

Why Bad Things Happen to Good People: Complex Systems and Chaos

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Bad things do happen in medicine,¹ including in anaesthesia²: it is not difficult for the public to view these as reflecting negligent practice, and for the law to respond accordingly.³ A contrary view holds that it is normal for things to go wrong in complex systems,⁴⁻⁶ and that system of healthcare is not only complex, but at times arguably in chaos. Glouberman and Zimmerman have divided problems into simple, complicated and complex.⁷ Much of what anaesthetists do for patients involves processes that are really only complicated, and should therefore be amenable to established tools of process engineering.⁸⁻⁹ Nevertheless, complex problems do occur regularly, and decisions must often be made under severe constraints of time. Emphasis on algorithms and somewhat deterministic concepts of human cognition may under-rate the complexity of the human brain. Perhaps it is not in understanding the system but rather in understanding the way in which humans deal with it that concepts of chaos become important. Important empirical work providing insight into human decision making may have been somewhat overlooked in the literature related to human factors in anaesthesia.¹⁰⁻¹¹

1. Kohn LT, Corrigan JM, Donaldson MS, editors. *To Err Is Human: Building a Safer Health System*. Washington DC: National Academy Press, 1999.
2. Webster CS, Merry AF, Larsson L, McGrath KA, Weller J. The frequency and nature of drug administration error during anaesthesia. *Anaesthesia and Intensive Care* 2001;29(5):494-500.
3. Merry AF, Peck DJ. Anaesthetists, errors in drug administration and the law. *New Zealand Medical Journal* 1995;108:185-187.
4. Perrow C. *Normal Accidents: Living with High Risk Technologies*. 2nd edition ed. Princeton New Jersey: Princeton University Press, 1999.
5. Merry AF, McCall Smith A. *Errors, Medicine and the Law*. Cambridge: Cambridge University Press, 2001.
6. Merry AF. How does the law recognize and deal with medical errors? *Journal of the Royal Society of Medicine* 2009;102(7):265-71.
7. Glouberman S, Zimmerman B. Complicated and Complex Systems: What Would Successful Reform of Medicare Look Like? Discussion paper no. 8, Commission on the Future of Health Care in Canada, Saskatoon, 2002.
8. Gawande A. *The Checklist Manifesto*. New York: Metropolitan Books Henry Holt and Company, 2010.
9. Runciman B, Merry A, Walton M. *Safety and Ethics in Healthcare: A Guide to Getting it Right*. Aldershot: Ashgate, 2007.
10. Wegner DM. Ironic processes of mental control. *Psychological Review* 1994;101(1):34-52.
11. Klein G. *Sources of Power: How People Make Decisions*. Cambridge, Massachusetts: The MIT Press, 1999.