Issue Brief
Findings from HSC

LEAPFROG PATIENT-SAFETY STANDARDS ARE A STRETCH FOR MOST HOSPITALS

by Kelly J. Devers and Gigi Liu

The Leapfrog Group, a national coalition of large health care purchasers, has championed three hospital patient-safety initiatives—computerized physician order entry systems, staffing of intensive care units (ICUs) with specially trained physicians and evidence-based hospital referrals for certain high-risk procedures. While Leapfrog's campaign has raised hospital awareness of these patient-safety practices and spurred some implementation efforts, few hospitals are close to meeting Leapfrog standards, according to findings from the Center for Studying Health System Change's (HSC) 2002-03 site visits to 12 nationally representative communities. Moreover, Leapfrog's focus on selected communities—known as regional rollouts—has not yet prompted significantly greater implementation of the three hospital patient-safety practices in targeted communities. Many factors, including a lack of incentives for hospitals, are hindering hospital buy in and fulfillment of the Leapfrog standards.

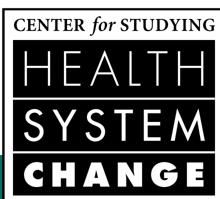
To Boldly Leap Where Few Hospitals Have Gone

In 1999, the Institute of Medicine (IOM) found that between 44,000 and 98,000 Americans die every year from preventable medical errors in hospitals—more than die from motor-vehicle accidents, breast cancer or AIDS. To help reduce medical errors, the IOM recommended that purchasers provide incentives for health care organizations to demonstrate continuous improvement in patient safety.

In response to the IOM report, the Business Roundtable, an association of chief executive officers of Fortune 500 companies, formed the Leapfrog group in 2000 to stimulate breakthrough improvements—or leaps—in patient safety. Leapfrog members agree to adhere to four purchasing principles: 1) educating enrollees about patient safety and the importance of comparing hospital performance; 2) recognizing and rewarding hospitals for major advances in protecting patients from preventable medical error, by, for example, steering patients to better performing hospitals through provider network selection or paying more to better performing hospitals; 3) holding health plans accountable for implementing the Leapfrog purchasing principles; and 4) building the support of benefits consultants and brokers to use and advocate for the Leapfrog purchasing principles with all of their clients.

Since Leapfrog's formation, the group has championed three hospital patient-safety practices:

- **Computerized Physician Order Entry (CPOE)**—whether hospitals have an electronic prescribing system to prevent medication errors.
- **ICU Physician Staffing**—whether hospitals use physicians board certified in the subspecialty of critical



Data Source

Every two years, HSC researchers visit 12 nationally representative metropolitan communities to track changes in local health care markets. The 12 communities are Boston; Cleveland; Greenville, S.C.; Indianapolis; Lansing, Mich.; Little Rock, Ark.; Miami; northern New Jersey; Orange County, Calif.; Phoenix; Seattle; and Syracuse, N.Y. HSC researchers interviewed key individuals in each community, including hospital representatives.

This Issue Brief is based on an analysis of these individuals' assessments of patient-safety activities in the 12 markets and data from two complementary surveys: an HSC patient-safety survey fielded during the 2002-03 site visits and the Leapfrog Group's publicly reported survey data from November 2000 to April 2003. The HSC patient-safety survey was completed by mail or fax by the person primarily responsible for patient safety at three to four of the largest hospital systems or hospitals in each market. For systems, respondents were asked to complete it for their flagship or main hospital. A total of 33 surveys were completed —a 90 percent response rate.

Five of the 12 HSC markets were included in the Leapfrog regional rollout campaigns: Boston, Lansing, northern New Jersey, Orange County and Seattle. While Lansing was included in the Leapfrog rollout campaign, Lansing hospitals did not take part in the Leapfrog survey and instead reported their progress on intensivist implementation and several volume referral standards to the Michigan Health and Safety Coalition. Updated Leapfrog survey data released in July 2003, after the HSC site visits were completed, show similar overall results.

Table 1

Leapfrog Group Hospital Survey Results for HSC Markets Included in Rollout Areas

HSC Market	Survey Response Rate	CPOE Avg. (Range: 0-100%)	ICU Physician Staffing Avg. (Range: 0-100%)	Avg. No. of Hospital Referral Requirements Fulfilled (Range: 0-6)
Boston	77%	*49.3%*	*49.2%*	*.8*
Lansing*	50	*NA*	*50.0*	*2.5*
Northern New Jersey	75	*45.8*	*48.6*	*1*
Orange County	33	*61.1*	*46.9*	*1.3*
Seattle	81	*48.5*	*65.6*	*1.4*
All HSC Markets	63	*51.2*	*52.1*	*1.3*

* Hospitals in Lansing did not participate in the Leapfrog survey, but they reported their progress on intensivist implementation and several referral procedures to the Michigan Health and Safety Coalition.

Notes: The data reported here were collected from November 2000 through April 2003, one month before the last HSC site visit was completed. More recently released data in July 2003, on four of the five HSC markets included in Leapfrog regional rollout areas show similar overall results. The number of procedures summarizes the total number of six types of procedures performed at the hospitals that meet or exceed Leapfrog standards. Six is the maximum number that could be met or exceeded, but sometimes the procedure is not performed at a hospital. The procedures are coronary artery bypass, coronary angioplasty, abdominal aortic aneurysm repair, carotid endarterectomy, esophageal cancer surgery, and high-risk deliveries and neonatal ICUs.

Scoring:
0% = **Did not submit information**
25% = **Willing to report publicly**
50% = **Good early stage effort**—hospital has developed an action plan and is committed to implementing the practice in the next few years.
75% = **Good progress**—hospital has begun to implement the practice, has a clear action plan and has committed the resources to achieve full implementation within the next few years.
100% = **Fully implemented recommended safety practice**

Source: Leapfrog Hospital Survey (updated as of 4/4/03) and Michigan Health and Safety Coalition Survey

care medicine to provide care in adult medical and surgical ICUs.

- **Evidence-Based Hospital Referral**—whether hospitals meet volume thresholds for six high-risk procedures. If hospitals do not meet the volume thresholds, they should refer patients to hospitals meeting the standard.

Leapfrog used four criteria to select these patient-safety practices: scientific evidence that the safety leaps will significantly reduce errors; implementation by the health industry is feasible; consumers can readily appreciate their value; and health plans, purchasers or consumers can easily determine which health care providers meet the standards.[1] For each patient-safety practice, Leapfrog developed standards, set ambitious time frames for full implementation and developed a survey process and scoring system so hospitals could voluntarily report their progress. Beginning with the first survey in 2001, comparative survey results were shared with purchasers, health plans and consumers.[2]

According to HSC site visit findings, hospitals in the 12 communities were in the planning and early implementation stages, and many intended to meet the spirit if not the letter of the Leapfrog standards by substituting alternatives they believed were more cost-effective (see Data Source). On average, hospitals in the five HSC site visit markets included in Leapfrog's initial regional campaigns had not made significantly more progress toward meeting the standards than hospitals in the seven HSC site visit markets

not included in the Leapfrog target areas (see box).

Lack of incentives and the organizational and technical challenges of implementing the three patient-safety practices have hindered hospital buy in and fulfillment of the Leapfrog standards. Despite Leapfrog's substantial efforts, hospitals' incentives for improvement in these three areas remain weak or negative, many hospitals disagree with Leapfrog's choice of patient-safety practices or specific standards, and significant barriers to full implementation remain.

Leapfrog Regional Focus Makes Little Difference

HSC patient safety survey results suggest that the impact of Leapfrog's regional rollout campaigns to date has been modest at best (see Web-exclusive table). Hospitals in markets included in Leapfrog regional rollout areas scored slightly higher on CPOE on average than hospitals not included in such markets (2.9 vs. 2.5). However, these differences were not statistically significant. The average score for ICU physician staffing was almost the same for hospitals in Leapfrog and non-Leapfrog regional rollout areas (4.0 vs. 3.9).

A small number of large employers participate in Leapfrog regional rollouts, and their efforts are relatively new and often have a statewide rather than a market-specific focus (see Table 2). Even when Leapfrog purchasers have a significant local market presence, they face challenges that employers attempting to use value-based purchasing strategies often encounter: relatively limited leverage because of health plan and hospital consolidation; inability to get hospitals to participate in voluntary quality reporting efforts; and few strong incentives for rewarding health plans or hospitals for improvement.[3]

Two HSC markets provide a good illustration of how hospitals can be at similar implementation stages for one or more of these patient safety practices, although some are included in a Leapfrog regional rollout area—Boston—and the others are not—Indianapolis. While the prestigious academic medical centers in Boston have been pioneers in some of these areas, this has not translated into greater progress at other local hospitals.[4] In contrast, Indianapolis is not a Leapfrog regional rollout area, but many hospitals there reported developing initiatives to meet the group's standards to both demonstrate their own commitment to improvement and to prevent organized purchaser activity on this issue in the future. On both the Leapfrog and HSC patient-safety surveys, the hospitals in Indianapolis reported making as much progress on average as hospitals in Boston.

A Long Way to Leap

Although hospitals are carefully considering the Leapfrog patient-safety practices and some are beginning to make progress, results from the national Leapfrog survey and the HSC site visit survey show that hospitals still have a long way to go to meet the standards (see Table 1).

CPOE. According to the Leapfrog survey, hospitals in the 12 HSC communities on average had made a "good early stage effort" toward implementing CPOE, meaning the hospital had developed an action plan and had committed to implementing the practice in the next few years. Another way of looking at hospitals' progress is to examine the percentage of hospitals reporting "full implementation" (or 100%). By April 2003, only 6 percent of hospitals in the five communities had fully implemented CPOE, according to the Leapfrog survey. HSC survey results were similar but slightly more positive. According to the HSC survey, most hospitals reported partially implementing CPOE by piloting the practice in one area or department of the hospital or substituting what they believed to be cost-effective alternatives, such as bubble forms with standardized medication orders or handheld devices with software to catch incorrect dosages or medication interactions. However, similar to the Leapfrog survey, only 6.7 percent of the hospitals in the 12 sites reported full CPOE implementation, according to the HSC survey.

ICU Physician Staffing. On average hospitals in the 12 HSC communities had made a good early stage effort toward meeting the standard, scoring in the 50 percent range on the Leapfrog survey. And, a much higher proportion of hospitals—22 percent—reported fully implementing this patient-safety practice.

Hospitals indicated more progress on the HSC survey, reporting on average that they had fully implemented the practice "in some ICUs." More than twice as many hospitals reported full implementation of ICU physician staffing on the HSC survey than on the Leapfrog survey (57% vs. 22%). In interviews, hospital respondents said they should be given credit for alternative ways of achieving the ultimate goal of safer ICU care even if they did not fully meet the Leapfrog standard. For example, the use of hospitalists—physicians who care for patients in the entire hospital not just the ICU—sometimes was reported as fulfilling the ICU physician standard.

Evidence-Based Hospital Referral. According to the Leapfrog survey, hospitals in the 12 HSC communities on average were meeting one to two of the six possible targets for high-risk procedure volume. Hospitals most often met the Leapfrog standard for high-risk deliveries and neonatal ICUs (65.2%) and coronary angioplasty (63.9%) and much less frequently met the

Table 2
HSC Markets Included in Leapfrog Regional Rollout Areas

HSC Site Visit Market	Leapfrog Group Regional Rollout Leader	Geographic Focus	Date Regional Rollout Began
Boston	*Verizon Communications*	*Statewide*	*April 2002*
Lansing, Mich.	*General Motors*	*Statewide*	*June 2001*
Northern New Jersey	*Healthcare Payers Coalition for Patient Safety*	*Statewide*	*April 2002*
Orange County, Calif.	*Pacific Business Group on Health*	*Statewide*	*June 2001*
Seattle	*Boeing Corp. and the International Association of Machinists and Aerospace Workers*	*Seattle*	*June 2001*

Sources: HSC and Leapfrog Group

standard for the other four procedures. Perhaps most striking, given the prevalence and cost of the procedure, only 35.7 percent of hospitals met the Leapfrog threshold for coronary artery bypass graft surgery.

The HSC patient safety survey did not ask hospitals to report volumes for the six high-risk procedures, but hospital respondents were asked to identify major patient-safety initiatives and discuss their progress toward meeting the Leapfrog referral standards generally. The largest hospitals often stated that they met many of the volume thresholds before Leapfrog developed standards. The remaining hospitals stated that other factors affecting volume, such as physician referral patterns and patient preferences, were out of their control, so they were not focusing on initiatives in this area.

Lack of Incentives, Other Factors Slow Progress

The majority of hospital executives interviewed by HSC researchers stated that Leapfrog has raised national awareness of patient safety generally and the three safety practices in particular. Despite the positive impact of Leapfrog efforts at the national level, many hospitals reported that employers and health plans in their markets were not providing strong incentives, especially financial incentives, to meet the standards or participate in the Leapfrog survey.

In addition to the absence of strong hospital incentives, hospital and physician incentives are not aligned. Hospitals' efforts to meet the three Leapfrog standards often are seen by physicians as restricting their autonomy and reducing their productivity and income. As a result, hospitals must work to secure and maintain physician support. One hospital respondent captured the general sentiment well, noting that one of the "fastest ways to the CEO graveyard is to push physicians too hard and fast on patient safety and quality improvement."

Many hospitals and physicians also do not agree with Leapfrog's approach or specific standards. They contend that evidence for the three patient-safety practices, particularly the volume thresholds for high-risk procedures, is not as strong as suggested and that other practices may be just as valid and more practical and cost-effective. They also complain that the standards are too rigid and do not take into account constraints, such as a shortage of physicians board certified in critical care medicine, and differences among hospitals, such as large vs. small or teaching vs. non-teaching.

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Hospitals attempting to implement Leapfrog's three patient-safety practices face difficult mission and business decisions and a host of organizational and technical challenges. Some hospitals view patient-safety improvement as a requirement rather than an option, despite the potential for declines in revenue and tension with physicians and other clinicians. However, even when hospitals view patient safety as a requirement, lack of organizational capacity—including time, money, managerial and clinical leadership, and expertise—is a significant barrier. Beyond these general organizational concerns, hospital respondents identified specific challenges to implementing the three Leapfrog patient-safety practices.

CPOE is perceived to be costly and risky. The hardware and software upgrades needed are expensive and require significant staff training time, and productivity often declines during implementation. CPOE also is technically complex, whether hospitals develop in-house systems or use off-the-shelf systems that may not have strong track records. The challenge of integrating either type with existing hospital information systems is significant.

With respect to ICU physician staffing, there is a shortage of intensivists. In addition, hiring intensivists and having them exclusively care for ICU patients can anger other physicians who want to retain control of their patients' care and the associated revenue. Although quality may be enhanced, ICU physician staffing may result in a loss of hospital revenue under certain circumstances and payment methods. For example, if health plans do not provide a bonus for improvement in this area and the hospital is being paid on a discount off charges or per-diem basis, use of intensivists may result in a loss of hospital revenue because patients' length of stay declines. Moreover, intensivists do not necessarily order more billable services, such as diagnostic tests.

Finally, evidence-based hospital referral can lead to declines in hospital revenue and conflict with physicians and patients, even when ultimately improving quality. Four of the six high-risk procedures for which Leapfrog set volume thresholds are cardiovascular procedures, which are relatively profitable for hospitals.[5] As a result, hospitals are reluctant to give up referrals and the associated revenue if they do not meet the volume thresholds.

Leaping in the Same Direction

Initially, the Leapfrog Group and government purchasers used different approaches and measures for improving hospital patient safety. However, through the National Quality Forum (NQF), public and private purchasers have worked with health plans, providers and consumers to establish a consensus on hospital quality and safety measures that may foster greater coordination of improvement efforts.

In early 2003, NQF announced a consensus on 26 safety practices to reduce medical errors. The NQF-endorsed safety practices did not initially include the Leapfrog standards for ICU physician staffing and volume thresholds for high-risk procedures, but NQF incorporated the Leapfrog standards into final consensus standards issued later in 2003. Additionally, Leapfrog indicated that it would use NQF-endorsed practices and measures when possible rather than using different measures and standards in the future.

Much of purchasers' ability to use Leapfrog's purchasing principles rests on their ability to collect and publicly report comparative hospital patient safety information. However, in the five HSC markets included in Leapfrog regional rollout areas, only 63 percent of hospitals on average completed the Leapfrog survey.[6] In addition, Leapfrog survey data indicate that hospital response rates in local markets have not increased significantly since the initiative began, and in some markets, the response rate has declined. Employers' inability to get all or almost all hospitals to report patient-safety data not only makes it difficult to use key purchasing principles, it also raises concerns about reporting bias common with voluntary public reporting efforts. Research shows that health plans and hospitals that have low quality of care scores often stop participating in voluntary public reporting efforts.[7]

Overcoming Barriers

While Leapfrog's focus on patient safety has sparked national awareness, the group's efforts have not resulted in rapid change in local health care markets. Efforts to improve patient safety are likely to be more successful if private and public purchasers collaborate to create strong incentives—particularly financial incentives—for hospitals to improve patient safety.

The public sector also could complement Leapfrog efforts through collaboration on research, information technology, reporting and purchasing approaches.

Research. The first area where research is needed is the development of additional valid and reliable patient safety measures that are relatively easy and inexpensive for providers to collect. A second critical research area is what patient-safety practices are most cost-effective and how best to implement them in diverse types of hospitals and care settings. Without sound research in these areas, it will be difficult for policy makers to select patient-safety practices for providers to focus on and to hold diverse providers accountable fairly for improvement. Finally, research about how to better communicate comparative patient safety information to consumers is needed.

Information Technology. Some have suggested that federal support through subsidies or loans is needed to spur investment in information technology (IT), so that quality and error data collection, analysis and improvement efforts are more efficient and effective. Others contend that IT investment should be made by private

Reporting initiatives vary widely on three key dimensions—what is reported, to whom and under what conditions.

health care organizations competing in the marketplace because providing safe care should be a basic requirement and IT investment is likely to reduce providers' costs. Even if government were to take a more central role, there are many options for policy makers to consider. Supporting the development of common electronic health record terms and platforms so that the private IT market could work more effectively is one example. Others include revising anti-kickback and fraud and abuse laws to stimulate more private investment and adopting payment incentives to encourage hospital investment and use of information technology. [8]

Quality Reporting. Reporting initiatives vary widely on three key dimensions—what is reported, to whom and under what conditions. Mandatory public reporting of aggregate quality measures can be a powerful incentive for providers to improve. However, early reporting efforts often are voluntary, private—results not shared with the public—and more comprehensive, so data collection and measures can be refined, provider self-assessment can occur out of the public eye and approaches to improve performance can be developed.

Purchasing. Finally, federal and state governments could use their substantial purchasing power through Medicare and Medicaid to provide hospitals with incentives to improve patient safety. To date, policy makers primarily have relied on nonfinancial incentives to stimulate hospitals to improve quality more broadly through such indirect mechanisms as Medicare conditions of participation and state licensure and certificate of need laws. However, beginning in 2005, Medicare will increase inpatient payments to hospitals that submit information on 10 quality measures. ●

Notes

1. Leapfrog Group Fact Sheet (January 2004), at *http://www.leapfroggroup.org/FactSheets/LF_FactSheet.pdf.*
2. The Leapfrog standards were revised for the 2003 survey, in some cases making it easier for hospitals to meet the standards or receive partial credit for progress. See New Survey Version Online, Summary of Changes to the Leapfrog Hospital Patient Safety Survey, at *http://Leapfrog.medstat.com/new.html.*
3. Hargraves, J. Lee, and Sally Trude, "Obstacles to Employers' Pursuit of Health Care Quality," *Health Affairs*, Vol. 21, No. 5 (September/October 2002).
4. Kuperman, G.J., et al., "Patient Safety and Computerized Medication Ordering at Brigham and Women's Hospital," Joint Commission Journal of Quality Improvement, Vol. 27, No. 10, (October 2001).
5. Devers, K.J., Brewster, L., and Ginsburg, P., *Specialty Hospitals: Focused Factories or Cream-Skimmers?*, Issue Brief No. 62, Center for Studying Health System Change, Washington, D.C. (April 2003).
6. This overall response rate is slightly higher than that for hospitals in Leapfrog regional rollout areas nationally, which is 59 percent. See Suzanne DelBanco testimony before the U.S. Senate Permanent Subcommittee on Investigations, Committee on Governmental Affairs, "Patient Safety: Instilling Hospitals with a Culture of Continuous Improvement" (June 11, 2003).
7. McCormick, D., et al., "Relationship Between Low Quality-of-Care Scores and HMOs' Subsequent Public Disclosure of Quality-of-Care Scores," *Journal of the American Medical Association*, Vol. 288, No. 12 (Sept. 25, 2002).
8. Thompson, E., "National Health Information Infrastructure (NHII) Conferees Work Toward Healthcare IT Roadmap," *Modern Physician* (July 2, 2003).

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600 Maryland Avenue, SW, Suite 550
Washington, DC 20024-2512
Tel: (202) 484-5261
Fax: (202) 484-9258
www.hschange.org

President: Paul B. Ginsburg
Vice President: Len M. Nichols
Director of Site Visits: Cara S. Lesser

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