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High Reliability and Safety Culture: Focus on Caregivers

High-reliability organizations consistently eliminate or minimize adverse events despite carrying out intrinsically complex and hazardous work. The following summaries of recent resources and peer-reviewed articles describe physician and caregiver processes and practices impacting the incidence of safety events and improving patient outcomes. Citations are linked to full-text articles **[*]** when available. **[PG]** denotes Press Ganey research.

Study	Objective	Conclusion
Ford, Y., & Heyman, A. (2017). Patients' perceptions of bedside handoff: Further evidence to support a culture of always. *Journal of Nursing Care Quality*, 32(1), 15-24.	To validate that patients' satisfaction with handoffs, understanding of their care, feelings of safety and satisfaction with the handoff process are associated with the frequency with which they experience bedside handoffs.	■ There are significant correlations between "always" receiving bedside handoff and patient satisfaction, understanding, safety, and participation in care. ■ Benefits of bedside handoffs are only realized when patients experience them consistently. ■ Patients feel less safe when bedside handoff does not "always" occur, and they perceive more inaccuracies in the information being passed on when bedside handoff occurs less than "always." ■ Higher scores about trust in nursing are positively correlated with the frequency of bedside handoff.
Stevens, K. R., Engh, E. P., Tubbs-Cooley, H., Conley, D. M., Cupit, T., D'Errico, E., … Withycombe, J. S. (2017). Operational failures detected by frontline acute care nurses. *Research in Nursing and Health,* 40(3), 197-205.	To better understand frontline nurses' direct experiences with operational failures in hospitals.	■ On average, nurses reported six operational failures per shift. ■ The highest rate of failures occurred in the category of Equipment/Supplies, and the lowest rate occurred in the category of Physical Unit/Layout. ■ Neither hospital size nor teaching status impacted the rate of operational failures.
[*] Donnelly, L. P., Cherian, S. S., Chua, K. B., Thankachan, S., Millecker, L. A., Koroll, A. G., & Bisset, G. S. (2016). The Daily Readiness Huddle: A key component to a system of care. *Health Systems and Policy Research, 3*(1).	To assess the effects of a Daily Readiness Huddle (DRH) on problem identification and improvement.	■ A defined DRH process greatly increases the ability to rapidly identify and solve problems in care delivery. ■ Additional benefits include improved care coordination and teamwork. ■ The DRH involves a clinical area, department, or leaders gathering every day to assess the ability to care for the patients they will encounter that day and identify concerns about care delivery. ■ DRH attendees remain standing to keep the huddle short. ■ Conduct the huddle at or near the care being rendered and in front of a visual board—white boards are considered ideal (easy to update and very low cost).
[*] Lee, S. H., Phan, P. H., Dorman, T., Weaver, S. J., & Pronovost, P. J. (2016). Handoffs, safety culture, and practices: Evidence from the hospital survey on patient safety culture. *BMC Health Services Research 16*, 254.	To analyze how different elements of patient safety culture are associated with clinical handoffs and perceptions of patient safety.	■ Effective handoff of information, responsibility, and accountability are associated with positive staff perceptions of patient safety. ■ Feedback and communication about errors are positively related to the transfer of patient information ■ Teamwork within units and the frequency of events reported are positively related to the transfer of personal responsibility during shift changes. ■ Teamwork across units is positively related to the transfer of accountability for patients.

Study	Objective	Conclusion

Miller, K., Briody, C., Casey, D., Kane, J. K., Mitchell, D., Patel, B., … Drees, M. (2016). Using the Comprehensive Unit-based Safety Program model for sustained reduction in hospital infections. *American Journal of Infection Control, 44*(9), 969-976.	To describe the results of a Comprehensive Unit-based Safety Program (CUSP) on hospital-acquired infection rates.	▪ Implementation of a CUSP is associated with:
		  − Decreases in hospital-acquired infections
		  − Decreased device utilization for urinary catheters and central lines
		  − Improved compliance with central-line insertion checklists
		  − Improved hand-hygiene compliance
		▪ The CUSP model—implementation of evidence-based practices by engaged frontline staff—creates sustainable improvements.

Richter, J. P., McAlearney, A. S., & Pennell, M. L. (2016). The influence of organizational factors on patient safety: Examining successful handoffs in health care. *Health Care Management Review, 4*(1), 32-41.	To determine whether perceptions of organizational factors that influence patient safety are positively associated with perceptions of successful patient handoffs.	▪ Communication failures, lack of leadership focus on safety, and staffing shortages are barriers to successful handoffs. ▪ Perceived teamwork across units is the most significant predictor of perceived successful handoffs. ▪ Perceptions of staffing and management support for safety are significantly associated with perceived successful handoffs for both management and clinical staff. ▪ Perceptions of organizational learning and continuous improvement have a positive association with perceived successful handoffs for management. ▪ Perceived communication openness has a significant association among clinical staff.

[*] Sheth, S., McCarthy, E., Kipps, A. K., Wood, M., Roth, S. J., Sharek, P. J., & Shin, A. Y. (2016). Changes in efficiency and safety culture after integration of an I-PASS-supported handoff process. *Pediatrics, 137*(2), 1-9.	To determine the impact of a multidisciplinary standardized handoff process on efficiency, safety culture, and satisfaction.	▪ A multidisciplinary I-PASS-supported handoff process results in improved transfer efficiency, safety culture scores, and satisfaction of providers and families.
		▪ The I-Pass handoff process resulted in:
		  − An 84% reduction in the time between transfer order entry and patient arrival on the receiving unit
		  − Increases in scores for two AHRQ Safety Survey items: "Things fall between the cracks when transferring patients from one unit to another" and "Problems often occur in the exchange of information across hospital units"
		  − Improved family satisfaction scores on items relative to the transfer process
		▪ Caregiver overall satisfaction with the transfer process increased from 3% to 24%.

[*] Birmingham, P., Buffum, M. D., Blegen, M. A., & Lyndon, A. (2015). Handoffs and patient safety: Grasping the story and painting a full picture. *Western Journal of Nursing Research, 37*(11), 1458-1478.	To examine nurses' perspectives about processes that promote and hinder patient safety intra-shift and during handoff.	▪ Nurses perceive grasping the story and painting a full picture as important patient safety handoff processes.
		▪ Disruptions during handoffs that hinder quality and safety include:
		  − New patients arriving at shift change
		  − Nurses leaving the unit at shift change
		  − No time dedicated for shift report
		  − Difficult to read orders and test results

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		– Lack of time to research questions related to patient status ▪ Nurses reported the following inefficiencies: – Heavy portable computers – Computer malfunctions – Requiring multiple password entries ▪ Factors that facilitate quality and safety during handoff include: – Patient and nurse continuity – Bedside report during handoff – Unit-level agreement on what to include in handoff reports – Experience asking and answering questions – RN-RN mutual respect and trust
Bishop, A. C., & Cregan, B. R. (2015). Patient safety culture: finding meaning in patient experiences. *International Journal of Health Care Quality Assurance, 28*(6), 595-610.	To determine how patient narratives advance an understanding of safety culture and how patients experience safety culture.	▪ Greater acknowledgment of patient and family experiences improves the ability to define and address safety culture deficiencies. ▪ Patient experiences and narratives add to an understanding of cultural impact on patient experiences of safety while hospitalized.
DiCuccio, M. H. (2015). The relationship between patient safety culture and patient outcomes: A systematic review. *Journal of Patient Safety, 11*(3), 135-142.	To determine nurse-sensitive patient outcomes that have been significantly correlated to the culture of safety and commonly used tools to measure safety culture.	▪ Hospital-acquired pressure ulcers (HAPU) and patient and family satisfaction are correlated to safety culture. ▪ Safety culture is correlated to readmission rates, AHRQ composite rates, mortality, and patient satisfaction at the hospital level. ▪ Improved teamwork and communication among care team members are correlated with decreased ICU patient mortality. ▪ Safety culture is correlated to mortality and family satisfaction at the unit level. ▪ Patient satisfaction is correlated to HAPU rates at the medical-surgical unit level.
Mullan, P. C., Macias, C. G., Hsu, D., Alam, S., & Patel, B. (2015). A novel briefing checklist at shift handoff in an emergency department improves situational awareness and safety event identification. *Pediatric Emergency Care, 31*(4), 231-238.	To assess the effectiveness of a physician handoff process in identifying a pediatric emergency department safety events.	▪ Physicians perceive improved communication when using a briefing checklist at handoff that includes patient information and situational awareness. ▪ The use of a handoff checklist resulted in the identification of potential adverse events through recognition of critically ill patients, equipment problems, and staffing issues. ▪ There was an 89% checklist completion rate; checklist completion over 80% is associated with improved patient outcomes. ▪ The mean duration of time per patient handoff was eighty-two seconds regardless of the number of safety concerns identified.

Study	Objective	Conclusion
[*] Nicksa, G. A., Anderson, C., Fidler, R., & Stewart, L. Innovative approach using interprofessional simulation to educate surgical residents in technical and nontechnical skills in high-risk clinical scenarios. *JAMA Surgery, 150*(3), 201-207.	To describe a surgical resident training program using interprofessional simulations.	▪ The program improves residents' leadership, teamwork, communication, and procedural skills. ▪ Participants found interprofessional simulations to be realistic and a valuable educational tool. ▪ Interprofessional simulation provides a valuable means of educating surgical residents and evaluating their skills in real-life clinical scenarios.
[*PG] Press Ganey. (2015). Reducing serious safety events: A critical dimension of the patient experience. South Bend, IN: Author.	To discuss the interrelated domains of safety, quality, and patient experiences.	▪ Patients perceive safety as fundamental to the health care experience. ▪ Tactics designed to improve patient perceptions of care (e.g., communication training and leadership rounding) positively and directly influence patient safety. ▪ Organizations that perform well in patient experience have lower mortality, improved rescue rates for critically ill patients, and fewer complications. ▪ Safety data transparency is integral to eliminating patient harm. ▪ Resources for teaching and reinforcing empathy, communication, compassion, and service for practitioners and employees are essential to highly reliable operations. ▪ Health care organizations that focus on high-reliability principles to create a culture of safety will improve multiple other dimensions of performance.

Taylor, J. S. (2015). Improving patient safety and satisfaction with standardized bedside handoff and walking rounds. *Clinical Journal of Oncology Nursing, 19*(4), 414-416.	To describe a handoff communication tool recognized by the Joint Commission as a patient safety goal to reduce communication errors and improve patient safety.	▪ Common distractions during walking rounds include call bells, phone calls, and nursing task priorities.
		▪ Standardizing a checklist of items at the unit-level to be discussed at handoff improves communication.
		▪ Combining a private nurse-nurse discussion and bedside rounds in a distraction-free environment during handoff results in nurse-reported improvements in the following:
		  − Nurse-nurse and nurse-patient communication
		  − Patient and family introductions
		  − Patient satisfaction
		  − Patient adherence to care
		  − Task prioritization

[*] Yip, L., & Farmer, B. (2015). High reliability organizations: Medication safety. *Journal of Medical Toxicology, 11*(2), 257-261.	To discuss the use of high-reliability practices to reduce medication errors in health care settings.	▪ Failures in communication, decision making, leadership, and human factors are the four leading root causes of sentinel events in health care. ▪ Medication-related adverse events are the leading cause of injury. − Every hospitalized patient is subject to at least one medication error every day, accounting for over 7000 deaths in 1993 and costing an estimated $3.5 billion dollars per year. ▪ The following "sterile cockpit" and "checklist" high-reliability practices mitigate medication errors:

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		- Visible "Do not disturb" signs in critical areas of medication rounds, cordoned off areas to signify interruptions are not permitted within set boundaries, and donning colored vests - Reading back the name, dose, and route of the medications as the order is received - Two people independently verifying high-risk medications being administered - Highly safe operations take human fallibility into account when people are trained, systems are designed, and organizations are managed.
[*] Profit, J., Sharek, P. J., Amspoker, A. B., Kowalkowski, M. A., Nisbet, C. C., Thomas, E. J., … Sexton JB. (2014). Burnout in the NICU setting and its relation to safety culture. *BMJ Quality and Safety, 23*(10), 806-813.	To examine the relationships between caregiver burnout and patient safety culture in the neonatal intensive care unit (NICU).	- NICU caregiver burnout is associated with lower perceptions of patient safety culture. - NICUs with more burnout scored lower on the Safety Attitudes Questionnaire in teamwork climate, safety climate, job satisfaction, perceptions of management, and working conditions.
[*] Starmer, A. J., Spector, N. D., Srivastava, R., West, D. C., Rosenbluth, G., Allen, A. D., … Landrigan, C. P. (2014). Changes in medical errors after implementation of a handoff program. *New England Journal of Medicine, 371*(19), 1803-1812.	To measure the impact of a resident handoff improvement program on rates of medical errors, miscommunications, and preventable adverse events in nine hospitals.	- Implementation of the I-PASS Handoff Bundle was associated with a 23% relative reduction in the rate of all medical errors and a 30% relative reduction in the rate of preventable adverse events. - Implementation of the handoff program was associated with improvements in communication without a negative effect on workflow.
Salas, E., & Rosen, M. A. (2013). Building high reliability teams: Progress and some reflections on teamwork training. *BMJ Quality and Safety, 22*(5), 369-373.	To identify high-level themes in the state of the science of team training in health care.	- Teamwork training is associated with improvements in clinical performance, efficiency, culture, and patient outcomes. - Health care providers believe team training is important, and relevant to their work. - Error reporting systems; leaders that reinforce the value of teamwork; and embedding teamwork concepts into job descriptions, evaluations, and promotion criteria improve the impact of teamwork training. - Simulation training enhances the application and retention of teamwork principles. - Senior leader attendance at teamwork training sessions improves sustainability of interventions. - Communication protocols—briefing, debriefing, handoff protocols, and checklists—support effective teamwork. - Pairing teamwork training with a workflow analysis and redesign has significant impact on staff and patient-reported outcomes.

Study	Objective	Conclusion
[*] Shekelle, P. G., Pronovost, P. J., Wachter, R. M., McDonald, K. M., Schoelles, K., Dy, S. M., … Walshe, K. (2013). The top patient safety strategies that can be encouraged for adoption now. *Annals of Internal Medicine, 158*(5 Pt 2), 365-368.	To conduct an evidence-based assessment of patient safety strategies.	▪ Strongly encourage the following patient safety strategies: − Barrier precautions for infection prevention − Bundles to prevent hospital-acquired conditions − Checklists − Hand hygiene − Hazardous abbreviations lists − Ultrasonography for central line placement − Venous thromboembolism prophylaxis ▪ Encourage the following patient safety strategies: − Computerized provider order entry − Falls reduction interventions − Improving patients' understanding of treatment options and risks − Medication reconciliation and use of clinical pharmacists to reduce adverse drug events − Reducing radiation exposure − Rapid-response systems − Simulation exercises in safety training − Surgical outcome report cards − Team training
Lee, A., Mills, P. D., & Watts, B. V. (2012). Using root cause analysis to reduce falls with injury in the psychiatric unit. *General Hospital Psychiatry, 34*(3), 304-311.	To identify how falls on psychiatric units occur, the underlying root causes, and effective action plans to reduce falls and injuries.	▪ Falls often result from activities related to getting up from a bed, chair or wheelchair; walking or running; the bathroom; and behavior. ▪ The most common root causes are environmental hazards, poor communication of fall risk, lack of suitable equipment, and inadequate falls assessment protocol. ▪ Staff education, documentation process improvements, and provision of falls prevention equipment are the most frequent actions taken.
Maxson, P. M., Derby, K. M., Wrobleski, D. M., & Foss, D. M. (2012). Bedside nurse-to-nurse handoff promotes patient safety. *Medsurg Nursing, 21*(3), 140-144.	To assess the impact of a bedside handoff process on staff and patient satisfaction.	▪ The bedside handoff process is associated with improvements in: − Patient perceptions with being informed of the plan of care for the day − Nurse satisfaction with accountability; nurse-nurse and nurse-physician communication; and medication reconciliation
[*] Mahmood, A., Chaudhury, H., & Valente, M. (2011). Nurses' perceptions of how physical environment affects medication errors in acute care settings. *Applied Nursing Research, 24*(4), 229-237.	To examine how the nursing staff perceive the role of the physical environment on the occurrence of medication errors.	▪ Factors within the physical environment perceived to be "very important" or "somewhat important" in leading to medication errors include lack of privacy in the nurses' work area, insufficient space in the medication room, inappropriate layout in the nursing unit, and insufficient space for documenting medication administration. ▪ Missed doses is correlated to poor lighting, high noise levels, poorly organized supplies, and missing or unreadable medication labels.

Study	Objective	Conclusion
		▪ Poor training, stress, overwork, noise levels, a high number of patients per nurse, poor teamwork, and poor handwriting are perceived to contribute to medication errors.
Krein, S. L., Damschroder, L. J., Kowalski, C. P., Forman, J., Hofer, T. P., & Saint, S. (2010). The influence of organizational context on quality improvement and patient safety efforts in infection prevention: A multi-center qualitative study. *Social Science and Medicine, 71*(9), 1692-1701.	To provide insights about successful implementation of safety culture improvement activities in relation to organizational structure in U.S. hospitals.	▪ Problematic evidence-based practice implementation is associated with sub-optimal outcomes and results. ▪ Barriers to improvement include: – Lack of effective leadership – Inconsistent interpretation of the organization's mission – Dictating new processes without caregiver input – Resource constraints (human and time) – Emotionally exhausted staff ▪ Traits and practices that aid improvement efforts requiring behavioral changes include: – Gap analyses comparing existing practices against professional guidelines – Leadership and medical stewardship for process change or implementation – Leadership support and encouragement for nurses to speak up to doctors about breaches in process – A cohesive culture that is strongly supportive of quality improvement ▪ Even with strong leadership and committed clinicians, resource constraints and or political divisions will undermine quality improvement efforts.
Timmel, J., Kent, P. S., Holzmueller, C. G., Paine, L., Schulick, R. D., & Pronovost, P. J. (2010). Impact of the Comprehensive Unit-based Safety Program (CUSP) on safety culture in a surgical inpatient unit. *Joint Commission Journal on Quality and Patient Safety, 36*(6):252-260.	To assess the impact of the Comprehensive Unit-based Safety Program (CUSP) on safety and teamwork climate in an adult surgical oncology unit.	▪ CUSPs improve safety climate, teamwork climate, and nurse turnover rates. ▪ CUSP success is related to staff involvement in the identification of safety hazards, and the design and implementation of interventions. ▪ Implementation of a team-based goals sheet reviewed during daily multidisciplinary rounds with nurses is associated with improvement in safety culture scores. ▪ The nursing turnover rate decreased from 27% to zero within three years.
[*] Pronovost, P., Needham, D., Berenholtz, S., Sinopoli, D., Chu, H., Cosgrove, S., … Goeschel, C. (2006). An intervention to decrease catheter-related bloodstream infections in the ICU. *New England Journal of Medicine, 355*(26), 2725-2732.	To evaluate the effect of the Michigan Keystone ICU project intervention on CLABSI rates up to eighteen months after implementation.	▪ Project interventions include a comprehensive unit-based safety program; a daily goals sheet for clinician-clinician communication: and a bundle for infection prevention including hand washing, using full-barrier precautions during central venous catheter insertion, cleaning the skin with chlorhexidine, avoiding the femoral site if possible, and removing unnecessary catheters. ▪ There was a significant decrease in rates of catheter-related bloodstream infection (CLABSI). ▪ The overall median rate of CLABSI was sustained at zero during 18 months of follow-up.