Wisdom in Medicine: What Helps Physicians After a Medical Error?

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Abstract

Purpose
Confronting medical error openly is critical to organizational learning, but less is known about what helps individual clinicians learn and adapt positively after making a harmful mistake. Understanding what factors help doctors gain wisdom can inform educational and peer support programs, and may facilitate the development of specific tools to assist doctors after harmful errors occur.

Method
Using "posttraumatic growth" as a model, the authors conducted semistructured interviews (2009–2011) with 61 physicians who had made a serious medical error. Interviews were recorded, professionally transcribed, and coded by two study team members (kappa 0.8) using principles of grounded theory and NVivo software. Coders also scored interviewees as wisdom exemplars or nonexemplars based on Ardelt's three-dimensional wisdom model.

Results
Of the 61 physicians interviewed, 33 (54%) were male, and on average, eight years had elapsed since the error. Wisdom exemplars were more likely to report disclosing the error to the patient/family (69%) than nonexemplars (38%); $P < .03$. Fewer than 10% of all participants reported receiving disclosure training. Investigators identified eight themes reflecting what helped physician wisdom exemplars cope positively: talking about it, disclosure and apology, forgiveness, a moral context, dealing with imperfection, learning/becoming an expert, preventing recurrences/improving teamwork, and helping others/teaching.

Conclusions
The path forged by doctors who coped well with medical error highlights specific ways to help clinicians move through this difficult experience so that they avoid devastating professional outcomes and have the best chance of not just recovery but positive growth.

> We don't receive wisdom, we must discover it for ourselves after a journey that no one can take for us or spare us.
> —Proust[1]

Despite sincere efforts to improve patient safety, physicians still make mistakes.[2–4] While the patient safety movement has emphasized a systems approach to preventing predictable aspects of human factor error,[5–7] acknowledging "the imperfect doctor" has been a challenging cultural shift. Handling physician error transparently and promoting open communication after a mistake has occurred is critical to organizational learning.[8] The same approach may also be central to promoting the individual clinician's learning and growth following a harmful medical error.

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Since Hilfiker's[9,10] courageous account of making a mistake, the discussion of medical errors and their impact has focused largely on disclosure to patients and supporting providers as they cope with the error.[11–20] The literature provides apt descriptions of the detrimental effects of harmful errors,[15,21] which may include depression, anxiety, professional burnout, leaving practice, or even suicidal ideation.[22–25] Given such a high cost to the profession, the growth of peer support programs throughout the United States is not surprising.[26–28] Still, while health care institutions are increasingly recognizing the physician as the "second victim" of medical error,[11] less attention has focused on how to frame postevent learning in a positive, rather than "coping" or "surviving," framework. Recent research in psychology suggests that trauma can be a catalyst not just for learning but for major growth and perhaps even wisdom.[29,30] "Posttraumatic growth," as described by researchers Tedeschi and Calhoun,[29,30] is an alternative to either posttraumatic stress or simple recovery. It occurs when people coping with a traumatic event move through a process of rumination and, with self-disclosure and the right social supports, are able to rework their understanding of themselves, learning and growing in the process. Tedeschi and Calhoun[29,30] postulate that the outcome of posttraumatic growth is wisdom. We wondered whether posttraumatic growth could apply to medical error.

Despite its implicit role in training programs, wisdom is not routinely discussed in medicine.[31] Ardelt's[32] three-dimensional wisdom model describes wisdom as the integration of cognitive, compassionate, and reflective components. A wise physician is one who can comprehend the deeper meaning of the interpersonal and intrapersonal aspects of life, tolerate ambiguity and uncertainty, and understand the limits of his/her knowledge. Wisdom also encompasses the capacity for compassion and empathy, the ability to see situations and phenomena from many different perspectives, and the practice of self-reflection.[33–35] Although the experience of medical error can be devastating for patients and physicians alike, such a trauma might provide a potent opportunity for the development of wisdom.[36,37]

Can physicians move through the experience of making a harmful error and not just survive but, rather, learn something essential about themselves

that promotes growth? We explored this question in our wisdom in medicine study, a three-year project through which we investigated how physicians cope, learn, and change after making a medical error.[38,39] Hoping to inform educational and peer support programs and to facilitate the development of specific tools, we conducted in-depth interviews with physicians who experienced a serious error, focusing on what these doctors reported as factors that helped them respond positively to their difficult experience.

Method

We employed a mixed-methods design, combining qualitative measures (interview) and quantitative measures (scores from Ardelt's Three-Dimensional Wisdom Scale [3D-WS][40] and from self-reported wisdom development ratings) in a postpositivist approach. The postpositivist approach acknowledges the limitations of quantitative investigation and seeks to integrate qualitative data and theory so as to more fully understand and describe in greater depth complex phenomena.[41,42] In designing the study, we used the theoretical underpinnings of posttraumatic growth and wisdom, derived from the psychology literature.[29,30,32–37]

From 2009 through 2011, we interviewed 61 physicians from three geographic regions of the United States (Southeast, Northeast, and West) who volunteered for the study and self-reported having made a serious medical error. We recruited participants through a combination of advertisement and word of mouth. Specifically, we sent e-mails to physicians through risk management/malpractice program listserves and faculty listserves, seeking physicians who had been involved in a serious medical error (self-defined) at any point in their career and who were willing to be interviewed. We conducted interviews (of 45–60 minutes) either in person or by phone, using a standardized semistructured interview guide.[38] We asked participants to tell the story of the error and to describe what helped them to cope positively with this experience.

Prior to the interview, participants completed several standardized scales, including the 3D-WS. The 3D-WS is free of any labeling, notification, or instructions that reveal that it measures wisdom. The 3D-WS uses five-point Likert-type scales (1 = "strongly agree" or "definitely true of myself" and 5 = "strongly disagree" or "not true of myself") to assess three dimensions of wisdom: cognitive, compassionate, and reflective.[40] The cognitive dimension comprises 14 items (Cronbach alpha = 0.60) and examines willingness and ability to understand the complexity, ambiguity, and uncertainty of life; the compassionate dimension comprises 13 items (Cronbach alpha = 0.70) and assesses compassionate concern for others; and the reflective dimension comprises 12 items (Cronbach alpha = 0.78) and examines willingness and ability to view phenomena from many different perspectives and the absence of subjectivity and projections.[40] The overall 3D-WS score is the average of the three wisdom dimensions (Cronbach alpha = 0.72 for the three wisdom dimensions and 0.83 for the 39 items).[40]

At the end of the interview, we asked participants to react to the statement, "My experience of coping with a medical error has made me a wiser person." Their rating (5 = "Strongly agree"; 1 = "Strongly disagree") of the statement constituted our self-reported wisdom development ratings.

Interviews were digitally audio-recorded and transcribed. Each transcript was coded using NVivo 8 (Melbourne, Australia). We used Strauss and Corbin's grounded theory approach to generate themes.[43–46] Two researchers (M.P.-O., N.M.) each independently read and coded the same subset of interviews, extracting common themes. Through consensus, these two merged the themes to develop a coding manual, and then coded another set of interviews. They repeated this process until no new themes emerged (saturation). Next, they used the coding manual to separately code another subset of interviews and assess coding reliability between the two researchers/coders (kappa 0.8). Finally, the two researchers coded the remaining interviews (each coding roughly half) using the same coding manual.

Additionally, the two researchers (M.P.-O., N.M.) used Ardelt's three-dimensional wisdom model[32,40] as a framework to independently score each transcript, as representing either a "wisdom exemplar" (physician who demonstrated wisdom) or a "nonexemplar" (kappa 0.7). Blinded to the results of the 3D-WS, each researcher independently scored each transcript based on evidence of the characteristics of wisdom as delineated in Ardelt's three-dimensional wisdom model. Scores of 4 or 5 were considered wisdom exemplars. They resolved any disagreements through consensus. More detailed analysis examining the relationship between interviewee responses (both exemplars and nonexemplars) and wisdom are discussed elsewhere.[38] In this study, to better understand how physicians might be supported after a serious medical error, we focused on exemplar interviews, analyzing themes that emerged both from responses to the question "What helped you to cope positively?" and from material extracted from the rest of the interview pertaining to "what helped."

The Institutional Review Board for Social & Behavioral Sciences of the University of Virginia approved this study (SBS#2008-0295-00). Because of the sensitive nature of the study, we obtained a certificate of confidentiality to protect the material from disclosure. We offered all study participants $100.

Results

Sixty-one physicians completed the study (Table 1). Of these, 33 (54.1%) were male. The mean time elapsed since the error was 8.1 years. Interviewees reported disclosure of the error to patients or family members in 37 (60.1%) of the cases. Only 6 participants (9.8%) reported receiving any prior training on disclosing medical errors. A substantial minority of the physician participants (13 [21.3%]) reported that a lawsuit was filed. Of all participants, 45 (73.8%) were scored as wisdom exemplars based on qualitative assessment of their interview narratives. Exemplars and nonexemplars were similar demographically, but exemplars were more likely to report disclosing the error to the patient/family, with, respectively, a positive likelihood radio of 2.01 and a negative likelihood ratio of 0.54. In other words, 31 (68.9%) of the wisdom exemplars reported disclosing the error, whereas only 6 (37.5%) of the nonexemplar physicians reported disclosing the error ($\chi^2[1] = 4.87$; $\gamma = 0.57$; $P < .03$).

Of all the physicians, 57 (93.4%) submitted completed 3D-WS surveys. A *t* test and Mann–Whitney *U* test,

Table 1

Characteristics of Physicians Participating in the Multisite Wisdom in Medicine Study, 2009 to 2011

Characteristic, units of measurement	All participants (n = 61)	Wisdom exemplar (n = 45)	Wisdom nonexemplar (n = 16)	*P* value
Mean age, number of years (SD)	46.2 (9.5)	47.2 (8.4)	43.2 (12.0)	NS
Gender, no. (%)[a]				NS
Male	33 (54.1)	26	7	
Female	28 (45.9)	19	9	
Practice setting, no. (%)[a]				NS
Academic	42 (68.9)	34	8	
Private	19 (31.1)	11	8	
Location, no. (%)[a]				NS
Southeast	34 (55.7)	25	9	
Northeast	12 (19.7)	10	2	
West	11 (18.1)	7	4	
Other	4 (6.6)	3	1	
Specialty, no. (%)[a]				NS
Internal	24 (39.3)	19	5	
Surgery	7 (11.4)	4	3	
Family	6 (9.8)	3	3	
Pediatrics	6 (9.8)	6	0	
Obstetrics–gynecology	5 (8.2)	3	2	
Emergency	4 (6.6)	2	2	
Anesthesiology	3 (4.9)	3	0	
Other	6 (9.8)	5	1	
Time since MD degree, median years (SD)	10.4 (8.0)	11.3 (7.8)	7.8 (8.0)	NS
Time elapsed since error, median years (SD)	8.1 (7.2)	9.3 (7.1)	7.1 (7.4)	NS
Error disclosed to patient/family, no. (%) reporting yes	37 (60.1)	31 (68.9)	6 (37.5)	.03
Prior disclosure training, no. (%) reporting yes	6 (9.8)	5 (11.1)	1 (6.25)	NS
Lawsuit filed against, no. (%) reporting yes	13 (21.3)	7 (15.5)	6 (37.5)	NS

Abbreviations: SD indicates standard deviation; NS, not significant.
[a]Numbers, without percentages, are provided for the wisdom exemplar and wisdom nonexemplar groups for gender, practice setting, location, and specialty.

respectively, confirmed that, on average, exemplars scored significantly higher on the 3D-WS (mean [M] = 3.89, standard deviation [SD] = 0.33) than nonexemplars (M = 3.67, SD = 0.20; $P < .02$; effect size = 0.37). Exemplars also agreed more strongly with the statement "My experience of coping with a medical error has made me a wiser person" (M = 4.57, median = 5) than nonexemplars (M = 3.93, median = 4; $P < .01$; effect size = 0.4).

Interview responses of wisdom exemplars highlighted eight key themes: talking about it; disclosure and apology; forgiveness; a moral context; dealing with imperfection; learning/becoming an expert; preventing recurrences/improving teamwork; and helping others/teaching (Table 2).

Talking about it

One of the most common responses to the question "What helped?" was "being able to talk about it." While some physicians reported that talking to someone outside the profession was beneficial, most felt that having someone who could understand the experience from a clinical context was helpful.

> My husband is a very big source of comfort for me and the fact that he was also a trainee was very important for me. So, having a peer and an ear.… (324)

Importantly, many physicians stated that *at the time of the event* they were not able to talk with anyone, either out of shame or in response to their lawyers' admonition. One physician spoke about an event that occurred when she was a resident.

> We've always been told that you just can't talk about things, outside of the hospital, and the root cause analysis committee had specifically said that, we couldn't talk to anybody else about this event … but it was difficult not be able to talk to anybody. Even M&Ms [morbidity and mortality rounds], there was a question of whether M&M is going to be discoverable … it is awful…. When something like this happens you need to have an M&M about it. There should have been an M&M about it. But it did not happen. So I really, cause I truly said "I don't' know, did I do something wrong here?" I really didn't know and couldn't talk to anybody about it for a couple of years. (313)

Physicians also emphasized how important it was that the people from whom they sought solace not dismiss the seriousness of the situation or the reality of the mistake. They noted the tendency of well-intentioned colleagues to minimize, dissolve, deny, or attempt to solve the error, which they did not find helpful. Instead, physician participants said they responded best to someone who simply "held" the feelings that they were expressing—that is, someone who really listened, acknowledged the seriousness of the situation, and helped them to put it in perspective.

> I went to the medical director and he said, "That's not a mistake. It could have happened to anybody." So I did talk about it with a nurse here who "got it." She heard me say, "I should have done something else. I made a mistake." And she accepted that … and then it was just, "Okay so what are you going to do about it?" (350)

Some physicians highlighted the importance of simply sharing the emotional impact of the feelings that they were experiencing. Communicating emotional responses was in contrast to traditional M&M rounds and other responses to the *medical* aspects of the case.

Table 2

Themes and Subthemes Gleaned From Participants' Responses to the Question "What Helped You in the Wake of the Error?"[a]

"What helped": Themes and subthemes	Representative quotations
Talking about it	
Talking about it/who to turn to	I think I called one of my colleagues that same afternoon and said, "Can I talk to you a minute about this?" I don't remember exactly when that was, it might have been that night or the next day, but at some point I did. That was very helpful. (319)
Acknowledging the mistake	Everybody was minimizing it, probably to protect me.… I couldn't really tell anybody, and that really got to me. Everybody tries to protect their friends and their trainees and their coworkers whenever they have a complication like that. But, I think the downside is it doesn't allow people to get the support that they need. (352)
Holding the feelings without trying to solve	She immediately understood the importance of what had happened and just held it, didn't try to resolve it or say, "Here's a way to understand it, it will go away," or put it in the right place. (337)
Emotional impact	I'm not sure how much people understood how devastating I found it. I think it's easy to cover that. I think that on some level, people need to kind of remind you that actually you shouldn't leave medicine, because I really thought about it. It's a very, very, very vulnerable time. I don't know exactly how that could be cared for but I think recognizing that, normalizing that, so the right setting would be a place where somebody would say, "You know, a lot of people have an error like this and they think about leaving medicine. Has that happened to you?" (362)
Knowing I'm not alone	I think it is important to talk to attendings, to find people who are supportive and to go at it with a sense of how could I have avoided this … part of it [what was supportive] was that he [the attending that this resident talked to] talked about three serious medical errors that he had [made], one in particular that he still thinks about on a regular basis. He is an awesome attending, highly respected for his knowledge base, his research, his interpersonal skills. For me that was useful and helpful, because he's a great doctor, and he's still thinking about this … that's part of being a doctor. (385)
Disclosure and apology	It was helpful for me to speak to the patient, and, again, I wish I had done a more appropriate disclosure to him.… I think that would have gone a long way for me. (369)
Forgiveness	Okay, the only forgiveness that I decided to give myself is partial to this day and it always will be but that's okay. I figure that I keep that other unforgiven part as the pressure to keep doing better. (318)
A moral context	I just wanted to run the other way, but in the end that is not who we are as doctors. We are here to take care of patients, even when, especially when, things don't go well. (379)
Dealing with imperfection	One of the processes of growing older, more experienced, more mature, is [that] reality replaces icons. People think of me as perfect. I happen to know it is not true. I don't need or want anyone to have that concept of me anymore. (350)
Learning/becoming an expert	You can see why I might want to do my [resident] project on it [the misdiagnosed condition] … why I consider myself a minor expert on the condition, that was part of my coping skills, was to learn about it and say, How I can I help other people? (300)
Preventing recurrences/ improving teamwork	That is certainly something else that is huge, having a team, a real team that works together. We have the opportunity to back each other up when somebody misses something and creating an environment where … we acknowledge [errors] when they happen. (318)
Helping others/ teaching about it	When it was clear that I had established a reputation as a good clinician, then I felt more comfortable sharing all my mistakes with my residents and helping them learn from those sorts of things because I think that, aside from having a mistake happen yourself, there are few things that are more powerful than hearing somebody else tell you about their mistakes. (369)

[a]Researchers asked participants (n = 61) from three different regions of the United States this question as part of the larger "Wisdom in Medicine" Study, 2009 to 2011.

Most of the physicians felt, at least initially, that they must be the only ones who have erred so egregiously. They noted that talking about their mistake often prompted others to share their own mistakes, and that in the process they began to see that they were not alone. One physician talked about a powerful experience she had had in a seminar in which attendees anonymously shared their most difficult mistakes.

> Maybe five or six years after … we had like 15 of us with this facilitator, who came one evening in somebody's home. We [each] had a piece of paper and we wrote down in abbreviated form the story of this error. And we put it in the middle and then, anonymously everybody took one and we read them out [loud]. As we did this … I thought "Mine was the worst" (crying) … and it was so amazing because we all sort of were able to go, "Well, mine was the worst." "No, mine was the worst." And … clearly none of them was the worst, you know? They were all what they all were. That was really important to me … that's when I really started to feel better about it. (356)

Disclosure and apology

As mentioned, disclosure occurred nearly twice as often in the wisdom exemplar cases compared with the nonexemplar cases (68.9% versus 37.5%), and the great majority of the physicians across both groups reported that they had not received any training in how to best approach disclosure. Interestingly, though, the participating physicians reported that disclosure and apology were critical first steps toward the possibility of healing a broken relationship and being able to deal openly with the event.

> I think talking to the family made it personal. She knew we cared. I felt like it was closed in a much better way. She knew the doc who made the mistake cared. She (the doctor) came to her on a day off and apologized. And if the only thing she walked out of there is we really care, that's great. (333)

Disclosure also included talking to someone other than the patient, who could offer an objective stance. One physician talked about needing to disclose to a colleague who would listen carefully and give him honest feedback so that he could learn from the event.

> I needed to tell somebody other than my colleagues who were excessively supportive that I had screwed up and that I felt bad about it. My immediate colleagues were all my friends, and they said, "there, there, it's awful.…" I needed to tell somebody who was not going to be protective of me that I had screwed up. (307)

Forgiveness

Although the participating physicians did not seem to expect forgiveness, they did note that disclosure and apology opened up the potential opportunity to find forgiveness from patients or from themselves. One physician's story illustrates this opening: Having missed a cancer diagnosis that resulted in a delay in treatment, the physician disclosed the error and apologized, but the patient was very angry. They did not talk for a month. The physician then went back to apologize again.

> I went to see him [again], because when I initially broke the bad news to him he was very angry, and upset, and said, "How could you do this to me?"… It took all the courage I could muster to go back and see him again. I wanted to apologize. I went in his room to apologize to him and (it is still so hard to talk about) he said, "I know, I know that you care about me" … that he was so happy to see me and just so touched that I came to see him.… And, he goes, "I forgive you. I know how you would never do anything intentionally to hurt me" and … it was such a wonderful thing. (392)

Physicians actively struggled with the concept of forgiveness. Most wrestled with a way to forgive themselves without lowering their standards or "letting themselves off the hook."

> I guess you can forgive, but not forget. I worry about that a little bit. I worry that if I am completely forgiven that I will forget and that's not good for me. (318)

A moral context: Professionalism, spirituality, and "doing the right thing"

Doctors shared that facing the shame of the event, as well as the anger and grief of the patient and family, took a great deal of courage. Many physicians underscored that a larger moral context—such as their professional code of honor, the teachings of their faith, a strong sense of humanism, or a spiritual understanding of their work—helped them to do the right thing.

> When I walked into that room and I saw everybody, I just had to think I'm taking a leap of faith here. I thought that the right thing to do was to go in there and ask for forgiveness and to tell him that I meant him no harm. (392)

Some physicians described a mentor who embodied a solid moral stance.

> In medical school we had this family doc … brilliant man. He talked about what you do when you make a mistake, and he said, "Well, what do you think you do? You say you are sorry, just like anybody else would do when they make a mistake … it doesn't matter what the personal consequences are to you, that's just the way it is, the mistake is the mistake." (303)

Another physician remarked on how a medical student had helped to reaffirm his decision to apologize.

> The student and I had a very brief conversation afterwards and to [him] it was like, "Well yeah, of course you apologize!" This obvious humanism.… [Students] didn't worry, they didn't know how our medical-legal risk office handled these problems. It was obvious to them: Of course, this is something we have to apologize for. (370)

Dealing with imperfection

The "imperfect (but good) physician" was a frequent theme throughout the interview narratives. Physicians wrestled with a common tension: how to relieve themselves of the unrealistic notion of perfection without lowering their standards. By talking with colleagues, they began to realize that other very good doctors had made mistakes too, which gave them permission to change their perfectionist understanding of themselves.

For some physicians, dealing with their imperfection involved developing a way to keep the memories of their mistakes alive.

> So, I like to say I carry a little graveyard in my head of all the patients [who] have passed and of all the people I wish I had done things differently for, and, when the opportunity comes up, I honor those people. (369)

Learning/becoming an expert

For many, the experience of a mistake triggered a strong desire to become an expert in whatever they felt was the knowledge or technical deficiency that caused the error. In some cases, this expertise meant a change in career focus. For others, it was mastering a technique or an obscure diagnosis. This mastery helped the physicians to move forward and heal.

> I did a literature review on this and did a write-up.… (300)

Preventing recurrences/improving teamwork

For many physicians, the first positive response was figuring out what happened and fixing it, so it would not happen again. They found meaning in developing system changes so that what they and their patients had gone through could at least protect against future mistakes. A number of the physicians talked about the importance of working as a team to both respond to errors when they occur and to prevent them from happening in the first place.

> I think we do have to partner with the patients and make sure that we empower the patients to ask questions. And empower your staff. I mean, I think we have to be open to questioning our colleagues but we also have to be open to our colleagues questioning us. (303)

Helping others/teaching about it

The process of recovery and growth in the wake of a medical error took place over years. Physicians continued to seek out ways to talk about their experience, but the "talking about it" transformed from helping the physicians process the event themselves to also helping others through teaching.

> I guess I've been telling the story more since I've kind of gone all through it. I confided in my peers early on but I didn't tell the story a lot early on. And now, I think I probably tell the story a lot more. Part education, maybe it's still a little part therapy. (370)

Many physicians eventually found a way to teach about their experience so that others might not have to go through what they had gone through.

Discussion

As understanding the opportunity for positive posttraumatic growth develops in other disciplines,[29,30,47–49] we now turn to medical error to understand how doctors might emerge from such events with wisdom rather than the common devastating effects of medical mistakes. Our study, therefore, focused on physicians who responded in a positive way to serious errors. In their narratives, the physicians rated as "wisdom exemplars" used the language of wisdom to describe what they had learned

and how they had changed because of their experience. Compared with the nonexemplars, wisdom exemplars were more likely to score higher on Ardelt's 3D-WS and to strongly agree with the statement that they had gained wisdom as a result of the error. The qualitative analysis of the narratives identified specific factors that exemplar physicians felt enabled them to respond to errors in a positive way. The findings can help inform institutional approaches to best support clinicians involved in medical error (Table 3).

Neimeyer[50] and others suggest that trauma disrupts our "story," the narrative of our lives, in such a way that we have to restructure that narrative if we are to grow and learn. Events that are socially unacceptable may be particularly difficult to openly acknowledge, resulting in a *silent, dissociated narrative*.[48] The results of our study show that the shame and guilt associated with an error, coupled with a culture that does not always openly accept such events, have often caused physicians to carry these dissociated narratives for years, unrevealed and unresolved.

Just as talking or writing can serve as a tool to help traumatized patients rework their narratives,[29,30,50–53] our results suggest that *talking about it* can help physicians who have made an error. Further, empowerment and self-efficacy are recognized components of growth from trauma[29,54,55]; so, too, *disclosing and apologizing for the error*, *forgiveness*, *having a moral context*, *dealing with imperfection*, *becoming an expert*, *preventing recurrences*, and *teaching about the experience* all seem to be helpful responses to medical error. Our study, like others, suggests that a key to successful responses to error is avoiding repressive behaviors,[18,56–58] whether emotional or relational, by talking openly about error to peers and patients/families.

Interestingly, the behaviors of wisdom exemplars align with what patients want after medical error: acknowledgment of the mistake, an explanation of what happened, an apology, and plans to prevent a recurrence.[17] Taken together, supporting doctors after medical error in specific ways as detailed in this study may help physicians gain wisdom, institutions improve patient safety, and patients receive the information they need.

Implications for institutions: Next steps

What can physicians and those who teach and support them learn from the accounts of the doctors in our study who made mistakes and emerged with positive new insights? First, several of the supports that helped the wisdom exemplars can be readily adopted by health care organizations (Table 3). For example, the specific forms of "talking about it" that helped doctors can be important guideposts for peer support programs. Doctors wanted "a peer and an ear"— that is, to be able to discuss the error openly with a supportive colleague. Well-designed peer support programs can provide a safe environment for this support. Training for the peer supporter is important. The well-intentioned tendencies of colleagues to minimize the error or to attempt to solve the problem may prevent doctors from achieving the support and perspective they need. Because ability to take responsibility for errors has been suggested as an important determinant of coping well,[19] a peer who is trained to simply "hold the feelings" is likely more helpful to a physician coping with an adverse event. Disclosure and peer support programs should be a part of the institutional quality improvement and/or physician wellness programs. Such programs should be well designed to provide the same kind of legal protection that other important quality processes (such as M&M rounds) receive.

In addition, participating physicians recommended both directly addressing potential emotional reactions (e.g., contemplating leaving medicine) and guarding against isolation through active outreach. They also suggested having respected peers share their own stories of making a medical error. Such approaches resonate with successful peer support programs that advocate the development and maintenance of a just culture, objective professional review of the clinical events, and close follow-up and emotional support for clinicians.[59–61]

Enriched curricula on ethics, humanism, and spirituality in medicine that address both patient and clinician perspectives may help doctors enhance their own moral context. Similarly, expanded discussions on the emotional impact of errors in existing educational venues such as M&M rounds can provide important supports.[62] Although the M&M forum has come a long way from traditional formats that reinforced shame and guilt through public humiliation,[63–65] there is still opportunity to emphasize the message that most errors are not personal blemishes stemming from unacceptable fallibility but, rather, a natural consequence of being human. Such a cultural shift, reinforced through supportive acknowledgment and open discussion, may also help curb ongoing biases about the unspoken expectation of perfection.

In addition to expanding, adjusting, or adopting supportive programs at the health care institution level, medical educators might consider professional development and training. The physician stories in our study highlight gaps in professional education related to error disclosure. The overwhelming lack of preparation to deal with medical error reported by our participants, along with the positive effects of disclosure experienced by wisdom exemplars, reflects an ongoing role for training. Providing physicians with strategies not only for coping with and disclosing error but also for facilitating their development of reflective practice could nurture wisdom and growth.[20,38,66–68] Our study adds to earlier findings that poor or absent disclosure can heighten physician distress[15] and, alternatively, that effective disclosure can facilitate resolution for patients and providers alike.[69,70] Through education and practice, institutions can emphasize disclosure and apology as an iterative process of communication and healing (rather than a single event), as described by some study participants (Table 2).

Another opportunity lies in changing the culture of medicine. We were struck by how often the physicians in our study mentioned struggling with imperfection and self-forgiveness. Although medicine has made important strides since Hilfiker's[9,10] report a quarter century ago, finding a place for human errors, and for self-forgiveness, remains challenging. Our physician narratives suggest that implicit values once framed by the profession in binary terms—perfect: good; erring: bad—must be recast as the more challenging notion of the "imperfect but good doctor." Redesigning systems for safety have at their basis an understanding of human fallibility and a commitment to putting in place systems that protect against predictable human

Table 3

Recommendations for Peer Support Programs and Health Care Institutions to Promote Positive Response and Wisdom Development Following a Medical Error

Strategy	Explanation	Rationale
Prioritize a "peer with an ear"	Peer support with an emphasis on "holding" rather than "solving" the problem helps physicians acknowledge and begin to make sense of/grow from the error.	Well-intentioned peers who minimize the error or try to solve the problem can be counterproductive to processing error.
Share error stories	Routine opportunities for sharing error stories, especially from well-respected clinicians, can normalize error and guard against isolation.	Many doctors may feel alone in making a mistake, not realizing that others have also made errors.
Ask specifically about emotional impact	Active outreach and direct discussion of common emotional reactions to error may mitigate damaging reactions.	Physicians may contemplate leaving medicine or have other maladaptive reactions to error that they are embarrassed or afraid to discuss.
Encourage physicians who have been involved in an error to serve as quality improvement (QI) safety advocates	Institutions should encourage and even expect physicians to participate in QI efforts related to the medical error they experienced.	Doctors experiencing error are highly motivated to prevent recurrences, but may be afraid to step forward. Participating in institutional fixes or solutions may also promote personal growth.
Link doctors who have made a mistake with teaching opportunities	Actively link doctors with teaching opportunities when they are ready to share their story.	Teaching can be healing to doctors who have made mistakes, but they may not know if and how to share their experience. Institutional norms for sharing mistakes can help, and may also signal to learners institutional support of a just culture.
Enrich doctors' moral context	Develop and provide integrated curricula and resources on ethics, humanism, and spirituality in medicine addressing medical error.	A moral context can help doctors "do the right thing" after medical error.
Promote a "learning institution"	QI efforts should focus on learning from rather than eliminating errors.	Doctors may view errors solely as a personal failing rather than as an opportunity for learning and implementing systems changes to prevent future errors.
Provide universal disclosure training and coaching programs	Widespread, even mandatory, disclosure training can help physicians access critical resources when things go wrong. Well-advertised, just-in-time coaching can guide doctors at an emotionally challenging time.	Physicians commonly report inadequate preparation to discuss errors with their patients and families.
Reframe the "imperfect, but good, doctor"	Institutions can acknowledge human fallibility through endorsement of a just culture and the "imperfect, but good doctor" as an acceptable standard.	Physicians struggle with imperfection. In addition to wrestling with internalized/intrinsic expectations of perfection, they may be fearful of extrinsic punitive outcomes if confessing a mistake.
Cultivate self-forgiveness	Training programs can emphasize that self-forgiveness does not mean lower standards.	Afraid that self-forgiveness may mean subpar standards, doctors may carry self-criticism, guilt, and shame for years.
Foster reflective practice	Institutional educational programs prioritizing and promoting reflective practice and peer support can stem personal grief and promote a more realistic and sustainable self-concept among physicians.	Medical errors can exacerbate burnout.

failings. Understanding and accounting for human error may not only help stem personal grief and burnout but also, by mitigating maladaptive behaviors in the wake of mistakes,[10,12,14] and instead promoting learning and prevention, serve as an effective way to reduce errors both individually and organizationally.[18,19,28,38,39] Fostering opportunities for self-forgiveness, without the perceived cost of lowering standards, deserves attention in peer support programs.

Finally, the path forged by doctors who coped well with error highlights ripe opportunities for developing infrastructure to facilitate posttraumatic growth and wisdom for clinicians and the organization (Table 3). An emphasis on reflection, learning, and making positive changes through a team framework can motivate doctors to step forward as patient safety advocates and help transform an emotionally traumatic experience into a vital experience of growth and learning that benefits everyone involved, including physicians and their institutions.[71] Wisdom exemplars sought ways to create something good out of something terrible. Disclosing an error and making meaningful safety changes as a result of the error can—as reported by doctors both in our study and in others[63,72]—activate clinicians. Taking action to prevent the error from happening again is a natural next step to taking responsibility for the error. Building on prior reports,[72] our findings underscore that physicians who experience error may well be among the most deeply motivated and committed safety advocates and teachers.

Providing doctors who experienced an error with teaching opportunities, allowing them to pass on the wisdom and insight gained from their experience or, perhaps, linking them with others who have made errors for coaching and mentoring, can present a "win–win" opportunity for the health care organization, the clinician, and even the patients they serve.

As we consider future directions, learning more about barriers to a healthy response to error through the examination of nonexemplar narratives merits future attention. For example, distinguishing between personal traits and learnable skills can help inform support strategies. Similarly, developing more robust

evaluation strategies for the effectiveness of peer support programs is another key area for further research. Using the recommendations of physicians who have responded well to error as "milestones" or ways to structure evaluation could help to match program assessment to self-reported needs.

Some of our findings, derived from a large group of in-depth interviews with doctors who endured serious errors, reinforce prior work. However, they also highlight relatively new areas to explore. One such area—enriching the discussion about self-forgiveness, both for affected individuals and for the culture as a whole—stands out as a theme emerging from this work. Above all, we hope that the experiences of physicians who made a serious medical error and responded well may motivate a paradigm shift—from condemning physicians as "second victims" to facilitating their learning, growth, and wisdom in the wake of a mistake. Translating "wisdom exemplars" from the study setting to the practice setting can help not only doctors but also the patients and health care organizations they serve.

Limitations

Because this was primarily a qualitative study, the information gathered is best understood as exploratory. Participants completed the questionnaires, including the 3D-WS, prior to their interviews. This order could potentially have introduced bias by prompting the participants to think about wisdom and growth before the interview. However, as mentioned, the scale itself never refers to wisdom, and the participants did not necessarily know that the scales were measuring posttraumatic growth or wisdom. In addition, because wisdom is explicitly discussed at the end of the interviews, we felt that doing the interviews first actually had more potential for introducing bias into the questionnaire data. Generalizability may be limited by the fact that the sample was weighted toward academic and internal medicine physicians. Participation was voluntary, which might explain the relatively high proportion of "wisdom exemplars" and may reflect the biases of those who were willing to share their experiences.

Conclusions

Medical error represents a critical juncture in a physician's personal and professional development. Examining how doctors cope with error provides both insight into medical culture and the opportunity to begin to redefine it in more supportive, realistic, and positive ways. We suggest specific steps to help clinicians move through the difficult experience of making an error so that they avoid devastating professional outcomes and have the best chance of not just recovering but actually growing and developing wisdom. Understanding the factors that help clinicians learn and grow in the wake of a mistake can inform peer support programs and create an environment that fosters continuous learning and improvement, teamwork, relational care, compassion, and wisdom.

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