Results of the 2013 Leapfrog Hospital Survey

Developed for The Leapfrog Group by Castlight Heath

THELEAPFROG**GROUP

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HEALTH

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Acknowledgements

Leapfrog and its Board thank Castlight Health® for their insightful work in developing this report, and for their own national efforts to demand transparency in healthcare for consumers and purchasers nationwide. We also thank the Leapfrog staff for their dedication in administering the Leapfrog Hospital Survey and developing this report of 2013 Leapfrog Hospital Survey Results.

The success of The Leapfrog Group is due largely to the leadership of our Regional Roll-Outs, who are employers and business coalitions on health across the country that work tirelessly to encourage hospital participation in the Leapfrog Hospital Survey and use the results to help employees find the best hospital care. We thank these organizations for serving as "Leapfrog on the ground" in their communities.

The Leapfrog movement would also not be possible without the support of our employer members and our Partners Advisory Committee. These companies share a fierce commitment to promoting transparency and implementing Leapfrog principles throughout their businesses.

Dozens of the nation's foremost experts in hospital safety and quality volunteer their time to advise Leapfrog on the content and scoring of the Leapfrog Hospital Survey, as well as Leapfrog's other ratings program, the Hospital Safety Score. These experts devote their best thinking to ensure the highest standards of scientific integrity apply to the content of the survey. The involvement of these experts is one reason hospitals find the survey such a valuable tool and a source of best practices to achieve performance excellence, and why purchasers rely on Leapfrog as the one unbiased, consensus tool for gauging the quality of the hospitals their employees use. We are grateful to these experts for their scientific contributions, as well as their contributions to our mission of transparency.

Last but not least, we thank the 1,437 hospitals that voluntarily reported to the 2013 Leapfrog Hospital Survey. By reporting to Leapfrog, these hospitals demonstrate the highest levels of transparency and a commitment to safety and quality. In particular, we want to applaud the health systems that have achieved 100% participation across their systems, including HCA Healthcare, Kaiser Permanente, Tenet Healthcare Corporation, Sutter Health, Steward Health Care, Orlando Health, Baylor Health Care System, and many more. It is The Leapfrog Group's goal that other hospitals across the country will follow their lead and transparently report their own performance.

These individuals and organizations bring to life Leapfrog's vision for making giant leaps forward in hospital safety and quality. We thank you for joining us in this mission.

Leah Binder
President & CEO
The Leapfrog Group

William H. Finck
Chairman
Leapfrog Board of Directors

Executive Summary

Every year, The Leapfrog Group, a national nonprofit organization, and its membership of employers and other purchasers as well as business coalitions on health, ask every adult and free-standing pediatric general acute care hospital in the U.S. to voluntarily complete the Leapfrog Hospital Survey. Results are publicly reported by hospital on www.leapfroggroup.org. Leapfrog uses the survey data to publicly report on issues of importance to healthcare purchasers and consumers, including high-risk surgeries, maternity care, hospital-acquired infections, and a variety of other important issues. The Leapfrog Group's standards are updated annually to reflect the latest science and are designed to drive better outcomes for patients. This is a report of the results of the 2013 Leapfrog Hospital Survey.

Key Findings from the 2013 Leapfrog Hospital Survey

- *Hospital participation is increasing:* A record number of hospitals submitted a survey this year: 1,437 hospitals or 37% of hospitals nationwide.

- *More hospitals are adopting computerized physician order entry (CPOE) to reduce medication errors:* This is good news because CPOE has been shown to reduce medication errors by upwards of 55%,[1] and medication errors are the most common errors occurring in hospitals. Although hospitals and their CPOE systems are doing a better job detecting potential medication errors, it's troubling that not all CPOE systems give appropriate warnings for orders that might have tragic consequences for patients.

- *Maternity care remains a key area of improvement:* While hospitals overall improved in the area of maternity care – especially in reducing early elective deliveries – problems remain persistent and many hospitals still lag behind. Episiotomy rates continue to decline, but show substantial room for improvement, and there is only moderate improvement in the number of hospitals taking the necessary precautions to reduce harm to mothers and babies.

- *Hospital performance on Leapfrog's high-risk deliveries standard has declined*: Too many very low birth-weight babies are being delivered at hospitals that aren't optimally equipped to care for them, and the problem is growing.

- *Significant variation in survival rates for high-risk procedures:* We still see significant variation in predicted survival rates for high-risk procedures across hospitals, suggesting it is wise for consumers to research Leapfrog Hospital Survey results when considering one of these procedures. For abdominal aortic aneurism repair there is a seven-fold difference between the predicted survival at the best performing hospital and the predicted survival at the worst performing hospital. For pancreatectomies the predicted mortality rate varies from 0% to almost 21%, while for esophagectomies the predicted mortality rate varies from 2.5% to 12%. The predicted survival rates for aortic valve replacement show the smallest variation.

- *Rates of certain hospital-acquired conditions remain problematic:* Variation in hospitals' ability to reduce and eliminate certain hospital-acquired conditions remains. Among hospitals that reported on hospital-acquired injuries, infections and pressure ulcers, rates varied tremendously. One in six

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[1] Bates DW, Leape LL, Cullen DJ, Laird N, et al. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. JAMA. 1998;280:1311-6

Leapfrog reporting hospitals have higher infection rates than expected for central line infections and one in ten perform poorly in preventing catheter-associated urinary tract infections.

- ***Hospitals are preventing deaths in the ICU with appropriate physician staffing:*** Hospitals with Intensive Care Units (ICUs) are in better compliance with Leapfrog's ICU Physician Staffing standard to decrease mortality. Studies show that meeting the Leapfrog standard for physician staffing can decrease mortality in the ICU as much as 40%.[2]

- ***Never Events Policy compliance holding steady:*** The number of hospitals meeting Leapfrog's Never Events Policy standard is holding steady.

- ***Compliance with safe practices:*** While compliance with The National Quality Forum (NQF)-endorsed safe practices is generally high among hospitals, urban hospitals are performing better than rural.

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[2] Pronovost PJ, Angus DC, Dorman T, Robinson KA, Dremsizov TT, Young TL. Physician staffing patterns and clinical outcomes in critically ill patients: a systematic review. JAMA. 2002; 288:2151-62.

Introduction

The Leapfrog Group is a national nonprofit founded in 2000 by a coalition of employer purchasers of health benefits, with support from the Business Roundtable, the Robert Wood Johnson Foundation, and the Commonwealth Fund. Since its inception, The Leapfrog Group has successfully driven a national movement towards increased transparency of information on hospital safety, quality, and affordability. Today, the Leapfrog Hospital Survey—a free, evidence-based, annual voluntary survey—remains by far the most powerful tool in the country for hospitals to publicly demonstrate their transparency, safety, and quality. Results are publicly reported by hospital on www.LeapfrogGroup.org.

For the 2013 Leapfrog Hospital Survey, a record 37% of hospitals nationwide participated. Hospitals are encouraged to complete the Leapfrog Hospital Survey annually to benefit from the survey's information on best practices and national performance benchmarking unavailable anywhere else. More information about the Leapfrog Hospital Survey can be found at www.LeapfrogHospitalSurvey.org.

While Leapfrog reports individual hospital results on our website, this report summarizes the aggregate 2013 Leapfrog Hospital Survey Results for all 1,437 hospitals across the United States. The report highlights variation in performance across regions, between urban and rural hospitals, and trends over time, while looking closely at results in seven areas of hospital safety and quality:

- Medication Errors
- Maternity Care
- High-Risk Surgeries
- Hospital-Acquired Conditions: Infections in Intensive Care Units (ICUs), Pressure Ulcers, and Injuries
- ICU Physician Staffing
- Serious Adverse Events including Never Events
- Safe Practices

Leapfrog encourages patients and healthcare consumers to use the Leapfrog Hospital Survey results to help them select the best hospital for themselves and their loved ones. Individual hospital results can be found at www.LeapfrogGroup.org/CP. In addition, The Leapfrog Group offers another resource for consumers and purchasers, the Hospital Safety Score, which is derived from some measures on the Leapfrog Hospital Survey as well as federal data to offer a composite letter grade on how well hospitals protect patients from accidents, injury, harm, and error. More information about the Hospital Safety Score can be found at www.HospitalSafetyScore.org. Purchasers may also benefit from Leapfrog's calculator of the Hidden Surcharge Americans Pay for Hospital Errors,[3] which allows calculation of the excess dollars purchasers spend due to the errors that occur in hospitals.

Leapfrog encourages consumers, private purchasers and employers, policymakers, and providers alike to use the information contained in this report as inspiration to create safer, higher quality care for all Americans.

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[3] http://www.leapfroggroup.org/HiddenSurchargeCalculator

2013: Record Year for the Leapfrog Hospital Survey

A group of over 175 employers and other purchasers of healthcare founded The Leapfrog Group in 2000, with the goal of improving the safety, quality, and affordability of healthcare in the U.S. They pursued this goal by supporting informed healthcare decisions by those who use and pay for healthcare and promoting high-value healthcare through incentives and rewards. To collect information about the safety and quality in hospitals, Leapfrog launched the annual Leapfrog Hospital Survey in 2001 to ask hospitals to voluntarily report on their progress in meeting national standards that are known to reduce patient harm and death. Two hundred hospitals agreed to publicly report that first year. Since then, the number of hospitals submitting a survey has grown steadily, and in 2013 a record 1,437 hospitals or 37% of eligible hospitals participated, a 19% increase over 2012.

The hospitals that complete the annual Leapfrog Hospital Survey deserve enormous credit for being transparent about the safety and quality of the care they provide their patients, and responding to the needs of hundreds of purchasers in their communities and across the country.

Leapfrog in local communities: Regional Roll-Outs

With help from healthcare purchasers and employer coalitions that volunteer to lead Leapfrog's Regional Roll-Outs (RROs), Leapfrog is able to target hospitals in local communities as well as nationally. There are currently 29 Regional Roll-Out markets across the country, led by organizations asking local hospitals to complete the Leapfrog Hospital Survey. Regions where RROs exist have higher rates of Leapfrog participation than in areas with no RROs.
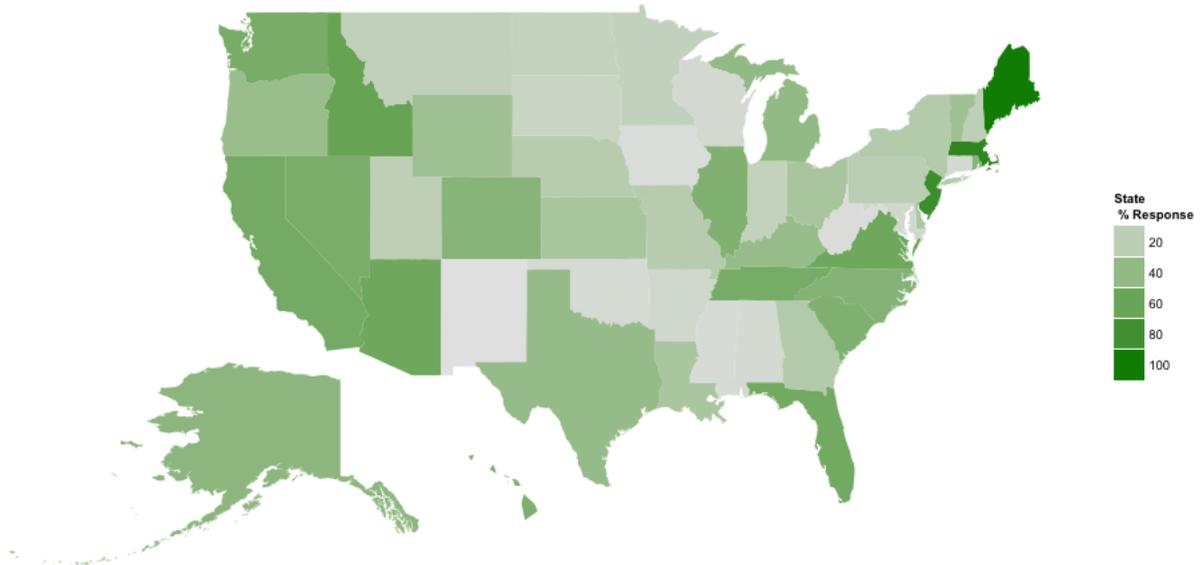
State (* With RRO)	Total Hospitals	Number responded in 2013	Response Rate
MAINE*	36	36	100%
MASSACHUSETTS*	73	69	89%
NEW JERSEY*	72	59	82%
IDAHO	13	8	62%
VIRGINIA*	87	50	57%
ARIZONA*	56	32	57%
FLORIDA*	193	107	55%
CALIFORNIA*	356	194	54%
TENNESSEE*	130	70	53%
WASHINGTON*	59	32	53%
NEVADA*	27	14	52%
HAWAII	12	6	50%
ILLINOIS*	181	88	49%
SOUTH CAROLINA*	64	31	48%
NORTH CAROLINA*	93	45	46%
RHODE ISLAND*	11	5	45%
COLORADO*	78	36	45%
ALASKA	7	3	43%
MICHIGAN	108	43	40%
TEXAS*	331	127	38%
KENTUCKY*	75	29	37%
OREGON	33	12	36%
VERMONT*	6	2	33%
WYOMING*	27	9	33%
KANSAS	52	15	29%
OHIO*	177	51	29%
DELAWARE	7	2	29%
LOUISIANA	84	25	29%
GEORGIA*	119	29	24%
NEW YORK*	205	49	24%
MISSOURI*	85	19	22%
NEBRASKA*	18	4	22%
PENNSYLVANIA*	156	34	21%
UTAH	31	6	19%
NEW HAMPSHIRE*	26	5	19%
MONTANA*	11	2	18%
MINNESOTA	53	9	17%
INDIANA*	125	22	17%
NORTH DAKOTA	6	1	17%
SOUTH DAKOTA*	14	2	14%
ARKANSAS*	45	5	11%
MARYLAND*	47	5	11%
WISCONSIN*	127	12	9%
ALABAMA	96	9	9%
CONNECTICUT	32	3	9%
OKLAHOMA	67	6	9%
MISSISSIPPI*	63	6	8%
IOWA*	45	3	7%
WEST VIRGINIA	32	2	6%
NEW MEXICO	21	1	5%

Leapfrog's Regional Roll-Outs

Arizona Business Coalition on Health
Colorado Business Group on Health
Consumer's Checkbook (Washington, D.C.)
Dallas Fort Worth Business Group on Health
Florida Health Care Coalition
Greater Philadelphia Business Coalition on Health
Group Insurance Commission, Commonwealth of MA
Health Action Council
Health Policy Corporation of IA/IA Health Buyers Alliance
Healthcare21 Business Coalition
IBM
Indiana Employers Quality Health
Lehigh Valley Business Coalition on Health
Maine Health Management Coalition
Memphis Business Group on Health

Mercer Health & Benefits (on behalf of Boeing)
Mid-Atlantic Business Group on Health
Midwest Business Group on Health
Nevada Business Group on Health
Niagara Health Quality Coalition
Northeast Business Group on Health
New Hampshire Purchasers Group on Health
New Jersey Health Care Quality Institute
Pacific Business Group on Health
South Carolina Business Coalition on Health
St. Louis Area Business Health Coalition
The Alliance
Virginia Business Coalition on Health
Wyoming Business Group on Health

2013 Leapfrog Response Rate by State

State
% Response
20
40
60
80
100

Computerized Physician Order Entry (CPOE) and Medication Errors

Medication errors are the most common mistakes made in hospitals, with one occurring per day per inpatient stay on average.[4] Studies such as one led by Dr. David Bates, MD, Chief of General Medicine at Boston's Brigham and Women's Hospital,[5] suggest that a well-designed computerized physician order entry (CPOE) system would substantially reduce these errors. As a result, since 2001, Leapfrog has tracked how many hospitals adopt CPOE systems. The Leapfrog standard requires that at least 75% of inpatient medications are ordered through a CPOE system that includes decision support software that alerts physicians to serious medication errors.

Not all CPOE systems are alike, and none are simply "plug-and-play" systems that work effectively year after year. That is why the Leapfrog standard also requires that hospitals continually test the safety of their CPOE systems. The Leapfrog Group's CPOE Evaluation Tool, developed by Drs. David Bates and David Classen and colleagues with funding from AHRQ and others, is the only tool in the U.S. that helps hospitals test whether or not their CPOE system is alerting physicians to common, serious prescribing errors such as drug-to-drug interactions and drug-allergy interactions. We know of no other test that allows hospitals to evaluate the safety of their CPOE systems, and strongly encourage wide dissemination of this and other tests in the future. The tool requires hospitals to download a series of simulated medication orders for patients, and to input those patient/medication combinations into the CPOE system. Leapfrog scores each hospital on how well its system does in intercepting orders that would result in patient harm or even death.

> ### *Leapfrog's Standard for CPOE:*
> The Leapfrog standard is aimed at ensuring that patients are being prescribed medications through a computerized order entry system that alerts prescribers to drug-drug interactions, drug-allergy interactions, and other potential prescribing errors and requires that:
>
> - At least 75% of medication orders across all inpatient units are ordered through a CPOE system
> - The hospital has tested the system to ensure that physicians are alerted to common, serious medication errors

Good news: an all-time record number of hospitals are adopting CPOE—and improvements abound

In 2013, an all-time record of 616 hospitals (or 43%) met the Leapfrog standard for CPOE, a dramatic increase since 2009, when only 113 hospitals met the standard. This clearly shows the influence of federal funding for hospitals' "meaningful use" of health information technology – as part of the American Recovery and Reinvestment Act. Nonetheless, the rigorous Leapfrog standard far exceeds the federal requirements, so it is very promising to see the growing number of hospitals reaching the Leapfrog standard.

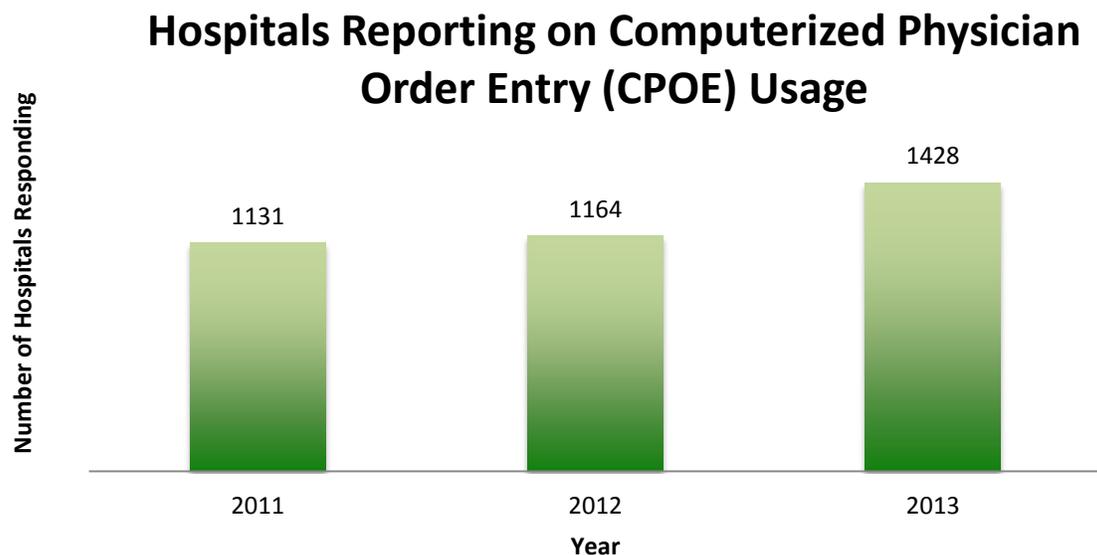[4] Institute of Medicine. Preventing medication errors. Washington, DC: National Academy Press; 2007

[5] Bates DW, Leape LL, Cullen DJ, Laird N, et al. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. JAMA. 1998;280:1311-6.

Hospitals that take the test more than once show remarkable improvements. In 2013, hospitals performed 931 tests of their CPOE systems using the Leapfrog CPOE Evaluation Tool, twice as many as in 2012 when only 455 tests were performed. With this increase in the number of tests being taken, performance has held steady or improved, with the proportion of all orders that did not receive an appropriate warning remaining at 36% and the number of potentially fatal orders that did not receive an appropriate warning falling from 14.2% in 2012 to 12.5% in 2013. What is encouraging is that of 595 hospitals that failed to meet the CPOE standard in 2012, 166 (27.9%) of those hospitals did meet the standard in 2013. This suggests that using the CPOE Evaluation Tool to continually monitor and make improvements to CPOE systems is critical to safety.
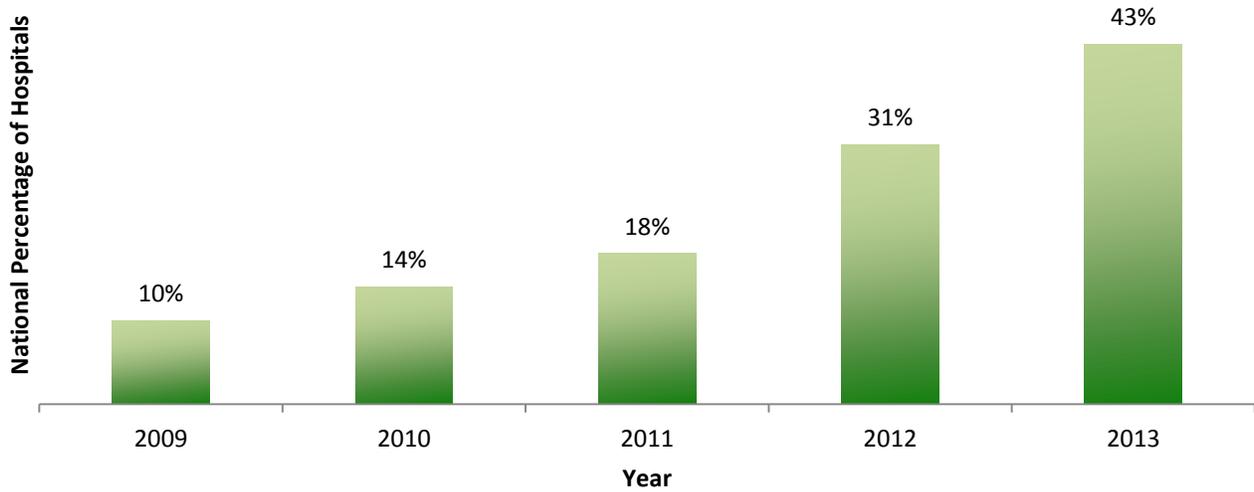
Bad news: challenges still remain

Based on the results of the CPOE Evaluation Tool, Leapfrog finds that hospitals are improving their ability to detect potential medication errors through the use of decision support software. However, it is troubling that not all medication orders that were tested through the simulation gave appropriate warnings for the test orders that would have resulted in patient harm.
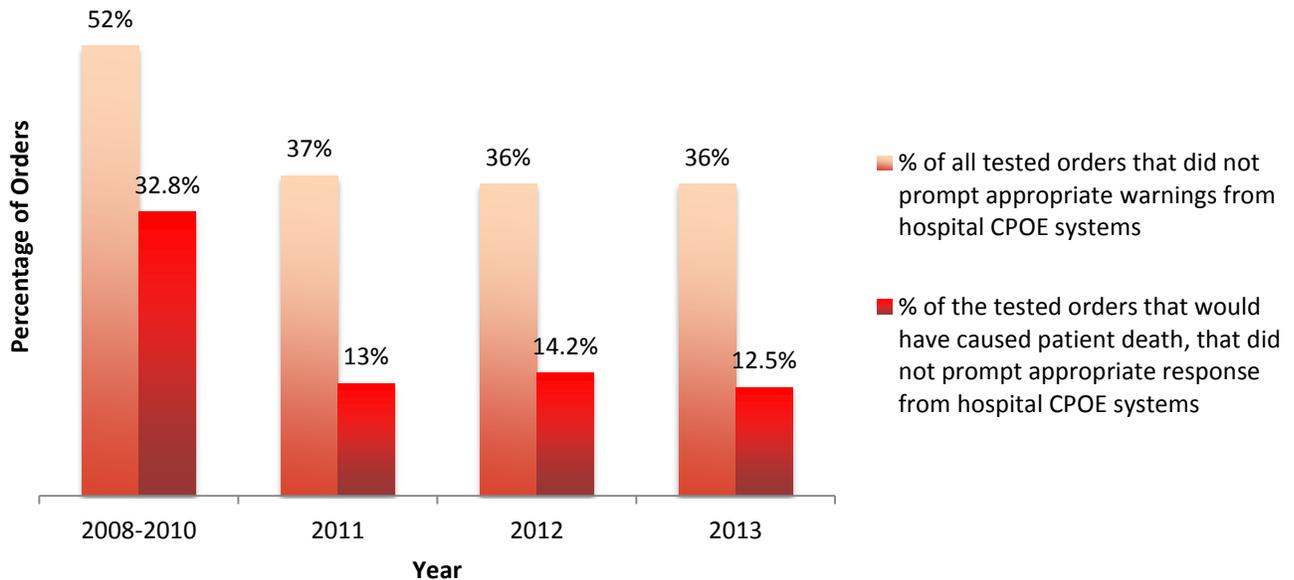
In 2013, CPOE systems did not alert physicians to one-third of the test orders that would have led to an adverse patient event. Even more troubling, the CPOE systems did not catch one in six of the test orders that would have resulted in death had the order been administered to a real patient. This failure rate is far too high, and points to the critical need for hospitals to make additional improvements to their medication ordering processes.
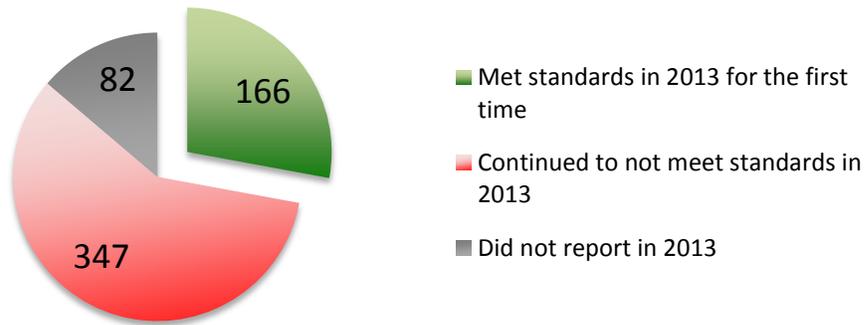
Hospitals Reporting on Computerized Physician Order Entry (CPOE) Usage

Hospitals Meeting Leapfrog's Computerized Physician Order Entry (CPOE) Standard

National Percentage of Hospitals

- 2009: 10%
- 2010: 14%
- 2011: 18%
- 2012: 31%
- 2013: 43%

Year

CPOE Test Orders That Did Not Receive an Appropriate Warning

Percentage of Orders

Year	% of all tested orders that did not prompt appropriate warnings from hospital CPOE systems	% of the tested orders that would have caused patient death, that did not prompt appropriate response from hospital CPOE systems
2008-2010	52%	32.8%
2011	37%	13%
2012	36%	14.2%
2013	36%	12.5%

Year

■ % of all tested orders that did not prompt appropriate warnings from hospital CPOE systems

■ % of the tested orders that would have caused patient death, that did not prompt appropriate response from hospital CPOE systems

Computerized Physician Order Entry (CPOE) Performance In Hospitals that Did Not Meet the Leapfrog Standard in 2012

82

166

347

■ Met standards in 2013 for the first time

■ Continued to not meet standards in 2013

■ Did not report in 2013

Maternity Care

The quality of maternity care is very important to purchasers, who pay for more than one-third of all deliveries in the U.S. For consumers, maternity care comes at one of life's most important moments, not only for the woman giving birth, but also for the newborn and the entire family. Yet without Leapfrog, we would have surprisingly little information available to compare maternity care quality among hospitals at the national level.

Early elective deliveries

> *Leapfrog's Standard for Early Elective Deliveries:*
> A hospital's rate of scheduled cesarean sections and elective inductions before 39 weeks is less than or equal to 5%.

Triumphant decline in early elective deliveries

Early elective deliveries – scheduled cesarean sections or medical inductions performed prior to 39 completed weeks of gestation without medical necessity – carry risks to both babies and mothers. Early elective deliveries can result in neonatal intensive care unit (NICU) admissions, increased length of stay, and higher costs to patients and payers.[6, 7. 8]
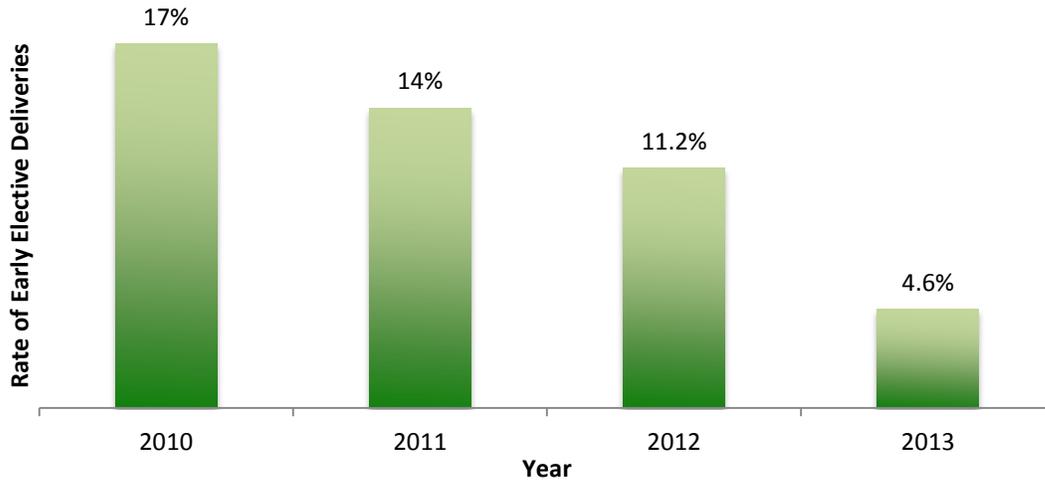
For more than 30 years, the American College of Obstetrics and Gynecology (ACOG) has advised its membership of maternity care physicians not to perform early elective deliveries, and highly influential organizations such as the March of Dimes and national health plans have campaigned to stop these deliveries. Nonetheless, progress did not occur until Leapfrog issued its first report in 2010, citing rates of early elective deliveries at over 750 hospitals across the country. This public information helped galvanize efforts from a variety of organizations, policymakers, and hospitals themselves to end early elective deliveries. In 2013, the average national rate of early elective delivery was 4.6%, compared with 17% in 2010.

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[6] King VJ, Pilliod RP, Little A. Medicaid-Evidence-Based Decisions Project (MED) Rapid review: elective inductions of labor. September 17, 2010
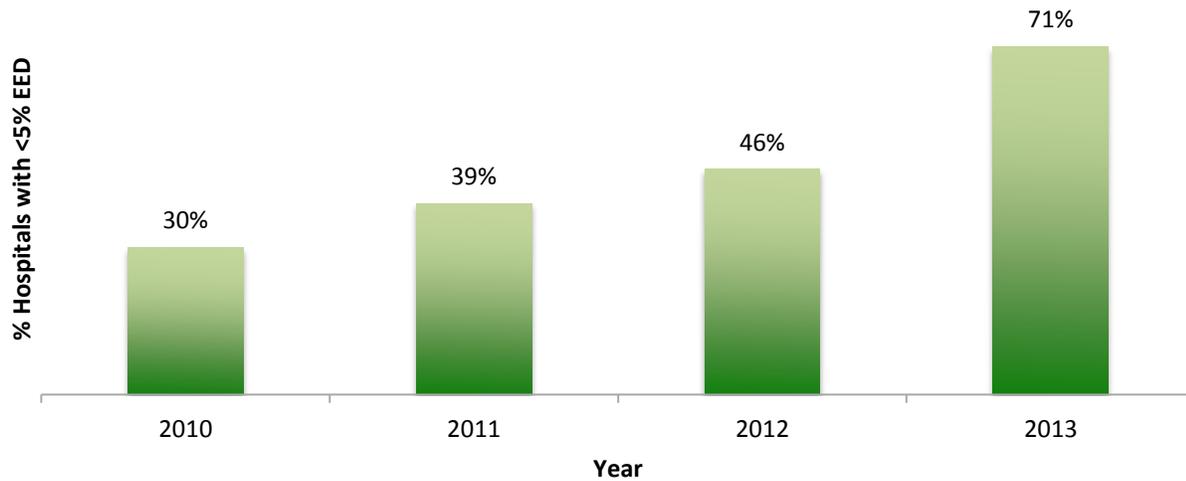
[7] Clark, SL, Miller DD, Belfort MA, Dildy GA, Frye DK, Meyers JA. Neonatal and maternal outcomes associated with elective term delivery. Am J Obstet Gynecol, 156, February 2009, e1- e4.

[8] Clark SL, Frye DR, Meyers JA, Belfort MA, Dildy GA, Kofford S, Englebright J, Perlin JA. Reduction in elective delivery at <39 weeks of gestation: comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. Am J Obstet Gynecol, 2010, 203:449, e1-6
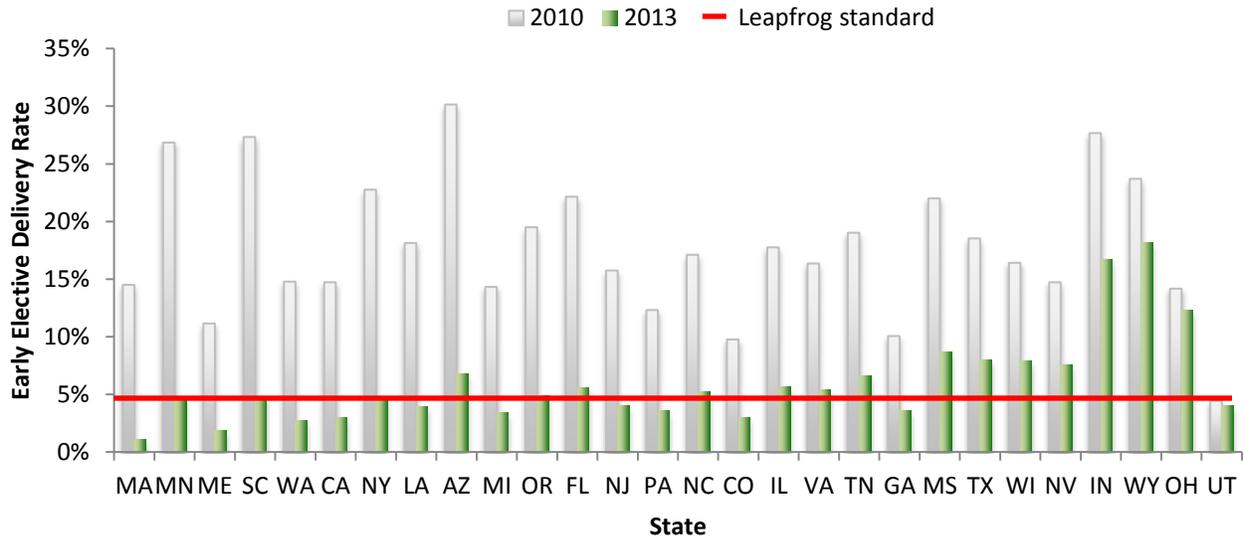
Average Rate of Early Elective Deliveries

17%

14%

11.2%

4.6%

Rate of Early Elective Deliveries

2010   2011   2012   2013

Year

% Hospitals Achieving ≤5% Early Elective Deliveries

71%

46%

39%

30%

% Hospitals with <5% EED

2010   2011   2012   2013

Year

State-by-state success

Every state has seen very strong improvement in lowering the rate of early elective deliveries. Those states (with ≥ 5 hospitals reporting) with the largest drops from 2010 to 2013 are highlighted below.
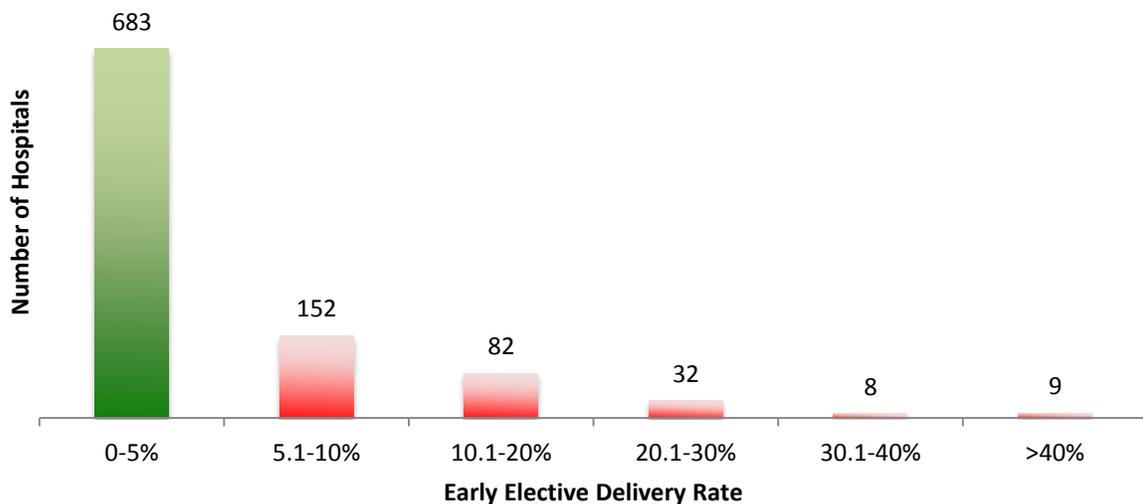
Early Elective Deliveries, 2010 to 2013

2010   2013   — Leapfrog standard

Many hospitals still lag behind

While an impressive 71% of hospitals had an early elective delivery rate of 5% or less, a large amount of variance still exists among reporting hospitals, with 132 hospitals reporting an early elective delivery rate of more than 10%, and 17 hospitals reporting an early elective delivery rate of greater than or equal to 30%.

Rate of Early Elective Deliveries, 2013

Episiotomy

An episiotomy is an incision made in the perineum (the birth canal) during childbirth. Although an episiotomy was once routine in childbirth, medical guidelines today recommend episiotomy only in a narrow set of cases.[9]

Episiotomies have been clearly linked with worse perineal tears and other complications. These complications include urinary incontinence, fecal incontinence, and pelvic floor defects.[10] Due to these concerns, ACOG has called for the "restricted use of episiotomy," which has been firmly linked to lower rates of perineal injury.

> *Leapfrog's Standard for Episiotomy:*
> A hospital's rate of episiotomy is less than or equal to 12%.

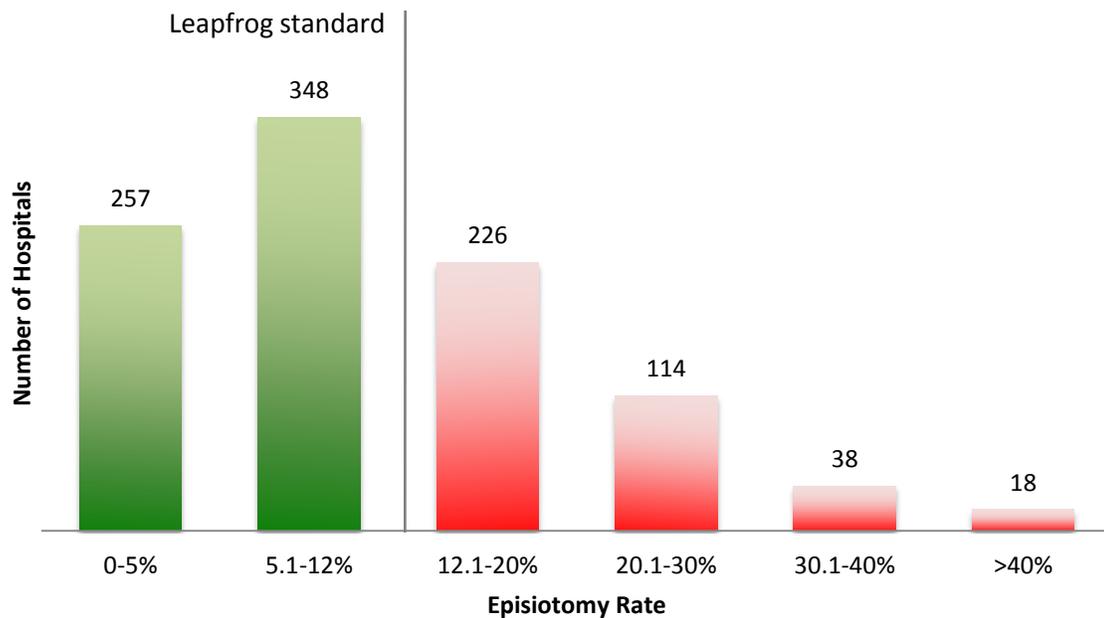**Improvement in episiotomy rates—but substantial room for improvement**

Leapfrog has tracked episiotomy use by hospitals since 2012. That year, of the 833 hospitals that reported on the standard, 468 (56%) had a rate at or below the target of 12%. In 2013, 1001 hospitals reported on the standard, with 605 (60%) achieving a rate of 12% or better. We find no significant difference between urban and rural hospital performance on episiotomy rates. In 2013, 104 of 163 rural hospitals (64%) met the Leapfrog guideline, as compared to 501 of 838 urban hospitals (60%).

There's substantial variance among hospitals, with 29 hospitals reporting an episiotomy rate of 1% or less and 18 hospitals reporting an episiotomy rate as much as 40% or higher. Thus, while nationally we find modest improvement, two out of five birthing hospitals are permitting excess episiotomies, putting thousands of women at unnecessary risk.

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[9] ACOG- Practice Bulletin-"Episiotomy" No.71 2006

[10] Hartmann K, Viswanathan M, Palmieri R, et al. Outcomes of Routine Episiotomy: A Systematic Review. JAMA, 2005, 293(17), 2141-2148.

2013 Episiotomy Rate

Maternity Care Standard Precautions

Leapfrog asks hospitals to report on whether or not they take precautions that can prevent harm to mothers and newborns, including asking hospitals if they screen newborns for bilirubin levels and if they give women who are about to have a cesarean section the appropriate treatment to prevent deep vein thrombosis (blood clots).

Screening all newborns prior to discharge for too much bilirubin in the blood can significantly decrease the incidence of severe jaundice, which, in extreme cases, can lead to seizures and brain damage. Most newborns have a rise in bilirubin in the days following birth. However, very high bilirubin levels can damage the nervous system. Monitoring these levels in babies is important so treatment can be started before dangerous levels are reached.[11]

The blood clot prevention protocol is necessary for women who are going to have a cesarean section because blood clots are a key risk factor these patients. Using a blood-thinning agent or applying pneumatic compression devices prior to the surgery has been proven to prevent blood clots in women undergoing this procedure.

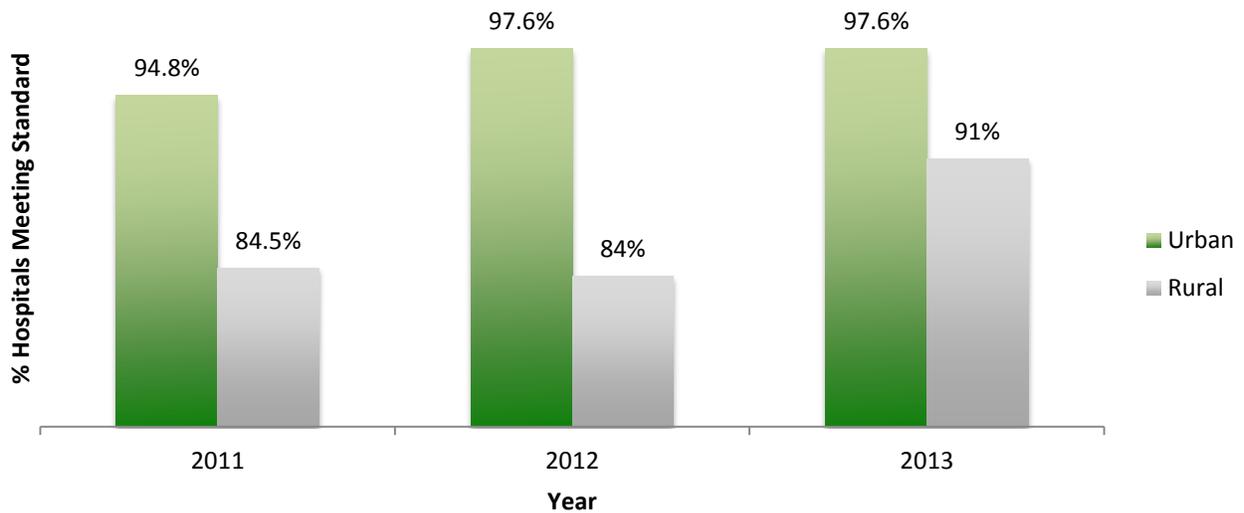> *Leapfrog's Standard for Maternity Care Precautions:*
> A hospital ensures that at least 80% of newborns are screened for hyperbilirubinemia and at least 80% of women undergoing caesarian section receive appropriate treatment to prevent blood clots (DVT).

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[11] Ann Schwoebel, MSN, CRNP, RNC, Vinod K. Bhutani, MD, FAAP, Lois Johnston, MD NAINR. 2004;4(4):201-210.
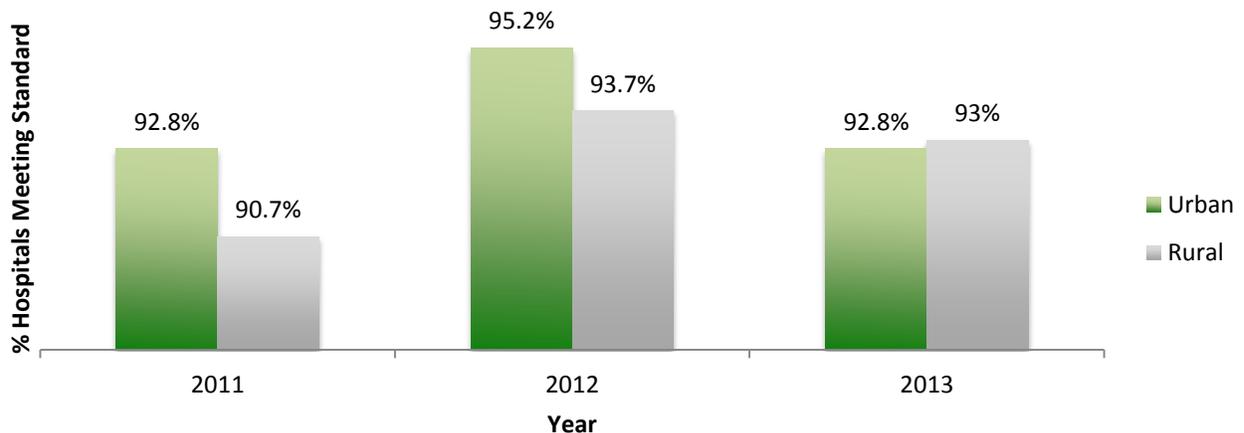
Moderate improvement in hospitals taking necessary precautions; rural hospitals catching up to urban hospitals

In 2013, 874 hospitals reported on the Bilirubin Process standard, and of those, 844 (97%) achieved or exceeded Leapfrog's standard. Notably, urban hospitals outperformed rural ones, with 97.5% (722 out of 740) meeting the standard, as compared to 91.0% (122 out of 134) of rural hospitals. Performance was similar on the DVT prevention measure, with 93.6% of hospitals (810 out of 865) meeting Leapfrog's standard, a slight decrease from 2012.

Hospitals Meeting Leapfrog's Standard for Newborn Bilirubin Screening

Y-axis: % Hospitals Meeting Standard
X-axis: Year

Year	Urban	Rural
2011	94.8%	84.5%
2012	97.6%	84%
2013	97.6%	91%

Legend: Urban, Rural

Hospitals Meeting Leapfrog's Standard for Blood Clot Prevention in Women Having a Cesarean Section

Y-axis: % Hospitals Meeting Standard
X-axis: Year

Year	Urban	Rural
2011	92.8%	90.7%
2012	95.2%	93.7%
2013	92.8%	93%

Legend: Urban, Rural

High-Risk Deliveries

When infants are born weighing less than 1500 grams (3 pounds 4.91 ounces) at birth, they are usually cared for in a neonatal intensive care unit (NICU). Research suggests that these very vulnerable babies are more likely to survive and thrive if they are born in a hospital that has an experienced NICU available on-site.[12] In cases of potentially high-risk deliveries, families should choose a hospital with a high-volume NICU, and hospitals without NICU services should transfer these newborns to hospitals that do.
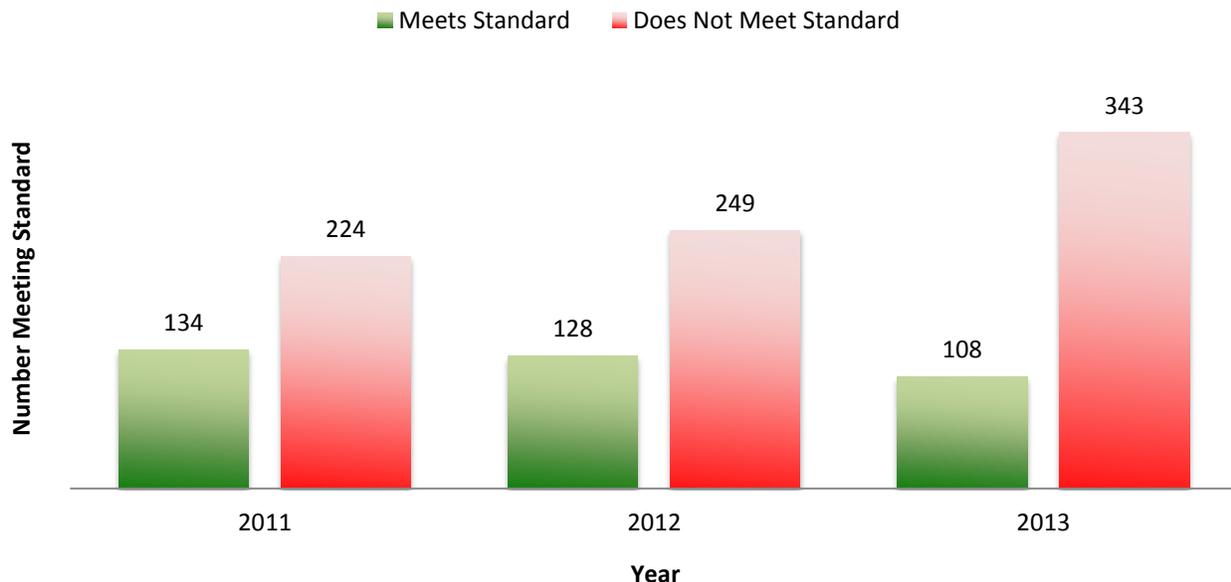
> ### *Leapfrog's Standard for High-Risk Deliveries:*
> A hospital delivers at least 50 very-low birth weight babies per year and ensures that at least 80% of mothers receive antenatal steroids prior to delivery OR the hospital has a lower than average morbidity/mortality rate for very-low birth weight babies.

Decline in hospital performance on Leapfrog's standard

Unfortunately, too many high-risk babies are being delivered at hospitals that aren't optimally equipped to care for them, and the problem is growing. In 2013, only 108 out of 451 hospitals that deliver high-risk babies (23.9%) have fully met this standard. This is a decline from 2011, when 134 out of 358 such hospitals (37.4%) met this metric.

Number of Hospitals Meeting Leapfrog's Standard for High-Risk Deliveries

■ Meets Standard   ■ Does Not Meet Standard

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[12] Phibbs CS, Bronstein JM, Buxton E, Phibbs RH. The effects of patient volume and level of care at the hospital of birth on neonatal mortality. JAMA. 1996; 276:1054-9.

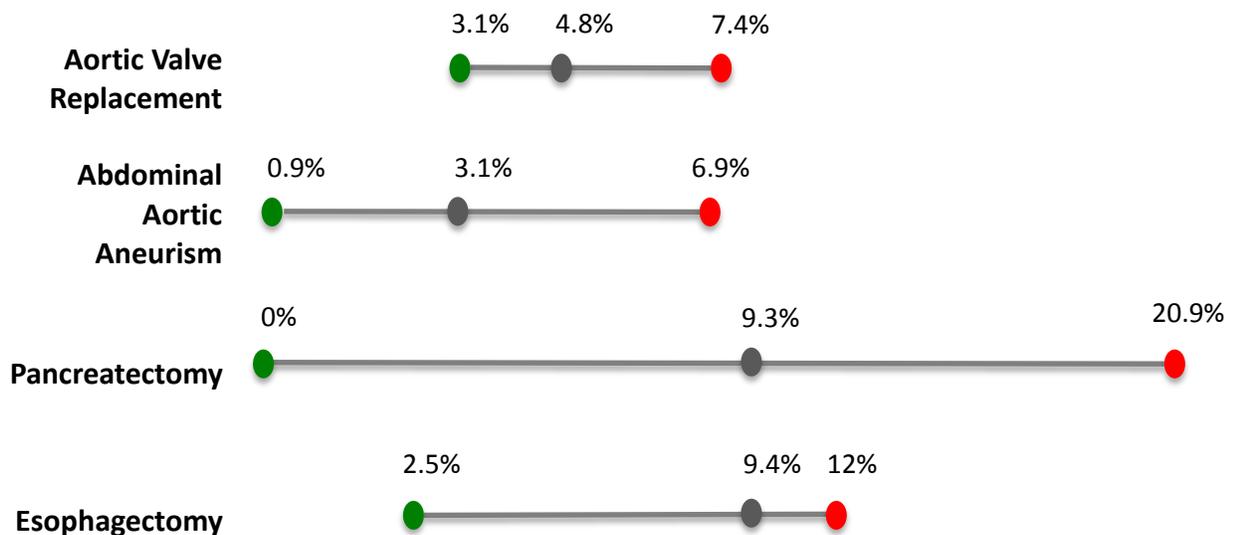## Predicting Patient Survival from High-Risk Surgeries

Choosing where to have an operation can mean the difference between life and death. The Leapfrog Hospital Survey asks hospitals to report on four high-risk surgical procedures, and Leapfrog calculates predicted survival rates, by hospital, for each procedure. Developed by Drs. John Birkmeyer and Justin Dimick at the University of Michigan, and tested for validity in peer-reviewed research,[13] the predicted survival rate is calculated using two pieces of information: the number of patients who had the surgery at a particular hospital and the number of patients who died after having the procedure at that hospital. The predicted survival rates for the four high-risk surgeries included in the Leapfrog Hospital Survey vary significantly across hospitals. The four surgeries included in the survey are:

- Esophagectomy
- Pancreatectomy
- Aortic Valve Replacement (AVR)
- Abdominal Aortic Aneurism (AAA) repair

Survival rates differ significantly among hospitals. For instance, for AAA repair, there is a seven-fold difference between predicted mortality at the best-performing hospital and predicted mortality at the worst performing hospital (0.9% vs. 6.9%). For pancreatectomies, the predicted mortality rate varies from 0% to almost 21%.

2013 High-Risk Procedure Predicted Mortality Rates

● Lowest Predicted Death Rate   ● Average Predicted Death Rate   ● Highest Predicted Death Rate

Aortic Valve Replacement
3.1%   4.8%   7.4%

Abdominal Aortic Aneurism
0.9%   3.1%   6.9%

Pancreatectomy
0%   9.3%   20.9%

Esophagectomy
2.5%   9.4%   12%

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[13] https://leapfroghospitalsurvey.org/web/wp-content/uploads/FSebhr.pdf

Hospital-Acquired Conditions: Infections, Pressure Ulcers, and Injuries

Hospital-Acquired Conditions (HACs) are medical conditions or complications that were not present when a patient was admitted to the hospital, but developed as a result of errors or accidents in the hospital. Hospitals can prevent many of these conditions; some hospitals have zero or close to zero reported HACs.

Leapfrog's Hospital Survey includes four key HACs:

1. **Hospital-acquired pressure ulcers** at stage III and IV are "bedsores" that are caused by remaining in one position for a long time, commonly in a bed or wheelchair, and can be prevented through known precautions. Stage III and IV pressure ulcers are very deep, serious sores that may reach muscle or bone. They cause pain and infection, and may prolong hospital stays or lead to amputation.

   > *Leapfrog's Standard for Hospital-Acquired Pressure Ulcers:*
   > The rate of stage III and IV pressure ulcers is zero.

2. **Hospital-acquired injuries** are falls and other traumatic injuries (broken or dislocated bones, crushing injuries, or burns) that occur while a patient is in the hospital. Although some falls and injuries may occur when hospitals are providing quality care, many others can be avoided.

   > *Leapfrog's Standard for Hospital-Acquired Injuries:*
   > The rate of falls and certain injuries is close to zero.

Hospital-acquired pressure ulcers and hospital-acquired injuries were reintroduced into the 2013 Leapfrog Hospital Survey when the Centers for Medicare & Medicaid Services (CMS) stopped publicly reporting this valuable information. These conditions are preventable, painful, and costly events that should not occur. Leapfrog believes patients and healthcare consumers have the right to know about these serious, preventable events in local hospitals, and that it is critical information for protecting themselves and their families.

3. **Central line-associated bloodstream infections** (CLABSIs) are infections caused by germs that enter the body through catheters or tubes inserted into large veins. CLABSIs continue to be one of the most deadly and costly hospital-associated infections in the U.S. CLABSIs can be prevented through proper insertion techniques and management of the central line.

   > *Leapfrog's Standard for Central Line-Associated Bloodstream Infections:*
   > The rate of infections in ICUs is zero.

4. **Catheter-associated urinary tract infections** (CAUTIs) are the most frequent types of infection in hospitals. They can result in increased lengths of stay, patient discomfort, excess healthcare costs, and sometimes death.
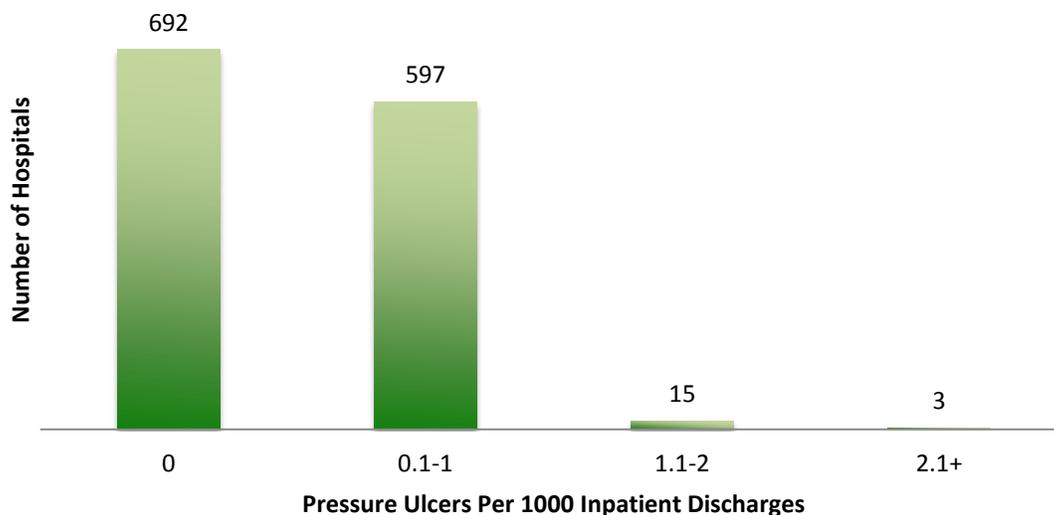
> *Leapfrog's Standard for Catheter-Associated Urinary Tract Infections:*
> The rate of infections in ICUs is close to zero.

CMS currently reports hospital data on CLABSIs and CAUTIs as part of the Inpatient Quality Reporting (IQR) program. However, this data is reported by Medicare Provider Number (MPN), which is an identifier that may cover a hospital system that includes several hospitals at different locations. Leapfrog is the only source of hospital-acquired infection and condition data by hospital (i.e. bricks-and-mortar facility). Leapfrog feels strongly that patients and healthcare consumers have the right to know about how individual hospitals in their own communities are performing.
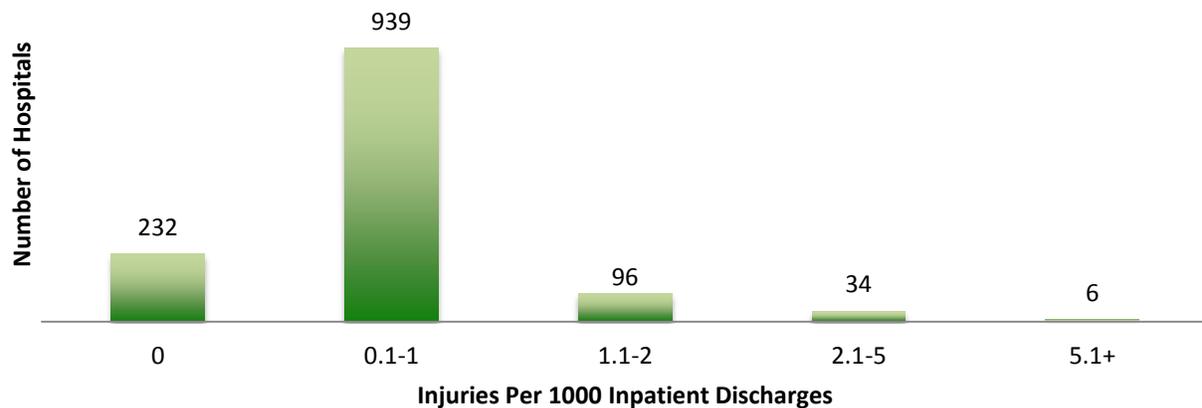
High variation in hospital-acquired pressure ulcer and hospital-acquired injury rates

Of the 1307 hospitals that reported their hospital-acquired pressure ulcer rate, 692 (52.9%) reported zero stage III & IV hospital-acquired pressure ulcers per 1000 inpatient discharges. Eighteen hospitals reported more than 1 hospital-acquired pressure ulcer per 1000 inpatient discharges. The incidence of hospital-acquired injuries was somewhat higher: only 232 of 1037 hospitals had zero hospital-acquired injuries. The average hospital-acquired injury rate was 0.521 injuries per 1000 inpatient discharges, with six hospitals reporting a hospital-acquired injury rate of more than 5 injuries per 1000 inpatient discharges.

2013 Stage III & IV Hospital-Acquired Pressure Ulcer Rates

Bar chart showing Number of Hospitals (y-axis) by Pressure Ulcers Per 1000 Inpatient Discharges (x-axis):
- 0: 692
- 0.1-1: 597
- 1.1-2: 15
- 2.1+: 3

2013 Hospital-Acquired Injury Rates

Number of Hospitals (y-axis)

- 0: 232
- 0.1-1: 939
- 1.1-2: 96
- 2.1-5: 34
- 5.1+: 6

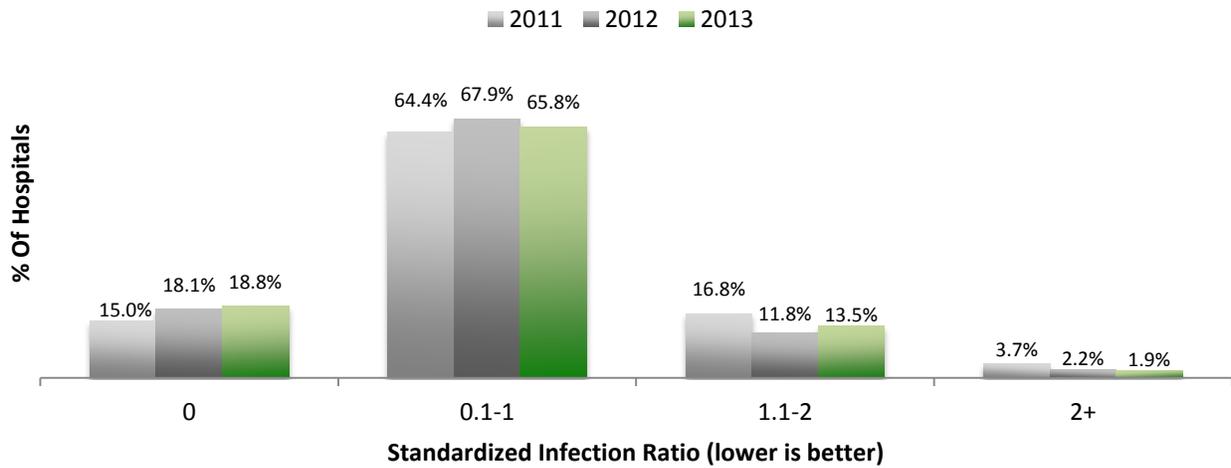**Injuries Per 1000 Inpatient Discharges** (x-axis)
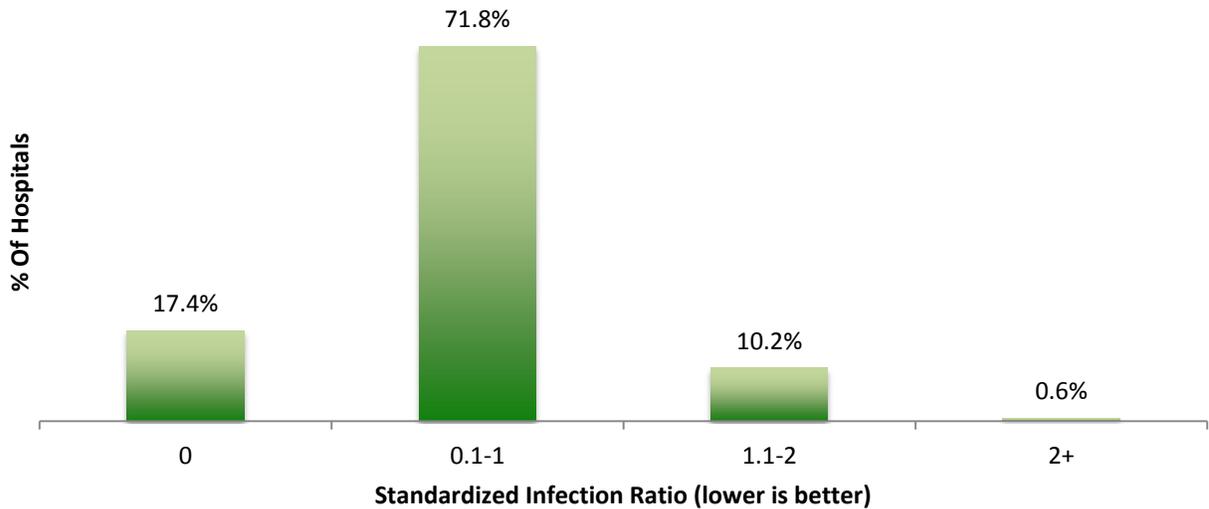
High variance in infection rates

Leapfrog uses a measure developed by the Centers for Disease Control and Prevention (CDC) to collect information from hospitals regarding central line-associated blood stream infections (CLABSIs) and catheter-associated urinary tract infections (CAUTIs). Leapfrog then uses a standardized infection ratio (SIR) to aggregate a hospital's performance across multiple ICU types and to standardize the reporting out of a hospital's performance. The SIR, which is used by the CDC and others, is a ratio of a hospital's actual number of infections over an expected number of infections. A SIR of 1.0 means that the actual number of infections is the same as the expected number of infections based on that hospital's number of days a central line or catheter was inserted in a patient and the ICU type. A SIR below 1.0 means that the actual number of infections is lower than the expected number of infections. A SIR above 1.0 indicates that the actual number of infections is worse than the expected number.

The good news is that, in general, the majority of hospitals have SIR rates of 1.0 or below, meaning they are more successful at preventing these infections than expected. However, a disturbing one in six reporting hospitals have a higher number of infections than expected from central lines, and one in ten perform poorly in preventing urinary tract infections. For the CLABSI measure – which Leapfrog has reported since 2010 – the number of hospitals with an SIR greater than 2.0 (exceptionally poor performance) has been reduced by half over the past three years.

Standardized Infection Ratios for Central Line-Associated Blood Stream Infections
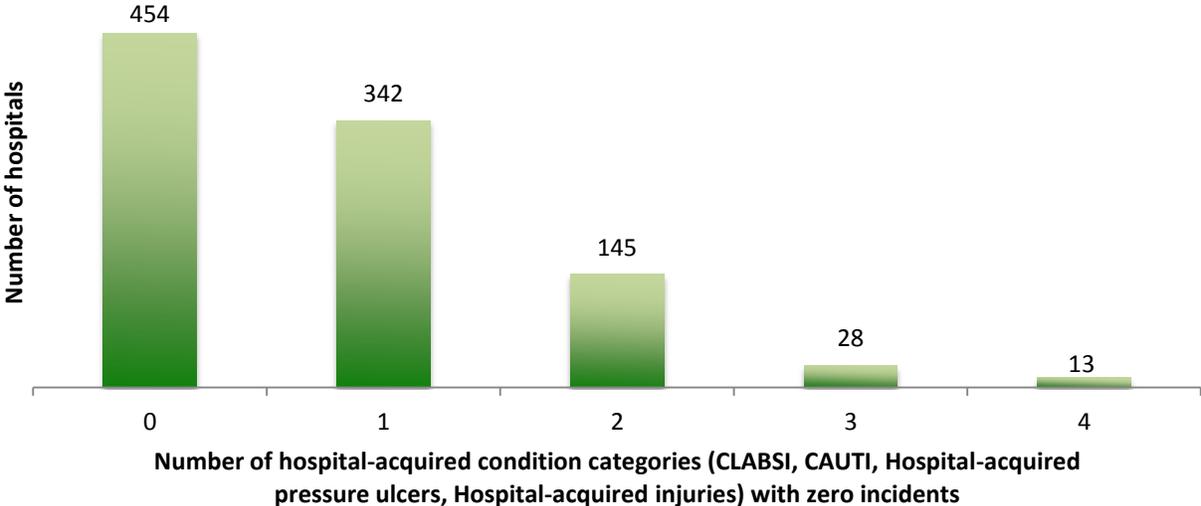
■ 2011   ■ 2012   ■ 2013

% Of Hospitals

- **0**: 15.0%, 18.1%, 18.8%
- **0.1-1**: 64.4%, 67.9%, 65.8%
- **1.1-2**: 16.8%, 11.8%, 13.5%
- **2+**: 3.7%, 2.2%, 1.9%

Standardized Infection Ratio (lower is better)

2013 Standardized Infection Ratios for Catheter-Associated Urinary Tract Infections*

% Of Hospitals

- **0**: 17.4%
- **0.1-1**: 71.8%
- **1.1-2**: 10.2%
- **2+**: 0.6%

Standardized Infection Ratio (lower is better)

*Prior year trend data unavailable because 2013 was the first year Leapfrog reported this measure.

While hospital-acquired conditions happen occasionally, 13 out of 982 hospitals reported an exceptionally good rate of zero on all four conditions in 2013. A further 28 hospitals accomplished zero on three of four conditions, 145 hospitals had a rate of zero on two of four, and 342 hospitals on one of the four conditions. 454 hospitals have not been able to reach zero for any of the four conditions.

Overall hospital performance on hospital-acquired conditions, 2013

Number of hospital-acquired condition categories (CLABSI, CAUTI, Hospital-acquired pressure ulcers, Hospital-acquired injuries) with zero incidents

Intensive Care Unit (ICU) Physician Staffing

The death rates for patients admitted to the ICU average 10-20% in most hospitals.[14] Overall, more than 200,000 patients die in U.S. ICUs each year.[15] Given the high stakes involved, the quality of care delivered in ICUs is particularly important. Unfortunately, evidence suggests that quality varies widely across hospitals.

Research has shown that hospitals staffing their ICUs with doctors specializing in critical care medicine can reduce ICU mortality by as much as 40%.

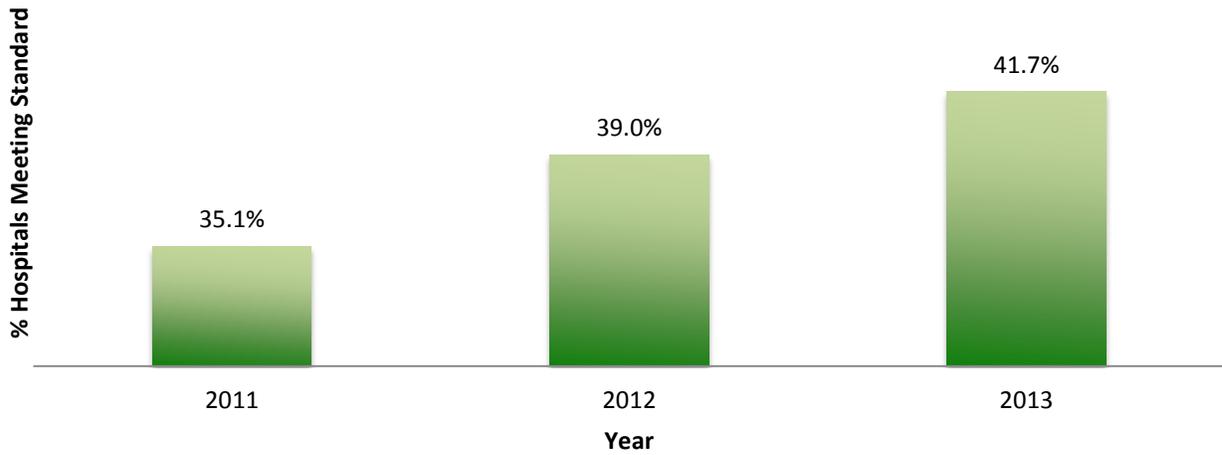> *Leapfrog's Standard for ICU Physician Staffing:*
> Patients in adult or pediatric medical and/or surgical or neuro ICUs are being cared for by physicians who are certified in critical care medicine (i.e. intensivists). These intensivists are present at least eight hours a day, seven days per week. When not present in the ICU, the intensivist responds to pages within five minutes or has another physician, physician assistant, nurse practitioner, or trained nurse that does reach the patient within five minutes.

The Leapfrog Group's 2013 Hospital Survey indicates that 41.7% of the responding hospitals fully meet Leapfrog's standard for physician coverage of the ICU. This represents an increase of 3% in hospital performance in meeting the ICU staffing standard. Since the number of Leapfrog-reporting hospitals increased in 2013, the number of hospitals fully meeting the standard has increased substantially to 552. However, there hasn't been nearly enough progress given how important this is to patients and consumers.

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[14] Zimmerman JE, Wagner DP, Draper EA, Wright L, Alzola C, Knaus WA. Evaluation of acute physiology and chronic health evaluation III predictions of hospital mortality in an independent database. Crit Care Med. 1998; 26:1317-26.

[15] Lwin AK, Shepard DS. Estimating Lives and Dollars Saved from Universal Adoption of the Leapfrog Safety and Quality Standards: 2008 Update. The Leapfrog Group. Washington, DC: 2008.

% of Hospitals Meeting ICU Physician Staffing Standard

% Hospitals Meeting Standard

35.1%

39.0%

41.7%

| 2011 | 2012 | 2013 |

Year

Never Events

Never Events are serious reportable adverse events that should never happen, but still do occur due to medical errors that are catastrophic, but preventable. These include errors such as surgery performed on the wrong body part or on the wrong patient, leaving a foreign object inside a patient after surgery, or death resulting from devices or contaminated drugs.

Leapfrog believes the public deserves reassurance that hospitals will work without fail to prevent these kinds of grave errors, and then respond responsibly if they do occur.
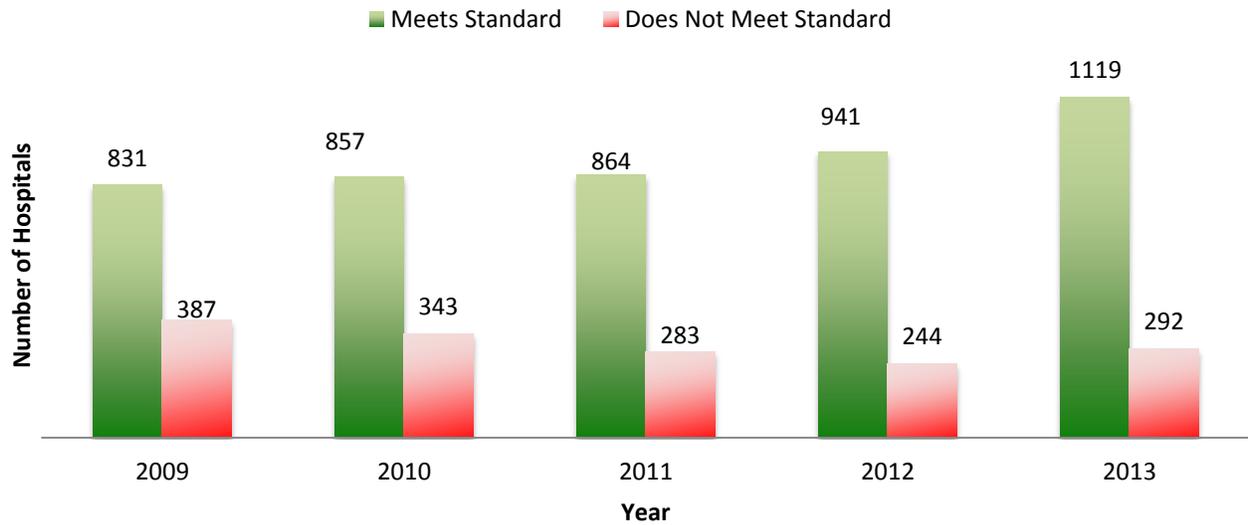
> ***Leapfrog's Standard for Never Events:***
> Hospital has a policy in place so that if a Never Event occurs, the hospital will (a) apologize to the patient and/or family (b) report the event to an outside agency (c) perform root-cause analysis (d) waive costs directly related to the Never Event and (e) make a copy of the policy available to patients and payers. A list of Never Events is available on the National Quality Forum website.
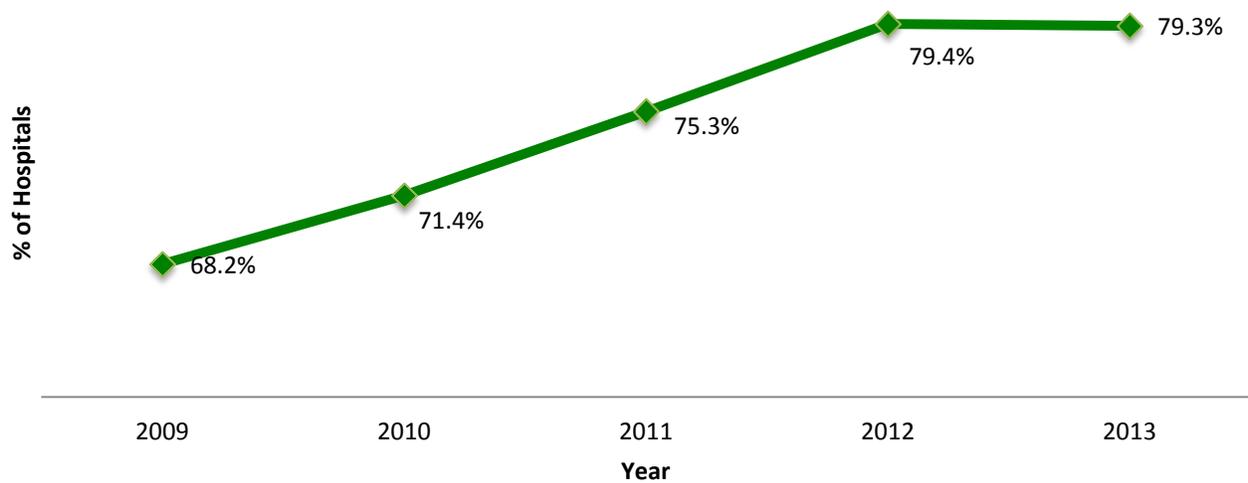
Number of hospitals meeting Leapfrog's Never Events policy standard holding steady

While the rate of hospitals meeting the Never Events policy standard has increased by 11.1% since 2009, and has plateaued at 79.3% from 2012 to 2013, the number of hospitals reporting on this metric has steadily increased. Though these results are promising, given the severity and tragedy of these errors, we would expect 100% of hospitals to put in place the straightforward elements of Leapfrog's policy.

Number of Hospitals Meeting Leapfrog's Never Events Policy Standard

■ Meets Standard　　■ Does Not Meet Standard

Number of Hospitals (y-axis)

Year	Meets Standard	Does Not Meet Standard
2009	831	387
2010	857	343
2011	864	283
2012	941	244
2013	1119	292

Year (x-axis)

% of Hospitals Meeting Leapfrog's Never Events Standard

% of Hospitals (y-axis)

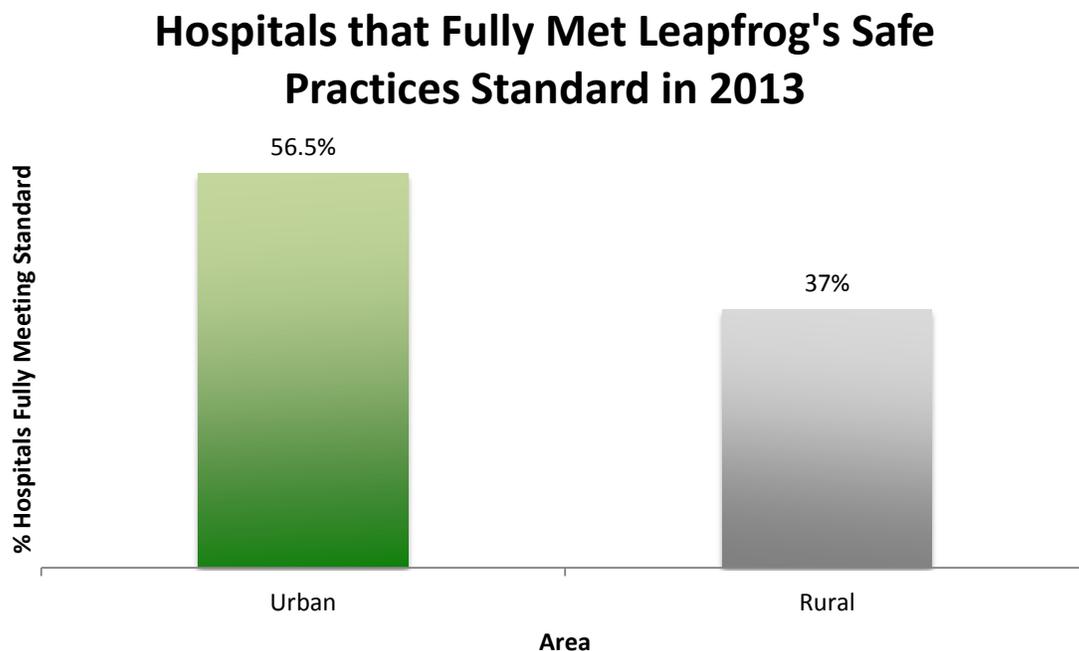| Year	% of Hospitals
2009	68.2%
2010	71.4%
2011	75.3%
2012	79.4%
2013	79.3%

Year (x-axis)

Safe Practices

Leapfrog asks hospitals to report on their implementation of eight National Quality Forum-endorsed Safe Practices that, if adopted, can improve patient safety in healthcare settings. Each of the eight safe practices includes four components: awareness, accountability, ability, and action. Each component then includes a list of activities that every hospital should accomplish. To meet this standard, hospitals earn points for each of the activities they complete. For example, the safe practice focused on Medication Reconciliation includes 14 activities organized into the four categories of awareness, accountability, ability, and action.

Hospitals meet Leapfrog's standard by completing every activity within each of the eight individual safe practices:

- Leadership structures and systems
- Culture of measurement
- Teamwork training and skill building
- Mitigating risks and hazards
- Nursing workforce
- Medication reconciliation
- Hand hygiene
- Proper interventions for ventilated patients

In general, most hospitals have done well in implementing the eight Safe Practices. Urban hospitals outperformed rural ones, with 56.5% of urban hospitals (680 out of 1203) at or above standard, as compared with only 37.0% of rural hospitals (81 out of 219).

Hospitals that Fully Met Leapfrog's Safe Practices Standard in 2013

Hospitals are scored on the eight safe practices based on how many of the activities they complete.

Leapfrog's Standard for Leadership Structure and Systems:
Hospital must ensure the involvement of senior officials, patients, and the local community in monitoring patient safety, have an integrated patient safety program, and have a formal and sufficient budget for patient safety.

Leapfrog's Standard for Culture of Measurement for Performance:
Hospital must conduct a biannual Culture of Safety Survey. The sample must account for 50% of the combined care delivered to patients within the facility, and cover the high patient safety risk units or departments. Hospitals are required to follow on this report by sharing the results with the administration; conducting staff educational programs addressing areas identified in the survey to improve the culture of safety; and implementing explicit, hospital-wide organizational policies based on the survey results.

Leapfrog's Standard for Training in Teamwork and Skill Building:
Hospital must train its staff annually in all areas of teamwork, as well as have a sufficient patient safety program budget.

Leapfrog's Standard for Risk Identification and Mitigation:
Hospital must conduct an annual risk assessment in their facilities and base their risk mitigation activities on their specific risk profile. The hospital must also provide training to its staff on risk mitigation.

Leapfrog's Standard for Nursing Workforce:
Hospital must implement critical parts of a well-designed nursing workforce plan that mutually reinforces patient safeguards, including an adequately resourced nurse staffing plan, senior administrative nursing leaders made part of the hospital senior management team, and adequate funding for nursing services including support in maintaining professional knowledge and skills.

Leapfrog's Standard for Patient Medication Management:
Hospital must perform an annual review of adverse events from medication interactions as well as conduct staff education and skill development programs for both existing staff and newly hired clinicians. A hospital must also have explicit facility-wide policies and procedures regarding medication reconciliation.

Leapfrog's Standard for Hand Hygiene:
Hospital must have board-mandated education and compliance policies around hand washing.
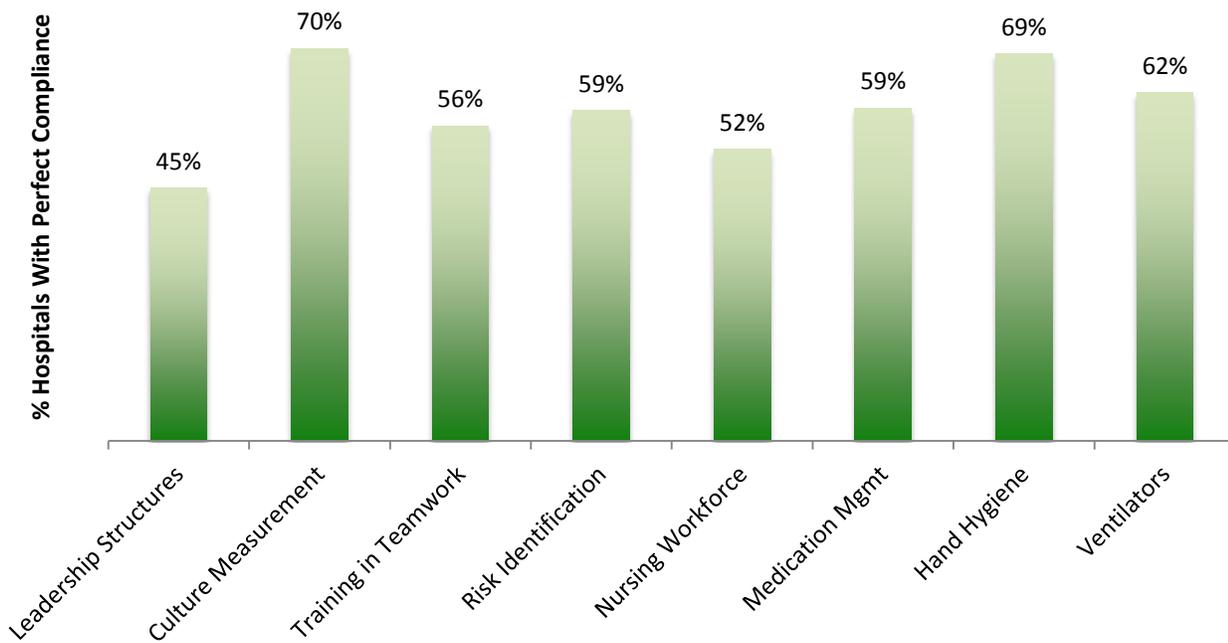
Leapfrog's Standard for Proper Intervention for Patients with Ventilators:
Hospital must conduct an annual evaluation of the frequency and severity of ventilator-associated complications, as well as hold senior officials directly accountable for improvements in performance.

High Compliance with Leapfrog's Safe Practices Guidelines

In general, hospitals have performed well on all eight of Leapfrog's Safe Practices, but only about half of all reporting hospitals have completed 100% of activities outlined for each of the eight individual safe practices. Compliance was particularly strong for culture of measurement for performance and hand hygiene, with around 70% of reporting hospitals completing all activities. On average, hospitals earned between 86% and 93% of the possible points for each safe practice.

% of Hospitals With Perfect Compliance with Leapfrog Safe Practices by Practice, 2013

Bar chart. Y-axis: % Hospitals With Perfect Compliance. Values by practice: Leadership Structures 45%, Culture Measurement 70%, Training in Teamwork 56%, Risk Identification 59%, Nursing Workforce 52%, Medication Mgmt 59%, Hand Hygiene 69%, Ventilators 62%.

Nursing Best Practices: Hospitals performing well, but more work needed in taking actions to elevate and maintain standard

Nurses provide most patient care in hospitals and they are critical to the safety and quality of any hospital. Leapfrog is the only transparent tool for consumers or purchasers to compare nursing workforce at different hospitals across the country.

Registered nurses constitute the largest group of healthcare professionals, with about 59% of nurses employed in hospitals. Because nurses are the primary hospital caregivers, not having enough nurses and a lack of quality nurse education can expose patients to greater risk. Short staffing in particular has been linked to increased mortality, complications, adverse events, longer hospital stays, and greater resource usage.
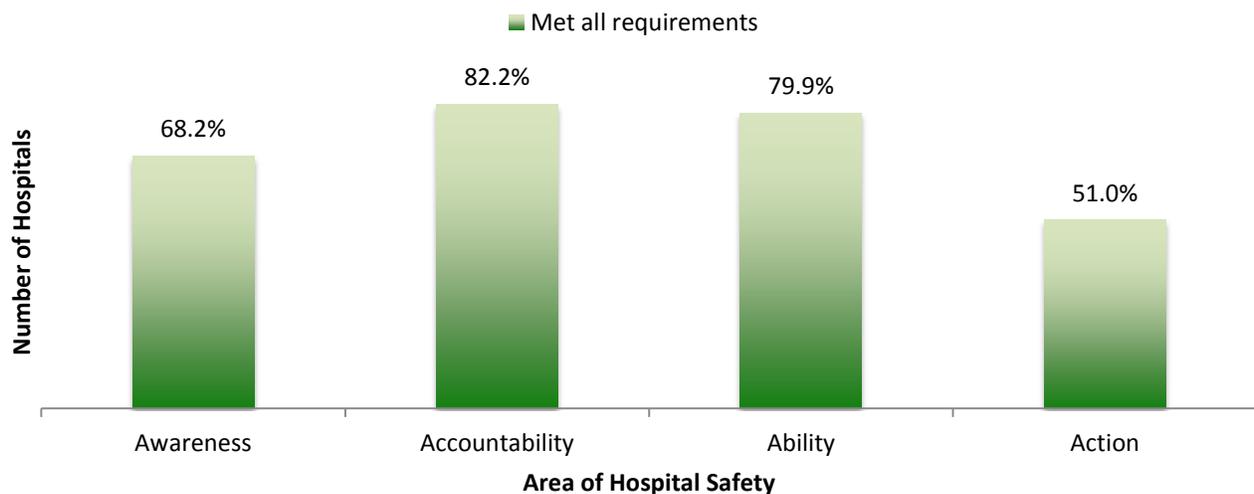
There are few measures available that analyze the nursing profession in hospitals. Leapfrog believes the public deserves to know about hospitals with strong nursing workforces, as this leads directly to increased safety and quality.

Leapfrog divides its nursing safe practice into four areas:

- Awareness – perform a risk assessment and evaluation and provide feedback to all levels of leadership
- Accountability – report performance metrics and hold all levels of leadership accountable
- Ability – conduct staff training and provide adequate budgetary resources
- Action – implement policies and procedures to ensure adequate staffing is achieved and provide an annual report on progress to the public

While hospitals perform well in all four areas, with at least half of all hospitals meeting each one perfectly, hospitals perform strongest in the areas of Accountability and Ability, and weakest in the area of Action.
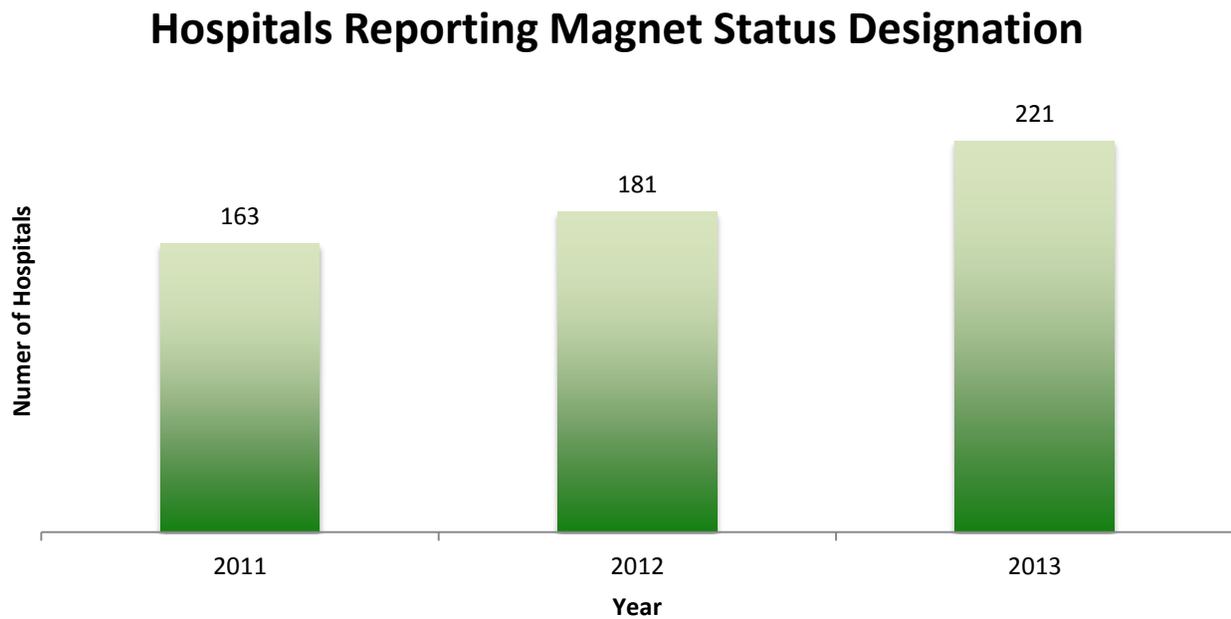
Nursing Workforce Best Practices Requirements Met, 2013

■ Met all requirements

Area of Hospital Safety	Met all requirements
Awareness	68.2%
Accountability	82.2%
Ability	79.9%
Action	51.0%

Magnet Status

Leapfrog is the only ratings provider that tracks and rewards Magnet® Status, an elite designation for nursing excellence, and gives credit to hospitals with this designation as fully meeting Leapfrog's standard for nursing workforce. The Magnet Recognition Program cites healthcare organizations for quality patient care, nursing excellence, and innovations in professional nursing practice, and requires those singled out to also demonstrate important safety outcomes. Developed by the American Nurses Credentialing Center (ANCC), Magnet is the leading source of successful nursing practices and strategies worldwide.[16]

The number of hospitals who reported having a Magnet Status designation has increased steadily over the last three years, with 221 hospitals reporting this designation in 2013.
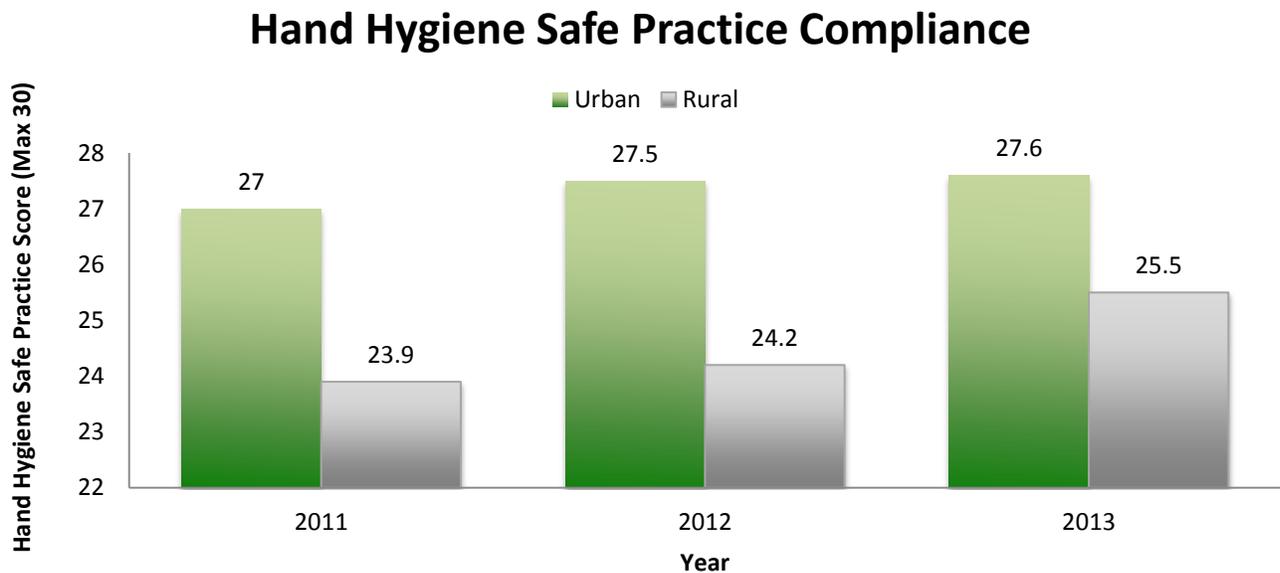
Hospitals Reporting Magnet Status Designation

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[16] http://www.nursecredentialing.org/magnet.aspx

Hand Hygiene: High compliance over time, with urban hospitals outperforming rural

Many healthcare-associated infections (HAIs) are caused by pathogens transmitted from one patient to another via the contaminated hands of healthcare workers. The CDC estimates that approximately 2 million patients annually acquire an HAI, and nearly 90,000 patients die as a result. Hand hygiene is one of the most important and effective means to stop the spread of pathogens in healthcare facilities. In 2013, Leapfrog reported that 69% of hospitals in the Leapfrog Hospital Survey had board-mandated education and compliance policies around hand washing. All hospitals in the U.S. should have policies for hand hygiene.

Leapfrog's results show a slow, steady increase in compliance on the hand hygiene safe practice, with hospitals averaging 27.3 out of a possible 30 points. As before, urban hospitals outperformed rural ones, averaging 2.1 points higher in 2013.

Hand Hygiene Safe Practice Compliance

■ Urban   ■ Rural

Year	Urban	Rural
2011	27	23.9
2012	27.5	24.2
2013	27.6	25.5

Y-axis: Hand Hygiene Safe Practice Score (Max 30)

Conclusion

The U.S. healthcare system is undergoing major transformation, from policy and regulatory changes associated with the implementation of the Affordable Care Act, to market-driven changes as purchasers put an increasing focus on value-based purchasing, narrowed networks, high-deductible health plans, and prevention and primary care. All of these shifts require trust and transparency among providers, consumers, purchasers, and policymakers. Leapfrog was the business community's first attempt to spur that new level of transparency, and it remains a fundamental building block for quality and safety improvement.

Since Leapfrog's debut in 2000, the number of hospitals participating in the Leapfrog Hospital Survey has increased 715%, with more than 37% of hospitals reporting in 2013. The value of Leapfrog as a trusted and respected source of important hospital information is steadily growing as employers and healthcare purchasers require increased visibility into the quality performance of the facilities from which their employees are receiving care. Further, Leapfrog continues its efforts to include new hospitals as well as to expand the survey scope and develop leading clinical best practices. In 2013, it was promising to see ongoing improvement in many areas of the survey, such as early elective deliveries, computerized physician order entry of prescriptions, and ICU Physician Staffing. Even more improvement is needed in these areas in 2014, as well as in high-risk deliveries, Never Events policy adoption, and more—where progress seems to have stalled.

Leapfrog encourages purchasers and employers to work closely with hospitals to create a more efficient U.S. healthcare system. Interested organizations are invited to participate in a local Regional Roll-Out, or become a Regional Roll-Out organization. To learn more about these initiatives or about The Leapfrog Group, please visit The Leapfrog Group's website at www.LeapfrogGroup.org. You can also find the Leapfrog Hospital Survey Results for your hospital at www.LeapfrogGroup.org/CP.

About The Leapfrog Group:

The Leapfrog Group (www.LeapfrogGroup.org) is a national, nonprofit organization using the collective leverage of large purchasers of healthcare to initiate breakthrough improvements in the safety, quality and affordability of healthcare for Americans. The flagship Leapfrog Hospital Survey allows purchasers to structure their contracts and purchasing to reward the highest performing hospitals, and the Hospital Safety Score (www.HospitalSafetyScore.org) publishes letter grades rating hospitals on how safe they are for patients. The Leapfrog Group was founded in November 2000 with support from the Business Roundtable and national funders and is now independently operated with support from its purchaser and other members.

About Castlight Health:

Castlight Health, Inc. (NYSE: CSLT) believes great healthcare builds great business. The Castlight Enterprise Healthcare Cloud enables employers to deliver cost-effective benefits, provides medical professionals and health plans a merit-based market to showcase their services, and – most importantly – empowers employees to make informed choices with a clear understanding of costs and likely outcomes. For more information visit http://www.castlighthealth.com. Follow us on Twitter and LinkedIn and Like us on Facebook. Castlight Health is the registered trademark of Castlight Health, Inc. Other company and product names may be trademarks of the respective companies with which they are associated.