
9. Hales B, Pronovost P. The checklist: a tool for error management and performance improvement. *J Crit Care.* 2006;21:231-235.
10. Pronovost P, Holzmueller C. Partnering for quality. *J Crit Care.* 2004;19(3):121-129.
11. Gawande A. The checklist: reporting and essays. *New Yorker.* December 10, 2007:86-101.
12. Uhlig P, Brown J, Nason A, Camelio A, Kendall E. System innovation: Concord Hospital. *Jt Comm J Qual Improv.* 2002;28(12):666-672.
13. Pronovost P, Berenholtz S, Dorman T, Lipsett P, Simmonds T, Haraden C. Improving communication in the ICU using daily goals. *J Crit Care.* 2003;18(2):71-75.
14. Dobkin E. Checkoffs play key role in SICU improvement. *Healthcare Benchmarks Qual Improv.* October 2003:113-115.
15. Narasimhan M, Eisen L, Mahoney C, Acerra F, Rosen M. Improving nurse-physician communication and satisfaction in the intensive care unit with a daily goals worksheet. *Am J Crit Care.* 2006;15(2):217-222.
16. Wolff A, Taylor S, McCabe J. Using checklist and reminders in clinical pathways to improve hospital inpatient care. *Med J Aust.* 2004;181(8):428-431.
17. Berenholtz S, Milanovich S, Faircloth A, et al. Improving care for the ventilated patient. *Jt Comm J Qual Saf.* 2004;30(4):195-204.
18. Walsh T, Dodds S, McArdle F. Evaluation of simple criteria to predict successful weaning from mechanical ventilation in intensive care patients. *Br J Anaesth.* 2004;92(6):793-799.
19. Berenholtz S, Pronovost P, Lipsett P, et al. Eliminating catheter-related bloodstream infections in the intensive care unit. *Crit Care Med.* 2004;32(10):2014-2020.
20. Wall R, Ely E, Elasy T, et al. Using real time process measurements to reduce catheter related bloodstream infections in the intensive care unit. *Qual Saf Health Care.* 2005;14(4):295-302.
21. Pronovost P, Berenholtz S, Goeschel C, et al. Creating high reliability in health care organizations. *Health Serv Res.* 2006;41(4 Pt 2):1599-1617.
22. Goeschel C, Bourgault A, Palleschi M, et al. Nursing lessons from the MHA Keystone ICU project: developing and implementing an innovative approach to patient safety. *Crit Care Nurs Clin North Am.* 2006;18(4):481-492.
23. Bergeron N, Dubois M, Dumont M, Dial S, Skrobik Y. Intensive care delirium screening checklist: evaluation of a new screening tool. *Intensive Care Med.* 2001;27(5):859-564.
24. Erdek M, Pronovost P. Improving assessment and treatment of pain in the critically ill. *Int J Qual Health Care.* 2004;16(1):59-64.
25. Hall R, Rocker G, Murray D. Simple changes can improve conduct of end-of-life care in the intensive care unit. *Can J Anesth.* 2004;51(6):631-636.
26. Clarke EB, Luce JM, Curtis JR, et al. A content analysis of forms, guidelines, and other materials documenting end-of-life care in intensive care units. *J Crit Care.* 2004;19 (2):108-117.
27. Nightingale F. *Notes on Hospitals.* London, England: John W. Parker and Sons; 1863.
28. Helmreich R. Managing human error in aviation. *Sci Am.* 1997;276(5):62-67.