

## **Patient Safety in Anaesthesia: Have We Made Progress?**

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### **Introduction**

Over 20 years ago, the United States Institute of Medicine published the report 'To Err is Human: Building a Safer Health System'. The report contained sobering statistics- that up to 98,000 people are killed by medical errors in American hospitals each year, and a further million are injured (Kohn, Corrigan and Donaldson, 2000). While the most basic decree of medicine is 'primum non nocere'- first, do no harm- the report revealed that medical errors cause more deaths annually than AIDS, or breast cancer, or motor vehicle accidents. Anaesthetics in particular has faced its own reckoning with patient safety and medical error after the case of Elaine Bromiley, who was being anaesthetised for an elective procedure when her airway became compromised (Bromiley, 2015). She could not be intubated or ventilated, and died after standard procedure was not followed. The patient's husband, Martin Bromiley, used his experience in flight safety to advocate for an investigation into his wife's death, which otherwise may not have occurred. The conclusion of this investigation emphasised the Institute of Medicine's report title: to err is human. Elaine Bromiley had been failed by systems, systems which had not exposed the anaesthetic team to such a situation before, systems which had not equipped the team to deal with a crisis. Systems that were allowing the same fatal or near-fatal mistakes to be made repeatedly without investigation. So, almost 20 years after Elaine Bromiley's death, we must investigate: have we made progress?

### **The Bottom Line**

In recent years, the anaesthesia-related mortality rate has dropped to an estimated 0.04-7 per 10,000 patients, decreasing ten-fold since the 1980s (Haller, Laroche and Clergue, 2011). A large study of otherwise healthy individuals undergoing elective procedures reported the rate of anaesthetic-related mortality or serious morbidity as 7.3 per million cases (Schiff *et al.*, 2014), a massive decrease since the 1950s (Beecher and Todd, 1954). How have we made progress, and what can we improve?

### **I Can't See You**

Clearly, lack of investigation was a major issue at the time of Elaine Bromiley's death. We cannot improve issues we cannot see. Although anaesthesia today shows better understanding of the need for investigation and reporting, a 2021 systematic review found that studies reporting medication error in anaesthesia are very heterogenous, and the authors felt a standardised reporting system would be of benefit (Bratch and Pandit, 2021). The authors emphasised the difficulty in drawing conclusions regarding rates of errors. The methods used for investigation included retrospective recall, self-reporting, analysis of large databases, observational studies, and observing for dose calculation errors (Bratch and Pandit, 2021). Further study of the accuracy of each method in anaesthesia would be beneficial, and allow for comparison between different centres and,

importantly, comparison over time. By comparing previous error rates to current rates, matching like with like, we will garner an accurate idea of whether progress is being made in anaesthetic safety.

Another method by which we can look at patient safety is litigation. In Ireland, from the year's 2011 to 2016, general anaesthesia was the most commonly cited in litigation claims, followed in joint third place by local anaesthesia (McCullagh and Slattery, 2019). It must be acknowledged that anaesthesia carries inherently higher risk compared to many specialties, but some particular points are still worth noting. Of the general and local anaesthetic claims, half were for either awareness during general anaesthetic or inadequate epidural block during Caesarian section, both of which can cause significant long-term psychological scars (Macleod and Maycock, 1992). Awareness during anaesthesia is much more common in obstetric and paediatric patients (Blussé Van Oud-Alblas *et al.*, 2009; Pandit *et al.*, 2014). While this is likely due to the increased complexity in dose calculation in these populations, it none the less could still be seen to be reminiscent of anaesthesia's unfortunate past, when women in labour and babies were denied anaesthesia or adequate pain relief (Rutter and Doyal, 1998; Sykes and Bunker, 2011) To make progress in patient safety, we must ensure we are making progress for all patients, especially those who are underrepresented in medical research. While this is of course complicated by ethical issues surrounding research in these populations, to exclude them and cause increased harm through lack of knowledge is itself ethically unacceptable. While randomised control trials, for example, may not be ethically possible, observational and descriptive studies such as the DREAMY trial for awareness in obstetric patients may offer valuable insights (Odor *et al.*, 2020).

### **Who Cares for the Carers?**

Ireland's non-consultant hospital doctors work long and difficult hours (O'Donovan, 2022). Irish doctors are often made to work 24 hour shifts, despite the well-established fact that being awake for prolonged periods causes reduced brain function, with particular impairment in higher-order cognitive processes (Thomas *et al.*, 2000). In a 2014 survey of anaesthesia trainees, 71% of respondents reported to have worked weeks of greater than 48 hours, and 37% reported to have worked shifts of longer than 24 hours in duration, which contravene the European Working Time Directive (Brohan and Moore, 2017). On average, trainees worked 66 hours per week, with 68% missing departmental teaching. This is, of course, an ever-present and pervasive issue in Irish medicine, which will not resolve without increasing the number of coveted training places available, and recruiting consultants to the many vacant posts with fair pay and working hours. Indeed, anaesthesia consultants in the UK and Ireland also report difficulties caused by working hours and night shifts, with 91% reporting work-related fatigue, over half of these noting this impacted negatively on their health and home-life (McClelland *et al.*, 2019).

### **Conclusion**

Anaesthesia-related morbidity and mortality has decreased massively since the 1950s, although it remains considerable. Increased knowledge of human factors and failsafe systems has allowed for better training. The role of investigation of errors is clearly understood, although in practice this is heterogenous and could be improved. Ultimately, anaesthetics is still practiced by overworked and fatigued doctors, and we will only see anaesthetics at its best when we are at ours.

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