

Using Technology to Improve Patient Care

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The current severe shortage of health care workers contributes to an ongoing crisis in medical care that has many consequences, not the least of which is our society's ability to meet the health care needs of a growing and aging population. The shortage of qualified personnel has a direct impact on the ability of nurses to provide an appropriate level of care in all patient settings. One of the symptoms of this crisis is the increased number of medical errors that occur as stressed caregivers try to manage increasingly complex patient situations with inadequate resources and at high levels of fatigue. Technology holds the promise of alleviating some of these problems.

*To Err Is Human*¹ is the first of 2 reports produced by the Institute of Medicine (IOM) that brought attention to the extraordinary number of patients who die each year as a result of medical and health care management errors. The IOM identified a 4-tiered approach to address these errors, including creating safety systems inside health care organizations through the implementation of safe practices at the delivery level. The importance of information availability at the point-of-patient care was also highlighted. In its second report, *Crossing the Quality Chasm*,² the IOM identified the critical role that technology can provide in promoting patient safety. In summary, the IOM reports recommended better use of human resources and the need to provide health care professionals with appropriate technology to deliver more information at the point-of-patient care.

Another recent report, *In Our Hands*, by the American Hospital Association's Commission on Workforce for Hospitals and Health Systems,³ offers 5 recommendations for health care providers to embrace:

- Foster meaningful work
- Improve workplace partnerships
- Diversify the workforce relative to the general population
- Collaborate with other health care providers

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• Build societal support

Technological solutions at the point-of-patient care can assist health care organizations in meeting these recommendations. Implementing technologies designed to enhance patient safety and improve nursing efficiency may help health care organizations recruit and retain qualified professionals from a shrinking workforce. Health care organizations that demonstrate enhanced safety, efficiency, and user satisfaction are typically viewed as the employer of choice within the community. Reducing adverse drug events, enhancing clinical decision making, improving productivity, augmenting skills of staff, promoting improved documentation, and providing better communication can positively impact and aid health care organizations in their recruitment and retention strategies.

Health care is in dire need of technology that can manage the tasks and activities that disrupt, interrupt, and remove the nurse from providing direct patient care. Too often, the indirect patient care activities lead to nurses' frustration and dissatisfaction with the profession and health care environment. The increasing amount of time nurses spend on indirect patient care activities must come at the cost of sacrificing some level of patient care. A short but comprehensive list includes change-of-shift or new patient-admission reporting, verification of medication orders, preparation of medications, charting, added paperwork (missing patient-care items, incident reports, environmental work requests, forms, etc.), telephone follow-up (to include orders or test results), dietary ordering, procedure scheduling, patient transportation, housekeeping, ordering and restocking supplies, retrieval of critical items needed on the nursing unit, discharge planning, education, competency training and certification, and communication with the multidisciplinary team, family members, and visitors.

Nursing shortages have exacerbated this already untenable situation by shifting responsibilities that were once the province of charge nurses and other supervisory positions (eg, bed flow, patient admissions, and staffing) to staff nurses. Communication and information technologies provide the means to remove these functions from the nurses' to-do list and allow nurses more time with their patients.

Existing nonautomated direct patient care activities also must be reviewed and redesigned with technological solutions that enhance safety, efficiency, and effectiveness. The need for technology is clearly evident in a variety of patient-care activities, including medication administration, laboratory draws,

specimen collection, patient assessments, procedures, monitoring, recording patient data, response to patient call lights, and patient and family education throughout all phases of hospitalization. Managing a 6- to 10-patient assignment on a medical/surgical floor is not uncommon; in fact, it is most often the norm. Stressed by a heavy patient assignment, high acuity, patient complexity, and a varied staffing mix, the nurse is challenged to manage a to-do list with pen and paper.

Although the staff nurses providing patient care are the primary focus here, leaders cannot lose sight of nurse educators, clinical specialists, operational managers, nursing administrators, support staff, and the other health care practitioners with whom staff nurses interact regularly.

Health care organizations must replace overburdened manual processes with technological solutions designed to meet patient needs while supporting a new, "techno-savvy" workforce that has grown up with computers and technological gadgets. At the same time, those designing and implementing new technologies must be sensitive to the problems associated with an aging nursing workforce and the limits that aging places on a nurse's ability to care for patients. Complex computer programs, incompatible technology, small print, the need to constantly lift and bend, and other challenges faced by older employees must be considered as technology is created. The focus must be on integrating technology into the current or improved processes by which nurses manage, care, communicate, inform, educate, train, and support patients.

Appropriate platforms for these technologies must also be decided. Information technology should consider practical solutions to the following questions. Is it more advantageous to share information and communicate via a hand-held device that is easily transported, or by a more permanent, fixed solution at the bedside or at the point of care? If portable platforms are preferred, how should they be carried: attached to the uniform, carried in a notebook, or contained within a cart?

Health care workers are not the only ones who need technology in health care settings. Patient information and health care communication technologies must be made available at the point of care using a variety of media methods. According to the Pew Internet and American Life Project study,⁴ 61% of health seekers, or 45 million Americans, say that on-line information has improved the way they take care of their health. The quality of the information and the means of communication must meet several criteria to ensure success: it must be easy-to-use, enhance patient-care management, coordinate multidisciplinary patient care, provide timely patient-care status information and communication, and provide the patient and family with direct access to information regarding the facility, plan of care, diagnosis, illness, procedures, treatments, medications, diet, activity, and required interventions after discharge. The Joint Commission on Accreditation of Healthcare Organizations' "Speak Up" program clearly showcases the importance and value of having patients and families actively involved in their care.

Information and communication must be multidisciplinary, ensuring that the health care team has immediate access to the most up-to-date information about a patient's status. Patients of all ages and their family members also need information and resources at the point-of-care. Technology should support patient therapies, reduce stress, and promote a holistic approach to healing, as well as entertain. Consideration must also be given to language differences and cultural, spiritual, and sensory deficits from both the patient and health care provider perspective. Designing technologies need to deliver added information and enhance our communication with a diverse patient population and workforce.

The positive impact that virtual meetings can have for the patient, family, nurse, and health care provider cannot be underestimated or undervalued. They enhance the health care delivery process by offering the patient and family a variety of information resources that they might not otherwise have access to, including consultations with members of the multidisciplinary health care team and specialists contacted by the local facility, patient education, and reporting.

What technologies will be needed to meet these challenges? How will we continue to develop these systems as our patients, the workforce, and the health care environment in which we operate change? How do we maintain the integrity of our solutions and protect them against obsolescence in the near term? How do we address the issue of cost? What other barriers within the health care environment need to be resolved to move forward with technological solutions at the point of care?

Information and communication technologies have clearly enhanced the success of many industries and professions that have dared to think outside of the box. Similar solutions can be applied to the health care environment to enhance patient safety and nursing efficiency, and do so at the point of care. The possibilities are infinite as we design our workplace of the future. As leaders, it will be our collective energy and creativity that help us take the necessary steps to transition our overburdened manual processes into a technological foundation that supports the patient, the nurse, and the multidisciplinary team at the point of care. ■

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