

CATTLE STANDARDS AND GUIDELINES – CASTRATION

DISCUSSION PAPER

Prepared by the Cattle Standards and Guidelines Writing Group, February 2013

ISSUES

The main welfare issues are:

- 1) Pain and healing responses due to castration procedures
- 2) The availability and efficacy of pain relief measures
- 3) Age limits before pain relief is required
- 4) Ability to perform the required task.

RATIONALE

Castration remains an important tool for cattle husbandry and on-farm management of male calves in Australia. There are many reasons for castration including:

- Reduced aggression and sexual activity
- Easier and safer to handle and manage
- Less likely to fight, reducing bruising and injuries to themselves and other cattle and damage to fences and gates
- Easier to keep in paddocks after the time that sexual maturity would be reached
- Allows flexibility to finish calves after puberty and to meet market specifications under variable seasonal conditions
- Allows other husbandry practices (e.g. parasite control) to be undertaken more quickly safely and efficiently
- Prevention of unwanted mating and pregnancies, particularly with the risk of dystocia in maiden heifers
- Improved meat quality in mature cattle.

RECOMMENDATIONS

The writing group reviewed the reasons for castration and the methods used and agreed that the procedure is necessary for cattle husbandry. Circumstances will dictate the choice of method, no one method being ideal in all circumstances. All methods are associated with a degree of pain and

Cattle castration discussion paper public consultation version 1.3.13

from this point of view; no one method is markedly superior to others. Appropriate pain relief should be used. The requirement for pain relief will practically prevent the practice at the age limit proposed (12 months) for commercial cattle enterprises because of the difficulties involved in applying pain relief. Effective drugs are available for cattle but the exact extent of 'pain relief' and the regimes of treatment to be applied have to be determined in the context of what is reasonable for the veterinary profession to deliver to cattle.

The maximum upper age limit of first muster after six months up to twelve months to perform the procedure before mandating pain relief is recommended for the following reasons:

- Desirable for cattle welfare – an age limit will protect cattle welfare and reinforce the need to perform the procedure at an early age. Industry communications and extension campaigns aim to promote the recommended guidelines.
- Feasible for the majority of industry to implement – Performance of castration 'at first muster up to 12 months' should allow the diverse range of production systems and environments (especially in the extensive areas) to perform necessary castrations within the timeframe of the standard and sends a clear message for cattle welfare. For smaller operations where cattle are easily mustered the time limit is six months before castration is required. For most large scale cattle enterprises the requirement for pain relief effectively prohibits the procedure beyond the specified age.
- Feasible for government to implement – An age limit of 6 months causes no impediment for regulation compared with any other age limit. Cattle dentition is an unhelpful guide to cattle age at less than one year old. Verification will have to rely upon measures other than dentition to establish age e.g. records.
- Important for the cattle welfare regulatory framework. The current MCOP for Cattle recommends that "Castration without local or general anaesthesia should be confined to calves at their first muster prior to weaning and preferably to calves under the age of 6 months. Only under exceptional circumstances (e.g. range management of older, previously unmustered bulls) should castration of older bulls be performed". The writing group believes that this recommendation must be incorporated in a standard.
- The valid outcome sought is that castration is only done where necessary, at an appropriate age and in a manner that minimises pain and distress. The age limit will not cause an increase in pre-emptive castrations or a decline in bull calf welfare due to castration not being able to be done if required.

The writing group recommends that the following acceptable standards be introduced into legislation and the following recommended guidelines be published for industry consideration.

STANDARDS AND GUIDELINES PROPOSAL

OBJECTIVE

Castration is done only when necessary and in a manner that minimises the risk to the welfare of cattle, particularly pain and distress.

STANDARDS

- S6.1 A person castrating cattle must have the relevant knowledge, experience and skills, or be under the direct supervision of a person who has the relevant knowledge, experience and skills.
- S6.2 A person in charge must use pain relief when castrating cattle, unless cattle are:
- 1) less than six months old; or
 - 2) less than 12 months old if at their first yarding, and where the later age is approved in the jurisdiction.
- S6.3 A person must use appropriate tools and methods to castrate cattle.

GUIDELINES

- G.1 Cattle to be castrated or made cryptorchid should be as young as possible (less than 12 weeks of age) and the procedure should be done before the cattle are weaned.
- G.2 Calves should be more than 24 hours old when castrated.
- G.3 Calves less than two weeks old should be castrated by the rubber-ring method in preference to the cutting method.
- G.4 Calves more than two weeks old should be castrated by the cutting method in preference to the rubber-ring and tension-band methods.
- G.5 Use of rubber rings or tension bands on calves should ensure that the correct position and tension is achieved to block the arterial blood flow.
- G.6 The incision for surgical castration should be of sufficient size, and extend to the base of the scrotum, to allow effective drainage and reduce the risk of infection.

NB The following material relates to the surgical procedures of cattle and has been written to reflect a single chapter in the draft document.

- G6.7 Castration procedures should only be done if there are no alternatives and the procedure results in either:
- life-time benefits to cattle welfare, or

Cattle castration discussion paper public consultation version 1.3.13

- better herd management, or
 - a reduced work health and safety risk.
- G6.8 Castration procedures should be done with pain relief. Operators should seek advice on current pain minimisation strategies.
- G6.9 Castration procedures should be planned with consideration to the health and age of cattle, weather, staff availability and facilities, including the use of temporary or permanent yards.
- G6.10 Good hygiene practices should be implemented in relation to facilities, hands, handling and instruments. Disinfectant should be used and changed frequently.
- G6.11 Effective but not excessive restraint should be used to minimise movement, and to enable the procedure to be done quickly and efficiently.
- G6.12 Equipment for restraining cattle should only be used:
- For the minimum time necessary and with the minimum restraint necessary, when it is suitable
 - If it is in good working order.
- G6.13 Calves should be separated from their mothers for the shortest possible time unless they are to be hand-reared or weaned onto a solid diet.
- G6.14 Bleeding from surgical wounds should be minimised by selecting an appropriate method, preventing overheating of calves and allowing them to settle after mustering.
- G6.15 Infection should be minimised by avoiding muddy or dusty yards, and wet weather.
- G6.16 Surgical procedures should not be undertaken during extreme weather.
- G6.17 Cattle should be inspected regularly and with minimal disturbance for signs of post-operative complications during the healing process, and appropriate action taken.

Pain relief is defined as ‘the administration of drugs that reduce the intensity and duration of a pain response’.

The term ‘pain relief’ is used throughout this document to mean the reduction of behavioural and physiological responses by an animal to a painful stimulus to a level judged to be reasonable.

Drugs are the common means by which pain relief is achieved and they act in various ways on the peripheral and central nervous systems and may be applied topically or by injection. The range of drugs available for use in cattle and the effectiveness and duration of pain relief provided is often limited.

The assessment of pain is an inexact science. The types of pain and their perception are often not understood and are known to vary at different ages and between individuals. In considering the use of pain relief, cattle should be given the benefit of the doubt.

Where there is a requirement for pain relief, the procedure must be done by a veterinarian or under veterinary supervision for the use of analgesic drugs. Supervision can be direct or indirect. For more information see the glossary.

METHODS OF CASTRATION

The currently recommended methods for castration of calves are:

- Application of rubber rings (Elastrator® rings)
- Cutting (scalpel).

The most common methods of castration of calves in Australia are by cutting (scalpel) or by rubber rings. All methods cause considerable pain at all ages, but levels of pain vary between methods over time, and it appears that pain is least in young calves. In an extensive review of pain control in routine husbandry procedures in sheep and cattle (Hayward 2002) concludes that surgical castration produces more rapid healing, fewer complications and reduced chronic pain compared to rings and bands and that rings used in calves older than 2 weeks give the highest level of inflammation, infection, and chronic pain. Use of rings and tension bands is the least preferred method for calves over two weeks of age.

Generally the surgical castration method does not require hemostasis. Where it is elected to achieve haemostasis in larger bulls, this can be achieved by a variety of ways including ligation, emasculators and the Stone-Henderson castration tool¹.

Tension banding is not a common method of castration in Australia. It is a difficult procedure and if not done expertly, can result in an extremely painful and potentially fatal swelling of the scrotum. For these reasons it is not recommended in the cattle code. MLA research (2011) concluded that tension banding castration produces inferior welfare outcomes to surgical castration in both weaner and mature bulls.

The use of rubber rings and tension bands in cattle requires a high degree of skill and judgement to ensure that the application is correct. The writing group believes that this issue is notably so for tension bands and thus precludes a general recommendation to use tension bands on larger calves.

Closed crushing procedures (i.e. Burdizzo clamp) are rarely used in Australia, due to the high degree of technical difficulty and therefore a high failure rate particularly as precision may be reduced with large numbers of cattle.

‘Short scrotum’ or cryptorchidism has a lesser role in the diverse husbandry systems in Australia. Immuno-castration is currently unavailable as no vaccine is licensed for the use in cattle in Australia.

¹ [http://www.stonemfg.net/images/brochures/Henderson/HendersonEquine_trifold%20\(High%20Res\).pdf](http://www.stonemfg.net/images/brochures/Henderson/HendersonEquine_trifold%20(High%20Res).pdf)

CATTLE WELFARE IMPLICATIONS

Benefits of castration

The major welfare benefit of castration to cattle is the reduced aggression and sexual activity leading to males being less likely to fight, hence reducing bruising and injuries to themselves and other cattle. Castrated males are more sociable herd-orientated animals as opposed to the solitary, aggressive nature of many bulls. Selection of a realistic proportion of entire males in a breeding herd also leads to better welfare outcomes for cycling (oestrus) cows.

Detriments to welfare

The major welfare detriments are the pain from the procedure, consequential healing issues that may occur including severe and fatal infection and a reduced growth rate in the short and longer term. The magnitude of chronic pain is not understood but it has been observed that constriction methods (rings, tension bands) do lead to a period of chronic pain. Petherick 2012 states that that with rings in 3 and 6 month old Belmont red calves pain for ring castrates began at 6 days post application and peaked between 27 and 30 days. In Pethericks' 2011 study of 225 and 420 kg live weight Brahman bulls castrated by tension bands the pain response began immediately post application and lasted for approximately one month. Both studies demonstrated again that wound healing is faster in surgical castrates compared to ring castrates but there were few other differences. Petherick concluded in 2011 that tension bands do not produce superior welfare or production outcomes for either immature or mature bulls compared to surgical castration.

(Chase, Larsen and Randel *et al.* 1995) compared surgical castration with tension banding in Brahman, Hereford and Angus bulls at 20-21 months old and found no breed effect. Cortisol levels were highest in surgically-castrated steers on the day after castration. Growth was suppressed by castration in the study period, but differences between methods were not significant. In tension banded animals the scrotum fell away between days 5 and 35. Neither method compromised health and there was similar growth in the feedlot.

Knight, Cosgrove and Death *et al.* (2000) compared the impact on growth rates of tension banding or surgical castration in bulls aged 8-9 months and 14 months. Bulls castrated using the tension bander grew significantly slower than surgically castrated bulls in the months following castration. Bulls castrated by either method lost their live weight advantage over steers within 1-3 weeks. The paper cites other studies where the growth rates effects of tension banding have been positive or negative compared to surgical castration. The occurrence of large lesions above the band was only evident in the older bulls (14 months) and may have been related to the difference in scrotal mass. The authors concluded that tension banding should only be performed on bulls under 14 months of age and that delaying the time for castration by either method from that at weaning was not advantageous to live weight gain.

Fisher, Knight and Cosgrove *et al.* (2001) further evaluated the animal welfare impacts of banding in both 9 and 14 month old *Bos taurus* bulls. There was some evidence that banded animals were less comfortable than surgically-castrated animals only in 24 hours after castration. Scrotal dehiscence (falling away) occurred between days 28 and 56. Healing then took several further weeks to

Cattle castration discussion paper public consultation version 1.3.13

complete in yearlings, probably because of the greater amount of tissue that initially was banded which may have reduced efficacy of the tourniquet effect. Healing of surgical castrates was complete by day 28. Banded steers grew slower than surgical castrates in this study and it was suggested this may have been related to the prolonged healing process. At the end of the study period on day 56 there was no difference in liveweight between the steers castrated by differing methods. These authors concluded that surgical castration is the preferred technique, at least in yearling cattle.

Although acute responses of calves to castration have been well studied, the chronic response of calves to castration has received less attention. However, some studies show that castration in cattle may have persistent effects and influence production regardless of method. More research is needed to determine whether the changes in growth post-castration are directly due to hormonal changes or to chronic pain affecting feeding behaviour. Research is required to examine the manner in which post-castration growth is affected: direct hormonal effects may affect efficiency of growth while chronic pain, in addition to its effects on cortisol secretion, may affect feed intake.

Provision of pain relief for castration

The evaluation of the pain response in cattle is difficult.

(Stafford, Mellor and Todd *et al.* 2002) compared: rings, surgery (cut and pull or cut and emasculator), Burdizzo clamp and Callicrate bander in calves at three months of age. The effects of local anaesthetic infiltrated into the testes and scrotum 20 minutes prior to, and IV ketoprofen at time of castration, were also explored.

The results were:

- All five methods were acutely painful and distressing based on plasma cortisol concentrations
- The pattern of the cortisol responses varies with surgery and pulling, burdizzo and the bands causing more acute stress than surgery with emasculator, and rings
- Local anesthetic given before ring and band application eliminated the cortisol response but had little effect for the other methods. Improvements in behavioural responses were recorded with the use of local anaesthetic
- Local anaesthetic and ketoprofen™ given before the procedure was able to eliminate responses to all methods for eight hours after castration
- Bands cause more response than rings but both methods have slower wound healing than the surgical methods
- Clamps were the least painful method but are not always successful
- ‘Surgery pull’ is more painful than ‘surgery emasculator’ and the latter can have a variable pain result.

Stafford, Chambers and Mellor 2006, concluded that there are a limited number of analgesic drugs registered for use in cattle and concerns include costs and residues. Ketoprofen (non-steroidal anti-inflammatory drug - NSAID) and lignocaine (local anaesthetic) appear to be the most successful combination registered to abolish the short to medium term pain response. This conclusion is derived from the aforementioned study and also the Stafford, Mellor and Todd *et al.* 2003 study into calf dehorning.

Cattle castration discussion paper public consultation version 1.3.13

Petherick concluded in 2012 that it would be difficult to provide effective analgesia for ring and band castrates. In her 2011 study of 225 and 420 kg live weight bulls castrated by tension bands it appeared that a single dose of Ketoprofen did not fully alleviate the immediate post application pain response other than in surgically castrated mature bulls.

Critical to a clear understanding of the pain issue surrounding castration is:

- All the research to date has involved calves in a benign working environment, often hand reared, all previously handled, and accustomed to humans, noise, and yards.
- The age span has generally been 24 hours to three months which is less than commonly encountered on commercial properties
- There are no scientific reports where research has been conducted under situations that reflect on-property operations where the first experience of humans is at the first muster, where calves are drafted from their mothers into the calf pen and processed
- It would be a seriously flawed procedure to base standards of animal welfare for the national cattle industry on cortisol levels that occur in young calves in the benign environment in which research has been conducted to date
- This statement is supported by the comments of Stafford, Mellor and Todd (cited by Hayward 2002) who found that the control animals had elevated cortisol levels little different to surgically castrated animals in the acute response
- The adrenal response measured by cortisol levels to husbandry procedures routinely done on cattle on Australian farms where the stock are yarded and restrained for the first time has not been measured
- While the cortisol levels reflect the response to stressors, care must be exercised in interpreting cortisol responses to pain and/or handling. Until other objective measures of chronic pain have been rigorously researched under conditions which accurately reflect on-property husbandry procedures, and results validated, the use of the research results to establish Australian animal welfare standards for castration must be held in its proper context
- Research is required to examine the physiological and behavioral aspects under Australian conditions to better understand the short and long term effects of castration.

SUMMARY

Where no drugs are given, and relegating the Burdizzo to little usage, the most humane options are: surgery with emasculator, surgery without an emasculator, followed by rings, then bands. Where drugs are given, local anaesthesia plus ketoprofen reduces the pain response to nil. Administration of pain relief requires drugs that can only be acquired and used by registered persons as specified under legislation which limits its on-farm use.

ABILITY TO PERFORM THE REQUIRED TASK

A person must have knowledge, experience and skills to perform a general husbandry task in a satisfactory manner. This matter is regarded as highly important by the cattle industry. A level of assurance is sought commensurate with the degree of immediate welfare risk to the animal. Formal assessment of ability is not required.

Cattle in Australia are managed in environments that vary from extensive rangelands to intensively managed systems. In all cases the persons in charge of cattle are responsible for the welfare of the animals under their control. In achieving improved welfare outcomes envisaged by the standards, it is important that people responsible for animals have the necessary knowledge, experience and skills to undertake the various procedures and meet the requirements of the standards, in a manner that minimises the risk to cattle welfare. The relevant principles are:

- The undertaking of any husbandry procedures required for planned herd management in a manner that reduces the impact of these procedures and minimises risks to cattle welfare.
- Handling facilities, equipment and procedures that minimise stress to the cattle.
- Minimising the risk of pain, injury or disease.
- Assessing the need to undertake any husbandry procedures that may result in significant short-term pain against alternative strategies for the long-term welfare of the cattle.

Considerations include:

- Reducing the impact of mustering, handling and restraint
- Carrying out the procedures at the earliest practical age
- Knowledge of the appropriate age/size considerations for selection of method
- Ensuring that facilities and equipment are suitable
- Applying the method skilfully
- Applying other basic principles such as vaccinating cows and calves to protect against tetanus and other clostridial diseases
- Avoiding wet weather
- Maintaining clean hygienic practices
- Allowing the unweaned calves to mother up as soon as possible
- Releasing the cattle from the yards and onto feed and water as soon as possible
- Conducting regular post-castration inspections.

The most important elements to be considered are:

- Knowledge of the appropriate age/size considerations for selection of method
- Demonstrated manual skill
- Appropriate hygiene
- Appropriate instruments.

AGE OF CASTRATION

The earlier the procedure is done in calves the better for the calf and the stock handler. International viewpoints are moving towards reductions in the age threshold above which the application of anaesthesia or pain relief should be required.

National and international recommendations for age of castration limits without pain relief are fully covered below. There does not appear to be any science that supports the recommendation that castration before two weeks of age is best – RSPCA² states up to two weeks for rubber rings (but requires pain relief) and for calves up to four months where a blade is used an anaesthetic and pain relief is required; castration of older males is considered a major surgical procedure and must only be performed by a vet ; the MLA manual states two weeks, NZ research refers to swelling, inflammation and infection problems with rings and by inference chronic pain with rings for up to 30 days later in week old calves; AVA recommends up to two weeks for rubber rings and up to six months by burdizzo or surgery without pain relief. The paradigm of increasing welfare impacts related to age of castration is neither proven under on-farm husbandry situations nor well understood (pain and post-operation complications). Whilst there is some evidence that pain increases with age (Ting et al 2005.) there is no evidence that there exists a critical age or developmental threshold beyond which cattle experience unacceptable pain in response to a given stimulus. It is recognised that more research would be useful to investigate the pain: age relationship but in the meantime, observers perceive that pain increases with age of castration in cattle, that this has a significant impact on the welfare of cattle and is a high priority issue that must be addressed.

The age at which the animal is castrated may also affect the manner in which the animal responds. It has been reported that there is an increasing cortisol response to castration with increasing age (King *et al.*, 1991; Robertson *et al.*, 1994). There was a greater cortisol response in 167 day-old calves than in 78 day-old calves (King *et al.*, 1991). Whereas (Robertson *et al.* 1994) report that for all methods of castration (surgical, rubber ring and burdizzo) that the cortisol response was lowest in 21 day old calves. In a review of the literature on castration of cattle, (Bretschneider 2005) concluded that castration by any method at or close to birth drastically reduced the loss in body weight. Petherick 2012 demonstrated that there is little difference in Belmont red calf response between surgical and ring castration performed at 3 and 6 months (93.7 and 163.3 kg live weight averages, respectively), other than the timing of pain responses due to the methods. The variability of cortisol results tends to undermine its usefulness as a proxy measure of welfare impact.

Early castration (two days to six months) significantly reduces:

- Pain and discomfort of the cattle
- Risk of bleeding and infection
- Recovery time after castration
- Weight loss after castration
- Difficulty of restraining the calf and performing the procedure
- Risks to the operator and the amount of labour needed.

² RSPCA Australia 2009, Invasive farm animal husbandry procedures, Position paper B4, adopted 07/12/2009.

Castrating the calves less than 24 hours is not recommended.
Castration too early can cause mis-mothering and unacceptable injury.

Determining an upper age limit for castration requires consideration of the following factors:

- The desirability to undertake castration before the onset of puberty which varies according to genotype, nutrition, liveweight and season. As a general statement, bull calves, regardless of breed reach puberty on average at a liveweight of 325 kilograms (acknowledging a wide range) (Fordyce , pers. comm). This occurs in Brahmins on average at 13.5 months (Anon 2000)
- Practical aspects of undertaking the procedure, including suitable weather conditions and labour availability
- The length of the joining period which will result in varying birth dates. Variable age ranges of calves requires adequate management to avoid associated welfare implications of mustering very young cattle such as mis-mothering
- The necessity to undertake other husbandry procedures at the same time.

New Zealand has documented a similar discussion in paragraph 38 of the Animal Welfare (Painful Husbandry Procedures) Code of Welfare Report 2005. Fisher *et al.* 2001 concluded that delaying castration in yearling cattle has no benefit in relation to castration method chosen.

Under extensive grazing management operations in northern Australia, where more than 50% of cattle are run, castration, branding and dehorning are done at the same time.

- The issue of determining when the first muster is done and thus when castration, branding and dehorning are done is the ability and cost of achieving a complete muster. Open country with very little uncontrolled surface water can yield 95% complete musters whereas in forest/timbered country or hilly terrain, complete musters are rarely achieved
- Calves born after the second mustering round in say late September to December will be up to nine months old at castration in the following midyear
- Where one mustering round is undertaken, the age of calves castrated in the current year can be up to 12 months, and will comprise a higher percentage of the total
- The number of mustering rounds can be limited by seasonal and operational constraints
- Adverse seasonal conditions will exacerbate the difficulty of achieving complete musters.

REVIEW OF NATIONAL POLICIES AND POSITIONS

The **Cattle MCOP 2nd edition (2004)** states that:

5.4 Castration

Cattle castration discussion paper public consultation version 1.3.13

5.4.1 *Castration without local or general anaesthesia should be confined to calves at their first muster prior to weaning and preferably to calves under the age of 6 months. Only under exceptional circumstances (e.g. range management of older, previously unmustered bulls) should castration of older bulls be performed, and then preferably by a veterinarian. Castration of animals older than 6 months is illegal under some state and Territory legislation, unless undertaken by a veterinarian. Therefore operators should be aware of their legal responsibilities.*

5.4.2 *Castration with rubber rings is only recommended for calves up to 2 weeks of age.*

5.4.3 *Castration with Burdizzo should be performed as young as possible.*

The cattle MCOP does not in effect create a standard, despite the reference to other legislation in various states. Existing regulations poorly mandate the age at which veterinary intervention or the application of analgesia is required for castration. A full review of legislation is at Appendix 1. It is apparent that a standard for the provision of effective analgesia for cattle castration does not exist in all states and Territories. The preferred ages appear to be 6 or 12 months old based on the legislation that is in place.

Australian Veterinary Association (AVA) does not have a current published policy on this matter. The new policy is similar to the 2009 policy of the AVA (K Doyle *pers comm.*) where they accepted the practice of surgical, ring or Burdizzo castration of calves under 6 months of age without anaesthetic.

RSPCA Australia 2008 relevant policy is as follows:

4.6 Invasive animal husbandry procedures

"4.6.1 RSPCA Australia is opposed to any invasive animal husbandry procedure for which there is no established need, which only benefit the human handler of the animals concerned, or that is performed to overcome the adverse effects upon animals of the production system they are in.

4.6.2 If an invasive procedure is to be performed, it must be undertaken at the earliest age possible, be performed by an accredited operator and be accompanied by appropriate pain-relieving and / or pain-preventing products."

The revised RSPCA Australia Position paper B4 (Invasive farm animal husbandry procedures) states:

Castration is carried out to reduce aggression and subsequent injury of male animals.

"4.1 RSPCA Australia believes that castration must only be undertaken where there is a clearly established need. There is no such need to castrate animals which are destined for slaughter prior to sexual maturity e.g. piglets, lambs or calves.

4.2 It is strongly advised to castrate animals at an earlier age than the maximum age indicated, provided the testicles have descended.

4.3 The use of pain relief and anaesthesia for castration should reflect the method used. Surgical methods of castration are the most painful at the time of application while recovery from rubber ring castration is more prolonged.

4.4 *The castration of deer, donkeys, horses and camelids of all ages is considered a major surgical procedure and must only be performed under anaesthetic by a veterinary surgeon.*

4.5 Juvenile males

Acceptable methods of castrating juvenile males of all species (i.e. calves less than four months, lambs less than 10 weeks, goats less than 6 weeks, pigs less than 4 weeks) are:

- *Rubber rings (these are unsuitable for calves over 2 weeks of age, pigs and goats). A pain-relief product is required. Vaccination against tetanus should be given. In very young lambs, i.e. less than 1 week of age, the combined use of an emasculator (an instrument that clamps and crushes the spermatic cord and blood vessels) and rubber ring is more humane than the use of rubber rings alone.*
- *Blade. An anaesthetic and a pain-relief product are required. The animal must be appropriately restrained (see 2.6), and adequate post-operative drainage is essential.*

4.6 Older males

a. *Castration of older farm animals is considered a major surgical procedure and must only be performed by a veterinary surgeon.*

b. *Where castration is necessary, it should be done in a location that is suitable for the implementation of hygienic methods and the animal should have adequate pre-operative preparation and pain management. General anaesthesia, or sedation plus local anaesthesia, together with appropriate restraint of the animal are required (see 2.6).*

c. *Post-operative monitoring, pain management and care must be implemented to minimise the possibility of complications."*

The **MLA Guide to Best Practice Husbandry in Beef Cattle (2007)** does not recommend a preferred method but gives cautionary advice on the Burdizzo and does not support the use of tension banding. Tetanus risk minimisation and other precautions are recommended. Recommended ages are:

- Castration - generally under 6 months old and at first muster
- Rings – 2 days to 2 weeks
- Burdizzo – none given.

The following international policies and position statements are included to provide a brief international context, while acknowledging that Australia's cattle production systems may vary significantly from production systems, cattle breeds and climatic conditions in other countries.

REVIEW OF INTERNATIONAL POLICIES AND POSITIONS

In **New Zealand** the relevant standards are contained in the **NZ Painful Husbandry Procedures Code (2005)** which requires in Minimum Standard No. 3 in part that: *'castration or shortening of the scrotum without pain relief must be performed when the animals are young as possible but over 12 hours old, and not greater than six months of age. When castrating or shortening the scrotum of any* Cattle castration discussion paper public consultation version 1.3.13

animal over the age of six months pain relief must be used. The use of high tension bands at any age must be accompanied by local anaesthetic pain relief’.

Detailed instructions are also included in the NZ code on how the methods must be performed. Recommended best practice and general information is provided. In this report it is acknowledged that for acute pain, scientific research has shown that the least to most painful methods for calves are:

- Rubber ring or high tension bands with local anaesthetic, or surgery with local anaesthetic plus analgesic
- Rubber ring without pain relief, or surgery without pain relief
- High tension bands without pain relief.

In lieu of official USA government policy, the **American Veterinary Medical Association** has a policy on bovine castration which is consistent with the proposal and is as follows:

- “Both dehorning and castration should be done at the earliest age practicable
- Elastrator rubber banding techniques have been associated with increased chronic pain and should be discouraged. High tension-banding systems may be used with appropriate veterinary supervision and/or training in those situations where surgical castration may predispose to postsurgical complications
- There are a number of acceptable castration techniques utilized by the cattle industry. The castration method used should take into account the animal's age, weight, skill level of the technician, environmental conditions, and facilities available, as well as human and animal safety.”

This is accompanied by a useful background document: *Welfare Implications of Castration of Cattle (2007)*.

The **UK Farm Animal Welfare Council (FAWC) Report on the welfare of Dairy Cattle (1997)** (no beef cattle report) recommends that ideally castration is avoided or when this is necessary to avoid worse welfare problems, castrated using pain relief if over two months of age (as required by legislation). If effective topical anaesthesia is developed it must be used for all ages of cattle castrations. Non-veterinarians should be trained and competent in the procedure.

The **Council of Europe (COE) Recommendations concerning Cattle (Oct 1988)** Article 17 2 c i. in effect states that castration should be avoided where possible and should be carried under local or general anaesthesia by a veterinarian, especially if over 4 weeks of age.

The **Canadian Recommended Code of Practice for the Care and Handling of Farm Animals – Beef Cattle (1991)** section 10.1.4 recommends that castration is performed at an early age and preferably before weaning by competent personnel using proper equipment and accepted methods with a view to avoiding unnecessary pain. Mature animals should be castrated in consultation with a veterinarian.

DEFINITIONS

| | |
|--------------------|--|
| castration | <p>The removal or disruption of the function of the testes by excision, or by constriction and / or crushing of testicular blood supply (rubber ring, tension band or burdizzo clamp) or by dysfunction created by the cryptorchid method.</p> <p>Note: <i>immuno-castration is not included in this definition but is not considered a welfare concern.</i></p> |
| direct supervision | <p>A person (the supervised person) is acting under the <i>direct supervision</i> of another person (the supervisor) if the supervisor:</p> <p>(a) provides instructions and guidance to the supervised person in relation to the subject activity; and</p> <p>(b) oversees and evaluates the performance of the activity by the supervised person; and</p> <p>(c) is contactable by the supervised person; and</p> <p>(d) is supervising the person in accordance with paragraphs (a), (b) and (c) above; and</p> <p>(e) is on the same premises as the supervised person while the subject activity is being undertaken; and</p> <p>(f) is able to immediately render assistance to the supervised person, if required, at any time during which the subject activity is being undertaken.</p> |
| pain relief | <p>The administration of drugs that reduce the intensity and duration of a pain response.</p> |
| supervision | <p>A person (the supervised person) is acting under the <i>supervision</i> of another person (the supervisor) if the supervisor:</p> <p>(a) provides instructions and guidance to the supervised person in relation to the subject activity; and</p> <p>(b) oversees and evaluates the performance of the activity by the supervised person; and</p> <p>(c) is contactable by the supervised person.</p> <p>See 'direct supervision'</p> |
| yarding | <p>The process of putting cattle into a cattle yard.</p> |

REFERENCES

A Guide to Best Practice Husbandry in Cattle, Meat and Livestock Australia, Locked Bag 991, North Sydney, NSW, 2007.

Animal Welfare (Painful Husbandry Procedures) Code of Welfare Report, 2005, New Zealand at: <http://www.biosecurity.govt.nz/animal-welfare/codes/painful-husbandry/index.htm>. Accessed on 3/3/09.

Animal Welfare (Painful Husbandry Procedures) Code of Welfare, 2005, New Zealand at: <http://www.biosecurity.govt.nz/animal-welfare/codes/painful-husbandry/index.htm>. Accessed on 3/3/09.

Anon. North Australia Project 113 *Bull Selection and use in Northern Australia* (Northern Bull Power Project) Meat and Livestock Australia, Locked Bag 991, North Sydney, NSW, 2000.

Australian Veterinary Association, *Members Directory and Policy Compendium* 2012.

<http://www.ava.com.au/about-us/policy-and-positions-1> Accessed on 1/3/13.

AVMA background document *Welfare Implications of Castration of Cattle* (October 2, 2007) http://www.avma.org/reference/backgrounders/castration_cattle_bgnd.pdf Accessed on 29-4-09.

AVMA policy *Castration and Dehorning of Cattle* http://www.avma.org/issues/policy/animal_welfare/dehorning_cattle.asp Accessed on 29-4-09.

Bretschneider, G. (2005). Effects of age and method of castration on performance and stress response of beef male cattle: A review. *Livestock Production Science* 97, 89-100.

Chase CC Jr, Larsen RE, Randel RD, Hammond AC and Adams EL, Plasma cortisol and white blood cell responses in different breeds of bulls: a comparison of two methods of castration. *J Animal Sci* 1995, 73: 975-980.

FAWC Report, Farm Animal Welfare Council, London at: <http://www.fawc.org.uk/reports.htm>. Accessed on 4/3/09.

Fisher AD, Knight TW, Cosgrove GP, Death AF, Anderson CB, Duganzich DM, & Mathews LR Effects of surgical or banding castration on stress responses and behaviour of bulls. *Aust Vet J* 2001, 79: 279-284.

Fordyce G Pers. Comm. 2009.

Hayward M *Pain and its Control In Routine Husbandry In Sheep and Cattle. Livestock Husbandry Review* March 2002 ACT Animal Welfare Advisory Committee, March 2002.

King, B.D., Cohen, R.D.H., Guenther, C.L. and Janzen, E.D. (1991). The effect of age and method of castration on plasma cortisol in beef calves. *Canadian Journal of Animal Science* 71, 257-263.

Knight TW, Cosgrove GP, Death AF, Andersen CB and Fisher AD Effect of method of castrating bulls on their growth rate and live weight new Zealand Journal of Agricultural Research 2000, Volume 43:187-192.

Cattle castration discussion paper public consultation version 1.3.13

Model Code of Practice for the Welfare of Animals – the Cattle, second edition, PISC Report 85, 2004, CSIRO Publishing at: <http://www.publish.csiro.au/> Accessed on 2/3/09.

Petherick, JC Pain management in castrated beef cattle MLA project B.AWW.0206 June 2011. Accessed on 7.1.13 at: <http://www.mla.com.au/Research-and-development/Final-report-details?projectid=15155>

Petherick, JC Welfare outcomes of calves of two ages castrated by rings. MLA project B.AWW.008 Dec 2012. Accessed on 7.1.13 at: <http://www.mla.com.au/Research-and-development/Final-report-details?projectid=15351>

Recommended Code of Practice for the Care and Handling of Farm Animals – Beef Cattle, Canadian Agri-Food Research Council 1991 at: <http://www.nfacc.ca/code.aspx>. Accessed on 2/3/09.

Robertson, I.S., Kent, J.E. and Molony, V. (1994). Effect of different methods of castration on behaviour and plasma cortisol in calves of three ages. *Research in Veterinary Science* 56, 8-17.

RSPCA Australia policies (2008) RSPCA Australia Inc, Australia at: <http://www.rspca.org.au/policy/policy.asp>. Accessed on 3/3/09. RSPCA Australia policies are available at <http://kb.rspca.org.au/78/>.

RSPCA B2, Farm Animal Position Papers 2006 edition, 2.1 Surgical animal husbandry techniques, pp 59 – 60 at: http://www.rspcavic.org/about_us/images/Policy/2006_RSPCA_B7.pdf. Accessed on 3/3/09. RSPCA Australia position papers are available at <http://kb.rspca.org.au/files/2/>.

Stafford KJ, Chambers JP and Mellor DJ. The alleviation of pain in cattle: a review *Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 2006 1 No. 032.

Stafford KJ, Mellor DJ, Todd SE, Bruce RA, and Ward RN Effects of local anaesthesia or local anaesthesia plus a non-steroidal anti-inflammatory drug on the acute cortisol response of calves to five different methods of castration *Research in Veterinary Science* 2002, 73: 61-70.

Stafford KJ, Mellor DJ, Todd SE, Ward RN and McMeekan CM. The effect of different combinations of lignocaine, ketoprofen, xylazine and tolazoline on the acute cortisol response to dehorning in calves. *New Zealand Vet J* 2003, 51(5): 219-226.

Ting STL, Earley B, Veissier I, Gupta S and Crowe MA., Effects of age of Holstein-Friesian calves on plasma cortisol, acute-phase proteins, immunological function, scrotal measurements and growth in response to Burdizzo castration. *Animal Science* 2005; 80: 377-386.

**APPENDIX 1
ANALYSIS OF THE LEGAL REQUIREMENTS FOR CASTRATION OF LIVESTOCK WITH
VETERINARY OR ANALGESIC DRUG APPLICATION**

Summary:

- **Very few actual regulations, and recommendations vary from nothing or 6 to 12 months**
- **Current situation is largely unenforceable but does reflect jurisdictional values**
- **Veterinarians Acts may provide defacto control but are not primarily welfare orientated.**

Existing regulations poorly mandate the age at which veterinary intervention or the application of pain relief is required for castration. The preferred ages appear to be 6 or 12 months old. At one end of the spectrum is an expectation that 6 months is a reasonable limit before the application of a higher standard of welfare, and at the other end of the spectrum is the physical reality of being able to handle livestock before they are 12 months old and the lack of veterinary services in remote areas. Both ends are equally unlikely to change for their own justifiable reasons.

| Jurisdiction | Cattle requirements | Relevant Act and comment |
|---------------------|--|--|
| Industry Issue | Large variation in the nature of pasture based enterprise with a significant component based on extensive or difficult to manage enterprises. Veterinarians not able to meet potential supply or satisfy industry economic considerations if a high standard (low age threshold) is imposed. | |
| MCOP | Guidelines only. # 5.4.1 <u>Should</u> be done at first muster and preferably < 6 months old. If > 6 months <u>should</u> be done by vet with analgesia, unless exceptional circumstances (range management). | The MCOP is variously referred to in legislation. The intent of the Veterinarians Acts, where they exist, is only indirectly focussed on animal welfare and does not really set performance criteria for welfare practices. |
| QLD | No actual welfare restrictions on age of castration exist. | Animal Care and Protection Act 2001 <i>Veterinary Surgeons Act 1936</i> – age restriction over 6 months with exemptions Enforced on a passive basis. |

Cattle castration discussion paper public consultation version 1.3.13

| | | |
|-----|--|--|
| | | <p>25M Persons who must not practise veterinary science</p> <p>(1) A person who is not a veterinary surgeon must not practise veterinary science.</p> <p>(2) However, a person does not commit an offence against subsection (1) if—</p> <p>(a) the person practises veterinary science other than for fee or reward; or...</p> <p>COP will help define cruelty for ACPA.</p> <p># 17 Breach of duty of care prohibited</p> <p>(1) A person in charge of an animal owes a duty of care to it.</p> <p>(2) The person must not breach the duty of care. etc</p> <p># 18 Animal cruelty prohibited</p> <p>(1) A person must not be cruel to an animal.</p> <p>(2) Without limiting subsection (1), a person is taken to be cruel</p> <p>to an animal if the person does any of the following to the</p> <p>animal—</p> <p>(a) causes it pain that, in the circumstances, is unjustifiable,</p> <p>unnecessary or unreasonable</p> <p># 16 Use of code of practice in proceeding</p> <p>A code of practice is admissible in evidence in a proceeding</p> <p>for an offence against this Act if it is relevant to the act or</p> <p>omission to which the proceeding relates.</p> |
| NSW | Defences in Prevention of Cruelty to Animals Act against a charge of cruelty | <p>Prevention of Cruelty to Animals Act 1985 Section 24</p> <p>Certain defences</p> <p>(1) In any proceedings for an offence against this Part</p> |

| | | |
|--|--|--|
| | <p>6 months of age.</p> <p>6 months Veterinary Practice Act 2003 & Regs. Similar situation</p> | <p>or the regulations in respect of an animal, the person accused of the offence is not guilty of the offence if the person satisfies the court before which the proceedings are being taken that the act or omission in respect of which the proceedings are being taken was done, authorised to be done or omitted to be done by that person:</p> <p>(a) where, at the time the offence is alleged to have been committed, the animal was:</p> <p>(ii) a pig of less than 2 months of age or a stock animal of less than 6 months of age which belongs to a class of animals comprising cattle, sheep or goats – in the course of, and for the purpose of, castrating the animal</p> <p>Veterinary Practice Regulation 2006 Clause 4 (d) (viii) and (x) Acts of Veterinary Science</p> <p>viii) the castrating of cattle, sheep or goats that are 6 months of age or older,</p> <p>(x) the castrating at any age of animals other than cattle, sheep, goats or pigs</p> <p>Veterinary Practice Act 2003 No 87</p> <p>9 Offence for unregistered person to do restricted acts of veterinary science</p> <p>(1) A person must not do any restricted act of veterinary science unless the person is a veterinary practitioner.</p> <p>(2) Despite subsection (1), a person other than a veterinary practitioner may, in respect of an animal, do any restricted act of veterinary science if:</p> <p>(a) the person is the owner of the animal, or</p> <p>(b) the person is an employee of the owner of the animal and the act is done incidentally to the primary duties of that employment, or</p> <p>(c) the person is a student enrolled in a course of study etc</p> <p>(d) the doing of the act is necessary because the animal is in urgent need of veterinary treatment and a</p> |
|--|--|--|

| | | |
|-----|--|--|
| | | veterinary practitioner is not available. |
| VIC | <p>No actual welfare restrictions on age of castration exist. Guidelines only.</p> <p>burdizzo -as young as possible: rubber rings <6 weeks of age (up to 12 weeks if management necessitates) :knife <6-8 months :bulls over 6-8 months with anaesthetic :adult bull- vet only with anaesthesia</p> | <p>POCTA</p> <p>Code requirement, cruelty under POCTA if not done according to code is problematic as most statements are 'shoulds'.</p> <p>Veterinary Legislation in Victoria [Veterinary Practice Act 1997] does not define "Acts of Veterinary Science"</p> |
| TAS | <p>No actual welfare restrictions on age of castration exist. 6 months recommend by TAS COP</p> <p>Guidelines: should be done before 6 months old. Rubber rings rec to be used under 3 months old.</p> | <p>Veterinary Surgeons Act 1987, Veterinary Surgeons Regulations 2012</p> <p>POCTA - cruelty</p> <p>Animal Welfare Act and Regs.</p> <p>Animal welfare legislation silent on this issue, therefore general cruelty provisions apply. Tas is hoping the national S&G process will deliver measurable animal welfare standards for regulation.</p> <p>Not an act of vet science if under 6 months. Not actively enforced – i.e. no regular audits at marking time - but the inspectorate does respond to complaints.</p> |
| SA | <p>No actual welfare restrictions on age of castration exist.</p> <p>3 months – vet act</p> <p>6 months</p> <p>Cattle Code (regulated in SA) has a recommendation that cattle be castrated at less than 6 months.</p> | <p>Animal Welfare Act 1985</p> <p>Cattle Code (regulated in SA)</p> <p>POCTA</p> <p>Veterinary Practice Act, 2003</p> <p>No specific legislation re castration of cattle, sheep or horses.</p> <p>Castration of older animals (including sheep and horses) without anaesthetic may be prosecuted under the general provisions of the Animal Welfare Act 1985 if there is evidence of harm, pain or distress. An</p> |

| | | |
|----|--|--|
| | | <p>offence could be prosecuted as a breach of the requirement to comply with the Code, although the wording is weak and I suspect an inspector would be looking for evidence of pain, suffering and distress.</p> <p>SA Veterinary Practice Regulations state that castration of cattle and sheep (and pigs) less than 3 months of age are excluded from the definition of veterinary treatment within the Act. Although this means that castrating cattle and sheep over 3 months is a veterinary treatment if done for the purposes of fee or reward, it does not prevent the owner of an animal castrating them at more than 3 months.</p> |
| WA | 12 months in some parts and under some circumstances if exemptions do not apply. | <p>Veterinary Surgeons Act 1960</p> <p>Section 26(3)(d)</p> <p>Only permitted to be done by a layperson “using humane methods.....castrating an animal not over the age of 12 months”</p> <p>VETERINARY SURGEONS ACT 1960 - SECT 26</p> <p>26. Only registered persons to practise veterinary surgery</p> <p>(2) Nothing in subsection (1) shall extend to make any person liable to any penalty if he satisfies the court that he has not directly or indirectly been paid or remunerated or received any other valuable consideration, or been promised or expected any such pay, remuneration or consideration for or in relation to the practice of veterinary surgery or any other directly or indirectly related matter arising out of or connected with the relevant circumstances.</p> <p>(3) Nothing in subsection (1) applies to or prohibits the performance, whether or not for reward, by a person —</p> <p>(a) of first aid for the purpose of saving the life of an animal or relieving pain suffered by an animal; or</p> <p>(b) of a veterinary service prescribed for the purposes of this paragraph, if, within 50 kilometres of the place where the service is required either —</p> <p>(i) no registered veterinary surgeon is in practice;</p> |

| | | |
|----|-----------|--|
| | | <p>or</p> <p>(ii) no registered veterinary surgeon willing to perform the service can be found; or</p> <p>(iii) no registered veterinary surgeon is available to perform the service within a reasonable time;</p> <p>or</p> <p>(c) in a prescribed area of the State and using humane methods, of the operation of spaying cattle or of castrating any animal over the age of 12 months;</p> <p>or</p> <p>(d) using humane methods, of the operation of dehorning cattle, tailing or mulesing lambs, or of castrating any animal not over the age of 12 months;</p> <p>or</p> <p>The Animal Welfare Act 2002 and its Regulations does not mention any castration requirements for livestock. The Codes of Practice for WA do mention ages and the preferred methods; however these are not mandatory codes, only a defence under the Act.</p> |
| NT | 12 months | <p><i>Veterinarians Act (2011)</i></p> <p>Vet Surgeons Regulations 6 (c) 27 March 2007</p> <p>Animal welfare Act 6 (3)</p> <p>8 March 2007</p> <p>Not an act of veterinary science if:</p> <p>(c) castrating cattle, buffaloes, horses, camels, goats, sheep or animals of any other species to which this paragraph is extended by the Minister by notice in the Gazette, that are –</p> <p>(i) less than 12 months old; and</p> <p>(ii) kept for human consumption in the course of primary production or, in the case of horses, for stock work;</p> <p>However,</p> <p>(1) A person must not neglect or commit an act of</p> |

| | | |
|-----|---|---|
| | | <p>cruelty on an animal.</p> <p>(3) In this section, "an act of cruelty" includes the following:</p> <p>(a) an act that causes an animal unnecessary suffering;</p> <p>(b) an act that causes an animal suffering and is unreasonable in the circumstances;</p> <p>(c) treatment that is inhumane in the circumstances.</p> |
| ACT | <p>No actual welfare restrictions on age of castration exist.</p> <p>CoP 6 months.</p> <p>Rubber ring up to 2 weeks</p> <p>- Knife under 6 months.</p> <p>Older than 6months requires analgesia</p> | <p>CoP listed under the Animal Welfare Act 1992</p> <p>While the CoP are mandatory there is no mechanism for punishment of breaches, other than general cruelty offences under the Act itself – like NT.</p> |
| NZ | <p>Minimum standard 3(c) >6 months must have pain relief.</p> <p>Farmed animals = any animals bred and/or reared for food, fibre and/or offspring.</p> | <p>Animal Welfare Act 1999</p> <p>Animal Welfare (Painful Husbandry Procedures) Code of Welfare 2005 (No.7)</p> <p>Failure to comply with a minimum standard may be used as evidence to support a prosecution for an offence under the Act. A person who is charged under the Act can defend him or herself by showing that he or she has equalled or exceeded the minimum standards in the code.</p> |