

Characterizing Resident Preferences for Faculty Involvement and Support in Disclosing Medical Errors to Patients

Narendra Singh, MD
 Brian M. Wong, MD
 Lynfa Stroud, MD, MEd

ABSTRACT

Background Residents may be commonly involved with medical errors and need faculty support when disclosing these to patients.

Objective We characterized residents' preferences for faculty involvement and support during the error disclosure process.

Methods We surveyed residents from internal medicine, pediatrics, emergency medicine, general and orthopedic surgery, and obstetrics and gynecology residency programs at the University of Toronto in 2014–2015 about their preferences for faculty involvement across a variety of different error scenarios (ie, error type, severity, and proximity) and for elements of support they perceive to be most helpful during the disclosure process.

Results Over 90% of the 192 respondents (N = 538, response rate 36%) wanted direct involvement in the error disclosure process, irrespective of type or severity of the error. Residents were relatively comfortable disclosing prescription and communication errors without direct faculty involvement but preferred faculty involvement when disclosing diagnostic and management errors. When errors were severe, many residents still wanted to be involved but preferred having faculty lead the disclosure. Residents particularly wanted to participate in the process when they felt responsible for the error. Residents highly valued receiving faculty advice on how to manage consequences and how to prevent future errors in preparing for disclosure, as well as receiving postdisclosure feedback and personal support.

Conclusions Residents are willing participants in the error disclosure process and have specific preferences for faculty involvement and support. These findings can inform faculty development to ensure appropriate support and supervision for residents when disclosing errors to patients.

Introduction

Faculty role modeling and formal training are critical for residents to develop error disclosure skills and positive attitudes regarding disclosure.^{1–7} In academic medical centers, residents often share the responsibility to disclose errors alongside their faculty⁶ and want to be directly involved in communicating with patients and families.¹ Therefore, faculty supervisors and training programs would benefit from knowing specific ways to support residents when the need for error disclosure arises in the clinical setting.

To our knowledge, little is known about resident preferences as they relate to faculty involvement and supervision during error disclosure. Characterizing resident needs and whether they vary depending on training program, learner stage, or error characteristic (error type, severity, and proximity) is essential if faculty are to ensure appropriate error disclosure to

patients and involve residents in the process. We surveyed residents across 6 programs at the University of Toronto about their preferences for faculty supervisor involvement and support during error disclosure.

Methods

Population and Setting

The University of Toronto has a large graduate medical education department with 75 accredited residency programs. There are 5 fully affiliated adult teaching hospitals and 1 major pediatric hospital. We surveyed residents in 3 medical (internal medicine, pediatrics, and emergency medicine) and 3 surgical (general surgery, orthopedic surgery, and obstetrics and gynecology) programs.

Survey Development and Distribution

We created a survey (provided as online supplemental material) to determine the degree of faculty supervisor involvement perceived to be most helpful in specific error contexts, and what elements of faculty support are most important. We focused on

DOI: <http://dx.doi.org/10.4300/JGME-D-17-00722.1>

Editor's Note: The online version of this article contains a survey of resident experiences with medical errors and preferences for faculty involvement and support of error disclosure.

content and response processes to enhance the validity of our tool.⁸ We derived content from literature searches and rich qualitative data previously collected by the authors on this subject.¹ Draft versions of the survey were reviewed by 2 patient safety content experts. To determine response processes, 12 fourth-year internal medicine residents pilot tested the survey for readability, clarity, and length. We incorporated their feedback into the final version of the survey and removed items consistently reported to be redundant.

We defined a medical error in our survey as “the failure of a planned action to be completed as intended (ie, error of execution) or the use of a wrong plan to achieve an aim (ie, error of planning).”⁹ We asked residents about their prior experiences with error disclosure and their preferences for faculty supervisor involvement in specific error contexts. These contexts included error type (diagnostic, management, prescribing, procedural, and communication); error severity¹⁰ (death or severe permanent disability, mild/moderate permanent disability, severe temporary pain or suffering, or mild/moderate temporary pain or suffering); and error proximity¹¹ (either the resident, another resident or medical student, or nursing or other health professionals felt most responsible). Residents rated their preference for faculty involvement for each scenario among 5 levels of resident autonomy in the disclosure process that we collapsed into 3 categories: (1) resident led without direct faculty supervision, (2) resident led with faculty involvement, and (3) faculty led with or without resident involvement.

Residents used a 5-point Likert scale (1, *unimportant*, to 5, *very important*) to rate the importance of faculty guidance to prepare for specific elements of error disclosure communication based on a well-established framework¹² that includes what to disclose, explaining facts, explaining consequences, managing consequences, and offering an apology. They also rated the importance of different types of faculty support around the disclosure period, including providing feedback, examples from personal experience, external resources, institutional resources, and personal support.

Between November 2014 and March 2015, we distributed electronic surveys via SurveyMonkey (SurveyMonkey Inc, San Mateo, CA) to all residents in the 6 medical and surgical programs. We sent 2 e-mail reminders to encourage participation and offered residents the opportunity to enter a drawing for 1 of 20 \$50 gift certificates to a bookstore as an incentive.

The University of Toronto Research Ethics Board approved this study.

What was known and gap

Residents may be involved in medical errors and need faculty guidance and support on how to manage disclosure to patients and families.

What is new

A study found that residents are willing participants in error disclosures and have specific preferences for faculty involvement and support.

Limitations

Single institution study and modest response rate limit generalizability.

Bottom line

Residents want faculty support in error disclosures, suggesting a need for faculty development in this critical area.

Statistical Analysis

We analyzed survey data descriptively, reporting continuous data using means and standard deviations and categorical data using counts and percentages. We grouped participants into medical (internal medicine, pediatrics, and emergency medicine) or surgical (general surgery, obstetrics and gynecology, and orthopedic surgery) training programs and junior (postgraduate year 1 [PGY-1] and PGY-2) or senior (PGY-3 through PGY-5) residents for subgroup analyses. We performed a chi-square test for comparisons across error type, severity, and proximity to determine differences in resident preferences for faculty involvement and support, and followed up with a Mantel-Haenszel chi-square analysis to identify differences in the distribution of responses between medical and surgical residents and junior and senior residents. We carried out data analysis using SPSS version 23.0 software (SPSS Inc, Chicago, IL). We considered $P < .05$ statistically significant and applied a Bonferroni correction by dividing $P = .05$ by the number of subgroups for all subgroup analyses (eg, for error type, we divided $P = .05$ by 15 subgroups and considered $P = .003$ to be statistically significant).

Results

Of 538 eligible residents, 192 responded to the survey (response rate 36%). TABLE 1 summarizes study participant characteristics, which were representative of the total population when comparing resident distribution across training program and level. The majority of residents reported having been involved in a harmful medical error in the past (78%, 150 of 192), having prior experience disclosing a medical error (72%, 106 of 148), and having had formal training in error disclosure (83%, 160 of 192). A significantly greater proportion of medicine residents reported having prior experience disclosing medical

TABLE 1
Demographic Characteristics of Resident Survey Respondents (N = 192)

Characteristic	n (%)
Training program	
Internal medicine	79 (41)
Obstetrics and gynecology	36 (19)
Pediatrics	25 (13)
General surgery	21 (11)
Emergency medicine	20 (10)
Orthopedic surgery	11 (6)
Gender	
Female	102 (53)
Training level	
PGY-1	54 (28)
PGY-2	61 (32)
PGY-3	45 (23)
PGY-4	14 (7)
PGY-5	18 (9)
Prior involvement with harmful medical error	
Yes	150 (78)
Frequency of involvement with harmful medical error ^a	
1 time	34 (23)
2–3 times	86 (58)
4–5 times	17 (12)
≥ 6 times	11 (7)
Prior experience disclosing medical error ^a	
Yes	106 (72)
Formal training in disclosure	
Medical school only	84 (44)
Residency only	16 (8)
Both medical school and residency	60 (31)
None	32 (17)

Abbreviation: PGY, postgraduate year.

^a A significantly greater proportion of medicine residents (internal medicine, pediatrics, and emergency medicine) had prior experience disclosing medical errors compared with surgical residents (obstetrics and gynecology, general surgery, and orthopedic surgery); 78% versus 60% ($P = .025$).

errors compared with surgical residents (78% [76 of 98] versus 60% [30 of 50], $P = .025$).

Resident Preference for Faculty Involvement in Error Disclosure by Error Type, Severity, and Proximity

For all errors, irrespective of error type or severity, more than 90% of the residents wanted to have direct involvement in the error disclosure process. Their preference, however, for the level of faculty involvement varied by type of error (TABLE 2). Specifically, for diagnostic and management errors, residents were

more likely to seek faculty involvement in disclosing the error, whereas for prescribing and communication errors, residents were more likely to feel comfortable disclosing the error independently without direct faculty supervision. Subgroup analysis revealed that surgical residents were more likely to prefer a faculty-led approach to error disclosure than medical residents for management, prescribing, and procedural type errors. Senior residents were more comfortable independently disclosing all error types except for communication errors.

Residents' preference for faculty involvement in an error disclosure also varied by error severity (TABLE 2). For severe life-threatening errors, residents were significantly more likely to have faculty lead the disclosure (61%, 106 of 173), although 38% (65 of 173) of respondents indicated that they still wanted to participate in the discussion with faculty support, and senior residents had a stronger preference for a resident-led approach with faculty involvement than junior residents. For minor errors, residents preferred a resident-led approach, with 47% (81 of 173) specifying that they would be comfortable leading the conversation independently without direct supervision. Finally, for errors where residents felt most responsible, 95% of residents (164 of 173) preferred a resident-independent or resident-led approach, which was significantly higher than for errors where another resident (64%, 111 of 173) or another health professional (65%, 112 of 173) was primarily responsible ($P < .001$).

Types of Faculty Support Preferred by Residents Surrounding an Error Disclosure

We explored the types of faculty support residents preferred in the period leading up to and following an error disclosure encounter. Before disclosing an error, residents were significantly more likely to seek faculty advice on how to manage consequences, and less likely to seek faculty advice on how to explain facts and make an apology (FIGURE 1A). After an error disclosure has taken place, residents reported that the most important way faculty could support residents was to provide feedback (FIGURE 1B).

Discussion

Our study confirms results of prior studies demonstrating that the majority of residents have personally disclosed medical errors to patients and families and have received formal training in how to carry out disclosure conversations effectively. Importantly, most residents wanted to participate directly in error disclosure conversations. However, residents' desired levels of faculty involvement in error disclosure

TABLE 2

Residents' Preferred Role in Error Disclosure Discussions by Error Type, Severity, and Proximity

Error Characteristic	Resident Led Without Direct Supervision, n (%)	Resident Led With Faculty Involvement, n (%)	Faculty Led, n (%)	P Value
Type				< .001
Diagnostic ^a	16 (9) ^b	108 (61)	52 (30) ^b	
Management ^{a,c}	24 (14) ^b	108 (61)	44 (25)	
Prescribing ^{a,c}	72 (41) ^b	85 (48)	19 (11) ^b	
Procedural ^{a,c}	37 (21)	99 (56)	40 (23)	
Communication	81 (46) ^b	71 (40) ^b	24 (14)	
Severity				< .001
Severe ^d	2 (1)	65 (38)	106 (61)	
Minor	81 (47)	80 (46)	12 (7)	
Proximity				< .001
Resident feels most responsible	51 (29) ^b	113 (65) ^b	9 (5) ^b	
Another resident most responsible	27 (16)	84 (49)	62 (36) ^b	
Another health professional most responsible	37 (21)	75 (43) ^b	61 (35) ^b	

Abbreviation: PGY, postgraduate year.

^a For diagnostic, management, prescribing, and procedural type errors, subgroup analysis revealed that senior residents (PGY-3 through PGY-5) were more likely to prefer a resident independent approach to error disclosure than junior residents (PGY-1 and PGY-2; P value < .001 to .044).

^b After applying Bonferroni correction ($P = .05/15$ subgroups $\rightarrow P = .003$), these table cells represent statistically significant differences in frequency distribution.

^c For management, prescribing, and procedural type errors, subgroup analysis revealed that surgical residents (obstetrics and gynecology, general surgery, and orthopedic surgery) were more likely to prefer a faculty-led approach to error disclosure than medical residents (internal medicine, pediatrics, and emergency medicine; P value .01–.04).

^d For severe errors, senior residents (PGY-3 through PGY-5) were more likely to prefer a resident-led approach with faculty involvement than junior residents (PGY-1 and PGY-2), who were more likely to prefer a faculty-led approach ($P = .002$).

conversations varied by error type and severity, with greater faculty involvement sought for diagnostic and management errors as well as for life-threatening errors.

Medical residents were more likely to disclose errors without direct faculty involvement than surgical residents. This may relate to the fact that a larger proportion of medical residents had prior experience disclosing errors to patients (78% versus 60%). However, there may be other differences in training culture, faculty expectation, or organizational processes in medical versus surgical programs that influence how residents view their role relative to faculty in the error disclosure process. A survey of surgical and nonsurgical residents suggested that punitive responses to error by senior members of the health care team might impede transparent disclosure of errors, with surgical residents disproportionately affected.³

These findings help to inform faculty development efforts to support error disclosure training. Whereas residents strongly value many aspects of faculty guidance and support before and after an error disclosure conversation, certain aspects (eg, describing how to manage consequences of the error, explaining how to prevent future errors) were seen by residents as particularly relevant and warrant specific attention.

Studies exploring the patient's perspective on error disclosure have also highlighted these elements as being particularly important.¹² Evaluations of resident error disclosure skills have consistently identified the need to develop skills to prevent future errors.^{1,13}

Residents responded that they highly valued receiving feedback from faculty about the disclosure process. This lends further credence to our prior research that identified informal learning in the clinical setting as critical to the development of error disclosure skills in residency.¹ This finding is also consistent with the increased focus on formative feedback in graduate medical education and the implementation of competency-based medical education.¹⁴ While residents may seek autonomy and, at times, disclose errors independently without direct supervision, they must also recognize the importance of "getting it right." Therefore, it is imperative for faculty to directly observe residents when they disclose errors and provide them with coaching and feedback. Given the high stakes surrounding medical errors, it is also critical to develop guiding principles regarding direct observation and assessment to inform entrustment decisions related to error disclosure.

(% Responding Important/Very Important, N = 192)

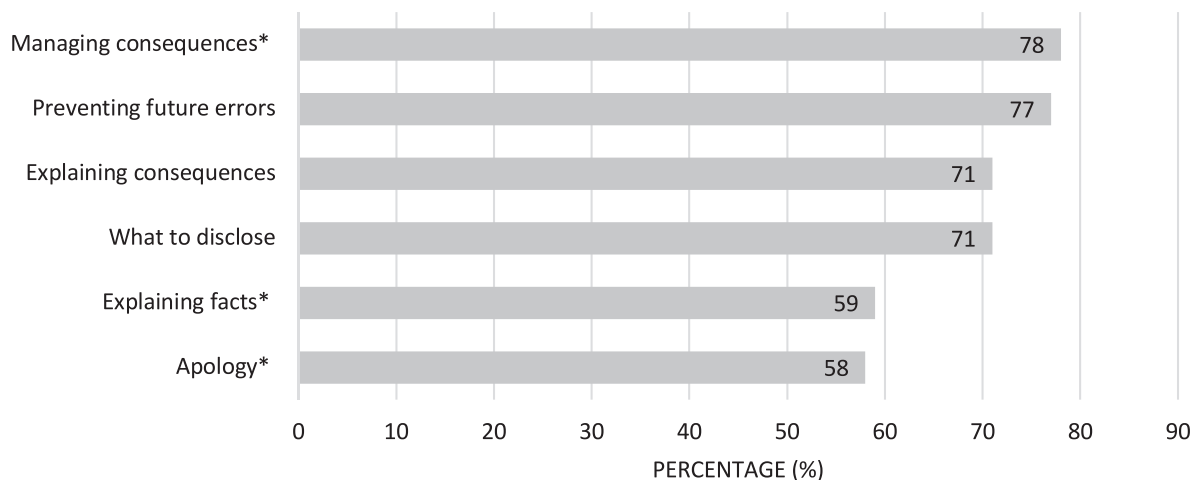


FIGURE 1A
Desired Faculty Guidance to Prepare for Error Disclosure

* After applying Bonferroni correction, $P = .05$ for 6 subgroups $\rightarrow P = .008$. These rows represent statistically significant differences in frequency distribution, with a higher proportion of residents seeking faculty guidance on how to manage consequences ($P = .004$), and a lower proportion of residents seeking faculty guidance on how to explain facts ($P = .002$) or make an apology ($P = .001$).

This study is limited by a moderate response rate (36%), and our findings may not be fully representative. We also did not include certain disciplines in our study (eg, family medicine, anesthesiology, or neurological surgery). The self-reported nature of our data means that our findings center primarily on perceived needs. Although we found no differences in residents seeking personal support from their faculty, the survey may not have adequately

addressed this topic, as faculty may play an important role in helping residents cope with the negative feelings of being involved in medical error.¹⁵ While our findings provide an important lens to inform curriculum design and faculty development efforts, programs should combine them with needs assessment data that reflect the local training environment. Future research should emphasize how best to deliver feedback to residents and

(% Responding Important/Very Important, N = 192)

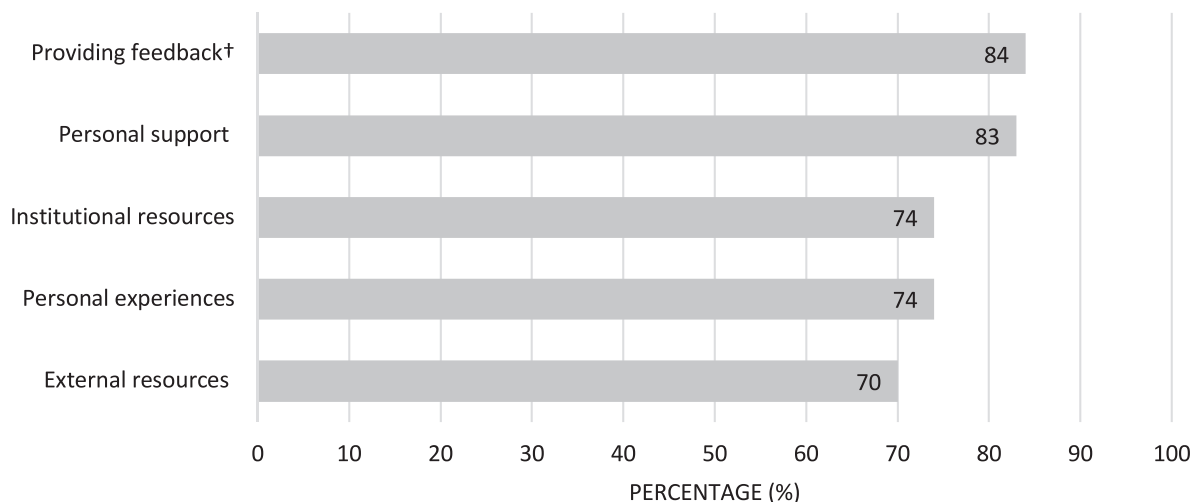


FIGURE 1B
Desired Faculty Support Surrounding an Error Disclosure

† After applying Bonferroni correction, $P = .05$ for 5 subgroups $\rightarrow P = .01$. There was a higher proportion of residents desiring feedback from their faculty ($P = .009$). There was also a trend toward a higher proportion of residents desiring personal support from their faculty ($P = .05$) surrounding an error disclosure.

focus on establishing criteria to guide entrustment decisions with respect to error disclosure.

Conclusion

Residents are willing participants in the error disclosure process but have specific preferences for faculty involvement and support. These findings can inform faculty development to ensure appropriate support and supervision for residents when disclosing errors to patients.

References

1. Wong BM, Coffey M, Nousiainen MT, et al. Learning through experience: influence of formal and informal training on medical error disclosure skills in residents. *J Grad Med Educ.* 2017;9(1):66–72.
2. Martinez W, Hickson GB, Miller BM, et al. Role-modeling and medical error disclosure: a national survey of trainees. *Acad Med.* 2014;89(3):482–489.
3. Martinez W, Lehmann LS. The “hidden curriculum” and residents’ attitudes about medical error disclosure: comparison of surgical and nonsurgical residents. *J Am Coll Surg.* 2013;217(6):1145–1150.
4. Varjavand N, Bachegowda LS, Gracely E, et al. Changes in intern attitudes toward medical error and disclosure. *Med Educ.* 2012;46(7):668–677.
5. White AA, Bell SK, Krauss MJ, et al. How trainees would disclose medical errors: educational implications for training programmes. *Med Educ.* 2011;45(4):372–380.
6. Kaldjian LC, Jones EW, Wu BJ, et al. Disclosing medical errors to patients: attitudes and practices of physicians and trainees. *J Gen Intern Med.* 2007;22(7):988–996.
7. Stroud L, Wong BM, Hollenberg E, et al. Teaching medical error disclosure to physicians-in-training: a scoping review. *Acad Med.* 2013;88(6):884–892.
8. Sullivan GM. A primer on the validity of assessment instruments. *J Grad Med Educ.* 2011;3(2):119–120.
9. Reason J. Human error: models and management. *BMJ.* 2000;320(7237):768–770.
10. White AA, Gallagher TH, Krauss MJ, et al. The attitudes and experiences of trainees regarding disclosing medical errors to patients. *Acad Med.* 2008;83(3):250–256.
11. Gallagher TH, Mello MM, Levinson W, et al. Talking with patients about other clinicians’ errors. *N Engl J Med.* 2013;369(18):1752–1757.
12. Gallagher TH, Waterman AD, Ebers AG, et al. Patients’ and physicians’ attitudes regarding the disclosure of medical errors. *JAMA.* 2003;289(8):1001–1007.
13. Stroud L, McIlroy J, Levinson W. Skills of internal medicine residents in disclosing medical errors: a study using standardized patients. *Acad Med.* 2009;84(12):1803–1808.
14. Holmboe ES, Sherbino J, Long DM, et al. The role of assessment in competency-based medical education. *Med Teach.* 2010;32(8):676–682.
15. Wu AW. Medical error: the second victim. The doctor who makes the mistake needs help too. *BMJ.* 2000;320:726–727.



All authors are with the University of Toronto, Ontario, Canada. **Narendra Singh, MD**, is a Resident, Division of Endocrinology & Metabolism, Department of Medicine; **Brian M. Wong, MD**, is Associate Professor of Medicine, Department of Medicine, and Associate Director, Centre for Patient Safety; and **Lynfa Stroud, MD, MEd**, is Associate Professor, Department of Medicine, and Centre Researcher, Wilson Centre.

Funding: This study was supported by the Department of Medicine, University of Toronto.

Conflict of interest: The authors declare they have no competing interests.

The authors would like to thank Ms Lisa St Amant, for her help as a research assistant, and Dr Kulamakan Kulasegaram, for his statistical advisement on this project.

Corresponding author: Narendra Singh, MD, Women’s College Hospital, Department of Endocrinology & Metabolism, 3rd Floor, 76 Grenville Street, Toronto ON M5S 1B2 Canada, 416.323.6013, narendra.singh@medportal.ca

Received September 27, 2017; revision received January 24, 2018; accepted March 14, 2018.