

## ADVERSE EVENTS

### Human Factors for Anaesthesia: Difficult Airway Management



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Adverse events for patients in healthcare are not only caused by equipment failures or deficiencies in practitioners' clinical skills. There are organisational and human factors which can also contribute to task failures, such as unsafe work cultures, inadequate team coordination, poor decision making or distraction. An acceptance of the requirement to take these factors into account when analysing accidents is now established in most safety-critical work settings, such as aviation or energy. Human factors are known to contribute to surgical adverse events and anaesthetic incidents, such as those resulting from difficult airway management. Research suggests that 1 in 10,000 patients has an unpredicted difficult airway, of those, approximately 1% will have a failed airway where they cannot be intubated. The aim of this project was to utilise the Human Factors Investigation Tool (HFIT) to analyse the human factors components of anaesthetic incidents, with a focus on difficult airways.

#### Human Factors in National Audit Project (NAP4) cases

The HFIT investigation method uses a hierarchical question bank that was designed to collect information on 28 categories of human and organisational factors related to four components of an accident trajectory. These are: (i) Threats - the underlying work conditions that may be causal, (ii) Situation Awareness - the cognitive processes which may have preceded an action error, (iii) Action Errors – (e.g. pressing the wrong switch) occurring immediately prior to the incident, (iv) Error Recovery mechanisms – actions that averted an accident, in the case of near misses. The list of 28 categories was shortened and adapted for use in this study.

The fourth National Audit project (NAP4) was launched by the Royal College of Anaesthetists and the Difficult Airway Society to collect case reports of serious events occurring in the UK between September 2008 and August 2009, related to difficult airway management in anaesthesia, the emergency department and intensive care. The objective of this pilot study was to conduct interviews with anaesthetists who had already reported cases to NAP4, using an adapted version of HFIT to structure the interview protocol. The aim was to determine what, if any human factors information could be generated by this method.

This was a very small sample of cases (n=12), involving only one witness to the event and therefore the results have to be interpreted with caution. The most frequent themes to emerge related to situation awareness and person factors. Other points noted included the need for assertiveness, the underestimation of specific risks and variation in practice.

#### Publications

Flin, R., Fioratou, E., Frerk, C., Trotter, C., & Cook, T. M. (in prep) Human factors in difficult airway management

#### Related publications

Cook, T.M., Woodall, N., & Frerk, C. (2011a) Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society: Part 1: Anaesthesia. *British Journal of Anaesthesia*, 106, 617-31.

Gordon, R., Mearns, K. & Flin, R. (2005) Designing and evaluating a human factors investigation tool (HFIT) for accident analysis. *Safety Science*, 43, 147-171.