RISK: Health, Safety & Environment (1990-2002)

Volume 12
Number 1 *Issue number 1/2, Spring 2001*

Article 7

March 2001

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Introduction

In December 1999, President Clinton directed the Quality Interagency Coordination (QuIC) Task Force to explore and reduce medical errors within the nation's health care delivery systems. The QuIC Task Force was initiated one week following release of the initial Institute of Medicine (IOM) report, "To Err is Human: Building a Safe Health System." The IOM report on medical errors estimated that up to 98,000 Americans die each year due to preventable medical mistakes and cited the associated costs (loss of life, income, disability, and direct health care costs) as high as $29 billion annually.[1]

The IOM recommended that medical mistakes be reduced by 50% within five years. Toward that end, the IOM report advanced four primary approaches it believed could precipitate this safer patient environment: (a) establish a national focus to create leadership, research, tools and protocols to enhance the knowledge base about safety; (b) identify and learn from medical mistakes through both mandatory and voluntary reporting systems; (c) raise standards and expectations for improvements in safety through the actions of oversight organizations, groups, purchasers and professional groups; and (d) implement safe practices at the delivery level.[2]

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1 Quality Interagency Coordination Task Force (QuIC), Doing What Counts for Patient Safety: Federal Actions to Reduce Medical Errors and their Impact (Report to the President) (March 2000), *available at* http://www.quic.gov/report/mederr2.htm.

2 *Id.*

The QuIC Task Force's goal has been to implement a coordinated effort for fulfilling these IOM recommendations with action items and to work toward improving overall quality of care. This goal seeks to increase public awareness, improve standards and develop an infrastructure to study and reduce medical mistakes.

William Richardson, CEO of the W.K. Kellogg Foundation, chaired the committee that wrote the initial IOM report. When the report was released, Richardson stated, "It may be part of human nature to err, but it is also part of human nature to create solutions, find better alternatives, and meet the challenges ahead."[3] Further commenting on the report, Richardson said he believes in the health care system's ability to respond to the challenges ahead with benefit of good leadership, resources, and knowledge.

This imperative to understand and then reduce medical mistakes was likewise reinforced by President Clinton in a December 7, 1999 White House press release.[4] The President noted: "Once you know about a problem, you're under a moral obligation to deal with it, ... whatever the consequences are, we have to go forward."[5] Even though admitting a mistake may cause psychological angst for the provider, disclosing the mistake to a patient and his family is the right thing to do, according to Wu and McPhee.[6] The current study focuses on the IOM and QuIC recommendations to enhance the knowledge base about patient safety and increase leadership awareness.

The topic of medical mistakes has received much attention since the release of the initial IOM report. An important aspect of the patient safety initiative is the disclosure of medical mistakes to patients and their families. Risk management professionals comprise an integral part of the health care team that must carry out disclosure policy management following a known medical mistake. Knowledge regarding risk management professionals' beliefs about disclosure of

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3 Press Release, Institute of Medicine, Medical Errors Cited in Institute of Medicine Report (Nov. 29, 1999), *available at* http://pharmacology.about.com/library/99news/bl9n1129a.htm.

4 Press Release, The White House Press Office, Medical Errors Remarks by President Clinton (Dec. 7, 1999), *available at* http://pharmacology.about.com/library/99news/bl9n1207a.htm.

5 *Id.*

6 Catherine Keyes & Tom A. Angello, *Teaching Residents and Medical Students to Disclose Mistakes,* 18 **Forum: Risk Management Foundation of the Harvard Medical Institutions** 6 (April 1997) (interviewing Albert Wu & Stephan McPhee).

mistakes offers important insights for benchmarking purposes. It also clarifies the role risk managers play in their organizations' decisions about disclosure management. Uncovering what risk managers believe about their organizations' attitudes toward disclosure will also help them understand how attuned they are with organizational leadership's attitudes.

The purpose of this survey research was to identify risk managers' recommended actions for disclosure of known medical mistakes along with their rationale(s) for disclosure management. Additionally, the study was designed to identify organizational leadership's attitudes toward disclosure as perceived by the risk management respondents using a valid and reliable survey.

The process of disclosing medical mistakes requires a team approach and should include physician providers, risk management, organizational leadership, patients and their families. Previous research on medical mistakes and disclosure has examined each of these team member groups. Literature related to disclosure from the vantage point of physicians, risk management, leadership, and the patients provided the foundation for the current study and research design.

Literature Review

In a study by Hingorani, Wong and Vafidis, attitudes toward disclosure of information after an adverse event were compared between doctors (n = 48) and patients (n = 246) from a single British hospital surgical clinic.[7] Survey data were used to answer whether a patient should be told of a known adverse event, and to what degree information should be offered. Most patients (89%) believed that full disclosure of an adverse event should be provided along with an explanation of possible future complications. On the other hand, only 33% of the physicians believed in a full disclosure with discussion about possible future complications.

Witman and Hardin researched patients' responses to physicians' mistakes through a mail survey in an outpatient clinic.[8] Three

7 Melanie Hingorani, Tina Wong & Gilli Vafidis, *Attitudes after Unintended Injury During Treatment: A Survey of Doctors and Patients,* 171 W.J. Med. 81 (1999).

8 Amy B. Witman & Steven Hardin, *Patient's Responses to Physician's Mistakes,* 18 Forum: Risk Management Foundation of the Harvard Medical Institutions 4 (April 1997).

scenarios of mistakes, which had been rated as minor, moderate, or severe, were presented to the patients. Patients were asked several questions about the type of information that would be desired following a known medical mistake. Patients were also asked to respond to several questions about their perceptions of care within two conditions: (a) when a mistake has been disclosed and (b) when not informed of a mistake but incidentally discovered by the patient. The risk that a patient would file a lawsuit when informed about a mistake, compared to not informed, rose from 12% to 20% in the moderate scenario, and rose again from 60% to 76% in the severe scenario. Many malpractice suits are brought, not solely because of clinical misadventure, but because of anger related to some aspect of the patient-doctor relationship or communication.[9] Patients were less likely to sue a physician or health care organization if they liked the care-givers and had a good relationship with them before the mistake occurred[10] and good communication took place following the event.

The physicians' hesitancy to disclose known medical mistakes may be due to reluctance to share bad news about mistakes. Fear of threatening a patient's trust in physicians and potential litigation were also cited as primary influences on the physician respondents' answers in the Hingorani, Wong and Vafidis study.[11] Other influencing factors included concern for patient anxiety and reluctance within the medical culture to admit mistakes and accept accountability. Historically, the foundation of the physicians' ethical responsibility to the patient is to "do no harm." Acceptance of this mandate will require that the physician abide by the oath with honesty and integrity. Physicians are nonetheless challenged to balance professional and personal concerns regarding disclosure, and many are frankly reluctant to participate in such activities as root cause analysis or openly discuss mistakes[12] for fear of increased liability risk.

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9 Bernard B. Virshup, Andrew A. Oppenberg & Marlene M. Coleman, *Strategic Risk Management: Reducing Malpractice Claims through More Effective Patient-Doctor Communication,* 14(4) Am. J. Med. Quality 153 (1999).

10 Henry T. Greely, *Do Physicians Have a Duty to Disclose?,* 171 W.J. Med. 82 (1999).

11 Hingorani, Wong & Vafadis, *supra* note 7.

12 Shelly M. Pierce, Analysis of Physician Participation in JCAHO's Sentinel Event Root Cause Analysis (1999) (unpublished Master's thesis, Finch University of Health Sciences/The Chicago Medical School).

The medical culture itself has been implicated as a potential barrier to truth telling and openness about disclosing mistakes. The medical community tends to treat mistakes as deviant and to scapegoat "culprits."[13] Fear of disciplinary actions or threats to licensure may override the decision to disclose a mistake. It has been suggested that physician mentors help their peers cultivate the necessary skills and ethical reasoning on how to appropriately disclose mistakes. Lacking an ethical model and formalized communication training, organized medicine's disclosure procedures often vary and inadvertently may increase liability risk exposures.

Researchers reporting on earlier studies have estimated that approximately 4% of hospital admissions result in iatrogenic injury and 25% of these injuries could be attributed to negligence.[14] Wu's article estimated that although less than 20% of medical malpractice cases involve negligence, almost all involved physician-patient communication breakdown allegations. His argument is that open disclosure is the best defense and may avert patients' seeking legal action by as much as 50% — if done properly.

O'Connell and Keller propose that risk managers' attitudes toward disclosure of medical mistakes may influence their counseling of physicians.[15] The authors identified risk managers' concerns that clinicians who disclose mistakes may do so in a manner that could be considered self-blaming, accusatory, or defensive. Part of the risk management function is to help practitioners cultivate communication skills, constructive behaviors, and attitudes toward disclosure of known medical mistakes without encouraging a punitive or retaliatory response.

Health care risk management professionals are challenged to implement proactive methods that will assist their respective organizations' effective response to patient safety issues. Likewise, risk managers assume an integral role in positioning their organizations with the IOM's recommendations for establishing a safer patient

13 Keyes & Angello, *supra* note 6.

14 Albert W. Wu, *Handling Hospital Errors: Is Disclosure the Best Defense?,* 131 Annals Internal Med. 970 (1999).

15 Daniel O'Connell & Vaughn F. Keller, *Communication: A Risk Management Tool,* 6(1) J. Clin. Outcomes Mgmt. 35 (1999).

environment. Risk managers also bear an ethical responsibility for reducing the liability exposures of their organizations, which requires a balanced rationale for disclosure management.

The perceptions that risk management professionals hold regarding disclosure are believed to influence other decision-makers, providers and organizational leadership alike, as to what recommendations would most likely be proposed. Risk managements' attitudes toward the importance of medical mistake disclosure may also influence other colleagues throughout an organization. In general, the risk manager as a member of the health care team has the capacity for sharing knowledge with leadership and to provide guidance on truth telling and disclosure management.

Truth telling and apologizing to patients following medical mistakes have been described as healing for both patients and physicians.[16] However, there seem to be gradients of truth telling as physicians balance their professional and ethical obligations against their personal values, emotional conflicts, and apprehensions about spawning litigation. Intuitively, truth telling makes good sense, but there is a vast difference between advocating an appropriate truth-telling posture in a hypothetical vein and actually carrying out such a discussion.[17]

The doctor-patient relationship is based upon trust and honesty. Patients expect to be informed about their health status, especially when a mistake has been made. Physicians bear the ethical obligation to disclose significant mistakes when that truth benefits the health of the patient and respects the patient's autonomy, regardless of ramifications to the physician or health care organization.[18] Organizational leadership and physicians alike need to support a consistent disclosure policy and openly accept responsibility for cooperative and appropriate

16 Chantal Brazeau, *Curbside Consultation: Disclosing the Truth About a Medical Error,* 60 Am. Fam. Physician 1013, 1014 (1999).

17 *Id.*

18 Albert W. Wu et al., *To Tell the Truth: Ethical and Practical Issues in Disclosing Medical Mistakes to Patients,* 12 J. Gen. Internal Med. 770 (1997); Michael Nowicki & Maneesh Chaku, *Do Healthcare Managers Have an Ethical Duty to Admit Mistakes?,* Healthcare Fin. Mgmt. 62 (Oct. 1998); National Patient Safety Foundation, Talking to Patients about Health Care Injury: Statement of Principle (Nov. 14, 2000), *at* http://www.npsf.org/statement.htm; Catherine Keyes, *Responding to an Adverse Event,* 18 Forum: Risk Management Foundation of the Harvard Medical Institutions 2 (April 1997).

disclosure management.

An example of a successful disclosure policy can be found in Lexington, Kentucky, where the Veterans Affairs (VA) Medical Center initiated its full disclosure policy in 1987 with positive results.[19] Early intervention following a known medical mistake accompanied by proactive investigation of injuries, full disclosure of findings to the patient, and fair compensation have become acknowledged cornerstones of risk management policy at this facility. The Lexington VA risk management policy is designed to directly and expeditiously mobilize an intervention plan with quick resolution following an injury and serves as a model for other health care organizations across the country.

The outcomes of such an honest approach, however, can prove difficult to measure due to confounding factors leading up to litigation. Malpractice payments are determined by many factors both related and unrelated to actual medical care. Although not the best measure, medical malpractice judgments may indicate one outcome of poor disclosure policies. Malpractice settlements reported in the Kraman and Hamm study revealed that the private sector's mean judgment was $1,484,000, compared to the Veteran Affair's mean settlement at $720,000.[20] Although this statistic is significant, additional clinical, psychosocial, and financial indicators are still needed to identify other benefits resulting from truth telling and aggressive disclosure policies.

Practitioners, risk management, organizational leadership, and patients must develop a learning community that will collaboratively implement a systems approach with appropriate measurement tools to study the latent effects of medical mistakes.[21] Consistent collection of relevant data regarding medical mistake management and outcomes of open disclosure is essential to better understand underlying contributory factors. Such outcome evidence, together with evaluation

19 Steve S. Kraman & Ginny Hamm, *Risk Management: Extreme Honesty May be the Best Policy,* 131 Annals Internal Med. 963 (1999).

20 *Id.*

21 David Woods, *Moving Forward on Patient Safety Inquiry, Innovation and Learning,* The Ohio State University, Institute for Ergonomics (March 2000), *at* http://www.sahs.uth.tmc.edu/SpeakerSeries/woods2-99.html; Steve Stelovich, *Framework for Handling Adverse Events,* 18 Forum: Risk Management Foundation of the Harvard Medical Institutions 8 (April 1997).

of the health care teams' attitudes toward full disclosure, provides knowledge that should prove useful as health care organizations move forward with a variety of patient safety initiatives.

Since the release of the initial IOM Report, many federal initiatives and organizations have worked together to respond to the QuIC agenda. The common goal for the health care industry is to improve the quality of care throughout the delivery system by focusing on medical mistakes and insisting on approaches to reduce their prevalence. The QuIC's call to action specifically focuses on enactment of the IOM recommendations. In keeping with this goal, the current study highlights the importance of ensuring that health care leaders actively seek more information about patient safety and use this knowledge to streamline their organizations' efforts.

Attitudes toward disclosure and truth telling collectively perceived by patients, physician providers and risk management have been studied at some length. Potential legal risks, professional and personal risks for open disclosure, and barriers to consistent management of medical mistake's disclosure have also been addressed. Risk managers have been identified as integral team members whose participation will be essential if organizational leadership and physicians are to succeed in early intervention following a known medical mistake, with open disclosure at the right time, with the right team, using the right information. This body of literature related to medical mistake disclosure deals with patients' perceptions and experiences, practitioners' concerns over disclosure, and reports that portray the magnitude of mistakes as well as the challenges to disclosure. The literature reveals little about the risk management profession's perceptions about either the extent to which disclosure of a medical mistake should be made to patients and families, or the rationale for recommending a particular action. Additionally, nothing could be found in the literature that discusses the degree to which risk managers are in synchrony with their respective organizations' attitudes about medical mistake disclosure. This study was designed to begin to fill these gaps in the literature.

Importance of the Study

Several points can be made about the importance of this study. Benchmark measurements will be strongly influenced by risk managers' perceptions about appropriate disclosure policies and procedures. The knowledge gain about disclosure attitudes is important to organizational leadership, especially if clinical providers/leaders foster collaboration with risk management. Synergy between risk management and organizational leadership on a consistent disclosure policy represents commitment to the institution's obligation to provide a safe patient environment and supports the IOM's recommendations. Such risk management collaboration is essential to fulfillment of respective organizational missions, goals, and objectives. Organizational leadership acceptance of risk management recommendations toward disclosure may be important for synchronizing an effective team. Without salient policies such teams may have difficulty responding appropriately (and with conviction) to mistakes. It is, therefore, important to gain knowledge regarding the strength of the relationship between risk management and leadership philosophy about disclosure of medical mistakes.

Future important dialogue and proactive initiatives can result when risk managers in cooperation with their leadership develop organizational guidelines for disclosure. It is essential for the risk management community to support an open forum seeking the participation of vested parties, including administrators, physicians and other providers, insurers, partnering affiliates, and most of all the patients regarding disclosure management. This research should help provide direction for potential indicators, which result from an organization's open disclosure posture, or the lack thereof. Outcomes of this research will hopefully promote a foundation for future studies among additional populations, utilizing a variety of data and measurements.

Limitations of the Study

Several limitations may have affected the current study about risk managements' attitudes toward disclosure. The study data were collected by a self-reported survey, which was mailed to health care risk management professionals without benefit of external accuracy

validation. The study lacked measurement of actual risk management practices (criterion validity) regarding participants' roles, accountability in disclosure of medical mistakes, or the institutional consequences from those practices. The study population was drawn from a national membership pool of risk management professionals and, therefore, may not reflect the views of non-membership risk management or non-respondents. The study was also limited to risk management professionals' attitudes and recommendations about disclosure of medical mistakes. The views of other important comparative groups, such as patients, health care providers, purchasers of services, or the general public, were not included.

Research Methods

Subjects

The subjects were health care risk managers who, at the time of the study were members of an international professional association. The cross-sectional study sample (N = 3430) was primarily domestic but included a small international segment. This convenience sample included a diverse group from various educational backgrounds, work experiences, work settings, current responsibilities, and types of industries, who were involved with the health care risk management function in some capacity.

Data Collection Survey

The self-reported survey consisted of five hypothetical scenarios of patient encounters each of which involved some type of medical mistake. Although fictitious, the scenarios were derived from a composite of actual medical malpractice claims which the research team reconstructed for purposes of the study. The outcomes of the scenarios varied from no harm to death: (a) a surgical mishap resulting in death; (b) an unneeded mastectomy due to an erroneous lymph node diagnosis; (c) two medication overdoses; and (d) a child who wandered away from a pediatric unit. A research team of health care risk management professionals developed the survey.[22].

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22 The research team included: the author; Grena Porto, R.N., M.S., A.R.M., Director of Clinical Risk Management, VHA Inc.; Geri Amori, Ph.D., A.R.M., F.A.S.H.R.M., Risk Manager, Fletcher Allen Health Care; Christopher Cassirer, Sc.D., M.P.H., Vernon E. Weckwerth Professor of Health Care Executive Studies, Department of Health Care

Four identical questions were presented following each scenario. A five-point ordinal scale followed each question that subjects used to indicate respective level of agreement. Each subject was asked to respond from his or her own perspective and then from his or her leadership's anticipated perspective. Table 1 below presents the first scenario with the four respective questions and response options.

Table 1
Scenario One - Lacerated Pulmonary Artery

A 70-year-old man with a long history of tuberculosis is admitted for surgery to resect the remaining portion of his right lung. He and his family members have been informed that due to the scarring both from prior surgery and the disease itself, the surgery will be complicated and carries additional risk. During the surgery, the surgeon's hand slips and inadvertently lacerates the pulmonary artery. Despite all attempts to control the bleeding, the patient suffers cardiopulmonary arrest in the operating room. Resuscitation fails and the patient dies.

(a) Which of the following statements best describes what you believe the patient's family should be told about what happened?	(b) Which of the following statements best describes why you chose this option?
(c) Which of the following statements best describes what you believe your organization would tell the patient's family about what happened?	(d) Which of the following statements best describes why you believe your organization would choose this option?
1. That the patient died from complications of his disease. 2. That the patient died from complications of the surgery. 3. That there was an unexpected complication during surgery and it is uncertain whether this contributed to the patient's death. 4. That there was an unexpected complication during surgery and this contributed to the patient's death. 5. That the pulmonary artery was accidentally lacerated and this caused a hemorrhage, resulting in the patient's death.	1. Health care providers do not have to disclose medical mistakes. 2. Health care providers do not have to disclose medical mistakes if disclosure will increase the risk of liability to the provider. 3. Health care providers do not have to disclose medical mistakes if is unlikely that the patient or family would ever find out about the mistake. 4. Health care providers have to disclose medical mistakes only if it is certain that the mistake caused the injury or changed the ultimate prognosis or outcome of treatment. 5. Health care providers have to disclose medical mistakes whether or not there was an injury, even if it will increase the risk of liability to the provider.

Management, University of Minnesota; Nancy Wilson, M.D., M.P.H., Vice President, VHA Inc.; Martin J. Hatlie, Esq., President, Partnership for Patient Safety.

Several multiple-choice demographic questions were included at the end of the survey. Additionally, one open-ended question was presented. The question asked, "What do you believe is the biggest barrier to disclosure of medical mistakes in your organization?" Open space was provided for additional comments the respondent might wish to offer.

In March 2000, a postcard was mailed to each risk management subject introducing the forthcoming survey and identifying the six-member research team. In April, the Attitudes of Risk Management Professionals Toward Disclosure of Medical Mistakes Survey was mailed, along with an introductory letter signed by the research team. A stamped, self-addressed return envelope was included. Two weeks after the survey mailing, a reminder postcard was mailed to the national risk management mailing list. Upon receipt of the completed surveys, raw data were entered into SPSS statistical software for subsequent descriptive and inferential procedures.

Data Analysis

A descriptive analysis was performed on the collective set of 20 questions. Frequency distributions were generated for each of the demographic variables including: (a) current employers; (b) setting of the employers' organization; and (c) the title of the risk manager/respondent's supervisor.

The chi-square one-way test was used to evaluate whether observed frequencies for a single qualitative variable were adequately described by hypothesized or expected frequencies.[23] If the agreement between the observed and expected frequencies were similar for each category, the chi-square would be small indicating proportions are uniform across all categories. However, if the divergence between observed and expected frequencies were large, the chi-square would also be large and rise to the level of significance indicating that responses considerably vary across the categories. The critical alpha level of .0001 was chosen for this study given the number of iterative chi-square procedures used

[23] Robert S. Witte & John S. Witte, Statistics (5th ed. 1997); Sidney Siegel & John N. Castellan, Jr., Nonparametric Statistics for the Behavioral Sciences (2d ed. 1988).

as a control against Type I error. A chi-square test was applied to each of the 20 study questions included in the survey (four questions across five scenarios).

Gamma correlations were generated between: (a) respondents' beliefs about information to be disclosed; and (b) risk managers' assumptions about their respective organizations' recommendations for each of the five scenarios. Additionally, gamma correlations were generated between: (a) reasons why medical mistakes should be disclosed as indicated by respondents' choices; and (b) reasons why their organization was anticipated to recommend its choice across each scenario. The gamma correlation is a measurement of the strength of relationship between two ordinal variables. The gamma measurements were considered indicative of the degree to which risk managers were in synchrony with their organization's attitude toward medical mistake disclosure and why. Gamma correlations range from zero to 1.0 where a large value indicates significant agreement. The critical alpha level .0001 was utilized for all gamma procedures.

Several assumptions were made about the study. It was assumed that: (a) the survey items were measurable and indicative of typical medical mistake disclosure options; (b) all information as reported by respondents was believed to accurately reflect individuals' perceptions about the content and rationale behind disclosures of mistakes; (c) the participants' responses were considered representative of the health care risk management population; (d) the measurement scale was at the ordinal level; (e) the survey was considered valid and reliable for the current research; and (f) the chi-square goodness-of-fit tests and gamma correlations were appropriate statistical procedures to test the hypotheses advanced.

Two hypotheses were advanced: (a) the chi-squares and proportion of responses across the five options provided for each question were expected to significantly vary across the choices and (b) the gamma correlations between risk managements' responses and the anticipated responses of their organizations would be significantly related across the five scenarios.

Results

Participants

Of the 3,430 surveys mailed, 41 envelopes were returned as undeliverable; therefore, 3,389 surveys were delivered. Forty-seven surveys were incomplete and subsequently removed from the analysis. A total of 603 usable surveys were returned for statistical analysis, yielding an overall 19% return rate.

Descriptive Statistics

The study participants worked for thirteen different types of employer groups. The top three categories were acute care (n = 335), insurance companies (n = 74), and academic medical centers (n = 51). The geographical settings where respondents lived were urban (n = 305), suburban (n = 177) and rural (n = 113), with the remaining eight respondents un-declared.

Table 2
Frequency Distribution of Respondents' Demographics

Reporting Relationship			*Setting*			*Employer*		
Title	*Frequency*	*Percent*	*Type*	*Frequency*	*Percent*	*Type*	*Frequency*	*Percent*
Pres./CEO	126	20.9	Urban	305	50.6	Acute	335	55.6
COO	46	7.6	Suburban	177	29.4	Academic	51	8.5
CFO	29	4.8	Rural	113	18.7	Military	13	2.2
Legal	63	10.4	Missing	8	1.3	MCO	9	1.5
CMO	43	7.1				Rehab.	7	1.2
Quality	59	9.8				Ambul	6	1.0
Risk Mgt.	118	19.6				Phys.Off.	15	2.5
Other	108	17.9				Insurer	74	12.3
Missing	11	1.8				Consult	19	3.2
						Law Firm	6	1.0
						IDS	25	4.1
						Broker	7	1.2
						Other	34	5.6
						Missing	2	.3
Total	N=603	100 %		N=603	100 %		N=603	100 %

Occasionally, respondents would indicate both urban and other categories, in which case the individual was coded as urban.

Reporting relationships indicated that the respondents varied across eight categories. The top three categories reported to the President/CEO (n = 127), Vice President or Director of Risk Management (n = 118), and other (n = 107), which demonstrated

very diverse reporting relationships. Frequency distributions for types of employer groups, geographical settings, and reporting relationships are provided in Table 2.

Frequency distributions of participant responses to the five scenarios' sets of questions are provided in Tables 3-7. The first scenario's details and options, presented in Table 1, relate to a patient with tuberculosis who underwent a lung resection. During surgery, the pulmonary artery was inadvertently lacerated and the patient died despite resuscitation efforts. Table 3 provides the frequency distribution of responses to the four questions posed along with the gamma correlations for the first scenario.

Table 3
Frequency Distribution of Responses to Lacerated Pulmonary Artery Scenario

N=603	*Frequency of risk manager's disclosure recommendations*	*Frequency of organization's disclosure recommendations*	*Frequency of risk manager's rationale for choice*	*Frequency of organization's rationale for choice*
Option 1	1	18	7	21
2	22	94	2	49
3	49	93	3	37
4	165	194	228	260
5	366	204	363	236
Gamma	.665		.743	

From this table, it can be seen that 66% (n = 366) of risk manager respondents recommended full disclosure of details to the family (the highest option), compared to 34% (n=204) of the respondents who anticipated their respective organizations would recommend such disclosure. The gamma correlation was found to be moderate (.665) for the level of agreement between risk managers' self-reported response and their organizations' anticipated response choices. Responding to questions about the rationale for disclosure, 61% (n = 363) of risk manager respondents recommended that disclosure be made whether or not an injury had occurred, even if there is an increased risk of liability. On the other hand, risk management respondents anticipated that 39% (n = 236) of their organizations would share their disclosure rationale. The gamma correlation between the rationale for risk managers' responses and the rationale they anticipated for their

organizations' responses, was moderately strong (.743). However, it can also be seen in Table 3 that some variability is evident across the responses to each of the questions with more reservations in the risk managers' predictions of the organizations' response choices.

The second scenario involved a woman who underwent an unneeded mastectomy due to an erroneous pathology interpretation of lymph nodes. The range of options about what to disclose and the rationale for disclosure was situationally appropriate to this scenario, but was similar to the first scenario's range of options from no disclosure to full disclosure regardless of increased risk of liability. Table 4 provides a frequency distribution of responses to the unneeded mastectomy scenario.

Table 4
Frequency Distribution of Responses to Unneeded Mastectomy Scenario

N=603	*Frequency of risk manager's disclosure recommendations*	*Frequency of organization's disclosure recommendations*	*Frequency of risk manager's rationale for choice*	*Frequency of organization's rationale for choice*
Option 1	4	39	6	21
2	107	138	6	41
3	120	137	3	26
4	227	195	240	285
5	145	94	348	230
Gamma Correlations	.784		.800	

From Table 4 it can be seen that 24% (n = 145) of risk management respondents indicated that full disclosure of the details should be made to the patient acknowledging that the erroneous pathology report resulted in the mastectomy. This was compared to 16% (n = 94) of risk managers' expectations as to their respective organizations' recommendations.

The gamma correlation for the degree of relationship between risk managers and the anticipated responses of their organizations was moderately strong (.784), indicating synchrony between the groups. Regarding why disclosure should be made, 58% (n = 348) of respondents indicated that disclosure should be made regardless of whether an injury occurred and regardless of the potential increase for liability risk. Risk manager respondents anticipated that 38% (n = 230) of their organizations would share their disclosure rationale for this

situation. Here again, the gamma correlation was moderately strongly related (.800) between the risk managers' rationale of recommended disclosure and their organizations' anticipated recommendations. This demonstrated more variability across response options, indicating room for additional discussions leading to more consistent agreement.

The third scenario involved a five-year-old asthmatic patient who wandered from the pediatric unit and eventually found his way to the roof. He was later found crying, but otherwise unharmed. The range of risk managers' responses about recommended disclosure to the parents and their rationales for disclosure, along with the anticipated organizational responses, are provided in Table 5.

Table 5
Frequency Distribution of Responses to Pediatric Patient Wandering from Unit Scenario

N=603	*Frequency of risk manager's disclosure recommendations*	*Frequency of organization's disclosure recommendations*	*Frequency of risk manager's rationale for choice*	*Frequency of organization's rationale for choice*
Option 1	2	13	10	20
2	6	25	5	23
3	88	131	3	26
4	110	148	142	206
5	397	286	443	328
Gamma Correlations	.808		.862	

Response to this scenario indicated a greater consensus that full disclosure of the mishap's details should be made to the parents. It was found that 66% (n = 397) of risk managers recommended the parents be told their child wandered away from the unit and was found crying on the roof, but otherwise unharmed. This was compared to the organization's anticipated response at 47% (n = 286) for full disclosure of the details. As to the rationale for disclosure, 73% (n = 443) of risk managers indicated that disclosure should be made, regardless of injury or increased liability risk to providers, compared to the organizations' 54% (n = 328) anticipated support for full disclosure. Gamma correlations were somewhat higher for this hypothetical scenario at .808 for "what should be disclosed" between the respondents' choices and those anticipated from their organization, and .862 for "why disclosure should be made" between the respondent and anticipated

organizational recommendations. There seems to be more willingness to disclose the details of this particular situation, which is less serious than the previous two scenarios, but there is still variability evident across the options.

The fourth scenario involved a stroke patient whose condition had been verified by a CT scan. An anticonvulsant was administered, a respiratory arrest ensued, and the subsequent resuscitation failed. After the failed arrest, the nurse realized she had administered twice the ordered medication and notified the attending physician of the mistake. Table 6 provides the range of responses and the rationale for the risk managers' recommendations, as well as those responses anticipated from their organization.

Table 6
Frequency Distribution of Responses to Anticonvulsant Overdose Scenario

N=603	*Frequency of risk manager's disclosure recommendations*	*Frequency of organization's disclosure recommendations*	*Frequency of risk manager's rationale for choice*	*Frequency of organization's rationale for choice*
Option 1	17	84	6	24
2	18	42	7	38
3	225	212	6	36
4	259	217	218	242
5	84	48	366	263
Gamma Correlations	.708		.794	

This scenario revealed the strongest hesitancy by risk managers to recommend full disclosure and divulge to the patient's family that the anticonvulsant overdose had probably contributed to his death. It was found that 14% (n = 94) of risk managers recommended full disclosure and 8% (n = 48) anticipated that their respective organizations would likewise recommend disclosure. The most frequent response to this situation was revelation that the anticonvulsant overdose may have contributed to the patient's death. Perhaps this scenario's comorbidity fostered a more conservative disclosure recommendation. The gamma correlation was .708, indicating a moderate level of agreement between the recommendations made by risk managers and anticipated from their organizations. Regarding rationale for disclosure, 61% (n = 366) of risk management respondents believed disclosure

should occur regardless of whether injury occurred and even if it increased liability risk to providers and organizations. This was compared to 44% (n = 263) of risk management respondents who reported their organizations would recommend full disclosure. The gamma correlation was moderately strong at .794, again indicating significant perceived agreement about the rationale for disclosure.

The final scenario presented a recovering surgical patient who was receiving Heparin. On one occasion, the woman was inadvertently administered ten times the ordered dose and required additional testing to monitor her clotting times. Her blood levels remained within therapeutic ranges without apparent injury due to the overdose. Table 7 provides the ranges of disclosure risk managers recommended and the disclosure choices they expected would be implemented by their organizations.

Table 7
Frequency Distribution of Responses to Heparin Overdose Scenario

N=603	*Frequency of risk manager's disclosure recommendations*	*Frequency of organization's disclosure recommendations*	*Frequency of risk manager's rationale for choice*	*Frequency of organization's rationale for choice*
Option 1	16	40	7	21
2	1	26	5	30
3	43	91	5	36
4	156	178	189	230
5	387	268	397	286
Gamma Correlations	.760		.785	

In this situation, 64% (n = 387) of risk managers' recommended full disclosure, including telling the patient that additional testing would ensue because she had received too much Heparin. This compared to 44% (n = 268) of the respondents who anticipated their organizations would recommend full disclosure. The gamma correlation was found to be .760, indicating a moderately strong level of agreement. As to why disclosure should be given, 66% (n = 397) of risk managers indicated that the disclosure should be made regardless of injury or increased liability, compared to 47% (n = 286) of the respondents who anticipated their organization would agree with this rationale. The gamma correlation here was .785, again indicating significant perceived agreement about the rationale for disclosure.

Inferential Procedures

All chi-square procedures were significant, indicating that responses statistically varied across the range of options under each of the five scenarios ($p < .0001$). This means that responses were rated more heavily in certain options out of the five choices and indicates a preference for disclosure management. Additionally, all gamma correlations were statistically significant ($p < .0001$), indicating that risk management-recommended responses were moderately to strongly related with their respective organizations' anticipated recommendations. Thus, risk management professionals believed they were consistently in agreement with their respective organizations as to content and rationale for disclosure to patients and/or their families. The survey's overall Cronbach's reliability coefficient alpha was .9230. This demonstrated the survey was highly reliable and stable for internal consistency of item responses across the aggregate of responses.

The open-ended question presented in the survey led to many interesting and introspective comments about perceived barriers to disclosure of medical mistakes at the organizational level. The top three barriers repeatedly cited in descending order of frequency were: (a) fear of litigation, publicity, and repercussions due to disclosure; (b) lacking communication skills or education on how to disclose information about a mistake; and (c) physician concerns over disclosure.

Discussion

The significant findings from this research were that: (a) the survey was valid and reliable for measuring the disclosure of medical mistakes expressed by risk managers' self-reported practices; (b) the significant chi-square results indicated that, overall, risk managers were much more likely to respond at Levels Four or Five to each question posed than lower choices. However, anticipated organizational leadership responses were somewhat conservative and more evenly spread across the options; (c) given the significant gamma correlations, risk managers' and expected organizational leadership's attitudes toward medical mistake disclosure were viewed similarly as was their rationale why disclosure choices were made; and (d) the barriers to disclosure that respondents reported were consistent with previous literature and research.

The chi-square test results indicated that risk managers largely agree with a philosophical inclination to disclose medical mistakes, but they may not be totally comfortable with full disclosure of all the known facts. The respondents also believe that health care providers must disclose medical mistakes, but many qualify this by finding a disclosure duty only if a cause and effect relationship is clear. Perhaps risk managers are predominantly influenced by one of two decision-making models in reporting disclosure management: an ethical/moral reasoning model or a legal/financial model.

Not all risk management professionals are convinced that full disclosure is necessary. Between 10% and 43% of respondents rated "what" should be recommended at lower Levels One to Three on the ordinal scale across the five scenarios. This means that their propensity is not to link the outcome to the adverse event in discussions with patient and/or family. Perhaps some risk management professionals fear that disclosure may not be in their organization's best interest. Or, as a minority indicated, perhaps they share a philosophical aversion to disclosure. The largest frequency for "why" risk managers chose their action response was that health care providers are obligated to disclose mistakes regardless of injury outcome or liability risk (Level Five). The next most frequent response was that disclosure should be made when causal relationships were irrefutable (Level Four). This lends support to the theory that respondents are predominantly influenced by one of the two decision-making models introduced in their disclosure rationale.

Participants consistently anticipated that their organization's responses would be lower than their own personal choices. Greater variability was evident as well in the organizational focused items, meaning that the choices selected were more evenly distributed, not stacked as much in one particular section of the scale. This finding may indicate greater hesitancy on the organization's behalf to disclose, perhaps due to administrative or clinical underpinnings or both. There may be less consistency in organizational leadership's attitude toward disclosure as perceived by risk management. The relationship or symbiosis between risk management and perceived organizational leadership responses are nonetheless moderate to strong, as evidenced by the gamma correlations between risk managers' recommendations

and rationale(s) with those anticipated from their organizations.

Knowledge about attitudes toward disclosure provides a framework within which risk managers may develop policies and procedures and implement education/coaching throughout an organization. Given current attitudes toward disclosure evident in this study, this knowledge may also advance the IOM recommendations for future research, raising standards, and safe practice implementations. The doors are open for dialogue and collaboration on how best to motivate and empower health care organizations to move forward in their commitment to patient safety.

Study Implications

Several study implications are apparent. First, the current study's findings have implications for risk management professionals to better understand the dynamic nature of medical mistake disclosure. By contemplating the study's results, risk managers may feel empowered to advance the knowledge about these issues and perhaps modify practices to consistently approach disclosure activity throughout the profession. Second, the study findings may also have implications for organizational leadership, given the patient safety cultural shift and expectations of patients and the public. Collaborations among organizational leadership, risk management, and the health care community in general will be critical to successfully fulfill the recommendations of the initial IOM report. Leadership commitment will be essential to an organization's ability to "walk the talk" about patient safety. Finally, the study may also have implications for the general public, which has a vested interest in making health care organizations safe environments for patients. Acknowledgment of a significant problem such as medical mistakes, accompanied by a genuine commitment to improvement, presents a tone for growth. Collaboration among consumers, providers, administrators, risk managers, and external stakeholders offers the key to comprehensive changes.

Conclusions and Recommendations

The survey on Attitudes of Risk Management Professionals Toward Disclosure of Medical Mistakes is valid and reliable for measuring

perceptions toward disclosure. With minimal variance about disclosure content and rationale, risk managers, by and large, are in agreement. A healthy attitude is evident in the positive nature of risk management responses to the scenarios' questions. Organizational leadership's attitudes toward disclosure were perceived by risk management to be less likely to fully disclose a known medical mistake. Some limitations of the findings may be related to the study's self-reported data. The 19% response rate may limit the overall findings since non-responder attitudes could differ from these outcomes reported. Power, however, was calculated to be 99%, indicating that results are generalizable to the risk management population given the sample size with a low probability of false negative results (Type II error). Overall, risk managers reported moderate to strong philosophical synchrony with their organizations, but 100 % agreements were not apparent.

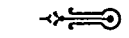
Given these conclusions, several recommendations can be made for future consideration. Value may result from expansion on these survey results by exploring other populations' attitudes toward disclosure, including patients, physicians, organizational leadership, legal community, insurance industry, consumer activists, and manufacturers and vendors of health care related products and services. Anticipating another's response as in this study is not as accurate as a direct response from the individual — an issue that next generation research may address.

Other research designs should be considered which would drill down further into the particular factors that shape risk managers', physicians', and leadership's choices made for their organizations. One such variable for consideration may be the perception of organizational support for full disclosure of known medical mistakes. Additional measures, such as cultural or organizational readiness assessment for implementing a medical error management infrastructure, may provide measurements of success indicators.

Objective outcome indicators of disclosure should be sought to provide criterion validity for investment into the patient safety culture that validate the self-reported practices. Such outcome measures may include: documenting the amount of time transpired until resolution of an event following disclosure; financial outcomes due to levels of

disclosure; psychosocial outcome measures of full disclosure on patients and providers alike; and legal costs for defense following full disclosure compared to non-disclosed situations. These measures should include financial outcomes or consequences of disclosure, clinical outcomes, and satisfaction or psychological outcomes related to mistake management.

More sophisticated research modeling could also be utilized to study medical mistakes such as multivariate data initiatives to hone in on potential latent variables and systems issues at their root. Data mining is one such analytical process that explores large amounts of retrospective data in search of consistent patterns and/or systematic relationships. This is accomplished by drilling down and generating a predictive model of an outcome specified by the researcher. Data mining is akin to mining for gold nuggets, sifting through large amounts of ore (data) to explore underlying treasures of useful knowledge.[24] Data mining methodology could answer such questions as: "What is the claim profile that results in the highest indemnity payments due to the failure to disclose a known medical mistake?" and "What are the associated clinical or systems issues that are predictive of medical mistake or iatrogenic injury?" This type of research modeling could provide a rich foundation for future research given the new knowledge discovery. It is hoped this study will promote more refined theory and new research designs. Research modeling is helical in nature and incremental in complexity.



[24] Jack Noonan, *Data Mining Strategies,* Data Mining Review 1 (July 2000), *available at* http://www.dmreview.com/master.cfm?NavID=55&EdID=2367.