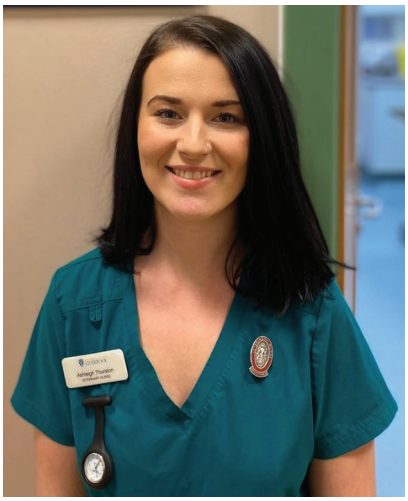

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DOI: 10.1080/17415349.2020.1723457

How to implement and use post-operative pain scoring systems effectively in general practice

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ABSTRACT: The identification of pain in veterinary patients is an essential skill of a Registered Veterinary Nurse (RVN) and the requirement of standardised protocols for the pain assessment of all patients in practice is vital in acute pain management. Pain scoring should be extended to all in-patients and include those admitted for routine elective procedures, as this is an area that pain scoring is often under utilised. RVNs should strive to provide gold standard patient care and by implementing pain scoring systems into practice a standardised and evidence based approach can be employed by all members of the team and appropriate analgesia provided when necessary.

Keywords: pain scoring; analgesia; audits

Introduction

Prompt and accurate recognition of pain is crucial in acute pain management and it is vital that Registered Veterinary Nurses (RVNs) possess a wealth of knowledge in this area. With advancements in veterinary medicine and an increasing awareness of animal welfare over the previous two decades, pain management in animals has improved significantly. As a painful experience will result in species specific behavioural changes which may not be recognised by the inexperienced observer, it is essential that pain is assessed effectively in order to prevent complex physiological changes to the central nervous system (Grant, 2002). Despite the advancements seen in veterinary medicine, studies investigating the attitudes of veterinary professionals towards pain scoring carried out by Lascelles, Capner, and Waterman-Pearson (1999) and Coleman and Slingsby (2007) showed that acute pain management provision was insufficient and the incidence of pain scoring post-operatively in practice was low.

Pathophysiology of pain

Klinck and Troncy (2016) stated that the physiology involved in the processing of pain is shared amongst vertebrae animals including humans. Therefore, it can be assumed that any procedure, disease process or injury that may be painful in humans is likely to be painful to animals. The International Association of the Study of Pain (IASP) described pain as a sensory experience that is unpleasant and may be associated with actual or potential tissue damage (IASP, 2017). This encompasses the reality that pain is multidimensional and involves emotion, in addition the associated sensation and each experience will be unique to an individual. It was stated by Grant (2002) that in the presence of pain, an animal's physiology and behaviour will change in order to avoid further damage and aid recovery. Epstein et al. (2015) added that although physiological adaptive pain may serve a protective function to animals, if uncontrolled it may lead to detrimental effects regardless of species. This is due to the many negative physiological effects it has on the body. If left untreated, an altered physiological response to pain may develop and patients may be left with difficult to treat chronic or neuropathic pain. Persistent pain has been shown to result in an increased risk of infection and delayed wound healing. It also produces a catabolic state that may lead to cachexia, an increase

in morbidity and patient suffering. Therefore, it is critical that pain is treated promptly and effectively in veterinary practice in order to prevent further complications or deterioration in a patient's condition.

Pain recognition

Nonverbal patients, such as animals display behavioural changes in response to a painful experience and the expression of pain is specific to each species. This may be subsequently affected by temperament, age, breed, anxiety levels, drugs and disease presence (Bloor & Allan, 2017). The use of pain scoring systems places sole reliance on the interpretation of pain by the individual observing the patient (Reid, Nolan, & Scott, 2018). Veterinary professionals have an ethical and moral duty to provide adequate and prompt analgesia to patients and a solid understanding of behavioural manifestations of pain is fundamental in appropriate pain management of patients. In order to contextualise behavioural signs in non-verbal patients it is critical that a thorough history is obtained from the pet owner to establish what is classed as normal behaviour (Epstein et al., 2015) so that signs of pain can be identified and addressed promptly. In addition to behavioural cues that may be picked up by veterinary professionals, Bloor and Allan (2017) suggested that both physical indicators and biological markers such as cortisol hormone levels may both indicate pain. However, in veterinary patients underlying concurrent diseases should be ruled out before these means are used.

Pain behaviour

The recognition of pain in non-verbal patients poses many issues, however monitoring behaviour is seen as 'gold standard' and more accurate method of identification in animals. Disturbance from normal behaviour has been suggested as a potential indicator of pain in veterinary patients and a range of behavioural changes shown in Table 1 highlight this. However, pain is completely subjective and will be experienced differently physiologically and psychologically by each individual. In addition to this, each animal demonstrates pain-related behaviours in a way that is individual to that species. Reid et al. (2018) supported the idea that breed differences may also affect the way in which pain is expressed as some breeds are known to hide pain well whilst others do not.

Pain scoring systems

In veterinary practice pain scoring should be performed regularly for all patients regardless of the presenting complaint and should make up part of every patient assessment. Barratt (2013) suggested this was essential in the management of surgical patients as it allows standardised assessment of pain and analgesic interventions can be implemented promptly if pain is detected. Due to an increased recognition of the importance of acute pain management in the veterinary profession, many pain scoring systems have been adapted for use on veterinary patients from human medicine. In human medicine, the self-report system remains the gold standard method of pain scoring, however this is unsuitable for nonverbal patients such as animals. It is for this reason that pain in veterinary patients will be recognised as whatever level the veterinary professional assessing the patient perceives it to be, rather than what the animal actually experiences and pain scores may be affected by observer bias (Bloor & Allan, 2017). The ideal pain scoring system should be reliable, validated and sensitive to change, however in veterinary practice few of the pain scoring systems used have been validated.

Unidimensional scales are basic in nature and require the observer to score pain intensity subjectively (Mathews et al., 2015) and are heavily affected by observer bias, as observers may base decisions upon their own feelings and life experience and therefore the reliability of the scale is negatively affected.

Multidimensional scales allow a more interactive pain scoring system with a patient and may consider physiological data in addition to behavioural cues and response to palpation. Crompton (2010), and Bloor and Allan (2017) concurred that this type of pain scoring tool is often more sensitive, reliable and valid than unidimensional scales as multiple facets of the pain experience are taken into consideration by the observer.

Table 1. Key behavioural indicators of acute pain.

Feline	Canine
Inappetance	Inappetance
Reduction in grooming behaviour	Defensive behaviour such as aggression or fearfulness
Changes in facial expression and body position e.g. hunched posture	Altered mobility e.g. lameness
Aggression	Self-mutilation

Species specific pain scales

In recent years, species specific multidimensional scales such as the Glasgow Composite Measure Pain Scale (GCMPS) have been devised by Holton, Reid, Scott, Pawson, and Nolan (2001) considering psychometric methods that are often used to measure abstract concepts such as pain, intelligence and quality of life. Findings of Morton, Reid, Scott, Holton, and Nolan (2005) supported the validity of the GCMPS and found the tool valuable for use in a clinical setting for perioperative acute pain in both the United Kingdom (UK) and the Netherlands. Results from this study were reliable and many other studies were able to replicate these findings. Reid et al. (2007) later studied its use in a short form as an analgesic intervention tool in clinical practice in order to improve speed, ease of use and user friendliness to veterinary professionals. The tool was used in 3 countries including the UK consistently and found analgesic intervention levels for each hospital were similar, further supporting its usefulness in a clinical setting and had minimised the time taken to score patients from 10 minutes to 2 minutes.

The UNESP-Botucatu Multidimensional Composite Pain Scale for cats uses the support of videos of patients in order to support training and decision making in veterinary professionals and prevent misinterpretation. This pain scale has been seen as 'gold standard' for pain measurement in felines and has been validated in multiple countries such as the UK (Brondani et al., 2013) and Italy (Della Rocca et al., 2018) with extremely high levels of specificity and sensitivity. However, there is currently no pain scale like this for canine patients. The GCMPS long and short form have both been validated for acute pain assessment in canines in clinical practice and should therefore be the pain scale of choice for practitioners as seen in Figure 1.

Validity

Validity is crucial when selecting a pain measurement tool, and therefore the most suitable pain scales for use in practice should be

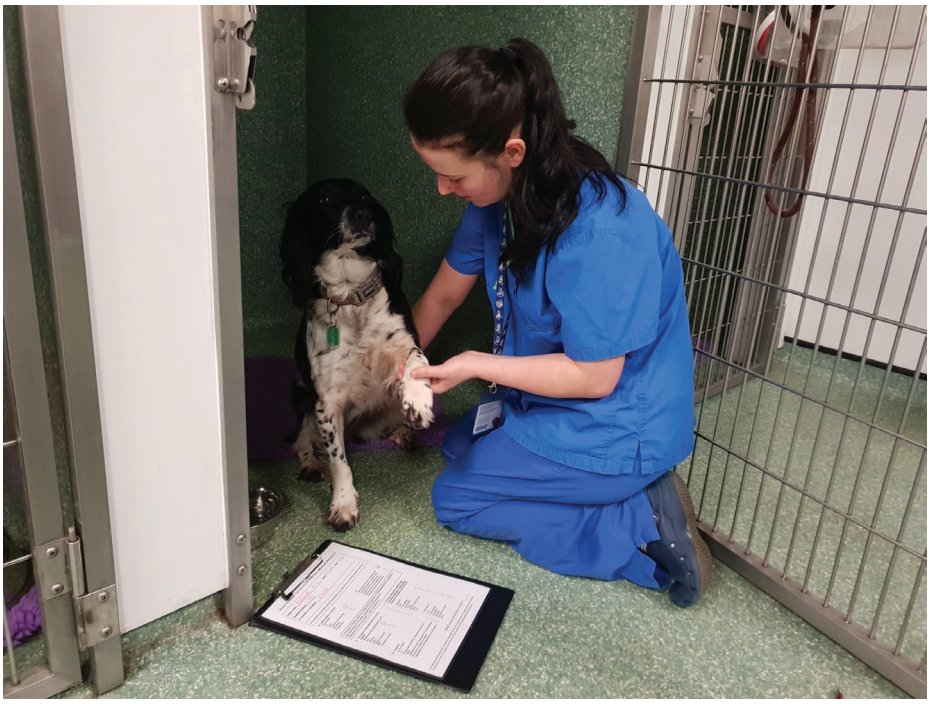

Figure 1. Demonstrating the use of the Glasgow Composite Measure Pain Scale on a patient post-operatively following ovariohysterectomy.

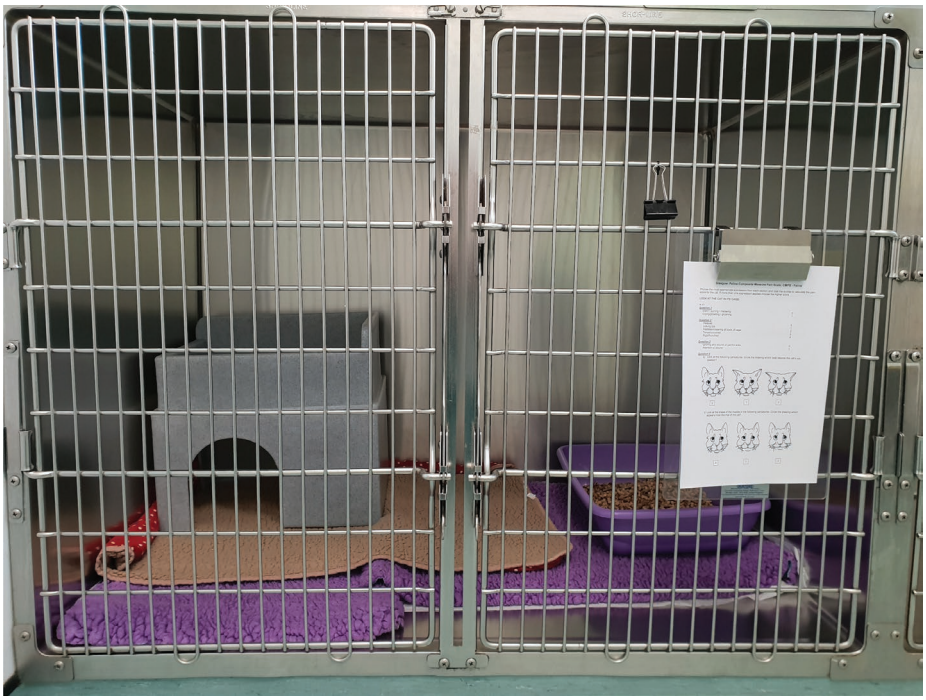

Figure 2. Post-operative kennel set up in recovery ward with a pain scoring sheet ready to be used by the recovery nurse.

validated to enable evidence-based practice and allow accurate analgesic intervention. Therefore, it is vital for RVNs to implement validated pain scores into practice protocols in order to maximise success in acute pain management.

Utilising RVNs appropriately

RVNs play a leading role in the recognition of pain, as they often spend more time interacting and caring for in-patients and are therefore more likely to pick up on subtle pain related behavioural changes. However, Hunt, Knowles, Lascelles, and Murrell (2015) showed that in small animal practice in the UK only 4% of RVNs were found to be used for assessing post-operative pain in patients and showed that members of the Association of Veterinary Anaesthetists (AVA) were found to be more likely to pain score patients due to an increased awareness of pain pathophysiology. These results support the idea that an increased awareness and knowledge of pain management leads to better post-operative pain monitoring and may lead to an overall improvement in patient welfare. It also highlights that improvements are needed in current pain management protocols in first opinion practice in the United Kingdom for gold standard pain management to be provided to all surgical patients including routine elective procedures and that RVNs should be taking more of an active role in post-operative pain scoring.

Implementing pain scoring systems

Pain scores are often under utilised in practice due to the misconception that they are difficult to implement or take too much time to complete. However, as previously stated, the GCMPS short form was adapted to take approximately 2 minutes and with training and consistent use this may be reduced even further.

When implementing pain scoring systems in general practice, one system should be selected for use to prevent confusion and encourage compliance. All members of the team should receive specific training on how to use the pain scoring system to allow treatment to be standardised and encourage a proactive approach to the assessment of analgesic efficacy and provision of analgesia if required. Where possible pain scores should be carried out consistently by the same person to minimise observer bias, however this is not always possible. Therefore, it is vitally important that patient's hospital records are filled out consistently in order accurately guide nursing care and treatment plans. This will also help to make other members of the team aware of the patients current status and identify improvement or the requirement for intervention. Copies of the pain score should be accessible in wards including the recovery ward so they can be easily used by all team members as seen in Figure 2.

Kata, Rowland, and Goldberg (2015) advised that pain scoring should be performed every 4 hours but may be required more regularly in critical patients. However, pain scoring should form part of every patient assessment in practice alongside physiological measurements. It was also suggested that surgical patients should be pain scored regularly every 30 mins

post-operatively in the immediate post-operative period following recovery from anaesthesia.

Clinical audits

RVNs play a significant role in the provision of analgesia to patients in the form of both traditional and complementary methods. Multimodal analgesic treatment plans are critical in acute pain management (Bloor, 2016) and it is important that evidence-based techniques are employed by veterinary professionals. Therefore, RVNs should strive to perform clinical audits in order to allow for quality improvement and support choices for standard operating procedures and protocols to be introduced in practice (Northway, 2019). Northway (2019) added that clinical audits allow areas of improvement to be identified in veterinary practice and is something currently supported by the Royal College of Veterinary Surgeons (RCVS) to aid in improving practice and challenging veterinary professionals to question their current protocols. This should encourage RVNs to take ownership of holistic in-patient care and engage in clinical discussions with practice principles and veterinary surgeons and audit their current in-patients and post-operative pain management protocols to review treatment of routine patients in comparison to those undergoing more extensive surgical procedures. This may indicate gaps were improvement could be made to the acute pain management of both surgical and in-patients in general practice.

Recommendations for future research

In comparison to human medicine, veterinary medicine is in an earlier stage of development in post-operative pain assessment. Previous studies such as Coleman and Slingsby (2007) supported this idea and found that over 90% of participants did not use a scale when pain assessing patients and that 96% of veterinary surgeons and RVNs felt that their knowledge of pain assessment could be enhanced. However, this study was published 12 years ago, and therefore current data in this area is required to give an up-to-date insight into the attitudes and incidence of pain scoring in veterinary practice.

Meagher et al. (2009) and Bloor and Allan (2017) suggested that there is currently no evidence-based gold standard pain assessment tools. Therefore, further research should be conducted into developing pain measurement tools within veterinary medicine that are reliable, valid, sensitive to change, species and condition specific in order to enhance specificity in pain recognition and analgesia provision.

Conclusion

For acute pain management to be effective it is vital that all members of the veterinary team have a deep understanding of the pathophysiology of pain, assessment methods and modalities of treatment. A team based approach is vital in any pain management case and allows for the provision of gold standard care and improved outcomes (Epstein et al., 2015). Although numerous pain scales are available, the scales employed will be individual to the practice, as they need to be understood by all staff members and should be able to be applied to patients in a standardised manner to maximise success in pain management. As suggested by Waring (2014), prioritising patient health and welfare through careful assessment, interventions, evaluation and analgesic strategies can allow an RVN to significantly improve a patient's quality of life and reduce morbidity. It is therefore suggested, that pain scoring should be included in patient care-plans and become routine practice protocol for all surgical patients.

References

Barratt, L. (2013). Feline pain assessment and scoring systems. *The Veterinary Nurse*, *4*(8), 470–477. doi:10.12968/vetn.2013.4.8.470

Bloor, C. (2016). How to manage pain in the dental patient. *The Veterinary Nurse*, *7*(7), 408–413. doi:10.12968/vetn.2016.7.7.408

Bloor, C., & Allan, L. (2017). Pain scoring systems in the canine and feline patient. *The Veterinary Nurse*, *8*(5), 252–258. doi:10.12968/vetn.2017.8.5.252

Brondani J. T., Mama K. R., Luna S. P. L., Wright B. D., Niyom S., Ambrosio J., Vogel P. R., Padovan C. R. (2013). Validation of the English version of the UNESP-Botucatu multidimensional composite pain scale for assessing postoperative pain in cats. *BMC Veterinary Research 9*. doi:10.1186/1746-6148-9-143

Coleman, D. L., & Slingsby, L. S. (2007). Attitudes of veterinary nurses to the assessment of pain and the use of pain scales. *The Veterinary Record*, *160*(16), 541–544. doi:10.1136/vr.160.16.541

Crompton, S. (2010). Pain assessment and pain scoring models: A review. *The Veterinary Nurse*, *1*(1), 22–27. doi:10.12968/vetn.2010.1.1.22

Della Rocca, G., Catanzaro, A., Conti, M. B., Bufalari, A., De Monte, V., Di Salvo, A., … Pacca Loureiro Luna, S. (2018). Validation of the Italian version of the UNESP-Botucatu multidimensional composite pain scale for the assessment of postoperative pain in cats. *Veterinaria Italiana*, *54*(1), 41–61.

Epstein, M. E., Rodan, I., Griffenhagen, G., Kadrlik, J., Petty, M. C., Robertson, S. A., & Simpson, W. (2015). 2015 AAHA/AAFP pain management guidelines for dogs and cats. *Journal of Feline Medicine and Surgery*, *17*(3), 251–272. doi:10.1177/1098612X15572062

Grant, D. (2002). Pain management in small animals. *Veterinary Nursing Journal*, *17*(1), 21–23. doi:10.1080/17415349.2002.11013187

Holton, L., Reid, J., Scott, E. M., Pawson, P., & Nolan, A. (2001). Development of a behaviour-based scale to measure acute pain in dogs. *The Veterinary Record*, *148*(17), 525–531. doi:10.1136/vr.148.17.525

Hunt, J. R., Knowles, T. G., Lascelles, B. D. X., & Murrell, J. C. (2015). Prescription of perioperative analgesics by small animal veterinary surgeons in 2013. *The Veterinary Record*, *176*(19), 493–493. doi:10.1136/vr.102834

International Association for the Study of Pain (IASP). (2017). IASP terminology (online). Retrieved from https://www.iasp-pain.org/terminology?navItemNumber=576#Pain

Kata, C. I., Rowland, S., & Goldberg, M. E. (2015). Pain recognition in companion species, horses and livestock. In M. E. Goldman & N. Shaffran (Eds.), *Pain management for veterinary technicians and nurses*. Oxford: Wiley Blackwell.

Klinck, M. P., & Troncy, E. (2016). The physiology and pathophysiology of pain. In T. Duke-Novakovski, M. De Vries, & C. Seymour (Eds.), *BSAVA manual of canine and feline anaesthesia and analgesia* (3rd ed.). London: BSAVA.

Lascelles, B. D. X., Capner, C. A., & Waterman-Pearson, A. E. (1999). Current British veterinary attitudes to perioperative analgesia for cats and small mammals. *The Veterinary Record*, *145*(21), 601–604. doi:10.1136/vr.145.21.601

Mathews, K., Kronen, P. W., Lascelles, D., Nolan, A., Robertson, S., Steagall, P. V. M., … Yamashita, K. (2015). Guidelines for recognition, assessment and treatment of pain. *The Veterinary Nurse*, *6*(3), 164–173. doi:10.12968/vetn.2015.6.3.164

Meagher R. K. (2009). Observer ratings: Validity and value as a tool for animal welfare research. *Animal Behaviour Science*, *119*(1-2), 1–14. doi:10.1016/j.applanim.2009.02.026

Morton, C. M., Reid, J., Scott, M., Holton, L., & Nolan, A. M. (2005). Application of a scaling model to establish and validate an interval level pain scale for assessment of acute pain in dogs. *American Journal of Veterinary Research*, *66*(12), 2154–2166. doi:10.2460/ajvr.2005.66.2154

Northway, L. (2019). Conducting clinical audits: A vet nurse's perspective. *VN Times*, *19*(3), 18–19.

Reid, J., Nolan, A. M., Hughes, J. M. L., Lascelles, D., Pawson, P., & Scott, E. M. (2007). Development of the short-form Glasgow Composite Measure Pain Scale (CMPS-SF) and derivation of an analgesic intervention score. *Animal Welfare*, *16*(Supplement), 97–104.

Reid, J., Nolan, A. M., & Scott, E. M. (2018). Measuring pain in dogs and cats using structured behavioural observation. *The Veterinary Journal*, *236*, 72–79. doi:10.1016/j.tvjl.2018.04.013

Waring, N. (2014). Canine osteoarthritis: Pathophysiology and management. *The Veterinary Nurse*, *5*(8), 462–467. doi:10.12968/vetn.2014.5.8.462