

## The Healthcare Imperative: Lowering Costs and Improving Outcomes

*Example Strategies for Reducing Costs in Care Delivery Organizations*

To address concerns about escalating healthcare costs and the need for effective solutions, the Institute of Medicine, with support from the Peter G. Peterson Foundation, convened a series of workshops involving the nation's leading experts—providers, patients, hospital executives, and others—to discuss sources of waste and inefficiency in health care and ways to control them.

Those meetings explored in detail the nature, sources, and magnitude of waste and inefficiency throughout health care today, as well as strategies to address the problem. Studies presented by the experts have been collected and published by the Institute of Medicine through the National Academies Press as *The Healthcare Imperative: Lowering Costs and Improving Outcomes*, and the analyses within the volume's more than 600 pages represent the most comprehensive undertaken to date. They show what causes the nation to spend at least 30% more than most national counterparts, with often inferior results, and they offer insights into approaches to remedy the problems.

Beyond the thorough assessment of sources and levels of excess health costs, an explicit charge to participants was also to identify how, given current knowledge, the nation might reduce health costs by 10% within 10 years. Below are the major categories identified and estimates for each developed by participants in the final workshop of the series.

<b>NATIONAL HEALTH COST SAVINGS</b>		
<i>Selected approaches (expert estimates)</i>		
	Estimated Savings in 10 <sup>th</sup> Year	
	Low	High
<b>CARE-RELATED COSTS</b>		
• Prevent medical errors	\$8 B	\$12 B
• Prevent avoidable hospital admissions	\$44 B	\$48 B
• Prevent avoidable hospital readmissions	\$16 B	\$20 B
• Improve hospital efficiency	\$38 B	\$80 B
• Decrease costs of episodes of care	\$32 B	\$53 B
• Improve targeting of costly services	\$9 B	\$20 B
• Increase shared decision-making	\$6 B	\$9 B
<b>ADMINISTRATIVE COSTS</b>		
• Use common billing and claims forms	\$181 B	
<b>RELATED REFORMS</b>		
• Medical liability reform	\$20 B	\$30 B
• Prevent fraud and abuse	\$5 B	\$10 B

**Source:** Institute of Medicine, Roundtable on Value & Science-Driven Health Care, *The Healthcare Imperative: Lowering Costs and Improving Outcomes*, National Academies Press, 2010, page 59.

Certain of these savings depend on broader cross-system initiative, such as medical liability reform and streamlining billing and claims forms. But many are well within the purview of each healthcare organization. The following examples are from *The Healthcare Imperative*, drawn from the relevant categories and updated to account for business advancements and the Affordable Care Act (ACA).

## **Prevent medical errors**

Hospitals can reduce costs by reducing medical errors – preventable patient harm that occurs because of a provider’s mistake. Errors that occur most frequently and are the most costly include pressure ulcers, postoperative infection, postlaminectomy syndrome, and hemorrhages that complicate a procedure. In 2008, medical errors cost the U.S. healthcare system over \$17 billion in direct medical costs. While hospitals undoubtedly strive to provide the best possible care for their patients, certain factors have been found to contribute to the incidence of medical errors. These include human factors such as poor adherence to guidelines and procedures and improper patient identification or assessment, as well as systems issues such as inadequate procedures to guide the delivery of care. While some errors may be unavoidable, experts have devised methods of minimizing their occurrence. Examples of methods to minimize errors include:

- Implementation of checklists to guide providers through the steps of complex procedures and care protocols
- Payment reforms, including Medicare’s non-payment for ‘never events’ and reduced payment for hospital readmissions as a result of the Affordable Care Act
- Improved communication among care teams
- Increased measurement and non-punitive reporting of errors

*Savings:* Reducing the number of preventable medical errors could yield between \$8 billion and \$12 billion in annual national savings.

*For more information:* *The Healthcare Imperative* pp 602-03; Van Den Bos, *Health Affairs*, 2011; Stulberg, *JAMA*, 2010; AHRQ toolkits.

## **Prevent avoidable hospital admissions and readmissions**

As reductions in reimbursements for inpatient care put pressure on hospitals to reduce lengths of stay, hospitals must find new ways to safely discharge patients. To reduce costs and improve outcomes associated with the discharge of chronically ill patients, hospitals can develop and implement coordinated care models to manage care transitions. These models can help hospitals reduce costs associated with readmissions and the utilization of costly services.

- *Case in point: Philadelphia Area Hospitals.* In a randomized clinical trial at two Philadelphia hospitals – the Hospital of the University of Pennsylvania and the Presbyterian Medical Center of the University of Pennsylvania Health System – elderly patients at risk for poor outcomes after discharge were given comprehensive discharge plans and protocols for home care follow-up. These discharge plans, implemented by advanced practice nurses (APNs), extended from patients’ admission to the hospital through four weeks after discharge, and called for:
  - An initial APN visit within 48 hours of the patient’s admission to the hospital
  - APN visits at least every 48 hours during hospitalization
  - Two APN visits after discharge: One within 48 hours, another 7-10 days after discharge
  - Additional APN home visits according to patient need
  - APN telephone availability
  - Weekly APN-initiated telephone contact with patients and their caregivers

Through home visits and telephone contact, APNs were able to help patients and their caregivers manage patients’ health problems, including medication and symptom management, diet, activity levels, sleep, follow-up care needs, and emotional status.

*Savings:* Six months after discharge, reductions in readmissions and in hospital days per patient in intervention group over control group; Medicare reimbursement savings up to \$3,000 per patient.  
*For more information:* Naylor, *JAMA*, 1999.

## Improve hospital efficiency

Manage variations in patient flow. The variability in the flow of patients into a hospital unit is a key driver of waste in the healthcare delivery system. Some of this variability is normal and unpredictable – for example, the flow of patients into the ER. However, other sources of patient flow variability – for example, in elective surgery admissions – are artificial, and are the result of poorly managed scheduling and resource allocation. This variability results in overcrowding, worse health outcomes due to fluctuations in staffing levels, increased staff stress, lower patient and staff satisfaction, reduced access to care, and higher costs. Hospitals can use variability methodology to identify and quantify sources of artificial variability in their own institutions. Armed with this knowledge, hospital administrators can employ operations management principles to manage the admissions, staffing and other contributors to artificial variations in patient flow.

- *Case in point: Cincinnati Children’s Hospital Medical Center.* By identifying and quantifying sources of variability and implementing operations management principles, Cincinnati Children’s was able to:
  - Decrease weekend emergency surgery wait times 34%, despite a 37% volume increase
  - Decrease weekday emergency surgery wait times 28%, despite a 24% volume increase
  - Decrease operating room overtime by 57%
  - Increase inpatient occupancy from 76% to 91%
  - Improve the job satisfaction of care providers

*Savings:* As a result of optimized patient flows, Cincinnati Children’s was able to save \$110 million in capital costs that it would have spent purchasing 100 new beds, and increase patient revenue by \$137 million per year.

*For more information:* *The Healthcare Imperative* pp 294-300.

Apply best-practice health IT strategies. Hospitals can achieve cost savings and improve quality by implementing EHR systems to automate and standardize the storage and sharing of health care information. Beyond allowing hospitals to meet the demands for compliance laid out in the Health Information Technology for Economic and Clinical Health (HITECH) Act and subsequent federal regulations on ‘meaningful use’ of health IT, EHR systems enable hospitals to achieve numerous operational efficiencies. EHR systems aid hospitals in:

- automating order entry and reducing paperwork
- optimizing staffing levels and scheduling
- managing equipment and resources
- defining care protocols and providing clinical decision support
- managing billing and revenue cycles
- reducing adverse drug events and duplicate tests
- improving care coordination

*Savings:* While initial investments in EHR systems may cost hospitals up to \$100,000 per bed, once implemented, EHRs represent an opportunity for annual savings of \$25,000 to \$44,000 per bed per year.

*For more information:* *Digital Infrastructure for a Learning Health System*; Laflamme, *McKinsey Quarterly*, 2010; Buntin, *Health Affairs*, 2011.

Implement systems engineering methods. Hospital systems can reduce waste, improve outcomes, and yield significant savings by evaluating tasks and processes to identify better approaches (also known as production systems engineering). The hallmark of production systems engineering is use of the hypothesize-test-check cycle of the scientific method:

- First, a task or process is analyzed in detail by a small team that includes providers, managers, front-line workers, and patients.
- Second, the team identifies waste and inefficiency in the process by breaking the workflow down into its elements – the steps required to complete the task.
- Third, the team proposes changes to the workflow that eliminate wasted resources and effort, and tests its proposed solution on a small scale.
- Fourth, the team’s improved workflow is disseminated throughout the organization.

By focusing on improving rather than expanding care, a production system engineering approach can improve outcomes and yield substantial savings.

- *Case in point: Virginia Mason Medical Center.* In 2002, with an eye toward continuous improvement, Virginia Mason Medical Center (VMMC) adopted a production systems engineering approach to take on large-scale transformations of departments and systems of care. Three examples of how VMMC changed its workflows and processes are:
  - Lab result processing: VMMC found that it took more time for physicians to process a large batch of lab results once every half day than to process two or three results between patient visits. By having physicians change to processing small batches of lab results, VMMC reduced wait times, errors and delays in lab result processing.
  - Photographic ‘shadow boards’: To reduce delays in procedures and mistakes in their execution, VMMC implemented photographic shadow boards – graphic templates that show the proper placement of materials and instruments.
  - Standardizing work: To eliminate wasted time and resources and to reduce errors, VMMC trained providers and medical assistants on standardized work processes ranging from visit initiation to chronic disease management. Personnel performance was observed and audited to increase adherence to the standardized work processes.

*Savings:* Standardized workflows have saved VMMC \$1 million in liability and malpractice premiums over two years. By using space more efficiently, VMMC has saved \$11 million in capital expenditures over eight years. And though a partnership with Boeing to care for the company’s highest-cost patients, VMMC’s standard workflows for chronic disease management resulted in a 35% reduction in Boeing’s healthcare costs.

*For more information: The Healthcare Imperative pp 287-294; Toussaint, Health Affairs, 2009.*

## Decrease costs of episodes of care

Hospitals can reduce costs associated with prolonged lengths of stay, repeated emergency room visits, readmissions, medical errors, and other cost drivers by adopting evidence-based care protocols to manage the care of certain medical conditions. Evidence-based protocols are detailed plans for the treatment of a medical condition. They can aid a hospital unit in improving the reproducibility and standardization of care while at the same time allowing for tailoring to account for the unique needs of individual patients. Evidence-based protocols go beyond mere guidelines by providing clinicians with both with the best evidence about a particular condition and with a decision pathway the clinician can follow to apply the best evidence in diagnosing and treating the condition.

- *Case in point: Intermountain Healthcare.* To reduce costs and improve the quality of care, Intermountain Healthcare – a system that includes 23 hospitals and a broad range of clinics – develops evidence-based care protocols within its clinical programs, which include not only clinical staff, but also statisticians, information technology, and finance staff. Utilizing systems engineering methods, staff members work in groups to identify gaps in patient care where the best evidence is not being applied, develop a new care protocol that incorporates the evidence base for the condition, implement the care protocol in the hospital unit, and disseminate the protocol throughout the system. Through this approach, Intermountain Healthcare has developed evidence-based treatment protocols for febrile infant care, multidisciplinary colon surgery, elective labor induction, extubation of post-surgical patients, and mental health evaluation.

*Savings:* By developing and implementing evidence-based care protocols, Intermountain targeted cost drivers including prolonged lengths of stay and readmissions while improving quality and patient outcomes. Savings achieved by specific care protocols include:

- Febrile infant care: \$3,000 per infant in 4 hospitals; \$6 million in annual Intermountain Healthcare system-wide savings
- Multidisciplinary colon surgery: \$1.3 million in estimated Intermountain Healthcare system-wide savings
- Elective labor induction: \$600,000 per year system-wide
- Extubation of post-surgical patients: \$20,000 per patient system-wide
- Mental health evaluation: \$667 per patient with depression diagnosis if treated in Intermountain's mental health integration clinic

*For more information: The Healthcare Imperative pp 259.*

## **Improve targeting of costly services**

Implement a palliative care program. Chronically and seriously ill patients are a key cost driver for hospitals. These patients constitute only 5-10% of the patient population but account for over 50% of U.S. healthcare costs. Despite these expenditures, seriously ill patients often receive poor quality care – their personal care needs are not met, their pain and suffering is not managed, their care is uncoordinated, and they and their families undergo significant emotional distress. To improve quality and reduce the cost of caring for chronically and seriously ill patients, hospitals can institute palliative care programs to manage these patients' care. Unlike hospice care, palliative care is focused on relieving pain and suffering for patients, regardless of their prognosis. Palliative care teams address pain and other symptoms of their seriously and chronically ill patients, meet with patients and their caregivers to establish care goals, review treatments for alignment with patient goals, and develop safe discharge plans. The essential elements of a palliative care team include an interdisciplinary team of clinical and other staff who are trained, credentialed, or certified in palliative care, staffing ratios tailored to the hospital's size, and 24 hours per day, 7 days per week availability.

*Savings:* In addition to improving the quality of care for chronically and seriously ill patients, hospitals that institute palliative care programs reduce costs by addressing key cost drivers, including readmissions, ER visits, in-hospital deaths, and non-beneficial ICU stays, consultations, labs, and imaging. Potential cost savings total nearly \$2,700 per patient when treated by a hospital's palliative care service.

*For more information: The Healthcare Imperative pp 415; Temel, NEJM, 2010.*

## **Increase shared decision-making**

Implementing shared decision-making processes can help hospitals practice patient-centered care while reducing costs associated with overuse. Patient-centered decision making requires that patients are informed about the risks and benefits of various treatment options, that they have time to consider how their options align with their goals for care, and that they have an opportunity to communicate with their care providers, who help incorporate their goals and preferences into the care plan. Once informed about their care options, patients often reveal preferences for lower-cost and less intensive treatments.

- *Cases in point: Massachusetts General Hospital & Dartmouth-Hitchcock Medical Center.* To reduce costs and improve the quality of patient-centered decision making, hospitals can incorporate shared decision-making processes into their workflows and electronic health record (EHR) systems in several ways:
  - At Massachusetts General Hospital, when a new problem is entered into a patient's EHR, an automatic reminder notifies the provider of the availability of a decision aid that can be mailed to the patient.

- At the Spine Center at Dartmouth-Hitchcock Medical Center, patients fill out questionnaires about their symptoms every time they visit the clinic. By tracking patients' symptoms over time, decision aids can be generated that are targeted to each patient's unique circumstances.

*Savings:* By facilitating patient involvement in care decisions, shared decision-making processes have the potential to save \$1 billion per year if used nationally for 11 common conditions and interventions. An additional \$5 billion in savings could be realized nationally if shared decision-making tools were used in palliative care.

*For more information:* *The Healthcare Imperative* pp 612; Lewin Group, *High Performance Health System*, 2009; Fowler, *Health Affairs*, 2011.

## **Administrative costs**

Although the largest share of administrative cost reduction requires system-wide reform and process harmonization, costs associated with data entry duplication, manual processing and distribution of information, administration of overpayments, and other sources of administrative waste can be reduced by using technology to streamline administrative processes. Administrative waste could also be reduced by improving the standardization, connectivity, and interoperability of the systems that house health and payment data and the standards for exchanging that data. New standards could be adopted for claims data (i.e.: demographics data, claims inquiries, funds transfers) and health encounter data (i.e.: lab results, medication orders, care plans) that would allow for secure data exchange and sharing between providers, payers, and health systems. Other improvements stemming from enhanced data standardization and sharing capabilities might include automated patient eligibility determinations, electronic delivery of health statements, electronic funds transfers, enhanced practice management, and improved prevention and care coordination capabilities.

## **Stay tuned**

The insights stemming from the partnership of the Institute of Medicine and the Peter G. Peterson Foundation to produce *The Healthcare Imperative: Lowering Costs and Improving Outcomes* have deepened the national understanding of the nature and magnitude of unnecessary health care expenditures, while also revealing some initial suggestions for healthcare organizations seeking to lower costs while improving outcomes. As part of its ongoing *Learning Health System* initiative, the Institute of Medicine is currently extending this effort, engaging the chief executives of a number of the nation's innovative healthcare delivery organizations in collaborative work, available early in 2012, to develop more textured and specific practical suggestions for institutional initiatives that can deliver high value healthcare to Americans. Similarly, the Peter G. Peterson Foundation will be strengthening its investment and leadership roles targeted to addressing this vital challenge for the nation's health and financial security.