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# Policy Insight

## Improving Patient Safety Addressing Patient Harm Arising from Medical Errors



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Patient harm arising not from a patient’s underlying condition but from medical errors that occur during patient care is a leading cause of disability and death and a major problem that policy-makers interested in improving health care quality face. In the United States alone, medical errors are estimated to result annually in at least 44,000 deaths and \$17 billion in direct health care costs, disability, and productivity losses (Institute of Medicine [IOM], 1999). On the bright side, research shows that up to half of these medical errors could be prevented and that a large share of the associated costs could be avoided. In this *Policy Insight*, we briefly review available evidence on the magnitude of the patient safety problem and present simulation results on effects achievable through the adoption of three system-level approaches to reducing medical errors.

### Defining the Problem

*Patient safety* is defined by the World Health Organization (WHO) as “freedom for a patient from unnecessary harm or potential harm associated with

healthcare.” A *medical error* is thus an event associated with plans followed or actions taken during the provision of health care that can cause *patient harm* in the form of morbidity (disease complications, secondary disease, and/or disability) or mortality (death) and can negatively affect health care systems via increased costs connected with remedying the harm (e.g., longer hospital stays). Table 1 shows the main types of medical errors.

Although various efforts to counter patient safety problems have been made—with different strategies, structures, policies, and processes in place—most health care systems do not routinely collect and report data on the types, causes, and prevalence of medical errors at a nationally representative level. A limited but growing body of evidence on the prevalence and impacts of hospital-based medical errors is developing, however. The bulk of it comes from patient safety studies of adult patient populations in the United States, the United Kingdom, Australia, New Zealand, Canada, Spain, Denmark, and France. Figure 1 shows the results for some of this research, which suggest that *roughly 10 percent of hospital patients are affected by a medical error while receiving care.*

Medical errors affect children as well as adults and take place in both hospital and nonhospital settings. Nearly 39 percent of U.S. pediatric emergency department visits result in medical errors (Selbst et al., 1999), as do 2 percent of ambulatory visits in both Spain (ENEAS 2005 Report) and the UK (National Patient Safety Agency, 2008).

Health care is largely believed to have an intrinsic margin of error, and many errors have no medium- or long-term medical effects on patients. But those errors that do cause harm can have staggering human and fiscal impacts:

Category	Type
<b>Diagnostic</b>	Error or delay in diagnosis Failure to employ indicated tests Use of outmoded tests or therapy Failure to act on results of monitoring or testing
<b>Treatment</b>	Error in performance of an operation, procedure, or test (e.g., wrong-side surgery) Error in administering treatment (e.g., wrong prescription) Error in dose of or method of using a drug Avoidable delay in treatment or in responding to an abnormal test Inappropriate (not indicated) care
<b>Preventive care</b>	Failure to provide prophylactic treatment Inadequate monitoring or follow up of treatment
<b>Other</b>	Failure to communicate Equipment failure Other system failure

SOURCE: Leape, L. L., et al. “Preventing Medical Injury,” *Quality Review Bulletin*, 19(5):144–149, 1993.

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For example, in the United States, medical errors lead to between 44,000 and 98,000 deaths annually and result in at least \$17 billion in associated direct health care costs, disability, and productivity losses (IOM, 1999). In the United Kingdom, roughly 850,000 medical errors occur annually, costing £400 million in settled negligence claims alone, to which £2.4 billion in existing and expected claims can be added (National Audit Office [NAO], 2005).

However, studies also show that as much as 50 percent of medical-error harm to patients is preventable if established protocols and evidence-based practices are followed. For example, according to a study by the Spanish government (ENEAS 2005 Report), 42.8 percent of the 9.3 percent of medical errors afflicting hospital patients in Spain in 2005

could have been avoided. A French national survey (Michel et al., 2007) found, in the course of seven days of observation, that at least one medical error took place in 55 percent of all surgical units and in 40 percent of all medical units. Of these errors, 35.4 percent were considered avoidable. Studies from the United States, the UK, Australia, and New Zealand further confirm that between 40 and 50 percent of medical errors related to hospital care could have been prevented if established protocols and best practices had been followed. An analysis of errors occurring during primary care produced even stronger findings: Up to 70.2 percent of all medical errors identified in a Spanish primary care study were considered avoidable.<sup>1</sup>

If roughly half of all medical errors that result in patient harm are preventable, why are so many patients harmed in the process of receiving care? Existing knowledge on the root causes of medical errors in both inpatient and primary care confirms the IOM's observation that "the majority of medical errors do not result from individual recklessness or the actions of a particular group. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them" (IOM, 1999). Individual vigilance and responsibility are, of course, necessary, and health systems need to have appropriate disciplinary and remedial systems in place; but systemic solutions for reducing medical errors are also essential.

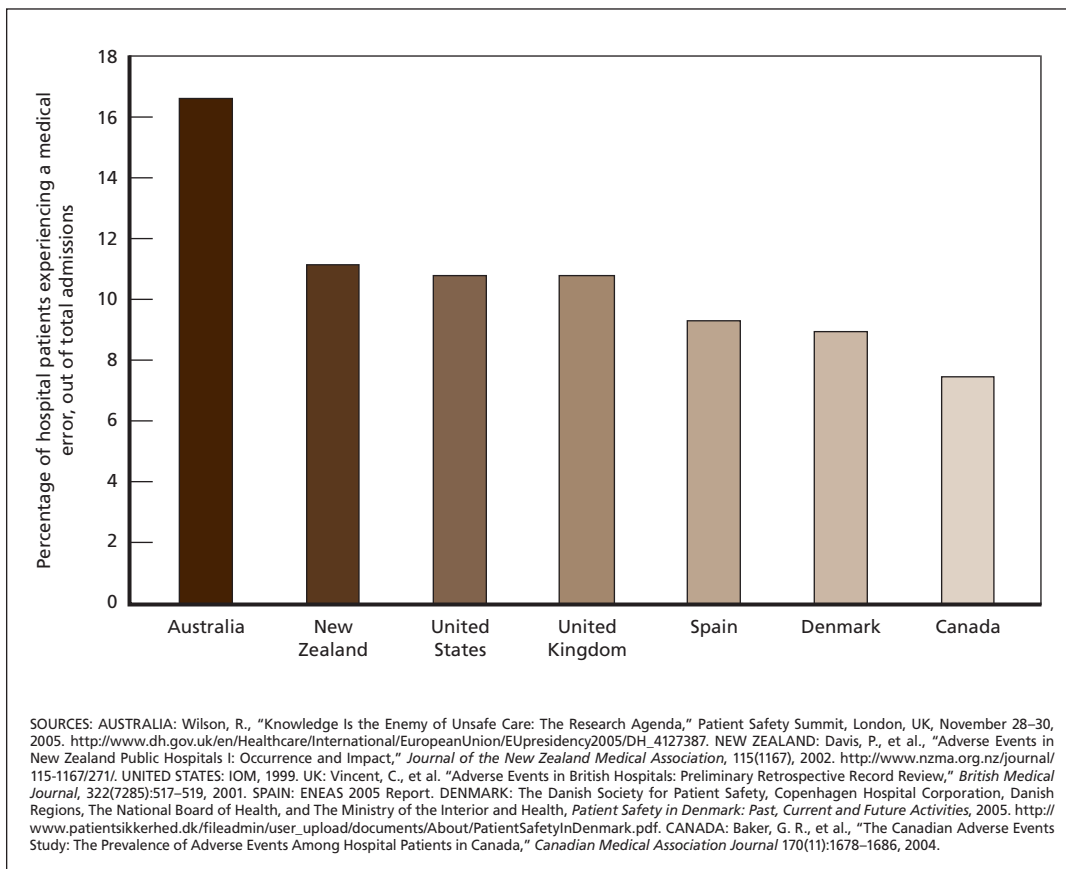


Figure 1. Percentage of Hospitalized Patients Experiencing a Medical Error

<sup>1</sup> Ministerio de Salud y Consumo, *APEAS Study: Patient Safety in Primary Healthcare Summary* (in Spanish), 2005.

## Assessing Three System-Level Approaches for Reducing Medical Errors

Patient safety experts, including the WHO's World Alliance for Patient Safety, suggest several structures and policies that can help reduce harm to patients, including a national reporting and learning system; the embedding of patient safety into the curricula of health professionals; a common classification, or taxonomy, for patient safety; the use of patient safety indicators; the adoption of evidence-based practices; the alignment of reporting mechanisms and incentives via a blame-free system;<sup>2</sup> and the involvement of patients and their families in patient safety policymaking and reporting.

We explored how different system-level approaches to improving patient safety might affect the health care burden of medical errors. Using discrepancies within EU member states related to national patient safety policy, we simulated how the adoption of three of the above-listed elements might affect medical-error prevalence and impacts. The three policy elements we chose are considered to be a cohesive and effective foundation of measures for addressing medical errors and are currently adopted to differing degrees by EU members. They are:

- 1) *Establishment of effective medical-error reporting and learning systems* to report and analyze all types of occurring medical errors, in both the hospital and primary settings, to monitor trends, to develop effective interventions, and to share learning on intervention effectiveness.
- 2) *Establishment of fair remedial mechanisms* to inform patients and families how to access recompense for medical errors and to monitor their impacts. Remedial mechanisms can include court-awarded compensation, no-fault compensation, administrative compensation (e.g., arbitration boards), health courts, and clinical indemnity schemes.<sup>3</sup>

Simulated Outcomes	Baseline	Improvement Scenario	Difference
Medical errors	10,274,289	8,499,351	1,774,938
Permanent disability	1,562,411	1,292,496	269,915
Death	558,819	462,280	96,539
Preventable medical errors	4,397,396	3,637,722	759,674
Preventable lengths of stay (in person-years)	50,845	42,061	8,784

SOURCE: Conklin et al., 2008.

NOTES: Under the improvement scenario, Group 1 countries maintain their medical-error prevalence rate of 7 percent, and all other groups reduce their rates to 10 percent. For the estimation of preventable medical errors, we applied the 42.8 percent ratio documented in the ENEAS 2005 Report.

- 3) *Systematic compilation and implementation of evidence-based knowledge* through actions ranging from promoting evidence-based medicine to encouraging investment in information technology solutions to collect, process, and share information.

Few EU countries systematically collect data on medical-error prevalence, types, and outcomes. However, using expert interviews and the results of the 2007 SIMPATIE (Safety Improvement for Patients in Europe) project, which assessed patient safety policies in Europe, we were able to categorize 24 of the 27 EU member states into five groups according to their level of effectiveness in adopting the three identified policies.<sup>4</sup> Using international data suggesting that medical errors are distributed in the range of 7 to 17 percent of all hospitalizations (subject to the patient safety strategy elements adopted in each country), we assigned rates of medical-error prevalence to each of the five country groups. We verified the adequacy of our assumptions by comparing estimated data on medical-error prevalence with actual data for countries, where such data were available.

Four of the 24 countries possess fully functional systems of medical-error reporting and learning at the national level (encompassing at least several types of medical errors) and some form of a remedial mechanism; we placed these countries in

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*As much as 50 percent of medical-error harm to patients is preventable.*

<sup>2</sup> The literature indicates that, when medical errors occur, care providers are frequently affected by a sense of guilt, depression, and lack of collegial support, all contributing to a general negative effect on the quality of care they provide and their productivity. It is also believed that automatic blame attribution creates strong disincentives for care providers to report errors. It is therefore suggested that the reporting of medical errors not involve automatic blame attribution.

<sup>3</sup> For more details and a discussion of remedial mechanisms, see Conklin et al., 2008.

<sup>4</sup> Conklin et al., 2008, provide more details on these simulations and the policy options.



Group 1 and assigned them a medical-error prevalence rate of 7 percent. Four countries have no patient safety monitoring and improvement policies at any level; we placed these in Group 5 and assigned them a prevalence rate of 17 percent. The other three intermediate groups were as follows: Group 2, three countries, 10 percent prevalence rate; Group 3, eight countries, 12 percent prevalence rate; Group 4, five countries, 14 percent prevalence rate.

We then estimated the improvements in patient safety that would result if the different groups reduced their prevalence rates to varying degrees. Table 2 shows the improvements in patient safety that we would expect if exemplary (Group 1) countries remain at their current level of progress with respect to patient safety and all other EU countries move toward a 10 percent hospital care medical-error prevalence rate. Under this scenario, we estimate that more than 750,000 harm-inflicting medical errors would be prevented annually and that this would lead to the annual elimination of more than 3.2 million days of hospitalization, 260,000 fewer incidents of permanent disability, and 95,000 fewer deaths.

### Key Messages for Policymakers

Not all medical errors cause harm to patients, but those that do can lead to permanent disability and death, as well as to related financial costs, such as the expense of extended hospital stays to remedy harm done. Harm-inflicting medical errors also contribute to a loss of patient trust.

Patient harm arising from medical errors is both a systemic and a human-based problem. While individual responsibility for medical errors should not be de-emphasized, systemic solutions to the problem are needed. Patient safety systems should include effective reporting and learning systems, effective remedial mechanisms, and the active dissemination and implementation of evidence-based knowledge aimed at reducing errors.

Such systems can benefit patients by providing safer, more efficient care—achieved through monitoring and learning mechanisms and through patients' increased participation in their medical treatment. These approaches can also help health care providers by helping them to learn how to prevent harm-inflicting medical errors and thus improve care. For these reasons, policymakers should consider mandating the establishment and implementation of strong patient safety systems.

### Further Reading

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