



**August 14, 2007**

## **Patient Safety in Canada: An Update**

### **Introduction**

Safe care is about doing the right things right. Health care is a complex environment where errors can injure or kill. Usually, the safeguards work. However, each layer of defenses—such as alarms, standardized procedures and well-trained health professionals—has weak spots.<sup>1</sup> When multiple system failures occur, mistakes that would usually be caught slip through. The price that we pay when such situations occur is often high, on both a human and a health-system level.

Measuring patient safety initiatives and adverse events is essential when monitoring progress of these strategies, tracking success and helping to flag issues or identify potential areas for improvement. Patient safety indicators have already been instrumental in describing the state of patient safety in Canada. They have highlighted large variations in the risk of different types of adverse events, as well as differences in risk by patient group. To manage and reduce the risk of adverse events, it helps to understand the issues and be able to measure improvements.

This Analysis in Brief provides updated information on what we know and don't know about patient safety in Canada. It focuses on results from recent surveys, as well as several patient safety indicators.

### **Understanding Patient Safety**

Patient safety has been defined as “the reduction and mitigation of unsafe acts within the health care system, as well as through the use of best practices shown to lead to optimal patient outcomes.”<sup>2</sup> One way to measure patient safety is to examine the risk of adverse events—“unexpected and undesired incidents directly associated with the care or services provided to the patient.”<sup>2</sup> While some risks are unavoidable based on what we know today, there is growing evidence about what works to reduce the risk.

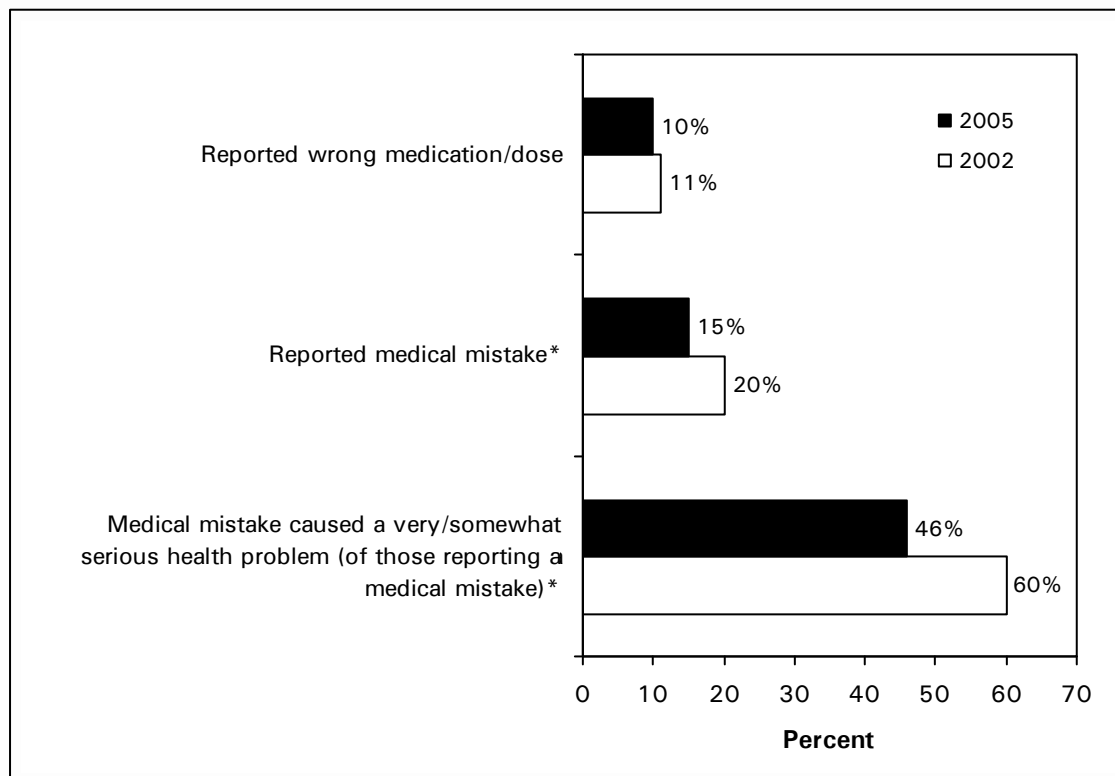
Progress has been made in a number of areas. For example, anesthesia is much safer than it used to be. Sometimes errors occurred when an oxygen tube was inserted into a patient's food tract rather than the airway. Likewise, it used to be relatively easy to switch nitrous oxide and oxygen canisters. By studying these and other errors, improving procedures and system design, introducing standards of practice and enhancing training programs, anesthesiology has transformed its safety record.<sup>3</sup> Locally, provincially, nationally and internationally, people are building on these and other successes.

However, important challenges remain. The first-ever Canadian adverse events study<sup>4</sup> estimated that 1 in 13 adult medical and surgical patients admitted to acute care hospitals in Canada in 2000 experienced an adverse event. Shortly after its publication, the Canadian Institute for Health Information's *Health Care in Canada 2004*<sup>5</sup> provided further information about how often different types of adverse events occur in Canada. Likewise, in a 2006 survey, approximately three-quarters of health system managers and nurses reported that they thought it was likely that they would experience a serious medical error if they were treated in a Canadian hospital. Three out of every five Canadians surveyed answered in the same way.<sup>6</sup>

## What Do Patients and Health Care Providers Say About Patient Safety?

Surveys of patients and health care providers are an important source of information for enhancing our understanding of patient safety. For example, in a recent international survey of adults with health problems administered by the Commonwealth Fund,<sup>7</sup> approximately 10% of Canadian respondents reported receiving a wrong medication or dose from a health care provider in the previous two years. Moreover, 15% reported experiencing a medical mistake in the care they received and, of these respondents, nearly half indicated that the medical mistake caused a very/somewhat serious health problem. However, as Figure 1 illustrates, there appear to have been some improvements since 2002.

**Figure 1. Percentage of Canadian Adults With Health Problems Reporting on Events During the Past Two Years**

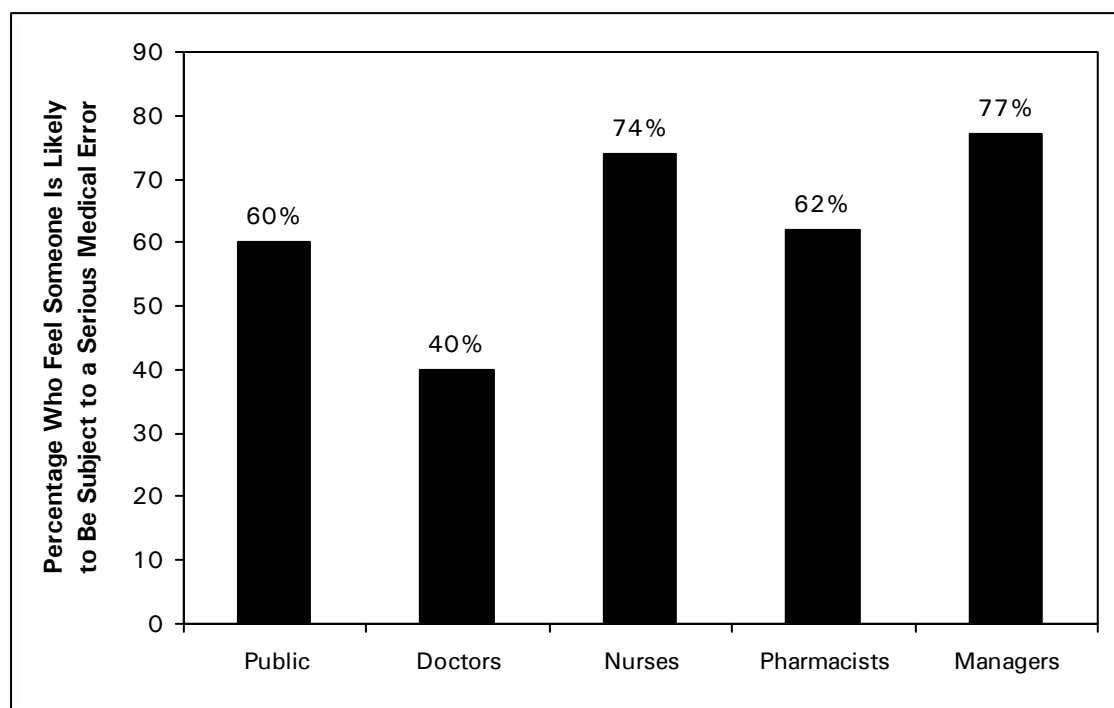


**Note:** \*Statistically significant difference between 2002 and 2005 survey results.

**Source:** Commonwealth Fund International Health Policy Survey of Adults With Health Problems, 2002<sup>8</sup> and 2005.<sup>7</sup>

Perceptions of patient safety were also recently examined in the 2006 *Health Care in Canada Survey*.<sup>6</sup> The results show that over half of adults surveyed believed that they were likely to experience a serious medical error while in hospital (Figure 2). The percentage was even higher among nurses, health care managers and pharmacists. In contrast, doctors were the least likely to agree that a serious medical error would occur (differences between rates of agreement of doctors and other groups are statistically significant).

**Figure 2. Percentage of Health Care Providers, Managers and the Public Who Feel That Someone Is “Likely” to Be Subject to a Serious Medical Error While Being Treated at a Canadian Hospital**



**Note:** These data represent the percentage of respondents answering “yes,” “somewhat likely” or “extremely likely” to “Are you likely to be subject to a serious medical error while being treated in a Canadian hospital?”.<sup>6</sup>

**Source:** Health Care in Canada Survey, 2006.

Surveys have also asked more specific questions about medication errors and hospital-acquired (or nosocomial) infections.<sup>9, 10</sup> The surveys asked slightly different questions and were conducted at slightly different times. Nevertheless, both primary care doctors and nurses felt that patients were more likely to acquire infections in health care settings than to receive the wrong medication or dose (Table 1).

**Table 1. Health Care Providers' Perceptions on Adverse Events**

Adverse Events in the "Past 12 Months"	Percentage
<b>Primary care doctors</b> reporting that patients received the wrong drug or wrong dose, or had preventable drug interactions (either "often" or "sometimes") (2006; n = 578)	8%
<b>Primary care doctors</b> reporting that patients acquired infections while in the hospital (either "often" or "sometimes") (2006; n = 578)	40%
<b>Nurses</b> reporting that patients occasionally or frequently received the wrong medication or dose (2005; n = 18,676)	18%
<b>Nurses</b> reporting that patients occasionally or frequently acquired a nosocomial infection (2005; n = 18,676)	35%

**Sources:** Commonwealth Fund International Health Policy Survey of Primary Care Doctors, 2006,<sup>9</sup> and National Survey of the Work and Health of Nurses, 2005.<sup>10</sup>

## How Often Do Different Adverse Events Happen?

Most Canadians accessing health services receive safe care. However, problems do happen—sometimes preventable, sometimes not. In order to compare how the risk of different types of adverse events varies, several data sources were used:

- For acute inpatient care, hospital data were obtained from CIHI's Discharge Abstract Database and Hospital Morbidity Database for the period of April 1, 2003, to March 31, 2006. Data from Quebec hospitals were excluded from all indicators because of differences in the way data were collected. For some indicators, 2003 data from parts of Manitoba were also excluded because of differences in data collection.
- Data from the Continuing Care Reporting System were used to capture information on falls experienced by residents in Ontario complex continuing care facilities in 2005–2006.

These data sources allowed us to evaluate the frequency of several types of adverse events, but by no means all those that affect patients in Canada. To supplement these sources, we have also included results from surveys and other data for some types of adverse events that cannot be captured using these data sources.

Our analysis shows that some adverse events are relatively rare, such as those related to blood transfusions (Table 2). Others, however, occur more frequently. Of those examined, the most common adverse events are related to medications, infections and obstetric traumas during childbirth. Less common are adverse or fatal events due to blood transfusions and having a foreign object, such as a sponge or an instrument, left in after a procedure. It is important to note that while not all incidents are avoidable, there is evidence to suggest what can be done to reduce the risk that they will occur.

**Table 2. Average Number Exposed per Patient Safety Event in Canada**

Type of Event	Number Exposed per Event	Reported Year
Adults contracting a nosocomial infection while in an acute care hospital	1 in 10	2002*
Adults with health problems who report receiving the wrong medication or dose	1 in 10	2005**
Children contracting a nosocomial infection while in an acute care hospital	1 in 12	2002***
Medical/surgical patients in an acute care hospital experiencing an adverse event	1 in 13	2000†
Obstetrical traumas during childbirth (vaginal delivery)	1 in 21	April 2003–March 2006‡
Birth trauma—Injury to neonate	1 in 141	April 2003–March 2006‡
Death associated with preventable adverse events for medical/surgical patients in an acute care hospital	1 in 152	2000†
Post-admission pulmonary embolism or deep vein thrombosis	1 in 279	April 2003–March 2006‡
In-hospital hip fracture for adults 65 and older	1 in 1,263	April 2003–March 2006‡
Foreign object left in after procedure	1 in 2,998	April 2003–March 2006‡
Adverse blood transfusion events	1 in 4,091	2003§
Fatal events definitely, probably and possibly related to transfusion of blood components	1 in 87,863	2002§

**Note:**

The table above presents **the number of people** who receive care or are exposed to a risk per patient safety event for selected indicators, with the exception of blood transfusion-related indicators. The blood transfusion-related indicators present the number of **blood transfusions** per patient safety event. A higher number suggests less risk.

**Sources:**

- \* D. Gravel, A. Matlow, M. Ofner-Agostini, M. Loeb, L. Johnston, E. Bryce, M. L. Sample, V. R. Roth, C. Goldman, G. Taylor and the Canadian Nosocomial Infection Surveillance Program, "Point Prevalence Survey of Health Care—Associated Infections Within Canadian Adult Acute-Care Hospitals," *Journal of Hospital Infection* 66 (June 18, 2007): pp. 243–248.
- \*\* Commonwealth Fund International Health Policy Survey of Adults With Health Problems, 2005.
- \*\*\* D. Gravel, A. Matlow, M. Ofner-Agostini, M. Loeb, L. Johnston, E. Bryce, M. L. Sample, V. R. Roth, C. Goldman, G. Taylor and the Canadian Nosocomial Infection Surveillance Program, "A Point Prevalence Survey of Health Care—Associated Infections in Pediatric Populations in Major Canadian Acute Care Hospitals," *American Journal of Infection Control* 35, 3 (April 2007): pp. 157–162.
- † G. R. Baker, P. G. Norton, V. Flintoft, R. Blais, A. Brown, J. Cox, E. Etchells, W. A. Ghali, P. Hébert, S. R. Majumdar, M. O'Beirne, L. Palacios-Derflingher, R. J. Reid, S. Sheps and R. Tamblyn, "The Canadian Adverse Events Study: The Incidence of Adverse Events Among Hospital Patients in Canada," *Canadian Medical Association Journal* 170, 11 (May 25, 2004): pp. 1678–1686.
- ‡ Discharge Abstract Database/Hospital Morbidity Database, April 1, 2003, to March 31, 2006, CIHI.
- § Transfusion Transmitted Injuries Surveillance System Program Report, Public Health Agency of Canada, 2005.

## Adverse Events in Canada: How Often Do They Occur?

While public and provider perceptions offer rich insights into progress and challenges for patient safety in Canada, measuring particular adverse event rates allows for the identification of more targeted strategies in areas where improvement is indicated.

### Birth Trauma—Injury to Neonates

There are over a quarter of a million babies born in Canadian hospitals each year outside of Quebec. This represents one of the primary reasons for hospitalization in Canada. Unfortunately, sometimes during the birthing process, newborns suffer injuries to their scalp and nervous system, or experience skull fractures. These injuries are referred to as “birth trauma.”

On average, over 1,700 birth traumas per year were reported in Canadian hospitals outside of Quebec from 2003–2004 to 2005–2006. This means that for every 1,000 live births, about 7 newborns will experience birth trauma.<sup>i</sup>

While all cases of birth trauma are not preventable, understanding and keeping a close watch for known risk factors may help to prevent them. Studies have found that risk factors include diabetes, obesity and small pelvis in the mother, prolonged pregnancy, abnormal presentation of the neonate and induced labour.<sup>11</sup> Experts suggest that ensuring early diagnosis and detailed examination during labour, as well reviewing the potential risks and benefits of alternatives when a difficult instrumental delivery is anticipated, may decrease the risk to the neonate.<sup>12, 13, 14</sup>

For example, it was found that babies born during an instrument-assisted delivery, such as one during which forceps or a vacuum extractor were used, were six times more likely to experience birth trauma than those born with a non instrument-assisted delivery (statistically significant;  $p < 0.0001$ ). However, by following clinical practice guidelines, such as those developed by the Society of Obstetricians and Gynaecologists of Canada,<sup>15</sup> for when delivery should or should not be assisted, and ensuring that there is appropriate training for assisted delivery techniques, physicians can make informed decisions with their patients on which methods to use when and if necessary.

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i. Quebec data were excluded from this indicator because the data collected did not permit comparable results.

There was a decreased risk of birth trauma among babies born via C-section compared to those born during a vaginal delivery (RR = 0.59; statistically significant;  $p < 0.0001$ ). However, there are other potential risks to the mother or baby when undergoing C-section.

Birth trauma also leads to longer hospitalizations for mother and baby. The mean length of stay for newborns with and without birth trauma is 3.1 and 2.2 days, respectively, suggesting that babies experiencing birth trauma stay in the hospital for 1 day longer, on average (statistically significant;  $p < 0.0001$ ).

## Obstetrical Trauma During Childbirth

Obstetric traumas are among the most commonly reported types of adverse events, and occur to the mother during vaginal delivery. Obstetric traumas include third- or fourth-degree perineal lacerations; laceration of the cervix, vaginal wall or sulcus; and injury to the bladder or urethra. They can also be identified if there has been a procedure to repair obstetric lacerations of the uterus, cervix, corpus uteri, bladder, urethra, rectum and sphincter after childbirth.

Between 2003–2004 and 2005–2006, there were over 9,100 reported obstetric traumas per year (or 47.3 obstetric traumas per 1,000 live vaginal deliveries) in Canadian hospitals outside of Quebec.<sup>ii</sup>

Women aged 25 to 29 years have the highest rate of obstetric trauma during childbirth (statistically significantly different than the next-highest rate;  $p < 0.0001$ ) (Figure 3). This is also the group associated with the greatest number of vaginal deliveries in Canada based on the three years of data for this analysis.

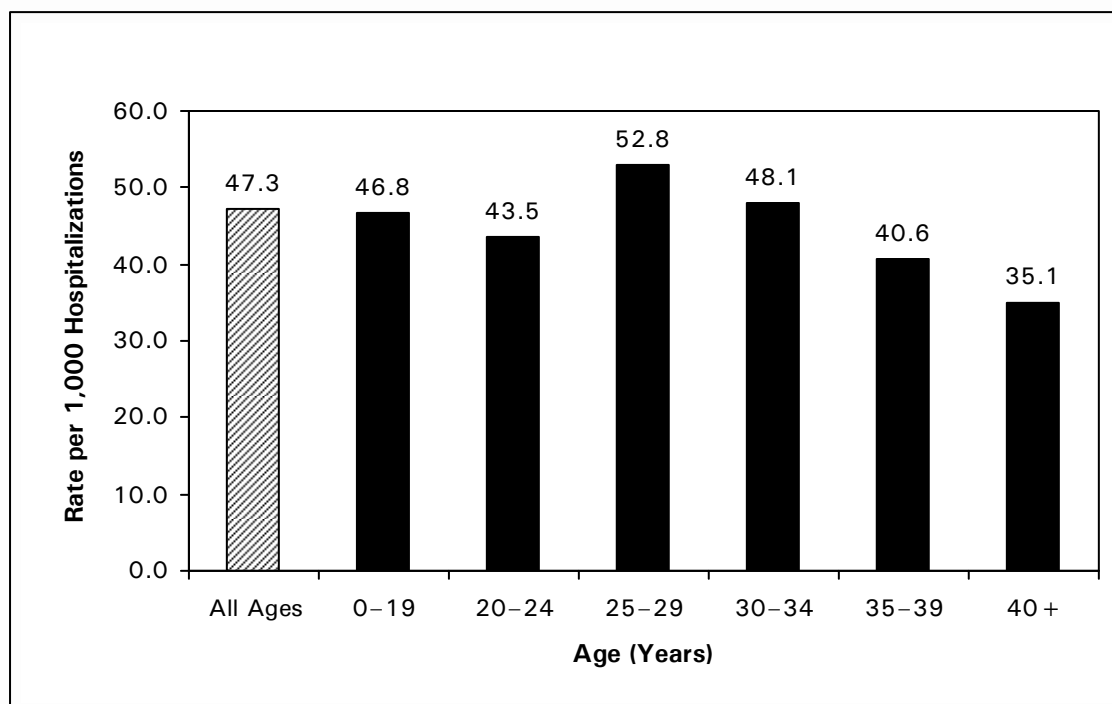
In general, mothers who experience obstetric traumas also tend to have longer hospital stays (almost half a day longer, on average) than those who do not. Even though women over 40 have the lowest rates of obstetric trauma, these patients tend to have longer lengths of stay in hospital. This may suggest that patients in this age group have longer recovery times for obstetrical traumas compared to other age groups. However, this may also be due to complications with their babies resulting in longer stays for the mothers or other factors. Studies have shown that babies of older mothers are at increased risk of preterm birth, multiple birth, low birth weight and admission to newborn intensive care.<sup>16</sup>

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ii. Quebec data were excluded from this indicator because the data collected did not permit comparable results.



**Figure 3. Rate of Obstetrical Trauma During Vaginal Delivery, by Age Group**



Source: Discharge Abstract Database/Hospital Morbidity Database, April 1, 2003, to March 31, 2006, CIHI.

Minimizing trauma is important for reducing discomfort to mothers as well as the risk of longer-term consequences. Obstetrical traumas can also lead to further health problems such as fecal incontinence, rectovaginal fistula and uterine prolapse.<sup>17, 18, 19</sup> Some mothers are at higher risk for obstetrical trauma, including those with newborns over four kilograms, mothers with longer duration of labour over which there is no control and mothers undergoing episiotomy or instrumental delivery. However, there are known strategies for reducing the risk of obstetrical trauma. Studies suggest reducing instrumental deliveries (especially using forceps) where possible, avoiding episiotomy when appropriate and properly positioning the mother during the delivery.<sup>20, 21, 22</sup>

In some cases, the use of instruments such as forceps and vacuum extractors is necessary to assist with the birthing process. Approximately 15% of vaginal deliveries in Canada (excluding Quebec) included some form of instrument assistance from 2003–2004 to 2005–2006. Potential complications from the use of instruments during delivery, such as third- or fourth-degree perineal lacerations, cervical lacerations and vaginal hematomas have been observed.<sup>23</sup> However, mothers and their babies can minimize risk when these instruments are used appropriately.<sup>15</sup> By following the guidelines for when deliveries should or should not be assisted (developed by the Society of Obstetricians and Gynaecologists of Canada), and ensuring that there is appropriate training for these techniques, physicians can make informed decisions with their patients on which methods to use if necessary.

## Foreign Objects Left in After Procedure

There were, on average, over 200 reported foreign objects per year, such as sponges or instruments, left in after a surgical procedure from 2003–2004 to 2005–2006—about 3 cases for every 10,000 surgeries performed in hospitals in Canada.<sup>iii</sup>

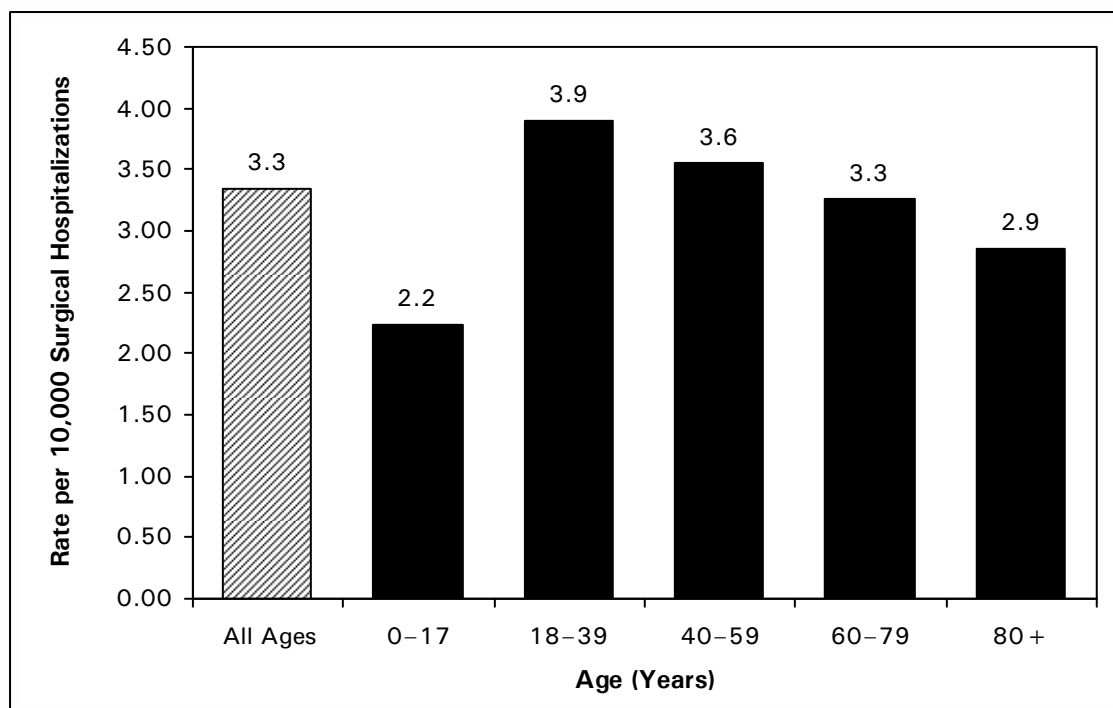
While foreign objects left in after a procedure are less common than other reported adverse event indicators profiled in this analysis, experts suggest that this is also one of the indicators most likely to be preventable.<sup>24</sup> Documented prevention strategies include following a strict practice of sponge and instrument counts, use of a sponge counter bag to ensure that sponges are kept in one place for more accurate counts, rather than being discarded at random, and more vigilant inspection of the body cavity when the surgery is complete. Other research has suggested that there may be benefits in using diagnostic tools such as radiography with radiopaque markers on sponges to ensure they are not left in, or placing bar codes (much like those in grocery stores) on sponges and instruments so that they can be recorded as they are inserted and subsequently removed.<sup>25, 26, 27</sup>

Patients aged 17 years and under are at lowest risk for a foreign object left in after a procedure (though it is not significantly lower than that of the two oldest age groups) (Figure 4). This could be due to the types of procedures that are most common in this age group. For example, surgeries to repair a cleft lip/palate, as well as tonsillectomies and adenoidectomies, make up much more of the 0-to-17 age group's case mix compared to the other age groups. These procedures, by their nature, tend to have a small number of foreign body events. Research shows that higher-risk groups for having a foreign body left in after procedure include patients who are obese, who undergo emergency operations, who have an unexpected change in operation or who experience a change in nursing staff or surgical team during the operation.<sup>25, 26, 27</sup>

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iii. Quebec data and some 2003 data from Manitoba were excluded from this indicator because the data collected did not permit comparable results. Also, the definition of this indicator has changed substantially from the definition used in *Health Care in Canada 2004*. Only surgical patients are included in the denominator, whereas both surgical and medical patients were previously included. Hence, comparisons to previous numbers are not appropriate.

**Figure 4. Rate of Foreign Objects Left in After Procedure, by Age Group**



Source: Discharge Abstract Database, April 1, 2003, to March 31, 2006, CIHI.

## Post-Admission Pulmonary Embolism or Deep Vein Thrombosis

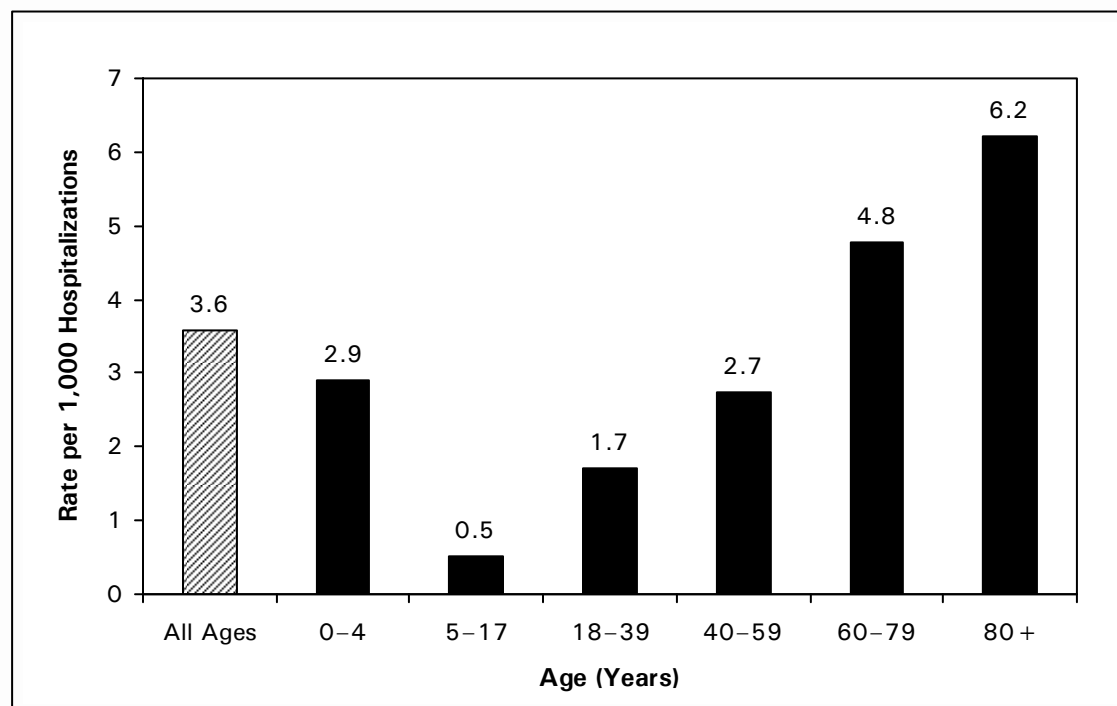
Pulmonary embolism (PE) occurs when a blood clot, or sometimes a globule of fat or tissue, travels through the veins and into the lung. These frequently originate from a vein in the leg, otherwise known as deep vein thrombosis (DVT). Tracking cases of PE or DVT that occur to patients in acute care hospitals can be helpful, since strategies for reducing the risk of this condition exist. Studies suggest options including early mobilization of patients after surgery, such as walking or leg exercises; use of elastic support stockings; and aspirin, warfarin or heparin therapy to reduce the probability of clotting for those on prolonged bed rest.<sup>28, 29, 30</sup> Close monitoring of patients with known risk factors, such as those with a prolonged period of bed rest, those using oral contraceptives or estrogen therapies, those who had a stroke or heart attack and those with a prior history of PE or DVT, may also be effective for early detection and treatment.<sup>29, 30</sup>

# Analysis in Brief

Taking health information further

Overall, 3.6 out of every 1,000 patients in Canada experience a DVT or PE after being admitted to a hospital.<sup>iv</sup> The risk of post-admission PE or DVT generally increases with age (Figure 5). However, the rate of DVT or PE among children from 0 to 4 years old is statistically significantly higher compared to older children up to 17 years of age ( $p < 0.0001$ ). Patients aged 60 and above have a significantly higher risk of developing a post-admission PE or DVT than younger patients ( $p < 0.0001$ ).

**Figure 5. Rate of Post-Admission Pulmonary Embolism or Deep Vein Thrombosis, by Age Group**



Source: Discharge Abstract Database, April 1, 2003, to March 31, 2006, CIHI.

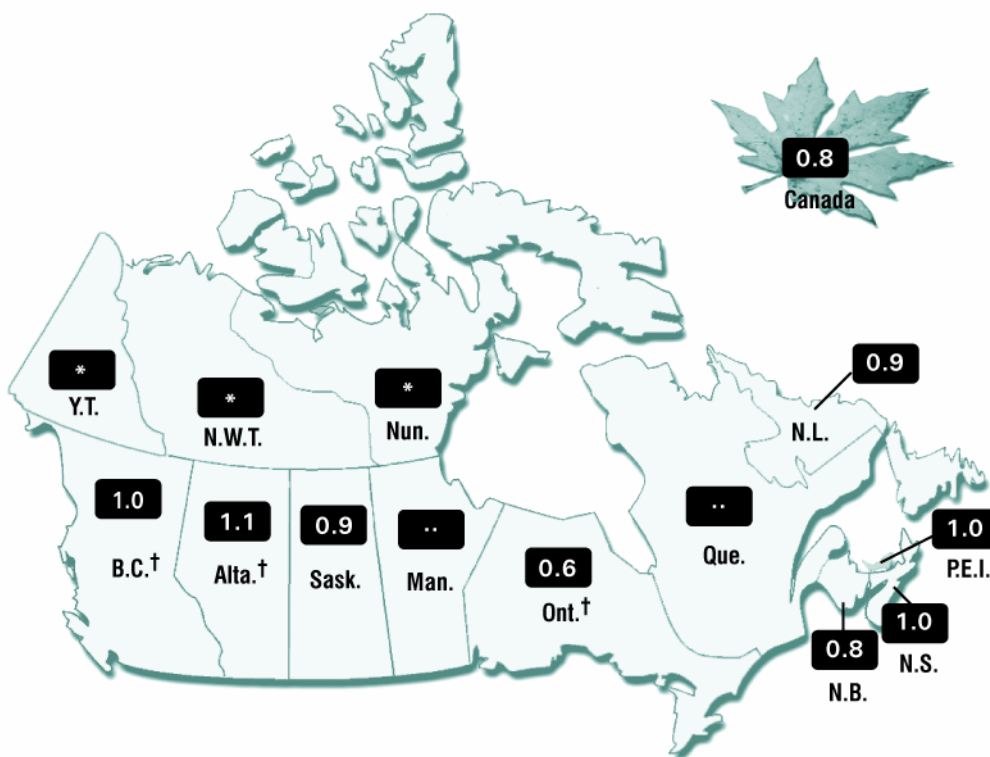
iv. Quebec data and some 2003 data from Manitoba were excluded from this indicator because the data collected did not permit comparable results.

## In-Hospital Falls and Hip Fractures

Although most falls leading to hip fractures occur in the community, they also happen in acute care hospitals. Falls are also relatively common in complex continuing care settings across the country.

Nearly 1 in 1,000 seniors admitted to an acute care hospital fractured their hips during their stays—over one per day.<sup>v</sup> Figure 6 illustrates that, overall, 1 in 1,263 patients 65 years of age or older suffered a hip fracture after admission to hospital (0.8 per 1,000 population between April 2003 and March 2006).<sup>vi</sup>

**Figure 6. Rate of In-Hospital Hip Fractures for Adults 65+, by Province**



**Notes:**

\* Data were suppressed.

† Statistically different from the average (Canada) rate (p ≤ 0.05).

.. Not available.

**Source:** Discharge Abstract Database, April 1, 2003, to March 31, 2006, CIHI.

v. For rates of in-hospital hip fractures at the health region level, please refer to *Health Indicators 2007*, at [www.cihi.ca](http://www.cihi.ca).

vi. Quebec and Manitoba data were excluded from this indicator because the data collected did not permit comparable results.

Several strategies have been proposed for reducing the risk of falls in hospital. Some focus on identifying and monitoring those most at risk, including the “oldest” old, women and those who have recently experienced a stroke or are taking certain medications which may lead to dizziness. Staff education, ensuring a safe physical environment (for example, adequate lighting, railings and grab bars) may also reduce falls that may lead to hip fracture.<sup>31, 32</sup>

Falls also occur in other health care settings. Approximately 8% of longer term residents in Ontario complex continuing care facilities experienced a fall during their stays in 2005–2006.<sup>33</sup> Several key risk factors for falls were identified. For example, residents who had had a fall within the previous month were five times more likely to experience another fall compared to those who had not had a fall within that time period. Other risk factors for falls include increasing age and patients requiring supervision or physical guidance to transfer or walk. Understanding these risk factors could potentially reduce the risk of falls and injury.

## Fostering a Culture of Patient Safety

There are many ways that health care facilities can foster a culture of patient safety. Experts suggest that supporting an open and non-punitive environment for reporting patient safety incidents, including patient safety reporting at senior management and board levels, are some examples of high-level strategies that can be implemented. More targeted interventions include, for example, hand-washing protocols to minimize hospital-acquired infections and the use of systems that minimize the incidence of medication errors.

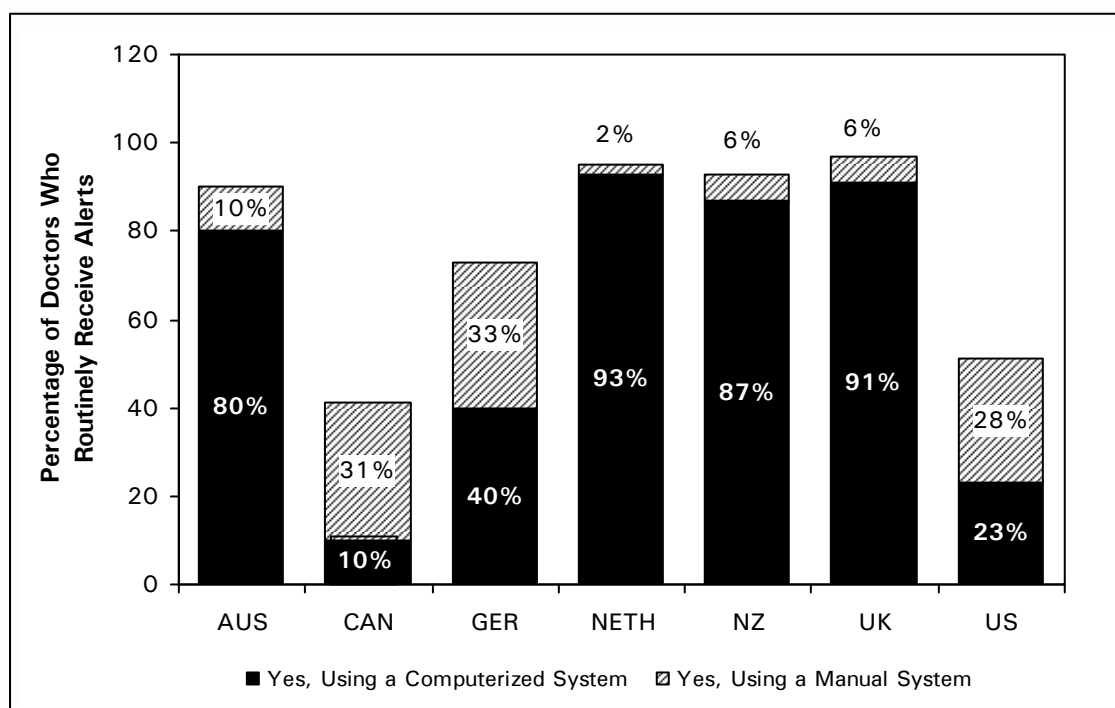
## Prevention of Medication Errors

Medication safety has become an area of increasing awareness.<sup>34</sup> However, 72% of primary care doctors in Canada reported that it was somewhat or very difficult to generate lists of all of the medications taken by individual patients, if at all, including those prescribed by other doctors.<sup>9</sup>

The Institute for Healthcare Improvement suggests that one of the primary ways in which a health care organization could improve medication safety is to reduce the risk of adverse drug events.<sup>35</sup> One way to do this is through the use of automated drug alerts, which provide information on potential drug interactions or dose problems. Although some primary care doctors in Canada do use computerized systems to alert them to potential drug interactions, when compared to other countries participating in the International Health Policy Survey of Primary Care Doctors, fewer Canadian doctors tend to use computerized systems to alert or prompt doctors about potential drug dose or interaction problems. Where 10% of Canadian primary care doctors reported that they used such a system, 93%, 91% and 87% of their counterparts in the Netherlands, the United Kingdom and New Zealand, respectively, responded likewise (Figure 7).<sup>9</sup>

A recent review has suggested that electronic prescribing of medication might also reduce the number of prescribing errors.<sup>36</sup> It has been reported that 11% of primary care doctors in Canada use electronic prescribing, the lowest of all of the surveyed countries.<sup>9</sup> This compares to over 80% in both the Netherlands and Australia, which both reported a high percentage of doctors using electronic prescribing (85% and 81%, respectively). Medication reconciliation, a formal process for creating a list of all patients' current medications when admitted to hospital, and using it when prescribing new medications, has been suggested for reducing adverse drug events.<sup>37</sup>

**Figure 7. Doctor Routinely Receives Alert About Potential Problem With Drug Dose/Interaction**



Source: Commonwealth Fund International Health Policy Survey of Primary Care Doctors, 2006.<sup>9</sup>

## Reporting Patient Safety Incidents

Experts suggest that openness and encouragement of patient safety reporting are key factors in understanding patient safety and working towards its improvement. Almost half of surveyed hospital executives in Canada in 2003 reported that their hospitals have a written policy for informing patients or their families of a preventable medical error. On the other hand, in 2006 almost three out of five primary care doctors said that there was no documented process for follow-up and analysis of adverse events. (Table 3).

**Table 3. Provider Perceptions of Patient Safety Reporting**

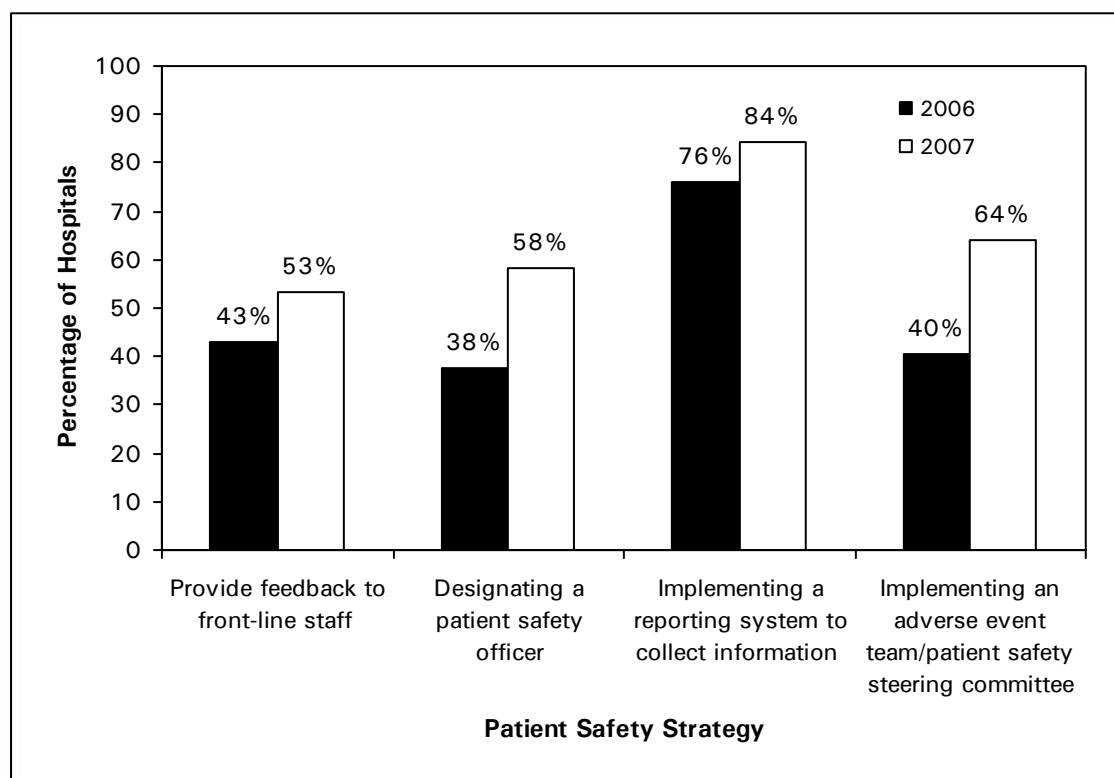
Survey Question	Percentage
<b>Hospital executives</b> saying hospital has written policy for informing patients or their families of a preventable medical error (2003; n = 102)	47%
<b>Hospital executives</b> saying physicians are very/somewhat supportive of error reporting (2003; n = 102)	80%
<b>Primary care doctors</b> saying there is <u>no</u> documented (written) process for follow-up and analysis of adverse events (2006; n = 578)	58%
<b>Primary care doctors</b> saying there is <u>no</u> process for finding and preventing medical errors (2006; n = 578)	48%

**Sources:** Commonwealth Fund International Health Policy Survey of Hospital Executives, 2003,<sup>38, 39</sup> and Commonwealth Fund International Health Policy Survey of Primary Care Doctors, 2006.<sup>9</sup>



Surveys sent to hospital executives in Ontario and summarized in *Hospital Report 2007: Acute Care* track which strategies have been implemented to improve patient safety. As presented in Figure 8, for example, just over one half of hospitals reported routinely providing feedback on patient safety issues to front-line staff (53%) and having a designated patient safety officer (58%) in 2007, compared to 43% and 38% in the previous year, respectively. There have also been increases in the number of hospitals implementing a patient safety reporting system (76% in 2006, 84% in 2007) and adverse event teams or patient safety steering committees (40% in 2006, 64% in 2007).

**Figure 8. Percentage of Ontario Hospitals Implementing Selected Patient Safety Strategies**



**Source:** System Integration and Change Survey, 2007, used within *Hospital Report 2007: Acute Care*, published by the Canadian Institute for Health Information in 2007.

## What We Know

The results presented in this Analysis in Brief reveal that while some improvements in patient safety-related outcomes have occurred within the last few years, there are still opportunities to create a safer health care system. Key findings include the following:

- About 1 out of every 10 patients with health problems surveyed in Canada reported that they had been given a wrong medication or a wrong dose in the past two years. Three out of every 20 Canadians surveyed reported an adverse event; about 46% of these resulted in a serious health problem.
- Hospital-acquired infections are among the most common types of adverse events examined in this report.
- On average, over 1,700 birth traumas per year were reported from 2003–2004 to 2005–2006 in Canadian hospitals outside of Quebec. These included injuries to the scalp and nervous system, or fracture of the skull during the birthing process. These also led to longer hospital stays for mothers and babies.
- Obstetrical trauma during childbirth was suffered by 1 out of every 21 women having a vaginal delivery. This trauma can also have longer-term consequences. While not every trauma experienced during childbirth is preventable, there are known strategies to reduce the risk.
- On average, over 200 reported foreign objects per year, such as sponges or instruments, were left in after a surgical procedure from 2003–2004 to 2005–2006. While foreign objects left in after a procedure were less common than other adverse events profiled in this analysis, a number of strategies have been suggested to prevent them from occurring.
- Overall, almost 3.6 out of every 1,000 patients in hospital in Canada outside of Quebec and some parts of Manitoba experienced a pulmonary embolism (PE) or deep vein thrombosis (DVT). The risk of suffering a post-admission PE or DVT increased significantly with advancing age.

- Nearly 1 in 1,000 seniors admitted to an acute care hospital fractured their hips during their stays—over one per day. Rates varied significantly across the country, suggesting opportunities to delve further into why some regions achieved much lower rates than others.
- Computerized medication alerts, which provide physicians with information about potential adverse drug interactions, were used by about 10% of doctors surveyed in Canada. Also, 11% of Canadian doctors reported prescribing medication electronically. These are the lowest rates of all the countries included in the survey (that is, Australia, Canada, Germany, the Netherlands, New Zealand, the United Kingdom and the United States).
- Approximately half of primary care doctors surveyed reported that there was no process for finding and preventing medical errors where they work.

## What We Don't Know

The information presented in this Analysis in Brief provides a short update on patient safety and adverse events in Canada. However, many questions remain about the state of patient safety and how to translate these findings into improvement initiatives. Examples of information gaps include the following:

- How is patient safety changing over time? What is driving these trends?
- What does patient safety look like across the health care continuum? What are the rates and types of adverse events occurring outside of the acute inpatient hospital environment?
- What are some of the risk factors contributing to different types of adverse events? How can these be addressed? Do hospital types and hospital volumes play a factor in the rate of adverse events?
- How can we translate adverse events into learning opportunities? How is reporting and communication of adverse events changing? How can it be increased or encouraged?
- Which policies, strategies and practices are most effective in improving patient safety, and how can this knowledge be applied more broadly?

## References

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Taking health information further

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