Health Cost Containment and Efficiencies

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Health Care Provider Patient Safety

Cost Containment Strategy and Logic

Patient safety refers to rules, practices and systems to prevent patient harm or injury, including efforts to prevent medical errors. These errors, also known as adverse events, are occurrences of unintended harm from medical care. The main categories of medical errors are treatment errors, failure to complete indicated tests, and avoidable delays in treatment. Patient safety also includes efforts to reduce health care-associated infections that result from treatment in a hospital or other medical care setting.[1] The goal of patient safety initiatives is to reduce pain, suffering and deaths associated with preventable, unintended harm to a patient.

Medical errors are the eighth leading cause of death in the United States. More people die from medical errors than from motor vehicle accidents, breast cancer or AIDS. Each year, between 500,000 and 1.5 million Americans admitted to hospitals are harmed by preventable medical errors.

Nationwide, the estimated annual cost of additional medical and short-term disability expenses associated with medical errors is $19.5 billion (Table 1). Longer hospital stays and the cost of treating medical error-related injuries and complications are the two major expenditures associated with medical errors.

Target of Cost Containment

Cumulatively, the most expensive, preventable hospital care-related problems are pressure ulcers; postoperative infection; mechanical complications related to a device, implant or graft; chronic pain after failed back surgery; and excessive and unintended bleeding complicating a procedure. They account for more than 55 percent of the estimated total cost of medical errors. In 2006, just two conditions caused by hospital-acquired infections—sepsis and pneumonia—were responsible for nearly 50,000 deaths nationwide and cost more than $8 billion to treat.

Table 1. The High Cost of Inpatient and Outpatient Medical Errors, 2008 U.S. Estimates

Total medical, mortality and short-term disability costs	**$19.5 billion**
Average cost per medical error	**$13,000**
Missed days of work	**10 million**
Excess deaths	**2,500**

Source: Jon Shreve et al., The Economic Measurement of Medical Errors (Schaumburg, Ill.: Society of Actuaries, June 2010); http://www.soa.org/files/pdf/research-econ-measurement.pdf.

Examples of patient safety initiatives that improve patient care and reduce costs exist, but evidence of overall savings is limited.

Hospital-acquired conditions cost states millions of dollars annually. A 2008 study estimated Massachusetts could save between $446 million and $718 million in Medicaid expenditures over 10 years (2010–2020) by reducing or eliminating payments for serious medical errors.[2]

Federal Health Reform

The Patient Protection and Affordable Care Act, signed March 23, 2010, includes several patient safety provisions. It authorizes state demonstration project grants to develop, implement and evaluate alternatives to tort litigation over injuries allegedly caused by health providers, including mediation and arbitration (section 10607). Demonstration projects must encourage disclosure of health care errors and enhance patient safety by detecting, analyzing and helping reduce medical errors. States are eligible for demonstration planning grants of up to $500,000 per state. The act also establishes a Patient Safety Research Center and a Physician Compare Internet Web site to provide physician performance information, including assessments of patient safety and effectiveness and timeliness of care (section 10331). A similar Hospital Compare Web site (http://www.hospitalcompare.hhs.gov) already exists.

Examples

States use an array of strategies to promote health provider systems and practices that foster patient safety. Highlighted below are electronic prescribing and penalties for illegible prescriptions; regulation of nurse-patient ratios and nurse work hours; non-payment for costs associated with serious preventable events; and medical error and infection reporting.

- **Electronic prescribing and penalties for illegible prescriptions**. Difficulties deciphering hand-written prescriptions often lead to medication errors, including wrong dosages and incorrect substitution of one drug for another with a similar name (e.g., Cerebyx for seizures and Celebrex for pain). To reduce errors, some states require or authorize expanded use of electronic prescribing (e-prescribing), also known as computerized physician order entry. A 2009 Minnesota law (Minn. Stat. §62J.497 (2009)), for example, requires "all providers, group purchasers, prescribers, and dispensers to establish, maintain, and use an electronic prescription program." Few states expressly authorize—and some expressly prohibit—e-

prescriptions for controlled substances (e.g., hallucinogens, cocaine, opium, barbiturates) due to concerns about illegal drug diversion. In light of federal regulations that took effect June 1, 2010, however, states are moving to authorize controlled substance e-prescriptions if they are transmitted with software that meets federal e-prescribing requirements. States also combat medication errors by penalizing physicians who write illegible prescriptions. In Montana (Mont. Code Ann. §3-2-17 (2005)), for example, writing an unreadable prescription is a civil offense.

■ **Non-payment for "never events."** Medical errors that result in unambiguous, serious and preventable harm are known as serious reportable or never events. The National Quality Forum has identified 28 such events. Examples include surgery performed on the wrong body part or wrong patient; accidentally leaving a foreign object in a patient during surgery or other procedure; patient death or serious disability associated with a burn, fall or use of restraints or bed rails; and suicide or attempted suicide during care in a health care facility. In recent years, states have enacted laws restricting or prohibiting payment for never events and care that arises from them. Medicare, several state Medicaid programs and many commercial insurers also have adopted non-payment policies.

Some states prohibit payers from reimbursing providers for never events (e.g., Iowa), while others prohibit providers from billing insurers and patients for them (e.g., New Jersey).[3] Some laws apply to a few serious reportable events, and others to as many as 50 (e.g., Maryland, which adjusts hospital payments for potentially preventable complications). Never-event payment provisions may apply to some providers (e.g., hospitals or hospitals and ambulatory surgery centers) or all providers (e.g., Pennsylvania's Medicaid program). The list of never events may be specified in statute (e.g., Maine) or set by a state health department (e.g., Massachusetts). Maine's never event law applies broadly. It prohibits health facilities from charging a patient or the patient's insurer (including public and private payers) for 28 never events and requires facilities to inform patients of the policy. As of December 2009, Medicaid programs in Colorado, Kansas, Maine, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, New York, Pennsylvania and Washington had never event non-payment policies.

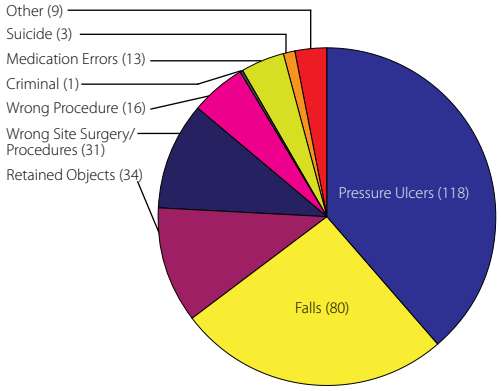
On Feb. 17, 2011, the Centers for Medicare and Medicaid Services issued a proposed rule requiring state Medicaid programs to adopt non-payment policies for, at a minimum, Medicare's list of hospital-acquired conditions.

■ **Nurse-patient staff hours and nurse work hours**. A series of studies for the Agency for Healthcare Research and Quality (AHRQ) found significant associations between lower levels of nurse staffing and higher rates of patient pneumonia, upper gastrointestinal bleeding, shock/cardiac arrest, urinary tract infections, and failure to rescue.[4] States use several approaches to ensure nurse staffing is adequate to ensure hospital patient safety.[5] California requires hospitals to meet specific nurse-patient ratios. Hospitals in Connecticut, Illinois, Nevada, Ohio, Oregon, Texas and Washington must develop nurse staffing plans with input from direct care nurses and based on patient need. Illinois, New Jersey, New York, Rhode Island and Vermont require disclosure of staffing to the public and/or a regulatory entity.

Studies also have demonstrated a correlation between the number of hours nurses work and patient safety.[6] As of July 2010, laws in 14 states—Alaska, Connecticut, Illinois, Maryland, Minnesota, New Jersey, New Hampshire, New York, Oregon, Pennsylvania, Rhode Island, Texas, Washington and West Virginia—restrict mandatory overtime for nurses. Laws may set or require a process for determining the maximum number of hours a nurse is required to work, except in special circumstances (e.g., declared disaster). Some also specify the minimum amount of time between shifts or set a ceiling on allowable voluntary overtime. Laws may apply to registered nurses only, all types of nurses, hospitals only or all health care facilities.

■ **Error and infection reporting.** Many states require or encourage hospitals and other providers to report serious preventable adverse events. In most cases, reports are submitted to patient safety organizations (PSOs)—public or private entities that collect and analyze data to identify and reduce risks and hazards associated with patient care. At the end of 2009, 27 states required hospitals to report never events.[7] Figure 1 shows the distribution of 305 never events reported to the Minnesota Department of Health in 2010. As of March 2010, 27 states required public reporting of hospital-acquired infection rates; two allowed confidential reporting to state agencies, and three provided for voluntary public reporting.[8]

Figure 1. Adverse Health Events Reported by Minnesota Hospitals and Ambulatory Surgical Centers, October 2009 – October 2010



Source: Minnesota Department of Health, *Adverse Health Events in Minnesota* (St. Paul: MDH, January 2011); http://www.health.state.mn.us/patientsafety/ae/2011ahereport.pdf.

■ **Private sector.** Hospitals, physicians, provider associations, quality management organizations, health insurance plans and other private sector groups are actively engaged in patient safety initiatives. The National Business Group on Health, for example, has developed specific recommendations for employers and other purchasers to include in contracts with health plans to improve hospital patient safety. In December 2009, the National Association of Public Hospitals and Health Systems, the Patient Safety Foundation and Kaiser Permanente launched a program to enhance patient safety programs at public hospitals. Blue Cross Blue Shield's 39 inde-

pendent companies withhold reimbursement to contracted acute care hospitals for never events. HealthPartners, a Minnesota-based nonprofit HMO, began refusing payment for 27 never events in early 2005.

Evidence of Effectiveness

Examples of patient safety initiatives that improve patient care and reduce costs exist, but evidence of overall savings is limited. Two cost-saving initiative examples come from Michigan and Ohio. According to the Michigan Health and Hospital Association, its efforts to reduce intensive care unit-acquired conditions have led to dramatic declines in bloodstream infections and ventilator-associated pneumonia, saving more than 1,800 lives and $271 million over five years. Solutions for Patient Safety is an initiative of the Ohio Business Roundtable, several Ohio hospital associations and Cardinal Health Foundation. They report that efforts have resulted in 900 fewer hospital days over 12 months and $12.8 million in savings by avoiding unnecessary health care.

Despite examples of successful patient safety initiatives, evidence for overall cost savings and improved patient care is mixed. A May 2009 Consumers Union report, *To Err is Human—To Delay is Deadly,* observed: "Ten years ago, the Institute of Medicine declared as many as 98,000 people die each year needlessly because of preventable medical harm, including healthcare-acquired infections. Ten years later, we don't know if we've made any real progress." A study of patient safety incidents among hospitalized Medicare patients found that, between 2006 and 2008, six patient safety indicators showed improvement, while eight worsened.[9] Health care expenditures are growing at more than 7 percent annually, but patient safety is improving by only 1 percent. Experts have described patient safety improvements over the past 10 years as frustratingly slow.

Findings from studies of specific, legislated patient safety strategies are presented below.

- **Electronic prescribing.** Evidence exists for the patient safety benefit of e-prescribing, but research for this brief did not uncover any studies of the overall effect on health care expenditures. A study published in 2010 compared the safety of e-prescribing to paper-based prescribing.[10] It found that nearly two of every five paper prescriptions contained an error. After introduction of e-prescribing in 15 community-based office practices, error percentages dropped from 43 percent to 7 percent. An older study documented a more than 50 percent drop in serious medical error rates when computerized prescribing systems were used.[11] A systematic review of e-prescribing studies published in January 2011 found weak-to-moderate evidence for improved practitioner performance (e.g., fewer medication errors), but far less evidence for improvements in patient health.[12]

- **Non-payment for never events**. Medicare no longer reimburses hospitals for 12 hospital-acquired conditions. According to the Centers for Medicare and Medicaid Services, in 2009 this policy resulted in 3,416 payment adjustments (.04 percent) from a total of 9.3 million Medicare hospital discharges, yielding $18.8 million (.01 percent) in savings out of $133 billion in total hospital expenditures.[13] The Wisconsin Department of Health Services estimated that implementing a hospital never events policy in state FY 2010 would save $100,000 in state and federal Medicaid expenditures in 2011.[14] Researchers have attributed low overall savings from non-payment policies to the fact that never events are rare.

- **Nurse-to-patient ratios and work hours**. In 2001, AHRQ rated various patient safety practices by strength of evidence of impact and effectiveness.[15] Strength of evidence was rated as greatest, high, medium, lower and lowest. AHRQ found high strength of evidence for changes in nurse staffing on morbidity and mortality. Studies of California's 1999 law requiring specific hospital nurse-to-patient ratios, however, have not documented patient safety improvement or cost savings. According to a 2009 California HealthCare Foundation report: "Most of the quality measures do not appear to have been directly affected by the increase in nurse staffing."[16] With respect to regulation of nurse work hours, the AHRQ study found lower strength of evidence for the effect of providers' hours of service on adverse events related to fatigue in health workers.

- **Reporting**. A 2005 Congressional Research Service report found that: "Overall the research on the impact of [collecting and] publicizing performance measures shows mixed results."[17] Some findings show patient mortality decreased after hospital performance data were released, while others showed no effect. A 2003 study comparing the effect of publicizing performance data for some hospitals but not others found some evidence for the value of publicizing performance data to encourage quality improvement activities.[18] A 2009 Vermont Department of Health report looked at state patient safety and event reporting systems in other states.[19] It concluded: "Empirical data from these states provides evidence that implementation of patient safety and event reporting programs effectively improve patient care by decreasing medical errors and strengthening hospital systems of care." The report did not, however, find any state reporting systems that report cost savings or have a proposed methodology for conducting a cost analysis. It noted: "Quantifying the resulting cost savings [from patient safety and event reporting systems] remains an elusive goal."

Challenges

Several challenges exist to implementing patient safety programs that can both control overall costs and improve patient health.

- It can be difficult for payers, including states, to capture savings associated with patient safety improvements realized at the provider level. Providers may retain the savings or undertake other activities to offset lost revenues.

- Determining and assigning accountability for an adverse event can be difficult. Hospital-acquired conditions, for example, may be caused by medical devices that became contaminated before they reached the hospital.
- Establishing, maintaining and analyzing data from state medical error reporting systems requires up-front and ongoing funding that may be difficult for states that are facing budget deficits.
- Measuring savings and improved health from patient safety efforts is difficult, in part due to insufficient and inconsistent reporting and reporting standards.

Complementary Strategies

The cost savings potential of patient safety initiatives may be enhanced when offered with complementary cost containment strategies, which are the subject of other briefs in this series. Examples include medical malpractice reform; all-payer claims databases; and global, episode-of-care and performance-based health care provider payments.

For More Information

The Commonwealth Fund. "State Patient Safety Initiatives and Nonpayment for Preventable Events and Conditions." *States in Action* (January/February 2010); http://www.commonwealthfund.org/Content/Newsletters/States-in-Action/2010/Jan/January-February-2010/Feature/Feature.aspx.

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Spencer, Anna, et al. *Lessons from the Pioneers: Reporting Healthcare-Associated Infections*. Denver, Colo.: National Conference of State Legislatures, May 2010; www.ncsl.org.

The latest information on this topic is available in an NCSL online supplement at 19940.

Notes

1. Umbrella terms to describe unintended harm or injury arising from medical care include health care-acquired conditions and provider-preventable conditions.

2. Christine Eibner et al., *Controlling Health Care Spending in Massachusetts: An Analysis of Options*, Option #10, "Eliminate Payment for Adverse Hospital Events" (Santa Monica: RAND Health, August 2009); http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/control_health_care_spending_rand_08-07-09.pdf.

3. For information on state never event nonpayment policies, see Jill Rosenthal and Carrie Hanlon, *Nonpayment for Preventable Events and Conditions: Aligning State and Federal Policies to Drive Health System Improvement* (Washington, D.C.: National Academy for State Health Policy, December 2009); http://www.nashp.org/sites/default/files/PatientSafety.pdf.

4. Mark W. Stanton, "Hospital Nurse Staffing and Quality of Care," *Research in Action* 14], Agency for Healthcare Research and Quality, http://www.ahrq.gov/research/nursestaffing/nursestaff.htm.

5. American Nurses Association, "Nurse Staffing Plans and Ratios," *Nursing World* Web page: http://nursingworld.org/MainMenuCategories/ANAPoliticalPower/State/StateLegislativeAgenda/StaffingPlansandRatios_1.aspx.

6. Anne E. Rogers et al., "The Working Hours of Hospital Staff Nurses and Patient Safety," *Health Affairs* 23, no. 4 (2004); http://content.healthaffairs.org/content/23/4/202.abstract?ijkey=7f33d45a7b24738d308bba0f23b8f7c195acd870&keytype2=tf_ipsecsha.

7. Kevin B. O'Reilly, "Patient Safety Improving Slightly, 10 years After IOM Report on Errors," *amednews (Dec. 28, 2009);* http://www.ama-assn.org/amednews/2009/12/28/prsb1228.htm.

8. Committee to Reduce Infection Deaths, State Legislation and Initiatives on Healthcare-Associated Infections Web page (updated March 2010); http://www.hospitalinfection.org/legislation.shtml.

9. "Patient Safety Incidents at U.S. Hospitals Show No Decline, Cost $9 B," *Healthcare Intelligence Network* 6, no. 74 (April 16, 2010); hin.com.

10. Rainu Kaushal, "Electronic Prescribing Improves Medication Safety in Community-based Office Practices, *Journal of General Internal Medicine"* 25, no. 6 (2010); http://www.mendeley.com/research/electronic-prescribing-improves-medication-safety-communitybased-office-practices/.

11. D.W. Bates et al., "Effect of Computerized Physician Order Entry and a Team Intervention on Prevention of Serious Medication Errors," *Journal of the American Medical Association* (Oct. 21, 1998).

12. Ashly D. Black et al., "The Impact of eHealth on the Quality and Safety of Health Care: A Systematic Overview," *PLoS Med* 8, no. 1 (January 2011); http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000387.

13. U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, "New Provisions to Strengthen Tie Between Medicare Payment and Quality for Inpatient Stays in Acute Care Hospitals in Fiscal Year 2011 and Beyond," *Medicare Fact Sheet* (July 30, 2010); http://op.bna.com/hl.nsf/id/bbrk-87ut56/$File/fact730qualitycms.pdf.

14. Wisconsin Department of Health Services, "ForwardHealth Rate Reform Project," PowerPoint, July 2009; http://www.dhs.wisconsin.gov/em/imac/minutes/2009/8/forwardhealth-rate-reform-project.pdf.

15. Agency for Healthcare Quality and Research, "Addendum to Summary: Patient Safety Practices Rated by Strength of Evidence," *Making Health Care Safer: A Critical Analysis of Patient Safety Practices* (Washington, D.C.: AHRQ, July 2001); http://archive.ahrq.gov/clinic/ptsafety/TabA-1tv.htm.

16. Matthew Gever, "Improving the Quality of Care: The Continuing Debate Over Nurse-Patient Ratios," *State Health Notes* 30, no.535 (March 16, 2009); http://www.ncsl.org/default.aspx?tabid=13817.

17. Bernadette Fernandez and Fran Larkins, *Medical Malpractice: The Role of Patient Safety Initiatives* (Washington, D.C.; Congressional Research Service, Jan. 24, 2005); http://www.law.umaryland.edu/marshall/crsreports/crsdocuments/RL3209201242005.pdf.

18. J.H. Hibbard, J. Stockard, and M. Tusler, "Does Publicizing Hospital Performance
Stimulate Quality Improvement Efforts?" *Health Affairs* 22, no. 2 (March-April 2003).

19. Vermont Department of Health, *Vermont 2008: Patient Safety, Surveillance and Improvement System* (Burlington, Vt.: VDH, Jan. 15, 2008); http://healthvermont.gov/admin/legislature/documents/PatientSafetySurveillanceImprovement_legrpt011509.pdf.

About this Project

NCSL's Health Cost Containment and Efficiency Series describes multiple alternative state policy approaches, with an emphasis on documented and fiscally calculated results. The project is housed at the NCSL Health Program in Denver, Colorado. It is led by Richard Cauchi, program director, and Martha King, group director, with Barbara Yondorf as lead researcher and author of most of the briefs.

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