

Organizational Change and Learning

Creating a Fair and Just Culture: One Institution's Path Toward Organizational Change

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In 1995, the Dana-Farber Cancer Institute (DFCI; Boston), a nationally designated comprehensive cancer center, was propelled into the media spotlight following two tragic incidents involving chemotherapy overdoses. During the next several years, DFCI leaders came to appreciate that the health care workplace was inherently complex and that health care workers, as human beings, were prone to making mistakes.^{1,2} This major shift in thinking spurred an approach to error analysis that was more advanced within other industries at that time: seeking the root causes of medical errors through the promotion of a nonpunitive culture. In recognition that safety cannot be achieved in a culture that blames individuals for mistakes,^{3,4} health care organizations have more recently begun to move toward a nonpunitive, or “blame-free,” process when analyzing medical errors and near misses.

Contrary to what many believe, removing blame from the workplace does not eliminate individual or organizational responsibility. High-accountability organizational structures are characterized by clear systems thinking, organizational learning, well-developed decision-making mechanisms, and clear organizational structures. Individual accountability is characterized by clear role definition and relationship delineation. An accountability model enables an organization to promote a just culture that strikes a balance between the benefits of learning at the organizational, interpersonal, and individual levels and the need to retain personal accountability and disci-

Article-at-a-Glance

Background: Health care organizations have begun to move toward a nonpunitive, or “blame-free,” process when analyzing medical errors and near misses. The Dana-Farber Cancer Institute’s (Boston) “Principles of a Fair and Just Culture,” define for staff and managers behavioral expectations when an error occurs.

Creating the Principles of a Fair and Just Culture: The principles focus not just on patient safety but on a culture of safety and transparency in all the organization’s functional areas, including nonclinical departments such as information services, administration, and research.

Incorporating the Principles into Practice: Introducing the principles is a gradual process, one that requires continual education and discussion among staff at all levels and a commitment to examining and changing many of the systems, policies, and procedures that guide the organization’s work. A survey conducted in January 2007 revealed that the clinical areas had sustained higher-than-average scores and that the nonclinical areas showed improvement.

Discussion: Changing a long-standing culture of blame, control, and disrespect to one that embraces principles of fairness and justice and standards of respectful behavior is a major undertaking. Educating and involving clinical and administrative leaders, who work directly with staff and play a pivotal role in translating the principles into practice, is especially important.

pline.⁵ Behavioral and attitudinal changes and systems thinking help to promote organizational change.⁶

DFCI leaders have written a set of “Principles of a Fair and Just Culture,” which define for staff and managers alike behavioral expectations of individual staff members and the organization when an error occurs. These principles, in contrast to principles and policies developed by many other health care organizations, apply to all segments of this academic medical center, including the clinical, research, and administrative arenas, given that work complexity and human error are not isolated to clinical areas. This article describes the development and implementation of these principles and the transformation under way at DFCI toward a culture that is fair and just.

The Driving Force for Change

In 1995, DFCI underwent intense organizational self-assessment and change spurred by two tragic incidents of chemotherapy overdoses that resulted in the death of one patient and irreversible cardiac toxicity in the other. During the subsequent investigation and review of organizational processes, it became clear that major systems failures contributed to these errors.^{1,2}

In the aftermath of these incidents, DFCI went through a difficult period of self-assessment, and a culture of blame prevailed. It lost deemed status with Medicare and was placed on conditional accreditation by The Joint Commission. Licensing boards took action against staff, some patients and families experienced a loss of trust in the organization, and the staff as a whole felt demoralized.^{1,2}

At the time of these events, a systems approach to error analysis was not a widely recognized practice within health care and, consequently, had not become part of the organizational culture at DFCI. In responding to the events, DFCI’s leaders sought help from external consultants. They also committed to undertake an institutional examination to gain a better understanding of how the errors occurred and to publicly acknowledge to the medical community how they happened. Thus began a journey of self-examination and sober reflection.

Important Next Steps

The first public meeting occurred at DFCI when the chief nurse convened a meeting of oncology nurses from the greater Boston community to hear an account of the over-

dose incidents and lessons learned. This approach was not only beneficial to those in attendance but therapeutic for the staff involved in the incidents. DFCI then began, initially at the request of The Joint Commission, to discuss the incidents and the organization’s responses to them at meetings of health care organizations throughout the United States.

Five years later, in 2000, the health care industry started to undergo a major transformation as a result of the publication of the Institute of Medicine report *To Err is Human*.⁷ DFCI had begun by then to routinely use root cause analysis (RCA) to examine errors in the context of the system in which they occurred. Accepting institutional responsibility for medical errors and correcting faulty systems was becoming DFCI’s way of doing business.

DFCI had not as yet formally articulated its beliefs regarding errors and practices for addressing them in a written document; however, it soon became clear that staff needed such a document and that other organizations would be interested in it as well. As a result, in spring 2002, an interdisciplinary team began working to articulate the principles that guided DFCI’s efforts to develop a nonpunitive culture.

Creating the Principles of a Fair and Just Culture

GETTING STARTED

The following three major organizational needs drove the creation of the principles:

1. Staff satisfaction surveys suggested that frontline staff did not really understand what a nonpunitive reporting system meant.
2. Supervisory staff were unequipped to address errors in a nonpunitive way because most had been educated and socialized within the old model of error management and reporting.
3. Evidence obtained by the human resources (HR) department indicated that employees were being disciplined using a punitive approach without the full benefit of a systems analysis.

The team charged with developing a document describing the principles of a fair and just culture included representatives from risk management [M.C., team leader; D.D.], pharmacy [S.B.], nursing, human resources [C.M., E.B.], quality improvement [C.B.], and the legal

department. The newly appointed senior vice president of patient care services and chief nursing officer [P.R.P.] joined the team and became the group's executive sponsor. This position was viewed as critical because it provided a direct link to DFCI's executive leadership. An organizational development consultant with expertise in systems thinking and learning organizations facilitated the group.

The team recognized early on that its members were at different levels in their understanding and application of the principles of nonpunitive reporting. Many had a very limited understanding of a systems approach to error analysis. In contrast, team members who worked in HR had been exposed to a systems approach through a specific case and were advocates of the process.

The HR staff was first introduced to a nonpunitive approach to error analysis when a temporary staff member was arrested for alleged theft of patient identity. Using the RCA process, HR discovered that the root cause of this event was criminal intent and that the blame assigned to staff who hired or worked with this person was unfounded. Consequently, exposure to this RCA enabled HR to play a pivotal role in the initial phases of the work team's efforts.

DEFINING THE PRINCIPLES

During the team's first few biweekly meetings in spring 2002, the team members agreed on the need to develop principles; a policy seemed too prescriptive, and guidelines too optional. Coincidentally, Partners HealthCare, an integrated delivery system located in Massachusetts, was developing its own set of principles, "Our Commitment to Patient Safety."⁸ The team decided to use the principles it described as a basis for its work. However, it determined that DFCI's principles should focus not just on patient safety but on creating a culture of safety and transparency in all the organization's functional areas, including non-clinical departments such as Information Services and Environmental Health and Safety, as well as areas related to administration and research. The team concluded that staff throughout the organization would benefit from the same underlying principle: It is safe to talk about mistakes.

The team held a focus group with nonclinical staff, who confirmed that a set of principles could apply to their respective areas. In adopting this broader approach, as complicated and time consuming as it was, the team expanded its membership to include a physician researcher

and the director of environmental health and safety [E.G.].

During the following year, the team worked to articulate what it meant by a fair and just culture and to specify the principles that should serve as the culture's foundation. At the end of its deliberations, the team drafted a document that stated the following:

A fair and just culture means giving constructive feedback and critical analysis in skillful ways, doing assessments that are based on facts, and having respect for the complexity of the situation. It also means providing fair-minded treatment, having productive conversations, and creating effective structures that help people reveal their errors and help the organization learn from them.

The principles that accompanied this statement underscored DFCI's commitment to promoting open interdisciplinary discussion about all untoward events, establishing accountability in the context of the system in which an error occurs, and improving all areas of the workplace by implementing changes based on an analysis of the problem. The principles emphasized not only the importance of a systems approach to error analysis but also individuals' accountability for their own performance.

In developing the principles, the team struggled with distinguishing between individual accountability and a systems failure. James Reason's decision tree on determining the culpability of unsafe acts helped the team to differentiate between the two.⁹ The team also deliberated on individual versus institutional responsibility related to the issue of competency. In the end, it was decided that because the organization played a critical role in ensuring the competency of its staff, the document would be modified to highlight the institutional role.

The team recognized that the concepts the principles addressed were inextricably linked to DFCI's core values of respect, impact, excellence, and discovery. To uphold those values, staff must be able to speak up about errors, problems, conflicts, and misunderstandings in an environment where it is the norm to surface and discuss problems with curiosity and respect. The relationship between the core values and the principles of a fair and just culture were highlighted in several sections of the draft document.

REVIEW AND APPROVAL PROCESS

In 2003, after the final draft of the principles was complete, it was presented to a series of executive committees for review and approval. A number of revisions were proposed and implemented. For example, the executive committee on research, which was composed of senior scientists and administrative leaders, believed that the principles didn't apply to research, because, as one committee member noted, making mistakes is part of the nature of research and adverse events are a part of the clinical research process. Recognizing that the phrase *adverse event* has a different meaning for the research community, the team decided to instead use the term *untoward event*.

Several members of DFCI's executive management group expressed concern that some of the principles were too prescriptive because they listed specific issues for which staff should be held accountable. The language was therefore broadened to note that individuals are accountable for their own performance in accordance with their job responsibilities and the DFCI core values.

A trustee on DFCI's board-level quality committee suggested that the title of the document, "Principles of a Non-punitive and Just Culture," be changed, noting, "Why would the title [of a document] be about something it's *not*?" The committee believed the title should instead reflect a balanced view of DFCI's approach to error and approved the current name, "Principles of a Fair and Just Culture," on the basis of the work of Reason and Marx.^{9,10}

The final document (Appendix 1, pages 621–622) was presented to the full board of trustees on January 27, 2004, and received unanimous approval. This meant that the team's work was entering a new phase, that of implementation.

Incorporating the Principles into Practice

Although the principles were endorsed and fully supported by executive management, the team recognized that changing the organizational culture would take a multi-year effort. Noting the close link between the principles and the core value of respect, leaders at DFCI believed that efforts to introduce the principles could not move forward until managers and staff embraced respect as a core value. To this end, the principles were first introduced to senior leadership and members of the diversity council through

two full-day retreats that focused on the core value of respect. Members of the team that developed the principles attended the retreats to help facilitate discussion.

Next, questions related to fair and just treatment were inserted into the staff satisfaction survey conducted in fall 2003. These questions, derived from a validated survey tool that assessed the culture of patient safety, were modified to apply to all areas of the organization. Findings from the survey revealed that staff in pockets of the organization believed they were treated unfairly under certain circumstances. On the basis of these results, managers began working with staff to develop action plans to address these issues.

The principles were then presented to mid-level managers and staff in some areas. To more fully integrate the principles, the team developed a train-the-trainer module that addressed both the principles and the core value of respect—concepts that are closely linked. The module was designed to serve as a guide for managers as they discussed these concepts with staff and examined how they could be incorporated into practice. At the invitation of one administrative leader, the training module was piloted in a non-clinical area. During the pilot, some members of the staff expressed concern—not about the principles but about having managers present them because they did not feel they would be able to have an open conversation with managers facilitating the session. Moreover, staff had witnessed some managers being disrespectful and felt that these experiences ran counter to what the principles espoused.

The employees' comments, which underscored the link between the principles and the core value of respect, led to several changes. The team decided to focus on training managers and ended the pilot, replacing it with a plan to introduce the principles and the train-the-trainer module during upcoming new leadership training sessions. The team that had developed the principles and that was now overseeing their implementation was expanded to include the chief scientific officer and representatives from finance and facilities. In addition, HR started to examine how the principles could be embedded into the annual performance appraisal process and how the employee opinion survey could be used to evaluate the principles' impact on employees. An introduction to the principles was added to general orientation of new staff members in spring 2006.

Although implementation of the principles is ongoing, their impact has already been felt throughout the organi-

Appendix 1. Dana-Farber Cancer Institute Principles of a Fair and Just Culture

Background

It is inevitable that people will make mistakes or experience misunderstandings in any work environment. When events occur that cause harm or have the potential to cause harm to patients or staff members or that place the Institute at legal, financial or ethical risk, a choice exists: to learn or to blame. Dana-Farber Cancer Institute is committed to creating a work environment that emphasizes learning rather than blame.

Dana-Farber Cancer Institute recognizes the complexity and interdependence of the work environment in all aspects of its operations, including patient care, clinical operations, research, support services and administration. The intent is to promote an atmosphere where any employee can openly discuss errors of commission or omission, process improvements, and/or systems corrections without the fear of reprisal.

It is well documented that most errors, whether or not they cause harm, are due to breakdowns in organizational systems; however, when an error takes place, individual culprits are often sought. Blaming individuals creates a culture of fear and defensiveness that diminishes both learning and the capacity to constantly improve systems.

Most errors take place within systems that themselves contribute to the error. In spite of this, it is difficult to create an institutional culture that integrates the understanding that systems failures are the root cause of most errors. Learning from errors often points to beneficial changes in systems and management processes as well as in individual behavior.

In the context of promoting a fair and just culture, what does it mean? A fair and just culture means giving constructive feedback and critical analysis in skillful ways, doing assessments that are based on facts, and having respect for the complexity of the situation. It also means providing fair-minded treatment, having productive conversations, and creating effective structures that help people reveal their errors and help the organization learn from them. A fair and just culture does not mean nonaccountable, nor does it mean an avoidance of critique or assessment of competence. Rather, when incompetence or substandard performance is revealed after careful collection of facts, and/or there is reckless or willful violation of policies or negligent behavior, corrective or disciplinary action may be appropriate.

Applying these principles creates an opportunity to enact the core values of the Dana-Farber Cancer Institute. In order to have the greatest impact and achieve the highest level of excellence, staff must be able to speak up about problems, errors, conflicts and misunderstandings in an environment where it is the shared goal to identify and dis-

cuss problems with curiosity and respect. To achieve excellence, unwanted or unexpected outcomes and inefficiencies of practice must be used as the basis for a learning process. Respect must be shown to all people at every level of the organization.

Principles of a Fair and Just Culture*

1. DFCI strives to create a learning environment and a workplace that support the core values of impact, excellence, respect/compassion, and discovery in every aspect of work at the Institute.
2. DFCI supports the efforts of every individual to deliver the best work possible. When errors are made and/or misunderstandings occur, the Institute strives to establish accountability in the context of the system in which they occurred.
 - We commit to creating an institutional work environment that is least likely to cause or support error.
 - We are proactive about identifying system flaws.
3. DFCI commits to holding individuals accountable for their own performance in accordance with their job responsibilities and the DFCI core values. However, individuals should not carry the burden for system flaws over which they had no control.
4. DFCI promotes open interdisciplinary discussion of untoward events (errors, mistakes, misunderstandings or system failures resulting in harm, potential harm or adverse outcome) by all who work, visit, or are cared for at the Institute.
 - We commit to developing and maintaining easily available and simple processes to discuss untoward events.
 - We commit to eliciting different points of view to identify sources of untoward events and to use the information to improve the working and care environment.
 - We commit to fostering an interdisciplinary teamwork approach to the analysis of untoward events and to the actions taken to address them.
 - We believe that individuals are responsible for surfacing untoward events and for contributing to the elimination of system flaws.
 - We commit to analyzing episodes of institutional or patient harm or potential harm in an unbiased fashion to best determine the contributions of system and individual factors.

(continued on page 622)

* Principles adapted from Allan Frankel, M.D., and the patient safety leaders at Partners Healthcare System. Source: Frankel A., Gandhi T.K., Bates D.W.: Improving patient safety across a large integrated health care delivery system. *Int J Qual Health Care* 15 (suppl. 1):i31–i40, Dec. 2003.

Appendix 1. Dana-Farber Cancer Institute Principles of a Fair and Just Culture (continued)

- We seek solutions that promote simplification and standardization wherever possible.
5. DFCI acts to improve all areas of the workplace by implementing changes based on our analysis of problems and potential or actual harm.
- We know that actions designed to address the root causes of untoward events will improve the effectiveness of our work environment and the safety of care. We commit to identifying and assigning responsibility for implementing those actions to specific individuals or groups.
 - We commit to developing timely and effective follow-up and an effective organizational culture through education and systems for ensuring on-going competency.
6. DFCI commits to a culture of inclusion and education.
- We commit to fostering a culture that is concerned with safety in research, clinical care and administration through continuous education, proactive interventions and safety-based leadership.
 - We believe that patient input is indispensable to the delivery of safe care and we commit to promoting patient and family participation.
7. DFCI will assess our success in promoting a learning environment by evaluating our willingness to communicate openly and by the improvements we achieve.
- We commit to monitoring actions and attitudes for their effectiveness in supporting a culture of safety and modifying actions as needed.

zation. When an error occurs, managers often ask Risk Management to perform an RCA rather than move directly to a disciplinary process. As illustrated by two case studies (Sidebar 1, page 623), the principles' emphasis on a systems approach to investigating errors and addressing their underlying problems has been adopted by staff and managers in many departments throughout DFCI.

Other evidence of a nonpunitive, systems-oriented approach to management can be found, for example, in Facilities, where critical incident reviews have been introduced and are now conducted whenever significant events, such as major flooding, power outages, or information systems application failures occur. Through these reviews, key information about the event and plans for follow-up are captured and recorded through a systematic, objective, and nonpunitive process. Whereas previously Facilities staff felt that such reviews were burdensome, keeping them away from their jobs, staff now view the reviews, which focus on getting to the root of problems and help them identify and correct underlying issues, as essential.

Monitoring the Principles' Impact

Introducing principles of a fair and just culture is a gradual process, one that requires continual education and discussion among staff at all levels and a commitment to examining and changing many of the systems, policies, and procedures that guide the organization's work. A culture shift of this magnitude inevitably occurs in the course of years and in concert with other changes.

As we move forward to implement the principles, we will continue to assess their impact on staff through staff satisfaction surveys. The survey conducted in January 2007, which also included questions that assessed staff perceptions of respect for employees, revealed that the clinical areas had sustained higher-than-average scores found in the previous (2003) survey. Moreover, the non-clinical area scores that had previously represented opportunities for improvement also increased. However, it is difficult to assess the principles' contribution to this improvement, because other factors, such as staff turnover, may also have played a role.

The effect of the principles on staff should be realized more fully once managers begin to receive training in how to incorporate the principles into practice. Development of a new Leadership Institute for senior leaders is under way. Participants will learn about system contributions to medical errors, including risk assessment and RCA. In addition, a case will be presented to illustrate how to assess individual culpability when errors occur. We will also examine opportunities to embed the principles into other systems, such as the performance review process.

Discussion

Changing a long-standing culture of blame, control, and disrespect to one that embraces principles of fairness and justice and standards of respectful behavior is a major undertaking. There is a growing tradition of using such principles in clinical arenas, but less attention has been

Sidebar 1. Case Studies Illustrating the Principles' Emphasis on a System Approach

Responding to a Critical Event in a Clinical Laboratory

In one clinical laboratory, liquid nitrogen freezers are used to store stem-cell and bone-marrow products. Freezer temperatures are continuously monitored and alarms are set to indicate when temperatures fall outside the -160°C to -190°C range. Early one morning, the laboratory's freezer alarm sounded, signaling a temperature drop to -146°C . In responding to the alarm, the laboratory staff found that the liquid nitrogen controller's electrical cord had been unplugged, resulting in the decline in temperature.

A team composed of laboratory staff was formed to investigate the incident and identify risk factors for recurrence and solutions to prevent similar events from happening. The team knew that access to the freezer room is tightly controlled and that only laboratory staff and a limited number of Facilities and Environmental Services staff are able to enter. At the time of the event, construction was under way in an area adjacent to the freezer room, and the evening contractor managers were also authorized to allow access.

Through its investigations, the team discovered that no unauthorized access had occurred but did not determine who unplugged the freezer. Rather than focusing on placing blame, the team worked to identify forcing functions that would prevent a similar occurrence. On the basis of its recommendations, the laboratory replaced the electrical plugs for all freezers and their components to twist-lock plugs that prevent cords from being inadvertently unplugged and implemented a process for educating all contractor managers who might need temporary access to the freezer rooms. Since the implementation of these changes, there have been no incidents of unplugged cords.

Responding to a Near Miss in Chemotherapy Administration

Before administering certain forms of chemotherapy, nurses in the infusion units routinely access the organization's electronic longitudinal medical record (LMR) to confirm that a patient's laboratory values are within a range acceptable for

treatment. One morning, a nurse accessed the LMR, found that her patient's laboratory values were acceptable, and activated the chemotherapy order, telling the pharmacy to prepare and dispense the drug. Before beginning drug administration, the nurse accessed the patient's LMR again and noticed that the lab value she had checked 30 minutes before was different—in fact, it was now outside the acceptable range. She called the laboratory, thinking that one of the laboratory staff might have entered the LMR and corrected the result. When questioned, however, the laboratory staff reported that no one had changed the value.

The nurse's query prompted Laboratory Administration and Risk Management to launch an investigation. The investigation team, which included the nurse and representatives from the laboratory and information services departments, traced the cause to a network interruption that had temporarily prevented laboratory data from being correctly transferred to the patient's LMR. The laboratory result initially viewed by the nurse was from a previous date; posting of the more current value had been delayed by the network interruption.

On the morning of the interruption, Information Services had followed their communication protocol and activated a system to notify staff of network problems. Through the system, the information was sent by page to managers who, in turn, were expected to alert their staff. Because this event had occurred very early in the morning, the manager who had received the notification for the nurse's unit was still traveling to work when she received the page. By the time she arrived and informed staff of the network communication issue, the nurse associated with the case was involved in patient care and did not hear of the problem.

On the basis of the team's findings, a corrective action plan was developed and immediately implemented. The notification tree for network issues was expanded to include the on-site triage nurse, who is charged with immediately communicating the information to other clinical staff. Since the notification tree was modified, no occurrences of miscommunication have been reported.

paid to implementing them in the operations of administrative departments such as human resources, finance, and information technology. Even less attention has been given to these principles in scientific enterprises. Moreover, to develop and implement behavioral standards and principles of fairness and justice in large, complex organizations such as academic medical centers requires a multiyear and multipronged process. Because each organization has its own unique culture, history, and traditions, significant time is needed to move through the design, buy-in, and

implementation phases.

An interdisciplinary leadership team and the board of trustees are critical stakeholders and must play an integral role in defining and approving the principles and behavioral standards. Yet there must also be a level of understanding and involvement from the bottom up to ensure that the principles support the experience of every employee in the organization. Educating and involving mid-level managers, who work directly with staff and play a pivotal role in translating the principles into practice, is

especially important. Failure to educate leaders and mid-level managers appropriately can have a detrimental effect on employees' acceptance of the principles, as we found when we first tried to pilot a train-the-trainer module.

Implementing a fair and just culture must be a major patient safety and quality goal that is embraced by the organization's leaders and governing body. Embedding these principles into the organization creates a culture and environment where hazard scanning, event analysis, and other patient safety practices can flourish. If introduced and used properly, these practices, in turn, help reinforce the culture and values that fostered their development.¹¹

Initiating this work in an organization takes time, commitment, and constant attention. Every day, new challenges emerge. For example, a new employee may feel disrespected by his or her supervisor, a manager may move to disciplinary action before an RCA is completed, or an employee may be terminated for an error despite a lack of evidence of blatant disregard for hospital policy. To avoid such incidents, leaders must remain diligent and watchful and foster understanding of the principles among all staff.

Organizations that decide to embark on this journey must complete the following five steps:

1. Develop an understanding that removing blame does not absolve individual or organizational accountability.
2. Commit to respect as a prevailing value of the organization.
3. Create principles of a fair and just culture that are experienced from the bottom up.
4. Ensure that executive leaders and board members understand and support the principles and live the behavioral standards of respect (this includes educating leaders about when and how to apply the methodology of RCA).
5. Measure the effects of the new principles continuously over time.

Moving toward a fair and just culture and creating an environment of accountability and respect can transform an organization into a vibrant and transparent institution—one truly focused on its mission. Such a culture not only strengthens the relationship between the organization and its staff but can have a profound effect on patient safety and the quality of care provided to patients. **J**

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References

1. Paul C.: Back from the brink: making chemotherapy safer. In Findley S. (ed.): *Accelerating Change Today. A.C.T. for America's Health*. Washington, D.C.: The National Coalition for Healthcare, 2000, pp. 4–8.
2. Connor M., et al.: Multidisciplinary approaches to reducing error and risk in a patient care setting. *Crit Care Nurs Clin N Am* 14:359–367, 2002.
3. Leape L.: Error in medicine. *JAMA* 272:1851–1857, 1994.
4. Helmreich R.: On error management: Lessons from aviation. *BMJ* 320:781–785, 2000.
5. Marx D.: *Patient Safety and the "Just Culture": A Primer for Health Care Executives*. New York City: Columbia University, 2001.
6. Paul M.: Moving from blame to accountability. *The Systems Thinker* 8(1):1–6, 1997.
7. Institute of Medicine: *To Err Is Human: Building a Safer Health System*. Washington, DC: National Academy Press, 2000.
8. Frankel A., Gandhi T.K., Bates D.W.: Improving patient safety across a large integrated health care delivery system. *Int J Qual Health Care* 15 (suppl. 1):i31–i40, Dec. 2003.
9. Reason J.: *Managing the Risks of Organizational Accidents*. Brookfield, VT: Ashgate Publishing Ltd., 1997.
10. Marx D.: How building a 'just culture' helps organizations learn from errors. *OR Manager* 19:1, 14–15, 20, May 2003.
11. Weingart S.N., Conway J.B.: Promoting an organizational infrastructure for patient safety. In *From Front Office to Front Line: Essential Issues for Health Care Leaders*, 2nd ed. Oakbrook Terrace, IL: Joint Commission Resources, 2005, pp. 41–64.