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Learning from Medical Errors

Healthcare professionals/trainees are often unprepared to experience and learn from errors due to structural characteristics of our systems and training programmes. Restructuration is needed to allow learning from errors.

Introduction

Medical error is considered one of the ten leading causes of death and disability in the world and as many as 4 in 10 patients are harmed globally (World Health Organization 2019). Mistakes not only impact patient safety, but also pose an emotional burden for medical staff (Fatima et al. 2021) since many of them experience emotions like anger, guilt, and remorse after medical errors occur (Christensen et al. 1992), with the risk of developing long-lasting conditions such as depression, burnout syndrome, impaired memory, and lack of concentration (Robertson and Long 2018), all of which leads to the notion of the “second victim” (Wu 2000). For these reasons, we should not only aim to prevent errors, but also seek to help healthcare professionals be prepared for their occurrence.

Becoming aware and speaking up about errors in clinical practice is an important part of the learning process of medical students (Chen et al. 2021). In fact, trainees may learn more from the errors they have personally experienced (Ryder et al. 2019). However, medical students are naturally prone to concealing their mistakes, instead of taking advantage of these personal experiences that may provide a fertile ground to explore their emotional responses to medical error and learn from them (Ryder et al. 2019; Lo et al. 2018).

Here, we will review the challenges that trainees experience when facing medical errors, and ways to integrate learning from medical errors with preparedness for them in medical training programmes.

Defining Medical Errors

Medical errors refer to preventable adverse events of medical care, even if not evident

or harmful to the patient (Hofer et al. 2000). They can also be defined as an act of omission or commission that contributes or may contribute to an unintended consequence (Rodziewicz et al. 2022). Errors of omission arise because of actions not taking place. Examples of this include failure to prevent pressure ulcers or patient falls. On the other hand, errors of commission arise when a wrong action takes place. For instance, administering a blood product to the wrong patient or performing a wrong-site surgery. Most medical errors are not due to a single physician or group of physicians; instead, they are due to systems that foster error-prone situations (Rodziewicz et al. 2022).

Factors related to medical errors include physician inexperience, fast-paced environments (such as emergency departments, intensive care units, operating rooms), patients in extremes of age, novel procedures, prolonged in-hospital stay, low-resource settings, inadequate doctor-patient relationship, depression, burnout, among others (Rodziewicz et al. 2022; Lifshitz 2004).

As a response to the rise of patient harm and with the evolving complexity of healthcare systems, the discipline of Patient Safety emerged, aiming to prevent risks and errors arising during the provision of healthcare. It is defined as “the avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of healthcare” (Vincent 2010).

What Impedes Us From Learning From Errors?

Error is inevitable as it is a fundamental part of the human condition. Nonetheless, there is a culture of infallibility in healthcare that punishes those involved in errors.

When failure occurs, consequences may be hurtful or even fatal towards patients, but can also potentially result in consequences for the careers of trainees and healthcare professionals. Because of this, it is implicitly discouraged to admit error, and physicians and students feel pressured to cover up rather than acknowledging their errors, causing a self-imposed silence in fear of blame and punishment. This phenomenon makes the connection between error and learning in medicine more difficult than in other disciplines, as it does not allow feedback.

It is imperative to be conscious of the great responsibility that comes with working with human lives, but rather than being afraid of making mistakes, we should be able to draw lessons from our errors enabling us to avoid their repetition and to build significant knowledge from them.

Most medical training programmes are well designed to provide trainees with the necessary knowledge to prevent errors by knowing what to do in certain circumstances (i.e., basic and advanced life support training). But patient and healthcare scenarios are so diverse that it is impossible to prevent all mistakes. Thus, emotional preparedness becomes even more imperative for trainees (Kiesewetter et al. 2018).

According to Lee et al. (2018) many medical students had difficulty during their clinical rotations to analyse and reflect on the medical errors they witnessed. Therefore, it is necessary to integrate a teaching model that focuses on the positive aspects of medical errors as learning opportunities. Education on patient safety and medical mistakes is also a strategy to prevent errors that needs to be implemented by medical schools (Goyal 2021).

Models of teaching through medical errors have shown that digital case studies are innovative ways of introducing key patient safety concepts and experiential practice of interprofessional communication in medical students (McCoy et al. 2020). The incorporation of simulation in medical education helps the student learn about mistakes that could be prevented under certain scenarios to develop confidence (Suleiman et al. 2021). Under these scenarios, students can experience and learn from medical errors in a controlled way.

How to Use Medical Errors as Opportunities to Learn

There are intrinsic and extrinsic factors involved in the process of using errors for educational purposes, the former being

factors specific to the medical student's behaviour and the latter being part of the system and environment in which they develop. Bridging both aspects is important in order to build an interrelated system that favours learning and competency.

As part of the intrinsic factors, Shepherd et al. (2019) reported that, to promote learning in the circumstances of medical error, a change in the way medical trainees see failure is needed. Thus, it is necessary to normalise error as part of the learning process as well as having peer support and mentorship with a blame-free focus. The emotional response that accompanies medical error – such as guilt, shame, and grief – can enhance memory and bring desirable outcomes to the learning process as a catalyst and motivating force to take corrective actions.

Another crucial part of using error for learning that connects intrinsic with extrinsic factors is requesting help when needed, since supervision is a pillar in learning to be competent and autonomous in clinical practise. Kroll et al. (2008) mention that if medical students and residents are to gain experience and deliver good patient care, current systems of support and supervision must change. The study strongly suggests that clinical supervisors are key in the learning process and expectations should be clarified in three ways. Firstly, trainees must be explicit about when and whom to ask for help. Secondly, supportive, and constructive feedback on all decisions – good, bad and borderline – must accompany an omnipresent reassurance, since such discussions may lead to detection of near-misses – defined as potential adverse events that could have caused harm but did not, either by chance or because someone or something intervened (Rodziewicz et al. 2022) – and errors, building motivation to learn from error and attenuating stress. Thirdly, supervisors must ensure that trainees have an appropriate level of confidence and accept an appropriate level of responsibility for errors (Kroll et al. 2008).

Complementarily, a retrospective analysis of workshops addressing patient safety and supervision concluded that improved

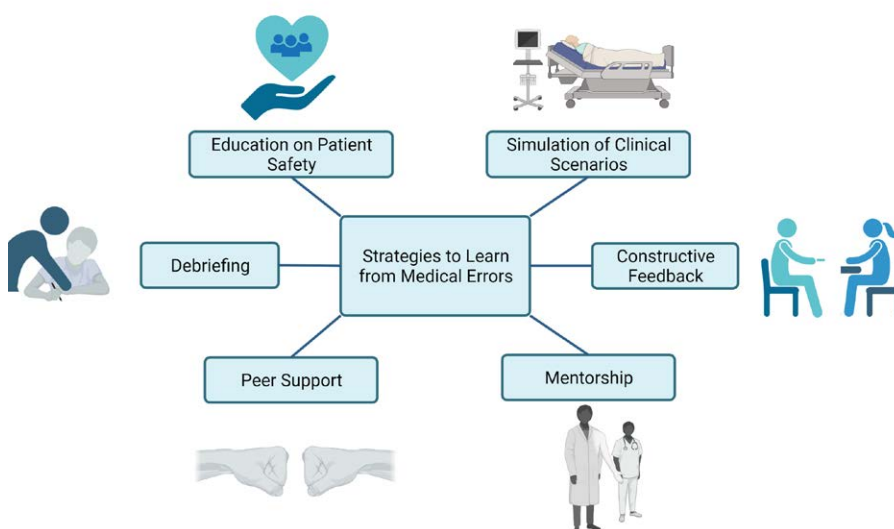


Figure 1. Strategies to learn from medical errors. Created with BioRender.com

supervision and communication within the medical hierarchy has the power not only to create more productive learning environments but also to improve patient safety by addressing behaviours that would otherwise remain undetected or uncorrected (Ross et al. 2011).

Debriefing is a major tool that takes into consideration both intrinsic and extrinsic factors involved in learning, as well as the existing problems, encompassing solutions to achieve a meaningful learning experience. According to Cho (2015), debriefing is a conversational session that revolves around sharing and examining information after a specific event has taken place. It may follow a simulated or actual experience and provides a forum for the learners to reflect on the experience and learn from their mistakes.

Since medical learning is based on educational hierarchies in a closely related system, a chain effect can be achieved if

everyone is trained in debriefing, which can occur in a simulation environment, but also in actual professional clinical practice. This could help improve confidence and experience in medical trainees and also

most medical errors are not due to a single physician or group of physicians; they are due to systems that foster error-prone situations

develop assertive and open communication in a safe space, allowing the evaluation of their performance, while also giving feedback on errors in a timely manner in order to learn from them. Helpful strategies to learn from medical errors are shown in **Figure 1**.

Conclusions

A key step into the solution of medical errors is the promotion of a societal and institutional culture that accurately identifies safety challenges while implementing feasible action plans through education, training, and teamwork rather than a culture of blame, fear, and punishment, albeit preserving individual accountability. The entire healthcare systems must be constantly revised to make sure improvements are directed towards making a safer environment for both patients and physicians. All members of the healthcare team must ensure effective interprofessional communication, recognise and report a medical error when first noticed and provide timely support to their peers after an adverse event occurs.


Conflict of Interest

None. ■

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