

# Choosing Your Words Carefully

## How Physicians Would Disclose Harmful Medical Errors to Patients

Thomas H. Gallagher, MD; Jane M. Garbutt, MB, ChB, FRCP; Amy D. Waterman, PhD;  
David R. Flum, MD, MPH; Eric B. Larson, MD, MPH; Brian M. Waterman, MPH;  
W. Claiborne Dunagan, MD; Victoria J. Fraser, MD; Wendy Levinson, MD

**Background:** A gap exists between patients' desire to be told about medical errors and present practice. Little is known about how physicians approach disclosure. The objective of the present study was to describe how physicians disclose errors to patients.

**Methods:** Mailed survey of 2637 medical and surgical physicians in the United States (Missouri and Washington) and Canada (national sample). Participants received 1 of 4 scenarios depicting serious errors that varied by specialty (medical and surgical scenarios) and by how obvious the error would be to the patient if not disclosed (more apparent vs less apparent). Five questions measured what respondents would disclose using scripted statements.

**Results:** Wide variation existed regarding what information respondents would disclose. Of the respondents, 56% chose statements that mentioned the adverse event but not the error, while 42% would explicitly state that an error occurred. Some physicians disclosed little information: 19%

would not volunteer any information about the error's cause, and 63% would not provide specific information about preventing future errors. Disclosure was affected by the nature of the error and physician specialty. Of the respondents, 51% who received the more apparent errors explicitly mentioned the error, compared with 32% who received the less apparent errors ( $P < .001$ ); 58% of medical specialists explicitly mentioned the error, compared with 19% of surgical specialists ( $P < .001$ ). Respondents disclosed more information if they had positive disclosure attitudes, felt responsible for the error, had prior positive disclosure experiences, and were Canadian.

**Conclusions:** Physicians vary widely in how they would disclose errors to patients. Disclosure standards and training are necessary to meet public expectations and promote professional responsibility following errors.

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A **SIZABLE GAP** EXISTS BETWEEN patients' desire to be told about medical errors and current practice, with studies<sup>1-5</sup> suggesting that less than half of harmful errors are disclosed to patients. This failure to disclose errors could diminish patient trust and satisfaction and may increase the likelihood of malpractice claims.<sup>6-11</sup>

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The causes of this "disclosure gap," especially the contribution of physicians' attitudes and behaviors, are poorly understood. Prior studies<sup>12-16</sup> suggest that while physicians generally support disclosure, multiple barriers inhibit them from actually talking to patients about errors, such as fear of lawsuits, shame, and lack of disclosure training. Physicians are also uncertain about the content of disclosure (ie, what words to choose when discussing errors with patients).<sup>17</sup> Following errors, patients want an explicit statement that an error has occurred, information about why the error happened, how recurrences will be prevented, and an

apology.<sup>18-21</sup> Yet, in prior qualitative research,<sup>17</sup> physicians were often cautious in discussing errors with patients, such as mentioning the adverse event (the harm caused by medical care) but avoiding use of the word "error." Prior work<sup>17</sup> also suggested that the nature of the error may affect disclosure. Physicians told us they would be less inclined to disclose errors that would not be apparent to the patient unless health care workers pointed out the mistake. Yet, patients want to be informed about all harmful errors, not just errors that are obvious to them.<sup>7,20-22</sup> To our knowledge, no quantitative data exist regarding what information physicians would disclose and whether disclosure varies for errors that would not be apparent to patients.

Physicians' specialty may also influence how they approach disclosing errors. Surgeons routinely talk with patients about potential adverse events during the informed consent process and with colleagues during morbidity and mortality conferences.<sup>23-25</sup> Medical specialists, however, may have less experience discussing adverse events with patients and colleagues.<sup>26</sup> In addition, surgeons traditionally espouse a "captain of the

#### Author Affiliations:

Departments of Medicine and Medical History and Ethics (Dr Gallagher) and Surgery and Health Services (Dr Flum), University of Washington School of Medicine, and Center for Health Studies, Group Health Cooperative (Dr Larson), Seattle, Wash; Department of Medicine, Washington University School of Medicine (Drs Garbutt, Waterman, Dunagan, and Fraser), BJC HealthCare (Dr Dunagan), and Waterman Research Solutions (Mr Waterman), St Louis, Mo; and Department of Medicine, University of Toronto, Toronto, Ontario (Dr Levinson).

ship” mentality in which the captain is considered responsible for errors made by anyone on the team, a belief evolving with changes in surgical education and legal doctrine.<sup>23,25,27</sup> Understanding specialty differences in disclosure could allow one group of physicians to learn from another. However, to our knowledge, no prior studies have explored whether medical and surgical physicians approach disclosure similarly.

Programs to enhance disclosure of errors to patients are proliferating.<sup>28,29</sup> The success of these efforts hinges on better understanding how physicians in different specialties think these difficult conversations should be conducted. Therefore, we surveyed physicians in the United States and Canada to determine the following: (1) how physicians would disclose hypothetical harmful medical errors to patients, (2) whether disclosure differs when an error might be less apparent to a patient and between medical and surgical specialists, and (3) the factors associated with disclosure.

**Table 1. Definitions Provided to Respondents**

Term	Definition
Adverse event	An injury that was caused by medical management rather than the patient's underlying disease.
Medical error	The failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. Medical errors include serious errors, minor errors, and near misses.
Serious error	Error that causes permanent injury or transient but potentially life-threatening harm.
Minor error	Error that causes harm which is neither permanent nor potentially life threatening.
Near miss	An error that could have caused harm but did not either by chance or timely intervention.

## METHODS

### PHYSICIAN SAMPLE

We mailed surveys about error disclosure and patient safety to 4193 medical and surgical physicians in academic and private practice in the United States and Canada. A detailed description of the survey methods is provided elsewhere.<sup>30</sup>

### SURVEY CONTENT

The survey used the US Institute of Medicine's definitions of *adverse event*, *medical error*, and *near miss*.<sup>31</sup> We developed and

**Table 2. Clinical Scenarios**

Type of Scenario	Description
Medical	
Insulin overdose (more apparent error)	You have admitted a diabetic patient to the hospital for a COPD exacerbation. You handwrite an order for the patient to receive “10 U” of insulin. The “U” in your order looks like a 0. The following morning, the patient is given 100 U of insulin, 10 times the patient's normal dose, and is later found unresponsive, with a serum glucose level of 35 mg/dL (1.94 mmol/L). The patient is resuscitated and transferred to the intensive care unit. You expect the patient to make a full recovery.
Hyperkalemia (less apparent error)	You administer a new medicine with a common adverse effect of increasing the potassium level to an outpatient with hypertension. The patient's baseline potassium level is normal (4.0 mEq/L). You order a repeat blood test to measure potassium level, to be drawn the next week, but forget to check the laboratory results. Two weeks after the patient begins taking this new medicine, the patient starts feeling palpitations and goes to the emergency department. In the emergency department, the patient experiences an episode of ventricular tachycardia, requiring cardioversion. The patient's potassium level at this event is 7.5 mEq/L. The patient is hospitalized for 4 days, and makes a full recovery. The patient returns to your office for a follow-up visit. On reviewing the patient's chart, you see the overlooked laboratory results, which showed the patient's potassium level had increased substantially from 4.0 to 5.6 mEq/L. Had you seen this elevated potassium level earlier, you would have discontinued the new medicine and treated the hyperkalemia, likely avoiding the life-threatening arrhythmia.
Surgical	
Retained sponge (more apparent error)	You are seeing a patient 3 weeks after elective splenectomy for ITP. The splenectomy was technically challenging because of the patient's obesity, but seemed uncomplicated. At this follow-up visit, the patient complains of vague persistent LUQ pain. You send the patient for an abdominal x-ray film, which shows a foreign body consistent with a retained surgical sponge in the patient's LUQ. You remember that the sponge count was correct at the end of the procedure. However, you also remember that you packed off a small bleeding vessel near the stomach with a sponge, and do not recall removing this sponge. When you review the postoperative records, you observe that a math error was responsible for a falsely correct sponge count. You believe a subsequent operation to remove the retained sponge is indicated, and expect the patient will make a full recovery.
Bile duct injury (less apparent error)	You are performing a laparoscopic cholecystectomy. In the informed consent before surgery, you explicitly told the patient that an open procedure might be required. A surgical device representative has asked you to try a new coagulation/dissection device. He mentions in passing that the tip of the device can get hot. You are dissecting with the new device, and the procedure is going smoothly. A surgical resident asks you a question. With the dissection device off, you look in the resident's direction to answer the question. When you turn back to the operative field, you realize the tip of the dissection device is resting against the common bile duct, which has been burned. You did not realize that this new device could cause such tissue damage even when turned off. You convert the procedure to an open cholecystectomy and repair the injured common bile duct. The remainder of the procedure is unremarkable, and you expect the patient to make a full recovery.

Abbreviations: COPD, chronic obstructive pulmonary disease; ITP, idiopathic thrombocytopenic purpura; LUQ, left upper quadrant.

pilot tested our own definitions of *serious error* and *minor error* (**Table 1**). General questions solicited respondents' attitudes about key patient safety concepts, malpractice, whether errors should be disclosed, and barriers to disclosure.

To explore how differences in errors might affect disclosure, we created 4 scenarios depicting serious errors (errors that caused permanent harm or transient but potentially life-threatening injury). Widespread consensus supports disclosing such errors to patients.<sup>32-34</sup> Using scenarios allowed us to study how physicians would disclose errors in standardized situations and explore the variation in disclosure.<sup>35</sup> These 4 errors were designed to be comparable in severity and to vary along 2 primary axes: specialty (medical and surgical scenarios) and how apparent the error would likely be to the patient (more and less apparent).

Respondents randomly received 1 of 2 scenarios specific to medicine or surgery (**Table 2**). The more apparent medical error was an insulin overdose due to the physician's handwritten order for "10 U" of insulin being misinterpreted as "100 U," resulting in severe hypoglycemia. The less apparent medical error was a hyperkalemic dysrhythmia due to failure to check the results of a potassium level ordered after starting a medicine known to cause hyperkalemia, an error that the patient would likely be unaware of unless the physician brought the overlooked potassium result to the patient's attention. The more apparent surgical error involved a retained surgical sponge, while the less apparent surgical error was bile duct injury during a laparoscopic cholecystectomy caused by the surgeon's incorrect use of a new surgical tool. This later scenario was considered less apparent because the patient would be unlikely to suspect that the surgeon's lack of familiarity with the new surgical tool caused the bile duct injury.

For each scenario, respondents received a parallel series of questions, including how serious the error was, how responsible the respondent was for the error, how likely the respondent was to be sued, and how likely the respondent would be to disclose this error to the patient. Five disclosure content questions measured what information physicians would volunteer to the patient about the error. These questions included the following: (1) "What would you most likely say about what happened?" (2) "How much detail would you most likely give the patient about the error?" (3) "What most closely resembles what you would say about the cause of the error?" (4) "What would you most likely say regarding an apology?" and (5) "What would you most likely say about how the error would be prevented in the future?" For each question, 3 response items that represented increasing amounts of information disclosed (no disclosure, partial disclosure, and full disclosure) were provided. The full text of these responses is provided in **Table 3**. Several rounds of pilot testing, including cognitive interviews with practicing physicians, were conducted to ensure that the survey questions were clear, the scenarios were realistic, and the disclosure options were plausible.

## STATISTICAL ANALYSIS

To explore potential differences in responses to the scenarios, we created several composite result categories, including all 4 scenarios combined ("overall"), the 2 more apparent errors compared with the 2 less apparent errors, and the 2 medical scenarios compared with the 2 surgical scenarios. Then we used  $\chi^2$  analyses to determine whether responses to the scenarios differed based on (1) whether the error would be more or less apparent to the patient and (2) whether the error was medical or surgical. Finally, we created medical and surgical multivariate models to explore the predictors of how much information respondents would disclose. Because we assumed a priori that a single factor could represent the 5 disclosure content questions

and factor analyses supported a single "significant" factor (with an eigenvalue >1), the dependent variable for the multivariate analyses was a specialty-specific scaled disclosure score created via factor analysis of the 5 disclosure content questions. Creating the disclosure score this way yields a continuously measured score with the advantage over simple summation of not assuming equal item weighting. General linear models were used to determine the effects of key covariates on the medical and surgical disclosure scores, including attitudes toward patient safety, malpractice, and disclosure, scenario-specific attitudes, prior experience with disclosure, and sociodemographics. Full models were reduced using backward deletion with a  $P < .05$  criterion for deletion. Analyses were conducted using SAS statistical software, version 8.2 (SAS Institute Inc, Cary, NC).

It was recently found that US and Canadian physicians' basic attitudes regarding patient safety and error disclosure were largely similar.<sup>30</sup> Therefore, for clarity of presentation, we have combined the US and Canadian data while retaining country as a covariate in the multivariate models.

## RESULTS

### CHARACTERISTICS OF RESPONDENTS

Surveys were completed by 2637 (62.9%) of 4193 eligible physicians (**Table 4**). The characteristics of these respondents are described in detail elsewhere.<sup>30</sup> We highlight the composite responses to all 4 scenarios and compare the more apparent with the less apparent errors and the medical with the surgical scenarios. Responses to each scenario are available in **Table 5** and **Table 6**.

### ATTITUDES REGARDING SCENARIOS

#### Overall

Overall, 85% of physicians thought the error was serious and 81% believed the physician was very or extremely responsible for the error. Of the respondents, 39% were very or extremely concerned that their reputation would be damaged because of the error and 47% thought a lawsuit was somewhat or very likely (Table 5). Of the physicians, 65% said they would "definitely disclose" the error to the patient, 29% would "probably disclose the error," 4% would "disclose only if asked by the patient," and 1% would "definitely not disclose" the error.

#### More Apparent Compared With Less Apparent Errors

Of the respondents, 90% considered the more apparent errors to be serious errors, compared with 81% for the less apparent errors ( $P < .001$ ). Respondents who received the more apparent errors were more likely to report that they would definitely disclose the error compared with respondents who received the less apparent errors (81% more apparent errors and 50% less apparent errors,  $P < .001$ ) (Table 5).

#### Medical Compared With Surgical Scenarios

Medical specialists were more likely to rate the error as serious (90% medical scenarios and 79% surgical

**Table 3. Disclosure Dialogues by Scenario**

Type of Disclosure	Scenario			
	Insulin Overdose	Hyperkalemia	Retained Sponge	Bile Duct Injury
<b>What Would You Most Likely Say About What Happened?</b>				
No disclosure	Your blood glucose went too low and you passed out.	Your potassium level got too high, which led to a dangerous heart rhythm.	The x-ray showed an abnormality that could be serious. Another operation will be required to investigate and correct this problem.	As we discussed before the operation, sometimes an open procedure is necessary. Your case required that we do an open procedure.
Partial disclosure	Your blood glucose went too low because you received more insulin than you needed.	The new medicine we started caused your potassium level to become too high, which led to a dangerous heart rhythm.	During the surgery, a sponge was inadvertently left in your abdomen. Another operation will be required to remove the sponge.	During the surgery, your common bile duct was injured. We were able to repair your bile duct, but this required an open procedure.
Full disclosure	Your blood glucose went too low because an error happened and you received too much insulin.	You had a dangerous heart rhythm because an error happened and we did not notice that the new medicine had caused your potassium to become too high.	We will have to do another operation because an error happened and a sponge was left in your abdomen.	We had to do an open procedure because an error happened and your common bile duct was injured.
<b>How Much Detail Would You Most Likely Give the Patient About the Error?</b>				
No disclosure	I would not volunteer any specific information about the details of the error unless asked by the patient.	I would not volunteer any specific information about the details of the error unless asked by the patient.	I would not volunteer any specific information about the details of the error unless asked by the patient.	I would not volunteer any specific information about the details of the error unless asked by the patient.
Partial disclosure	You received more insulin than you needed.	We did not realize your potassium had gotten dangerously high until it was too late.	We track the sponges used during operations carefully. In your case we were unaware that a sponge was missing.	Your common bile duct was injured by a new surgical tool we were using. We repaired your bile duct successfully.
Full disclosure	You received 100 units rather than your usual 10 units of insulin.	Your potassium was high on the blood test we drew the week after you started the medicine, but I did not see this laboratory result until today. Had I known about the elevated potassium earlier, I would have stopped this new medicine and treated the high potassium, likely avoiding the dangerous heart rhythm.	The sponges were counted incorrectly and we did not know one sponge was missing.	Your bile duct was injured because I was using a different surgical tool than the one I am familiar with. We repaired your bile duct successfully.
<b>What Most Closely Resembles What You Would Say About the Cause of the Error?</b>				
No disclosure	I would not volunteer a cause of the error unless the patient asked me.	I would not volunteer a cause of the error unless the patient asked me.	I would not volunteer a cause of the error unless the patient asked me.	I would not volunteer a cause of the error unless the patient asked me.
Partial disclosure	This occurred because of a miscommunication about your insulin order.	This occurred because of a mix-up regarding your laboratory results.	This occurred because of a problem with the sponge count.	This occurred because of a malfunction with a new surgical tool.
Full disclosure	My handwriting is sometimes difficult to read. I wrote your order for "10 U" of insulin and the "U" looked like a "0." Therefore, you received 100 units of insulin instead of 10. This also slipped by our nurse and pharmacist.	I did not remember to check the results of the laboratory tests you had drawn the week after you started the new medicine. The laboratory and the nurse also did not notify me about the high potassium.	This occurred because I forgot that I had put a sponge deep in your abdomen to control some bleeding. Also, the sponge count was done incorrectly, so I was unaware that not all the sponges had been removed.	This was the first time I had used this surgical tool. I had turned this tool off, but the tip was still cooling down. I was unaware it was still hot, and the tool touched your common bile duct when it shouldn't have.
<b>What Would You Most Likely Say Regarding an Apology?</b>				
No disclosure	I would not volunteer that I was sorry or apologize.	I would not volunteer that I was sorry or apologize.	I would not volunteer that I was sorry or apologize.	I would not volunteer that I was sorry or apologize.
Partial disclosure	I am sorry about what happened.	I am sorry about what happened.	I am sorry about what happened.	I am sorry about what happened.
Full disclosure	I am so sorry that you were harmed by this error.	I am so sorry that you were harmed by this error.	I am so sorry that you were harmed by this error.	I am so sorry that you were harmed by this error.
<b>What Would You Most Likely Say About How the Error Will Be Prevented in the Future?</b>				
No disclosure	I would not volunteer anything about how similar errors will be prevented in the future.	I would not volunteer anything about how similar errors will be prevented in the future.	I would not volunteer anything about how similar errors will be prevented in the future.	I would not volunteer anything about how similar errors will be prevented in the future.
Partial disclosure	We are looking into what happened to you and will try to make changes to prevent this from happening in the future.	We are looking into what happened to you and will try to make changes to prevent this from happening in the future.	We are looking into what happened to you and will try to make changes to prevent this from happening in the future.	We are looking into what happened to you and will try to make changes to prevent this from happening in the future.
Full disclosure	We are looking into what happened to you and we will let you know what changes we make to prevent this from happening to someone else. I will not use this abbreviation in the future. I am also bringing this to the attention of other doctors at our monthly conference so that we can prevent problems like this in the future.	We are looking into what happened to you. I have spoken with my office staff to make sure that I am notified when there are irregular test results. I am also bringing this to the attention of other doctors at our monthly conference so that we can prevent problems like this in the future.	We are looking into what happened to you. In the future, I will get a routine x-ray in the operating room on all patients having surgeries like this to make problems like this less likely to happen again. I will also bring this to the attention of other doctors at our monthly conference so that we can prevent problems like this in the future.	We are looking into what happened to you. In the future, I will make sure I receive more training about new devices like this before using them on patients. I am also bringing this to the attention of other doctors at our monthly conference so that we can prevent problems like this in the future.

scenarios,  $P < .001$ ), and surgeons thought a lawsuit was more likely (57% surgical scenarios and 40% medical scenarios,  $P < .001$ ). Despite this increased malpractice con-

cern, surgeons were more likely to report that they would definitely disclose the error (81% surgical scenarios and 54% medical scenarios,  $P < .001$ ) (Table 5).

**Table 4. Characteristics of the 2637 Respondents**

Characteristic	Value*
Country	
United States	1233 (46.8)
Canada	1404 (53.2)
Specialty	
Family practice	225 (8.5)
Medical specialists	1311 (49.7)
Surgical specialists	1063 (40.3)
Not listed	38 (1.4)
Practice type	
Private	1218 (46.2)
Academic	951 (36.1)
Other	285 (10.8)
Not listed	183 (6.9)
Time spent in clinical practice, %	
1-25	171 (6.5)
26-50	239 (9.1)
51-75	495 (18.8)
76-100	1612 (61.1)
Not listed	120 (4.6)
Age, y†	49.2 (9.7)
Time in practice, y†	16.8 (9.9)
Sex	
Male	2074 (78.6)
Female	491 (18.6)
Not listed	72 (2.7)
Which medical errors have you personally been involved with?	
Near miss	1612 (61.1)
Minor error	1892 (71.7)
Serious error	1433 (54.3)
None	132 (5.0)
Have you disclosed a SERIOUS error to a patient?	1436 (54.5)
In the past 12 mo, have you disclosed a MINOR error to a patient?	1298 (49.2)

\*Data are given as number (percentage) of respondents unless otherwise indicated. Percentages may not total 100 because of rounding.  
†Data are given as mean (SD).

## DISCLOSURE CONTENT

### Overall

Physicians varied widely in the information they reported they would disclose. Of the physicians, 42% would use the word “error,” while 56% mentioned the adverse event but not the error; 50% would disclose specific information about what the error was, while 13% would not volunteer any details unless asked by the patient (Table 6). Similarly, 52% would disclose specific information about why the error happened, but 19% would volunteer no such information. Overall, 94% would apologize, with 61% offering an expression of regret (“I am sorry about what happened”) and 33% choosing an explicit apology (“I am so sorry that you were harmed by this error”). Regarding error prevention, 9% would provide no information unless asked, 54% chose a general pledge to prevent recurrences, and 37% would discuss detailed plans for preventing recurrences (Table 6).

### More Apparent Compared With Less Apparent Errors

Physicians who received the less apparent errors would disclose less information to the patient than respondents who received the more apparent errors. Respondents to the less apparent errors were less likely to use the word “error” (32% less apparent errors and 51% more apparent errors,  $P < .001$ ), and were also less likely to choose an explicit apology (28% less apparent errors and 37% more apparent errors,  $P < .001$ ). Of the respondents, 19% responding to less apparent errors would volunteer no details about what the error was, compared with 8% of those responding to more apparent errors ( $P < .001$ ).

**Table 5. Respondents' Attitudes Regarding Scenarios\***

Statement	Overall	More Apparent Errors Compared With Less Apparent Errors		Medical Scenarios Compared With Surgical Scenarios		Individual Scenarios			
		More Apparent Overall	Less Apparent Overall	Medical Scenarios Overall	Surgical Scenarios Overall	Medical Scenario	Medical Scenario	Surgical Scenario	Surgical Scenario
						More Apparent (Insulin Overdose)	Less Apparent (Hyperkalemia)	More Apparent (Retained Sponge)	Less Apparent (Bile Duct Injury)
This situation is a serious error.†	85	90	81	90	79	93	87	87	71
As the physician, how responsible are you for this error?‡	81	70	94	78	85	64	94	77	94
How likely do you think it is that you will be sued because of this error?§	47	57	38	40	57	43	39	77	36
How likely would you be to disclose this error to the patient?	65	81	50	54	81	69	39	97	66

\*For all statements,  $P < .001$  for the difference between more apparent and less apparent errors and for the difference between medical and surgical scenarios.

†Data are given as percentage of respondents.

‡Data are given as percentage of respondents who answered very or extremely responsible.

§Data are given as percentage of respondents who answered somewhat or very likely.

||Data are given as percentage of respondents who answered “I would definitely disclose this error.”

**Table 6. Disclosure Content\***

Disclosure Statement	Overall	More Apparent Compared With Less Apparent Errors		Medical Compared With Surgical Scenarios		Individual Scenarios			
		More Apparent Overall	Less Apparent Overall	Medical Scenarios Overall	Surgical Scenarios Overall	Medical Scenario More Apparent (Insulin Overdose)	Medical Scenario Less Apparent (Hyperkalemia)	Surgical Scenario More Apparent (Retained Sponge)	Surgical Scenario Less Apparent (Bile Duct Injury)
What would you most likely say about what happened?†									
No disclosure (no reference to adverse event or error)	3	2	4	3	3	1	4	3	4
Partial disclosure (mention adverse event but not error)	56	48	64	40	78	25	56	80	75
Full disclosure (explicit statement that error occurred)	42	51	32	58	19	74	40	17	21
How much detail would you most likely give the patient about the error?†									
Nothing (no information volunteered)	13	8	19	10	18	9	10	5	32
Partial disclosure (nonspecific information about what the error was)	37	43	30	30	47	34	25	56	37
Full disclosure (specific description of exactly what the error was)	50	49	51	61	35	57	65	39	31
What most closely resembles what you would say about the cause of the error?†									
No disclosure (no information volunteered about cause of error)	19	13	26	14	26	10	18	17	36
Partial disclosure (nonspecific information hinting at cause of error)	29	42	16	35	21	49	21	33	9
Full disclosure (detailed description of why the error happened)	52	45	58	51	53	41	61	51	55
What would you most likely say regarding an apology?†									
No disclosure (no apology)	6	3	9	4	9	3	4	4	15
Partial disclosure (expression of regret)	61	60	63	55	70	52	59	70	70
Full disclosure (explicit apology)	33	37	28	41	21	45	37	26	16
What would you most likely say about how the error will be prevented in the future?†									
No disclosure (no information volunteered about prevention of recurrences)	9	6	13	4	17	4	4	8	26
Partial disclosure (nonspecific pledge to prevent recurrences)	54	63	45	44	68	52	36	77	57
Full disclosure (present specific steps to be taken to prevent recurrences)	37	32	42	52	16	44	60	15	17

\*Data are given as percentage of respondents. Percentages may not total 100 because of rounding.

† $P < .001$  for more apparent vs less apparent error difference and medical vs surgical scenarios overall.

(Table 6). Overall, this pattern also extended to what physicians would tell patients about the error's cause and prevention plans. Respondents who received the less apparent errors were twice as likely to volunteer no information about the error's cause (26% less apparent errors and 13% more apparent errors,  $P < .001$ ) and to volunteer no information about how recurrences of the error would be prevented (13% less apparent errors and 6% more apparent errors,  $P < .001$ ) (Table 6).

#### Medical Compared With Surgical Scenarios

Despite expressing greater intention to disclose than medical specialists, surgical specialists disclosed less information. For example, 19% of surgeons would use the word "error," compared with 58% of medical specialists ( $P < .001$ ); 35% of surgeons would disclose specific de-

tails about the error compared with 61% of medical specialists ( $P < .001$ ). Surgeons chose an explicit apology half as often as medical specialists did (21% surgical scenarios and 41% medical scenarios,  $P < .001$ ). Surgeons also were one third as likely to provide details about preventing error recurrences (16% surgical scenarios and 52% medical scenarios,  $P < .001$ ) (Table 6).

#### FACTORS ASSOCIATED WITH THE AMOUNT OF DISCLOSURE

**Table 7** presents the multivariate medical and surgical models exploring predictors of the amount of disclosure. In the medical and surgical scenarios, independent predictors of disclosing more information included respondents believing the error was serious, respondents feeling more responsible for the error,

**Table 7. Regression Models Predicting Amount of Disclosure as Measured by Disclosure Factor Scores**

Variable	Medical Scenarios' Model		Surgical Scenarios' Model	
	Estimate	P Value	Estimate	P Value
Scenario (more apparent)	NS	.61	NS	.79
Attitudes regarding scenarios				
This situation is a serious error	0.22	<.001	0.31	<.001
As the physician, how responsible are you for this error? (very or extremely responsible)	0.25	<.001	0.15	.05
How likely would you be to disclose this error to the patient? (definitely disclose)	0.52	<.001	0.35	<.001
Malpractice variables				
Disclosing a serious error would make it less likely that the patient would sue me (agree)	0.28	<.001	NI	NI
I might be less likely to disclose a serious error if I think I might get sued (yes)	-0.12	<.001	NI	NI
General attitude regarding disclosure				
Near misses should be disclosed to patients (agree)	0.16	<.001	0.27	<.001
Minor errors should be disclosed to patients (agree)	0.15	<.001	NI	NI
I might be less likely to disclose a serious error if the patient is unaware that the error happened (yes)	-0.17	<.001	-0.18	.03
Prior experience with disclosure				
I experienced relief after disclosing this (serious) error to the patient (yes)	0.23	<.001	0.32	.002
I experienced relief after disclosing this (minor) error to the patient (yes)	0.15	.001	0.15	.05
Demographic characteristics				
Canada as the country	0.03	<.001	0.30	<.001
Private practice	-0.27	<.001	NI	NI

Abbreviations: NI, not included because these variables were not significant in the final surgical model; NS, not significant.

respondents reporting they would definitely disclose the error to the patient, respondents not agreeing that they would be less likely to disclose an error the patient was unaware of, respondents experiencing relief the last time they disclosed an error, and being Canadian. For the medical scenarios, attitudes about the relationship between disclosure and malpractice were also independent predictors of the content of disclosure. Medical specialists provided more information if they thought disclosing a serious error reduced the likelihood of malpractice and if they disagreed that a potential lawsuit would reduce their willingness to disclose. Medical specialists also disclosed more information if they were not in private practice.

### COMMENT

Calls are increasing to fully disclose adverse events and medical errors to patients, but little is known about how physicians approach disclosure.<sup>33,36-38</sup> Our study of more than 2500 practicing physicians in the United States and Canada reveals wide variation in how physicians would disclose harmful errors. For example, 42% of physicians would disclose the fact that the adverse event was due to an error, while 56% would mention the adverse event but not the error. Such variation likely reflects the competing pressures physicians face regarding disclosure, because ethicists and patient advocates promote full disclosure while risk managers and malpractice insurers often urge restraint.<sup>29,39</sup> Standards offer little guidance, requiring disclosure of “unanticipated outcomes” but remaining silent regarding what information should be disclosed.<sup>40</sup>

While all the scenarios involved clear-cut serious errors, many physicians would not explicitly apologize.

For example, only 33% would explicitly apologize, while 61% would simply express regret. Studies<sup>41-43</sup> in medicine and other fields suggest that individuals strongly prefer explicit apologies and that such apologies, while not a panacea, may prevent lawsuits and promote faster and smaller settlements when lawsuits are filed. Progressive malpractice companies, like COPIC in Denver, Colo, encourage physicians to apologize when clear-cut serious errors have harmed patients.<sup>44</sup> The lack of consensus about whether and how to apologize following errors makes it likely that patient expectations are not being met.

We found that physicians in both specialties were less likely to disclose an error that might not be apparent to the patient. Some dimensions of errors might justify disclosing less information, such as if the error caused only trivial harm. However, physicians agreed that all the scenarios represented serious errors. Basing disclosure decisions on whether the patient was aware of the error is not ethically defensible or consistent with standards such as those from the Joint Commission on Accreditation of Health Care Organizations.<sup>40</sup>

This study highlights differences in how medical and surgical physicians disclose errors. Surgeons reported greater intention to disclose errors than medical specialists, but disclosed less information, especially regarding using the word “error” and communicating about error prevention. Perhaps a disclosure style has developed within the specialty of surgery that focuses more on the adverse event itself than on whether the adverse event was due to an error.<sup>45</sup> While many surgical adverse events are not due to errors, some surgical adverse events are caused by clear-cut errors.<sup>25</sup> In the bile duct injury scenario, an error caused by the surgeon’s lack of familiarity with a new device, only 21% would disclose the fact

that the injury was caused by an error. The patient might logically assume that this adverse outcome was merely an unavoidable complication. Yet, if this patient subsequently learned from a source other than the surgeon how the bile duct injury occurred, the patient's trust and satisfaction would likely be reduced.

Examining the predictors of disclosure in this study raises important questions for further research. Many have suggested that the external malpractice climate is a key determinant of disclosure.<sup>33,46,47</sup> Canadian physicians, who practice in a much less hostile malpractice environment than their US counterparts, indeed would disclose more information than US physicians in this study.<sup>48-50</sup> Yet, in a recent survey,<sup>3</sup> US and Canadian patients were equally likely to report that they had not been told about a medical mistake. Furthermore, while medical specialists' malpractice attitudes were associated with disclosure, surgeons' malpractice attitudes were not independent predictors of disclosure. Additional research should explore the complex interrelationships between malpractice issues, physician specialty, and disclosure. Finally, several factors beyond malpractice also influenced how physicians approached disclosure and, therefore, merit further exploration, including physicians' rating of an error's severity, perceived responsibility for the error, prior disclosure experience, and general disclosure attitudes.

This study has several limitations. The scenarios were all hypothetical, and it is not known how physicians would actually behave. Social desirability bias might cause our results to overestimate physicians' willingness to disclose errors. Also, the error scenarios, although designed using a theory-driven approach and carefully pilot tested, did differ in ways other than whether they were surgical or medical errors and how apparent the error might be to the patient. These differences might complicate comparisons between scenarios. In addition, respondents received specialty-specific scenarios. We do not know how surgeons would have responded to the medical scenarios or vice versa. While our response rate was robust, nonresponse bias could have affected our results. In addition, the US physicians we surveyed were located in only 2 states. However, our large sample size of more than 2500 medical and surgical physicians in academic and private practice and in rural and urban settings supports the generalizability of our findings.

Being more open with patients about errors represents a paradigm shift for the medical profession, a process that is just beginning. Additional research should study how disclosure affects litigation to address this real barrier to disclosure. Ethicists should consider whether different dimensions of errors justify disclosing more or less information to patients about errors. By integrating empirical research and normative analyses, the medical profession can develop guidelines for what information patients can expect from their physicians following errors. Ideally, if these guidelines can help physicians choose their words following errors in closer alignment with patients' preferences, including apologizing and providing information about preventing recurrences, such disclosure could enhance patients' confidence in the honesty and integrity of the health care system.

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Correspondence: Thomas H. Gallagher, MD, University of Washington School of Medicine, 4311 11th Ave NE, Suite 230, Seattle, WA 98105-4608 (thomasg@u.washington.edu).

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