



# Reports of Preventable Medical Errors from the Alberta Patient Safety Survey 2004

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## Abstract

The Health Quality Council of Alberta (HQCA) is charged with reporting to Albertans on the quality, safety and performance of the healthcare system. In 2004, the HQCA conducted a telephone survey (response rate: 55%) of 1,500 adult Albertans to assess their perceptions of and personal experiences with preventable medical errors (PMEs). A total of 559 (37.3%) respondents reported that they or a family member had ever experienced a PME. The most common PMEs were related to clinical performance (n=128), medication (n=123), diagnosis (n=121) and communication (n=73). Through this research, patients have provided an orientation to interventions to improve patient care and prevent medical errors.

## INTRODUCTION

Patient safety, including the occurrence of medical errors or adverse events (AEs), is receiving increasing attention in Canada (Baker et al. 2004). Some AEs are unavoidable, some are potentially preventable (Baker et al. 2004) and the severity of others can be reduced (Baker and Norton 2004). AEs may result in a

variety of undesirable consequences, including death, disability or other physical harm (Baker et al. 2004; Blendon et al. 2002; Kuzel et al. 2004), psychological harm (Kuzel et al. 2004), additional or prolonged treatment (Blendon et al. 2002), or an increased financial burden to the healthcare system (Baker et al. 2004).

Most AE research has focused on hospital patients with data drawn from hospital records. Through a review of hospital charts at Canadian acute care hospitals in 2000, the AE rate was estimated at 7.5%, over one-third (36.9%) of which were preventable (Baker et al. 2004). Similar results have been obtained in studies conducted in Britain (Vincent et al. 2001), New Zealand (Davis et al. 2001) and the United States (Tomas et al. 2000). In a study of the internal medicine service at one Canadian hospital, researchers interviewed patients discharged over a 14-week period and found that 23% reported an AE after discharge, half of which were preventable or ameliorable (Forster et al. 2004).

Community-based studies, including surveys of the general population, have been less common than those of hospital

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The Health Quality Council of Alberta is an arm's length organization empowered and funded by the Government of Alberta through the Minister of Health and Wellness to report directly to Albertans on the quality, safety and performance of the healthcare system.

patients (Baker and Norton 2004). In one Canadian survey in 2003, 24% of respondents reported that they or a family member had ever experienced a preventable AE, 52% of which had serious consequences (Canadian Institute for Health Information 2004). In a 2002 national survey of physicians and the public in the United States, 35% of physicians and 42% of the public reported that they or a family member had ever experienced a medical error (Blendon et al. 2002). This study focused on opinions about medical error and did not solicit information on respondents' experiences with medical error.

In response to the growing concern over medical errors, in 2003 the Canadian government created the Canadian Patient Safety Institute and in 2004 the Alberta government added patient safety to the mandate of the Health Quality Council of Alberta (HQCA; formerly the Health Services Utilization Commission established in 2001). The HQCA is charged with reporting to Albertans on the quality, safety and performance of the healthcare system. Accordingly, in 2003 the HQCA surveyed Albertans to assess their perceptions of and actual experiences with health services. Concern about medical errors emerged as the second most important factor associated with overall quality in the healthcare system, second only to accessibility (Health Services Utilization and Outcomes Commission 2003). Furthermore, 14% of those surveyed reported that they or a family member had experienced a medical error within the past year that resulted in serious harm, such as death, disability, or prolonged treatment. These results were corroborated by a 2004 survey in which 13% of those surveyed reported that they or a family member had experienced a medical error within the past year (HQCA 2004). In the spring of 2004, the HQCA sponsored a subsequent survey to further explore patient safety issues. This article reports findings from that survey, focusing on patients' experiences with preventable medical error (PME) and their descriptions of the most recent PME that they or a family member had experienced.

## METHODS

A representative sample of 1,500 adult Albertans (over 17 years of age) was surveyed. The sample was stratified by age, gender and regional health authority (RHA) and included 400 respondents each from the Calgary and Capital (Edmonton area) RHAs and 100 respondents from each of the remaining seven RHAs. The sample was weighted to represent the provincial population, given that the Calgary and Capital RHAs were under-sampled, while the smaller RHAs were over-sampled. The final sample provided estimates that are accurate to within plus or minus 2.5%, 19 times out of 20.

The Alberta Patient Safety Survey 2004 was administered by trained interviewers using a computer-assisted telephone interviewing system in April and May of 2004. Households were selected by random digit dialling and the individual in the

household with the most recent birthday was selected for interview. The response rate was 55%, calculated as total number of completed questionnaires over total completed plus refusals plus those who could not participate due to communication and language problems.

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The questionnaire was adapted from a structured questionnaire developed and administered in the United States by Blendon et al. (2002). Items were modified to be appropriate to the Alberta healthcare system and open-ended items were added to solicit detail on experiences with PME. PMEs were defined as mistakes resulting in serious harm, such as death, disability or additional prolonged treatment that occurred while receiving medical care.

The questionnaire was pretested to ensure it could be appropriately administered by interviewers and questions were clear to respondents. Following the pretest, minor changes were made to refine the questionnaire. Closed-ended questions elicited perceptions of PMEs in general. In addition, respondents were asked if they or a family member had ever experienced a PME. Those who responded yes were asked to share the details of the most recent PME. Further closed-ended questions sought details regarding health consequences of the error, persons or institutions responsible and disclosure of the error. Open-ended questions were: What was the error? What do you think caused the error? How could the error have been prevented?

Responses to closed-ended questions are reported as frequency distributions. A content analysis (Crabtree and Miller 1999) was performed on the open-ended questions. The coding template that was applied to open-ended data began with three category headings: types of errors, perceived causes, and beliefs regarding prevention. Detailed subcategories were developed within these categories through several iterations of reading the data to ensure the analysis accurately reflected respondents' descriptions. Frequencies were calculated at the subcategory level and themes were identified (Crabtree and Miller 1999).

To assess reliability of the coding template, before data analysis began two coders (LV and CMM) independently applied the template to a random sample of the data. Results were compared and inter-rater reliability was assessed at 0.81 (81% agreement).

**Table 1: Demographic Characteristics of Respondents to the Alberta Patient Safety Survey 2004**

Demographic Characteristics	Respondents who Experienced PME		All Other Respondents	
	number	%	number	%
Total	559		941	
Female	320	57.3	438	46.5
Male	239	42.7	503	53.5
X <sup>2</sup> =15.7, df=1, p=.0001				
Age:				
18 – 24 years	62	11.1	144	15.3
25 – 44 years	244	43.6	374	39.7
45 – 64 years	192	34.4	277	29.5
65 years +	60	10.8	146	15.5
X <sup>2</sup> =14.2, df=3, p=.003				
Income:				
< \$30,000	90	16.1	158	16.8
\$30,000–59,999	171	30.6	282	29.9
\$60,000–99,999	135	24.1	251	26.7
\$100,000 +	106	19.0	159	16.9
No response	57	10.1	91	9.6
X <sup>2</sup> =2.0, df=4, p=.73				

**RESULTS**

A total of 37.3% (95% CI 34.8%-39.8%) of respondents reported that they or a family member had ever experienced a PME while receiving healthcare service within Alberta. Females were more likely than males (p=0.0001) and individuals aged 25 to 64 years were more likely than older or younger individuals (p=.003) to have experienced a PME (Table 1).

Of those who reported having experience with PME, over half (54.2%, n=302) said the most recent error had one or more serious health consequence, including significant loss of time at work, school or other important life activities (79.1%), severe pain (78.2%), temporary disability (64.3%), long-term disability (53.6%), death of a family member (35.7%) and other serious health consequences (40.7%). Other reported serious health consequences were grouped into five categories: 1. *physical* (e.g., loss of limb, brain damage); 2. *psychological* (e.g., depression, panic or anxiety; suicidal thoughts), 3. *treatment* (e.g., further, prolonged or subsequent treatment or hospitalization), 4. *financial* (e.g., lost income, unnecessary costs to the healthcare system) and 5. *social* (e.g., unable to meet family obligations, personal relationships affected).

Respondents were most likely to assign responsibility for the most recent PME to doctors (66.7% said doctors had a lot of

responsibility) in comparison to nurses (21.6%), other health professionals (17.7%) or the institutions involved (29.5%). About one-third (31.9%) said they had been told an error had been made and 30.0% said the doctor or health professionals involved had apologized. Only 3.9% indicated they or their family member sued the health professional for malpractice.

Of those respondents who had experience with a PME, 79.1% (n=435) agreed to share the details about the most recent PME that occurred. The following results use the respondents' language as much as possible to reflect their personal account of the experience.

**REPORTED TYPES OF MEDICAL ERRORS**

Respondent descriptions of the types of PME (n=539; some narratives described more than one PME) they or a family member had experienced most recently were grouped into 12 categories with subcategories (Table 2). The most common categories of described PMEs were related to clinical performance (n=128, 23.7%), medication (n=123, 22.8%), diagnosis (n=121, 22.4%) and communication (n=73, 13.5%). In the clinical performance category, 54 narratives (42.2%) were related to the belief that a practitioner did not properly follow a procedure; for example, if a surgical incision was not properly cleaned. In the medication category, 53 narratives (43.1%) were related to receiving the wrong prescription. The diagnosis category was dominated by narratives related to misdiagnosis (n=72, 59.5%).

**PERCEIVED CAUSES OF MEDICAL ERRORS**

Respondents' beliefs regarding the causes of the most recently experienced PME (n=596; some narratives identified more than one cause) were grouped into eight categories with subcategories (Table 3). The most frequently mentioned categories of perceived causes were: clinical performance (n=161, 27.0%), practitioner attitude (n=136, 22.8%), lack of communication (n=91, 15.3%) and practitioner education or knowledge (n=73, 12.2%). The clinical performance category included narratives describing perceived practitioner negligence or incompetence (n=36, 22.4%) and of perceptions that practitioners were not paying attention to their patients (n=33, 20.5%). One-quarter (n=35, 25.7%) of the narratives in the practitioner attitude category were regarding a perceived lack of caring by a practitioner towards their patient.

**BELIEFS REGARDING HOW MEDICAL ERRORS COULD HAVE BEEN PREVENTED**

Respondent beliefs regarding how the PME could have been prevented (n=920) were varied. Responses were grouped into categories and subcategories, but no primary category emerged as the most prevalent. Respondents were most likely to say that their PME could have been prevented if a practitioner had

**Table 2: Reported Types of Medical Errors**

Categories and Subcategories of Medical Error	Number of Reports		Categories and Subcategories of Medical Error	Number of Reports	
	Categories	Sub-Categories		Categories	Sub-Categories
Clinical Performance	128 (23.7%)		Did not read or follow instructions left by other practitioner		3
Did not follow protocol or complete procedure properly		54	Did not ask relevant questions before administering treatment		3
Procedure did not go as intended (i.e., mistake)		39	Patient Management	34 (6.3%)	
Did not look into problem thoroughly enough		14	Improper monitoring, supervision or follow up		16
Made incorrect decision regarding care		10	Inappropriate care		15
Improperly read test results or patient chart		6	Taken to wrong hospital/put in wrong ward		3
Not prepared for patient or procedure		5	Time	21 (3.9%)	
Medication	123 (22.8%)		Waited too long for treatment or testing	12	
Wrong prescription given/received		53	Waited too long for emergency physician	4	
Incorrect dose		24	Did not take time to look into problem thoroughly enough	2	
Adverse reaction		13	Delay in receiving test results	2	
Not given when needed		16	Not enough time in hospital	1	
Drug interaction		9	Surgery	13 (2.4%)	
Medicated too long		3	Complications	6	
Unnecessary		3	Unnecessary	4	
Ingredients not listed properly		1	Inappropriate	2	
Wrong route of administration		1	Inadequate supplies	1	
Diagnosis	121 (22.4%)		Therapy	10 (1.9%)	
Misdiagnosis		72	Wrong		3
Delayed Diagnosis		45	Not received		3
Inappropriate or unnecessary diagnostic tests		4	Delayed		3
Communication	73 (13.5%)		Unnecessary		1
Did not listen to patient		18	Practitioner Attitude or Disposition	8 (1.5%)	
Not enough or incorrect information given to patient		12	Rude		7
Mix up with patient charts or treatments		12	Did not want to perform procedure (too risky)		1
Different clinics, etc., did not communicate efficiently or effectively		11	No improvement in condition	4 (0.7%)	
Did not read patient chart		7	Inefficiency with time or resources	2 (0.4%)	
Did not report or record patient complications or related events in patient chart		7	Lack of procedures	2 (0.4%)	
			Total*	539	

\*Some respondents indicated more than one category of error for the PME they most recently experienced.

completed further diagnostic tests or looked into a problem more thoroughly (n=97, 10.5%); a practitioner had followed a procedure correctly (n=84, 9.1%); a second opinion had been received or a procedure had been double checked (n=75, 8.2%); a practitioner had paid increased attention to or listened to a patient (n=62, 6.7%); there had been better communication between healthcare professionals (n=58, 6.3%); and a practitioner had cared more for a patient or their treatment (n=54, 5.9).

## THEMES

Four themes emerged from the detailed accounts of the most recent PME.

*Communication.* Some respondents felt they were not listened to or heard by their health professionals. They felt they did not have a voice and that their concerns, issues and opinions were not valued. They felt they did not have a say in their treatment decisions, but should have.

The healthcare system is stressed and overloaded. Many respondents indicated that the healthcare system is stressed and overloaded. This theme is evident in comments about health professionals being overworked, working shifts that are too long, not having a long enough break between shifts and having too many patients, as well as there not being enough hospitals, money and resources in the system.

*Negative Practitioner Attitudes.* The attitudes of individual practitioners were often seen as an immediate cause of an error and improving attitudes was seen as a strategy to improve the healthcare system and prevent future errors. While often discussed in relation to communication and an overloaded system, many respondents felt that their practitioner was arrogant, lazy, rushed, did not care about them or their concerns, was overconfident or did not have people skills.

*Team-oriented Care.* Many respondents stated that a team approach to healthcare would have prevented many errors. Respondents identified many situations where errors were perceived to have occurred as a result of poor communication and a lack of coordination and cooperation. For example, PMEs were perceived to have occurred as a result of inappropriate followup or because all necessary viewpoints, such as that of a pharmacist, a nutritionist and a general practitioner, were not considered.

## DISCUSSION

The Alberta Patient Safety Survey was the first in Canada to explore PMEs from the patient perspective. This research has produced preliminary taxonomies of errors reflecting patient views of types of error that occur, causes and strategies for prevention. Patients appear to blame individuals, versus the system, for errors and seem to be more concerned with the process by which errors occur versus the errors themselves. For

example, patients appear to emphasize a practitioner who did not seem to care about them, rather than being misdiagnosed, and seem to blame the practitioner for the misdiagnosis versus a lack of clinical practice guidelines (a system problem), for example. This perspective contrasts with the medical error literature, which emphasizes system problems as the primary cause of errors (Leape et al. 2002). A likely reason for this difference in perspective is that a patient's experience with the system is often limited to contact with one practitioner and patients do not have the same level of understanding of the system as do practitioners and researchers. It is becoming apparent that medical errors are multifactorial and may be caused by one or many components in a complex web of events. Such an understanding of medical errors has long been recognized in the patient safety literature, but has not percolated into public understanding. Perhaps, as the healthcare system moves towards a more open and transparent environment around the disclosure of medical errors that result in patient harm, a shift in patient perspectives towards a more comprehensive understanding of medical errors may result.

Kuzel et al. (2004) have proposed a broad definition of medical errors: "all forms of improper, delayed or omitted care that unnecessarily injures patients by either worsening health outcomes or causing physical or emotional distress." This definition, although appropriately encompassing patient views as suggested by the current study, blurs the line between patient satisfaction and medical error — a line that hinges on what is accepted as legitimate harm. Research from a physician and administrator perspective typically recognizes physical harm, including death, and additional treatment as the only legitimate consequences of errors (Baker et al. 2004; Blendon et al. 2002; Kuzel et al. 2004). Patient-centred research suggests that psychological and social consequences (Berwick 2005; Kuzel et al. 2004) should also be recognized. The patient perspective broadens the definition of error, but identifies meaningful points of intervention to potentially reduce preventable harm and improve patient care.

The Alberta Patient Safety Survey 2004 has provided insight into how the adult public who have experienced PME perceive the healthcare system. Some feel the system is set up so they cannot be heard or listened to; it is inadequately funded; there is little encouragement for cooperation and consultation; and some feel that some practitioners have a negative attitude toward their jobs and patients. The language used by respondents to describe their experiences with PME was often harsh. Terms such as negligence, incompetence, arrogance and laziness were not uncommon. While these results are of concern, they must be taken in context. The opinions expressed in this study were provided while describing experienced PMEs, and therefore reflect only the views of individuals who are describing a negative experience with the system but who otherwise may

**Table 3: Perceived Causes of Medical Errors**

Categories and Subcategories of Perceived Cause	Number of Reports		Categories and Subcategories of Medical Error	Number of Reports	
	Categories	Sub-Categories		Categories	Sub-Categories
Clinical Performance	161 (27.0%)		Did not listen to or talk to patient/family		14
Negligence/incompetent		36	Did not provide patient with appropriate information		8
Not enough attention to patient or inattentive		33	Practitioner did not ask relevant questions		6
Outlined/standard procedure not followed		23	Did not record information properly		4
Human error, or mistake made while following correct procedure		21	Did not refer when necessary		3
Not thorough examination before diagnosis		16	Poor handwriting		2
Poor or incorrect decision regarding care		15	Did not have sufficient patient records		1
Misunderstanding/improper reading of test results or prescription		7	Pharmaceutical improperly labelled		1
Improper preparation for a procedure		7	Patient did not ask relevant questions		1
Did not consult necessary resources		2	Did not work with patient to find suitable treatment		1
Practitioner was not available when needed		1	Language barriers		1
Practitioner attitude/disposition	136 (22.8%)		Practitioner Knowledge or Education	73 (12.2%)	
Lack of caring/Uncaring		35	Lack of knowledge on patient condition or treatment		31
Too busy/rushing		27	Poor/insufficient training of practitioners		14
Assumption knows problem/overconfidence		21	Individual lack of experience		12
Fatigue/overwork		18	Individual lack of skill		11
Arrogance		16	Two (or more) diseases share the same symptoms		3
Practitioner was too old		5	Systemic lack of information on new drugs		2
Lazy		3	System	63 (10.6%)	
Optimism		3	Limited resources/cutbacks		25
Discrimination		2	Professionals have too many patients		18
Personal concerns		2	Poor supervision of practitioners or students		7
No people skills		2	Lack of procedures		5
Practitioner was under the influence of alcohol		1	Cost-focused versus patient-focused		5
Concerned regarding risk factors		1	Does not hold physicians accountable		2
Lack of Communication	91 (15.3%)		Pressure to not prescribe antibiotics		1
Same institution – between professionals		20	Time	56 (9.4%)	
Different institutions – between professionals		15	Not enough time with doctor		13
Did not read patient chart		14	Delay in referral (e.g., specialist, surgery, testing)		13
			Not enough time spent diagnosing a patient (incl. diagnostic tests)		12

Categories and Subcategories of Medical Error	Number of Reports	
	Categories	Sub-Categories
Delay in receiving treatment/procedure/diagnosis		7
Not enough time spent on a procedure		7
Not enough time for proper monitoring or followup		2
Drs not taking time to discuss patient amongst each other		1
Not enough time for doctor-patient followup		1
<b>Treatment or Diagnostic Procedure</b>	<b>13 (2.2%)</b>	
Difficult in nature		7
Equipment/supply error		4
Rare disease/condition		1
Two or more drugs share a similar name		1
<b>Patient Characteristics or Behaviour</b>	<b>3 (0.5%)</b>	
Patient did not follow recommended treatment		1
High-risk patient		1
Patient did not take enough responsibility		1
<b>Total*</b>	<b>596</b>	
*Some respondents indicated more than one cause for the PME they most recently experienced.		

From a patient perspective, improved coordination and cooperation of various providers across the healthcare system could improve patient care and reduce PMEs.

The Alberta Patient Safety Survey 2004 had several potential limitations. First, it is increasingly difficult to get high response rates in telephone surveys given that more people are screening incoming calls and are opting for cell phones in place of landlines. As a result, there may be bias in selection of the sample. A telephone survey was the preferred design, however, as complete information, which is more probable with telephone surveys versus postal surveys, for example, as the goal. Second, respondents were asked to describe PMEs that either they or a family member had experienced at any point during their lives in Alberta, which casts a broad net. Responses therefore may not be entirely representative of the current situation or reflective of the range of errors that may occur. Finally, beyond the three open-ended interview questions, interviewers were not instructed to probe for further details or clarification of respondents' descriptions. The resultant narratives were necessarily succinct. Although lacking in depth, the large sample allowed for PMEs to be explored in breadth.

be satisfied with their healthcare. Nevertheless, patients have provided some general orientation to prevention strategies that can be explored by healthcare administrators and decision-makers to increase patient confidence and to potentially prevent medical errors. Patient-practitioner communication is of central importance. From a patient perspective, practitioners who care about their job and their patients, who listen to and respect their patients and who take the time to provide information and respond to patient concerns are more likely to prevent an error from occurring. Further, patients appear to be responding to government and media messages regarding the ideal of an integrated healthcare system, where physicians, nurses, pharmacists and other community-based practitioners work together to provide patient-focused care. From a patient perspective, improved coordination and cooperation of various providers across the healthcare system could improve patient care and reduce PMEs.

A similar survey within other Canadian province's healthcare systems may be informative to assist geographical comparisons of patient satisfaction and patient experiences with medical errors. Such comparisons would promote communication between provinces and allow various provinces to learn from one another's best practices and experiences. Several lessons were learned from the Alberta Patient Safety Survey 2004 that may be of use to administrators and researchers in other jurisdictions who may want to conduct a similar survey. First, the addition of a cognitive testing component to the pretest phase would be of great value. The topic of PMEs is emotionally charged and thus open to multiple interpretations. A cognitive testing component would allow issues around question clarity to emerge through probing pretest respondents' understanding of questions and their thinking as they provide responses. Second, fixed choice responses to open-ended questions could be expanded to reflect patient experiences and perspectives. For example, it is clear that patients perceive a broader range of consequences to medical

errors than prolonged treatment, disability and death. The addition of emotional and social consequences (depression, anxiety, loss of income, having relationships affected) as fixed responses would assist in a more thorough exploration of PME from a patient perspective. Finally, a less structured interview format with some or different respondents would assist in the exploration of PMEs with greater depth and clarity. There is a trend towards combining qualitative and quantitative research methods to enhance validity and theoretical insights (Polit and Hungler 1999). In addition to the structured survey, a series of individual and semistructured in-depth interviews with respondents who have experienced a PME would add context to the study of PMEs and would provide insight into the depth of the complex experience of a PME.

No one perspective — be it the perspective of healthcare administrators, practitioners or patients — can adequately express the complexity and depth of PMEs. Instead, a combination of perspectives is needed before PMEs may be comprehensively understood and before meaningful patient safety initiatives may be advanced. The patient perspective is traditionally overlooked or only modestly considered in patient safety research, yet must be considered if the ultimate goal of patient confidence and patient safety is to be realized.

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## Attribution

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