Sentinel Event Alert

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The essential role of leadership in developing a safety culture

In any health care organization, leadership's first priority is to be accountable for effective care while protecting the safety of patients, employees, and visitors. Competent and thoughtful leaders* contribute to improvements in safety and organizational culture.[1,2] They understand that systemic flaws exist and each step in a care process has the potential for failure simply because humans make mistakes.[3-5] James Reason compared these flaws – latent hazards and weaknesses – to holes in Swiss cheese. These latent hazards and weaknesses must be identified and solutions found to prevent errors from reaching the patient and causing harm.[6] Examples of latent hazards and weaknesses include poor design, lack of supervision, and manufacturing or maintenance defects.

The Joint Commission's Sentinel Event Database reveals that leadership's failure to create an effective safety culture is a contributing factor to many types of adverse events – from wrong site surgery to delays in treatment.[7]

Inadequate leadership can contribute to adverse events in various ways, including but not limited to these examples:

- Insufficient support of patient safety event reporting[8]
- Lack of feedback or response to staff and others who report safety vulnerabilities[8]
- Allowing intimidation of staff who report events[9]
- Refusing to consistently prioritize and implement safety recommendations
- Not addressing staff burnout[10,11]

In essence, a leader who is committed to prioritizing and making patient safety visible through every day actions is a critical part of creating a true culture of safety.[12] Leaders must commit to creating and maintaining a culture of safety; this commitment is just as critical as the time and resources devoted to revenue and financial stability, system integration, and productivity. Maintaining a safety culture requires leaders to consistently and visibly support and promote everyday safety measures.[13] Culture is a product of what is done on a consistent daily basis. Hospital team members measure an organization's commitment to culture by what leaders do, rather than what they say should be done.

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* The Joint Commission accreditation manual glossary defines a leader as: "an individual who sets expectations, develops plans, and implements procedures to assess and improve the quality of the organization's governance, management, and clinical and support functions and processes. At a minimum, leaders include members of the governing body and medical staff, the chief executive officer and other senior managers, the nurse executive, clinical leaders, and staff members in leadership positions within the organization."

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The Joint Commission introduced safety culture concepts in 2008 with the publication of a *Sentinel Event Alert* on behaviors that undermine a culture of safety.[14] Further emphasis was made the following year with a *Sentinel Event Alert* on leadership committed to safety (this Alert replaces and updates that one), and the establishment of a Leadership Standard requiring leaders to create and maintain a culture of safety. The Patient Safety Systems (PS) chapter of The Joint Commission's accreditation manuals emphasizes the importance of safety culture.

Safety culture foundation

Safety culture is the sum of what an organization ***is*** and ***does*** in the pursuit of safety.[15] The PS chapter defines safety culture as the product of individual and group beliefs, values, attitudes, perceptions, competencies, and patterns of behavior that determine the organization's commitment to quality and patient safety. Organizations that have a robust safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures.[16] The safety culture concept originated in the nuclear energy and aviation industries, which are known for their use of strategies and methodologies designed to consistently and systematically mitigate risk, thereby avoiding accidents.[17,18] The Institute of Nuclear Power Operations defined safety culture characteristics[19] that are adaptable to the health care environment:

1. Leaders demonstrate commitment to safety in their decisions and behaviors.
2. Decisions that support or affect safety are systematic, rigorous and thorough.
3. Trust and respect permeate the organization.
4. Opportunities to learn about ways to ensure safety are sought out and implemented.
5. Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.
6. A safety-conscious work environment is maintained where personnel feel free to raise safety concerns without intimidation, harassment, discrimination, or fear of retaliation.
7. The process of planning and controlling work activities is implemented so that safety is maintained.

Leaders can build safety cultures by readily and willingly participating with care team members in initiatives designed to develop and emulate safety culture characteristics.[13] Effective leaders who deliberately engage in strategies and tactics to strengthen their organization's safety culture see safety issues as problems with organizational systems, not their employees, and see adverse events and close calls ("near misses") as providing "information-rich" data for learning and systems improvement.[3-5] Individuals within the organization respect and are wary of operational hazards, have a collective mindfulness that people and equipment will sometimes fail, defer to expertise rather than hierarchy in decision making, and develop defenses and contingency plans to cope with failures. These concepts stem from the extensive research of James Reason on the psychology of human error. Among Reason's description of the main elements of a safety culture[20] are:

- **Just culture** – people are encouraged, even rewarded, for providing essential safety-related information, but clear lines are drawn between human error and at-risk or reckless behaviors.
- **Reporting culture** – people report their errors and near-misses.
- **Learning culture** – the willingness and the competence to draw the right conclusions from safety information systems, and the will to implement major reforms when their need is indicated.

In an organization with a strong safety culture, individuals within the organization treat each other and their patients with dignity and respect. The organization is characterized by staff who are productive, engaged, learning, and collaborative.[19] Having care team members who gain joy and meaning through their work has been found to have an important role in establishing and maintaining a safe culture. The Lucien Leape Institute's Joy & Meaning in Workforce Safety initiative addresses clinician burnout, which is at record highs.[11,21] Clinician burnout is associated with lower perceptions of patient safety culture and may directly or indirectly affect patient outcomes.[22]

Joy and meaning will be created when the workforce feels valued, safe from harm, and part of the solutions for change. When team members know that their well-being is a priority, they are

able to be meaningfully engaged in their work, to be more satisfied, less likely to experience burnout, and to deliver more effective and safer care.[11,21] Leaders who encourage transparency in response to reports of adverse events, close calls and unsafe conditions, and who have established processes that ensure follow-up to ensure reports are not lost or ignored (or perceived to be lost or ignored), help mitigate intimidating behaviors because transparency of action itself discourages such behavior. On the opposite end of the spectrum, intimidating and unsettling behaviors causing emotional harm, including the use of inappropriate words and actions or inactions, has a detrimental impact on patient safety[10] and should not occur in a safety culture. This includes terminating, punishing, or failing to support a health care team member who makes an error (the "second victim").

Unfortunately, as attention to the need for a culture of safety in hospitals has increased, "so have concomitant reports of retaliation and intimidation targeting care team members who voice concern about safety and quality deficiencies," according to a National Association for Healthcare Quality report.[9] Intimidation has included overtly hostile actions, as well as subtle or passive-aggressive behaviors, such as failing to return phone calls or excluding individuals from team activities. Survey results released by the Institute for Safe Medication Practices (ISMP) show that disrespectful behavior remains a problem in the health care workplace. Most respondents reported experiences with negative comments about colleagues, reluctance or refusal to answer questions or return calls, condescending language or demeaning comments, impatience with questions or hanging up the phone, and a reluctance to follow safety practices or work collaboratively.[23]

Actions suggested by The Joint Commission
The Joint Commission recommends that leaders take actions to establish and continuously improve the five components of a safety culture defined by Chassin and Loeb: ***trust, accountability, identifying unsafe conditions, strengthening systems, and assessment.***[18] These actions are not intended to be implemented in a sequential manner. Leaders will need to address and apply various components to the workforce simultaneously, using tactics such as board engagement, leadership education, goalsetting, staff support, and dashboards and reports that routinely review safety data.[12]

1. Absolutely crucial is a transparent, non-punitive approach to reporting and learning from adverse events, close calls and unsafe conditions,[16,24] states the PS chapter of The Joint Commission's accreditation manuals. Develop ***trust and accountability*** through an organizational-wide and easy-to-use reporting system. This reporting system should be accessible to everyone within the organization. Having this system is essential for developing a culture in which unsafe conditions are identified and reported without fear of punishment or reprisal for unintentional mistakes, leading to proactive prevention of patient harm.[14,18,25,26] Leaders can augment voluntary reporting by using other methods, such as trigger tools and observational techniques, to proactively address risk and identify potential errors.[27]

2. Establish clear, just, and transparent risk-based processes for recognizing and separating human error and error arising from poorly designed systems from unsafe or reckless actions that are blameworthy.[18] Mistakes, lapses, omissions and other human errors are opportunities for improvement and lessons learned from them should be shared. Punishing, terminating or failing to support an employee who makes a mistake during the course of an adverse event can erode leadership's credibility and undermine organizational safety culture.[28] The Incident Decision Tree, from the United Kingdom's National Patient Safety Agency, is one example that supports the aim of creating an open, fair and accountable culture, where employees feel able to report patient safety incidents without undue fear of the consequences, and health care organizations know where to draw the accountability line.

3. To advance trust within the organization, CEOs and all leaders must adopt and model appropriate behaviors and champion efforts to eradicate intimidating behaviors.[18,25,26] These behaviors include demonstrating respect in all interactions, personally participating in activities and programs aimed at improving safety culture, and by making sure safety-related feedback from staff is acknowledged and, if appropriate, implemented. Leadership must maintain a fair and equitable measure of accountability to all.

4. Establish, enforce and communicate to all team members the policies that support safety culture and the reporting of adverse events, close calls and unsafe conditions.[19]

5. Recognize care team members who report adverse events and close calls, who identify unsafe conditions, or who have good suggestions for safety improvements. Leaders can recognize "good catches" – in which adverse events are avoided – and share these "free lessons" with all team members (i.e., feedback loop).[29] Also useful toward recognizing safety initiatives and promoting safety culture are activities involving leaders, such as team safety briefings and planning sessions,[17,30] huddles[31,32] about safety threats or issues, debriefs to learn from identified errors or safety defects,[30,33] and safety rounds or walkarounds.[34-36]

6. Establish an organizational baseline measure on safety culture performance using the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (HSOPS) or another tool, such as the Safety Attitudes Questionnaire (SAQ).[37-39] A summary of these tools can be found in the Resources section of this alert.

7. Analyze safety culture survey results from across the organization to find opportunities for quality and safety improvement.[33,39-40] Analyzing data in this manner enables an organization to find improvement opportunities and solutions in line with organizational priorities and needs. This analysis must drill down to local unit levels so that unit-specific solutions can be developed and implemented.[41] Share the results with frontline staff throughout the organization and with governing bodies, including the board.

8. In response to information gained from safety assessments and/or surveys, develop and implement unit-based quality and safety improvement initiatives designed to improve the culture of safety.[33,39-40,42-46] Examples from Joint Commission-accredited organizations include:

- An obstetrics service line created a multidisciplinary code of professionalism as a mechanism to address unprofessional behavior. Physicians, nurses, and support staff underwent education that addressed why and how to report unprofessional behavior. Leadership followed up on all reports concerning unprofessional behavior with coaching. As a result of the education, reporting and coaching, statistically significant improvement was shown on the following AHRQ Hospital Survey on Patient Safety Culture dimensions: teamwork within units, management support, organizational learning, and frequency of events reported.[47]

- The Rhode Island Intensive Care Unit (ICU) Collaborative conducted a study to examine the impact of a Safety Attitudes Questionnaire Action Plan (SAQAP) on ICU central-line associated blood stream infections (CLABSIs) and ventilator-associated pneumonia (VAP) rates. Teams that developed SAQAPs improved their unit culture and clinical outcomes. Units that developed SAQAPs demonstrated higher improvement rates in all domains of the SAQ, except working conditions. Improvements were close to statistical significance for teamwork climate (+18.4% in SAQAP units versus -6.4% in other units, $p = .07$) and job satisfaction (+25.9% increase in SAQAP units versus +7.3%, $p = .07$). Units with SAQAPs decreased the CLABSI rates by 10.2% in 2008 compared with 2007, while those without SAQAP had a 2.2% decrease in rates ($p = .59$). Similarly, VAP rates decreased by 15.2% in SAQAP units, while VAP rates increased by 4.8q% in units without SAQAP ($p = .39$).[48]

- An academic medical center developed a comprehensive unit-based safety program that included steps to identify hazards, partnered units with a senior executive to fix hazards, learned from defects, and implemented communication and teamwork tools. In 2006, 55% of units achieved the SAQ-measured safety climate goal of meeting or exceeding a 60% positive score or improving the score by 10 or more percentage points. In 2008, 82% of units achieved the goal. For teamwork climate, the two-year improvement was 61-83%. Scores improved in every SAQ domain except stress recognition.[39]

Many other examples of successful and measurable safety culture initiatives can be found in health care literature. Some of these initiatives[39,49] successfully used tactics such as walkarounds,[34-36] huddles,[31,32] employee engagement,[50,51] team safety briefings and planning sessions,[17,30] debriefs to learn from identified errors or safety defects,[30,33] and safety ambassadors[52] to improve various aspects of safety culture. Improvement on safety culture measures is associated with positive outcomes, such as reduced infection rates,[38,53] fewer readmissions,[38,53] decreased care team member turnover,[39] better surgical outcomes,[54] reduced adverse events,[55,56] and decreased mortality.[55]

Health care organizations in which care team members have positive perceptions of safety culture tend to have positive assessments of care from patients as well.[57]

9. Embed safety culture team training into quality improvement projects[33,39-40,49] ***and organizational processes to strengthen safety systems.***[17,18,30] Team training derived from evidence-based frameworks can be used to enhance the performance of teams in high-stress, high-risk areas of the organization – such as operating rooms, ICUs and emergency departments – and has been implemented at many health care facilities across the country.[17,30]

Safety Culture Key to High Reliability

The Joint Commission established a theoretical framework that emphasizes safety culture, leadership and robust process improvement as three domains that are critical to high reliability within a health care organization.[18] By promoting the core attributes of trust, report and improve,[15] high-reliability organizations create safety cultures in which team members trust peers and leadership; report vulnerabilities and hazards that require risk-based consideration; and communicate the benefits of these improvements back to involved staff. Leaders can self-assess performance and improvements relating to high reliability by using the Oro™ 2.0 High Reliability Organizational Assessment and Resources Tool. See this alert's Resources section for more information.

10. Proactively assess system (such as medication management and electronic health records) strengths and vulnerabilities and prioritize them for enhancement or improvement.[18,58]

11. Repeat organizational assessment of safety culture every 18 to 24 months to review progress and sustain improvement.[38] Ensure that the assessment drills down to unit levels,[41] and make these assessments part of strategic measures reported to the board.[18]

Related Joint Commission requirements
Many Joint Commission standards address issues related to the design and management of patient safety systems. These requirements and elements of performance (EPs), which include the following, can be found in the PS chapter of The Joint Commission's accreditation manuals:

> **LD.03.01.01:** Leaders create and maintain a culture of safety and quality throughout the organization.
>
> EP 1. Leaders regularly evaluate the culture of safety and quality using valid and reliable tools.
>
> EP 4. Leaders develop a code of conduct that defines acceptable behavior and behaviors that undermine a culture of safety.
>
> EP 5. Leaders create and implement a process for managing behaviors that undermine a culture of safety.

Also, workplace violence standards provide a framework to guide hospitals and critical access hospitals in defining workplace violence; developing strong workplace violence prevention systems; and developing a leadership structure, policies, and procedures, reporting systems, post-incident strategies, training, and education to decrease workplace violence. The requirements are located at Environment of Care (EC) standard EC.02.01.01 EP 17, EC.04.01.01 Eps 1 and 6; Human Resources standard HR.01.05.03 EP 29; and LD.03.01.01 EP 9.

Resources
Hospital Survey on Patient Safety Culture (HSOPS) – Identifies 12 dimensions of safety culture (10 climate dimensions and two outcomes variables):[53]

- Communication openness
- Feedback and communication about error
- Frequency of events reported
- Handoffs and transitions
- Management support for patient safety
- Non-punitive response to error
- Organizational learning (continuous improvement)
- Overall perceptions of safety
- Staffing
- Supervisor/manager expectations and actions promoting safety
- Teamwork across units
- Teamwork within units

United Kingdom's National Patient Safety Agency's Incident Decision Tree – Supports the aim of creating an open culture, where employees feel able to report patient safety incidents without undue fear of the consequences. The approach does not seek to diminish health care

professionals' individual accountability but encourages key decision makers to consider systems and organizational issues in the management of error.[28]

Institute for Healthcare Improvement's Joy in Work initiative – Addresses clinician burnout.

Joint Commission Resources Oro™ 2.0 High Reliability Organizational Assessment and Resources application – High reliability organizations routinely self-assess. This self-assessment tool is intended for hospital leadership teams. It can be used in combination with tools (such as HSOPS and SAQ) that measure the perceptions of staff at all levels of the organization. The tool evaluates:

- Leadership commitment
- Safety culture
- Performance improvement

Patient Safety Systems (PS) chapter of The Joint Commission's accreditation manuals

Safety Attitudes Questionnaire (SAQ) – Measures six culture domains:

- Teamwork climate
- Safety climate
- Perceptions of management
- Job satisfaction
- Working conditions
- Stress recognition

Strategies for Creating, Sustaining, and Improving a Culture of Safety in Health Care – Published by Joint Commission Resources, this second edition book expands the idea of "building" a culture of safety by spotlighting the best articles related to this topic from *The Joint Commission Journal on Quality and Patient Safety*. These articles provide unique perspectives of challenges inherent when establishing and maintaining a culture of safety.

References

1. Schein EH. Organizational Culture and Leadership, 4th ed. 2010.
2. Institute of Medicine (U.S.) Committee on the Work Environment for Nurses and Patient Safety. Keeping Patients Safe: Transforming the Work Environment of Nurses. Washington, DC: National Academies Press (U.S.). 2004. 4, Transformational Leadership and Evidence-Based Management. Available from: https://www.ncbi.nlm.nih.gov/books/NBK216194/.
3. Clarke JR, et al. The role for leaders of health care organizations in patient safety. *American Journal of Medical Quality.* Sept./Oct. 2007:22(5):311-318.
4. Parand A, et al. The role of chief executive officers in a quality improvement initiative: A qualitative study. *BMJ Open.* 2013;3:e001731.
5. Causal Factors Analysis: An Approach for Organizational Learning. B&W/Pantex. 2008.
6. Agency for Healthcare Research and Quality. Patient Safety Network (PSNet) Systems Approach webpage. Last updated March 2015.
7. Smetzer J, et al. Shaping systems for better behavioral choices: lessons learned from a fatal medication error. *Joint Commission Journal on Quality and Patient Safety*. 2010;36:152-163.
8. Sorra J, et al. Hospital Survey on Patient Safety Culture 2014 User Comparative Database Report. (Prepared by Westat, Rockville, Maryland, under Contract No. HHSA 290201300003C). Rockville, Maryland: Agency for Healthcare Research and Quality. AHRQ Publication No. 14-0019-EF. March 2014.
9. National Association for Healthcare Quality. Call to action: Safeguarding the integrity of healthcare quality and safety systems. October 2012.
10. Stewart K, et al. Unprofessional behavior and patient safety. *The International Journal of Clinical Leadership.* 2011;17:93-101.
11. Institute for Healthcare Improvement. Joy in Work.
12. National Patient Safety Foundation. Free From Harm: Accelerating patient safety improvement 15 years after To Err Is Human. 2015.
13. Leonard M and Frankel A. How can leaders influence a safety culture? The Health Foundation Thought Paper. May 2012.
14. The Joint Commission. *Sentinel Event Alert*, Issue 40: Behaviors that undermine a culture of safety. July 9, 2008.
15. Reason J and Hobbs A. *Managing Maintenance Error: A Practical Guide.* Ashgate. 2003.
16. The Joint Commission. *Comprehensive Accreditation Manual for Hospitals*: The Patient Safety Systems Chapter, Update 2. January 2015.
17. Health Research and Educational Trust. *Improving Patient Safety Culture through Teamwork and Communication: TeamSTEPPS®.* Chicago, Illinois. Health Research and Educational Trust. 2015, June.
18. Chassin MR and Loeb JM. High-reliability health care: getting there from here. *The Milbank Quarterly.* 2013;91(3):459-490.
19. Institute of Nuclear Power Operators. Traits of a Healthy Nuclear Safety Culture. Revision 1, 2013.
20. Adapted from Reason J. *Managing the Risks of Organizational Accidents.* Ashgate.1997.
21. Lucian Leape Institute. *Through the Eyes of the Workforce: Creating Joy, Meaning, and Safer Health Care*. Boston, Massachusetts: National Patient Safety Foundation. 2013.
22. Profit J, et al. Burnout in the NICU setting and its relation to safety culture. *BMJ Quality & Safety.* 2014;23:806-813.
23. Institute for Safe Medication Practices. Intimidation still a problem in hospital workplace, survey shows. News release dated Oct. 3, 2013.
24. National Patient Safety Foundation's Lucien Leape Institute. Shining a light: Safer health care through transparency. Boston, Massachusetts: National Patient Safety Foundation; 2015.

25. Blouin AS and McDonagh KJ. Framework for patient safety, Part 1: Culture as an imperative. *The Journal of Nursing Administration.* Oct. 2011;41(10).
26. Blouin AS and McDonagh KJ. Framework for patient safety, Part 2: Resilience, the next frontier. *The Journal of Nursing Administration.* Oct. 2011;41(10).
27. Institute for Healthcare Improvement. Introduction to trigger tools for identifying adverse events.
28. Meadows S, et al. The incident decision tree: guidelines for action following patient safety incidents. *Advances in Patient Safety.* 4:387-399
29. Reason JT. The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries. Ashgate Publishing Limited. Surrey, England. 2008; Page 35.
30. Thomas L and Galla C. Building a culture of safety through team training and engagement. *BMJ Quality and Safety.* 2013;22:425-434.
31. Criscitelli T. Fostering a culture of safety: The OR huddle. *AORN Journal.* Dec. 2015;102(6):656-659.
32. Sikka R, et al. How every hospital should start the day. *Harvard Business Review.* Dec. 5, 2014.
33. Muething SE, et al. Quality improvement initiative to reduce serious safety events and improve patient safety culture. *Pediatrics.* August 2012;130(2):e423-e431.
34. Singer SJ and Tucker AL. The evolving literature on safety WalkRounds: Emerging themes and practical messages. *BMJ Quality and Safety.* 2014;23:789-800.
35. Rotteau L, et al. 'I think we should just listen and get out': a qualitative exploration of views and experiences of patient safety walkrounds. *BMJ Quality and Safety.* 2014;23:823-829.
36. Sexton JB, et al. Exposure to Leadership WalkRounds in neonatal intensive care units is associated with a better patient safety culture and less caregiver burnout. *BMJ Quality & Safety.* 2014;23:814-822.
37. Safety culture proven to improve quality, must be monitored and measured. *Hospital Peer Review,* May 2016;41(5):49-60.
38. Hospital culture must be measured, not just improved. *Case Management Advisor,* April 2016; Page 46.
39. Paine LA, et al. Assessing and improving safety culture throughout an academic medical centre: a prospective cohort study. *Quality and Safety in Health Care.* 2010;19:547-554.
40. Burström L, et al. The patient safety culture as perceived by staff at two different emergency departments before and after introducing a flow-oriented working model with team triage and lean principles: A repeated cross-sectional study. *BMC Health Services Research.* 2014;14:296.
41. Campbell EG, et al. Patient safety climate in hospitals: Act locally on variation across units. *The Joint Commission Journal on Quality and Patient Safety.* July 2010:36(7):319-326.
42. Leape L, et al. A culture of respect, part 2: Creating a culture of respect. *Academic Medicine*. 2012 July;87(7):853-858.
43. Wu A, ed. *The Value of Close Calls in Improving Patient Safety: Learning How to Avoid and Mitigate Patient Harm*. Oak Brook, Illinois. Joint Commission Resources. 2011.
44. Agency for Healthcare Research and Quality. *Becoming a High Reliability Organization: Operational Advice for Hospital Leaders*. Rockville, Maryland: AHRQ. 2008.
45. Fei K and Vlasses FR. Creating a safety culture through the application of reliability science. *Journal of Healthcare Quality*. 2008 Nov.-Dec.;30(6):37-43.
46. Massachusetts Coalition of the Prevention of Medical Errors: When Things Go Wrong: Responding to Adverse Events. March 2006.
47. DuPree E, et al. Professionalism: A necessary ingredient in a culture of safety. *The Joint Commission Journal on Quality and Patient Safety*. Oct. 2011;37(10):447-455.
48. Vigorito MC, et al. Improving safety culture results in Rhode Island ICUs: lessons learned from the development of action-oriented plans. *Joint Commission Journal of Quality and Patient Safety.* Nov. 2011;37(11):509-14.
49. Jones KJ, et al. A theory-driven, longitudinal evaluation of the impact of team training on safety culture in 24 hospitals. *Quality and Safety in Health Care.* 2013;22:394-404.
50. Collier SL, et al. Employee engagement and a culture of safety in the intensive care unit. *Journal of Nursing Administration.* Jan. 2016;46(1):49-54.
51. Daugherty Biddison EL, et al. Associations between safety culture and employee engagement over time: A retrospective analysis. *BMJ Quality & Safety.* 015;0:1-7.
52. Pressman BD and Roy LT. Developing a culture of safety in an imaging department. *Case Studies in Clinical Practice Management.* 2015. American College of Radiology. http://dx.doi.org/10.1016/j.jacr.2014.07.010
53. Fan CJ, et al. Association of safety culture with surgical site infection outcomes. *Journal of the American College of Surgeons.* 2016;222:122-128.
54. Sacks GD, et al. Teamwork, communication and safety climate: A systematic review of interventions to improve surgical culture. *BMJ Quality & Safety.* 2015;0:1-10.
55. Berry JC, et al. Improved safety culture and teamwork climate are associated with decreases in patient harm and hospital mortality across a hospital system. *Journal of Patient Safety.* 2016.
56. Birk S. Accelerating the adoption of a safety culture. *Healthcare Executive.* March/April 2015:19-26.
57. Sorra J, et al. Exploring relationships between patient safety culture and patients' assessments of hospital care. *Journal of Patient Safety.* 2012;8:131-139.
58. Braithwaite J, et al. Resilient health care: turning patient safety on its head. *International Journal for Quality in Health Care.* Oct. 2015;27(5):418-20.

Patient Safety Advisory Group
The Patient Safety Advisory Group informs The Joint Commission on patient safety issues and, with other sources, advises on topics and content for *Sentinel Event Alert.*