



Minimise mistakes

Dr Ifan Lewis and Dr Mark Stacey

The role of human factors in healthcare has long been recognised and has been studied in detail over the past decade due to its potential to explain the phenomena associated with errors and mistakes in clinical settings. Work started in the early 90's and has flourished since then. To name just a few, Harvard (Brennan et al. 1991) and later the OWAM (Department of Health 2000) studies highlighted the role of human factors in patient harm. This How To paper aims to explore a few basic concepts surrounding error and bias. Having an awareness of pitfalls in our own performance allows us to train to mitigate these factors and to minimise mistakes.

Situational Awareness

Situational Awareness (SA) is a critical concept in any field that involves complex and dynamic systems where safety is a priority. It is particularly relevant to medicine because of the potential to combine theories from cognitive disciplines and systems approach to develop preventative measures of diagnostic errors (Singh, et al. 2006). SA can be thought of as a three stage process including **PERCEPTION, COMPREHENSION** and **ANTICIPATION** and these three stages can occur very quickly (Endsley 1995).

Consider this clinical example:

A Junior doctor is called to a "cardiac arrest" on the medical admission unit. The doctor is the first to arrive and the nursing staff present are attempting to ventilate the patient. This is a perceived cardiac arrest, CPR is started and defibrillator attached. Further staff arriving continue to prepare adrenaline and gain large bore IV access. At this point the patient wakes with a start- fighting people away. Once the situation settles patient admitted he faints regularly and had fainted after standing up too quickly.

The main issue in this example was loss of Situational Awareness:

- 1. Perception** – Incorrect initial diagnosis, likely to be due to anchoring bias; i.e., assuming that those that instigated treatment are probably right.
- 2. Comprehension** – Combination of defibrillator, BVM and high stress situation lead to the assumption of a cardiac arrest.
- 3. Anticipation** – The initial call out was to a "cardiac arrest". Thus, mental pre conditioning would have happened prior to arrival to scenario.

Work done in the aviation industry has identified that the majority of errors are made at the first step, perception (78%), followed by failure to understand (17%) and anticipatory failures (5%). A phenomenon highlighted above is the "bandwagon effect" and this refers to the tendency of individuals to follow group mentality in times of stress. Conformity can prevent people from speaking up in a crisis scenario especially if there are varying levels of experience among staff. Eliminating this phenomenon from clinical practice relies on a culture of being able to challenge seniors, albeit in a respectful manner. In a calm clinical environment that is well within the competence of the clinician, SA is likely to be high and triggers are likely to be dealt with in a controlled manner. However, this may not be the case with confounding stressors including fatigue and stress. Many cognitive errors and biases are discussed in the literature and here we provide some examples of these:

Task Fixation

In a challenging environment we can get caught up with a task ignoring all clues. In the extreme form, this is known as task fixation. Fixation errors are normally easy to identify to persons removed from the immediate stressor, but can have a devastating effect on the individual caught up in the evolving situation. Avoiding fixation completely is not possible, and we must recognise that all of us, however experienced, are susceptible to “tunnel vision” during stress. Understanding that we are all vulnerable to these heuristics is the first step of managing them in the clinical environment.

Cognitive Bias

Cognitive biases can be thought of as thought processes that lead away from guidelines and normal rules. They can be useful in stressful situations as they require less cognitive input and can lead to rapid decision making. However, most cognitive biases can be thought of as “short cuts” and as such are vulnerable to mistakes. In times of stress we also hope for the normal, an escape from the stressor, and in this situation we are vulnerable to confirmation bias. Confirmation bias arises when we have a trigger that is open to interpretation and we pick the clue that fits our model, rather than considering an alternative model.

Discussing biases in detail is beyond the scope of this paper and Kahneman’s (2012) seminal book is an excellent source on the topic. It is important to realise that we are all susceptible to biases and need to overcome this by actively engaging in the tasks we are undertaking.

Hungry - Angry - Tired

These three emotional states lower our stress threshold. It is imperative that we account for these factors in our everyday practice. As professionals we must be aware of our state of mind and accept that performance will vary depending on it. Not only will our ability to complete complex tasks diminish, our stress threshold will be lowered – leading us into a spiral of fixation and biases, processes that require less power of thought than real comprehension of a stressful situation.

Communication and Challenges

Communication was identified in the NAP4 airway audit (Cook, 2011) as being contributory to 22% of the adverse events related to human factors (40% of total cases recorded in the audit). Communication is a skill we all take for granted. We communicate from a young age and it’s an integral part of everyday life, yet we must appreciate that communication is an art in itself and we can all improve. Clear, concise communication in stressful circumstances can minimise the risks posed by fixation and bias and help to maintain SA.

Situational Awareness (SA) Checks

Multiple clinical triggers are aimed at re-establishing SA, these include National Early Warning Scores (NEWS), Saturation probe alarms, and ventilator alarms to name but a few. When these systems alarm, it should instigate the three step approach (Mitchell 2013):

- ▶ **Focus** – Identify the issue causing alarm
- ▶ **Consider** – Consider all possible causes for change. A step aimed at reducing confirmation bias.
- ▶ **Confirm** – Discuss with senior or other team members. A safety measure to minimise task fixation.

Conclusion

Human factors contribute to adverse events in all aspects of life including healthcare. The aim of this paper was to highlight some common errors of decision making and how to minimise them. A lot of these processes are linked to how we think, and further reading would help in further understanding why we are vulnerable to decision making errors under stress. We are all susceptible to stress and stressors will vary according to experience and specialist areas. By accepting this we can develop our clinical practice with mechanisms in place to minimise potential sources of error and maximise positive outcomes.

Further Information

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Dr Ifan Lewis is an Anaesthetic Registrar at University Hospital Wales, Cardiff

Dr Mark Stacey is a Consultant Anaesthetist at University Hospital Wales, Cardiff

Series Editor

Dr Michal Tombs – Senior Lecturer in Medical Education, Postgraduate Medical & Dental Education (PGMDE), School of Medicine, Cardiff University.

