The Humanimal Hub

Collaboration Café

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In this issue:

What a year it has been for Humanimal Trust so far and there is some fantastic news on its way this winter, so please do keep an eye on the Hub. Here at Hub Admin Central, we really love hearing from Hub members about what they are doing and their passion for One Medicine. In this edition, we feature a fantastic article written by Hub member, Dr Rakhi Ghosh, as a spotlight on our seminar held earlier this year in May. Grab a cup of coffee/tea/tipple of choice, a plate of cake/ biscuits/accompaniment of choice and take a break to read Collaboration Café.

PROFILE:

Dr Rakhi Ghosh

Rakhi is a Doctor training in Anaesthetics in the outskirts of London. She has an interest in medical education and is passionate about animals and their welfare. She recently joined the Hub and is keen to bring the One Medicine message to a wider audience.

A Chat in the Collaboration Café

"Put to Sleep": Two Different Meanings! A Comparison of Anaesthetic Practice Between Human and Veterinary Medicine

The practice of anaesthesia dates back centuries and crosses continents - various herbal concoctions have been used to perform surgical procedures and alleviate pain. Modern anaesthesia began within the field of surgery and many anaesthetic discoveries happened during the 'Enlightenment' period of the 19th century. The use of anaesthesia in animals was also reported and was advocated as a humane practice during this period, but it took almost another century for it to become routinely used amongst vets. Many anaesthetic developments have their foundations in animal models including the demonstration of the safety of a particular breathing tube by Arthur Guedel on his own dog in 1926.

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Over the course of the 20th century, anaesthesia became a specialty within human medicine in its own right, and is now governed by the Royal College of Anaesthetists. Within veterinary medicine, there is also scope for specialisation - in the UK, the Royal College of Veterinary Surgeons (RCVS) recognises anaesthesia as a specialty. However, specialisation tends to be divided instead by size of animal (e.g. small animal surgery) or species (e.g. equine medicine) and many vets also remain generalists - anaesthesia is very much within the remit of these non-anaesthetist-vets. Anaesthesia never has a 'one size fits all' recipe, and this is particularly true for variations in the animal kingdom. It is therefore important for general vets to be familiar with the differences in anatomy, physiology and responses to anaesthesia amongst the animals they treat.

Human and veterinary anaesthesia have many similarities, but also a large number of recognised differences, as discussed below. I will consider how we can implement more mutually beneficial approaches to benefit both human and animal patients and I will discuss potential challenges that need to be overcome in working towards this goal.

There is some cross-over of anaesthetic and analgesic medications, particularly in small mammalian veterinary practice and paediatrics. For example, some intravenous medications used at the start of general anaesthesia can be used at similar doses per kilogram of body weight. Many tranquilising medications used for animals are also useful as pre-medication (given prior to a general anaesthetic) in both children and anxious adults. Many pain relief medications, such as opioid analgesics and non-steroidal anti-inflammatory drugs can be used as effective pain relief in both humans and animals. However, the toxic doses per kilogram of body weight can vary widely, which is why advice should always be sought from a vet before giving any medication to animals.

The method of delivery of anaesthetic medications needs to be tailored to the species - the intramuscular route is favoured in some animals, whilst the intravenous route is usually preferable in humans, particularly in adults who are able to tolerate the placement of intravenous lines. Inhalational anaesthetics can also be used in both humans and animals, and numerous mask shapes and sizes have been created for veterinary and human use.

Much of the equipment utilised in human and veterinary practice is similar, including intravenous lines and traditional devices to secure the airway under general anaesthesia. The practice of human anaesthesia requires a large team of people - there are routinely more than 10 members of staff in one operating theatre, including one or more anaesthetists, one or more surgeons, an operating department practitioner, scrub nurses and theatre support workers. On the other hand, veterinary surgical and anaesthetic departments tend to be smaller and operating theatres tend to have fewer members of staff.

The age-old difference between human and veterinary medicine is the potential for communication with the patient, and this is particularly important in the peri-operative period when patients may be anxious or frightened. Although, it could be argued that the comforting connections animals require can actually be achieved through body language and tone of voice. Putting animals under general anaesthesia can also pose more physical threat to the theatre team than in human anaesthesia, particularly with large animals who are often disorientated on waking or uncooperative on induction, and anaesthetic regimes may need to be tailored to reduce the chances of this.

Human adult anaesthesia lends itself to a number of different anaesthetic options that do not require being "put to sleep" with a general anaesthetic. Local anaesthesia and regional anaesthesia (injecting anaesthetic agents to numb a specific part of the body - examples include nerve blocks, spinal anaesthesia and epidural anaesthesia) can be used in adults, but require the patient to be cooperative and remain still, so may not be possible in awake animals. These techniques may, however, be performed successfully under sedation or general anaesthetic and provide good post-operative pain relief for the animals.

Human medicine has often been accused of 'medicalising' normal physiological processes. We now have numerous anaesthetic options for 'managing' labour and childbirth, whilst most animals perform this undertaking without any pain relief at all. Anaesthesia provides us with the power to alleviate pain, but may also have had a cultural impact on how we view certain physiological processes.

Anaesthesia is an ever-evolving specialty and there have been some impressive developments in medication and equipment over the last 40 years. Despite the differences in anaesthetic practice, there have been some examples of information sharing to benefit both human and veterinary anaesthesia. For example, the supraglottic airway device (a type of breathing tube that sits above the vocal cords) was developed in the 1980s in human anaesthesia, and its use has been recently studied in animals, leading to the creation of a similar device for some animal species. This has enabled us to share the benefits of supraglottic airway devices over traditional breathing tubes with these animals.

During and after veterinary anaesthesia, higher rates of mortality (death) have been displayed than in human anaesthesia. However, it is important to note that there is large variation in these figures amongst different species, mortality risk is difficult to estimate and many peri-anaesthetic deaths are not directly a result of the anaesthetic itself. Nonetheless, this has been recognised and the well-established practice of using guidelines to facilitate safer anaesthesia in human anaesthesia has been adopted within veterinary anaesthesia in the UK.

The Association of Veterinary Anaesthetists (AVA) have formulated patient safety checklists and general anaesthesia recording charts which are recommended by the RCVS Practice Standards Scheme. There are some similarities between the Association of Anaesthetists of Great Britain and Northern Ireland (AAGBI) standards and AVA standards including record-keeping, the use of safety checklists, equipment checks and the presence of an anaesthetically-trained clinician in theatre.

As the NHS and veterinary practices move towards greener and more sustainable anaesthesia, there is a lot we can achieve through a joined-up approach. For example, the veterinarian-led Davies Green Group sought information published by the Sustainable Development Unit of the NHS and the AAGBI, and came to realise that anaesthetic gases were major contributors to their carbon footprint. The group have implemented numerous changes including a practical guide explaining simple steps veterinary anaesthetists can take to reduce the environmental impact of anaesthetic gases.

There are, of course, some challenges to adopting a more joined-up approach between human and veterinary anaesthesia. A lack of interest and motivation to do so amongst some clinicians may be a barrier, but reaching out to the younger generation through One Medicine societies at universities and promoting discussion where possible can help to overcome this. When proposing to share developments in medication and equipment, ethical and practical considerations may need to be overcome, but the example of the veterinary supraglottic airway device demonstrates that this can be done.

To borrow a phrase from paediatric medicine, 'animals are not just small people'. If we account for the innate differences between species, taking a more joined-up approach may help to promote better care for not only our patients but also for the planet.

References:

Anaesthesia Records and Checklists. Association of Veterinary Anaesthetists 2022. Available at: https://ava.eu.com/resources/checklists/

Carter J, Story DA. Veterinary and human anaesthesia: an overview of some parallels and contrasts. Anaesth Intensive Care. 2013 Nov;41(6):710-8. doi: 10.1177/0310057X1304100605. PMID: 24180711.

Cassu RN, Luna SPL, Teixeira Neto FJ, Braz JRC, Gasparini SS, Crocci AJ. Evaluation of laryngeal mask as an alternative to endotracheal intubation in cats anesthetized under spontaneous or controlled ventilation. Veterinary Anaesthesia and Analgesia, Volume 31, Issue 3, 2004, Pages 213-221, ISSN 1467-2987, https://doi.org/10.1111/j.1467-2987.2004.00195.x.

Goyal R. Animal testing in the history of anesthesia: Now and then, some stories, some facts. J Anaesthesiol Clin Pharmacol. 2015 Apr-Jun;31(2):149-51. doi: 10.4103/0970-9185.155139. PMID: 25948891; PMCID: PMC4411824.

Guidelines: Recommendations for standards of monitoring during anaesthesia and recovery 2021. Association of Anaesthetists of Great Britain and Ireland May 2021. Available at: https://anaesthetists.org/Portals/0/PDFs/Guidelines%20PDFs/Recommendations%20for%20standards%20of%20monitoring%20during%20anaesthesia%20and%20recovery%202021.pdf?ver=2021-05-26-141701-007

Kazakos GM, Anagnostou T, Savvas I, Raptopoulos D, Psalla D, Kazakou IM. Use of the laryngeal mask airway in rabbits: placement and efficacy. Lab Anim (NY). 2007 Apr;36(4):29-34. doi: 10.1038/laban0407-29. PMID: 17380146.

Kurdi MS, Ramaswamy AH. Anesthetizing animals: Similar to humans yet, peculiar? Anesth Essays Res. 2015 Sep-Dec;9(3):298-303. doi: 10.4103/0259-1162.161816. PMID: 26712963; PMCID: PMC4683469.
One Health in Action. Case Study: Greening Davies Veterinary Specialists. British Veterinary Association (BVA) 2019. Page 33. Available at: https://www.bva.co.uk/media/3145/bva_one_health_in_action_report_nov_2019.pdf

Recommended requirements when performing general anaesthesia of dogs, cats and horses. Association of Veterinary Anaesthetists (AVA) 2008. Available at: https://ava.eu.com/wp-content/uploads/2015/10/AVA-RECOMMENDED-REQUIREMENTS-ENG.pdf

Risks associated with your anaesthetic Section 15: Death or brain damage. Royal College of Anaesthetists 2017. Available at: https://www.rcoa.ac.uk/sites/default/files/documents/2019-11/15-DeathBrainDamageweb.pdf

Unknown author. Anaesthesia in the Lower Animals. The Lancet. 30 March 1895.