Chapter 2. Nurses at the "Sharp End" of Patient Care

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Background

The work environment in which nurses provide care to patients can determine the quality and safety of patient care.[1] As the largest health care workforce, nurses apply their knowledge, skills, and experience to care for the various and changing needs of patients. A large part of the demands of patient care is centered on the work of nurses. When care falls short of standards, whether because of resource allocation (e.g., workforce shortages and lack of needed medical equipment) or lack of appropriate policies and standards, nurses shoulder much of the responsibility. This reflects the continued misunderstanding of the greater effects of the numerous, complex health care systems and the work environment factors. Understanding the complexity of the work environment and engaging in strategies to improve its effects is paramount to higher-quality, safer care. High-reliability organizations that have cultures of safety and capitalize on evidence-based practice offer favorable working conditions to nurses and are dedicated to improving the safety and quality of care. Emphasis on the need to improve health care systems to enable nurses to not be at the "sharp end" so that they can provide the right care and ensure that patients will benefit from safe, quality care will be discussed in this chapter.

The Everydayness of Errors

Health care services are provided to patients in an environment with complex interactions among many factors, such as the disease process itself, clinicians, technology, policies, procedures, and resources.[2] When these complex factors interact, harmful and unanticipated outcomes (e.g., errors) can occur. Human error has been defined as a failure of a planned action or a sequence of mental or physical actions to be completed as intended, or the use of a wrong plan to achieve an outcome.[2] By definition, errors are a cognitive phenomenon because errors reflect human action that is a cognitive activity. Near misses, or "good catches,"[3] are defined as events, situations, or incidents that could have caused adverse consequences and harmed a patient, but did not.[4] Factors involved in near misses have the potential to be factors (e.g., root causes) involved in errors if changes are not made to disrupt or even remove their potential for producing errors.

Reason[2] described errors as the product of either active (i.e., those that result primarily from systems factors, producing immediate events and involve operators (e.g., clinicians) of complex systems) or latent factors (i.e., factors that are inherent in the system). Latent factors (e.g., heavy workload, structure of organizations, the work environment) are embedded in and imposed by systems and can fester over time, waiting for the right circumstances to summate individual latent factors and affect clinicians and care processes, triggering what is then considered an active error (e.g., an adverse drug event). Leadership and staff within organizations essentially inherit and can create new latent factors through scheduling, inadequate training, and outdated equipment.[5] Latent factors or conditions are present throughout health care and are inevitable in organizations. These factors and conditions can have more of an effect in some areas of an

organization than others because resources can be "randomly" distributed, creating inequities in quality and safety.[5] The number of hazards and risks can be reduced by targeting their root causes. In doing so, the path between active failures when the error occurred would be traced to the latent defects in the organization, indicating leadership, processes, and culture. Then, if organizational factors (e.g., latent factors) become what they should be, few active causes of accidents will come about.

The Institute of Medicine (IOM) stated that safety was dependent upon health care systems and organizations, and patients should be safe from injury caused by interactions within systems and organizations of care.[6] Organizational factors have been considered the "blunt end" and represent the majority of errors; clinicians are considered the "sharp end." Therefore, to prevent errors, the organizations in which humans work need to be adapted to their cognitive strengths and weaknesses and must be designed to ameliorate the effects of whatever human error occurs. The most effective strategies to improve safety target latent factors within organizations and systems of care. This point is emphasized by the IOM, which further stated that the safety and quality of care would be improved by holding systems accountable, redesigning systems and processes to mitigate the effects of human factors, and using strategic improvements.[7]

According to Reason,[2] a large part of mental functioning is automatic, rapid, and effortless. This automatic thinking is possible because we have an array of mental models (e.g., schemata) that are expert on some minuscule recurrent aspect of our lives (e.g., going to work). Many errors result from flaws in thinking that affect decisionmaking.[8, 9] Ebright and colleagues[10] assert that nurses' ability to make logical and accurate decisions and influence patient safety is associated with complex factors, including their knowledge base and systems factors (e.g., distractions and interruptions), availability of essential information, workload, and barriers to innovation. The effects of these factors are complicated by the increasingly complex nature of nursing's roles and responsibilities, the complex nature of preventing errors from harming patients, and the availability of resources.[10]

When errors occur, the "deficiencies" of health care providers (e.g., insufficient training and inadequate experience) and opportunities to circumvent "rules" are manifested as mistakes, violations, and incompetence.[11, 12] Violations are deviations from safe operating procedures, standards, and rules, which can be routine and necessary or involve risk of harm. Human susceptibility to stress and fatigue; emotions; and human cognitive abilities, attention span, and perceptions can influence problem-solving abilities.[2] Human performance and problem-solving abilities are categorized as skill based (i.e., patterns of thoughts and actions that are governed by previously stored patterns of preprogrammed instructions and those performed unconsciously), rule based (i.e., solutions to familiar problems that are governed by rules and preconditions), and knowledge based (i.e., used when new situations are encountered and require conscious analytic processing based on stored knowledge). Skill-based errors are considered "slips," which are defined as unconscious aberrations influenced by stored patterns of preprogrammed instructions in a normally routine activity. Distractions and interruptions can precede skill-based errors, specifically diverting attention and causing forgetfulness.[2] Rule-based and knowledge-based errors are caused by errors in conscious thought and are considered "mistakes."[13] Breaking the rules to work around obstacles is considered a rule-based error because it can lead to dangerous situations and may increase one's predilection toward engaging in other unsafe actions. Work-arounds are defined as "work patterns an individual or a group of individuals create to accomplish a crucial work goal within a system of dysfunctional work processes that prohibits the accomplishment of that goal or makes it difficult"[14] (p. 52). Halbesleben and colleagues[15]

assert that work-arounds could introduce errors when the underlying work processes and workflows are not understood and accounted for, but they could also represent a "superior process" toward reaching the desired goal.

Clinicians' decisionmaking and actions are also influenced by the "human condition." Reason[5, 16] asserted that because of the fallibility of the human condition, we can change the working conditions so that the potential for errors is reduced and the effect of errors that do occur is contained. Humans are limited by difficulty in attending to several things at one time, recalling detailed information quickly, and performing computations accurately.[6] As discussed by Henriksen and colleagues,[17] the scientific field of human factors focuses on human capabilities and limitations and the interaction between people, machines, and their work environment. The focus is on system failures, not human failures, and on meeting the needs of the humans interacting within it. Systems would be redesigned and dedicated to continuous improvement to protect against human error by employing simplification, automation, standardization of equipment and functions, and decreasing reliance on memory.[18] The "work system" would account for the interrelatedness of the individual, tasks, tools and technologies, the physical environment, and working conditions.[19] Conditions that make errors possible would be redesigned to reduce reliance on memory, improve information access, error-proof processes, standardize tasks, and reduce the number of handoffs.[20, 21] Errors would be identified and corrected and over time there would be fewer latent failure modes and fewer errors. However, because patient outcomes are dependent upon human-controlled processes, health care settings will never be 100 percent safe.

The IOM defined patient safety as freedom from accidental injury.[6] Adverse events are defined as injuries that result from medical management rather than the underlying disease.[22, 23] While the proximal error preceding an adverse event is mostly considered attributable to human error, the underlying causes of errors are found at the system level and are due to system flaws;[24] system flaws are factors designed into health care organizations and are often beyond the control of an individual.[25, 26] In other words, errors have been used as markers of performance at the individual, team, or system level. Adverse events have been classified as either preventable or not,[21, 27] and some preventable adverse events (fewer than one in three) are considered to be caused by negligence.[28] The concept of an error being preventable has not been widely understood in its context, and definitions have been conflicting and unreliable,[21, 29] partially because the source of the majority of errors have been ascribed to vague systems factors,[30] and the relationship between errors and adverse events is not fully understood.[30, 31]

Although the true number of errors and adverse events may not be known because of underreporting, failure to recognize an error, and lack of patient harm, it is difficult to understand the pervasiveness of errors because there are differences in definitions of reportable errors and adverse events.[32] Research and quality improvement initiatives have focused predominately on medication safety because of existing information systems and the potential frequency for which errors can occur. In the case of medications, the types and causes of errors describe how nurses are at the "sharp end." Medications pose the largest source of errors, yet many do not result in patient harm.[33, 34] Since errors actually occur during the process of medication therapies, the usual 'practice' has been to blame individuals.[35, 36] A medication intervention goes from prescribing, transcribing, and dispensing to administration. Physicians are primarily responsible for prescribing medications and nurses are primarily responsible for administering medications to patients. Errors made by physicians can be intercepted by pharmacists and nurses, errors made

by pharmacists can be intercepted by nurses, and errors made by nurses could potentially be intercepted by peers or patients.

Several classifications of health care errors have been posed.[37–39] Classifications or categorizations of errors have been based on types of adverse events,[40–42] incident reports,[38, 39] individual blame,[37] and system causes. Given what is known about error causation,[1, 5, 6, 16] particularly what has been learned from root-cause analysis and failure modes and effects analysis, when errors/adverse events involve clinicians, classifications/taxonomies of errors would be centered on all the related systems factors and would consider them the major contributors of the error/adverse event.[5, 16] For example, one classification of errors differentiates endogenous errors (i.e., arise within the individual or team) from exogenous errors (i.e., arise within the environment).[43] Endogenous errors are generally either active or latent[2] and result from departure from normative knowledge-based, skill-based, or rule-based behaviors.[44]

The complexity of factors involved in errors and adverse events is exemplified in medication safety. Researchers have found that between 3 percent and 5 percent,[45] 34 percent,[46] 40 percent,[47] or 62 percent[48] of medication errors are attributable to medication administration. For an administration error to not occur, the nurse would be at the "sharp end," having the responsibility to intercept it. Administration errors have been found to be the result of human factors, including performance and knowledge deficiencies;[49] fatigue, stress, and understaffing were found to be two major factors for errors among nurses.[50] Administering medications can take up to 40 percent of the nurse's work time,[51] and medication administration errors have been found to be due to a lack of concentration and the presence of distractions, increased workloads, and inexperienced staff.[48, 52, 53] If we consider what has been learned in other industries, medication administration errors would also be caused by systems factors, such as leadership not ensuring sufficient training, maldistribution of resources, poor organizational climate, and lack of standardized operating procedures.[54]

Since the publication of the IOM's *To Err Is Human*,[6] millions of dollars of research funds—e.g., from the Agency for Healthcare Research and Quality (AHRQ) and the Robert Wood Johnson Foundation—have been devoted to building the evidence base in patient safety research. Findings reported from the IOM and other related research is being disseminated on key aspects of patient safety. It is interesting to note that before the publication of *To Err Is Human*, the major focus of patient safety was on individual blame and malpractice.[55] Since the publication of *To Err Is Human,* that has no longer been the case and there is more focus on the need to improve health care organizations,[56] but the concerns associated with malpractice have not dissipated. In fact, concerns about malpractice have thwarted many patient safety improvement efforts primarily because of the need for data collection and analysis as well as performance measures to inform patient safety changes.[57]

The focus on the responsibilities and influences of systems does not negate the challenge of understanding error and accepting the inevitability of many errors while concurrently increasing the quality of health care. It is not possible for every aspect of health care and every setting of care to be 100 percent error free, and leaders and clinicians are challenged to define what is an acceptable level of error. Because safety is foundational to quality,[58] one way to define quality is providing "the right care, at the right time, for the right person, in the right way."[59] In doing so, efforts to improve safety and quality need to address concerns with potential overuse, misuse, and underuse of health care services that can threaten the quality and safety of care delivered to patients. Since patient safety, and quality in many respects, "is a new field, identifying which safe practices are effective has presented a significant challenge"[60] (p. 289), in part because of

the resource requirements, the complex nature of changing practice, and the influences of units within the whole.[60]

The Importance of High-Performing Organizations

The quality and safety of care is associated with various factors within systems, organizations, and their work environments—the combination of which influences the type of quality and safety of care provided by nurses.[1] Donabedian's[61] definition of quality of care represents the entire continuum from structure to process and to outcome. Structures, processes and outcomes are interdependent, where specific attributes of one influence another according to the strength of the relationship.[61–63] When organizational structure factors support the care processes and enable teamwork, nurses are more satisfied with their jobs[64, 65] and patients receive higher-quality care.[65] Leaders who engage in transactional (e.g., establish trust in relationships with staff, provide structure and expectations)[66, 67] and transformational leadership (e.g., develop a stronger collective identity and commitment to change)[68, 69] and who view change as opportunities to learn, adapt, and improve[70] organizations to improve health care quality. When teams function well and organization structure factors support their work, outcomes are better, even at institutions that have a high intensity of specialized care for those particular needs.[71, 72] The effectiveness of individuals and teamwork is dependent upon leadership, shared understanding of goals and individual roles, effective and frequent communication,[72-74] having shared governance,[75] and being empowered by the organization.[76]

In his seminal work, Shortell asserted that the characteristics of high-performing health care organizations included "a willingness and ability to: stretch themselves; maximize learning; take risks; exhibit transforming leadership; exercise a bias for action; create a chemistry among top managers; manage ambiguity and uncertainty; exhibit a 'loose coherence;' exhibit a well-defined culture; and reflect a basic spirituality"[77] (page 8). These organizations are engaged in continuous improvement to improve outcomes. Since then, Shortell and colleagues[78] furthered his seminal work, finding that what distinguished high-performing organizations was certain key factors, such as having a quality-centered culture, reporting performance, and the ability to overcome quality improvement redesign barriers by "(1) directly involving top and middle-level leaders, (2) strategically aligning and integrating improvement efforts with organizational priorities, (3) systematically establishing infrastructure, process, and performance appraisal systems for continuous improvement, and (4) actively developing champions, teams, and staff"[79] (p. 599).

The significance of these characteristics of high-performing organizations was furthered by findings from an evaluation of 12 health care systems, where factors critical to redesigning current systems to achieve quality and safety goals and improve patient outcomes were found to be successful when there was an "(1) impetus to transform; (2) leadership commitment to quality; (3) improvement initiatives that actively engage staff in meaningful problem solving; (4) alignment to achieve consistency of organization goals with resource allocation and actions at all levels of the organization; and (5) integration to bridge traditional intra-organizational boundaries among individual components"[80] (p. 309). Yet to address these factors in redesigning care systems and processes, Lucas and colleagues found that organizations needed to have "(1) mission, vision, and strategies that set its direction and priorities; (2) culture that reflects its informal values and norms; (3) operational functions and processes that embody the work done in patient care; and (4) infrastructure such as information technology and human resources that support the delivery of patient care"[80] (p. 309).

Yet, many organizations do not meet the standards of high-reliability organizations (HROs). Reason and colleagues[81] described the "vulnerable system syndrome" as a cluster of organizational pathologies that interact, making some systems more liable to unsafe practices that threaten patient safety. These pathologies (e.g., blame, denial, and the pursuit of financial excellence) are perpetuated in work environments by leaders and peers targeting individuals at the "sharp end," simultaneously failing to question core beliefs, recognize systemic causes, or to implement systemwide reforms. Reason and colleagues further asserted that indicators of vulnerabilities of the work environment, such as a culture of individual blame, were associated with workplace cultures that influenced safety and could be categorized as (1) high reliability (where recognizing how safety can be improved is rewarded), (2) pathological (where punishment and covering up of errors/failures are pervasive and new ideas are discouraged), or (3) bureaucratic (where failures are considered isolated, systematic reforms are avoided, and new ideas are problematic). An indicator of the presence of work environment vulnerabilities and patient safety improvements could be whether or not an organization has Joint Commission accreditation.[82]

Nurses perceive multiple and complex work environment factors that influence nurse and patient outcomes, including the quality of leadership and management, staffing resources, workload,[83] job stress and anxiety, teamwork, and effective communication.[84] Heath and colleagues asserted that in healthy work environments, nurses "feel valued by their organization, have standardized processes in place, have staff empowerment, have strong leadership, feel a sense of community, and recognize that strategic decision-making authority [influences] how their units were run and how scarce resources were disseminated"[85] (p. 526–7). Healthy work environments are also places where safe and high-quality nursing care is expected and rewarded. Healthy work environments also need to foster effective communication, collaborative relationships, and promote decisionmaking among all nurses.[85] Unhealthy work environments can have adverse consequences on the quality of care delivered as well as nurses' intention to leave the profession.[1, 86–88]

As proposed by Stone and colleagues,[89] there are microclimates (e.g., a unit or department) that function within the larger context of the organization. These microclimates or "microsystems" have a core team of health care professionals; a defined population of patients they are responsible for; and information, staff, and health technologies that provide support to the work of the clinicians.[90]

Yet, the majority of this research has examined outcomes at the hospital-wide level, and not at the unit level. Since the work environment within microclimates/microsystems can be different than that found organization-wide, it would be important to focus on these subunits to support efforts to standardize common care processes, to better examine process and outcome measures and what subunit factors and organization-wide factors contribute to less-than-optimal care, to emphasize the impact of multidisciplinary teams throughout the organization, and to ascertain how lessons learned in these subunits could be applied organization-wide.[90]

High-Reliability Organizations

Inherently related to high-performing organizations, HROs are defined as organizations that function daily under high levels of complexity and hazards. Reliable organizations have "procedures and attributes that make errors visible to those working in the system so that they can be corrected before causing harm"[6] (p. 152) and produce consistent results. Accordingly, the

IOM has advocated for hospitals to transition into HROs to improve the quality and safety of care.[6] In HROs, reliability and consistency are built into organizational routines where errors can have catastrophic consequences. In health care, reliability is defined as the "measurable ability of a health-related process, procedure, or service to perform its intended functions in the required time under commonly occurring conditions"[91] (p. 82). Applying the theory behind high reliability organizations and normal accident theory (e.g., understanding how health system factors affect safety), patient safety improvements have been linked to high-reliability safety interventions, including double checking, and improving the validity of root-cause analyses.[92]

Because improving safety is complex and should be continuous,[2, 4, 11] HROs continually measure their performance, learn from experience, and take action to resolve problems when they are discovered. HROs have a (1) preoccupation with avoiding failure, (2) reluctance to simplify interpretations, (3) sensitivity to operations, (4) commitment to resilience, and (5) deference to expertise.[93, 94] A preoccupation with avoiding failures is based on comprehensive error reporting, where human failure is accepted as being inevitable, and being overconfident because of successes is considered highly risky. A reluctance to simplify interpretations is supported by thoroughly examining situations. Being sensitive to operations involves being constantly concerned about the unexpected and recognizing that active errors result from latent errors in the system. Committing to resilience involves being able to identify, control, and recover from errors, as well as developing strategies to anticipate and responds to the unexpected. Having deference to expertise means that everyone is involved and decisions are made on the front line.[94]

Health care leaders and researchers have been looking to HROs in industry, such as the National Aeronautics and Space Administration, aviation, and the U.S. Postal Service,[21, 94, 95] to apply their lessons learned to health care. HROs are known to approach safety from a systems perspective, involving both formal structures and informal practices, such as open inquiry and deep self-understanding that complement those structures.[96] Through careful planning and design, HROs have been found to share common features: (1) auditing of risk—to identify both expected and unexpected risks; (2) appropriate reward systems—for safety-related behaviors; (3) system quality standards—evidence-based practice standards; (4) acknowledgment of risk—detecting and mitigating errors; and (5) flexible management models—promoting teamwork and decentralized decisionmaking.[97] Shapiro and Jay asserted that health care organization can become HROs though "(1) attitude change, (2) metacognitive skills, (3) system-based practice, (4) leadership and teamwork, and (5) emotional intelligence and advocacy"[98] (p. 238).

Implementing quality and safety improvement strategies in organizational microclimates/microsystems, and for that matter organization-wide, should be predicated on increasing the subunits' awareness of how they function and mindfulness of the reliability of their outcomes. Mindfulness is a "combination of ongoing scrutiny of existing expectations, continuous refinement and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, and a more nuanced appreciation of context and ways to deal with it, and identification of new dimensions of context that improve foresight and current functioning"[94] (p. 42). Mindfulness speaks to the interrelationships among processes of perception and cognition that stimulate a rich awareness of and hypervigilance for emerging factors and issues that could threaten the quality of care and enable the identification of actions that might be taken to deal with the threats to quality.[94] Weick and Sutcliff[94] argue that organizations can become HROs when they become

mindful, as manifested by being preoccupied with failure, reluctant to simplify interpretations, sensitive to operations, committed to resilience, and deferent to expertise.

What Is It Going To Take To Improve the Safety and Quality of Health Care?

Changes in health care work environments are needed to realize quality and safety improvements. Because errors, particularly adverse events, are caused by the cumulative effects of smaller errors within organizational structures and processes of care, focusing on the systemic approach of change focuses on those factors in the chain of events leading to errors and adverse events.[5, 99] From a systems approach, avoidable errors are targeted through key strategies such as effective teamwork and communication, institutionalizing a culture of safety, providing patient-centered care, and using evidence-based practice with the objective of managing uncertainty and the goal of improvement.

The Right Work Environment

The major focus of the IOM's report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*,[1] was to emphasize the dominant role of the work environment within health care organizations and the importance of the work environment in which nurses provide care to patients. Research reviewed by the IOM committee reported that nurses were dissatisfied with their work and wanted better working conditions and greater autonomy in meeting the needs of patients. The significance of these and many other findings led to the committee recommending significant changes in the way all health care organizations were structured, including "(1) management and leadership, (2) workforce deployment, (3) work processes, and (4) organizational cultures"[1] (p. 48). After the release of that report, the American Association of Critical-Care Nurses (AACN) expanded upon these concepts and put forth the following standards for establishing and sustaining healthy work environments: (1) effective, skilled communication; (2) true collaboration that is fostered continuously; (3) effective decisionmaking that values the contributions of nurses; (4) appropriate staffing that matches skill mix to patient needs; (5) meaningful recognition of the value of all staff; and (6) authentic leadership where nurse leaders are committed to a healthy work environment and engage everyone.[100] To achieve these standards, many organizations will need to significantly change the work environment for nurses.

The nursing "practice environment" is defined by organizational characteristics that can either facilitate or constrain professional nursing practice.[101] Changes to the nurses' work environment need to focus on enabling and supporting nurses to provide high-quality and safe care.[102] To do so, there needs to be significant changes in the way health care is organized that also address nursing workforce resources, training, and competencies. Researchers have found that nurses may experience greater professional fulfillment when strategies are implemented that promote autonomous practice environments, provide financial incentives, and recognize professional status.[103] Whether because of unequal distribution of nurses or expected nursing workforce shortages with the aging of practicing nurses and faculty,[104, 105] staffing shortages increase a nurse's stress, increases their workload, and can adversely impact patient outcomes. More important, clinicians in practice will need new skills and empowerment to work effectively with colleagues within their work environments. Nurses also need to possess certain

competencies that reflect the nature of nursing in improving patient and systems outcomes, including evidence-based practice, patient-centered care, teamwork and collaboration, safety, quality improvement, and informatics.[106]

Opportunity, power, and the composition of the workforce within organizations influence what nurses are able to do and how they are able to use resources to meet patients' needs. Lashinger and colleagues[76, 107–109] have found that the empowerment of staff nurses increased with greater responsibilities associated with job advancements and was related to the nurses' commitment to the organization, burnout, job autonomy, their ability to participate in organizational decisionmaking, as well as job strain and work satisfaction.[110] Because work environment factors influence the perceptions of nurses as being supported in their work, having a sense of accomplishment,[111] and being satisfied with their work, it is important to empower staff to manage their own work, collaborate in effective teams,[112] and practice nursing in "optimal" conditions.[113] Professional empowerment in the workplace is derived from competence and interactions with colleagues and other clinicians within organizations—and with patients—as well as by demonstrating knowledge and gaining credibility.[114] For nurses, structural empowerment can have a direct effect on their experience of providing care in their work environment.[115] Models of care, such as a professional practice model, not only can improve work satisfaction, but they can facilitate patient and nursing outcomes.[116]

Patient-Centered Care

In *Crossing the Quality Chasm*, the IOM recommended that "all health care organizations, professional groups, and private and public purchasers should adopt as their explicit purpose to continually reduce the burden of illness, injury, and disability, and to improve the health and functioning of the people of the United States"[7] (p. 39). For this recommendation to be realized, the IOM asserted that health care would have to achieve six aims: to be safe, effective, patient-centered, timely, efficient, and equitable. The IOM also asserted that health care for the 21st century would need to be redesigned, ensuring that care would be based on a continuous healing relationship, customized inclusion of patient needs and values, focused on the patient as the source of control, and based on shared knowledge and the free flow of information. Patient-centered care would improve health outcomes and reduce or eliminate any disparities associated with access to needed care and quality.[117–119]

Patient-centered care is considered to be interrelated with both quality and safety.[7] The role of patients as part of the "team" can influence the quality of care they receive[120, 121] and their outcomes.[122, 123] The IOM recommended that clinicians partner with patients (and the patient's family and friends, when appropriate)[124] to realize informed, shared decisionmaking, improve patient knowledge, and inform self-management skills and preventive behaviors. Patients seek care from competent and knowledgeable health professionals to meet their physical and emotional needs. Within this framework, the clinician's recommendations and actions would be customized to the patient and informed by an understanding of the patient's needs, preferences, knowledge and beliefs,[125] and when possible, would enhance the patient's ability to act on the information provided. It follows then that an effective clinician-patient partnership would include informed, shared decisionmaking and development of patient knowledge and skills needed for self-management of chronic conditions.

Patients and families have been and are becoming more involved in their care. Findings from several studies have indicated that patients who are involved with their care decisions and

management have better outcomes than those patients who are not,[126, 127] although some researchers indicate that the evidence concerning the impact of patient-centered care is variable.[128] Patient self-management, particularly for chronic conditions, has been shown to be associated with improvements in quality of life[129] and health status, decreased utilization of services,[130] and improved physical activity.[131, 132] The Chronic Care Model developed by Wagner and colleagues[133–135] similarly emphasized the importance of actively engaging patients in achieving substantial improvements in care. Patient-centeredness is increasingly recognized as an important professional evolution[124] and holds enormous promise for improving the quality and safety of health care. Yet, patient-centered care has not become the standard of care throughout care systems and among all clinicians as recommended by the IOM.[7, 136] For patient-centered care to become the "standard" care process, care processes would need to be redesigned and the roles of clinicians would need to be modified[137, 138] to enable effective teamwork and collaboration throughout care settings.

Teamwork and Collaboration

It is nonsensical to believe that one group or organization or person can improve the quality and safety of health care in this Nation. In that patient safety is inextricably linked with communication and teamwork,[6] there is a significant need to improve teamwork and communication.[139, 140] Teamwork and collaboration has been emphasized by the Joint Commission. The Joint Commission has found communication failures to be the primary root cause of more than 60 percent of sentinel events reported to the Joint Commission.[141] Ineffective communication or problems with communication can lead to misunderstandings, loss of information, and the wrong information.[142] There are many strategies to improve interdisciplinary collaboration (e.g., physician and nurse),[140, 143] including using multidisciplinary teams as a standard for care processes.

Interprofessional and intraprofessional collaboration, through multidisciplinary teams, is important in the right work environments. Skills for teamwork are considered nontechnical and include leadership, mutual performance monitoring, adaptability, and flexibility.[144] Teamwork and interdisciplinary collaboration[139] have the potential to mitigate error and increase system resilience to error.[145] Clinicians working in teams will make fewer errors when they work well together, use well-planned and standardized processes, know team members' and their own responsibilities, and constantly monitor team members' performance to prevent errors before they could cause harm.[6, 146, 147] Teams can be effective when members monitor each other's performance, provide assistance and feedback when needed,[147] and when they distribute workloads and shift responsibilities to others when necessary.[144]

The importance of training members to work effectively in multidisciplinary teams to achieve high reliability in patient (e.g., no adverse events) and staff outcomes (e.g., satisfaction working with team members and improved communication)[145, 148–151] was found to be especially significant when team members were given formal training to improve behaviors.[145] Resources such as AHRQ's TeamSTEPPS™ (visit http://www.ahrq.gov/qual/teamstepps) can provide teams with the opportunities the members need to improve the quality and safety of health care. TeamSTEPPS™ is an evidence-based teamwork system that teams can use to improve communication and other essential teamwork skills.

Conversely, lack of effective teamwork—such as poor communication and collaboration[139] within and between disciplines—was found to have negative effects on patient outcomes (e.g.,

surgical errors)[152] and higher mortality.[153] Poor teamwork as well as disrespectful, rude, and insulting behaviors have no place in health care and can potentially increase unsafe practices.[154–156] In a comparison of medicine to aviation, physicians were found to be significantly more supportive of hierarchical models of practice, where junior physicians would not question their seniors.[152] Hierarchical structures have been found to have an adverse influence on communication among team members and patient outcomes.[157, 158] Nursing's participation in teams is further limited under a hierarchical, mechanistic structure when nurses focus on tasks.[159] Other barriers that have been found to inhibit the effectiveness of nurses in teams were their perceptions of teamwork, having different teamwork skills, and the dominance of physicians in team interactions.[160] When physicians view hospitals as a "platform[s] for their work and do not see themselves as being part of [the] larger organization"[1] (p. 144), physicians may not only thwart the work of nurses, but the organization's efforts to improve the quality and safety of care. When anyone within organizations exhibit intimidating or disruptive behaviors and when there are inappropriate hierarchies, breakdowns in teamwork, and loss of trust, decreased morale and turnover are expected among staff; patients can expect to be harmed and will likely seek care elsewhere.[1, 161–163]

The work environment, communication and collaboration among clinicians, and decisionmaking are also linked to leadership and management within health care organizations.[164–166] Some authors have argued that performance of organizations and the use of evidence in practice were factors dependent upon leadership, particularly among middle/unit-based clinical management.[167–169] The personality and attitudes of leaders has been shown to have an impact on safety[170, 171] and on perceptions about how safety is managed.[172] Visible, supportive, and transformational nursing leadership to address nursing practice and work environment issues is critical as is nursing and medical leadership to ensure that the work environment supports caregivers and fosters collaborative partnerships. However, giving encouragement is not generally stated as a high-priority role of health care supervisors. Traditionally, technical skills and productivity on the job were aspects that received the supervisor's primary focus. However, there is a growing appreciation that encouragement is a transformational leadership technique that is related to productivity on the job and to quality work. Use of encouragement is a leadership technique that fits in today's people-oriented work climate.[1]

Evidence-Based Practice

Evidence should be used in clinical decisionmaking whenever possible. The need for improving quality using evidence was described by Steinberg and Luce as "the recognition that there is much geographic variation in the frequency with which medical and surgical procedures are performed, the way in which patients with a given disease are managed, patient outcomes, and the costs of care, which cannot be explained by differences in patients' demographic or clinical characteristics"[173] (p. 80). Indeed, findings from research continue to provide information that illustrates that only some patients are receiving the recommended quality of care,[117, 174–176] and errors continue to adversely impact patient outcomes. Steinberg and Luce go on to state that there is "strong evidence that much of the care that is being provided is inappropriate (that is, likely to provide no benefit or to cause more harm than good)" and that there are "indications that many patients are not receiving beneficial services"[173] (p. 80). Some examples of these concerns are associated with determining health care interventions and

medication safety. Patients can be harmed if their symptoms and needs are not assessed accurately,[177] if the wrong type of intervention is selected,[178–180] and if patients do not receive information they need to manage their care.[181] Certain types of medication errors, such as the wrong drug, wrong dose,[182] and polypharmacy,[183] threaten the quality of therapeutic interventions and the safety of patient care by aggravating the patient's preintervention health status.

Another reason that health care quality needs to improve and be based on evidence is "continuously rising health care costs"[173] (p. 80). In a country that spends more per capita than anywhere else in the world, patients do not necessarily have better outcomes.[184] Often without knowing it, clinicians have one of the greatest roles in controlling (or increasing) the cost of health care. What type of care is given to patients is sensitive to clinicians (e.g., nurses and physicians) as well as organizational structures, policies, and resources. The skill mix and number of nurses has been found to be associated with adverse events, longer lengths of stay in hospitals, and higher health care costs.[185–187] Findings from research have indicated that understaffing is associated with an increase in errors and adverse events, such as medication errors, pressure ulcers, health care associated infections, and increased mortality rates in hospitalized patients.[86, 185, 188–195] To address workforce shortages, organizations have used financial and shift work incentives, used part-time workers, and improved the image and job satisfaction, among other things.[196, 197] All of these strategies increase the cost of health care.

The combined concern about the growing cost of care and the effects of poor-quality care on patients has resulted in action by the Centers for Medicare and Medicaid Services (CMS) and other insurers to put in place financial penalties for hospitals that have preventable events, such as readmission, never events (e.g., wrong-site surgery), health care associated infections,[198] pressure ulcers, and patient falls with injury. These financial penalties reflect policy based on research that has indicated a significant association between nurse staffing and adverse patient outcomes,[185, 187, 192] and quality measures that have been put forth as being sensitive to nursing care.[199, 200] Adverse patient outcomes are also sensitive to the care directed by physicians, even when physicians and hospitals have a financial incentive to provide specific elements of quality care. This was recently found in a comparison of treatments and outcomes for 5 conditions at 54 hospitals participating in a Medicare pay-for-performance pilot program to the treatments and outcomes at 446 hospitals not participating in the program. The researchers in this investigation found the financial incentive of pay-for-performance was not associated with significant improvement in quality of care or outcomes.[201] Because health care costs are expected to continue to increase, it is important to ensure that costs of health care are not unnecessarily high and that patients receive quality care and are not exposed to preventable adverse events. Nurse leaders and clinical practitioners should be required to be actively engaged with other clinicians and leaders in assessing and monitoring the care of patients and their outcomes, as well as in driving quality improvement efforts to prevent the reoccurrence of these high-risk adverse events.

However, not all evidence is equal. It can be based on research that is not generalizable to other settings and populations[173, 202, 203] and may be difficult to translate into practice without further testing and the development of guidelines.[203] Even when research is available, it is often not used in practice,[204, 205] and adapting the research to practice can be challenging because of numerous barriers and deficits of facilitators to change.[206, 207] A systematic review of interventions aimed at increasing the use of evidence in practice found that greater success was achieved when clinicians were involved in education about and in intervention strategies that

were centered on using evidence in practice with local opinion leaders and multidisciplinary teams. The investigators further asserted that to effectively use research in practice, nurses should use the right evidence to inform and evaluate practice change interventions, longitudinally assess the effects of the intervention using the measures for multiple outcomes, and use a methodologically rigorous approach to design the implementation and evaluation of the intervention.[208]

Evidence-based practice has been defined as using data and information, often from diverse sources, to guide practice. When evidence is available, clinicians must locate and then consider the generalizability of its findings and usability in the practice setting. Randomized controlled trials (RCTs) have been considered the best standard for clinical practice, but they are not available for many common clinical situations and are generalizable only to the population studied during the trial. Clinicians use a broad range of practice knowledge, especially when evidence is not available. Sandars and Heller[209] proposed using the concept of knowledge management, which involves generating research-based evidence, synthesizing the evidence base, communicating that knowledge, and applying it to care processes. Another option would be to employ quality improvement methods, such as Plan-Do-Study-Act, to inform practice.[50] Horn and Gassway[210] proposed using practice-based evidence for clinical practice improvement that is based on the selection of clinically relevant alternative interventions, includes a diverse study population from heterogeneous practice settings, and utilizes data about a broad range of health outcomes.[210] Thus, when evidence is not available, clinicians should use their experience and data and information from other forms of inquiry.

A Culture of Safety

The IOM encouraged the creation of cultures of safety within all health care organizations.[6] A safety culture is defined as "the product of the individual and group values, attitudes, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety [programs]"[211] (p. 2). An organization's culture is based on its history, its mission and goals, and its past and current leadership. Gadd and Collins[211] found that organizations with a positive safety culture were characterized by communication guided by mutual trust, shared perceptions of the importance of safety, and confidence that error-preventing strategies would work.

The terms "culture" and "climate" have been used interchangeably. Organizational climate refers to the atmosphere of aggregate attitudes and perceptions of how individuals feel about their places of work, which are associated with both individual and team motivation and satisfaction. The climate within an organization represents a moveable set of perceptions related to conditions within the workplace,[212] which can be changed by the values, attributes, skills, actions, and priorities of organization leaders and mangers. A safety climate is a type of organizational culture and is the result of effective interplay of structure and processes factors and the attitude, perception, and behavior of staff related to safety. A climate of safety is represented by employee perceptions of: the priority of safety within the work environment on their unit and across the organization, and is influenced by management decisions; safety norms and expectations; and safety policies, procedures, and practices within the organization.[211]

It follows then that the higher the safety culture, the safer and better the quality of care. When researchers compared the safety cultures of hospitals to the aviation industry—which has been associated with high safety cultures—they found that the safety climate in hospitals was

worse; and within hospitals, the safety culture was worse in operating rooms and emergency departments.[213, 214] The perceptions of safety within a hospital have been found to be more positive among leaders and managers than among those directly involved in care;[215] nurses reported the lowest numbers for a safety culture.[216] Hospital staff have been found to understand the importance of safety in their work and their role in patient safety, and to judge patient safety according to their perception of workplace safety and leadership commitment.[217] The perceptions of hospital staff of the patient safety culture have also been found to be associated with empowerment (e.g., being able to practice nursing optimally) and characteristics of Magnet hospitals.[113] Additionally, more errors were found in organizations and units with poor safety cultures. In fact, some researchers found that the safety climate predicted the occurrence of medication errors, that the level of safety was associated with the unit-specific and hospital-wide climates, and that a positive safety climate in a unit could compensate for the detrimental effects of a low hospital-wide climate.[218]

Developing and transitioning to a culture of safety requires strong, committed leadership by executives, hospital boards, and staff.[5] According to the IOM, the essential elements of an effective safety culture include the commitment of leadership to safety and empowering and engaging all employees in ongoing vigilance through communication, nonhierarchical decisionmaking, constrained improvisation, training, and rewards and incentives.[1] The Association of Operating Room Nurses issued guidance about creating such a patient safety culture, emphasizing the necessity of the following components: (1) a reporting culture, (2) a flexible culture, (3) a learning culture, (4) a wary culture, and (5) a just culture.[219]

Yet, it should be understood that changing the culture within an organization is difficult and can happen only over time.[2, 5] Throughout time, nurses have frequently been treated differently if they were involved in an error/adverse event, being at the sharp end of blame because they can stand between errors.[220, 221] Thus, for nurses to not be at the sharp end of blame, it is important for organizational leaders and managers to establish a just culture that values reporting, where errors can be reported without fear of retribution;[222-224] where staff can trust leaders to make a distinction between blameless and blameworthy; and where the organization seeks to ferret out the root causes of that error, focusing on systems and process factors. Just as important, organizational leaders, managers, and staff need to learn from the continuous assessment of safety culture and make efforts to continually improve organizational performance[4, 5] and demonstrate success in safety improvements.[215]

If an organization's culture is based on secrecy, defensive behaviors, professional protectionism, and inappropriate deference to authority, the culture invites threats to patient safety and poor-quality care.[225] Several factors can impede the development of a culture of safety, including (1) a clinician's tendency to view errors as failures that warrant blame, (2) the focus of nurse training on rules rather than knowledge, (3) punishing the individual rather than improving the system,[226, 227] and (4) assuming that if a patient was not injured, that no action is required.[227] Each of these factors stems from organizations and the people in them having unrealistic expectations of clinical perfection, refusing to accept the fallibility of humans, and discounting the benefit of effective multidisciplinary teams.[1, 151]

Changing an organization's culture of safety should begin with an assessment of the current culture, followed by an assessment of the relationship between an organization's culture and the health care quality[228, 229] and safety within the organization. Several tools have been developed to measure the safety culture within organizations to inform specific interventions and opportunities for improvement. They have focused on dimensions of a patient safety climate, including

leadership and management (e.g., personality and attitudes), teamwork, communication, staffing, attitudes/perceptions about safety, responses to error, policies, and procedures. Some of these tools could be used for individual or team assessment, or to compare organization-wide perceptions or unit-specific perceptions.[230] A recent tool that was developed can be used to differentiate patient from staff safety and types of clinicians.[218] Another of these tools (www.ahrq.gov/qual/hospculture/#toolkit) developed for AHRQ has been used to compare safety cultures among hospitals.

The Challenge of Change

The question has been whether efforts to improve the quality and safety of care have been moving quickly enough. Many leaders and researchers[231–234] have raised concern that clinicians, administrators, policymakers, and researchers have *not* been moving quickly enough toward safe care. A few researchers have found improvements in some areas, but little if any change in others.[32, 235–238] Amalberti and colleagues[239]argued that the cultural and historical emphasis on individualism and autonomy in health care, its drive for economic productivity, and structural elements such as chronic staff shortages must be overcome if rapid progress is to be made toward ultrasafe health care. These authors warn that, to achieve progress, we will need to identify closely held values and traditions that enforce the status quo and change them in support of safety and quality.

Organizations such as the IOM, AHRQ, the Joint Commission, and CMS have been emphasizing the need for significant improvements in quality and patient safety. Yet depth and breadth of organizational quality and safety improvement changes are variable. For example, groups such as the Leapfrog Group have been influential in moving safety forward by setting standards for intensivist physician staffing levels in intensive care units,[240, 241] yet many hospitals have been challenged to implement physician staffing standards because of the resource implications (e.g., financial and staffing)[242, 243] and lack of clearly defined leadership.[121] Also, efforts to improve safety by understanding and targeting systems factors through public reporting have been championed in some States, such as Texas (www.texashasp.org) and Pennsylvania (www.psa.state.pa.us), but other States lag behind. The Joint Commission has emphasized national patient safety goals (www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals) to improve safety in areas it has identified as high risk associated with sentinel events reported to the Joint Commission. Furthermore, starting in October 2008, the CMS (as well as other insurers) will begin to deny reimbursement to care providers for care delivered to patients that involved never events, such as health care–associated infections, wrong-site surgery, and hospital-acquired pressure ulcers. Given the role and influence of these various external drivers, health care leaders and managers will need to be actively engaged in quality and safety improvement efforts.

Organizations should be flexible to keep pace with the rapid changes in health care and the growing evidence base. To do so, they need to be willing to adopt new knowledge and innovations, which entails "a social and political process, which nearly always involve[s] debate and reference to others' views"[168] (p. 44), a process that needs to include all leaders, managers, and staff. Those employees within organizations, particularly nurse leaders and staff, will need to redesign care processes and revisit the roles and responsibilities of team members.[244] Pronovost and colleagues[245] emphasized the importance of recognizing that creating change is complex and that improvement strategies need to (1) prevent errors from occurring, (2) raise awareness of

errors and near misses, and (3) be better at diminishing patient harm if an error occurs. For these reasons, changes to the error-producing structural factors of an organization by themselves do not lead to expected improvements in quality.[246, 247] Several organizations have reported difficulties in improving patient safety because of the need for transparency in reporting on performance measures, lack of standardization and functionality of information technology, and no clear pathway identified for improvement.[248] Other difficulties could be associated with the results of the improvement initiative itself. For example, the introduction of computerized provider order entry systems for medication therapy prevented some errors from happening (e.g., related to illegible handwriting), but introduced other errors that might have been avoided with better implementation strategies.[249]

There are many change strategies, from single focus to multifaceted, that have centered on a structural approach and have been used successfully to create quality and patient safety improvements. One approach would be to implement bundles of evidence-based interventions to simultaneously improve multiple outcomes,[207] using health information technology when possible. Other strategies have focused on the components of the change process that need to be addressed. Caramanica and colleges[250] asserted that a successful quality improvement strategy was based on the alignment of the goals of the organization with goals for quality and patient safety improvement, collaboration using interdisciplinary teams, applying evidence-based practice, and monitoring and assessing excellence. Quality improvement strategies that align with the values and beliefs of individuals and build on current processes can determine the pace and diffusion of change.[251] As discussed in chapter 44, "Quality Methods, Benchmarking, and Measuring Performance," many organizations have used the Plan-Do-Study-Act approach to implement change, particularly rapid-cycle improvement. A similar strategy used the Reach-Effectiveness-Adoption-Implementation-Maintenance framework to translate research into practice.[252] The Department of Veterans Affairs has approached patient safety improvement by targeting key strategies, including leaders creating an environment of acceptance, establishing clear goals, creating a fair system that does not focus on blame, creating a transparent system for decisionmaking, facilitating root-cause analysis, requiring leadership and management to be visibly involved, and evaluating performance.[253, 254] While organizations' characteristics differ, as do characteristics of leaders and managers, success can be realized through continuous improvement with careful attention to finding a balance that avoids so much change that change fatigue results.[255]

The IOM asserted that improvements must target organizational factors by using information technologies, developing effective teams, standardizing procedures with evidence, and using data and information to monitor performance.[7] Focusing on the role, the influence, and the complexity of health care systems by thinking about the "big picture" involves understanding how a specific issue or outcome of concern interacts with numerous factors, both within and external to the system. In doing so, it may be more feasible to solve recurring problems with ineffective processes and poor outcomes, even when previous attempts have failed.[256] In the case of medication safety, efforts to significantly reduce medication administration errors must also consider errors associated with prescribing, transcribing, and dispensing errors, as well as errors associated with health information technologies, product labeling,[257] therapeutic consistency across care settings (e.g., medication reconciliation), and miscommunication of drug allergies. For health care systems and organizations to improve safety and quality, they need to learn to improve existing knowledge and processes, understand what is and is not working well, and both adopt and discover better ways to improve patient outcomes.[258]

Organizational changes should be targeted using multifaceted strategies and interventions that focus on redesigning structural factors (e.g., staffing levels, roles and responsibilities of nurses, etc.), revising policies and procedures,[259] and using multidisciplinary teams.[260] Because the factors and issues involved in patient safety and quality improvement are complex, mirroring the complexity of health care systems, no one single intervention will accomplish performance goals and standards. Using a systematic approach to changing practice based on evidence when possible is required to improve patient safety and contribute to the evidential knowledge base and generalizability that can be used eventually for purposes of diffusion.[261] Improving the quality and safety of health care may require the use of mixed or multiple methodologies to continually monitor and evaluate the impact and performance, because no one single method would be expected to be appropriate for the depth and breadth of change interventions.[262–264]

Change can be slow because it is a process that involves many people and issues. Efforts to improve quality and safety need champions throughout the key areas within the organization as well as executive and midlevel managers.[70, 259] Champions can also be found among individuals for whom adverse events have had incredible impact on their lives.[265] It would follow then that when an opportunity is present to adopt new knowledge and evidence into practice, "that individual professionals and professional groups (particularly the doctors) have the power to impede or to facilitate the diffusion process"[168] (p. 50). Adoption of new knowledge and evidence for change is a process that needs leadership involvement and support, fostering effective relationships and enabling action, utilizing ongoing monitoring and evaluation, and demonstrating flexibility according to findings from evaluation and changing needs.[254, 258] Yet the effect of this could be mitigated by the commitment and direction of senior leadership, who co-lead/co-coach with clinical leaders[266] to use evidence in practice, and to continuously evaluate progress and make changes accordingly, to therefore improve organizational performance and patient outcomes.[267]

For changes of care processes that support safe and quality care to be effective, interventions must not be first-order, short-term problem-solving that offers quick fixes but not lasting change. Instead, second-order problem-solving should be used, where the underlying causes and processes are examined.[268] Even when processes and procedures have changed and demonstrated positive effects on patient outcomes, there is a concern about sustainability over time because the tendency of health care providers to deliberately deviate from the new standard of practice may be unavoidable.[95] Ongoing monitoring and management of these new processes and procedures is required.[95] How do you institutionalize change? Change initiatives are successful when they are built on the current way of doing things,[251] are visible and have positive outcomes, are consistent with employees' values and beliefs, are manageable,[269] and are generalizable to the organization.[270]

Practice Implications

To bring the effects of the sharp end away from nurses and put them squarely on the shoulders of health care organizations and systems, there needs to be significant changes in how health care is structured and how it is delivered to patients. While the roles and responsibilities of nurses have changed over the years, including "risk management, quality assurance, case management, clinical trials coordinator, and patient care manager among numerous others,"[271] the diversity of skills, roles, and training[272] places nurses in critical positions to lessen the

incidence of variation by collecting and assessing data, working with interdisciplinary teams, examining performance, and driving evidence-based practice.

From the literature reviewed in this chapter, there are key strategies that can be used to effect change, and subsequently, the quality and safety of care will be improved. The major factor in creating improvement is understanding and accounting for the complexity of health care organizations, health care systems, care processes, and patient needs. To begin, senior nurse leaders need to work with staff to identify and prioritize areas and establish goals to address the issues that are associated with poor-quality and unsafe care. Executive leadership and managers need to be committed to investing both their time and resources to improving the safety and quality of care. As organizations begin plans and reassess the need for changes, nurses will need to be proactive in redesigning care models and redefining the work of nurses,[273] whether the initiatives will initially impact only a single unit or group of clinicians, or are aimed at being systemwide. Furthermore, efforts to improve quality and safety must have involvement and commitment from all stakeholders.

The foundation of quality and safety improvement initiatives needs to be centered on systems factors, not individuals. Nurse leaders, colleagues, and State boards of nursing registration should understand the significant impact of systems factors in any instance when individual culpability is sought, particularly when appraising and disciplinary action is unfortunately taken against an individual clinician (e.g., State boards of licensure and malpractice cases). The responsibility of nurse leaders and State boards of nursing is to determine when errors and adverse events result from deliberate malfeasance as opposed to a mixture of systems factors. Without considering the nature and effect of systems factors, action taken against an individual would not appear to be evidence-based and latent factors will continue, waiting to "ensnare" another nurse.

To improve patient safety and the quality of care, it is important to determine the best strategy and be willing to alter the strategy if necessary to create change. Not all strategies that have been successful in other organizations will be successful in your organization; some interventions have too small a sample size or information about them to be considered as a possible strategy in your organization. As an initiative is implemented, it could be that what was thought to have been generalizable needs to be tailored to the unique characteristics of your organization. Change initiatives should be either evidence based or based on data and information internal to your organization (e.g., incident reports), and should address measures to evaluate improvements in patient safety and quality.[199, 274] Throughout the process of implementing changes, it is important for data and information to be continually monitored and assessed to track performance. It is only through strategic decisions and interventions that the sharp end held against nursing will transition to the organizations in which nurses work.

Research Implications

The nurse's role in and ability to change patient safety and quality improvement within health care systems is a relatively new field of research, but consideration must be given to more than 60 years of nursing research that has implications for both safety and quality processes and nursing, patient, and organizational outcomes. Future research will need to better define the theoretical foundations behind the relationships between organizational systems factors, clinical processes, and patient safety and quality outcomes. It is also important for future research to focus on improving and widening the assessment of the impact of patient safety and quality

improvements on the incidence of the broad array of errors that can and do occur in nurses' work environments. For example, leaders and clinicians need to understand the association between an organization's culture of safety and patient outcomes as well as how nurses can influence executives to lead working environment improvements. In addition, and probably more important, future research needs to address how research and evidence can be translated into and become the new standard of practice, avoiding the lengthy process now involved, which could take as long as 10 to 17 years.[275]

Conclusion

Everything about health care is complex. There are complex care processes, complex health care technologies, complex patient needs and responses to therapeutic interventions, and complex organizations. There are tremendous opportunities and challenges in improving the quality and safety of health care, but the majority require purposeful redesign of health care organizations and processes. Organizations that are committed to high-quality and safe care will not place nurses at the "sharp end" of care, but will focus on system improvements. Recognizing the complexity of care and how several factors combine at a specific time and result in errors and adverse events, organizations, leaders, and clinicians will dedicate themselves to using data and evidence and to continuously improve the quality and safety of care, even when there are complex challenges.

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