'Whatever you cut, I can fix it'

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'Whatever you cut, I can fix it': clinical supervisors' interview accounts of allowing trainee failure while guarding patient safety

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ABSTRACT

Background Learning is in delicate balance with safety, as faculty supervisors try to foster trainee development while safeguarding patients. This balance is particularly challenging if trainees are allowed to experience the educational benefits of failure, acknowledged as a critical resource for developing competence and resilience. While other educational domains allow failure in service of learning, however, we do not know whether or not this strategy applies to clinical training.

Methods We conducted individual interviews of clinical supervisors, asking them whether they allowed failure for educational purposes in clinical training and eliciting their experiences of this phenomenon. Participants' accounts were descriptively analysed for recurring themes.

Results Twelve women and seven men reported 48 specific examples of allowing trainee failure based on their judgement that educational value outweighed patient risk. Various kinds of failures were allowed: both during operations and technical procedures, in medication dosing, communication events, diagnostic procedures and patient management. Most participants perceived minimal consequences for patients, and many described their rescue strategies to prevent an allowed failure. Allowing failure under supervision was perceived to be important for supporting trainee development.

Conclusion Clinical supervisors allow trainees to fail for educational benefit. In doing so, they attempt to balance patient safety and trainee learning. The educational strategy of allowing failure may appear alarming in the zero-error tolerant culture of healthcare with its commitment to patient safety. However, supervisors perceived this strategy to be invaluable. Viewing failure as inevitable, they wanted trainees to experience it in protected situations and to develop effective technical and emotional responses. More empirical research is required to excavate this tacit supervisory practice and support its appropriate use in workplace learning to ensure both learning and safety.

INTRODUCTION

Healthcare professionals have a complex relationship to failure. Because of the mandate to provide safe, high quality patient care,^{1–4} failures are likely to be stigmatised,^{1–4} and provoke emotional

distress with feelings of shame, guilt and self-doubt in providers.^{5–7} At the same time, however, health professionals understand that failure at some point in their career is inevitable^{8–9} and valuable for learning,^{10–13} particularly in training when novices will work at the edge of their competence to develop technical skills,^{14–16} gain adaptive expertise¹⁷ and acquire failure management strategies.¹⁸

With the rise of the patient safety movement, however, opportunities to learn from failure may be in decline as supervision increases and trainee autonomy decreases.¹⁹ Paradoxically, this may jeopardise safety by not equipping new graduates to face the realities of critical care.^{19–21} In other educational settings where safety is a less overt concern, such as education and psychology, failure is not only supported, it is also promoted: educational activities are carefully structured to provoke learner failure in order to drive learning and cultivate resilience.^{22–28} The recently presented Prevention-Permission-Promotion Framework described three approaches to errors during learning.²⁹ The 'error prevention' approach is supported in medicine: we teach our learners to avoid making errors and to observe others' errors.²⁹ The 'error permission' approach allows errors to arise naturally during learners' exploratory or trial-and-error activities, supported by corrective feedback.²⁹ The 'error promotion' approach goes a step further, where learners are actively induced or guided to make errors. Importantly, however, both of the last approaches to allowing and promoting failure derives from 'low stakes' contexts, such as paper-based

exercises or simulation-based learning activities,^{22 29 30} so that little is known about how they might translate to workplaces, or more high stakes learning contexts.

Research into the learning affordances of workplace error suggests that it may be particularly challenging to embrace such an approach in healthcare, especially given the primacy of patient safety as a professional value.³¹ With the certainty of failure in both medical training and medical practice, however, we should consider the educational potential of failure in healthcare environments as well. Scholars are beginning to ask, how does the experience of failure equip physicians with both clinical strategies to repair their failures and community supports to remain resilient in the face of them, and what might be the role of the clinical supervisor in this experience?³² While supervisors could conceivably use failure strategically for learner development the way educators in other domains do,³² our recent review of the literature revealed no discussion about the phenomenon of allowing failure in supervised clinical training, even though failures were recognised as important learning opportunities for trainees.³³ The current study explored supervisors' experiences of allowing failure in the medical workplace to address this gap.

METHODS

Study design

The work reported in this paper comes from a qualitative research programme exploring if and how supervisors and trainees experience the phenomenon of allowing failure as an educational strategy in postgraduate clinical training. This study followed constructivist grounded theory methodology to explore a phenomenon based on social process interactions, which it is not yet explained by pre-existing theory.³⁴ A constructivist approach allowed us to bring sensitising concepts such as 'failure' and 'learning' to bear during data collection and analysis, in order that we can engage with and build on existing literature even while the central grounded theory principle of attending to emergent themes is upheld.³⁵ Because we acknowledge that the social interactions of supervisors and residents regarding allowing failure take place within the workplace learning environment, we employ sensitising concepts from experiential learning theory.³⁶

Constructivist grounded theory acknowledges that researchers bring their orientations to the work. Our collaboration of two insiders (JMK and PWT, both past residents and current clinical faculty) and two outsiders (LAL and ED, with experience studying teamwork, workplace-based learning and competency-based assessment practices but no personal role in those settings) affords the opportunity to reflect on how our orientations inform the nature of the data we will collect and the analytical patterns we will be attuned to see. Reflective memoing and regular

research meetings were used to continuously engage our perspectives during the research process.

As the interviewer, JMK's role as a surgeon with experience working in critical care and emergency departments offered the advantage that familiarity with the topic helped her understand participants' stories. We anticipated that this would help encourage the participants to share their experiences candidly. JMK is a near-peer to some participants, and most of the participants had some form of acquaintance with the interviewer, knowing each other through professional networks. Recognising that this familiarity, however, could also be a disadvantage, potentially limiting the depth of explanation in participants' responses and influencing interpretation of the data, LAL added a non-physician perspective in weekly meetings. PWT and ED shared additional insights in regular meetings.

Participant recruitment and sampling

In order to maintain confidentiality within the surgical and medical education community, we invited possible participants via email or personal request. Twenty-one participants agreed to an interview; 19 were required for sampling sufficiency. Because we recruited participants from two countries, Switzerland and Canada, and for convenience of some participants, we interviewed eight by video call. Participants from Switzerland were non-native English speakers, as was the interviewer (JMK). Participation was voluntary and participants did not receive any compensation for their contribution to the study; all signed for informed consent. Participants were aware that the study would specifically ask about whether and how supervisors allow failure in their trainees in the clinical workplace. Participants knew who the interviewer was, that she had medical education background and experience both as a past clinical trainee and as a current clinical supervisor.

We started by interviewing more experienced supervisors or those in leadership positions (consultant or department chief, P1–P6), who we expected to be confident in their clinical expertise or supervisory style and therefore perhaps more willing to discuss the potentially sensitive topic of allowing clinical failure in the course of training. Also, as a rapport-building strategy, we started with supervisors from surgery (P1, P2, P5), critical care (P3) or emergency medicine (P4), as the interviewer has experience in these clinical settings. Sampling was then expanded to other specialties, including obstetrics and gynaecology, internal medicine, anaesthesia, paediatrics and psychiatry (from P6 onwards). Clinical supervisors earlier in their careers and with less experience were included later in the process (from P7 onwards). Owing to the sensitivity of the topic, if a supervisor was not familiar with the subject through prior discussions or seemed insecure at the beginning of the interview, we began with broader questions about whether the participant had

ever seen a trainee make a mistake in a clinical situation. After the first few interviews, we ensured that most of the remaining study participants had formal training in medical education or at least experience in medical education (eg, participation in a simulation instructor course or medical education courses) in order to receive richer and potentially more reflective responses.

Data collection and analysis

With Swiss and Canadian institutional research ethics approvals, we individually interviewed 19 clinical supervisors asking them whether they had allowed failure for educational purposes, requesting specific examples, and probing to explore how and why supervisors made the decision to use this strategy. Both purposeful and theoretical sampling were employed, to secure information-rich participants who were reflective and interested in the study question and to pursue recurring themes as they were identified in the iterative constant comparison of the data analysis.^{34 37}

Each semistructured interview lasted between 45 min and 75 min, was audio-recorded and subsequently transcribed verbatim with anonymising protocols to remove person and place identifiers. Transcripts were not returned to participants for member checking. Postinterview field notes were made after each interview and supported the reflexivity process. The semistructured interview guide was recursively refined to explore emerging themes.

Data sufficiency, or a robust and stable description of the dimensions involved in the phenomenon of allowing trainee failure, was reached after 17 interviews. Two more participants were interviewed to confirm the description. Participant 18 was one of two discrepant cases, denying use of this educational strategy but nevertheless providing examples that fit the description we had created. Participant 19 offered confirmatory information and additional examples but did not alter the definition.

We conducted a qualitative content analysis of each specific account that supervisors shared about having allowed a trainee to fail for educational purposes, with the aim of systematically describing the dominant features of the phenomenon.³⁸ All transcripts were coded by JMK, while LAL read and discussed with JMK four transcripts in detail and fully coded one in parallel. Themes were derived from the data and refined until they were stable and consistent. The content data analysis was supported by Excel tables and a Mind map, created with Mind Node.

The participants (P1–P19) shared 79 specific experiences of failure in clinical training, including those from their own residency. The qualitative content analysis followed Hsieh and Shannon's framework,³⁸ starting with closely and repeatedly reading these examples and inductively developing codes to reflect recurring patterns in them. As these became more

Table 1 Demographic data

Characteristics	Number
Gender	
Female	12
Male	7
Supervisory experience	
2–5 years	2
5–10 years	9
10–15 years	7
>15 years	1
Specialty	
General surgery	3
Emergency medicine	4
Critical care/anaesthesia	2
Obstetrics/gynaecology	2
Internal medicine, including medical specialties, for example, gastroenterology	4
Paediatrics	2
Psychiatry	1

refined and stable in categories, we began to develop a preliminary definition of allowing failure. Using this definition, we revisited all 79 examples to separate the examples that met all the criteria from those that did not. In this process, we identified 31 examples that did not fully reflect the definition. Consequently, the results presented here are based on a final analysis of the 48 included examples.

RESULTS

Twelve women and seven men from 11 different institutions participated in the study (table 1).

The participants represented the medical specialties of emergency medicine, critical care, internal medicine, paediatrics, and psychiatry, and the surgical specialties of general surgery and obstetrics and gynaecology. Their expertise as clinical supervisors ranged from 2 years to 18 years. Seventeen of the 19 participants acknowledged that they allowed trainees to fail in clinical situations for educational purposes. The remaining two participants denied using this strategy; however, they shared examples that fit the definition emerging from our analysis. While each of the 17 participants shared between one and four accounts of allowing failure, they gave the impression that they could have shared more had time allowed. These supervisors acknowledged that allowing failure was commonplace: it 'happens regularly' (P19); 'during the whole hospital daily business. You often let them do mistakes....' (P2). One estimated that they '...probably use it now once a week' (P3) and another declared that '...it seems to be quite a good strategy I use quite often. So, during nightshifts, I use it once or twice in a week of nightshifts.' (P7) (online supplementary file 1: Representative example of allowing failure: an experienced clinical supervisor reported allowing a resident

to fail (twice) under direct supervision during two C-sections in two night shifts).

From the analysis, we developed a definition of the phenomenon of allowing failure in clinical training as follows: *While supervising a trainee's clinical performance, the supervisor detects an imminent trainee mistake, has the opportunity to intervene but deliberately chooses not to do so because the educational gain for the trainee is perceived to outweigh the (potential) consequences for the patient.* Below we describe and illustrate each part of this definition.

The participants perceived that they must have some form of oversight of the trainee performance in order to allow failure. We followed established definitions of supervision to analyse the supervisory situations in the accounts:³⁹ most involved direct or immediately available supervisory situations, such as in the elaborated C-section account (online supplementary file 1), while three participants reported local or distant supervision, such as psychotherapy provision: '(when) I'm not there with them, and I may have a hypothesis of a possible mistake or outcome. But it's almost like I have to really not interject that because the learning for the resident is more powerful if they develop their own hypothesis and act accordingly in the moment.' (P12)

Participants' accounts of allowing failure involved a wide variety of clinical performances. They included technical or manual failures such as misplacing a trocar in laparoscopic procedures (P1), selecting the wrong plane during operations (P5) or using the wrong angle for a lumbar puncture (P16); medication failures such as overdosing or underdosing of a drug (P3, P18); communication failures, such as a misleading consultation with a patient (P14); diagnostic failures, such as selecting the wrong ultrasound programme (P7); decision-making failures such as using ultrasound instead of a CT-scan (P4); and patient management and organisation failures, such as planning insufficient follow-up (P12) (Online supplementary file 2: Samples of allowing failure, categorised in clinical performance types).

Participants also described a wide range of possible consequences of these failures. They tended to focus on patient outcomes, rather than consequences for trainees or supervisors, and they emphasised that these consequences should be 'really small' (P1), 'not dangerous' (P5) and that they wouldn't 'let the patients suffer too much' (P2). However, potential consequences for patients included pain (P2, P3); bleeding or haematoma (P1, P2, P5, P7, P13); potential suboptimal wound healing or skin incisions (P5, P8); multiple, wrong or painful punctures (P3, P8, P16, P19); excessively deep sedation (P14); longer waiting time or delay in patient care (P4, P11, P16).

In most of the reported accounts, the consequences were anticipated by the supervisor and one articulated the strategy to rescue precisely: 'Or, for example, I

remember I had a patient where I put in the trocars and I said, be sure to take care of the epigastric vessels, and I saw he didn't, but I knew, okay I can put an endo close... ' (P5). Not all consequences were anticipated, prompting unplanned rescues, as in an account where the supervisor allowed the trainee to try a surgical procedure in a different way than the supervisor's preferred approach: 'You get one try your way and if it doesn't work, we're doing it my way. He did it his way and it ended up causing more of a complication intraoperatively that we then had to go and fix it. It ended up being fine in the end, fortunately.' (P13). In direct supervision, supervisors explicitly referred to themselves as a safety net that could be invoked when needed, such that trainees could be allowed to 'experience the mistake, while I was there as a backup' (P8) or in a medication example: 'I probably thought I would be quick enough afterwards to be able to correct or to counterbalance whatever she did.' (P3). Some direct supervisors also reported allowing a failure initially and then intervening to prevent that failure from having a potentially unacceptable outcome for the patient. These 22 examples of calculated rescuing included redirecting trainee-patient conversations (P14, P17), taking over the manoeuvre to get the baby out of the womb (P7), interrupting or changing a treatment plan (P4, P6), acting to stop bleeding (P13) or moving back in the colon to resect an overlooked polyp during colonoscopy (P19).

The choice to step back and give trainees space to learn through experience was commonplace in participants' accounts of allowing failure. One 'condone[d] a time delay... so that (the trainee) can think autonomously and act independently' (P4) as a way of deepening their learning. One emergency physician estimated that they would allow an unsuccessful communication exchange to go on for 'like five, ten minutes, and then (the resident) comes to a point where they sort of hit a wall. And then I often say, we'll discuss our plan and your concerns, and we'll get back to you. And we leave the room and I discuss the situation with the resident. What do we do now? And what can we do differently?' (P14). A surgical supervisor explained how they consciously 'would leave them much more alone and do mistakes...like I tell them 'put in the negative pressure bandage' and then it would be way too much of the black foam. And then I would go and say, look now what happens to the wound, next time we'll do it together because it's important to narrow the wound...' (P5). Sometimes supervisors reflected that they were allowing trainees latitude to try approaches different from their own:

Basically, I tell them ...there are a hundred methods to do (reposition a joint), take the method you want, but you have to know what you are doing ... Like if they explain me okay, I will do it like that and that and they don't mention that they have to reposition the patient I'll say well you are the one who's doing it. I'm just

here and I just do what you tell me to do. Then if they fail then I'll show them how to reposition the patient and how it makes it easier. P11

The educational value of standing back during supervision was felt to be profound: as one supervisor reflected, 'I think it was one of [the trainee's] strongest night shifts because then she suddenly recognised how life can be when your supervisor doesn't interact just in the moment, but just sorts the problem afterwards' (P7).

Further, supervisors emphasised how valuable they thought the experience of failure was for trainees' learning process. Failure was perceived as particularly powerful in its ability to provide trainees with sensory feedback for tasks or situations. For instance, an emergency doctor explained 'especially this (lumbar puncture), it's something you have to feel where you have to get in with the needle and if the angle is not correct, you always hit the bone.' (P16). And a critical care supervisor felt it was important for the trainee 'to have lived the experience, to know the feeling of it for further situations, knowing that you intubated wrongly.' (P8). Supervisors also acknowledged the emotional impact of failure as part of its educational power: 'I think for (the trainee) it was horrible because she was so self-confident that she thought she will manage, and nevertheless, I think she learnt a lot in the moment she had to do it.' (P7). Finally, supervisors perceived that experience failure is inevitable in medicine. Therefore they reasoned that it is better for trainees to fail under supervision than when they are working unsupervised because 'then they have the chance to practice the failure management in a setting with me' (P8); a trainee can '... learn from a situation that you have experienced yourself and know what happened and how to deal with complications' (P4). Supervisors reflected that feedback played an important role for learning from allowing failure. For instance, the supervisor involved in the C-section account (online supplementary file 1) detailed when and how she gave feedback, to ensure that the trainee will develop her anatomical knowledge, which the supervisor viewed as the basis of her failure.

DISCUSSION

Our findings suggest that allowing failure for educational purposes is not an uncommon pedagogical strategy in medicine. All participants described accounts of error permission (allowing errors to arise in naturalistic ways, and not preventing them), but none described using error promotion (purposefully adding challenge to elicit errors, or leading learners into specific errors).²⁹ Medical education is familiar with both approaches in simulated training environments.^{40 41} However, our results demonstrate that the practice of error permission extends into authentic clinical work, which raises a number of critical questions.

First, how is this strategy compatible with our patient safety culture? Healthcare tends to have a zero-tolerance approach to error,⁴² given the primacy of patient safety⁴³ and healthcare's consequent 'First, do no harm' guiding principle for clinicians.⁴⁴ In our data, although supervisors endeavoured to limit patient consequences, a range of potential and even actual harm was described. While these narrative accounts cannot claim causality, they are illustrative of the stakes involved when supervisors balance patient risk and trainee benefit; the sense of supervisory responsibility and need for rescue when the balance goes off; and the factors that may increase the potential for supervisors to misjudge. These factors likely include supervisory distance, as supervisors' abilities to infer consequences may be more attenuated the further they get away from direct supervision contexts.^{16 45}

Trainee learning and patient safety are conventionally seen as being in binary relationship to one another, with supervisors having to choose one or the other.⁴⁶ But we would argue that this binary is both infeasible and undesirable: infeasible because the very presence of learners promises inexperienced clinical performance which, in theory, threatens patient safety, and undesirable because, given the complexity of healthcare, physicians need to learn how to fail and recover, both technically and emotionally. Our participants' accounts of allowing failure suggest that they attempt to negotiate or balance these values, by affording just enough independence to the trainees that they will learn from an error experience, without creating undue risk to the patient. What we don't yet understand sufficiently is how supervisors negotiate this balance: what social and cognitive processes inform their decisions to allow failure for learning in one clinical episode, but not in another?

Second, if we accept that supervisors can balance, rather than choose between, learner development and patient safety, what kinds of failures can be allowed for learning? What supervisors described as a 'failure' varied across the sample, from an insufficient communication with a patient, to an improper angle for a lumbar puncture, to an insufficient medication dose for clinical effect. We anticipate that readers might view some of these as 'real failures' but not others. This variety and divergence of perception may reflect what Billett calls the 'relational interdependencies' of workplace learning: what constitutes an error depends on social factors and on personal preferences, which influence what is defined as an error in one setting (but not another), who defines whether an error has occurred (in our context, the clinical supervisor) and whether productive learning arises from it.³¹ Participants also explicitly debated whether these events should be referred to as mistakes, failures or errors, or whether they simply constituted different styles or approaches from that preferred by the supervisor. This ambiguity, which is also present in the literature on learning from

failures,^{31 33} has implications if communities of clinical supervisors are going to engage in discussions to develop shared expectations for using this educational strategy. Finally, our results illustrate that the relationship between failure and consequence is varied: not all failures lead to patient consequences, and not all consequences can be anticipated. This has implications for supervisors' ability to enact rescue strategies. How supervisors anticipate failures and consequences, and how they make judgements about whether to allow them, is the focus of an ongoing analysis of interview data beyond the narrative accounts in this study.

Third, what is the educational impact of allowed failure? Supervisors in our study were consistent in viewing failure as a powerful, and necessary, educational strategy. Their accounts reflect the philosophy, supported by the Institute of Medicine report in 1999,⁹ that failure is inevitable in medical practice, and, consequently, trainees will experience it eventually. Supervisors advocated failing *with* supervision as preferable to failing *without*, both for the patient and for the trainee, echoing concerns that resident errors arise from lack of supervision and policies that demand increased supervision.^{47–50} Their accounts also reflected medical education's strongly held value of progressive independence, the notion that trainees *must* be allowed increasing independence if they are to graduate prepared for practice.⁵¹ Our results suggest that supervisors appreciate their moment-to-moment supervisory decisions about allowing such independence as both inherently risky and ultimately necessary for trainees to develop into safe practitioners. We need more research on what—and whether—trainees have learnt, to better understand which sorts of failure episodes might be most educational for particular learners in particular situations.

One theory that might inform our understanding of what trainees learn from failure is that of negative knowledge, drawn from experiential learning theory: this is 'explicit knowledge about what not to do in certain situations'.⁵² Expertise is knowing what to do and doing it effectively, it is also knowing 'what not to do and thus (having) the ability to avoid errors and to intercept and interdict unproductive lines of thought during performance'.⁵² In allowing trainees to experience 'critical episodes which are perceived as 'wrong, but relevant'',⁵¹ such as the 'feeling' of a wrong angle for lumbar puncture or a poor intubation attempt, our participants were supporting trainees' development of 'negative expertise'.⁵³ Importantly, the theory of negative knowledge stresses the importance of analysis and reflection to maximise learning from critical negative episodes. While the accounts we analysed offered some examples of supervisors debriefing failure episodes with trainees, further research is required to understand how supervisors employ feedback and reflection when allowing failure, and how trainees experience them.

Finally, what are the implications of allowing failure for supervisory relationships and trainee wellness? The culture of clinical supervision has seen an important shift in recent decades, from being characterised by hierarchy, bullying and mistreatment^{54 55} to being predicated on supportive, constructive supervisory relationships.^{39 56 57} This shift reflects increasing concern with fostering well-being and resilience in order to combat burn-out and dropout.^{58–60} In order to allow trainees to fail without risking a return to a culture of supervisory mistreatment,⁶¹ we need careful attention to how trainees are responding emotionally to their failure experiences, as emotions can either deepen learning or impede it, depending on their valence.⁶² The understanding of the phenomenon could then be used to support explicit discussion and faculty development with regard to how to appropriately judge the balance between resident learning and patient safety in our field.

LIMITATIONS

In interview research, the role of the interviewer has a strong influence on the data collected. As a young surgical consultant and medical education researcher, the interviewer in this study (JMK) was able to develop a rapport with participants given her own experience as both trainee and supervisor. However, interviewing of near-peers may have led to acquiescence bias.

While our sample of 48 accounts from 19 participants was theoretically sufficient to support a rich preliminary sketch of this phenomenon, further research is required to develop deeper insight into the nature of this phenomenon in particular settings. Nuanced distinctions of which our data offer hints, such as those between direct and distant supervisory contexts, will require more purposeful sampling of such contexts in order to explore.

CONCLUSION

We recognise that we have described a practice—allowing failure for educational purposes—that may concern and discomfort readers committed to patient safety. However, given that such a practice appears to be in use among our participants, we should be explicitly discussing it in our clinical supervisory communities. Towards this end, we hope that clinical supervisors will use the definition we have put forward in this study as a starting point for discussing the educational strategy of allowing failure and developing a shared set of conditions and expectations that is reflective of the nature of supervision, the type of clinical performance, the potential for both anticipated and unexpected consequences, and the strategies that can be put in place to maximise trainee learning and avoid patient harm.

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