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HEALTH IT PATIENT SAFETY
Making healthcare safer together

State of the *Partnership:* Transforming Knowledge into Action

2017 Annual Report

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ECRI Institute

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1

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Dear Colleagues,

The work we perform together, as a multistakeholder collaborative, advances our shared goal of health IT safety excellence. In these continuing efforts, *the Partnership for Health IT Patient Safety* gratefully acknowledges the guidance of our expert advisory panel, the support of our many collaborators, and funding from the Gordon and Betty Moore Foundation. This past year's theme, *Transforming Health IT by Embedding Safety*, emphasized the transformative role that health information technology (IT) plays in care delivery, as well as the impact health IT has on safety, and ways we can achieve a positive difference. We first looked at how policy influences safety transformation and then turned to lessons from leaders in healthcare transformation. This set the stage for exploring how we, as a *Partnership*, could strive to accelerate health IT safety improvements and excellence.

In 2017, the *Partnership*'s workgroups focused on two high-priority topics, which you can learn more about in the following pages. The *Partnership* offered a new toolkit of safe practices for developing, implementing, and integrating a health IT safety program and is now finalizing its safe practice recommendations for closing the loop on both diagnostic testing and medication changes to mitigate delayed, missed, and incorrect diagnoses.

Importantly, as the *Partnership* looks at the safety impact of implementations, evaluates standardization for safety, and considers safety projects requiring developer intervention, it looks to its members for the necessary input to help set the stage for 2018, which promises to be a busy year. However, none of this work can be done without each member sharing accountability for the triple aim of health IT safety—safe technology, safe use of the technology, and use of the technology for safety. We look forward to a productive year.

Thank you,

Ronni P. Solomon
Executive Vice President and General Counsel
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The Patient Care Program of the Gordon and Betty Moore Foundation aims to improve the experience and outcomes of care. The Foundation seeks opportunities to make a unique contribution that results in measureable improvements.

Patient Safety

The Foundation explores ways to make a difference in medical diagnosis. Its focus is on community-based settings, which can include large health systems, and it works to increase collaboration and coordination to avoid harms and errors to patients.

In addition to a focus on diagnostic excellence, the Foundation also examines opportunities to enhance medication safety in community settings, including prescribing in primary care settings, dispensing in community pharmacies, and medication monitoring and use in the home by some of the country's most vulnerable patient populations. Other endeavors focus on safe use of health IT, including a grant to ECRI Institute's *Partnership for Health IT Patient Safety* to promulgate safe practice recommendations.

Serious Illness Care

The Foundation is working to improving the experience and outcomes of patients who are seriously ill. It is working to effect change in two areas:

— Strengthening workforce training and support
— Building effective quality measurement and accountability programs for community-based services

About the Foundation

Gordon and Betty Moore established the Foundation in 2015 to create positive outcomes for future generations. Therefore, the Foundation fosters scientific discovery, environmental conservation, patient care improvement, and preservation of the special character of the San Francisco Bay Area.

Learn more about the Foundation at http://www.moore.org.

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4

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The Gordon and Betty Moore Foundation awarded the Partnership for Health IT Patient Safety *a grant to "build a sustainable private sector infrastructure for effective health information technology patient safety practices."*

This grant facilitated the planning and execution of the Transformation Leadership Summit (see pages 10-13), which helped formalize a roadmap for the Partnership's role, responsibilities, and priorities.

Increased Infrastructure

The *Partnership* strengthened its internal team, which consists of a program director, data and safety analysts, clinical informatics specialists, expert consultants, and other operations staff. This growth has accelerated the *Partnership's* work in engagement, development of safe practices, and sustainability planning, all of which has in turn increased the *Partnership's* visibility as the leader in developing, promulgating, and implementing health IT patient safety practices.

Redoubled Efforts

In addition to holding the 2017 Transformation Leadership Summit, the *Partnership* led two workgroups:

— Embedding health IT safety into a larger patient safety program (see pages 14-15)

— Using health IT to mitigate delayed, missed, or incorrect diagnoses (see pages 16-19)

The *Partnership* also continues to build on its core activities. Data collection and analytics underpin the *Partnership's* power to build the evidence necessary to influence safety priorities. Internal analysts examine safety reports under the protections of ECRI Institute PSO. Additionally, developer reports, medical malpractice claims data, and other external sources provide information to guide the *Partnership* in developing safe practices.

Current Goals

Modification to the data classification strata that will improve analysis is presently under way. These updates will increase efficiency and improve the information obtained from the data by allowing the *Partnership* to identify not only the safety concerns involved in the event report, but also the additional ways that health IT can be best used to improve safety. For more information about the *Partnership's* areas of focus for 2018, see The *Partnership* Reaches for the Horizon on page 20.

Learn more about the Partnership *and get involved at https://www.ecri.org/HITPartnership.*

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5

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The *Partnership* Engages
Members: **Fourth Annual
In-Person Meeting**

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The Partnership for Health IT Patient Safety *welcomed members and participants to its fourth annual in-person meeting on November 15, 2017, held on the campus of ECRI Institute.*

At the meeting, the *Partnership* presented results of its workgroups on health IT safety programs and closing the loop (see **The *Partnership* Embeds Health IT Safety in Organization Culture** and **The *Partnership* Issues Safe Practices to Help Close the Loop**) and highlighted the successes of several *Partnership* members.

The *Partnership* is also undergoing radical transformation to meet the needs of all stakeholders interested in the triple aim of health IT safety—safe health IT, safe use of health IT, and using health IT to improve safety.

"We're testing a collaborative model of working together," explained Ronni Solomon, executive vice president and general counsel, ECRI Institute. "And we need to rethink about how we—as a partnership—can do even better to achieve our objectives."

Setting Larger Goals

Janet Marchibroda, director of the Bipartisan Policy Center (BPC) Health Innovation Initiative and executive director of BPC's CEO Council on Health and Innovation, moderated the daylong conference. "My hope is that we can build on participants' work and create a movement across the country where everyone is focused on building an HIT [health information technology] culture of safety," she said. Marchibroda presented the BPC's May 2017 recommendations, *Patient Safety and Information Technology: Improving Information Technology's Role in Providing Safer Care*, and posited that the *Partnership* could fill a broader leadership role in setting health IT safety priorities.

Such a role would allow the *Partnership*, as supported by public and private sector funding, to set health priorities by drawing upon existing reporting and analysis efforts.

The *Partnership*:

— Collects and analyzes de-identified information and analyses of health IT safety events drawing from existing efforts

— Identifies and prioritizes areas of focus and intervention, based on the data, as well as input from developers, implementers, users (clinicians, hospitals, patients), and others

— Issues regular calls for best practices, tools, standards, and other methods to address health IT safety priorities and publicizes their availability

— Develops strategies to address gaps in health IT safety

— Tracks progress made on safety

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Therefore, the *Partnership* plans to use these efforts as a foundation upon which to advocate for national health IT safety priorities. Based on the "Five Es"—as presented by **Kenneth W. Kizer**, MD, MPH, director of the Institute for Population Health Improvement, University of California (Davis), both at the Transformation Summit and the in-person *Partnership* meeting—the *Partnership* is driving toward envisioning a new normal, enlisting champions, engineering and executing a change strategy, empowering agents to support efforts, and evaluating change strategies.

"If [technology] is not well designed, implemented, or used, it could cause additional harm," emphasized Marchibroda. Therefore, the aim of the *Partnership* is to "create a movement across the country where everyone is focused on building an HIT culture of safety," she said.

Seeking Foundational Change

The *Partnership* leverages its broad membership to understand health IT safety concerns that are both pressing on stakeholders immediately and hovering on the horizon. At the 2017 meeting, participants discussed standardization and how it can promote patient safety—specifically, standardization of clinical decision support, documentation, and patient identification.

Clinical decision support. Participants emphasized the importance of standardizing information presented to the provider, noting that the inconsistency that exists currently contributes to alert frustration and fatigue, as well as provider burnout. Participants also noted that standardized action triggers, escalation notifications, and other communications could facilitate closing the loop. However, barriers include the potential lack of flexibility, the need for a consensus, and competing organizational priorities. Participants also caution that too much standardization can stifle innovation.

Documentation. Participants offered many areas in which patient safety could benefit from standardized documentation, including laboratory results, referrals, information communicated via text (and its presentation in the medical record), visit summaries, and discharge paperwork. Participants noted that the lack of standardization regarding the process of documentation is in itself a barrier to standardizing what is documented and how it is documented. Also, participants suggested that working with developers to improve system feedback capabilities and to standardize system workflows could be beneficial.

EHR Dashboards: Driving Safety

David Bates, MD, MSc, senior vice president and chief innovation officer, Brigham and Women's Hospital, presented to meeting participants the results of the PROSPECT (Promoting Respect and Ongoing Safety Through Patient-centeredness, Engagement, Communication, and Technology) study, supported by Brigham and Women's and the Gordon and Betty Moore Foundation.[1]

"The goal is to transform intensive care and oncology environments through patient-centered intervention. Its aims are to minimize harms, optimize the overall experience, and take a collaborative approach," said Bates.

The study included provider- and patient-facing tools, such as a microblog, to help providers and patients share expectations and information. Patients' perspectives were sought in building the patient portal; Bates noted that the most used pages in the portal housed information on the patient's care team. The researchers found that use of these tools reduced harm in the medical intensive care unit by nearly one-third and correlated to a visible increase in patient satisfaction.

1 Dykes PC, Rozenblum R, Dalal A, Massaro A, Chang F, Clements M, Collins S, Donze J, Fagan M, Gazarian P, Hanna J, Lehmann L, Leone K, Lipsitz S, McNally K, Morrison C, Samal L, Mlaver E, Schnock K, Stade D, Williams D, Yoon C, Bates DW. Prospective evaluation of a multifaceted intervention to improve outcomes in intensive care: the Promoting Respect and Ongoing Safety through Patient Engagement Communication and Technology study. Crit Care Med 2017 Aug;45(8):e806-13. PubMed: https://www.ncbi.nlm.nih.gov/pubmed/28471886.

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7

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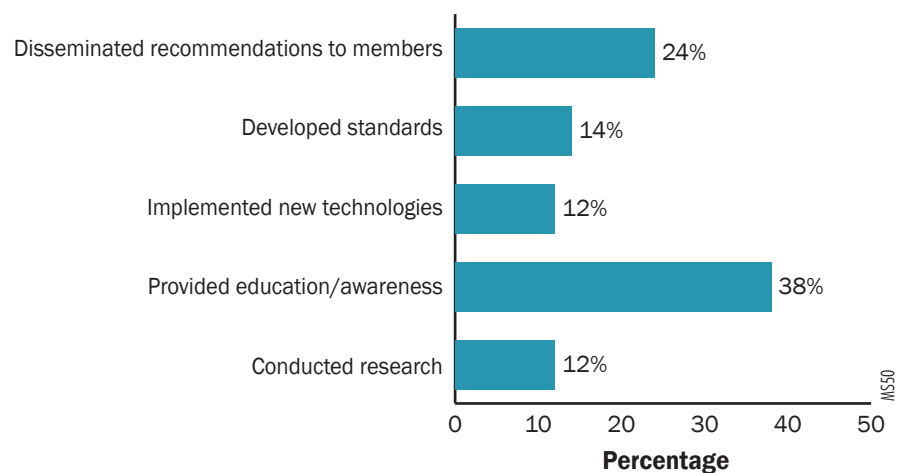The Discipline of Science. The Integrity of Independence.

Communication, the successful conveyance of information, is at the heart of many patient safety initiatives, and its strength or weakness has repercussions throughout each implementation. This is especially true with the discharge summary, explained **Thomasine Gorry**, MD, MGA, of the Sheie Eye Institute and Perelman School of Medicine, University of Pennsylvania. She emphasized that "communication is the most powerful and least expensive tool in healthcare. A few words can be standardized and can make all the difference." She also stressed the difference between information and communication: "Transparency cannot replace trust. Information does not replace trust. If you synthesize the data, if you translate it for [the patient], then they trust you." Gorry described efforts to improve written communication with the patient via the discharge summary. "Patients are using this document, so it needs to be correct, clear, and concise. We're working to make an organization-standard format; an efficient, concise product of the EMR [electronic medical record]," she said. "We are moving from volume to value in information."

Patient identification. Participants emphasized the importance of an overarching, multipronged approach to standardize patient identification across a healthcare organization and beyond. How the patient's name is displayed on the electronic record, as well as the birth date, would also benefit from standardization, suggested participants. However, one of the most significant barriers feared by participants is inertia: until significant quantities of evidence clearly demonstrate the benefits of multimodal patient identification, such as biometrics, images, and barcoding, it will not be widely implemented.

The *Partnership* Supports Action

The *Partnership* has made available several sets of safe practices, toolkits, recommendations, and more. During the meeting, participants were asked how they are using the available materials.

What Have You Done to Implement the *Partnership*'s Safe Practice Recommendations?

Category	Percentage
Disseminated recommendations to members	24%
Developed standards	14%
Implemented new technologies	12%
Provided education/awareness	38%
Conducted research	12%

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8

Jason Adelman, MD, MS, of Columbia University Medical Center/New York Presbyterian, and **Diane Humbrecht**, RN, DNP, CNIO, of Abington Health, presented patient identification initiatives from their own organizations. Adelman highlighted the challenges of implementing the use of patient photos in the electronic health record (EHR). As an identifier, Adelman noted, photos help the provider ensure that care is being documented in the correct record. However, the use of photos has implementation challenges: patient consent, workflow complications, photo usability, the perception of photos as a low priority for registration staff, and more.

Humbrecht described the implementation of palm vein scanning to reduce instances of duplicate records. The initial goal was to decrease duplication by 50%. Palm scanning was the chosen modality because the organization thought it would be accepted and effective. The process was found to be efficient, as well; the organization focused on patient safety and posted security notices and information for patients. The organization chose to scan patients' right hands for consistency. After initial testing and training, the organization saw very high compliance rates, with more than 3,000 patients enrolled in the system monthly. Duplicates were decreased by more than 50%, and most of those remaining are in an area where palm scanning has yet to be rolled out. Humbrecht noted that there were minimal barriers, largely infection control and patient privacy, regarding patient participation.

Communication is the most powerful and least expensive tool in healthcare.

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Robert M. Crane, Ronni Solomon, JD

Kenneth W. Kizer, MD, MPH

Janet Corrigan

John Glaser, PhD

The Partnership for Health IT Patient Safety *brought together in Washington, DC, a stellar panel of change leaders to discuss successful transformation within an organization and to identify the tools necessary to use health IT safely and to develop health IT as a framework for safety. The panel and participants concluded the following:*

— Sustainable transformation is collaborative

— Independent, wide-reaching standards are needed to guide all stakeholders

— Messaging and communication are crucial

— Transformational change must be incorporated into organizational culture or risk being lost

These high-level goals were then translated into actionable steps during the two-day meeting, which was moderated by **Robert M. Crane**, formerly of Kaiser Permanente, and **Ronni Solomon**, JD, executive vice president and general counsel, ECRI Institute. **Janet Corrigan**, PhD, MBA, and **Susan Baade Song**, MPH, represented the Gordon and Betty Moore Foundation.

Kenneth W. Kizer, MD, MPH, director of the Institute for Population Health Improvement, University of California (Davis), has been instrumental in changing institutions in his previous roles as undersecretary for health, U.S. Department of Veterans Affairs; chief executive officer (CEO) of the Veterans Health Administration; CEO and president, National Quality Forum (NQF); and director of the California Department of Health Services. Making a change can be difficult, Kizer told the panel, but "sustaining change may be even harder."

Transformation must recognize and incorporate the "5 Es," Kizer suggested:

— Envision and embrace a "new normal"

— Enlist champions, partners, and collaborators

— Engineer and execute a multidimensional change strategy using critical change levers that produce overlapping and mutually reinforcing effects

— Enable and empower agents of change

— Evaluate whether change is actually occurring and what strategies and tactics are most effective in driving change

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Transformation can define key players, as **John Glaser**, PhD, senior vice president of population health, Cerner, pointed out. He noted that success and profitability are tied to those individuals who exhibit the strongest ability to transform. Successful organizations, Glaser said, understand that "individuals and leadership matter; relationships are critical; alignment must be mature and strong; evaluation of IT opportunities must be thorough; IT governance must be efficient, inclusive, and thoughtful; change management skills must be first rate; . . . the organization must encourage innovation; the technology and the technical infrastructure is the great enabler; and a high-performing IT organization is critical."

Patricia Gabow, MD, MACP, former CEO of Denver Health, explained that essential to any transformation are seven key elements: "organizational culture, past successes, trusted leadership, a noble goal, a disciplined approach, broad engagement, and measuring and reporting of results."

Engaging participants and empowering them to be accountable for their roles strengthen transformation efforts, explained **Carla Smith**, MA, CNM, FHIMSS, executive vice president of the Health Information and Management Systems Society. She emphasized that it is important to welcome all who are interested in working on issues and to give them meaningful roles in the effort. Sharing the message as the work is performed, she noted, can be challenging. She underscored the importance of identifying the best vehicle for conveying the information and of equipping participants with the right tools to do the work.

A panel discussion featured **William Isenberg**, MD, PhD, vice president for patient safety, Sutter Health; **David Mayer**, PhD, chief safety officer of the New York Metropolitan Transportation Authority; **Wyche T. "Tee" Green, III**, cofounder and executive chairman, Greenway Health; and **Paul Tang**, MD, MS, vice president, chief health transformation officer at IBM Watson Health, consulting associate professor of medicine and biomedical informatics at Stanford University, and practicing internist.

Patricia Gabow, MD, MACP

Paul Tang, MD, MS

First
Engage leadership, set goals, engage the team, instill accountabilty, and create benchmarks.

Second
Embed the transformation into the organizational culture and ensure sustainability.

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11

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William Isenberg, MD, PhD

Isenberg emphasized the importance of using case studies as a learning tool. "Lasting change takes time if you are trying to influence human behavior, but oftentimes, you have to wait for a generation to age out," noted Mayer. He also emphasized the importance of employing engaging language and messaging, pointing to the organization Mothers Against Drunk Driving, which stopped speaking of auto "accidents" and began speaking of "crashes" to create stronger reactions and impel change. Green noted the complexity and importance of providing a road map for safety without stifling innovation. "Technology can do anything," he said, but implementing technology requires planning and prioritization. Tang urged organizations to focus on the "upstream" elements first, underscoring the importance of strong leadership and supportive culture. He also noted that while much is gained from looking at event reports—that analyzing data, making recommendations, and sharing the learning are the drivers of change—data must serve as a foundation for change to occur.

Bipartisan Policy Center Supports *Partnership*'s Quest for Transformation

The Bipartisan Policy Center (BPC) opened its doors to the *Partnership* and hosted the Transformation Leadership Summit May 23-24, 2017. **Janet Marchibroda**, MBA, director of BPC's Health Innovation Initiative and the executive director of its CEO Council on Health and Innovation, presented the BPC's 2017 Health Innovation Initiative. The initiative aims to conduct research and engage stakeholders to accelerate the discovery, development, and delivery of safe and effective cures and treatments for patients and advance innovative strategies—including those related to digital technology—to improve health and healthcare in the United States. The BPC Initiative offers three recommendations for the advancement of patient safety in the development, implementation, and use of IT:

Janet Marchibroda, MBA

1. **To launch a coordinated leadership effort—supported by public and private sector funding—to set health IT safety priorities, drawing on existing reporting and analysis efforts.**
2. **To accelerate the widespread dissemination of existing best practices and tools that address priority safety issues and coordinate efforts to address gaps.**
3. **To continue to advance the development and adoption of standards.**

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12

Transformation Leadership Summit Seeks Shared Expertise

The Honorable **Paul O'Neill**, MPA, 72nd secretary of the U.S. Treasury and former CEO of Alcoa, described his seminal journey transforming the aluminum manufacturer into one of the safest places to work in the world. He emphasized "habitual excellence, defined as being excellent all the time, at everything." He also highlighted the importance of "real leadership," not simply "management" or "presider-ship," but the presence of leaders who willingly take on the responsibilities that cannot be delegated. O'Neill urged attendees to set "aspirational goals for the organization," to create and maintain "a value-based culture, with values being a precondition for everything else," and to eliminate all excuses as to why it cannot be done.

Ragunathan "Raj" Rajkumar, PhD, who codirects the General Motors–Carnegie Mellon Autonomous Driving Collaborative Research Lab, described how a proactive assessment approach may be preferable to the significant burden of postimplementation enforcement. Introducing technology into an area to enhance safety—whether driving or healthcare—necessitates a thoughtful approach regarding the emergence of potentially new safety concerns.

Paul O'Neill, MPA

Ragunathan "Raj" Rajkumar, PhD

The Transformation Leadership Summit drew members of the *Partnership* as well as representatives from the Bipartisan Policy Center and the Gordon and Betty Moore Foundation. This panel discussed the high-level goals and actionable steps necessary for change within an organization.

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The *Partnership*'s Unifying Vision

The *Partnership* built on recommendations from the National Patient Safety Foundation (NPSF) and other leading health IT safety experts. In 2015, NPSF identified eight recommendations for achieving total systems safety.[1]

In 2016, *Hardeep Singh*, MD, MPH, and *Dean Sittig*, PhD, authors of the SAFER Guides and developers of the sociotechnical model, wrote that it is important to "make health IT-related patient safety an organizational priority by securing commitment from organizational leadership" and to "develop an environment that is conducive to detecting, fixing and learning from system vulnerabilities."[2]

NPSF's recommendations for total systems safety influence technology's incorporation into healthcare, while Singh and Sittig's health IT safety framework highlights the main health IT safety domains—safe IT, safe use of health IT, and using health IT to improve safety—which should be incorporated into all aspects of the health IT safety program.

The *Partnership*'s safe practice recommendations increase optimization of health IT safety and identify meaningful safety strategies that stakeholders can use to round out and incorporate health IT safety into a general safety program.

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[1] National Patient Safety Foundation (NPSF). Free from harm. Accelerating patient safety improvement. Fifteen years after to err is human. 2015 [accessed 2017 Jul 27]. http://www.npsf.org/?page=freefromharm

[2] Singh H, Sittig DF. Measuring and improving patient safety through health information technology: the health IT safety framework. BMJ Qual Saf 2016 Apr;25(4):226-32. Epub 2015 Sep 14. http://qualitysafety.bmj.com/content/25/4/226.long

The Partnership for Health IT Patient Safety *has published its* "Safe Practice Recommendations for Developing, Implementing, and Integrating a Health IT Safety Program." *The recommendations are based on the findings of the workgroup that met throughout the first half of 2017 and that considered the results of a literature search and analysis performed by ECRI Institute, as well as data provided by ECRI Institute PSO. The* Partnership *offers three safe practice recommendations:*

— Integrate
— Inclusively collaborate
— Embed health IT safety in a general safety program

The group was chaired by *Partnership* Expert Advisory Panel member **Patricia P. Sengstack**, DNP, RN-BC, FAAN, associate professor at Vanderbilt University.
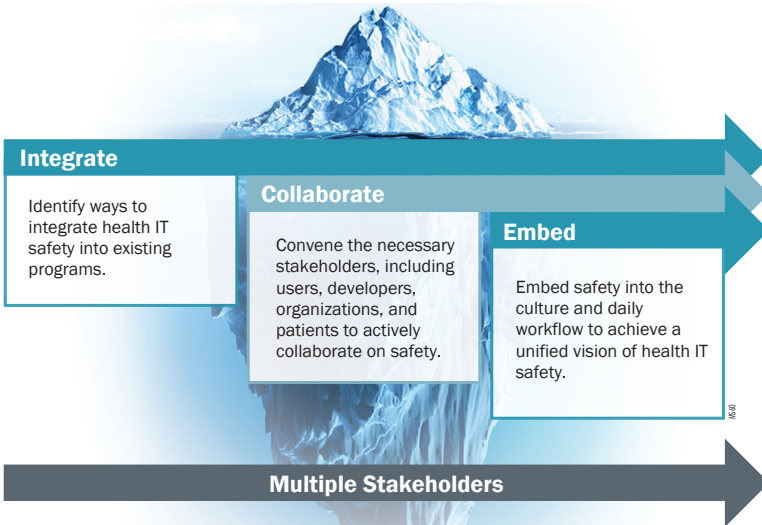
Anticipating and mitigating the unintended consequences of developing and using health IT is the focus of any health IT safety program—healthcare organization, care provider, or developer. In isolation, technology risks, such as unexpected effects of module upgrades or coding revisions, may not be immediately identifiable. However, by incorporating health IT safety into an organization's general safety program, unintended consequences can be recognized sooner, interventions can be made earlier, and potential safety hazards that previously might have gone unrecognized can be mitigated.

The *Partnership* Deconstructs Silos

The *Partnership*'s multistakeholder workgroup evaluated processes and practices for incorporating health IT safety into a general safety program. Such deconstruction of the "silo" effect requires the use of enterprise risk management techniques and consideration of the sociotechnical model. Thus, the workgroup identified and evaluated key components of a health IT safety culture:

— Commitment to health IT safety
— Understanding of a just safety culture
— Identification of the involved stakeholders
— Use of general risk principles
— Employment of initial and continuous learning opportunities
— Reporting (including reporting to developers and by developers)
— Understanding of technology's function within the sociotechnical environment
— Provision of actionable feedback on interventions

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14

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Integrate

Identify ways to integrate health IT safety into existing programs.

Collaborate

Convene the necessary stakeholders, including users, developers, organizations, and patients to actively collaborate on safety.

Embed

Embed safety into the culture and daily workflow to achieve a unified vision of health IT safety.

Multiple Stakeholders

Health IT Safety=ICE. As unknown aspects of the health information technology (IT) iceberg become known, healthcare organizations can integrate, collaborate, and embed (ICE) safety into their culture and daily workflows to achieve a unified vision of health IT safety.

Building on a Core to Inform Health IT Safety. The *Partnership* workgroup's focus on developing, implementing, and integrating a health IT safety program considers the sociotechnical model (innermost circle) and pairs it with the elements of an enterprise risk model (middle circle). Combining these elements ensures that the necessary health information technology (IT) considerations are incorporated into assessing, measuring, prioritizing, mitigating, and assigning risk. Taken together, this forms a continuous process. It can begin at any of the three safe practice recommendation areas, moving forward or backward as needed.
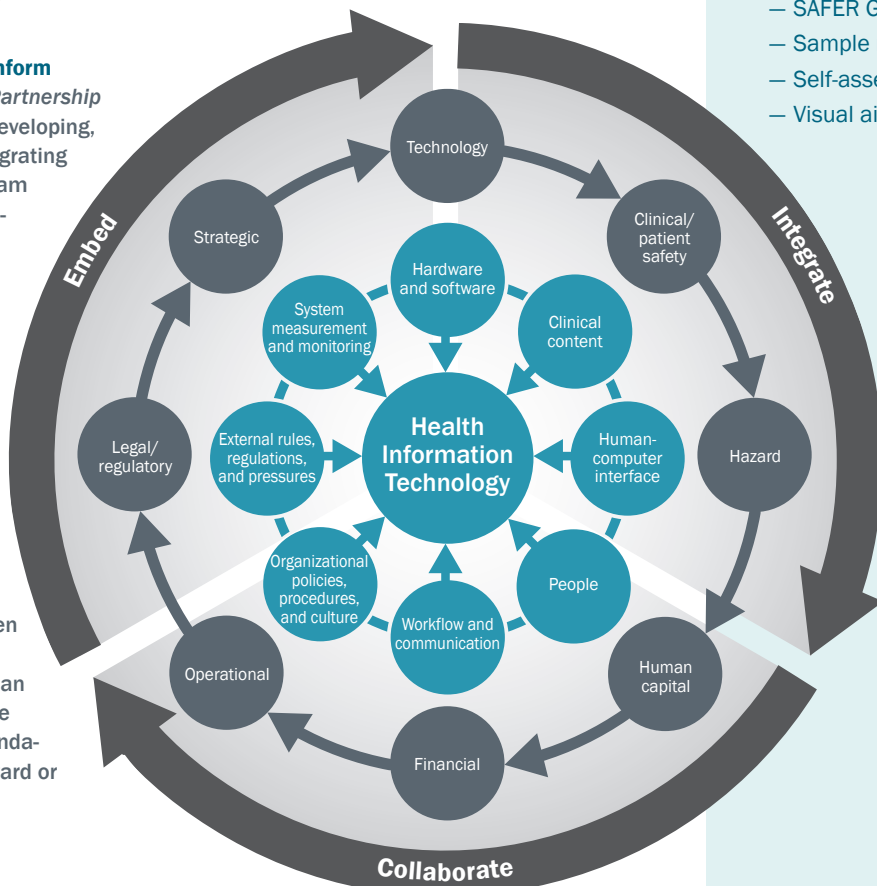
Health IT Safety Tools
The *Partnership* offers the following tools within this toolkit to help organizations understand their current health IT safety program capabilities and work toward incorporating their health IT safety program into their larger patient safety program:

— Communication tools
— Education aids
— Event analysis and reporting tools
— Health IT dashboard
— Health IT safety program evaluation tool
— Leadership tools
— Review-process steps
— SAFER Guides
— Sample memos and logs
— Self-assessment questionnaires
— Visual aids

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The *Partnership*
Issues Safe Practices to
Help Close the Loop

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The *Partnership* Seeks Evidence

The *Partnership* began by refining the definitions used for closing the loop, to best reflect what must be accomplished to address the issue in its entirety.

Closing the loop includes all mechanisms—workflow and management tools, interventions, electronic and verbal notifications, checklists, alerts, and dashboards. These mechanisms ensure all patient data and information requiring an action beyond review are delivered and communicated to the right individuals at the right time in the right mode to allow interpretation, critical review, reconciliation, initiation of action, acknowledgement, and appropriate documentation.

Surprisingly, the literature review identified only a small quantity of studies fit for consideration by the workgroup, which was limited to comparative studies performed in a U.S. setting and published between January 2009 and mid-April 2017. The studies identified generally found benefit to practices helping to close the loop, specifically through improving ease of use and minimization of alert fatigue. Both of these were important considerations in the success of the interventions studied.

The *Partnership* reviewed more than 800 events from the database of ECRI Institute PSO, as well as more than 80 medical malpractice closed claims data points. This review found that most of the closed claims were related to imaging studies, while a majority of reported events related to noncritical values. One of the most common factors among both events and claims was a lack of adequate communication to close the loop.

The Partnership for Health IT Patient Safety *is developing its* "Safe Practice Recommendations for Closing the Loop: Using Health IT to Mitigate Delayed, Missed, and Incorrect Diagnoses Related to Diagnostic Testing and Medication Change." *This report is based on the findings of the workgroup that met throughout 2017 and that—*

— Considered the results of an evidence-based literature review (see **The *Partnership* Seeks Evidence**)

— Reviewed event and claims data

— Identified causes of potential failures to close the loop

— Examined successful programs

— Suggested solutions and standards to address communication of diagnostic results and medication changes

— Addressed core elements of closing the loop

— Drafted safe practice recommendations for consideration by the *Partnership* at large

The workgroup was chaired by *Partnership* Expert Advisory Panel member **Christoph U. Lehmann**, MD, FAAP, FACMI, professor, Biomedical Informatics and Pediatrics, Vanderbilt University Medical Center.

The *Partnership* found that failure to close the loop can contribute to patient harm or death, that multiple forms of communication are needed to ensure that the loop is closed, and that the patient is an integral part of closing the loop (see **Patients Are an Integral Part of the Communication Loop**).

Therefore, the *Partnership* offers three safe practice recommendations:

Communicate
Apply IT solutions to communicate and deliver the right information to the right people at the right time, thereby closing the loop.

Track
Use health IT to track key areas in the loop to ensure the loop is closed for both providers and patients.

Link
Optimize health IT to link an acknowledgement to the action taken to close the loop

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16

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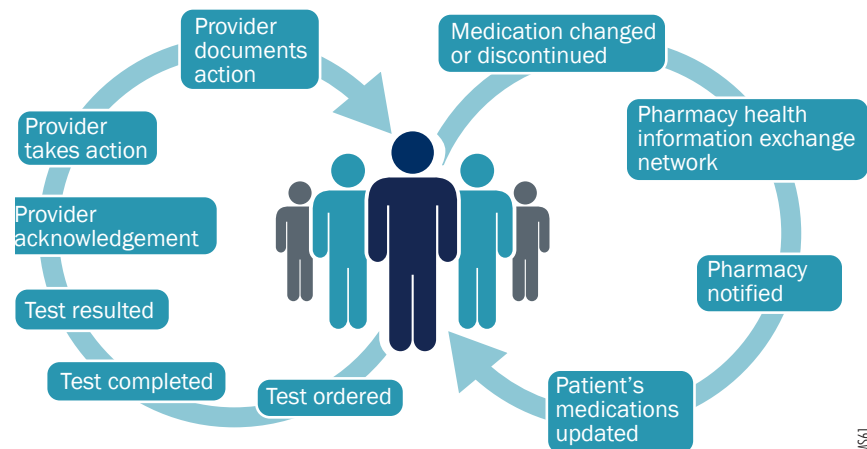
The *Partnership* Calls for Change

The recommendations issued by the *Partnership* are a call not only to health-care organizations, but also to developers, system designers, and regulators. Notably, with the findings of this workgroup, the *Partnership* has issued its most significant call to action for regulators to date. Health IT systems need to be capable of meeting the safe practice recommendations issued by the *Partnership*, and organizations need to be prepared to implement these capabilities.

The *Partnership* offers several interventions to help improve patient safety and effectively close the loop. Technology can and should be leveraged to—

— Simplify, revise, and reinforce processes
— Engage patients, listen to their concerns, and maintain an accurate medication list
— Identify and prevent gaps or failures in communication and decision-making
— Flag reports for monitoring and alert providers to the severity of test results
— Streamline alerts
— Assign responsibility for the next step, and link an acknowledgement to the actions taken

See **The Road to Closing the Loop: Interventions and Outcomes** for a more detailed breakdown of how healthcare organizations should work with vendors toward maintaining patient engagement and ensuring continuous awareness of movement through the process.

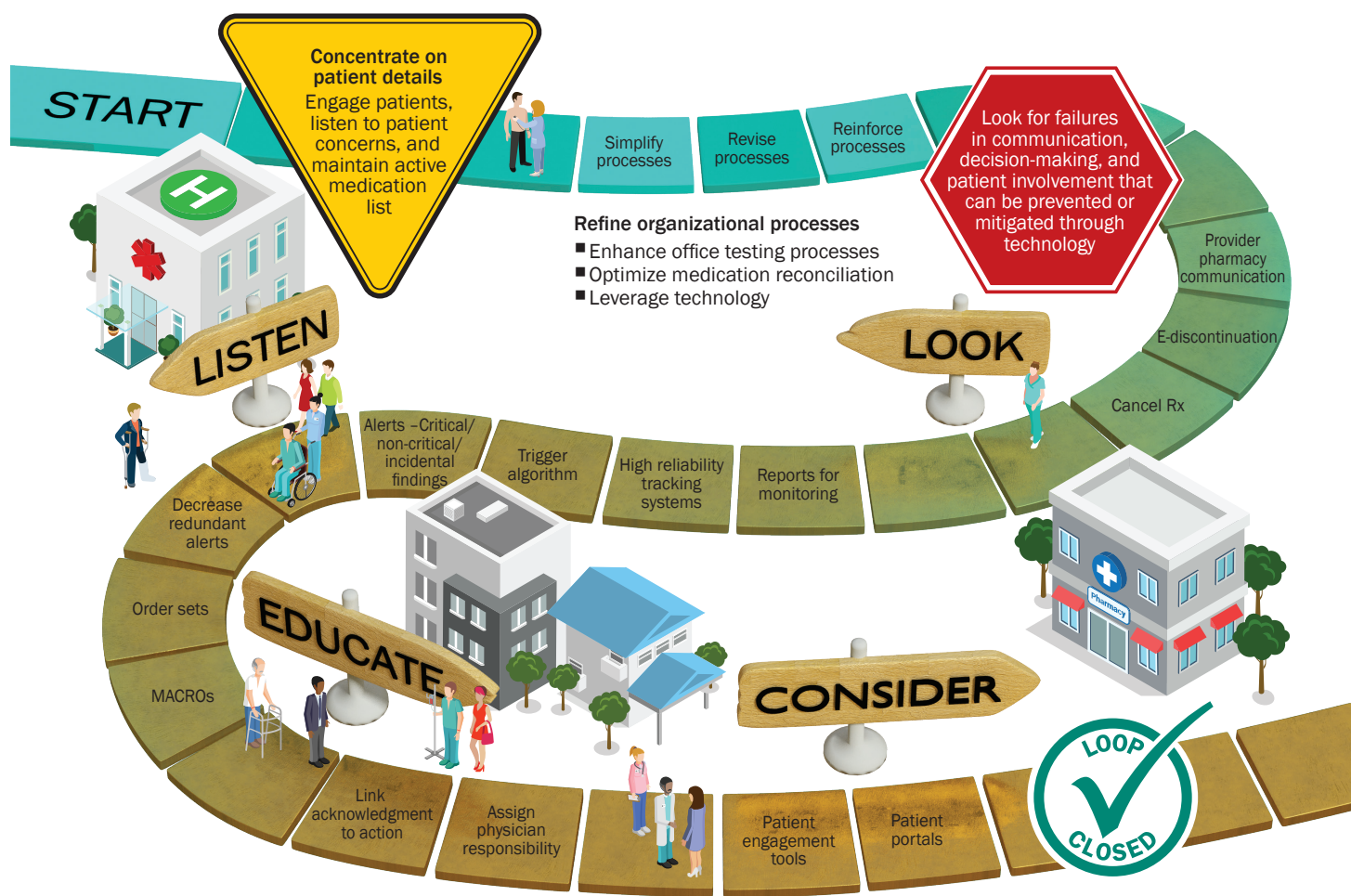**Patients Are an Integral Part of the Communication Loop**

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The Road to Closing the Loop: Interventions and Outcomes

START

Concentrate on patient details
Engage patients, listen to patient concerns, and maintain active medication list

LISTEN

Simplify processes

Revise processes

Reinforce processes

Refine organizational processes
- Enhance office testing processes
- Optimize medication reconciliation
- Leverage technology

Look for failures in communication, decision-making, and patient involvement that can be prevented or mitigated through technology

LOOK

Provider pharmacy communication

E-discontinuation

Cancel Rx

Alerts –Critical/ non-critical/ incidental findings

Trigger algorithm

High reliability tracking systems

Reports for monitoring

Decrease redundant alerts

Order sets

MACROs

EDUCATE

CONSIDER

Link acknowledgment to action

Assign physician responsibility

Patient engagement tools

Patient portals

LOOP CLOSED

Sources: Balogh EP, et al. Improving diagnosis in health care. Washington (DC): National Academies Press, 2015; Diagnostic errors: technical series on safer primary care. Geneva: World Health Organization, 2016. Singh, H. Types and origins of diagnostic errors in primary care settings. JAMA Intern Med 2013;173(6):418-25.

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18

Obstacles to Closing the Loop: Interventions and Outcomes

START

Each year, 5% of U.S. adults will be subjected to a diagnostic error.

eRx not discontinued

Test not done

Failures to close the loop may result in missed, delayed, or incorrect diagnoses or improper therapy.

Test not performed correctly

Test not tracked

Where do communications break down?

Physician does not review all results

Systems not used to capacity

Test not returned to physician

Discontinued med automatically refilled

Chart not updated

Patient not notified

Abnormal results not monitored through follow-up

Sources: Balogh EP, et al. Improving diagnosis in health care. Washington (DC): National Academies Press; Diagnostic errors: technical series on safer primary care. Geneva: World Health Organization, 2016. Singh, H. Types and origins of diagnostic errors in primary care settings. JAMA Intern Med 2013;173(6):418-25.

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Looking Forward

The *Partnership for Health IT Patient Safety* is exploring new avenues by which to extend the development and implementation of health IT safe practices. This includes a focus on issues surrounding the safety of health IT, the safe implementation and use of health IT, and the use of health IT to improve patient safety by sharing safety reports and aggregate data with participating health IT developers and provider organizations. The *Partnership* strives to share the knowledge it gleans at the forefront of health IT patient safety research and collaboration—issues of national importance.

Therefore, the *Partnership* is working on several new projects that will unfold throughout the coming months.

Spurring On Workforce Safety

The *Partnership* is pleased to have influenced the development of and to continue to support ECRI Institute's partnership with the Electronic Health Record Association (EHRA). EHRA was established in 2004 under the direction of the Healthcare Information and Management Systems Society (HIMSS). EHRA brings together developers who develop, market, and support EHR systems. Like the *Partnership*, EHRA's goals are collaborating and sharing lessons learned.
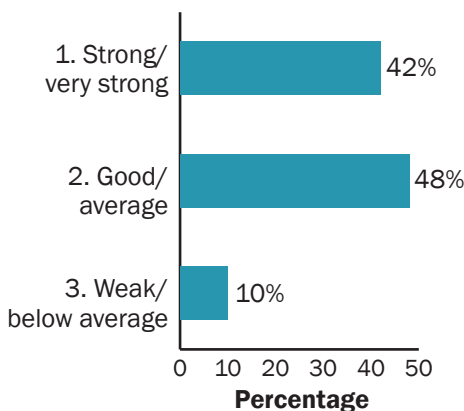
"We are working with EHRA to develop a culture of safety assessment," says **Ronni Solomon**, executive vice president and general counsel, ECRI Institute. "We're building a tool focused especially on health IT safety" for the health IT developer community. The assessment tool will build on an organization's feedback from staff members and help assess the organization's culture of safety regarding its IT implementation and use. This cultural safety assessment was developed

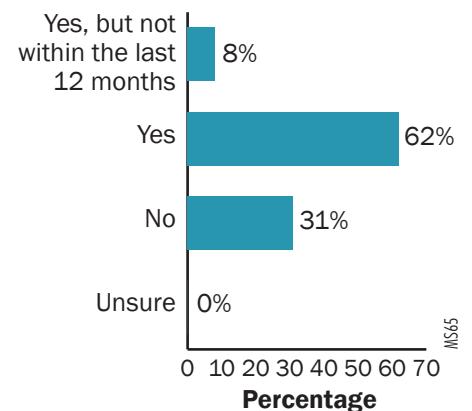**Partnership Members' Perceptions of Safety**

The *Partnership for Health IT Patient Safety* surveyed members during the annual in-person meeting on November 15, 2017, about the culture of safety at their home organizations. Most respondents indicated that their safety culture was average or above average, although 10% believed that their safety culture was weak or below average. Nearly 40% of respondents also indicated that they had not participated in a culture of safety survey in the last year.

Partnership Members' Perceptions of Safety

On a scale of one to three, how would you rate the safety culture within your organization?

Category	Percentage
1. Strong/very strong	42%
2. Good/average	48%
3. Weak/below average	10%

Percentage

Have you participated in a culture-of-safety survey within your organization in the past 12 months?

Category	Percentage
Yes, but not within the last 12 months	8%
Yes	62%
No	31%
Unsure	0%

Percentage

MS65

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20

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with input from subject matter experts and has undergone psychometric and beta testing. The assessment will evaluate staff perceptions of safety, shared safety responsibilities, training, and safety values.

The assessment reviews senior leadership safety engagement, organization-wide shared safety perceptions, proactivity in engaging users in usability testing, health IT safety training, client collaboration, perceptions of reporting safety concerns, and organization policies.

Strengthening Our Message

During the Transformation Summit and the in-person annual meeting of the *Partnership*, participants heard from **Kenneth W. Kizer**, MD, MPH*, director of the Institute for Population Health Improvement, University of California (Davis), regarding the importance of having a clear, consistent, concrete message that can be absorbed and retained by listeners.

Members of the *Partnership* convened a messaging task force, which met from December 2017 through February 2018, to answer this call. The workgroup was led by **Janet Marchibroda**, director of the Bipartisan Policy Center (BPC) Health Innovation Initiative and executive director of BPC's CEO Council on Health and Innovation. The group conducted background research, examined previous messaging campaigns, worked to develop a key message for the *Partnership*'s target audience, and developed dissemination strategies. Output from the workgroup will be evidenced in *Partnership* publications over the coming months.

Supporting Members' Needs

The *Partnership* is also working with members to identify health IT topics for closer assessment, review, investigation, and research. Each year at the in-person meeting, the *Partnership* polls participants to discover the issues that are most pressing, as well as those further out on the horizon. The resulting cloud of topics is distilled by *Partnership* leadership and Expert Advisory Panel into action items (see Unclouding the Issue).

In 2018, the *Partnership* will turn its lens to clinical decision support (CDS) issues. Potential areas of focus include the risks and safety concerns associated with CDS, medication-safety practices, workflow tools, documentation, components of CDS systems, and evidence-based practice.

The *Partnership* will also continue its work in identifying and addressing progress on national health IT safety concerns; convening stakeholders to prioritize health IT safety initiatives; engaging providers in robust participation; and serving as a clearinghouse for health IT safety tools, safe practices, and resources.

Unclouding the Issue

Participants at the *Partnership for Health IT Patient Safety*'s in-person meeting November 15, 2017, were asked which health IT concerns they hoped the *Partnership* would focus on in upcoming workgroups and publications. In this word cloud, the size of the word is proportional to the number of participants who suggested it.

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Would you like to be a part of the *Partnership for Health IT Patient Safety?*

Learn how you can make a difference at:
https://www.ecri.org/HITPartnership

Contact us at: HIT@ecri.org

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