The EHR and Patient Safety:
A Paradigm Shift for Healthcare Decision-Makers

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"Not everything that can be measured is important, and not everything that is important can be measured."
– Albert Einstein

IS CONCENTRATING ON A FINANCIAL ROI FOR THE EHR APT?

Is it possible to cost-justify an EHR (electronic health record) in a local hospital, let alone a pan-Canadian EHR? Can a strictly financial case be made to rationalize the large investment? Is a financially focused ROI (return on investment) for the EHR something that has an actual existence, or is it a useful illusion or pretense; is it an actual occurrence, or is it an assumption of a possibility as fact irrespective of the question of its truth?

Traditionally, boards and senior management of healthcare organizations, and senior levels of governments, have been preoccupied with a financial return on their investment when dealing with an EHR. Is it time for a change in paradigm within the health sector to reflect current evidence as it relates to the EHR – to move from building an ROI case strictly on financial bases and concentrate more on return of patient safety (ROPS)?

Chief Information Officers (CIOs) in the healthcare sector have been challenged to present a "business case" for requesting significant capital and operating budgets for Information Management and Technology (IM&T) initiatives. These cases, for the most part, attempt to quantify financial savings resulting from decreased tests, decreased paperwork, and more intangible and qualitative benefits such as more timely access to test results, full medications profile, ability to track waiting lists, etc. The senior management discussions that follow almost invariably end up trying to weigh the importance of IM&T against competing priorities. CIOs, and the senior managers supporting them, find it very difficult to argue against cases for more clinical staff or a new piece of medical technology – both of which are seen to have a more obvious direct patient impact. What makes it even harder is that the competing priorities rarely have to argue a "business case" as IM&T does.

Part of the problem is that most healthcare organizations view information as an expense in the sense of cost/benefit. This view of information seeks to determine the value of the activity by its cost or as a percentage of operating budgets. As a knowledge-intense field, healthcare work is characterized as abstract, intangible and conceptual. Conceptual work is difficult to operationalize (e.g., convert to a dollar value) in a definitive fashion because the work is either unobservable or very difficult to observe. The task of transferring information technology (IT) in large, complex divisionalized organizations reliant on highly professional workers such as doctors presents a particularly difficult challenge (Stiles and Mick 1997).

To date, the discussions and investment decisions around IT have been almost always framed in a primarily financial context and have rarely recognized the mounting evidence that links the EHR to patient safety, particularly through the medication errors and computerized physician order entry (CPOE) literature. The time seems ripe for a paradigm shift similar to that which took place when those working in the field of addictions changed their thinking from "abstinence" to "harm reduction." As a result, the entire focus in the field changed and so did investments and research in the field. There was also a similar paradigm shift when anti-tobacco lobbyists started to reframe the debate in terms of the economic impact of tobacco on society. The economic impact argument of "lost years of productivity" was convincing – to the point that it has been accepted as a valid ROI for governments to actively intercede to control and reduce tobacco consumption. Business for the first time understood the issue as not just personal choice, but as a "bottom-line" issue.

Instead of devoting our energies to seeking primarily, if not exclusively, a business case on the EHR, should we not be looking for ROPS? Surely there is sufficient and convincing evidence that one of the most important issues facing healthcare delivery systems is that people die from medical errors. According to the now famous Institute of Medicine (IOM) report *To Err Is Human: Building a Safer Health System*, there are 44,000 to 98,000 unnecessary deaths in the United States (IOM 2000). Even using the lower estimate, more people die from medical mistakes each year than from highway accidents, breast cancer or AIDS (Richardson 1999). About 7,000 Americans are estimated to die each year from medication errors alone – approximately 16% more than the number attributable to work-related injuries (Ortiz et al. 2001).

Of significance to those who tend to think in financial and economic terms, medical errors also result in a large financial burden to the healthcare system. The IOM report estimates that medical errors cost the United States approximately $38 billion per year, with about $17 billion of those costs associated with preventable errors (Ortiz et al. 2001).

There is no reason to believe that the situation is any different here in Canada. British Columbia coroner Susan McIver used an extrapolation of the IOM report to estimate 10,000 deaths in Canada from medical errors. Encouragingly, the Canadian Institute for Health Information is in the process of carrying out a patient safety analysis for Canada, and results are expected in 2003 (Shoesmith 2002).

Is it time to recognize that the EHR should be justified more on qualitative (i.e., improving patient safety) than on quantitative terms? Are we ready to move to a mindset that the EHR is not a "nice-to-have" but a "must have"?

SHOULD WE TOTALLY ABANDON OUR FINANCIAL-ORIENTED ROI THINKING?

Of course not. To argue otherwise would be both naive and foolhardy. The healthcare system is a world of virtually unlimited demand and limited resources. We must and always will be concerned with value for money. In addition, there is also some encouraging news beginning to surface in terms of IM&T producing financial benefits.

An early study at an academic medical centre estimated that CPOE generated savings of $5 to $10 million annually on a $500 million budget (Glaser et al. 1996). A more recent study presented evidence from Montefiore Medical Center, a 1,100-bed academic health system, of savings for CPOE and medication administration records – roughly $6 million annually. This figure combines the time savings for nurses, unit secretaries and pharmacists (Manzo et al. 2001).

A home-grown software system at Brigham and Women's Hospital is saving a collective $7 million per year. Another dozen initiatives picked for their potential are still under study for quantifiable benefits. The basis for much of the benefit is a CPOE system that handles about 12,000 orders per day at 7,000 personal computers in the hospital and at a growing number of clinics and physicians' offices (Morrissey 1998).

A large 450-bed tertiary care organization in the southwestern United States has used the automation of various clinical functions in laboratory, radiology and pharmacy, as well as a clinical decision support system, to address head-on the reduction of adverse drug events (ADEs). The conclusions demonstrated that by using the alerting system, 36 deaths were avoided over a 12-month period of time and dollar savings in excess of $3 million were achieved. These benefits were the result of the deployment of just 37 rules out of a possible several thousand such medication rules that could potentially be used (Newman and Walters 2000).

There are other examples, and there is even anecdotal evidence emerging that a few Canadian facilities may begin to demonstrate similar findings in the next few years. Hence, a case can be made that some organizations (primarily American hospitals and medical centres at this point) are indeed documenting tangible financial benefits. Unfortunately the numbers for the most part:

- Are based on single facilities.
- Tend not to divulge how the benefits compare to the original capital and ongoing operating investments made by the organization.
- Often result in "avoided costs" rather than real savings that can be pulled out of a cost centre's budget and moved into another.

"Traditional financial analysis methods focus on well-known financial measures, such as the return on investment (ROI), net present value, internal rate of return, and payback period. These methods are best suited to measure the value of simple IT applications, such as transaction processing and office automation systems. Unfortunately, evaluation methods that rely solely on financial measures are not as well suited for newer generations of IT applications. Newer IT applications typically seek to provide a wide range of benefits, including many that are intangible in nature (e.g., it is difficult to quantify the full value of a decision support system or a knowledge-based system)."

– M. Martinsons et al. (1999)

Identifying the financial benefits is a necessary, but not a sufficient, step to determining a

true and meaningful ROI (i.e., financial cost savings that pay back the capital and operating costs). The business case framework may be a suitable tool when the tangible benefits and costs form a significant part of the total benefits and costs of a project, but it is a blunt tool for examining EHR-related technologies where the intangibles (such as improved access to information and better quality information) form the main reason for the investment (Peel 1997). In fact, should identifying financial benefits ever be the primary focus of EHR investment decisions? Should ROPS not be the driving force?

Payback of any IT system does not reach full potential until the end. An EHR project is front-end loaded in dollars and back-end loaded on payback. Payback expectations have to be tied to organizational transition (Reed 1997). To make the technology installation the point of reference is a mistake; the EHR is not a technology investment, it is a healthcare delivery investment. Those who ante up the money should not be expecting savings at the end of the initial implementation phase. Savings will only occur when the organization begins using the technology effectively in the normal course of business. In the case of the EHR, the evidence suggests that this is at least three to five years after the initial investment.

What further complicates a financially dominated view to ROI is that much of the EHR is about infrastructure. As with any infrastructure, information technology infrastructure does not provide direct business performance. Rather, it enables other systems that do yield business benefits. IT infrastructure is strikingly similar to other public infrastructures such as roads, hospitals, sewers, schools, etc. They are all long-term and require large investments. They enable business activity by users that would otherwise not be economically feasible. They are difficult to cost-justify in advance as well as to show benefits in hindsight. They require a delicate investment balance – too little investment leads to duplication, incompatibility and suboptimal use, while too much discourages user investment and involvement and may result in unused capacity.

A classic example of infrastructure is a bulldozer – it has no intrinsic value on its own. Some would argue that it will allow holes to be dug more quickly and more safely and hence is a good financial investment. But to others, a bulldozer could be seen as a huge liability as it takes up much space, is costly to move about, requires expensive maintenance and needs a highly skilled and costly operator. A bulldozer's value is only derived as a result of its use – i.e., the hole in the ground, the levelling of the old building or the preparing of the ground for a new road or motorway surface. The value potential in economic terms of the bulldozer is thus linked to the result that may be obtained by its appropriate use. So too is it with IT – in all sectors, not just healthcare.

For years, healthcare IM&T leaders have attempted to determine the value of information technology to a hospital. Most, if not all, studies to date have analyzed isolated variables

at a single institution. These micro-level studies focus on subjects such as physician order entry, clinical documentation and electronic storage of images. To date, these micro-level studies have been the industry's only source of data on which executives have been basing decisions about IT investments. Unfortunately, applying the results of these micro-level studies to other institutions – let alone across a region or country – requires making assumptions that can be difficult to substantiate, much less bear out. Unfortunately, very few macro-level cost-benefit studies have been conducted, and those that have are subject to question in terms of the validity of their numbers.

A rare macro-level study was recently completed analyzing data from many hospitals in an attempt to identify correlations between hospital performance and information technology. Data were used from a variety of sources such as Solucient's (HCIA) Annual Top 100 Hospitals, U.S. News Top Hospitals, and the Washington State Department of Health. Based on the data available, there appears to be a positive correlation between performance outcomes and IT spending and staffing levels. This is not to say that the correlation is direct (Golob 2002).

The ever-present need to build a financial ROI case is not restricted to single organizations. An April 2001 Alberta We//net Pharmacy Information Network (PIN) overview document clearly states among its goals to avoid some of the growing demand on Alberta's healthcare system by:

- Detecting potential adverse drug reactions (unintended and negative consequences of medication therapy).
- Improving the ability of healthcare providers to counsel patients, thereby improving compliance with medication instructions.

Having reviewed the medical research on medication problems, the PIN Task Force estimated that through a fully functional PIN it will be possible to achieve a:

- 25% reduction in adverse drug reactions related to hospital admissions (yearly financial impact of $18.5M).
- 25% reduction in hospital admissions related to improved compliance ($18.5M).
- 25% reduction in physician visits related to improved compliance ($19M).
- 10% reduction in long-term-care admissions related to improved compliance ($13.7M).

The Alberta authors are to be commended for the courage to make their projections public. Undoubtedly some kind of business case argument has been made for other provincial systems – such as Teleplan and PharmaNet in British Columbia, and SHIN in Saskatchewan, to name a few. Do all of these large-scale provincial initiatives have a financial ROI?

Economic analyses can be difficult for large healthcare applications of IT. There are severe problems in applying the results of such analyses to other contexts. The identification, description and measurement of inputs and outputs may be conceptually easy. For example, inputs may be defined as resources used in terms of staff time or consumables and outputs defined as the changes in some outcome measure such as the time taken to process pharmacy requests, or reduction in the number of inappropriate referrals. However, while it is possible to identify the inputs and outputs, the practicality of obtaining objective measurements is often prohibitive (Peel 1997).

WHY NOT BUILD AN ROI CASE PRIMARILY ON NON-FINANCIAL RETURNS OR ROPS?

> "Consider the captain of a 747 jumbo jet who is directly responsible for 350 lives on every flight. Aircrew are highly selected, trained and experienced. Throughout their careers they undergo incessant revalidation and reaccreditation by frequent, regular simulator rides to handle repeatedly every repeatedly every conceivable emergency, far worse than could ever occur in real life. Yet on every flight, for every procedure, for every check, the captain and crew read from the written checklist. Not because they cannot remember the checks but because their job is to get it right every time.
>
> Patients do not expect clinicians to demonstrate superpower memories, but they would quite like them to get it right every time."
>
> – S. Sheperd (2000)

In healthcare, IM&T has a much larger potential to improve patient safety than to save money. The Davies Computer-based Patient Record (CPR) Recognition Program recognizes exemplary CPR implementation achievements. When studying the commonalities of the Davies award winners, it was found that because of the strategic importance assigned to information management, the CPR systems generally have not been subjected to classical cost-benefit or ROI analyses. Value has not been assumed, however; project sponsors have had to justify CPR upon a series of demonstrated successes, *justifying each new phase of CPR expansion based on its value to the care process* (Metzger et al. 2000).

Processes to detect and reduce medical errors have been in place in hospitals and healthcare systems, but they have been hampered by the lack of integrated technology and decision support applications (Kimmell and Sensmeier 2001). For many years, the extent of medical errors was not well acknowledged. Uncovering the degree of the problem was fuelled by the medical error-related death of Boston *Globe* health columnist Betsy Lehman in 1994. Her death triggered a landslide of government hearings, meetings and reports. Lehman, who was being treated for breast cancer, mistakenly received the cumulative dose of the cancer drug Cisplatin, instead of the daily dose for four days. The overdose caused heart failure. Post-event findings and analysis culminated in the release of the IOM's first report that shocked the nation – and the world – by exposing a quality crisis. The report concluded:

- The extent of harm that results from medical errors is great.
- *Errors result from system failures, not people failures.*
- Achieving acceptable levels of patient safety will require major systems changes.
- A concerted national effort is needed to improve patient safety.

The IOM report was not the first to produce such data; it was the first to raise the subject to a level of national consciousness. A 1991 Harvard medical study and a 1995 Australian healthcare study produced similar findings. In 1995, Bates et al. reported that of 10,070 orders, 530 contained medication errors and that one in 100 medication errors resulted in an adverse drug event, while seven in 100 represented a potential ADE. In 1997, Bates et al. further reported that ADEs are expensive, costing $2,461 per ADE and $4,555 per preventable ADE for a total annual cost at Brigham and Women's Hospital in Boston of $8.4 million.

John Millar of CIHI has confirmed that a Canadian study is underway to determine the extent of the problem here in Canada. He and Morgan have projected that if the U.S. data are correct and the 100,000 deaths are due to system errors in hospitals only – making it the eighth highest cause of death – this would jump to the third leading cause when one adds deaths from hospital-acquired infections and non-error medication deaths. If one were to add in deaths from outpatient medications and deaths from infections acquired in other healthcare institutions, then it is likely that the leading cause of death would indeed be due to errors (Millar and Morgan 2001).

How extensive are medical errors? The National Committee on Vital and Health Statistics (NCVHS) reported the following statistics (NCVHS 1999):

- One in 25 hospital admissions results in an injured patient.
- 3% of adverse effects cause permanent disabling injury; of these, one in seven leads to a patient death.
- Preventable medical errors account for 12 to 15% of hospital costs.
- About 23,000 hospital patients die each year from injuries linked to medication use.
- 80% of nurses calculate dosages incorrectly 10% of the time, and 40% of nurses make mistakes more than 30% of the time.
- Approximately 180,000 unnecessary deaths and 1.3 million injuries occur from medical treatment in the United States.

Besides the IOM and the NCVHS, the Advisory Board Company in Washington, DC, is another source of information on medical errors (Kimmell and Sensmeier 2001). The Advisory Board divides adverse effects into

several categories. Each category is listed along with the number of times they occur per 1,000 hospital visits:

- 65 incidents are due to adverse drug events.
- 60 incidents are due to nosocomial (hospital acquired) infections.
- 51 incidents are due to procedural complications.
- 15 incidents are due to falls.

Adverse drug events top the list in frequency of occurrences. ADEs have a broad range of causes due to the complex process of processing medication orders and getting the medicine to the patient. Some ADEs can result in mortality, but the majority do not. When ADEs, which account for more than 25% of all adverse hospital incidents, are studied, the following results are found:

- 56% are attributed to physicians.
- 34% are attributed to nurses.
- 6% are attributed to unit secretaries.
- 4% are attributed to pharmacy staff.

While ADEs do not always lead to death, they usually do increase the length of the hospital stay and add significant cost. Categorizing the types of problems that occurred with physician orders:

- 78% had illegible signatures.
- 58% were missing the order time.
- 24% of the orders were incomplete.
- 20% of the orders were illegible.

A common theme throughout many of the IOM reports is the critical role IT plays in reducing medical errors. In his statement before the subcommittee on Labor, Health and Human Services, and Education of the Senate Committee on Appropriations, the president of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) stated: "Medical error reduction is fundamentally an information problem. The solution to reducing the number of medical errors resides in developing mechanisms for collecting, analyzing, and applying existing information. If we are going to make significant strides in enhancing patient safety, we must think in terms of the information we need to obtain, create, and disseminate" (JCAHO 2002). Evidence of the impact of technology is demonstrated by the Veterans Health Administration, which has seen a system-wide 75% reduction in medication errors since implementing bar code medication administration software (Johnson et al. 2002).

The evidence to support computer-based medication prescribing continues to mount. A recent Norwegian study reported that drug-related side effects might contribute to nearly a fifth of all hospital deaths in elderly patients, particularly those who have more than one illness or are taking multiple medications. In almost half the cases looked at, inappropriate drugs were prescribed or the wrong doses or forms of drugs were used (Gottlieb 2001).

The increasing influence of the Leapfrog Group in the United States is a powerful motivator for American hospitals to install computerized physician order entry (CPOE) and medication prescribing systems. The Leapfrog Group is a consortium of more than 100 Fortune 500 companies and other large private and public healthcare purchasers who provide health benefits to more than 33 million Americans; Leapfrog members and their employees spend approximately $52 billion on healthcare annually (Birkmeyer et al. 2001). In order to meet Leapfrog's CPOE standard, American hospitals must:

- Require physicians to enter medication orders via computers linked to prescribing error prevention software.
- Demonstrate that their CPOE system intercepted at least 50% of common serious prescribing errors, using a testing protocol specified by First Consulting Group and the Institute for Safe Medication Practices.
- Require documented acknowledgment that the physician read the directives to any override.

The Leapfrog Group's efforts to impose economic sanctions to drive compliance are coming to fruition. By year-end 2001, General Motors had rewritten all of their payer contracts to require them to include patient safety requirements within their hospital provider contracts. This action puts the onus of responsibility of obtaining provider compliance with the health plans. Three Fortune 500 companies joined

Empire Blue Cross to recognize and reward hospitals that achieve the Leapfrog safety standards. Beginning January 1, 2002, hospitals in Empire Blue Cross and Blue Shield's networks receive a 4% bonus for meeting two quality standards – CPOE and ICU staffing with intensivists. Hospitals that meet this standard beginning in 2003 receive a 3% bonus, and those that wait until 2004 will receive a 2% bonus (Kimmell and Sensmeier 2001).

As a result of the IOM report and the Leapfrog initiative, a number of American states have legislation on the books addressing patient safety (Legislation 2002). Leading the way is California Senate Bill 1875, which requires health facilities and clinics (including general acute care hospitals, specialty hospitals and surgical clinics, but excluding small and rural hospitals) to implement a formal plan to eliminate or substantially reduce medication-related errors by 2005. The plan is to include technology implementation, such as, but not limited to, computerized physician order entry or other technology that, based upon independent, expert scientific advice and data, has been shown effective in eliminating or substantially reducing medication-related errors (California 2000).

At the federal level in the United States, the Medication Error Reduction Act of 2001 would reduce medication errors, and the subsequent deaths and injuries, by improving the systems of delivering inpatient and skilled nursing care. Specifically, the legislation would:

- Establish a 10-year, $1 billion hospital and skilled nursing facility (SNF) grant program to offset the prohibitively high costs of developing and implementing new and emerging patient safety and information technologies, so as to reduce medication errors.
- Authorize funding, through the grant program, for the purchase, lease and installment of computer software and hardware; improvement or upgrade of existing computer technology; purchase or lease of communications capabilities necessary for clinical data access, storage and exchange; and provision of education and training for hospital staff on new information systems (Senate 2001).

WHAT SHOULD WE BEING DOING IN CANADA?

1 Integrate patient safety/medication errors with health information strategies and investments.

At the policy level, whether local, provincial, territorial or federal, are IM&T strategies integrated with patient safety and/or medication errors strategies? A great deal of interest and activity was generated as a result of the September 2001 meeting of the Ministers of Health. Currently there are numerous patient safety/medication error activities underway across Canada:

- The previously mentioned CIHI patient safety study is to be completed in 2003.
- The Royal College of Physicians and Surgeons struck a Canada National Steering Committee on Patient Safety.
- A number of provinces – Alberta, Manitoba, Ontario, Nova Scotia and Quebec to name a few – have some kind of patient safety/medication error initiative underway.

How collaborative, harmonized and integrated are all these initiatives? How many have IM&T firmly entrenched within them, or are the IM&T strategies being developed separately – as a competing strategy or in a different branch or division of government?

2 Invest in EHRs and change management strategies as part of the path towards a safer healthcare system for Canadians.

Clinicians do not make mistakes on purpose. The IOM report concluded that *errors result from system failures, not people failures*, and that achieving acceptable levels of patient safety will require major systems changes. Is Canada – at all levels – ready to invest heavily in EHRs, and not just in the technology but in building the human resource capacity in creating a cadre of clinicians (particularly physicians), administrators and policy-makers who are engaged?

Poor processes, not error-prone people, are the main cause of medical errors. Errors result from faulty systems, not from faulty people, so it is the systems that must be fixed. Medical errors are the result of system and process failures that directly lead to errors or contribute to human mistakes that directly or indirectly

ERRORS RESULT FROM FAULTY SYSTEMS, NOT FROM FAULTY PEOPLE

result in poor outcomes. Medical errors cannot be significantly reduced without systematic changes in processes. Our experience during the last 40 years of space flight and commercial aviation has demonstrated how failure analysis can lead to stronger, more error-resistant systems that can reduce the likelihood of poor patient outcomes and avoid medical errors. Front-end analysis and definitive preventive steps are critical to identifying potential problems before they occur (Holmquest and Chaiken 2002).

In the context of time and evolutionary adoption, *Taking the Pulse: Physicians and Emerging Information Technologies* (Deloitte 2001) indicates that "early adopter" physicians represent only 21% of the total U.S. physician population today (the numbers are likely lower in Canada). Early adopter physicians are those "professional users" who believe that IT is essential to their practices. The bulk of physicians – the "middle ground" and the "avoiders" who are taking a wait-and-see approach – comprise the remaining 79% of the U.S. physician pool. The key point is clear – it will take time to move these avoiders into the middle ground and to move the middle ground into becoming adopters. They need to see convincing evidence that technology will help them save time, reduce costs and – last but not least – optimize the quality of healthcare.

3 Invest in studies that assess the return on patient safety as it relates to years of life lost and other economic measures.

Similar to the tobacco and harm reduction research, patient safety/reduced medical errors could potentially have an ROI for society similar to the economic implications of reducing tobacco consumption – i.e., fewer people die prematurely or are disabled at the peak of their earning power or lose time from work. Such Canada-wide studies have not been undertaken to date.

4 Consider legislative, regulatory and other nationwide options to bring a significant paradigm shift to the EHR.

Is Canada ready to take a close look at the California legislation? Are we ready either through regulatory requirements, memorandums of understanding or at least changes to our accreditation standards to make CPOE, and its attendant decision support capabilities, a gold standard in healthcare organizations?

In July 2001, additional patient safety standards went into effect for U.S. hospitals. These standards address a number of significant patient safety issues, including the implementation of patient safety programs; the responsibility of organization leadership to create a culture of safety; the prevention of medical errors through the prospective analysis and redesign of vulnerable patient systems (e.g., the ordering, preparation and dispensing of medications); and the hospital's responsibility to tell a patient if he or she has been harmed by the care provided. JCAHO is considering implementing similar patient safety standards throughout its accreditation programs. Hospitals that do not comply may lose their accreditation or face steep fines. Currently, only Veterans Administration hospitals, which care for U.S. armed forces veterans, are required to inform patients of medical errors (JCAHO 2002).

The JCAHO announced in December 2001 that it will join in formal partnership with the Leapfrog Group to actively solicit JCAHO's input on its patient safety initiatives. The Joint Commission has made patient safety its top priority since implementing its performance-based standards framework in 1995. Is our own Canadian accreditation process disposed to undertaking similar initiatives? Are we ready to make the following kind of commitment?

> "Our health care system is a decade or more behind other high-risk industries in adopting safety principles. We should call on Congress to create a national center for patient safety in the Department of Health and Human Services. Just think of how dramatically

the risk of dying on a domestic airline flight or at the workplace has declined in recent decades, in part because federal agencies focused on safety. By creating a national center to set patient safety goals and track progress, we could do the same for the health care industry." (William C. Richardson, President and CEO, W.K. Kellogg Foundation, Chair of the Institute of Medicine Committee on "*To Err Is Human: Building a Safer Health System*"). e

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