MEDICATION SAFETY

DATA BY HOSPITAL ON NATIONALLY STANDARDIZED METRICS

The right medication can be a lifesaver. Unfortunately, more than half of all patients admitted to the hospital suffer a medication error[1]. The wrong medication, wrong patient, harmful interactions with food or other drugs, allergies, and poor communication are among the hazards involved in the process of administering medications in the hospital. Given the complexity of the environment and potential hazards involved, technology aimed at preventing medication errors is not only helpful, but in many cases lifesaving.

The annual Leapfrog Hospital Survey is the only source of publicly reported data on hospitals' effective use of two key technologies known to reduce medication errors: Bar Code Medication Administration (BCMA), which studies suggest can reduce errors by up to 93%, and Computerized Physician Order Entry (CPOE), shown to reduce errors by up to 88%. This report examines U.S. hospital performance in preventing medication errors in hospitals as measured on the 2016 Leapfrog Hospital Survey.

REPORT HIGHLIGHTS

- First-ever data on bedside bar coding shows hospitals have the technology to safely administer medication, but fall short on using it effectively
- Hospital use of CPOE systems continues to grow and systems are safer than ever
- Only 22% of hospitals meet standards for both technologies, and many decline to report at all
- Continued transparency and quality improvement are still needed

SIGNIFICANT ROOM FOR IMPROVEMENT ON BAR CODE MEDICATION ADMINISTRATION

BCMA systems are electronic scanning systems that intercept medication errors at the point of administration. A nurse scans a bar code on a patient's wristband to confirm he or she is the right patient, then scans a similar bar code on the prescribed medication to verify the remaining four of what's known as the "Five Rights of Medication Administration": right drug, dose, time, and route. In one study, when nurses used a BCMA solution as directed, the error rate in administering medications was reduced by up to 93%.[2]

With the guidance of a national panel of experts[3] in BCMA use, The Leapfrog Group developed a standard for hospital adoption of BCMA, the first and only public reporting on this critical technology to improve medication safety. These results, reported for the first time on the 2016 hospital survey, showed that nearly all reporting hospitals (97.8%) have a BCMA system connected to their electronic medication administration record implemented in at least one inpatient unit but only 30% fully met Leapfrog's BCMA standard (Figure 1), showing ample room for improvement. Another 35% made substantial progress toward the standard by fulfilling three of the four requirements, and an additional 26% made some progress—meeting two of the standard's four criteria.

FIGURE 1

MEDICATION SAFETY STANDARDS MEASURED IN THIS REPORT

	WHAT IS IT	BENEFITS	LEAPFROG'S STANDARD
BAR CODE MEDICATION ADMINISTRATION (BCMA) 	BCMA systems are electronic scanning systems that intercept medication errors at the point of administration. When administering medications with BCMA, a nurse scans a bar code on the patient's wristband to confirm that the patient is the right patient. The nurse then scans a bar code on the medicine to verify that it's the right medication at the right dose, given at the right time by the right route. These are known as the "Five Rights of Medication Administration."	• Ensures the right medication is given to the right patient • Reduces medication administration errors at the bedside by warning against the wrong medication, dose, time, or route given to the wrong patient • Provides a valuable double check on the clinical reasoning of pharmacists and nurses • May add efficiency by eliminating unnecessary manual recording in a patient's chart	• Implement a BCMA system linked to an electronic medication administration record (eMAR) in 100% of the hospital's medical and/or surgical units (adult and pediatric) and intensive care units (adult, pediatric, and neonatal) • Scan both patient and medication barcodes in 95% of bedside medication administrations in BCMA-equipped units • Hospital's BCMA system includes all seven decision-support elements identified as best practices by the Leapfrog BCMA Expert Panel, including wrong patient, wrong medication, wrong dose, wrong time, vital sign check, patient-specific allergy check and second nurse check • Hospital has implemented all five best-practice processes and structures to prevent workarounds, including a formal committee to review BCMA use, back-up systems for BCMA hardware failures, a help desk to respond to BCMA issues, observation of users using the BCMA system, and engaging nursing leadership
COMPUTERIZED PHYSICIAN ORDER ENTRY (CPOE) 	CPOE systems are electronic prescribing systems that intercept errors when they most commonly occur—at the time medications are ordered. Orders are integrated with patient information, including laboratory and prescription data. The order is then automatically checked for potential errors or problems.	• Warns those ordering the medication about adverse drug interactions, allergies, or overdoses • Maintains accurate, current information, even on newer drugs • Minimizes confusion among drugs with similar names • Eliminates error-prone paper, fax, phone, or verbal orders	• Order at least 75% of inpatient medication orders through a CPOE system that includes decision-support software and is linked to key hospital information systems to reduce prescribing errors; ***and*** • For adult and general hospitals (standard excludes pediatric facilities), demonstrate that the system alerts physicians to at least 50% of common, serious prescribing errors by participating in Leapfrog's CPOE Evaluation Tool

Of those hospitals that fell short on one of the four requirements, the most common gap (45% of those reporting) was not having all seven decision-support elements integrated into their system. The decision-support elements most frequently lacking were a vital sign check (80%) and a patient-specific allergy check (45%). The next most common reason for not fully meeting the Leapfrog BCMA standard was that hospitals aren't utilizing BCMA scanning in at least 95% of bedside medication administrations.

Some hospitals also fell short because they didn't adhere to the five best-practice processes and procedures to prevent workarounds. The most frequent misses for all hospitals not meeting this component of the standard were not establishing an oversight committee (58%) or making the necessary observations (57%) regarding the efficacy of the process.

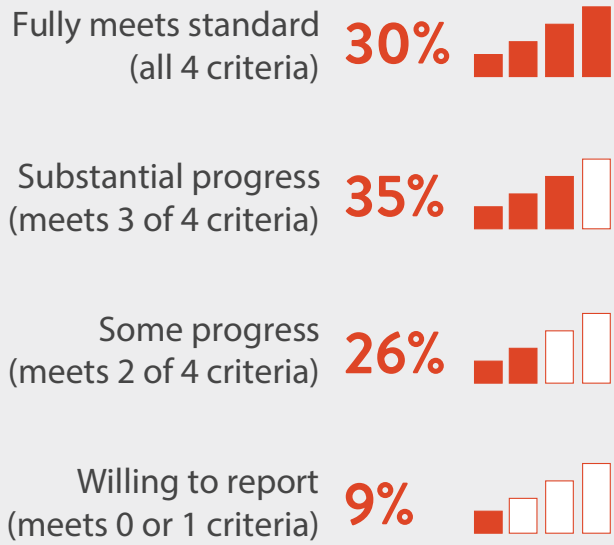
SIGNIFICANT PROGRESS MADE ON COMPUTERIZED PHYSICIAN ORDER ENTRY

CPOE systems enable physicians and other prescribers to order medication via a system that

checks patient information for known allergies, existing medications, lab results, and dosing recommendations to flag any potential problems. These systems have been highly effective at reducing the rate of serious medication errors, decreasing error rates by 55%—from 10.7 to 4.9 per 1,000 patient days. Rates of serious medication errors declined by 88% in a follow-up study by the same group.[4,5]

FIGURE 2

HOW HOSPITALS MEASURED UP ON LEAPFROG'S BCMA STANDARD



The Leapfrog CPOE Evaluation Tool was originally developed by First Consulting Group and the Institute for Safe Medication Practices in consultation with Leapfrog's CPOE Expert Panelists: David W. Bates, MD, MSc, senior vice president and chief innovation officer, Brigham and Women's Hospital; and David C. Classen, MD, MS, CMIO, Pascal Metrics, and associate professor of medicine, University of Utah. The tool requires hospitals to download a series of simulated patients and medication orders, and to input those patient/medication combinations into the hospital's CPOE system.[6] Hospitals track the alerts received at the point of order-entry and are scored based on the percentage of correct alerts received in various categories.

The percentage of hospitals fully meeting Leapfrog's standard for CPOE systems has risen steadily over the past five years. In 2016, 74% of hospitals fully met Leapfrog's CPOE standard. This represents an increase of 10% over the prior year and more than double the percentage of hospitals meeting the standard in 2012.

CONTINUED TRANSPARENCY AND QUALITY IMPROVEMENT NEEDED

While the gains made in meeting Leapfrog's CPOE standard are encouraging, most hospitals have significant room for improvement when it comes to medication safety. In 2016, only 22% of hospitals reporting on both the CPOE and BCMA standards fully met the standard for both measures.

What's more disappointing, some hospitals declined to report their data at all. Leapfrog is the only organization publicly reporting on hospital use of BCMA to reduce medication errors and Leapfrog's CPOE Evaluation Tool is the only known system in the U.S. that allows hospitals to test how well their systems are detecting a wide variety of prescribing and medication administering errors. According to Dr. Bates, "Having hospitals take the CPOE test can provide the broadest information to date about the extent to which medication-related decision support is in place and working in U.S. hospitals." He added, "Taking a periodic assessment of what decision support is in place will be useful for all hospitals, even those that have had computer systems for a long time."

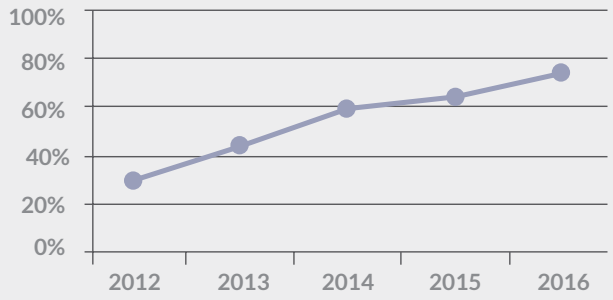
Noted Dr. Classen, "Over the last ten years, thousands of hospitals have used the Leapfrog CPOE test to gauge the effectiveness of their medication safety decision support program. Many of these hospitals, through the use of the tool, found numerous areas of improvement and used the results to make improvements in their programs." Hospitals that test their CPOE systems on an annual basis with Leapfrog's CPOE Evaluation Tool can ensure their systems remain up-to-date and are performing as needed to safeguard patients from unnecessary harm.

By reporting on the Leapfrog Hospital Survey, providers are able to assess the efficacy of their

medication safety tools and identify better ways to prevent harm to patients. Equally important, patients can rely on the publicly reported information to make more-informed decisions on where to seek care.

FIGURE 3

PERCENTAGE OF HOSPITALS FULLY MEETING LEAPFROG'S CPOE STANDARD IS STEADILY RISING



METHODS

The Leapfrog Group annually invites all adult general acute care and free-standing pediatric hospitals in the United States to voluntarily report to the Leapfrog Hospital Survey, which collects and publicly reports data by hospital on topics including high-risk procedures, maternity care, hospital-acquired infections, medication safety, nursing safety, and never events through its annual hospital survey. In 2016, 1,859 hospitals submitted a survey, representing 49% of hospitals nationwide and 60% of U.S. hospital beds. Participation is free to hospitals and results are free to the public. This report uses final hospital data from the 2016 Leapfrog Hospital Survey (data submitted through December 31, 2016).

The Leapfrog Hospital Survey includes measures that are endorsed by the National Quality Forum (NQF) and/or aligned with those of other significant data collection entities, including the Centers for Medicare & Medicaid Services (CMS) and The Joint Commission. Leapfrog partners with the Armstrong Institute for Patient Safety and Quality at Johns Hopkins Medicine to review survey measures and standards, and updates them annually to reflect the latest science. Additionally, panels of volunteer experts meet regularly to review the survey measures and recommend performance standards for each subject area covered in the Leapfrog Hospital Survey. The full list of measures included in the survey is available at www.leapfroggroup.org/survey.

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6. Kilbridge P, Welebob E, Classen D. Development of the Leapfrog methodology for evaluating hospital implemented inpatient computerized physician order entry systems. Qual Saf Heatlh Care. 2006;15(2):81-84.

About The Leapfrog Group: Founded in 2000 by large employers and other purchasers, The Leapfrog Group is a national nonprofit organization driving a movement for giant leaps forward in the quality and safety of American health care. The flagship Leapfrog Hospital Survey collects and transparently reports hospital performance, empowering purchasers to find the highest-value care and giving consumers the lifesaving information they need to make informed decisions. The Leapfrog Hospital Safety Grade, Leapfrog's other main initiative, assigns letter grades to hospitals based on their record of patient safety, helping consumers protect themselves and their families from errors, injuries, accidents, and infections.

About Castlight Health: Our mission is to empower people to make the best choices for their health and to help companies make the most of their health benefits. We offer a health benefits platform that engages employees to make better healthcare decisions and guide them to the right program, care, and provider. The platform also enables benefit leaders to communicate and measure their programs while driving employee engagement with targeted, relevant communications. Castlight has partnered with enterprise customers, spanning millions of lives, to improve healthcare outcomes, lower costs, and increase benefits satisfaction. For more information, visit www.castlighthealth.com and connect with us on Twitter and LinkedIn and Facebook.

Castlight Health, Inc.
150 Spear Street, Suite 400
San Francisco, CA 94105

Tel: 415.829.1400
info@castlighthealth.com
castlighthealth.com