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# Error Disclosure Training and Organizational Culture

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and Eric J. Thomas

## Abstract

**Objective.** Our primary objective was to determine whether, after training was offered to participants, those who indicated they had received error disclosure training previously were more likely to disclose a hypothetical error and have more positive perceptions of their organizational culture pertaining to error disclosure, safety, and teamwork.

**Methods.** Across a 3-year span, all clinical faculty from six health institutions (four medical schools, one cancer center, and one health science center) in The University of Texas System were offered the opportunity to anonymously complete an electronic survey focused on measuring error disclosure culture, safety culture, teamwork culture, and intention to disclose a hypothetical error at two time points - both before (baseline) and after (follow-up) disclosure training was conducted for a subset of faculty.

**Results.** There were significant improvements (all p-values < .05) in the follow-up surveys compared with the baseline surveys for the following domains (percent refers to percent positives before and after, respectively): minor error disclosure culture (33 percent vs. 52 percent), serious error disclosure (53 percent vs. 70 percent), safety culture (50 percent vs. 63 percent), and teamwork culture (62 percent vs. 73 percent). Follow-up survey data revealed significant differences (all p-values < .001) between faculty who had previously received any error disclosure training (n = 472) and those who had not (n = 599). Specifically, we found significant differences in culture (all p-values < .001) between those who received any error disclosure training and those who did not for all culture domains: minor error disclosure (61 percent vs. 41 percent), serious error disclosure (79 percent vs. 58 percent), trust-based error disclosure (61 percent vs. 51 percent), safety (73 percent vs. 51 percent), and teamwork (78 percent vs. 66 percent). Significant differences also existed for intent to disclose an error (t = 4.1, p < .05). We also found that error disclosure culture was significantly associated with intent to disclose for those who received previous error disclosure training, whereas all types of culture we measured were significantly associated with intent to disclose for those who did not receive error disclosure training.

**Conclusions.** Error disclosure, teamwork, and safety culture all improved over a 3-year period during which disclosure training was provided to key faculty in these six institutions. Self-reported likelihood to disclose errors also improved. The precise impact of the training on these improvements cannot be determined from this study; nevertheless, we present an approach to measuring error disclosure culture and providing training that may be useful to other institutions.

## Introduction

Informing patients about medical errors will continue to be necessary, given that no foreseeable improvement in health care delivery will eliminate all errors that seriously harm patients. Patients want to know about medical errors, with virtually all patients wanting to know about errors that directly harm them.<sup>1,2</sup> Although disclosing an error and its consequences to a patient can be challenging, the benefits of disclosing errors to patients and institutions are multiple.<sup>3</sup> First, some errors have important consequences for patients' health, and knowing about such errors can help patients make more informed health care choices. Second, disclosing errors preserves the trust fundamental to the doctor-patient relationship. Third, disclosing errors allows patients to communicate what information, compensation, or services they need to cope with the consequences of the error. Good disclosures can also involve soliciting patients' perceptions of what caused the adverse event, thereby helping organizations to learn and improve.<sup>4</sup> When organizations have a two-way dialogue with patients/family members about errors and subsequently learn from patients/family members about additional causes of errors, the organization is in a better position to develop patient safety-focused interventions to address the root causes of errors.

On the other hand, a minority of patients report that they have been told about errors in their care,<sup>5</sup> and physicians report disclosing events in around 25 percent of the cases.<sup>6,7</sup> One reason that physicians do not disclose errors is because they lack the training that would help them to provide effective disclosures.<sup>8</sup> The conflict between patients' needs and actual disclosure practices of physicians creates a tension that needs to be addressed. One possible way to address this tension is by training physicians to disclose errors to patients and family members.<sup>3</sup>

A factor that has been linked with the effectiveness of training in general is organizational culture. Organizational culture refers to the shared beliefs from those working together about how work gets accomplished.<sup>9,10,11</sup> Health services researchers have focused on understanding several types of cultures in health care settings, notably safety culture and teamwork culture.<sup>9,10,11</sup> Organizational culture has been identified as an important factor in the extent to which training is effectively transferred from the training setting to the workplace setting.<sup>12,13</sup> Specifically, units in an organization that have a positive safety culture may be more likely to foster opportunities for physicians to use knowledge and skills learned in training programs in the workplace, while units with neutral or negative safety cultures may be less likely to provide the same opportunities to transfer such training to the workplace. We have previously examined organizational culture as it pertains to error disclosure (herein error disclosure culture) and in so doing focused on three main types of culture: trust-based error disclosure culture, minor error (i.e., error that causes harm that is neither permanent nor life-threatening) disclosure culture, and serious error (i.e., error that causes permanent injury or transient but potentially life-threatening harm) disclosure culture.

According to the research to date, error disclosure training has been shown to improve medical students' self-efficacy in disclosing errors,<sup>14</sup> with similar findings for residents<sup>15,16,17</sup> and more experienced physicians.<sup>18</sup> Despite increased attention to error disclosure nationally, less is known about the relationship among training, perceptions of organizational culture, and intent to disclose future errors. We sought to address this gap in two ways. First, we extended our previous work<sup>19</sup> on the creation and validation of a survey to measure error disclosure culture

by investigating whether those who reported receiving error disclosure training were more likely to disclose a hypothetical error and perceive important aspects of their organizational culture—namely error disclosure, safety, and teamwork culture—in a more positive way. Second, we compared culture scores before and after error disclosure training was offered to faculty.

## Methods

### Participants

We sent surveys to all clinical faculty from six health institutions (four medical schools, one cancer center, and one health science center) in The University of Texas (UT) System two times – in 2010 before offering error disclosure training<sup>19</sup> and in 2013 after error disclosure training was provided (herein referred to as baseline and follow-up, respectively). A consulting firm experienced in disclosure training was hired to provide training to key leaders in the six UT System health campuses. At each site, they provided an institution-wide grand rounds followed by a training session for a small group of key faculty. Clinical faculty included nurses and physicians. Managers or administrators who were not clinical faculty attended training, but they were not surveyed unless they were also clinical faculty. Leadership of the hospitals and medical schools selected participants, and participation was voluntary. Participants were chosen based on their clinical experience, type of clinical experience, and expected ability to serve as resources for their colleagues.

The training included lectures that presented relevant information, video clips of disclosure conversations, and opportunities for role-playing, followed by feedback. This was a “train-the-trainer” approach in which the attendees learned about disclosure coaching and were expected to provide additional training and support to other faculty. Grand rounds attendance ranged from 70-150 at each site and disclosure training attendance ranged from 15–43 participants per session, which was 6 hours in duration. The curriculum included a review of the institution’s own culture survey results before the training, practice of coaching strategies based on reviews and discussion of video-recorded cases and live simulations, care for the caregiver after an event, review of recent cases from the institution, and creation of a sustainable disclosure culture. Institutional review board (IRB) approval was obtained prior to initiating data collection.

We sent all clinical faculty (approximately 5,000 individuals) from these institutions an email with a link to an anonymous, electronic survey once a week for 4 weeks. For the baseline sample, 496 faculty members completed the survey, resulting in a response rate of 9.9 percent. In order to increase the response rate, we offered all participants in the follow-up survey administration an incentive (either \$20 or \$40 depending on the site) for completing our survey. In all, 1,217 participants completed the follow-up survey, resulting in a response rate of 22 percent. We asked participants if they received error disclosure training, but we did not specify that they needed to have received the training we offered, so we cannot be certain that everyone received training from us. Participation was anonymous, and we did not collect identifying information from participants during either the baseline or follow-up surveys.

## Measures

We measured error disclosure culture, safety culture, teamwork culture, intent to disclose a hypothetical error, and demographics in our survey. The error disclosure culture survey items were from a previous study we conducted<sup>19</sup> where we found that clinical faculty were significantly more likely to indicate agreement with disclosure of serious errors as opposed to minor errors. Yet, patients expect truthful information about minor harmful errors, and organizations may benefit from committing to quality improvements (part of a full disclosure process) following the relatively greater number of minor events compared to serious errors. Therefore, in this study we examined these constructs separately, with four items focused on minor error disclosure as one construct and four items focused on serious error disclosure as a separate construct. We also examined error disclosure trust culture with two items focused on losing patient and peer trust in one's competence as a result of disclosing medical errors.

The safety and teamwork culture items (seven items for each scale) come from the Safety Attitudes Questionnaire,<sup>10</sup> although the first teamwork item was created for this study. All culture survey items were measured on a 5-point Likert-type scale, where 1 = disagree strongly and 5 = agree strongly. Each participant was asked to read a hypothetical scenario depicting a ten-fold medication overdose of insulin where the patient was unresponsive but expected to make a full recovery; the participant was then asked "How likely would you be to disclose this error to the patient?" with response options ranging from 1 = I would definitely not disclose this error to 4 = I would definitely disclose this error. Table 1 presents all of the items we measured in this study.

## Statistical Analysis

In addition to examining demographics, we conducted several analyses. We examined the percent positive scores for error disclosure, safety, and teamwork culture for each of the six institutions and overall across the system. Percent positive scores represent the percent of participants who averaged at least a 4 (i.e., agree slightly) on their Likert-type responses to all of the items that measure a specific type of culture. These scores are routinely used in culture measurement when providing feedback to organizations because they allow organizations to see variability between units so they know where to focus their improvement efforts. A general guideline is that percent positive scores of 60 or less indicate areas in need of immediate attention, those between 61 and 79 as needing improvement, and those at 80 or above reflecting strengths of the organization. We used t-tests to determine whether significant differences existed between those in the baseline dataset and follow-up dataset to address our secondary objective. We compared culture perceptions between baseline and follow-up surveys by examining percent positive scores for each type of culture. Further, we examined associations between culture perceptions and intent to disclose a hypothetical error for those who reported on the follow-up survey that they received prior error disclosure training and those who did not.

**Table 1. Descriptive Statistics for Constructs and Items**

<b>Construct</b>	<b>Item</b>	<b>Mean (sd) – No training</b>	<b>Mean (sd) – Training</b>	<b>t-test value</b>
<b>Minor Error Disclosure Culture (<math>\alpha = .81</math>)</b>				
	1. We routinely disclose MINOR ERRORS to patients/families in my clinical area.	3.89 (1.19)	4.14 (1.11)	3.6*
	2. The culture in my clinical area makes it easy to disclose MINOR ERRORS.	3.68 (1.21)	4.07 (1.12)	5.4*
	3. I am encouraged by my colleagues to disclose MINOR ERRORS to patients/families.	3.37 (1.13)	3.82 (1.17)	6.3*
	4. I am encouraged by hospital leadership to disclose MINOR ERRORS to patients/families.	3.35 (1.12)	3.93 (1.10)	8.5*
<b>Serious Error Disclosure Culture (<math>\alpha = .79</math>)</b>				
	1. We routinely disclose SERIOUS ERRORS to patients/families in my clinical area.	4.46 (.99)	4.69 (.75)	4.5*
	2. The culture in my clinical area makes it easy to disclose SERIOUS ERRORS.	3.69 (1.27)	4.14 (1.14)	6.1*
	3. I am encouraged by my colleagues to disclose SERIOUS ERRORS to patients/families.	3.86 (1.14)	4.30 (1.03)	6.6*
	4. I am encouraged by hospital leadership to disclose SERIOUS ERRORS to patients/families.	3.65 (1.22)	4.33 (1.01)	9.9*
<b>Error Disclosure Culture Trust (<math>\alpha = .80</math>)</b>				
	1. Disclosing a MEDICAL ERROR in my clinical area damages patient's trust in my competence. <sup>f</sup>	3.55 (1.26)	3.75 (1.29)	2.5*
	2. Disclosing a MEDICAL ERROR in my clinical area damages peer's trust in my competence. <sup>f</sup>	3.62 (1.24)	3.78 (1.25)	2.1*

**Table 1. Descriptive statistics for constructs and items (continued)**

<b>Construct</b>	<b>Item</b>	<b>Mean (sd) – No training</b>	<b>Mean (sd) – Training</b>	<b>t-test value</b>
Safety Culture ( $\alpha = .83$ )		3.89 (.76)	4.24 (.73)	6.4*
	1. I would feel safe being treated in this clinical area as a patient.	4.39 (.97)	4.45 (.97)	0.86 <sup>ϕ</sup>
	2. Medical errors are handled appropriately in this clinical area.	4.11 (.95)	4.42 (.88)	4.8*
	3. I know the proper channels to direct questions regarding patient safety in this clinical area.	4.02 (1.11)	4.50 (.83)	6.7*
	4. I receive appropriate feedback about my performance.	3.61 (1.20)	3.96 (1.18)	4.0*
	5. In this clinical area, it is difficult to discuss medical errors.	3.73 (1.18)	3.95 (1.25)	2.5*
	6. I am encouraged by my colleagues to report any patient safety concerns I may have.	3.77 (1.14)	4.32 (.97)	7.4*
	7. The culture in this clinical area makes it easy to learn from the errors of others.	3.62 (1.24)	4.08 (1.14)	5.4*
Teamwork Culture ( $\alpha = .83$ )		4.14 (.73)	4.34 (.68)	3.9*
	1. Patient and family input is well received in this clinical area.	4.37 (.91)	4.57 (.69)	3.5*
	2. Non-physician staff input is well received in this clinical area.	4.33 (.92)	4.50 (.76)	2.7*
	3. In this clinical area, it is difficult to speak up if I perceive a problem with patient care.	3.87 (1.29)	4.02 (1.33)	1.6 <sup>ϕ</sup>
	4. Disagreements in this clinical area are resolved appropriately (not who is right, but what is best for patient).	3.90 (1.16)	4.19 (1.08)	3.6*
	5. I have the support I need from other personnel to care for patients.	4.00 (1.19)	4.25 (1.05)	3.1*
	6. It is easy for personnel here to ask questions when there is something that they do not understand.	4.27 (.95)	4.47 (.83)	3.1*
	7. The physicians and nurses in this clinical area work together as a well-coordinated team.	4.26 (1.01)	4.41 (.91)	2.2*
Intent To Disclose a Hypothetical Error		3.70 (.56)	3.84 (.49)	4.1*

Note: † refers to items that were reverse coded. \* refers to t-tests significant at  $p < .05$ . <sup>ϕ</sup> refers to a non-significant t-test value.

## Results

We previously published demographics for the baseline survey,<sup>19</sup> and those demographics are similar to demographics for the follow-up survey participants (Table 2). As seen in Table 2, of all respondents in the follow-up survey administration, 472 participants (44 percent) indicated they had not previously received error disclosure training, and 599 participants (56 percent) reported having received such training; 10 participants did not provide information on prior training and were excluded from our analyses. Also, both groups (those who did not receive training and those who did) were mostly physicians (70 percent for “no training” group; 72 percent for “training” group), male (57 percent in both groups), practicing in either Internal Medicine (25 percent for both groups) or Surgery (16 percent and 14 percent, respectively), had 5 years or more experience (78 percent and 74 percent, respectively, for “no training” and “training” groups), and spent 51 percent or more of their time in clinic (80 percent and 71 percent, respectively).

Table 3 includes percent positive scores for each type of culture by institution and overall across all institutions. To address our first objective, we compared whether culture scores were significantly higher in the follow-up than baseline surveys. Minor error disclosure culture was significantly higher in the follow-up surveys than in the baseline surveys for all institutions and overall, with percent positive scores overall being 33 percent and 52 percent for baseline and follow-up, respectively ( $p < .05$ ). Four of the six institutions had significantly higher percent positive scores for serious error disclosure culture, with overall scores improving from 53 percent to 70 percent. Although error disclosure culture trust did not show significant increases for any of the institutions or overall (58 percent and 56 percent, respectively), safety culture improved overall from 50 percent to 63 percent ( $p < .05$ ), and teamwork culture improved from 62 percent to 73 percent ( $p < .05$ ).

In examining the follow-up survey data only, we computed Cronbach’s alpha for each of the key constructs, descriptive statistics for the constructs and survey items, and t-test and corresponding p-values comparing those who received training and those who did not (Table 4). The constructs and all but two items were significantly higher for those who received training. Table 5 contains correlational results between the different types of culture we measured and intent to disclose a hypothetical error. For those who did not receive training, all types of culture and intent to disclose were significantly correlated with each other. In contrast, for those who received training, minor, serious, and trust error disclosure were associated with intent to disclose, but safety and teamwork cultures were not (Table 5).

**Table 2. Demographics**

	No Training (n = 472)	Training (n = 599)
<b>Profession</b>		
MD	331 (70%)	432 (72%)
RN	5 (1%)	4 (1%)
Other	26 (6%)	26 (4%)
Missing	110 (23%)	137 (23%)
<b>Gender</b>		
Female	189 (40%)	235 (39%)
Male	269 (57%)	343 (57%)
Missing	14 (3%)	21 (4%)
<b>Specialty</b>		
Internal Medicine	120 (25%)	151 (25%)
Surgery	76 (16%)	83 (14%)
<b>Years in Specialty</b>		
5 years or more	366 (78%)	445 (74%)
<b>Time Spent in Clinic</b>		
51% or more	376 (80%)	423 (71%)

## Discussion

The results from our study highlight the potential importance of error disclosure training, given the association between different types of culture and intent to disclose errors. The improvements in minor error disclosure culture and serious error disclosure culture observed between baseline and follow-up point to an interesting association between culture and training. While we cannot infer from these results that training caused the improved perceptions of culture, it is possible that merely offering training to faculty signifies to them the importance of the topic that is the focus of training (i.e., error disclosure), and this in turn influences more positive perceptions of culture. Further, disclosure training might have benefits for the individuals attending training because it allows them to improve their disclosure skills. Organizations might also benefit from such training via effects from “train the trainer” programs that also enhance other’s perceptions of culture.

For those who received training, error disclosure culture played a more important role in explaining whether they intended to disclose an error as compared to safety and teamwork culture. In contrast, all types of culture played a role for those who had not received training. This suggests that perceptions of error disclosure and intent to disclose an error are more closely aligned in those who received specific training on error disclosure. The percent positive scores for the two types of participants revealed higher percentages for those who received training, with the percent positives dramatically higher for the error disclosure items focused on minor errors and serious errors.

**Table 3. Percent Positive Culture Scores Pre- and Post-training Across Sites**

	Institution A		Institution B		Institution C		Institution D		Institution E		Institution F		Overall	
	Pre train (n = 125)	Post train (n = 194)	Pre train (n = 63)	Post train (n = 226)	Pre train (n = 102)	Post train (n = 292)	Pre train (n = 99)	Post train (n = 159)	Pre train (n = 66)	Post train (n = 178)	Pre train (n = 41)	Post train (n = 32)	Pre train (n = 496)	Post train (n = 1081)
Jason														
Minor Error Disclosure Culture	35	48*	46	59*	25	50*	27	51*	35	50*	44	74*	33	52*
Serious Error Disclosure Culture	51	64*	67	73	50	72*	49	69*	48	69*	61	77	53	70*
Error Disclosure Trust Culture	57	48	60	59	60	57	65	60	50	58	54	59	58	56
Safety Culture	46	57	65	68	44	NA	47	64*	49	61	56	76	50	63*
Teamwork Culture	58	69*	73	73	57	NA	57	76*	61	72	85	81	62	73*

Note: NA = Institution C opted to not survey providers about safety culture and teamwork culture; \* denotes significant difference between pre- and post-training at  $p < .05$

**Table 4. Percent Positive Scores for Culture Constructs**

<b>Construct</b>	<b>No Training (n = 472)</b>	<b>Training (n = 599)</b>	<b>p-value</b>
Error Disclosure Minor	41%	61%	< .001
Error Disclosure Serious	58%	79%	< .001
Error Disclosure Trust	51%	61%	< .001
Safety Culture	51%	73%	< .001
Teamwork Culture	66%	78%	< .001

Note: While 1,217 participants completed part/all of the survey in the follow-up administration, not specifying whether training was received (n=10) and providing incomplete survey responses (n=136) resulted in a usable sample size lower than 1,217.

There are two notable implications from this study. First, those who were trained perceived their work environment in a more positive way. This finding suggests the content of the training was important (as evidenced by the higher error disclosure culture scores), the focus on openly discussing errors (which is vital to having positive safety and teamwork cultures), and intent to disclose an error. Second, this study shows that developing a culture that embraces disclosing minor errors might be more difficult to accomplish than one focused on serious errors. While our findings were higher than previous research indicating agreement (around 50 percent) about whether minor errors and serious errors should be disclosed,<sup>3</sup> the percentage of faculty perceiving a culture conducive to disclosing minor errors is still lower than serious errors, suggesting that clinicians are even less likely to meet patients' expectations after minor harm. Clinicians may worry that damage to their relationship with the patient may outweigh the benefit to the patient of knowing about minor harm. Greater educational emphasis may be needed to help physicians and institutions fully support disclosing minor errors. Leadership will play a central role in helping make this initiative an important part of an organization's culture.

It would be beneficial in the future to link culture survey responses with additional outcomes, such as assessments of disclosure quality. In other words, do higher scores on disclosure quality correlate with higher scores on safety, teamwork, or disclosure culture scales? Further, longitudinal studies linking more positive error disclosure cultures with better outcomes from increased quality improvement initiatives would help build knowledge in this area.

**Table 5. Correlations Between Key Constructs for Those Not Receiving Previous Error Disclosure Training**

<b>Construct</b>	<b>Minor Error Disclosure</b>	<b>Serious Error Disclosure</b>	<b>Error Disclosure Trust</b>	<b>Safety Culture</b>	<b>Teamwork Culture</b>	<b>Intent To Disclose</b>
Minor Error Disclosure	-	.62	.16	.61	.49	.10
Serious Error Disclosure	.65	-	.12	.65	.54	.20
Error Disclosure Trust	.22	.23	-	.13	.13	.16
Safety Culture	.48	.54	.23	-	.77	.08 (ns)
Teamwork Culture	.48	.43	.17	.70	-	.07 (ns)
Intent to Disclose	.19	.26	.17	.21	.19	-

Note: Correlations above diagonal are for participants who received training while below diagonal correlations are for patients who did not receive training. All correlations significant at  $p < .05$  unless noted by ns (where ns means non-significant).

## Limitations

There are several limitations to this study. First, while we expect that clinical faculty should know whether they received training in how to disclose errors, we do not have independent confirmation that they actually received training. Despite the fact that participation in training was a self-reported measure, it was likely a memorable event and one that participants should therefore remember. Second, for those clinical faculty members who indicated that they received training, we do not know if they attended the training offered as part of this study or received it in some other way. While the results reported here were collected after error disclosure training was offered to clinical faculty, it would be scientifically and methodologically stronger to offer training via a randomized design to better understand the role that training plays in changing physician perceptions. Relatedly, our methodology would have been stronger if we linked participants with their baseline and follow-up surveys. Third, those who reported receiving previous training might be different from those who did not receive previous training. For example, those previously attending training might have more positive perceptions of culture and a higher propensity to disclose an error. Fourth, our response rate was lower than we expected, especially given that we had incentives for participants. Fifth, our results represent perceptions of clinical faculty from one university system and might not be generalizable to other settings.

## Conclusion

In summary, several different culture measures are sensitive to differences between those participants who received training in disclosing errors and those who did not. Incorporating error disclosure training into medical schools and/or as part of physician continuing education might be an important step towards addressing the tension between patients' need for error disclosure and physicians' reluctance to disclose errors. Such training also might have a positive association with different types of organizational culture, including safety, teamwork, and disclosure cultures, which could also have a positive impact on patient safety.

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