SESIONES DE MORBI-/MORTALIDAD: APRENDE DE TUS ERRORES EN ANESTESIA
(ERRORS IN VETERINARY ANESTHESIA AND ANALGESIA - THEORY AND CASE EXAMPLES)

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In this session, error theory will be presented, followed by the use of numerous real-life case examples to illustrate how errors occur in everyday practice.
Definitions (Ludders and McMillan 2017, Reason 2000, Reason 2008, Runciman et al. 2009, Wiegmann and Shappell 2005):
Active failures - unsafe acts, including errors and violations (deliberate deviations from standard practice).
Adverse event - (synonyms: adverse incident, harmful incident, accident) - an action or event that resulted in harm to a patient or personnel. Harm is often defined as resulting in a change in patient management, prolonged hospital stay, long term disability or death.
Error - performance/ activity which fails to achieve the intended outcome. Errors can be sub-classified as skill-based, decision or perceptual errors.
Error wisdom - the ability of people on the frontline to recognise situations in which an error is likely.
High reliability organisation (HRO) - organisations which successfully manage complex technologies under time pressure and to a high standard with a very low incidence of failure. Classic examples include air traffic control, nuclear power plants, aircraft carriers.
Human Factors Analysis and Classification System (HFACS) - accident/adverse event investigation tool developed for aviation based on Reason't Swiss cheese accident model.
Patient safety incident - a deviation from standard care that could have resulted, or did result, in unnecessary harm.
Latent conditions - factors within a system predisposing to an adverse event e.g. dangerous work culture, poorly trained/supervised trainees, poor equipment.
Near miss incident - an incident that did not result in harm (to patient or personnel) as a result of intervention or chance.

Errors in human medicine gained widespread attention following publication of the Institute of Medicine's report, "To Err is Human: Building a Safer Health System" (Kohn et al. 2000). This report shifted focus from a culture of blame towards improving the systems in which individuals work. Anaesthesia was one of the first specialties to embrace this change in approach, and anaesthetic practice has frequently been compared to aviation: complex equipment providing a large amount of information, time pressure, serious consequences of error (Allnut 2002). Error in human anaesthesia is a significant source of patient morbidity and mortality, with a reported incidence of adverse events resulting from error of approximately 4% in hospitalised patients.
Two key principles underlie the error theory and prevention. These are: 1. humans are prone to error and 2. the systems within which humans work often predispose errors. Traditionally, and still the case in veterinary medicine, the focus is on the individual closest to the adverse event, usually the care provider. In this situation, there is a tendency to "blame and train" or "blame and shame" (Pang et al. 2018, Wiegmenn and Shappell 2005), ignoring the fact that the care provider is often a capable, highly trained individual unfortunate enough to be at the end of the accident trajectory (Reason 2008). If we accept that human error is unavoidable, it makes sense to consider the conditions (latent conditions) that predispose errors. A useful analogy is to consider errors like mosquitoes in a swamp; it is better to drain the swamp (the condition allowing the errors to occur) (Reason 2005). Therefore, resources should not be spent on improving individual performance unless a sub-standard performance (error-prone, inexperienced, unmotivated, badly trained) has been identified. Error prevention (and investigation) has evolved to a systems-based approach (HFACS). Such an approach recognises human error but also places it within the context of the surrounding latent conditions. Latent conditions occur locally and at a distance, and include organisational influences, unsafe supervision, preconditions for unsafe acts. While HFACS provides a framework for full and

complete adverse event investigation, as used in aviation accidents, a simpler “fishbone” diagram may be suitable in many instances (Fig. 1).

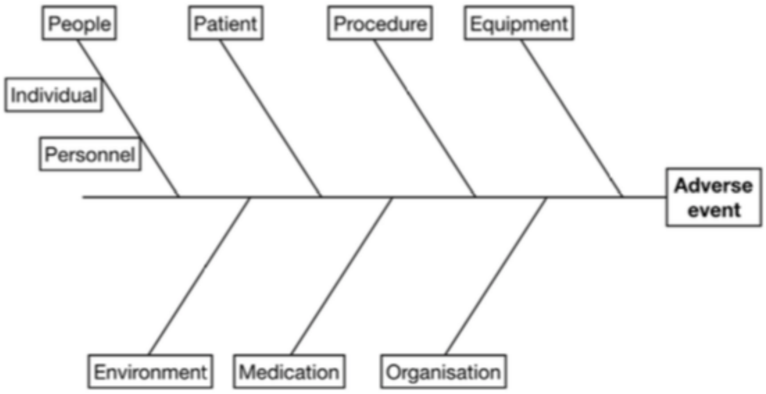

Fig. 1: Fishbone diagram showing patient, personnel and organisational influences to consider during investigation of an adverse event. This structure can be used to facilitate morbidity and mortality rounds (Pang et al. 2018).

Investigating adverse events has 3 goals: explanation, prediction and prevention. The HFACS or fishbone approach (amongst others) can be used to understand what happened, the circumstances leading up to the event and the predisposing factors. When done properly, the initial investigation will highlight areas of weakness in a system, allowing prediction and prevention of future events, depending on whether corrective measures are taken. In human and veterinary medicine, morbidity and mortality rounds are a common method for combining adverse event investigation with education (Pang et al. 2018, Mitchell et al. 2012, 2013). Furthermore, using a structured presentation format can improve knowledge transfer and retention by ensuring that information is shared clearly and concisely (Mitchell et al. 2013). A suitable method of presentation format is SBAR (Situation, Background, Assessment and Analysis, Review and Recommend). SBAR can be combined with HFACS or a fishbone diagram to create an educational morbidity and mortality round (Pang et al. 2018).

Error prevention is one of the goals of High Reliability Organisations (HROs). The central components of error prevention are developing a safety climate, the use of checklists (see later lecture) and clinical audit (see later lecture) and error wisdom. A safety climate is defined as the shared practices, policies and procedures surrounding safety within an organisation (Singer et al. 2010). The absence of a safety climate is one of the most striking differences between human and veterinary medicine and HROs (Singer et al. 2010, Hartnack et al. 2013, Hofmeister et al. 2014). In HROs, safety is embraced so that reporting systems are in place to promote identifying weaknesses in systems and incidents can be investigated in a positive, blame-free manner. In addition to reporting, checklists and audits are a common feature of HROs; their use reduces human error, supports monitoring of current practice and helps identify trends away from the expected standard. Error wisdom describes the role of the individual care provider (e.g. anaesthetist) in preventing adverse events. A series of studies of complex cardiac surgical procedures showed that expert operators exhibit resilience to errors; however, this resilience has limitations and can be breached when sufficiently challenged (Carthey et al. 2003, de Laval et al. 2000). It has been proposed that individuals can be trained in error wisdom by being aware of their current level of function (e.g. presence of fatigue), the task being performed and the context of the task (Reason 2008). Errors in decision making amongst medical/veterinary personnel can be reduced by awareness of cognitive bias (Stiegler et al. 2012). Some of the most commonly encountered cognitive biases amongst anaesthesia trainees includes anchoring (focusing/fixating on a single feature at the expense of other features), confirmation bias (only seeking information that supports the desired/ expected diagnosis), commission bias (tendency to take action when inaction is indicated), omission bias (tendency to inaction when action is indicated), overconfidence bias (delay/ failure in recognising need for help) and sunk costs (commitment to a course of action because of time/effort invested) (Stiegler et al. 2012).

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