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# The Economics of Health Care Quality and Medical Errors

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Hospitals have been looking for ways to improve quality and operational efficiency and cut costs for nearly three decades, using a variety of quality improvement strategies. However, based on recent reports, approximately 200,000 Americans die from preventable medical errors including facility-acquired conditions and millions may experience errors. In 2008, medical errors cost the United States \$19.5 billion. About 87 percent or \$17 billion were directly associated with additional medical cost, including: ancillary services, prescription drug services, and inpatient and outpatient care, according to a study sponsored by the Society for Actuaries and conducted by Milliman in 2010. Additional costs of \$1.4 billion were attributed to increased mortality rates with \$1.1 billion or 10 million days of lost productivity from missed work based on short-term disability claims. The authors estimate that the economic impact is much higher, perhaps nearly \$1 trillion annually when quality-adjusted life years (QALYs) are applied to those that die. Using the Institute of Medicine's (IOM) estimate of 98,000 deaths due to preventable medical errors annually in its 1998 report, *To Err Is Human*, and an average of ten lost years of life at \$75,000 to \$100,000 per year, there is a loss of \$73.5 billion to \$98 billion in QALYs for those deaths—conservatively. These numbers are much greater than those we cite from studies that explore the direct costs of medical errors. And if the estimate of a recent *Health Affairs* article is correct—preventable death being ten times the IOM estimate—the cost is \$735 billion to \$980 billion. Quality care is less expensive care. It is better, more efficient, and by definition, less wasteful. It is the right care, at the right time, every time. It should mean that far fewer patients are harmed or injured. Obviously, quality care is not being delivered consistently throughout US hospitals. Whatever the measure, poor quality is costing payers and society a great deal. However, health care leaders and professionals are focusing on quality and patient safety in ways they never have before because the economics of quality have changed substantially. Key words: *medical errors, quality, patient safety, quality-adjusted life year, QALY, Joint Commission, Institute of Medicine, Society of Actuaries, Milliman, efficiency, Medicare, accountable care organizations (ACOs), facility-acquired condition, cost savings.*

Hospitals have been looking for ways to improve quality and operational efficiency and cut costs for nearly three decades, using a variety of quality improvement strategies. The Joint Commission implemented its Agenda for Change in 1986 to improve the systems, processes, and, ultimately, the outcomes of care. However, there has not been widespread adoption of these principles, in part because the incentives were not substantial enough to overcome the inertia of many hospital cultures and the US payment system. However, those hospitals and health systems that overcame that inertia have experienced tremendous improvement in quality, financial performance, patient safety, and patient satisfaction. In a recent interview on PBS's *Nightly Business Report*,<sup>1</sup> Dr. Mark Chassin,

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The Joint Commission's president and CEO, said that only about a quarter of the nation's 6,000 hospitals are involved in some sort of quality improvement effort.

Preventable medical harm has been an ongoing and vexing problem. Quality and patient safety expert Dr. Lucian Leape from the Harvard School of Public Health, estimated more than 25 years ago that the problem's human toll equaled 300 jumbo jets crashing every year in the United States. That's nearly one a day. If that were the case, the US aviation industry would have been shut down until a solution was found. Yet, interestingly, the Medicare program over all these years reimbursed hospitals regardless of outcome. In fact, there are ICD-9 billing codes for specific errors.

In a perversion of the fee-for-service system, hospitals fared better financially when patients needed follow-up care after an error occurred. A hospital was encouraged by the payment system to harm a patient just enough without killing him or her and perform some additional services, for which it received additional payments. Not much incentive to improve care or save Medicare money. Of course, no hospital's leadership consciously decided to hurt patients to make more money, but the system did not encourage and reward better and more efficient care.

Recent national health reform legislation (the Patient Protection and Accountable Care Act or PPACA) has several quality improvement provisions including restructuring the way health care is delivered in the United States through accountable care organizations (ACOs) and value-based purchasing. The Centers for Medicare & Medicaid Services (CMS) has for the first time said it will stop reimbursing hospitals for two major problems that cost the government, and by

extension taxpayers, billions of dollars— (1) preventable readmissions and (2) health care facility-acquired conditions, such as infections. Before we discuss the new incentive system, let's explore how widespread medical errors are and how much they cost.

### **How Big a Problem Is Quality and Patient Safety?**

In 1999, the US Institute of Medicine (IOM) issued its landmark report, *To Err Is Human*, which stated that up to 98,000 Americans died as a result of preventable medical errors in US hospitals (see Figure 1), and up to one million more patients experienced some type of preventable error.<sup>2</sup> An error is defined as an act that produces a preventable adverse outcome compared to the natural progression of disease that leads to injury or death.<sup>3</sup>

The Centers for Disease Control and Prevention more recently noted that another 100,000 Americans die from infections.<sup>4</sup> A quarter of Medicare beneficiaries admitted to a hospital are victims of medical harm, according to a December 2010 report from the Office of the Inspector General (and that's only patients age 65 and above or those on disability). Approximately 5,000 beneficiaries per month suffer a "never event," and 180,000 die from medical errors annually.<sup>5</sup> Newer studies from *Health Affairs* in April 2011 suggest that the rate of preventable harm may be up to ten times higher than IOM estimates.<sup>6</sup> Although 12 years have passed since the IOM report, experts are still having a difficult time developing a concrete picture of the problem but clearly the toll is high in terms of death, injury, and loss.

An even greater challenge may be estimating the economic impact poor quality and

**Figure 1. Leading Causes of Death in United States**

1.	Heart Disease	599,413
2.	Cancer	567,628
3.	Chronic Lower Respiratory Disease	137,353
4.	Stroke	128,842
5.	Accidents (Unintentional Injuries)	118,021
	Preventable Medical Harm (Medical Errors)	98,000
6.	Alzheimer's Disease	79,003
7.	Diabetes	68,705
8.	Influenza/Pneumonia	53,692
9.	Nephritis/Nephrosis	48,935
10.	Intentional Self-Harm (Suicide)	36,909

Sources: CDC Web site, FastStats: Leading Causes of Death (Jan. 2012); National Vital Statistics Report, Deaths Final Data for 2009, vol. 60, no. 3; and for 98,000 statistic, IOM Report, *To Err Is Human* (1998).

unsafe care has in the United States because there are so many factors involved—loss of life or functionality, lost wages, impact on family and dependents, law suits, inefficient and wasteful care as a result of poor facility operations, etc.

Much of the national discussion about quality and patient safety focuses on the direct medical costs associated with poor care. The studies that we explore in this article do just that and that seems to be the bulk of the leading literature on the subject. However, there is a significant human cost for the loss of human life or the impact it has on patients who are injured and must live with disability for the remainder of their lives. The focus of the health reform legislation is on cost savings to the government by improving care. Of course, the side benefit is fewer harmed patients.

It is easy to forget when reviewing study after study, that what we are talking about are patients—real people—and their families. What does poor quality care cost on a human

level? What is the value of a human life and that person's relationship with his or her family members and, more broadly, in relation to the patient's community? Ask those family members and the answer is incalculable. Although difficult to measure because the value of an individual life is not exact, we have applied an economic approach using quality-adjusted life years (QALYs) in an attempt to develop one answer. Based on the IOM figure of 98,000 deaths each year with an estimate of ten lost years of life at \$75,000 to \$100,000 per year, there is a loss of \$73.5 billion to \$98 billion in QALYs for those deaths—conservatively. These numbers are much greater than those we cite from studies that explore the direct costs of medical errors. And if the estimate of a recent *Health Affairs* article is correct—preventable death being ten times the IOM estimate—the cost is \$735 billion to \$980 billion.<sup>7</sup>

The various estimates on medical errors point out several failures of the US health care system. The recently enacted health reform

legislation has many provisions to improve the quality and efficiency of care provided to Medicare beneficiaries.<sup>8</sup> In this article, we explore several studies and estimates of the economic impact preventable medical errors have on the US health care system. Although there is no meaningful estimate as to how much cost savings can be achieved through better care under changes outlined in the PPACA, we will discuss the significance of these studies and some anecdotal examples of hospitals or health systems that have improved their care and experienced significant cost savings. In this article we explore different ways improved quality may help reduce costs of the US health care delivery system. Quality improvement is a major factor in the PPACA legislation's efforts to reign in costs in federal expenditures for health care. We also explore the incentives and disincentives for better quality care and what behavior changes among health care providers can be expected, both for facilities and individual professionals, to achieve better quality care.

Under PPACA, hospitals and other providers that deliver poor or substandard care will no longer be able participate in the Medicare and Medicaid programs.<sup>9</sup> Medicare is a substantial source of income for nearly every hospital, nursing home, and physician, so the impact could be significant.

We did not find specific analyses of the proposed quality provisions' economic impact in the Congressional Budget Office (CBO) scoring for the PPACA legislation,<sup>10</sup> or in analyses by the Kaiser Family Foundation, the Alliance for Health Reform, nor the Heritage Foundation. No one questions the fact that health care can be made better in terms of operational efficiency and higher quality. However, developing a meaningful estimate for expected savings across the

entire US health care system may be too difficult—and certainly not an estimate for which one can budget. If PPACA is successful in providing health insurance and access to care to 32 million more Americans, invariably there will be a numerical increase in medical errors if nothing is done to improve quality of care.

### **The Economics of Medical Errors**

In 2008, medical errors cost the United States \$19.5 billion. About 87 percent or \$17 billion were directly associated with additional medical cost, including: ancillary services, prescription drug services, and inpatient and outpatient care, according to a study sponsored by the Society for Actuaries and conducted by Milliman in 2010. Additional costs of \$1.4 billion were attributed to increased mortality rates with \$1.1 billion or ten million days of lost productivity from missed work based on short-term disability claims.<sup>11</sup>

The report analyzed claims data to extrapolate an estimated 6.3 million medical injuries. Of those it is believed that, conservatively, 1.5 million medical injuries were preventable errors. The study concluded that the most significant errors were easily preventable if better policies and practices were followed. Opportunity savings of 19.5 billion would be available.

For medical errors to be in the top ten causes of death we must reflect on the value we put on life, as medical errors are easily preventable and caused by simple negligence.

Milliman also reviewed two previous major studies, which attempted to estimate the economic impact of medical errors. The first was the Harvard Medical Practice Study,<sup>12</sup> which estimated that all types of medical injuries totaled approximately \$3.8 billion in New York in 1984, \$50 billion nationally.

The second study, *Costs of Medical Injuries in Utah and Colorado*,<sup>13</sup> reviewed a representative sample of 14,732 randomly selected discharges from 1992 and estimated total costs for errors to be \$662 million in 1996 dollars—\$308 million of that was related to preventable medical errors. Extrapolated nationally, that is approximately \$37.6 billion for all medical errors and \$17 billion for preventable errors. That study's authors categorize medical errors into five areas:

1. Operative;
2. Drug-related;
3. Diagnostic or therapeutic;
4. Procedure-related; and
5. Other.

Postoperative complications were the most expensive, accounting for 35 percent of costs for medical errors and 39 percent of costs for preventable medical errors. There are many ways to measure errors and the economic impact. The National Quality Forum and National Priorities Partnership talks about the \$21 billion cost of medication errors.<sup>14</sup> Citing the New England Healthcare Institute, inpatient preventable medication errors cost approximately \$16.4 billion, while outpatient medication errors cost \$4.2 billion, according to the Center of Information Technology.<sup>15</sup>

### **The Economy's Impact on Quality and Patient Safety**

Although there is no definitive evidence that the recent recession is having an impact on health care quality and patient safety, it may be having an affect. A recent study of over 800 nurses, administrators, and physicians revealed that 20 percent believe a large impact on patient and staff safety has occurred due to the recession and its fall out.

An additional 21 percent feel that a moderate negative impact has occurred. Those surveyed conveyed concern over medication safety, new purchasing procedures, equipment lifespan, facility maintenance, properly qualified staff, and staff shortages.<sup>16</sup>

Those surveyed stated that medication safety was still the number one problem and explained its causes. First the elimination or reduction in time spent by key safety personnel such as medication safety officers was reported by over 42 percent surveyed, coupled with 33 percent reporting less clinical pharmacist involvement in patient care units specifically. Intensive care units and a new level of risk adverse behavior starts to appear. The reduction has also affected allotted time for nurse education, a key area of concern as more facilities use more part-time or registry nurses whose integration into the health institution medication administration procedures is not adequate. This has led to drug administration short cuts and missed safety steps all increasing the risk of harm or death to patients.

New purchasing procedures refer to the purchasing of multi-dose medications instead of single dose vials and syringes. Yes, Sam's Club and Costco have their place in the medical market as medical institutions look to cut cost with bulk medication. This has increased the number of medication errors fivefold. The opposite effect, medication shortages, is occurring as facilities try to limit supply cost of fast-expiring medications that are normally expensive and not often utilized.

Next is the investment in medical equipment and technology. Life cycles for equipment are being extended as institutions try to limit or cancel plans to purchase expensive new technology. This becomes one of the biggest

problems as stagnation in purchasing new technology slows or stops both development and research. Hospital profits are not adequate for re-invest in the technology areas that are not covered under PPACA. New hospitals, remodeling, and design improvements have come to a halt as credit and cash flow have slowed. America's rural and inner city hospitals are antiquated at best and are a point of contention as they are not suited for best care practices and are in a state of ill repair.

### Designing for Quality

Stepping back from health reform's specific focus on preventable readmissions and facility-acquired conditions, quality is a much broader field and incorporates the safe design of medical facilities. According to the Agency for Healthcare Research and Quality, there is a correlation between how a hospital is designed and quality of care and outcomes. New health care construction over the next ten years is expected to be \$250 billion.<sup>17</sup> Evidence-based design and incorporating it into hospital best practices (Lean and Six Sigma)<sup>18</sup> is expected to reduce medical waste, improve quality outcomes, reduce medical errors, and improve patient and employee satisfaction while instilling a culture of safety. Improvements include noise suppression, additional lighting (sunlight when possible), nature areas, and music. The additional \$12 million<sup>19</sup> in upgrades per facility are expected to be recovered within 12 months through operational savings and increased revenue. Given the state of the economy and ongoing staff shortages, information that provides transparency about hospital performance and how it is linked to a hospital's reimbursement

will have a significant impact on its ability to survive.

### Quality: Solutions

Quality and patient safety have historically been a secondary issue for the majority of the nation's approximately 6,000 hospitals. Of course, there have been visionary leaders who have seen quality, operational excellence, and patient care as inextricably linked. They provide examples for the rest of the country. In 1986, The Joint Commission launched its Agenda for Change initiative to introduce quality improvement philosophy into its accreditation process. It was also a way to encourage US hospitals to adopt these principles in order to improve health care operations, quality, and ultimately, patient safety. The PPACA legislation and the financial penalties associated with poor care makes quality "job one" to borrow a slogan from Ford Motor Company in the 1990s.

Besides providing better care, improved quality under the legislation is expected to be a major force in efforts to "bend the cost curve" for Medicare, as well as private insurance. Given the size of the Medicare program, the focus on quality will have a significant ripple effect throughout the entire US health system. But how much money is at stake?

Rather than try to determine an exact figure, we will review a number of reports that explore the economic impact of quality health care and discuss the work and achievement of three leading hospitals and health systems that have implemented significant quality improvement efforts. Two institutions have received the prestigious Malcolm Baldrige Award for Quality with only ten other US

hospitals the first being SSM Healthcare in St. Louis in 2002.<sup>20</sup>

### **Incentives and Penalties for Quality Care**

Historically, the Medicare program paid for whatever services health care providers charged, including provider errors. That has been changing in recent years and in an effort to improve quality of care and reduce costs to the Medicare program, CMS will no longer reimburse providers for preventable hospital readmissions. The initial focus will be on heart attack, heart failure, and pneumonia. Hospitals will see their reimbursement rates go down for high rates of readmissions. Fines or penalties will start at one percent and reach 3 percent over the next three years. Recognizing that hospitals need to do a better job of reducing hospital-acquired conditions such as infection, the government will fine hospitals with the highest rates, one percent. Given the low average operating margin of 5 percent for US hospitals,<sup>21</sup> those that provide poor quality care will have difficulty staying in business. In fact, those that do not improve and meet the national requirements will lose their ability to care for Medicare patients. To turn up the heat a bit, Medicare has said it will publicize which hospitals are performing well and those that are not. Depending on what actually happens, poor quality and the government's active public notification could damage institutional reputations and be the dominant force in shifting market position or leadership.

Although Medicare does not reimburse at the same level as most private insurance, it is a significant portion of most hospitals' business, so a loss of it would be disastrous. Those hospitals that provide quality care will continue to be eligible to treat Medicare

patients and assume the responsibility for patients from hospitals that do not meet the standard. This situation has the potential to alter market leadership quickly.

Brad Bowman, Director of the Health Care Advisory Practice at PricewaterhouseCoopers suggested that detailed quality performance data that identifies a poor performing hospital in a three or four hospital town, would put the hospital at a significant disadvantage especially when the local media publicizes the information.<sup>22</sup>

By 2017, up to 6 percent of hospital diagnosis-related group payments will be at-risk based on quality performance measures. Voluntary quality reporting will begin in 2011, something entirely new for physicians who accept Medicare patients. Physicians will receive one percent bonuses going down to 0.5 percent by 2014. By 2015, there will be a 1.5 percent penalty and by 2016, it will be 2 percent. And for the first time, starting in 2015, physicians will see mandatory individual performance reports published on the CMS Web site, as has been done for hospitals and nursing homes.<sup>23</sup>

Although the government's plans seem logical, the question remains, will the penalty/incentive approach work? The approach is not based on a demonstration project or past experience. However, there is evidence that at least physicians are responsive when their personal compensation is tied to performance. In a study conducted at the University of Illinois at Chicago that used a four-year sample of 59 physicians and 1.1 million encounters, a network of primary care clinics shifted from salary to a compensation plan with a lower salary and piece rates for encounters and procedures. Physicians increased the number of patient encounters from 11 to 61 percent. They were paid



between \$22 and \$30 for each outpatient visit. The authors also noted that physicians of all medical specialties increased the number of procedures done to one per visit—reimbursed at \$5 per procedure. The authors found that physicians respond strongly to even to marginal incentives when it is tied to their overall compensation.<sup>24</sup> Whether CMS penalties will motivate health care providers to deliver better quality and less expensive care remains to be seen. The study suggests it doesn't take much to change certain physician practice patterns.

In a study published in *Medical Care and Review*, Blue Cross and Blue Shield of Michigan implemented a pay-for-performance program composed of just over \$22 million in incentive payments to hospitals plus a 5 percent administrative cost. Almost 25,000 patients had better care and had from 733 to 1,701 QALYs depending on the effectiveness of care provided. Based on the study results, a QALY was estimated to be \$12,967 to \$30,081, much less than most generally accepted estimates.<sup>25</sup>

Clearly, incentives can have an impact on how physicians and hospitals deliver care and what care they provide. Will the penalties be the right motivation to improve health care? There may be other proven ways to improve the care that can be replicated around the country.

### **Center for Medicare and Medicaid Innovation**

Given that the PPACA legislation's goal is to reduce cost and improve efficiency and quality, the Center for Medicare and Medicaid Innovation was established in 2011 to test innovative payment and service delivery models. The Center will fund projects at a local level building upon private

sector delivery reform that is working. Twenty models are included in the statute but it allows for unlimited possibilities. To support these types of initiative, \$10 billion is provided over ten years. Under the Center, a new federal Coordinated Health Care Office has been established to help improve the coordination of care for beneficiaries who are eligible for both Medicare and Medicaid (known as dual-eligible).<sup>26</sup>

### **Leading Examples of Hospitals and Health System Improving Quality**

#### **Intermountain Healthcare**

Since 1988, Intermountain Healthcare, based in Salt Lake City, Utah, has been applying quality improvement techniques to health care delivery that were developed by W. Edwards Deming at the end of World War II, and adopted throughout Japanese industry.

Brent James, Director of Intermountain Healthcare's Institute for Health Care Delivery Research, wrote in *Health Affairs* that quality improvement methods were applied to reduce rates of elective induced labor, unplanned caesarean sections, and admissions to newborn intensive care units. He estimated that the initiative saved \$50 million dollars annually. Nationally, it would save \$3.5 billion.<sup>27</sup>

Another initiative focused on improving the operation of mechanical ventilators that were used in treating acute respiratory distress syndrome. As a result, they improved adherence to the guideline and reduced variation from 59 percent to 6 percent within four months. Patient survival increased from 9.5 percent to 44 percent. Physician time involved in care dropped in half and the total cost of care dropped by 25 percent.

In 1995, Intermountain analyzed its cost savings from 65 such initiatives and found \$30 million—approximately 2 percent of its total clinical operations. These interventions were only applied in one local practice. Intermountain estimated that if this initiative was applied to the entire health system, there would be total savings of \$100 million to \$150 million, approximately 6 to 10 percent of annual clinical costs. As a result of these findings, Intermountain developed a strategic plan to apply these methods throughout the health system.

In a separate White Paper, Intermountain Healthcare's CEO, Charles Sorenson, MD, notes that the United States could reduce national health care spending by as much as 40 percent if Intermountain's operational and clinical processes were used as a benchmark and adopted nationwide.<sup>28</sup> This is based on research by Dartmouth's Paul Wennberg who focused on variation in medical care practices nationally.

### **Advocate Good Samaritan Hospital**

Downers Grove, Illinois-based Advocate Good Samaritan Hospital is nationally recognized for the quality of its operations and care. It won the Malcolm Baldrige Award for Quality in 2010. Tamara Schaefer, Director of Patient Safety, recently presented at the 2011 Chicagoland Patient Safety Summit<sup>29</sup> and discussed the importance of a culture of patient safety on improving care. Although she did not discuss the hospital's performance on specific Partnership for Patients goals, she made a good case for improving quality. From February of 2009 to April 2011, the hospital increased hand washing from 30 percent to almost 100 percent—one of the major ways to reduce facility-acquired infections.

Another important measure of quality is ICU ventilator-associated pneumonia. In 2006 they had no cases. In 2007 and 2008 they had one case per 1,000, which translated to one case per year. In 2009 and 2010 they had no cases. Using data from Thomson-Reuters, the hospital dropped their actual/expected mortality ratio significantly.

Although already below what was expected for a hospital of their type based on acuity (Level-1 trauma center) in 2003 (0.74), it dropped to 0.25 in 2010. That translates to more than 550 patients living than would have otherwise have died. The last statistic shared was an 83 percent decrease in medical liability insurance expense. A specific dollar amount was not shared during the presentation or in an interview, but the savings were reported to be in the millions.

### **Poudre Valley Health System**

At the same meeting, Priscila Nuwash, President of the Center for Performance Excellence at Poudre Valley Health System (PVHS), Fort Collins, Texas, discussed their quality efforts, which also were recognized by a Baldrige Award.<sup>30</sup>

Again, while not specific on financial savings, two of PVHS's hospitals are doing better than competitors on HCAHPS data (federal patient satisfaction data). In other PVHS patient satisfaction data examining customer-focused outcomes, PVHS had nine years of consistent improvement. Also, staff voluntary turnover rates dropped from 19 percent to approximately 7 percent from 2000 to 2010. There was a slight up tick the last year with the opening of a new hospital.

Another interesting sign of PVHS's improved quality is the 59 percent increase in health system discharges from 2000 to 2010

compared to 15 percent for their competition. PVHS experienced only a 19 percent increase in population growth in their home county compared to 40 percent growth in their competitor's home county. Obviously, a number of factors can affect these numbers but the increase in discharges is attributed, in part, to the improved quality of services. PVHS also uses Thomson-Reuters data and they fall in the nation's top 10 percent of hospitals for risk-adjusted mortality. An interesting measure was their financial flexibility index from Ingenix. It examines total margin, return on investment, replacement viability, equity financings, days of cash on hand, cash flow to total debt, and average age of plant. Although the trend line shows some ups and downs, from 2001 to 2010, they improved from approximately 7 percent to over 12 percent while locally and nationally there have been decreases.

#### **University of Illinois at Chicago Medical Center**

Historically, medical professionals have been uncomfortable with the idea of admitting that a mistake has been made or harm has been caused from an action they have taken. They fear increased medical liability costs, giving attorneys ammunition, censure, and public rebuke. Counter to this traditional way of thinking is the University of Illinois at Chicago (UIC) Medical Center. It has focused on developing a culture of patient safety. In fact, through its Institute for Patient Safety Excellence, its philosophy has become an international model. Errors are quickly identified, disclosed to patients or their families, root-cause analyses are conducted, and the results are shared with those who have been affected, and financial

settlements are made when appropriate to help the patients and their families begin the healing process. These analyses are also used to change systems and the way procedures are done in order to prevent recurrences. Besides being the right thing to do and helping those affected, a byproduct of this approach is that UIC's medical liability insurance costs have dropped 53 percent. This approach is being evaluated further through a \$3 million Agency for Healthcare Research and Quality demonstration project administered by UIC's Institute among ten Chicago-area hospitals. Some legal and patient safety experts think this approach may be an alternative to tort reform, which has been struck down twice in Illinois by the state's Supreme Court.<sup>31</sup>

#### **Conclusion**

Quality care is less expensive care. It is better, more efficient, and by definition, less wasteful. It is the right care, at the right time, every time. It should mean that far fewer patients are harmed or injured. Obviously, quality care is not being delivered consistently throughout US hospitals. Although recently enacted health reform legislation does not require hospitals to implement comprehensive quality improvement and patient safety programs, incorporating operational quality improvement programs involving Lean or Six Sigma have had a significant affect at Intermountain Healthcare, Advocate Good Samaritan Hospital, Poudre Valley Health System, and the University of Illinois at Chicago Medical Center. Interestingly, developing a culture of safety and quality also can improve medical liability insurance costs although that's not the primary

motivator for improving care. The Society of Actuaries/Milliman report showed that medical errors cost the United States \$19.5 billion in direct medical costs. Other studies show the cost to be much higher. Looking at the totality of a human life, our own conservative calculation shows that medical errors cost \$73.5 billion to \$98 billion in QALYs and if applied to the most recent estimate in *Health Affairs* that says preventable medical harm is ten times what the IOM report

says, then that cost could be \$735 billion to \$980 billion—almost \$1 trillion annually. Whatever the measure, poor quality is costing payers and society a great deal. Time will tell if the Medicare program's incentives will make the difference. However, health care leaders and professionals are focusing on quality and patient safety in ways they never have before because the economics of quality have changed substantially.

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