



# Make the most of health IT

By Joyce Sensmeier, MS, RN-BC, CPHIMS, FHIMSS, FAAN

**N**urses are the frontline defense to ensure patient safety. During each patient encounter, the nurse is focused on confirming that treatments are successfully delivered, assessments accurately documented, and medications administered correctly. The quality and impact of patient care

depends on safe and effective care delivery. However, the challenges are many. Nurses need support from an information technology (IT)-enabled environment to guarantee that patient care isn't compromised.

Ever since the Institute of Medicine report *To Err is Human* was published in 1999, there's been an increasing focus on the issues, challenges, and opportunities of managing the healthcare environment to keep patients safe.<sup>1</sup> One of the ways to mitigate errors is through the best use of health IT. Yet, although we've made advances over the past 15 years in digitizing health records, integrating data, and automating workflow, safety concerns remain pervasive and our progress has been slow.

Consider the following scenarios:

- A patient's lab tests are electronically sent in a PDF from one physician group to another. The nurse

opens the attachment and manually transcribes the test results into the electronic health record (EHR), inadvertently omitting some of the data, which causes a delay in treatment.

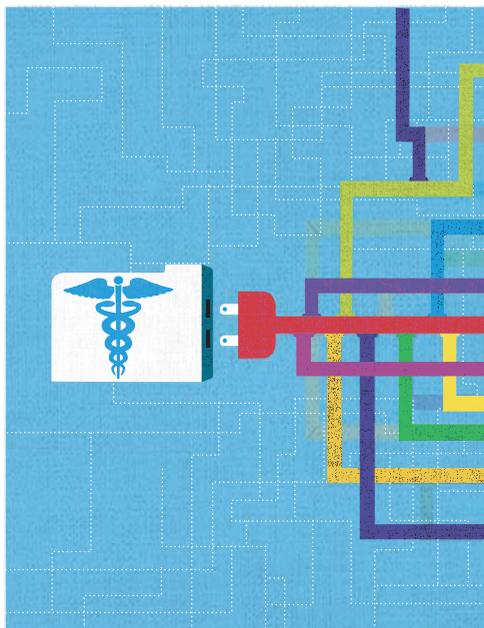
- A specialist prescribes a new medication for a patient. However, the patient forgets to tell her primary care provider, who reviews the medication list available

in the office practice EHR and orders a drug that's contraindicated with the new medication, resulting in a drug reaction.

- A nurse manually enters the I.V. infusion rate and medication dosage into the infusion pump, but miscalculates the formula. The infusion is administered too rapidly, causing the patient to experience kidney failure.

- A patient develops drug toxicity because his history and medications were copied from an older note that didn't document that he was previously on the medication.

In each of these situations, IT can be used to ensure patient safety. Whether by connecting systems or devices so that information can be transferred from one setting or device to another, or by using clinical decision support to add the necessary checks and balances, health IT is an essential component of a safe and secure healthcare ecosystem.



connecting systems or devices so that information can be transferred from one setting or device to another, or by using clinical decision support to add the necessary checks and balances, health IT is an essential component of a safe and secure healthcare ecosystem.

Patients and nurses deserve a safe healthcare environment, and health IT systems are pervasive, but clearly we aren't "there" yet. What are the strategies we should consider to more rapidly advance these efforts?

### Best practices

An expert panel convened by the National Patient Safety Foundation (NPSF) published a report titled "Free from Harm: Accelerating Patient Safety Improvement Fifteen Years after *To Err is Human*." The panel's recommendations are based on the establishment of a total systems approach and a culture of safety.<sup>2</sup> The report makes eight recommendations:

1. Ensure that leaders establish and sustain a safety culture.
2. Create centralized and coordinated oversight of patient safety.
3. Create a common set of safety metrics that reflect meaningful outcomes.
4. Increase funding for research in patient safety and implementation science.
5. Address safety across the entire care continuum.
6. Support the healthcare workforce.
7. Partner with patients and families for the safest care.
8. Ensure that technology is safe and optimized to improve patient safety. (See *Figure 1*.)

Working together to implement these recommendations will more rapidly advance our collective efforts to ensure safe and effective care. But no matter how much a clinician wants to embrace a culture of safety, if the organization's leadership isn't on board, it won't happen. Improving safety requires an organizational culture that enables and prioritizes safety. Nurses play an important role in influencing this culture and advocating for a cross-organizational approach. Nurse leaders are and should be at the table, sharing their knowledge and collective insights gained from the front lines. A comprehensive approach includes more than safety protocols; it requires an organizational commitment to a culture of safety that leverages best practices, checklists, and tools to improve outcomes.

Another key point emphasized in the "Free from Harm" report is that patients deserve safe care in and across every setting. Health IT has enabled the care continuum to expand beyond hospitals and health systems to ambulatory clinics and the home. Nurses deliver care in each of these environments and are actively engaged in patient transitions from one care setting to another.

Figure 1: NPSF recommendations

**FREE FROM HARM**  
Accelerating Patient Safety Improvement  
Fifteen Years After *To Err Is Human*

Eight recommendations for achieving total systems safety from a report of an expert panel convened by the National Patient Safety Foundation

- 

**1. ENSURE THAT LEADERS ESTABLISH AND SUSTAIN A SAFETY CULTURE**

Improving safety requires an organizational culture that enables and prioritizes safety. The importance of culture change needs to be brought to the forefront, rather than taking a backseat to other safety activities.
- 

**2. CREATE CENTRALIZED AND COORDINATED OVERSIGHT OF PATIENT SAFETY**

Optimization of patient safety efforts requires the involvement, coordination, and oversight of national governing bodies and other safety organizations.
- 

**3. CREATE A COMMON SET OF SAFETY METRICS THAT REFLECT MEANINGFUL OUTCOMES**

Measurement is foundational to advancing improvement. To advance safety, we need to establish standard metrics across the care continuum and create ways to identify and measure risks and hazards proactively.
- 

**4. INCREASE FUNDING FOR RESEARCH IN PATIENT SAFETY AND IMPLEMENTATION SCIENCE**

To make substantial advances in patient safety, both safety science and implementation science should be advanced, to more completely understand safety hazards and the best ways to prevent them.
- 

**5. ADDRESS SAFETY ACROSS THE ENTIRE CARE CONTINUUM**

Patients deserve safe care in and across every setting. Health care organizations need better tools, processes, and structures to deliver care safely and to evaluate the safety of care in various settings.
- 

**6. SUPPORT THE HEALTH CARE WORKFORCE**

Workforce safety, morale, and wellness are absolutely necessary to providing safe care. Nurses, physicians, medical assistants, pharmacists, technicians, and others need support to fulfill their highest potential as healers.
- 

**7. PARTNER WITH PATIENTS AND FAMILIES FOR THE SAFEST CARE**

Patients and families need to be actively engaged at all levels of health care. At its core, patient engagement is about the free flow of information to and from the patient.
- 

**8. ENSURE THAT TECHNOLOGY IS SAFE AND OPTIMIZED TO IMPROVE PATIENT SAFETY**

Optimizing the safety benefits and minimizing the unintended consequences of health IT is critical.

**NPSF** National Patient Safety Foundation  
To read the full report and detailed set of recommendations, visit [www.npsf.org/free-from-harm](http://www.npsf.org/free-from-harm)

This project was made possible in part through a generous grant from AIG in support of the advancement of the patient safety mission. AIG had no influence or involvement in report direction or its content. The views and opinions expressed herein are those of the author(s) and do not necessarily reflect those of American International Group, Inc. (AIG) or its subsidiaries, insurance cover or affiliates. ©2015 National Patient Safety Foundation. Reprinted with permission of NPSF. All rights reserved.



Today, apps are used to support communication, such as during patient hand-offs or transfers. For example, researchers at McGill University Health Centre in Montreal, Canada, developed a smartphone app called the FLOW, designed as a patient rounding and hand-off tool. More than 50% of ICU clinicians who used the FLOW app indicated that it improved both patient care and safety.<sup>3</sup> And most of the clinicians, including nurses and physicians, wished to continue using the app after the pilot was completed.

health and care.<sup>5</sup> In some reported cases, patients found errors in their records that were subsequently corrected.

### Keep in mind

As we've discussed, health IT can facilitate patient engagement and care coordination. However, it can also contribute to errors from issues such as lack of interoperability, poor usability, or inappropriate use of copy and paste functionality. A recent study confirmed the existence of adverse events related to the use of EHR systems across the

a healthcare delivery system. Although cyber thieves may seek financial gain via these targets, healthcare data are also vulnerable. Threats to medical devices and critical infrastructure place patients at risk; cyber-attacks can disrupt communication, interfere with medical devices, or alter critical data. Remote and distributed access to healthcare devices and diagnostic systems increase the potential for such breaches.<sup>7</sup> Cyber-protection strategies are necessary to mitigate such threats, including real-time surveillance, risk-based

*A comprehensive approach includes more than safety protocols; it requires an organizational commitment to a culture of safety that leverages best practices, checklists, and tools to improve outcomes.*

Clinicians alone can't ensure patient safety; patients and families must also be actively engaged at all levels. Healthcare organizations increasingly provide patients with greater access to information about their health and care through patient portals; accessible health records, including clinician notes; bedside rounding; and mobile devices.<sup>4</sup> The OpenNotes initiative focuses on giving patients access to the visit notes written by their clinicians. Evidence suggests that opening up visit notes to patients makes care more efficient, improves communication, and helps patients become more actively involved with their own

care continuum.<sup>6</sup> Medication errors accounted for the most EHR-related errors overall, including medication ordering, management, and administration. In the ambulatory setting, hybrid systems in which both paper and electronic systems were used at the same time were a determining factor. In the inpatient and ED settings, errors resulted from system design issues, breakdowns in communicating data, and incorrect information in the EHR. Of utmost concern was that over 80% of the cases caused moderate or severe harm.

Almost daily, we learn of a new cyber-security breach that has occurred at a hospital or within

analysis and modeling, and effective regulation.<sup>8</sup>

To ensure that technology is safe and optimized to improve patient safety, the ECRI Institute convened the national Partnership for Health IT Patient Safety.<sup>9</sup> This collaborative effort develops and publishes best practices for the design and implementation of health IT. The inaugural workgroup published a toolkit for the safe use of copying and pasting health information, such as orders and notes, because this practice is widespread and has the potential to cause adverse safety events if documentation contains inaccurate, irrelevant, or outdated

information.<sup>10</sup> The goal of the toolkit is to allow providers the opportunity to evaluate the best ways to see the information that's being reused. Safe practice recommendations include:

- Provide a mechanism to make copy-and-paste material easily identifiable.
- Ensure that the provenance of copy-and-paste material is readily available.
- Afford adequate staff training and education regarding the appropriate and safe use of copy-and-paste practices.
- Confirm that copy-and-paste practices are regularly monitored and measured.

The ECRI Institute's annual list of the top 10 patient safety concerns offers guidance on addressing high priority issues.<sup>11</sup> In 2016, the number one patient safety concern was health IT configurations and organizational workflows that don't support each other. Often, in our haste to implement EHRs and other health IT, we may neglect to evaluate the impact of these systems on a clinician's workflow. One role of the informatics nurse is to do just that; however, not all organizations have the benefit of such an expert on staff. When health IT configuration and workflow clash, communication and efficiency can suffer. For example, a patient's allergies, weight, medications, tests, treatments, or code status may not be up to date or accessible at the point of care. Frontline staff members should always be involved in planning and configuring health IT, and testing the integration with workflows. Other strategies should also be in place to minimize workarounds and enable

timely reporting of events related to health IT issues.

A recently published brief reviewed current research on the impact of health IT and found evidence that it improves patient safety. However, it emphasized that more work is needed to understand this relationship.<sup>12</sup> Current findings suggest that the context in which health IT is implemented and used may be an important driver of quality and safety. For example, the potential for health IT to improve safety was highlighted in a recent study of malpractice claims involving seven different hospitals. The authors concluded that over half of the claims could've been prevented through existing decision support tools that weren't in use. In other cases, limited training played a role in negative outcomes. A summary of the evidence presented in recent years shows that the number of studies demonstrating the positive effects of health IT substantially exceeds the number of negative studies or studies with mixed effects.<sup>13</sup>

### Leverage for success

As frontline patient advocates, nurses understand that patient safety is imperative. Leveraging health IT can be an essential foundation for ensuring a safe and secure healthcare environment. Let's work with our interprofessional colleagues and collaborate across organizations to ensure that the promised benefits of health IT continue to be delivered. **NM**

#### REFERENCES

1. Kohn LT, Corrigan J, Donaldson MS. *To Err Is Human: Building A Safer Health System*. Washington, DC: National Academies Press; 2000.

2. National Patient Safety Foundation. Free from harm: accelerating patient safety improvement fifteen years after *To Err is Human*. [www.npsf.org/free-from-harm](http://www.npsf.org/free-from-harm).
3. Motulsky A, Wong J, Cordeau JP, Pomalaza J, Barkun J, Tamblyn R. Using mobile devices for inpatient rounding and handoffs: an innovative application developed and rapidly adopted by clinicians in a pediatric hospital. *J Am Med Inform Assoc*. [e-pub Aug. 22, 2016]
4. Delbanco T, Walker J, Bell SK, et al. Inviting patients to read their doctors' notes: a quasi-experimental study and a look ahead. *Ann Intern Med*. 2012;157(7):461-470.
5. OpenNotes. [www.opennotes.org](http://www.opennotes.org).
6. Graber ML, Siegal D, Riah H, Johnston D, Kenyon K. Electronic health record-related events in medical malpractice claims. *J Patient Saf*. [e-pub Nov. 6, 2015]
7. Perakslis ED. Cybersecurity in health care. *N Engl J Med*. 2014;371(5):395-397.
8. National Institute of Standards and Technology. Framework for improving critical infrastructure cybersecurity. <https://www.nist.gov/sites/default/files/documents/cyberframework/Cybersecurity-Framework-for-FCSM-Jan-2016.pdf>.
9. ECRI Institute. The partnership for health IT patient safety. <https://www.ecri.org/resource-center/Pages/HITPartnership.aspx>.
10. Partnership for Health IT Patient Safety. Health IT safe practices: toolkit for the safe use of copy and paste. [https://www.ecri.org/Resources/HIT/CP\\_Toolkit/Toolkit\\_CopyPaste\\_final.pdf](https://www.ecri.org/Resources/HIT/CP_Toolkit/Toolkit_CopyPaste_final.pdf).
11. ECRI Institute. Top 10 patient safety concerns for 2016. <https://www.ecri.org/Pages/Top-10-Patient-Safety-Concerns.aspx>.
12. Banger A, Graber ML. Recent evidence that health IT improves patient safety. [https://www.healthit.gov/sites/default/files/brief\\_1\\_final\\_feb11t.pdf](https://www.healthit.gov/sites/default/files/brief_1_final_feb11t.pdf).
13. Office of the National Coordinator for Health Information Technology. SAFER guides: safety assurance factors for EHR resilience. [https://www.healthit.gov/sites/default/files/onc\\_safer\\_jan302014\\_ppt.pdf](https://www.healthit.gov/sites/default/files/onc_safer_jan302014_ppt.pdf).

Joyce Sensmeier is the vice president of informatics for the Healthcare Information and Management Systems Society and a *Nursing Management* editorial board member.

The author has disclosed no financial relationships related to this article.

DOI-10.1097/01.NUMA.0000508263.57346.e8