

## **Primum non nocere: an impossible task in medicine?**

“Primum non nocere” (“first, do no harm”) is a core ethical principle in medicine. Despite the physician’s obligation to avoid patient harm, no treatment is without potential risks or unintended consequences. Globally, 30-day post-operative mortality remains a leading cause of death, highlighting the importance of reducing potential harms at all stages of the surgical process (1). The role of anaesthesiologists in managing vital signs, administering medication, and monitoring patients during procedures, holds serious implications for patient safety. Furthermore, the increasing complexity of patient care has only made the task of ensuring patient safety more difficult. Far from being an impossible task, avoiding harm is instead an ongoing process to improve patient safety, requiring constant evaluation and adaptation. This essay will explore how patient safety is improved in anaesthesia through patient engagement, development of a culture of safety, and advances in technology.

Patient engagement is a critical component of patient safety in anaesthesia. When patients are engaged and empowered in their care, they are more likely to communicate their needs and concerns, ask questions, and provide feedback that can help physicians to identify and address potential safety issues. Patient engagement is especially important in promoting the safe use of medications. Creating an environment of open communication can help patients to feel safe in reporting concerns regarding their medications. Moreover, engaging patients can create opportunities for physicians to include patients in their medication management. For example, increasing patient engagement can assist physicians in identifying optimal treatment plans, advising patients on medication adherence, and discussing potential side effects, thereby reducing the risk of medication errors and adverse drug events (2). Additionally, patients in prehabilitation benefit from early patient engagement by being better prepared for their operation and by being more informed on risks and benefits associated with the procedure, preventing complications. Early engagement also allows patients the time to share concerns so that anaesthesiologists can adjust their care plan to account for the patients’ needs and preferences. Thus, fostering patient engagement is a means of improving patient safety and avoiding undue harm.

Creating a culture of safety in anaesthesiology is a critical component of patient safety. Safety culture represents a team’s shared values and sense of responsibility for patient safety (3). Fostering an environment that prioritizes patient safety empowers members on a healthcare team to collaborate and communicate effectively, leading to improved care coordination. For example, a culture of safety and teamwork is better able to address peri-operative deterioration during surgical procedures, specifically through early recognition and intervention for patients experiencing adverse events (3). Additionally, building a culture of safety encourages team members to be more proactive in speaking up when potential safety concerns arise, ensuring interventions are quickly initiated. Finally, a culture of safety promotes continuous learning and evaluation of safety practices, a practice that is essential to identifying areas for improvement

and implementing changes that avoid potential errors. Promoting a culture of safety creates an environment where teams can strive to improve patient safety.

Lastly, technological advances in anaesthesia play a substantial role in improving patient safety. In recent years, anaesthesia simulation training has become a valuable tool in improving patient safety (4). By providing a safe and controlled environment, simulation allows anaesthesiologists to practice high-risk scenarios, refine technical skills, and identify errors during procedures such as equipment malfunctions and medication errors. Incorporating simulation into practice also allows anaesthesiologists to enhance their skills and provide better care to their patients. Additionally, advances in patient monitoring systems have improved patient safety outcomes. For example, anaesthesia information management systems (AIMS) have become useful tools for recording patient information, including medication, dosages, allergies, or other factors that may impact anaesthesia (5). These systems improve patient safety and outcomes in several ways. Notably, AIMS allow for real-time monitoring vital signs which can help identify potential problems early on, allowing for swift intervention. Furthermore, AIMS provide decision support by analyzing data and providing real-time alerts to the anaesthesia team. Lastly, AIMS facilitate communication between team members by using a centralized database of patient information for real-time sharing of data. Thus, the effectiveness of new technologies in anaesthesia highlights the important role they play in improving patient safety and reducing potential harms.

In conclusion, patient safety is not an impossible task, but rather a continuous process of improvement. To deliver safe care and improve patient outcomes, promoting patient engagement, creating a culture of safety, and adopting technological advances in patient care are crucial to reducing the risk of harm and adverse events to patients in anaesthesia, ultimately leading to better outcomes. Through ongoing evaluation and assessment of safety practices, anaesthesiologists can optimize patient safety and ensure that they are providing optimal care to patients.

## References

1. Nepogodiev D, Martin J, Biccard B, Makupe A, Ademuyiwa A, Adisa AO, et al. Global burden of postoperative death. *The Lancet* 2019; 393(10170):401.
2. Mahajan A, Esper SA, Cole DJ, Fleisher LA. Anesthesiologists' Role in Value-based Perioperative Care and Healthcare Transformation. *Anesthesiology* 2021; 134(4):526–40.
3. Warner MA, Arnal D, Cole DJ, Hammoud R, Haylock-Loor C, Ibarra P, et al. Anesthesia Patient Safety: Next Steps to Improve Worldwide Perioperative Safety by 2030. *Anesth Analg* 2022; 135(1):6–19.

4. Higham H, Baxendale B. To err is human: use of simulation to enhance training and patient safety in anaesthesia. *Br J Anaesth* 2017; 119:i106–14.
5. Simpao AF, Rehman MA. Anesthesia Information Management Systems. *Anesth Analg* 2018; 127(1):90–4.