

Patient Safety In Medicine: An Anaesthesiology Case Study





Patient Safety in Medicine: An Anaesthesiology Case Study Harry Delany¹

1. School of Medicine, University College Dublin, Belfield, Dublin 4

Of all the marvels achieved in medicine, arguably none have been more fundamental than the elimination of pain during surgery. Since the inception of their science, anaesthetists have persistently aimed to reduce perioperative patient harm¹. Early agents, such as chloroform, often caused death in healthy individuals during minor procedures. Fortunately, advances in medical science accelerated during the 20th century. Pharmaceutical and technical innovations substantially improved patient safety, reducing anaesthesia mortality by 100-fold between 1940 and 2000². While not performing the surgery, an anaesthetist's role in monitoring patient stability and safety is critical to an operation's success. Subsequently, patient safety describes all the ways in which healthcare organisations and their actions prevent adverse patient outcomes³. While perfecting pharmacology and medical procedures is vital, patient safety in anaesthesiology can be detrimentally affected by toxic work culture, burnout, and poor perioperative teamwork⁴. Further still, data pertaining to patient safety (such as patient mortality incidence due to medical error) must be recorded to prevent future adverse healthcare events. Therefore, improved perioperative behaviour strategized by adequate patient safety data should further optimise patient health.

Historically, efforts to improve productivity in healthcare have required longer staff working hours. However, without adequate support structures, such lifestyles can cause burnout and diminished healthcare quality. Burnout is a syndrome resulting from chronic workplace stress without effective management⁵. Traditionally, healthcare has been anchored by a culture of non-negotiable inferior work-life balance, safeguarded by the notion that burnout is simply a medical rite of passage⁶. Burnout is especially prevalent in anaesthesiology due to management of high-risk patients, long hours, and the frequent handling of difficult situations under a relative lack of clinical knowledge⁷. Over 40 per cent of anaesthetists have reported high burnout⁸.

Unfortunately, the harsh anaesthesiology working conditions demonstrates a near linear relationship with malpractice. In several studies, anaesthesiology trainees with a high risk of burnout (those working more than 60 hours per week) reported significantly more medical errors compared to low-risk trainees (those working less than 60 hours per week)^{9,10}. Further, anaesthetists experiencing burnout can increase medical error rates two-fold compared to those not experiencing burnout¹¹. Medical errors can range from delayed dosing to nerve injury¹⁰. Such are



the dangers of patient safety in clinician burnout that deaths from medical errors have become the third leading cause of death in the United States¹². Improving clinician burnout is thus critical in improving patient safety. Healthcare organisations should implement policies to allow a healthier living environment, such as extra staff, sufficient rest, and better enabled access to support groups. Simultaneously, self-management of symptoms, such as elevated social life and selfcare, should be encouraged. By addressing burnout at both an institutional and personal level, reduced malpractice and elevated patient safety may likely follow.

Medical error can often be attributed to poor perioperative communication. Differences in information coding (such as medical abbreviations) and the perceived value of information can often be poorly translated between staff. If the anaesthetist fails to seamlessly coordinate themselves with the team, clarity about the patient care plan or responsibility of team members can become blurred, resulting in malpractice. Lingard¹³ estimated that over a quarter of the communications within the operating room fail, leading to delays, tension, and procedural errors¹⁵. Such errors can be the failure to communicate critical pieces of information to the anaesthetists (such as allergies), thus leading to patient harm¹⁵. Limited sharing of information perioperatively has been shown to double the risk of surgical complications compared to teams who frequently share information¹⁶. Ultimately, for patient

safety to be seriously considered, effective communication between all members of staff must be made a priority. Ideally, decisions should be made by consensus as a team, with all members contributing ideas. Salas¹⁷ has advised a five-pillar model for effective teamwork within the operating room. These include shared leadership, monitoring mutual performances, teammate backup, patient adaptability, and mutual team agreement. Further, clinically aimed training programs have shown to improve communication, and thus patient safety, within the operating room¹⁸. By working as a team, anaesthetists will better holistically understand the patient care plan, thus improving overall patient safety.

Physicist Lord Kelvin once stated, “if you cannot measure it, you cannot improve it”¹⁹. Policies and procedures designed to improve patient safety are based on persistent recordings on the causes of patient harm. Nonetheless, a recent survey of European anaesthetists highlighted that only 56 percent of European hospitals produce annual reports on patient perioperative harm, and only 37 percent continuously highlight potential intervention strategies²⁰. Among anaesthetic staff, many barriers encourage a low incidence of reporting. Fear of blame is common, stemming from the belief that reporting malpractice can produce legal ramifications²¹. Further, many individuals do not know what constitutes a mistake, thus leading to underreporting of clinical error²².

The level of harm, type of inci-



dent and profession type has also been shown to bias the rate of reporting. In a survey, staff were more likely to acknowledge major anaesthetic mistakes (such as nerve injury) compared to a minor mistake (such as multiple intravenous injection attempts)²³. Additionally, anaesthetists were more likely to report adverse events than anaesthetic nurses²³. To encourage rates of reporting, some hospitals have implemented a 'just-culture': a blame-free healthcare ethos without penalties²⁴. Other strategies include education on what to report, and staff employed for patient safety incident management²⁴. Nonetheless, patient safety data collection methods are not standardized between hospitals, thus making it difficult to compare patient safety over time and between countries²⁵. Subsequently, healthcare providers should aim to not only consistently record patient safety data, but also devise a gold standard data collection method to allow for easy international comparisons.

Anaesthetists work in an environment where the unreliable delivery of best practice healthcare may contribute to patient harm. While burnout and miscommunication present threats to patient safety, such behaviours are preventable if properly intervened by health organisations. Simultaneously, consistent patient safety data must be effectively recorded to back up the implement strategies to reduce future patient harm. While anaesthesiology still faces many challenges, one of the biggest may be convincing all anaesthetists that

the effectiveness of patient safety strategies is just as important to their practice as the pharmacology and engineering under which their profession relies.

References:

1. Robinson DH, Toledo AH. Historical development of modern anesthesia. *Journal of Investigative Surgery*. 2012;25(3):141-9.
2. Gibbs N, Borton C. Report of the Committee convened under the auspices of the Australian and New Zealand College of Anaesthetists. Melbourne: Australian and New Zealand College of Anaesthetists. 2006:2000-2.
3. Wacker J. Measuring and monitoring perioperative patient safety: a basic approach for clinicians. *Current Opinion in Anaesthesiology*. 2020;33(6):815.
4. Newport M, Smith AF, Lewis SR. An arrow pointing somewhere: Qualitative study of the Helsinki declaration on patient safety and its role in European anaesthesiology. *LWW*; 2020.
5. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Annals of internal medicine*. 2002;136(5):358-67.
6. Baigent M, Baigent R. Burnout in the medical profession: not a rite of passage. *Med J Aust*. 2018;208(11):471-2.
7. Larsson J, Rosenqvist U, Holmström I. Enjoying work or burdened by it? How anaesthetists experience and handle difficulties at work: a qualitative study.



British journal of anaesthesia.
2007;99(4):493-9.

8. Sanfilippo F, Noto A, Foresta G, Santonocito C, Palumbo GJ, Arcadipane A, et al. Incidence and factors associated with burnout in anesthesiology: a systematic review. *BioMed research international*. 2017;2017.

9. de Oliveira Jr GS, Chang R, Fitzgerald PC, Almeida MD, Castro-Alves LS, Ahmad S, et al. The prevalence of burnout and depression and their association with adherence to safety and practice standards: a survey of United States anesthesiology trainees. *Anesthesia & Analgesia*. 2013;117(1):182-93.

10. Sousa ARC, de Barros Mourão JI. Burnout in anesthesiology. *Brazilian Journal of Anesthesiology (English Edition)*. 2018;68(5):507-17.

11. Tawfik DS, Profit J, Morgenthaler TI, Satele DV, Sinsky CA, Dyrbye LN, et al., editors. Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. *Mayo Clinic Proceedings*; 2018: Elsevier.

12. Makary MA, Daniel M. Medical error—the third leading cause of death in the US. *Bmj*. 2016;353.

13. Lingard L, Espin S, Whyte S, Regehr G, Baker GR, Reznick R, et al. Communication failures in the operating room: an observational classification of recurrent types and effects. *BMJ Quality & Safety*. 2004;13(5):330-4.

14. Weller J. Shedding new light on tribalism in health care. *Medical education*. 2012;46(2):134-6.

15. Schwilk B, Gravenstein N, Blessing S, Friesdorf W. Postoperative information transfer: a study comparing two university hospi-