Learning From Different Lenses: Reports of Medical Errors in Primary Care by Clinicians, Staff, and Patients

A Project of the American Academy of Family Physicians National Research Network

Robert L. Phillips, MD, MSPH, Susan M. Dovey, MPH, PhD,† Deborah Graham, MSPH,‡ Nancy C. Elder, MD, MSPH,§ and John M. Hickner, MD, MS||*

Objectives: To test whether family doctors, office staff, and patients will report medical errors and to investigate differences in how and what they report.

Methods: Clinicians, staff, and patients in 10 family medicine clinics of the American Academy of Family Physicians National Research Network representing a diversity of clinical and community settings were invited to report errors they observed. They were asked to report routinely during 10 weeks and to report every error on 5 specific days. They submitted anonymous reports via a Web site, paper forms, and a voice-activated phone system.

Results: Four hundred one clinicians and staff reported 935 errors within 717 events, 37% (265) of which came from the 5 intensive reporting days and 61% (440) from routine reports. Staff made 384 (53%) reports, and clinicians, 342 (47%) reports. Most (96%) errors reported were process errors, not related to knowledge or skill. Staff reported more errors in patient flow and communication; clinicians reported more medication and laboratory errors. Reports suggest that patients with complex health issues (31% versus 20%, $P = 0.013$) are vulnerable to more severe outcomes. Patients submitted 126 reports, 18 of which included errors.

Conclusions: Clinicians and staff offer different and independently valuable lenses for understanding errors and their outcomes in primary care, but both predominantly reported process- or system-related errors. There is a clear need to find more effective ways to invite patients to report on errors or adverse events. These findings suggest that patient safety organizations authorized by recent legislation should invite reports from a variety of health care workers and staff.

Key Words: patient safety, quality, medical errors, reporting systems

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From the *The Robert Graham Center: Policy Studies in Family Medicine and Primary Care, Washington, District of Columbia; †Royal New Zealand College of General Practitioners Research Unit, Dunedin, New Zealand; ‡American Academy of Family Physicians National Research Network, Leawood, Kansas; §University of Cincinnati Department of Family Medicine, Cincinnati, Ohio; and ||University of Chicago Department of Family Medicine, Chicago, Illinois.

Correspondence: Robert L. Phillips, MD, MSPH, The Robert Graham Center: Policy Studies in Family Medicine and Primary Care, 1350 Connecticut Ave, NW, Suite 201, Washington, DC 20036 (e-mail: bphillips@aafp.org).

The complex setting of primary medical care provides nearly one-half billion office visits annually in the United States and is the medical home for most Americans.[1–4] Nascent research is revealing that, in the convergence of complexity and volume, errors in primary care are common and do result in harm to patients.[5–8] Studies of error-related malpractice claims from primary care suggest that the burden of serious harms and death from medical errors is substantial.[9]

We now know that clinicians will report on errors that they recognize in practice and that there are some striking similarities about what they report as sources of errors across countries.[6,10,11] Most of these studies have focused exclusively on errors reported by physicians, providing an important but limited lens on the frequency, volume, and types of errors occurring in primary care. A recent study opened error reporting to other clinical staff, offering other important perspe
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reporting studies from other settings indicate that whether anonymous or confidential, voluntary or mandatory, there is large-scale underreporting of adverse events.[13–15]

This study aimed to answer 3 primary questions. Will family doctors, their office staffs, and their patients submit error reports about lapses in patient safety? How will errors reported by doctors, their office staffs, and their patients differ or agree? Will intensive reporting days combined with clinical visit data permit rate estimates for recognized and reported errors? We report on the answers to the first 2 questions in this article. We also gathered data about the reporters' assessment of harm, consequences, contributing factors, and ways to prevent the error in the future to develop these components of our taxonomy. We hypothesized that error reports from primary care office staff and patients would reveal more and different types of errors from physicians and perhaps also different perspectives on the same errors.

RESEARCH DESIGN AND METHODS

This study took place in 10 family physician offices: 5 private practices and 5 family medicine residency clinics. All clinics had at least 1 physician member of the American

Academy of Family Physicians (AAFP) National Research Network, were a mix of rural, urban, and suburban sites, and included private and community health practices. Physicians, nurse practitioners (NPs) and physician assistants (PAs), office staff, and patients submitted anonymous reports of errors observed in the course of clinical care. We used a definition of error derived from the Institute of Medicine definition and used previously in our U.S. and international studies.[6,16] We specifically asked for reports on things that happen in the practice "that should not have happened and that you don't want to happen again." These errors could be small or large, administrative or clinical. They could also be events or processes that did not happen but should have happened.

Physicians and staff were given the option of 2 methods of reporting: via the Internet to the AAFP Patient Safety Reports secure Web site or via written reports using a standard form. Patients could report by these same options and also via an automated telephone system. Many safeguards were incorporated to make sure that reports were anonymous. Reports included a practice code and a clinician category code to distinguish reports from physicians, NPs and PAs, nurses and office staff, residents, and patients. Participants from each practice were invited to make routine error reports whenever they wished during 10 weeks, and intensive error reports on each of 5 days were specified in advance. Based on our previous research, we were concerned that there may be reporting fatigue with routine reporting, particularly that reporters would grow tired of reporting common errors and those with low severity outcomes. We believed intensive reporting would permit exploration of these concerns. Intensive reporting was also used with the underlying hypothesis that it might permit better rate estimates of observed if not reported errors (not reported on here). Patients were invited to participate in the study on the 5 intensive reporting days only, 1 day every 2 weeks. Patient invitations were limited to intensive days because of the need for anonymous reporting; the only means of notifying patients about the opportunity to report required clinic staff effort—handing out letters, answering questions, and posting notices—and we felt that this was too much to ask of busy practices for 10 weeks. Another reason was to permit direct comparisons of patient and practice reports on days when potentially all events would be reported, looking for evidence of the same events being reported from multiple perspectives. All patients or relatives/caregivers, when appropriate, received information about the study as they checked out after the completion of their visits on the 5 designated dates.

Error-reporting Tools

The primary data collection tool was the AAFP Patient Safety Reports Web-based error-reporting system. The paper and telephone reporting tools collected data identical to the Web-based system but modified as needed to fit the mode of delivery (particularly the telephone process) and the type of reporter. The reporting tool follows the Institute of Medicine recommendations gleaned from human performance measurement in industry.[17] Specifically, it requests data that could support causal analysis, including free-text descriptions, sometimes guided by a standard set of questions. The clinician/staff tool asks the following.

- If a report is being made during their intensive reporting period
- If the report is about a specific patient
- The degree of familiarity the reporter has with the patient (5-point Likert scale), from 1 = "I have never seen this patient before," to 5 = "I am very familiar with this patient"
- The patient's age (years for adults, months for younger than 2 years)
- Patient's sex, ethnicity, and race
- Complexity and chronicity of presenting health problem
- What happened (free-text)
- Seriousness of event (Likert scale), from 1 = not serious at all, to 5 = extremely serious
- Where the event happened (list of 9 settings and free-text option)
- Result—actual and potential consequences (free text)
- What contributed to the event (free text)
- What could have prevented it (free text)
- Whether anyone was harmed
- How often events such as this happen in their practice (Likert scale), from 1 = this is the first time, to 5 = frequently
- Is there anything else you would like to tell us (free text)

A physician and a designated study coordinator from each of the 10 participating sites attended a mandatory 1.5-day training session, and they in turn trained the clinicians and staff at their respective offices in the reporting methods. Participants were invited to make routine error reports at any time during the 10-week period of data collection. We specifically encouraged participants to report errors that had the potential to cause or actually did cause harm. On intensive reporting days, participants were asked to report every single recognized error. Each practice was assigned 5 intensive reporting days, 1 day every other week for 10 weeks. The particular day of the week was selected with guidance from participating sites to avoid days on which too few reporters were present to protect anonymity.

Coding and Taxonomy

We coded each error using a modified version of the AAFP/Linnaeus taxonomy developed during studies of physician-reported errors in the United States and international practice–based research networks.[6,10] The original taxonomy has undergone several revisions which have largely expanded it from a taxonomy limited to the description of errors to one that also categorizes consequences/harms, contributing factors, and potential prevention strategies. In this study, we further modified and expanded the medical error taxonomy. Once revisions were made to the taxonomy, all previously coded reports were reviewed for accuracy, and new reports were coded based on the new taxonomy. The version of the taxonomy used for coding and analysis was the March 2004 version.

Unlike our previous error studies, for this study, we adapted a flexible coding protocol that allowed for coding more than 1 error in a report, incorporated error sequences, and whether sequential errors occurred simultaneously or 1 error caused the next error to occur (cascade). As well, we

coded consequences and prevention strategies identified by reporters. Initially, 5 members of the research team, including 2 experienced error coders (S.M.D. and R.L.P.), coded events independently, and then the entire research team compared their efforts and reached consensus on the final coding. As 2 team members (D.G. and J.K.) became more competent and confident in their coding skills, they became the chief coders for the study, with regular review of every 10th report by the principal investigator of the previous 2 studies (S.M.D.). This process confirmed a high reliability for coding in the first 3 levels of the taxonomy. There was more discrepancy at the more detailed levels of the taxonomy. Codes were assigned to each error identified in an event identified by a reporter. If multiple errors were identified, codes were sequenced to reflect the reported sequence.

Analysis

We conducted frequency analyses of all errors by all reporters to assess their general distribution. We conducted frequency analyses of reports made by reporter group, of intensive versus routine reporting, and of reporting method. We also looked specifically for reports of the same error by more than 1 reporter. Consequences and severity of errors were analyzed using simple frequencies. Although providers and staff are independent, the multiple error-report outcomes are not, so to test for differences between reporting groups in proportions of the major error types reported, an approximate omnibus test, we used multivariate analysis of variance in SPSS (version 11.1) (Chicago, IL) with each error type as an outcome and respondent type (provider/staff) as a fixed factor. Simple frequencies were used to contrast the number of errors reported on intensive days with those of routine reporting days. We also separated out reports that had 2 or more errors to investigate the most common proximal errors.

This study was reviewed and approved by the University of Missouri—Kansas City Social Sciences institutional review board and by individual site institutional review boards as required.

RESULTS

Four hundred one physicians and staff signed a consent form and/or participated in site training (86% of eligible participants). Clinic physicians, NPs/PAs, residents, and staff reported 726 events, 717 of which included at least 1 error. Staff made 384 (53%) reports, physicians made 278 (38%) reports, residents reported 46 (6%), and NPs and PAs made 18 (3%) error reports. An average of 1.9 reports were made by all potential reporters (range, 0.9–11.2), with just more than half (52%) of intensive reports and one-third (33%) of routine reports made by 1 site (Table 1). For analytic purposes, we grouped physician, resident, and NP/PA error-related reports ("clinicians"). There were 546 Web-based reports and 180 mailed reports. Most of the reports were reported routinely (440, 61%) rather than made on intensive error-reporting days (265, 37%) (21 errors could not be classified by reporting day). More clinician reports were routine than staff reports (67% versus 57%, $P = 0.039$). Patients submitted 126 reports, but most were statements expressing satisfaction with their primary care clinicians, and only 18 of which were errors that patients had experienced or observed. All but 8 of the patient reports were made by mail (1 report by phone and 7 by Web-based tool). One third of the patient's error reports dealt with extended waiting (6 reports), most of them in the clinic but also on the phone and for clinic appointments. Three reports dealt with errors that occurred in the past, with physicians or clinics other than their current one. Two dealt with mistaken identity, one resulting in an unnecessary blood draw and another with prescriptions. Other patients reported poor vaccination documentation, unnecessary emergency room visits (because of inability to reach their primary physician), inability to get laboratory tests because of lack of insurance, inappropriate comments by clinicians, clinician-induced fear (caused a patient to leave without treatment), and a credit card theft. Because of the small number of patient reports, we did not include them in comparative analyses.

The 717 error-related reports contained 935 errors. At the most basic level of our classification system, 96% (898) of the errors were process errors, not related to breakdowns in knowledge or skill (Table 2). Nearly all of the errors reported by all reporter groups were process errors. At the second level of classification, there were statistically significant differences in the types of errors reported by clinicians and staff ($P < 0.001$), but 49% to 78% of the errors fell within "office administration" regardless of reporter type. At the third level of the classification, the top 10 error codes are roughly similar but with a few statistically significant

TABLE 1. Distribution of Reporters, Error Reports by Clinic Site

Site	Error Reports	Potential Reporters	Reports per Reporter	Intensive Reports	Routine Reports
1	34	39	0.9	7	27
2	281	25	11.2	137	144
3	51	52	1.0	10	37
4	17	25	0.7	5	12
5	44	63	0.7	20	23
6	78	49	1.6	30	48
7	87	12	7.3	26	61
8	70	75	0.9	17	46
9	19	15	1.3	3	16
10	36	28	1.3	10	26
Total	717	383		265	440

TABLE 2. All Error Codes Reported by Physicians, NP/PAs, Residents, and Staff

Level 1 Errors	Level 2 Errors	Level 3 Errors
Process errors, 898 (96%)	Office administration, 510 (56.4%)	Chart completeness and availability, 177 (18.8%)
		Appointments, 111 (11.8%)
		Filing system, 84 (8.9%)
		Patient flow, 55 (5.9%)
		Message handling, 33 (3.5%)
		Maintenance of physical buildings/surroundings/practice site, 22 (2.3%)
	Treatments, 137 (15.1%)	Medications, 127 (13.5%)
		Other treatments, 13 (1.4%)
	Investigations, 127 (14.1%)	Laboratory, 82 (8.7%)
		Diagnostic imaging, 25 (2.7%)
		Other investigations, 13 (1.4%)
	Communication, 84 (9.3%)	With patients, 65 (6.9%)
		Between health care team, 34 (3.6%)
		With physician colleagues, 15 (1.6%)
		With nonphysician colleagues, 1 (0.1%)
	Payment, 29 (3.2%)	Insurance-related errors, 17 (1.8%)
		Billing slip problems, 6 (0.6%)
		Wrongly charged, 5 (0.5%)
		Forms not complete/accurate, 2 (0.2%)
		Payment dispute, 1 (0.1%)
		Failure to contact insurance company, 1 (0.1%)
	Workforce, 11 (1.2%)	Clinician arriving late, 3 (0.3%)
		Tasks of absent staff not covered, 2 (0.2%)
		Referrals, 2 (0.2%)
		Physician left office early, 2 (0.2%)
		No interpreter at office visit, 1 (0.1%)
		Workload poorly managed, 1 (0.1%)
Knowledge and skill errors, 37 (4%)	Execution of a clinical task, 18 (2.0%)	Failure to follow standard or recommended practice, 13 (1.4%)
		Lack of experience or knowledge in a clinical procedure, 3 (0.3%)
		Nonclinical staff making wrong clinical decision, 2 (0.2%)
	Wrong diagnosis, 12 (1.3%)	Attributable to examination by a physician, 5 (0.5%)
		Attributable to investigations, 3 (0.3%)
	Wrong treatment decision, 5 (0.6%)	By a hospital consultant, 1 (0.1%)
		Wrong treatment decision attributable to physician's action(s) or omission(s), 4 (0.4%)
		Patient made wrong treatment decision, 1 (0.1%)
	Execution of an administrative task, 2 (0.2%)	Lack of experience or knowledge in an administrative procedure, 4 (0.4%)
		Failure to respect/understand confidentiality of patient, 1 (0.1%)

TABLE 3. Top 10 Errors for Clinicians Versus Staff at Third Level of Classification

Error Codes	Total	Clinicians	Staff	F*	P
Chart completeness and availability	176 (19%)	83 (18%)	93 (19%)	0.029	0.840
Medications	127 (14%)	71 (16%)	56 (12%)	4.066	0.044
Appointments	111 (12%)	41 (9%)	70 (14%)	6.055	0.014
Filing system	84 (9%)	37 (8%)	47 (10%)	0.509	0.476
Laboratory	82 (9%)	51 (11%)	31 (6%)	7.730	0.006
Communication with patients	65 (7%)	19 (4%)	46 (9%)	9.806	0.002
Patient flow	55 (6%)	25 (6%)	30 (6%)	0.122	0.727
Communication health care team	34 (4%)	20 (4%)	14 (3%)	1.753	0.186
Message handling	33 (4%)	14 (3%)	19 (4%)	0.387	0.534
Diagnostic imaging	25 (3%)	17 (4%)	8 (2%)	4.265	0.039

*Multivariate analysis of variance.

differences (Table 3); clinicians were significantly more likely to report errors related to medications, laboratory investigations, and diagnostic imaging; staff were significantly more likely to report errors related to communication with patients and appointments.

Four reports contained 4 errors, 33 reports contained 3 errors, and 183 cases involved 2 errors. In 93 of these events, there was sufficient detail to identify where 1 error cascaded or caused 1 or more subsequent errors. In these events, the most common errors were chart completeness and availability, medications, appointments, laboratory, patient flow, and filing systems.

Consequences or Harm

In 706 of the reports, clinicians and staff reported consequences or harms (Table 4). Of the health consequences experienced, no patient died; 3 patients required urgent care, were admitted to a hospital, or had to visit the emergency room; 4 patients had pain or injury; and in 10 cases, the patient's health condition worsened. Most of the health consequences placed the patient at heightened risk for harm (49%) or made the patients, their families, or their health clinicians upset (33%). Reporters rated seriousness in 701 of the events (Table 5). Events judged by reporters to be very or extremely serious most often resulted in patients being placed at heightened risk for harm (24%), were discovered and resolved without harm (21%), or left patients or their families upset (8%). There was no significant difference in the severity of errors reported on intensive reporting days versus routine reports (25% severe or very severe versus 18%, $P = 0.126$). Patients judged by reporters to have "complex" health issues were more likely to experience very or extremely serious harm (31% versus 20%, $P = 0.013$), whereas there was no difference in risk for harm for patients with chronic conditions (29% versus 21%, $P = 0.086$). There were also no differences for patients familiar versus unfamiliar to the reporter.

Overlapping Reports

One of the potential outcomes of soliciting reports from different reporters is that 1 event may be reported by more than 1 reporter and offer different views of the event. In our study, only 2 events were obviously reported by both a physician and a staff member. In 1 of the 2 cases, the staff report offered slightly more information and understanding of the event; otherwise, the 2 reports were very similar in the error, consequence, and severity classifications. However, because all reports were submitted anonymously with no incident dates attached to reports, it was extremely difficult to recognize events that were reported by more than 1 reporter.

TABLE 4. Consequences or Harms of Reported Events

Consequences	Clinicians	Staff	Total
No consequence	15 (4%)	12 (3%)	27 (4%)
Health consequence	91 (27%)	73 (20%)	164 (23%)
Care consequence	167 (50%)	158 (43%)	325 (46%)
Money/time consequence	60 (18%)	110 (30%)	170 (24%)
Don't know	2 (1%)	18 (5%)	20 (3%)
Total	335 (100%)	371 (100%)	706 (100%)

TABLE 5. Severity of Reported Events

Severity	Clinicians	Staff	Total
Not very serious	71 (21%)	74 (20%)	145 (21%)
Somewhat serious	100 (30%)	96 (26%)	196 (28%)
Serious	99 (30%)	104 (28%)	203 (29%)
Very serious	43 (13%)	57 (16%)	100 (14%)
Extremely serious	21 (6%)	36 (10%)	57 (8%)
Total	334 (100%)	367 (100%)	701 (100%)

DISCUSSION

As with previous studies, we found that physicians will submit anonymous error reports,[6,10,11] and we confirm that staff will as well when personal safeguards are in place.[12] Previous studies have not examined differences between staff and physician reports. This study shows that that these different lenses on threats to patient safety offer similar but subtly different information. Staff reported more errors in appointments and communication with patients than did clinicians, whereas clinicians reported more errors in medication and testing processes. Reports from both groups suggest that patients with complex health issues are particularly vulnerable to more severe outcomes and that familiarity or continuity may not attenuate this risk. Conversely, we could not establish that patients with chronic health problems were at higher risk for more severe outcomes from errors. These findings do not rule out that people with chronic diseases are vulnerable to errors but do suggest that patients with "complex" issues should receive special consideration in efforts to make care safer. All of the reporters helped extend our understanding of the factors contributing to errors. Most reporters tended to focus on blaming individual behaviors rather than processes, but their reports do suggest that chaotic busy days, health care team communication failures, and breakdowns in protocols or guidelines often leave patients vulnerable.

Asking reporters for potential ways to prevent the errors they report was an exploratory component of this study. The results of this study support our previous finding that physicians and staff most often focus on personal behavior modification rather than on modification of office systems.[18] However, many of their suggestions do offer insights into potential process-related solutions that force certain functions or that have monitoring functions. We received many suggestions about the need to unload physician and staff time and to eliminate distractions, thereby allowing them to focus on the patient in front of them. These may also be system- or process-related solutions.

More than one-third of the reports were from just 5 intensive days of the 10-week reporting period. The volume of errors from intensive-reporting days substantiates previous findings of underreporting of errors when reports are collected routinely, even in settings with mandatory reporting requirements.[13–15] Reports from intensive days were not significantly less severe than reports from routine-reporting

days. A better-powered study might find that routine reporting skews understanding of the severity and relative frequencies of errors, but this study did not confirm this concern. The latter issue is related to concerns about relying solely on reports of bad outcomes; that is, it risks missing icebergs or those errors that occur commonly and only occasionally result in harm. The most urgent efforts to avoid errors have focused on events that should never occur. However, if the focus of error reporting shifts entirely away from common errors that uncommonly result in harm, there is real risk for leaving most of our patients vulnerable to bad outcomes.[17,19,20] To this end, further study is needed to know if routine reporting, intensive reporting, or a combination is best for learning about both common errors and bad outcomes.

Error reports in this study provided sufficient detail to identify aggregations of single errors as well as error cascades within a single event. We have previously found that understanding cascades may be an important gap in patient safety studies.[21,22] This study reaffirms that capturing information from reporters that identifies clustering and cascading of errors is possible and may offer the potential for identifying how systems that stop more proximal errors may prevent downstream errors and their adverse effects. In fact, by not looking for errors that commonly cluster or that cause cascades, there is a real risk that implemented solutions will not prevent the distal errors and events that reach patients. Cluster and cascade analyses will be a real challenge, particularly if reporting systems move away from free-text data or if reliance on anonymous reporting prevents follow-up and root-cause analysis.

Unfortunately, patients did not generally understand or respond to our reporting tools. The largest group of the 18 patient error reports related dissatisfaction with being made to wait, but in other cases, patients had things done to them because of mistaken identity, things said to them inappropriately, and bad outcomes caused by inability to access their physician or parts of the health care system. These few error reports suggest that patients do offer a different view compared with physicians and office staff on errors and adverse events in primary care. Most patients in our study, however, responded as if they were completing satisfaction surveys, perhaps suggesting that they are conditioned to this type of inquiry in their physicians' offices. Recent studies have found that most patients can recall errors in the course of their care, and Woolf and Kuzel[23,24] have taught us that they can offer specific details about these errors and their outcomes and that they are affected by errors that other reporters may consider trivial. We lack understanding, however, of whether patients will routinely participate in error-reporting systems, how their reports may differ from others', and what they may reveal that will make care safer. This study only helped us understand that our current reporting tools were not particularly useful for patients, or at least not in this context.

LIMITATIONS

Our findings are limited by the usual constraints of voluntary error reporting. Because there is no requirement for reporting events, the number of reports varies considerably across practices. Interestingly, other than 2 exuberant practices that submitted 11.2 and 7.3 reports per reporter, the report submission rate had little variation, from 0.7 to 1.3 reports per reporter for the 10-week reporting period. Therefore, one might reasonably expect to receive roughly one report per participant during a 10-week period by using a combination of routine and intensive reporting as we did. Moreover, error reporting, whether voluntary or mandatory, cannot produce accurate error rates. A recent study in the Veteran's Administration found that only 4.15% of tort claims had been reported in the patient incident reporting system and concluded, "all reporting systems—even the mandatory ones—are voluntary."[15]

The data collected were technically protected from discovery by federal regulation, and we seriously considered making the data confidential and not anonymous. This would have been desirable for more complete root-cause analysis and provided feedback to reporters as is commonly done in other industries and the Veteran's Administration.[25,26] However, the protective federal regulations have never been tested in court, so we felt ethically obligated to keep reports anonymous for this national study to protect the reporters and their employers. Being unable to directly contact reporters limited our interpretations of their reports, resulting in the coders introducing their own biases in data interpretation. We tried to reduce this limitation by early iterative group analyses, training of less-experienced coders by those with more experience, regular reviews of every 10th report by experienced coders, and the submission of particularly complex or unclear reports to analysis by the full research team. The Patient Safety and Quality Improvement Act of 2005, which established a confidential reporting structure in which health care professionals can voluntarily report on errors to designated Patient Safety Organizations, should help alleviate this problem in the future. This law allows the creation of organizations that can receive reports confidentially with protection from legal discovery. The regulations or guidance for this legislation is still pending, but it is conceivable that error reporting will become more routine and allow interaction between reporters and the receiving organizations.

Small response sizes from residents, NPs, and PAs prevented more refined subgroup analyses that might reveal even more important differences. Given the small number of family medicine clinics participating (10), our findings may not generalize to the broader family medicine community or to primary care. We tried to improve generalizability by purposefully selecting clinics from a variety of locations and community types from all 4 regions of the country and by choosing from a range of practice types, including private practice, teaching, and community health settings.

CONCLUSIONS

Physicians, clinic staff, NPs and PAs, and resident physicians in family physician offices will report on errors, their consequences, and their potential remedies. There were subtle but significant differences in the information gleaned from physician and clinic staff reports, and our findings specifically extend understanding of error reporting by multiple parties and perspectives in diverse primary care

settings, offering different lenses on patient safety. Furthermore, they were willing both to submit reports routinely and to submit within intensive reporting periods. Routine reporting provides information that differs both quantitatively and qualitatively from intensive reporting, and both methods may be useful to collect in the course of clinical care. These reporters also extended our understanding of the factors contributing to errors, of error cascades, of the broader ways that errors affect people, and of potential solutions. A shift to confidential rather than anonymous modes of reporting is needed to extend knowledge in these areas, and the legal protections for confidential reports to Patient Safety Organizations under the Patient Safety and Quality Improvement Act of 2005 may be a real boon to reporting and to improving safety in primary care. Ours and other studies suggest that voluntary errors reporting may be a good way to identify process-related problems but not errors of clinical knowledge or skills. Error-reporting systems, therefore, are likely to be important complements to other methods of monitoring threats to patient safety but should not be relied upon solely. Our tool or methods did not accommodate patient reporting very well and suggest that other methods of engaging patients and seeking their input on threats to safety are needed.

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