Consultation on Implementation of the ACT *Veterinary Practice Act 2018*

Feedback to
ACT Government Transport Canberra and City Office

From
Australian Veterinary Association Ltd

www.ava.com.au

Contents

Background	2
Veterinary Practitioners Code of Professional Conduct (Code of Conduct)	2
Veterinary Premises Standards (the Standards)	4
Veterinary Practice Regulation 2018 (the Regulations)	5
References:	11

The Australian Veterinary Association (AVA) is the national organisation representing veterinarians in Australia. Our 9500 members come from all fields within the veterinary profession. Clinical practitioners work with companion animals, horses, farm animals, such as cattle and sheep, and wildlife. Government veterinarians work with our animal health, public health and quarantine systems while other members work in industry for pharmaceutical and other commercial enterprises. We have members who work in research and teaching in a range of scientific disciplines. Veterinary students are also members of the Association. The ACT Division of the AVA represents 122 registered veterinarians in the ACT.

Background

The *Veterinary Practice Act 2018* (the Act) passed through the ACT Legislative Assembly on the 23 August 2018. The Act allows for the establishment of regulations in support of the Act. The AVA as the professional organisation representing veterinarians in the ACT has been asked to provide comments and feedback on the proposed Veterinary Practitioners Code of Professional Conduct (Code of Conduct); the proposed Veterinary Premises Standards (the Standards); and the proposed Veterinary Practice Regulations 2018 (the Regulations).

Veterinary Practitioners Code of Professional Conduct (Code of Conduct)

Background:

Under Section 42 of the Act the ACT Veterinary Practitioners Board (the Board) is authorised to establish a code of conduct for veterinary practitioners carrying on the practice of veterinary science. to act as a guide for veterinarians as to what are the minimum expected standards of behaviour. The Board when determining complaints may make reference to these guidelines.

The AVA supports the establishment of a Code of Professional Conduct in all states and territories of Australia, as it provides veterinarians with guidance as to what would constitute unprofessional conduct.

The AVA's Recommended key principles for veterinary practice acts in Australia state that the Code of Professional Conduct *should includes as a minimum:*

- *reference that the standards conform with current expectations of peer veterinarians*
- *primary concern for the welfare of animals*
- *the requirement to provide relief for an animal in pain or suffering, except where it puts the veterinarian's safety at risk*

- *the requirement to refer where appropriate*
- *not misleading, deceiving or behaving in such a way as to have an adverse effect on the standing of any veterinary practitioner or the veterinary profession*
- *where possible, obtaining the informed consent of the person responsible for the care of an animal before providing veterinary services to the animal*
- *maintaining the confidentiality of information obtained in the course of professional practice*
- *the requirement to keep adequate clinical records*
- *the requirement for all certification by a veterinary practitioner to be accurate*
- *that a veterinary practitioner must not perform a surgical operation for the correction of a heritable defect, or provide medical treatment for a heritable disease, unless the primary purpose of the operation or treatment is to relieve or prevent pain or discomfort to the animal concerned, and the veterinarian advises the owner not to breed from the animal*
- *rules for use of prescription and scheduled medication.*

Recommendations:

The proposed *Veterinary Practitioners Code of Professional Conduct (Code of Conduct)* covers most of AVA's Recommended key principles for veterinary practice acts in Australia, is well written, in easy to understand English and in the whole represents the behaviour that veterinary clients and fellow veterinarians would expect of practicing veterinary practitioners.

The following are AVA's recommendation as to amendments that are needed:

1. No refusal of pain relief

1.1. The AVA recommends that point 1 of the proposed code be modified to state: *"A veterinary practitioner must not refuse to provide relief of pain or suffering to an animal in his or her presence (**except in the case where there is an unacceptable and unmanageable risk to his/her or others personal safety**)"*.

2. Referrals and second opinion

2.1. The AVA recommends the inclusion of the following point: *"Specialists and referral practitioners have a responsibility to communicate their procedures, findings, details of any treatments and necessary aftercare back to the referring practitioner."*

3. Correction of genetic defects

3.1. In the case where surgery is performed to correct an inheritable defect, the veterinarians should advise the owner not to breed from the animal.

4. Supply of restricted substance

4.1. The current wording in the proposed code does not appear to cover the supply of prescription medicines to a herd of animals but rather only covers the circumstances around an individual animal.

5. Continuous Professional Development

5.1. Under Section 32 of the Act, "*the board may remove a veterinary practitioner from the register if the veterinary practitioner has failed to meet the continuous professional development requirements prescribed by regulation".* The proposed code then states that the requirement is a minimum of 60 Continuous Professional Development (CPD) points over three years. However points 3 and 4 of the proposed CPD clause then allows for a further year for the veterinary practitioner to complete their CPD if they have failed to meet their requirement over the stated 3 year period. The AVA believes that points 3 and 4 should not be included in the written codes, but rather applied by the Board as they see fit on an individual basis. If the veterinary practitioner does not have justifiable reasons for not completing the required CPD and does not produce an adequate written plan showing how they will address the deficits then the veterinary practitioner's registration should be removed.

5.2. There is no reference as to how a veterinary practitioner is to determine what activities are structured and unstructured points and how the points are to be calculated. The AVA recommends a direct link to the AVA VetEd points table.

6. Contents of annual return of veterinary practitioners for Continuous Professional Development

6.1. Point 2 of the draft CPD code lists the CPD details that a veterinary practitioner will need to provide in their annual return, however there are several areas which are covered by the AVA VetEd point system and considered by the profession as CPD that are not included, for instance, reading textbooks and mentoring activities. The AVA supports these being included and for harmonisation of CPD requirement across the jurisdictions and the AVA.

7. Antimicrobial Stewardship

7.1. The Board should consider adding guidance around appropriate antimicrobial stewardship (AMS) to the proposed code. Antimicrobial resistance (AMR) is an increasingly serious threat to global public and animal health. AMR threatens the effective treatment of an ever-increasing range of infections. Veterinarians play an important role in limiting and minimising the spread of antimicrobial resistance and as such must prescribe responsibly. *"A veterinarian should maintain a knowledge of current appropriate antimicrobial prescribing guidelines and prescribe judiciously as to minimise the development of antimicrobial resistance"*

Veterinary Premises Standards (the Standards)

Background:

Under Section 72 of the Act the Board is authorised to establish standards for veterinary premises. These are used to assess whether an application to register a veterinary practice should be granted and to inform and assess the ongoing maintenance of current licensed veterinary premises.

The AVA supports the Board licensing veterinary premises and providing guidelines for veterinary premises standards.

The AVA's Recommended key principles for veterinary practice acts in Australia states:

The regulation of premises is desirable under the Act. There is acknowledgement that cost of inspection can be a limiting factor for boards in smaller jurisdictions.

Boards should be allowed to decide how they audit and inspect practices. For example:

- *inspections when applying to open premises*
- *inspections every 3 or 5 years*
- *self-inspection lists sent out in intervening years*
- *inspection when a complaint is received.*

There should also be clear guidelines for mobile services.

Recommendations

To protect animal health and welfare veterinary premises need to be fit for purpose, adequately equipped and maintained in a clean, orderly and sanitary condition. The AVA generally supports the proposed Veterinary Premises Standards 2018 (No 1).

The following are AVA's recommendation as to amendments that are needed:

1. Introduction to Veterinary Premises Standards

1.1. Veterinary premises owners and superintendents need to be aware that they must keep themselves informed and adopt any new Veterinary Premises Standards issued by the Board. The AVA recommends the following amendment to the first paragraph of the Introduction to the Veterinary Premises Standards 2018 to address this: *"Veterinary premises that have been approved by the Board will be deemed to satisfy the Board's standards at the time of approval. Premises must be maintained at that standard* ***or at any new standards subsequently published by the Board as allowed under Clause 72 of the Act,*** *unless otherwise required by the Board"*

1.2. The AVA recommends that inspections of premises should be carried out by an officer appointed by the Board, and that Board members should not be inspectors and as such recommend amending the second paragraph by removing the words *"a member"*.

1.3. The AVA recommends that all premises should be inspected prior to their initial approval and as such recommend that the last paragraph of the introduction be removed.

2. Number 1 premises requirements

2.1. There may need to be some clarity around the statement *"Must be a permanent area with no other use"* . Many veterinary practices offer services such as grooming, boarding and retail which do not necessarily fall under the definition of veterinary science services as covered in Section 8 of the Act but are regarded as legitimate activities of veterinary practices.

3. Number 6 premises requirements

3.1. The AVA recommends the following amendment: *"Adequate ventilation, heating and cooling to ensure* ***patient, client and worker comfort*** *in terms of temperature and air quality"*

4. Number 36 premises requirements

4.1. For clarity this premise requirement should be amended as follows: *"Appropriate* ***patient*** *eating and drinking utensils and suitable protocol for hygienic handling and maintenance of these"*

5. Numbers 64,65,66 premises requirements

5.1. The heading applying to requirements 64,65 and 66 states *"Additional Standards for Veterinary Hospital* ***and Clinics****"* The AVA supports these additional requirements for practices categorised as veterinary hospitals, **but it does not** support them as requirements for veterinary clinics and as such the words *"and Clinics"* should be removed.

Veterinary Practice Regulation 2018 (the Regulations)

Background:

The AVA supports the intent of of these draft regulations to further harmonise legislation across Australia's jurisdictions.

The AVA has no further comments/recommendations on the clauses in the Regulation relating to administrative functions of the Board.

Schedule 1 Restricted acts of veterinary science

The AVA supports the need to restrict the performing of acts of veterinary science to registered veterinary practitioners in order to protect the health, safety and welfare of animals. These restricted acts should be defined in legislation to protect animals and the community.

The AVA's restricted acts of veterinary science policy states that *an 'act of veterinary science' means services which form part of the practice of veterinary surgery and medicine, and includes:*

- *the diagnostic confirmation of, treatment of, and provision of management advice for infectious disease, physiological dysfunction, psychological dysfunction and injury in animals*
- *performing invasive or surgical procedures on animals*
- *administering anaesthetics to animal*
- *the exercise of prescribing rights for veterinary chemicals, medicines or poisons which may be restricted by scheduling or registered label; and*
- *the provision of veterinary certificates.*

The AVA's position is that a formal degree in veterinary science, registrable within Australia, is the minimum acceptable knowledge base and skill set necessary to perform acts of veterinary science competently. This minimum standard is in place to protect animals and the community. The veterinarian is uniquely qualified to make evidence-based diagnoses, to manage patients before, during and after procedures, and to understand the systemic impacts of medical or surgical interventions on the individual patient. This level of knowledge and expertise is essential in order to minimise adverse welfare consequences and yield successful outcomes for the patient.

Of particular concern are invasive procedures with the potential for serious animal welfare or health implications, such as use of animals in research, use of power tools in equine dentistry, pregnancy testing of cattle, and cattle spaying.

In addition to the broad categories listed above, the range of procedures which should only be performed by registered veterinary surgeons includes:

- *stomach tubing or oesophageal intubation of horses*
- *artificial insemination and embryo transfer of horses and camelids*
- *pregnancy testing of horses and camelids by rectal examination*
- *microchip insertion in horses*
- *sampling of tissue from live animals*
- *laparoscopic insemination*
- *general anaesthesia*
- *the carrying out of any treatment, procedure or test that involves the insertion of anything in the nasal passage, nasal sinuses, thoracic cavity, abdominal cavity, pelvic cavity, cranial cavity, spinal cavity, tooth alveolar cavity, eye, orbital cavity, tympanic cavity, joint spaces or any other synovial cavity of any animal*
- *the performing of any dental procedure on any animal other than manual rasping on a horse performed by a person with an appropriate Certificate IV qualification*
- *the performing on a horse of any dental procedure that involves: making an incision through the skin or oral mucosa or entry below the gum line; extracting a tooth by repulsion; or any other activity to maintain or restore correct dental function (except basic hand filing and rasping performed by a person with an appropriate Certificate IV qualification)*
- *the performing on a horse of any dental procedure that involves the use of a power tool*
- *cattle spaying by flank or dropped-ovary method*
- *signing any certificate or other document prescribed by or under any Act which requires the signature of a veterinary surgeon or veterinary officer in respect of the certification of disease status, including freedom from disease of any animal or animal product.*

Husbandry
Some acts of veterinary science are routinely performed on livestock species by lay persons, and veterinary practice acts may grant exemptions for these procedures. In this case, it is essential that any associated compulsory standards such as age restrictions, requirements for competence, and use of analgesia are observed and enforced.

In some limited circumstances, appropriately trained and licensed paraprofessionals may perform specified acts of veterinary science, but must be under the supervision of a veterinarian who is responsible for their work. Whether this supervision is direct, or indirect, will vary with the relative risk of the procedures to be performed. For example, a veterinarian may directly supervise and provide sedation during a manual rasp and file of a horse's teeth by a Certificate IV level lay equine dental service provider. Veterinarians assisting, employing or supervising paraprofessionals must be available to assess, correct and intervene as required, and remain ultimately responsible for the animal's health and welfare.

Recommendations:

The following are AVA's recommendation:

1. Scope of the consultation on Restricted Acts of Veterinary Science

---

1.1. In the Board's communication about this consultation it was stated that *"Schedule 1 of the Regulation contains the Restricted Acts of Veterinary Science. These will **not change** at this stage, but there will be an opportunity to comment on them in 2019"* and that the Board had identified *"an issue relating to the Acts of VS relating to potential animal welfare issues associated with dental procedures being performed by non-veterinary professionals in the ACT however they were unable to address this during the development of the new Veterinary Practice Regulations 2018 as any change to the Acts of VS would require the approval of the Minister".* However, the new proposed regulations make **significant changes** to what is currently classified in the ACT as an act of veterinary science in the ACT's Veterinary Surgeons (Standard Statement) Approval 2017 (No 1) . The most significant change being that only treatments, procedures or tests carried out that require an animal to be anaesthetised, sedated or tranquillised will be considered acts of veterinary science, where currently this is not the case. There are several other significant changes, for example - currently stomach tubing or oesophageal intubation in a horse is an act of veterinary science while under the proposed regulations (item 15a) it is excluded. **The proposed regulations relating to restricted acts of veterinary science should not come into force until full consultation on ALL restricted acts of veterinary science is undertaken.**

---

2. Act of veterinary science Item 1

2.1. Transrectal palpation in camelids (camels, llamas and alpacas) has a significant risk of causing iatrogenic rectal and colonic injuries and as such should only be performed by a registered veterinary practitioner. This item should be amended as follows: *"examination or attendance on any animal for diagnosing the physiological or pathological condition of the animal, including for diagnosing pregnancy in a horse **or camelid** but not for diagnosing pregnancy in any other animal".*

- Adult alpacas have an average body weight of 70 kg and stand approximately 90 cm high at the wither. The diameter of the anus and rectum of an average alpaca only allows for a small (glove size <7), well-lubricated, gloved hand to be inserted into the rectum to remove faeces and then manually palpate/manually guide in an ultrasound probe to examine abdominal organs. There is little margin for error as the anus is narrow and the rectal wall sits snugly around the hand. Both the anus and rectal wall vary in elasticity and fragility. It is possible to cause anal and/or rectal trauma during insertion of a hand including splitting of the anal sphincter and/or rectal mucosa and/or rupture of the rectum. It is essential that only trained veterinarians perform this technique because they can assess elasticity of tissues to determine if a hand will fit into the anus and rectum in the first place; assess the degree of manipulation possible through the rectal wall, and are able to assess and treat any anal and/or rectal trauma that may occur during an examination. Lay operators do not have an adequate understanding of anatomy and physiology thus are not trained to handle tissues appropriately, assess variability in elasticity and fragility of the anus and rectal wall (some rectums are too small or have no elasticity and are not suitable for manual palpation), nor are lay operators in a position to assess or treat any trauma that may occur. It is estimated that anal and/or rectal

haemorrhage occurs in alpacas in approximately one in every 20-40 examinations and splitting of the rectal mucosa occurs one in around every 100 examinations.

- An average adult llama weighs 120-180 kg and stands 1-1.2m high at the wither. The anus and rectum of an average-sized llama will allow a larger hand to be inserted, but tissue elasticity and fragility are still of concern and must be assessed as for alpacas.

- It is possible to cause similar damage to the anus and rectum of dromedary camels, as outline above for the South American camelids, but because of the increased diameter of both anus and rectum, there is less risk of trauma. Nevertheless, with small numbers of camels present in the ACT and with the lack of understanding of anatomy and physiology of these camelids by lay operators, it is important that this procedure be restricted to registered veterinary practitioners.

3. Act of veterinary science Item 15

3.1. Stomach tubing and oesophageal intubation in horses for the purpose of administering liquids carries an unacceptable risk of accidental iatrogenic aspiration pneumonia with likely fatal consequences to the horse and as such should only be performed by a registered veterinary practitioner.

- There are fatal consequences of inadvertent administration of a liquid into the respiratory tract due to the inappropriate passage of a nasogastric tube. It is essential when passing a stomach tube in a horse that the operator can identify that the end of the tube is situated in the right structures, otherwise they may pass a large amounts of fluid into the wrong place, causing accidental iatrogenic aspiration pneumonia. [1,2]

- In cattle, special tubes have been developed with enlarged tips to prevent accidental tracheal administration. These are passed orally, and some lay people like dairy farmers or calf handlers may be trained to use them. In horses however, only nasogastric tubing is available due to temperament and anatomical reasons[3], and this should only be performed by a registered veterinary practitioner.

4. Acts of veterinary science Item 17

4.1.Teeth cleaning should be an act of veterinary science.

- Tooth cleaning should only occur under anaesthesia. Teeth cleaning involves scaling and polishing teeth and requires that subgingival (below the gum line) areas be probed and scaled of plaque, calculus and other debris. This is an uncomfortable, and often painful procedure when done properly and is not possible to do effectively on a conscious patient.

- Simply removing the calculus that is visible on the crown of the tooth is medically ineffective because it does not clean the material on the tooth root surface to allow healing of periodontal structures and reversal of dental disease. Disease below the gum line is responsible for periodontal disease which is painful, results in gum infections and leads to tooth mobility and loss over time as the surrounding tooth socket bone is destroyed

- What is presently referred to as “anaesthesia-free dentistry” involves the practice of attempting to perform scaling and polishing the teeth of a fully conscious animal. The practice of anaesthesia-free “dentistry” **should not be done** for the following reasons:

    - **Fails to clearly identify the status of the oral health of the pet:** It is impossible to complete a thorough oral examination including checking every tooth especially sub-gingivally (below the gum line), the tongue,

palate and oropharynx (back of the throat) in a conscious animal. Therefore pathology is missed.

- **Fails to address periodontal disease adequately:** Periodontal disease occurs below gum level and involves bacteria that are destroying the periodontal ligament anchoring the tooth to the socket. Removing calculus from the crown of the tooth does not address the site of disease formation and is merely “window dressing”.

- **Fails to protect the health of animal handlers, operators and patients:** Scaling to remove tartar is done using specialised powered tools and very sharp hand instruments. Even the slightest head movement by the patient could result in injury to the patient’s mouth. Dental instruments need to be very sharp to debride calculus and plaque from the teeth and can easily injure a handler or patient as the patient moves. Persons undertaking the procedure place themselves (and potentially other persons) at risk of being bitten, scratched or suffering other injuries inflicted by the distressed animal. There is no way to protect the airway from aerosolised bacteria or fluids including blood, saliva and scaler coolants further endangering the patient.

- **Fails to provide a positive animal handling experience:** In undertaking a procedure of this nature in a conscious animal it requires the restraining of the animal and forcing it to undergo an uncomfortable procedure over an extended period of time which is aversive and may have negative psychological and behavioural consequences for the animal. Increased anxiety and increased difficulty in handling in the future can have significantly negative welfare outcomes for the animal.

- I**t has the potential to mask underlying dental pathology resulting in delayed treatment of dental disease.** Examining teeth in a conscious patient, and only cleaning the visible surface above the gum line, will not detect or address any of the dental disease present below the gum line. **T**his is purely a cosmetic activity which delivers no health care benefits, and at worst it has the potential to mask underlying dental pathology resulting in delayed treatment of serious dental disease. Owners are likely to be deceived into believing that they have attended to their pet’s dental problems and delay getting appropriate treatment. Unfortunately, animals may suffer significant dental disease and remain in pain a lot longer than they would have if they had not had the superficial “anaesthesia-free” clean, this is an animal welfare issue.

5. Acts of veterinary science Item 18

5.1. The performing of any dental procedure on a horse that involves the use of a power tool must be done by a registered veterinary practitioner

- There are significant animal welfare implications when power dental tools are used inappropriately. The incorrect use can cause thermal insult and irreversible damage to the horse’s teeth. [4]

- As there is significant risk to the horse, it is appropriate that those performing these procedures are appropriately registered and for owners to have an ability to lodge a complaint.

- The main risks are: over aggressive floating resulting in exposed pulp horns; poor technique resulting in over heating of the tooth and subsequent pulp death which in time leads to an open pulp horn; and an unbalanced float job which results in excessive pressures placed on certain teeth or an adversely altered chewing motion. Pain may be experienced by the horse either from damaging the nerves in the pulp or by sore muscles involved in chewing. Damage to the pulp may be evident immediately or it may be a number of years later. An open pulp horn allows bacteria from the mouth to infect the pulp. This causes inflammation of the

pulp and pain is felt by the horse. The infection may result in a tooth root abscess and the pulp may die. Damage to the structures supporting the tooth may result in the tooth no longer erupting. Wear abnormalities develop when a tooth fails to erupt or when a painful tooth is no longer being used to chew. Oral pain can be exhibited in many ways by a horse from subtleties such as being a bit depressed, spilling a little feed when eating, eating more slowly, avoiding certain types of feed, and not performing as well under saddle to having major riding and behavioural issues, not being able to eat at all and losing weight dramatically. Incorrect dental procedures can also result in loss of teeth, bone fractures, osteomyelitis and abscess, death from complication or for humane reasons.

- To use power tools appropriately horses need to be sedated by a veterinarian.

- Advances in the understanding of oral pathology and function, drug modalities, technology, skills and skill learning opportunities have allowed this area of veterinary science to leap forward to a position where only qualified and skilled veterinarians should be allowed to practice it.

5.2. The performing of cleaning, rasping, grinding or cutting the horse's teeth; or removing a loose tooth or deciduous tooth cap from the horse must only be performed by a person qualified with a nationally recognised Certificate IV qualification in equine dentistry, or its equivalent or above.

- Horse owners are entitled to expect that the persons practising dentistry are properly trained, accredited and regulated.

6. Other acts of veterinary science that need to be included

6.1. The signing of any certificate or other document in respect of the certification of disease status, including freedom from disease of the animal or animal product should only be performed by a registered veterinary practitioner.

6.2. Artificial insemination and embryo transfer transfer in horses and camelids should only be performed by a registered veterinary practitioner

- Only veterinarians are able to assess and treat any anal and/or rectal trauma that may occur during these procedures.

- Both embryo transfer and artificial insemination in South American camelids require trans-rectal, manual stabilisation of the cervix to allow insertion of a catheter/pipette into the uterus to perform the appropriate procedure of flushing or transferring embryos/insemination of semen. The technique of grasping the cervix through the rectal wall is challenging because the tissues are fragile, the cervix is small and fragile and the external os of the cervix can be difficult to locate and enter. Dexterity, gentleness, hygiene and caution are essential to:

    - perform the procedure,
    - maintain fertility (no damage to cervix or uterus through trauma or infection by inadvertent introduction of bacteria through lack of understanding of microbiology), and
    - maintain general health (no damage to anus or rectal wall from hand, or inadvertent catheterisation of and damage to urethra and/or bladder) of the female.

\

- Under no circumstances should lay operators be able to perform these procedures in South American camelids.

6.3. Sampling of tissue from live animals should be an act of veterinary science

6.4. Cattle spaying by flank and dropped-ovary method should only be performed by registered veterinary practitioners.

- The surgical flank spaying of cattle should only be performed by veterinarians with the use of appropriate anaesthesia and analgesia. Animals must be assessed by the veterinarian to be sufficiently healthy to undergo the procedure. Animals showing signs of disease, weakness or emaciation should not be spayed by any technique.

- The Willis spay technique involves transvaginal separation of the ovary, which is then left in the abdominal cavity. Since the advent of this technique, the use of and need for surgical flank spaying has declined considerably. It is likely that surgical flank spaying will eventually no longer be necessary and will be eliminated.

- Animals must be assessed by the veterinarian to be sufficiently healthy to undergo either procedure. Animals showing signs of disease, weakness or emaciation should not be spayed by any technique.

References:

1. Curtis L, et al. Veterinary practitioners selection of diagnostic tests for the primary evaluation of colic in the horse.*Veterinary Record Open* 2015;Sep 29; 2 (2)

2. University of Nottingham and the British Horse Society. “Nasogastric Intubation”. 2016

3. Dyce K.M.et al. Textbook of veterinary anatomy. 2002. Saunders

4. Wilson G.J and Walsh L.J Temperature changes in dental pulp associated with use of power grinding equipment on equine teeth *Australian Veterinary Journal* 2005; Jan-Feb; 83 (1-2): 75-7.

5. McCosker K, et al Morbidity, mortality and body weight gain of surgical spayed, yearling Braham heifers. *Australian Veterinary Journal* 2010;88:497–503.