Safer Care Victoria

# Cognitive bias and adverse events

- **Cognitive biases are mental shortcuts we use to make decisions quickly**
- **Cognitive bias can lead to inappropriate judgement, which can contribute to adverse events**
- **Cognitive biases affect adverse event reviews through decreased objectivity and unfair judgement**
- **Strategies to manage cognitive biases can help to mitigate their influence**

## OVERVIEW

Cognitive biases are mental shortcuts (or rules of thumb) that humans rely on to make judgements and decisions. They help us:

- make sense of too much information
- fill in information gaps (with stereotypes and experience)
- act fast in time-pressured situations
- prioritise what to remember for the future.

Cognitive biases affect the way we perceive, act upon, and remember information, and can thereby contribute to poor and unfair judgement[1][2]. Work environmental factors such as fatigue can intensify cognitive bias[3].

### Cognitive biases are human

Due to our natural working memory limitations, we use a relatively small amount of information to develop a picture of a situation. Cognitive biases can affect the review of an adverse event and be a contributing factor to the adverse event itself.

## COGNITIVE BIAS AND ADVERSE EVENTS

### Cognitive bias can affect clinical care

Cognitive biases can negatively affect clinical care provided to patients in many ways. A few examples are:

- making generalised judgements about patients
- looking for clinical information that confirms an initial clinical judgement but disregarding contradictory evidence, e.g. looking for vital signs that confirm correct placement of a tracheal tube, but not considering signs that may indicate oesophageal intubation[4]
- relying on a recent experience when making a clinical decision, e.g. a recently conducted CT pulmonary angiogram with unexpected normal outcomes in a suspected high-risk patient contributes to the decision not to undertake a scan in a current patient)
- a senior person dismissing a safety issue raised by a less experienced or non-medical staff member when it contradicts their own opinion[5].

The effect of cognitive bias on the provision of clinical care can be intensified or mitigated by the design of the broader system and organisational culture. See the *Human Factors factsheet and Leadership and Safety Culture factsheet* for more information.

### Cognitive bias can affect adverse event reviews

Considering the impact of cognitive bias on people's actions is a core element of an effective review process. Adverse event reviews are complex and are often conducted with limited information. Reviewers' cognitive biases can significantly affect the adverse event review process. For example, they can lead to:

- data collection and analysis being less objective and valid because information is given too much or too little weight
- incorrect or irrelevant information weighing into decision making leading to biased outcomes
- information gaps being created or not recognised, and a narrow focus being established
- unfair judgement of individuals and the organisation (blaming, shaming, naming, retraining).

Review team members with pre-existing knowledge or experience related to the type of adverse event are especially prone to cognitive bias. This familiarity will affect what we are looking for when reviewing the adverse event, and what outcomes we expect. If not

[1] Tversky, A. & Kahneman, D. (1974). Judgement under uncertainty: heuristics and biases. *Science, 185*, 1124-31.

[2] Croskerry, P. (2005). The theory and practice of clinical decision-making. *Canadian Journal of Anesthesia, 52*(6), pp. R1-R8.

[3] Croskerry, P., Singhal, G. & Mamede, S. (2013). Cognitive debiasing 1: origins of bias and theory of debiasing. *BMJ Quality & Safety, 22*, ii58-ii64.

[4] Jafferji, D., Morris, R. & Levy, N. (2019). Reducing the risk of confirmation bias in unrecognised oesophageal intubation. *British Journal of Anaesthesia, 122*(4): e66-e68.

[5] Bromiley, M. & Mitchell, L. (2009). Would you speak up if the consultant got it wrong?.. .and would you listen if someone said you'd got it wrong? *Journal of Perioperative Practice, 19*(10), 326-330.

managed appropriately, this can interfere with an objective and balanced review of the adverse event.

## COMMON COGNITIVE BIAS IN ADVERSE EVENTS

Table 1 describes common cognitive biases that can impact clinical care and adverse event reviews. More cognitive biases have been identified in the literature[6].

### Table 1. Types of cognitive biases

| Type | Explanation |
|---|---|
| **Stereotyping** | Tendency to associate certain attributes, characteristics, and behaviours with members of a particular group of people |
| **Hindsight bias** | Tendency to believe past events were predictable at the time when they happened |
| **Outcome bias** | Tendency to evaluate a decision based on its outcome rather than the factors that contributed to the decision at the time it was made |
| **Saliency** | Prominent items of information are more likely to receive attention and are given more weight |
| **Confirmation bias** | We tend to more easily accept and look for information that confirms existing beliefs |
| **Primacy and recency effect** | We tend to best remember the first and last piece of information |
| **Groupthink** | The desire for harmony or conformity in a group leads to irrational decision-making outcomes |
| **Fundamental attribution error** | When someone else does something, we emphasise character or intention rather than external factors to explain behaviour (and the opposite when we do something) |
| **Availability heuristic** | Reliance on examples that come to mind easily when evaluating a situation and giving undue weight to this |

## MANAGING COGNITIVE BIAS

A range of debiasing strategies have been developed, with varying success.[7,8] The first step to managing cognitive biases is to become aware of their existence and influence[8]. Table 2 describes a number of practical strategies to manage cognitive bias in adverse event reviews.

Human factors offer a second lens, next to the clinical lens, by placing an adverse event in the broader systems context and looking at it from the perspective of an individual. This helps in making the review a fairer and more just process[9]. Read the Human Factors fact sheet for more information.

### Table 2. Managing cognitive bias during review – strategies

| | |
|---|---|
| 1. | Use open questions and avoid leading questions to minimise the influence of interviewer bias on interviewee responses. See factsheet on *Cognitive Interviewing* for more information |
| 2. | Use tools to support rational, critical and objective thinking. For example, collate all gathered evidence in a table to develop balanced finding statements |
| 3. | Avoid time pressure and stress where possible to avoid the tendency to jump to conclusions |
| 4. | Be curious – ask what made sense to people at the time, with the knowledge that they had |
| 5. | Ask if someone with similar experience in a similar situation would have done the same thing (substitution test), i.e. put yourself in their shoes |
| 6. | Schedule time to debrief after interviews to ensure leading interviewing styles are addressed |
| 7. | Avoid publishing preliminary findings early in the process (unless imminent risk to staff or patients) to make sure that sufficient supporting evidence has been gathered first |
| 8. | Ensure diversity of review team members to provide different perspectives and invite fresh points of view regularly |

[6] Blumenthal-Barby, J.S. & Krieger, H. (2015). Cognitive biases and heuristics in medical decision-making: a critical review using a systematic search strategy. *Medical Decision Making, 3*5(4), 539-57.

[7] Ludolph, R. & Schulz, P.J. (2017). Debiasing health-related judgements and decision-making: A systematic review. *Medical Decision Making, 38*(1), 3-13.

[8] Croskerry, P., Singhal, G. & Mamede, S. (2013). Cognitive debiasing 2: impediments to and strategies for change. *BMJ Quality & Safety, 22*, ii65–ii72

[9] See Introduction to Human Factors in adverse events for more information

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