

CATTLE STANDARDS AND GUIDELINES – Electro-immobilisation

DISCUSSION PAPER

Prepared by the Cattle Standards and Guidelines Writing Group February 2013

ISSUES

The main issues are:

- 1) Aversiveness of the electro-immobilisation procedure
- 2) Effects on respiratory and cardiac systems causing low numbers of deaths in susceptible cattle
- 3) Use for painful procedures without pain relief / anaesthesia
- 4) Operator ability to perform the required task and training in correct procedures including reduction of current during use and duration of use.

RATIONALE

Electro-immobilisation (EI) is the use of pulsed, low-frequency (50 Hz) electrical current to restrain an animal. The electrical current (typically 100-180 mA for cattle) causes tetanic contraction of skeletal muscles and therefore prevents voluntary movement on the part of the animal. Movement is regained when the current is switched off. The procedure typically involves an initial application of a current to induce immediate tetany followed by a reduction in the current to a level sufficient to maintain immobilisation but also allow respiration to occur.

EI is used to restrain cattle in order to perform animal husbandry procedures without sedation, anaesthesia or physical restraint of the animal. It is useful for procedures such as dehorning, foot examination and other short-term husbandry practices where facilities, or lack of manpower, make restraint of cattle difficult and a safety concern. It is most frequently used where, using conventional restraint methods, cattle are highly likely to injure themselves or stock people (Petherick 2005).

Users of electro-immobilisers claim the following benefits from their use:

- Improved safety for both handlers and cattle
- Immediate recovery for animal
- Increased speed of procedures
- Facilitation of use with local anaesthetics.

General concerns with the use of electro-immobilisers are:

- Cattle cannot display normal responses while under the influence of EI

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- Misuse
- Over use
- Facilitating failure to use pain relief when appropriate.

RECOMMENDATIONS

The recommendations in this paper are based on the Australian-made 'Stockstill' device. This device has two electrodes that can be placed anywhere on the body.

<http://www.killaracattleco.com/stockstill.html>

The writing group has been made aware of a South African device that is being promoted, the 'RAU Stand Easy Cattle Immobiliser'. This device is based on a rectal probe.

<http://www.raustandeasy.com.au/>

A field trial assessing the use of the RAU Stand Easy Cattle Immobiliser by a cattle veterinarian who is very experienced in the use of Stockstill under northern conditions concluded:

- (i) the blood parameters reported in stress/pain response assessment using the RAU Stand Easy Cattle Immobiliser would be similar to those reported with the use of Stockstill;
- (ii) there is less twisting/distortion of the head region using the RAU Stand Easy unit with the animal showing a better behavioural response;
- (iii) the Stockstill provides better restraint and control for flank spaying.

A telephone survey of rural veterinary practitioners reported that the RAU Stand Easy is a valuable aid to restraint under conditions requiring brief control, enabling for example, removal of wire, bore casing, tin cans and avoiding more stressful physical restraint or where tranquillizers and general anaesthetics are not the best option for the particular intervention

Electro-immobilisation also minimises the significant risk of injury to the veterinarian where restraint is inadequate or ropes have to be used.

The writing group studied the reasons for cattle electro – immobilisation and recognised that electro-immobilisation does not provide pain relief but is useful for assisting cattle treatments and procedures in skilled hands. Circumstances will dictate the need to use electro-immobilisation. There are limited studies that compare the averseness of electro – immobilisation compared with conventional physical restraint. A minimum weight of 140kgs is consistent with the AUSMEAT definition of a calf. An accredited training course for EI is not known to exist and would need to be developed if the standard is endorsed. This proposal currently restricts use of electro-immobilisation to veterinarians.

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

STANDARDS AND GUIDELINES PROPOSAL

OBJECTIVE

Electro-immobilisation practices are appropriate and minimise the risk to the welfare of cattle.

STANDARDS

- S5.7 A person must only use electro-immobilisation on cattle if:
- 1) the device is approved for use in the jurisdiction; and
 - 2) the cattle are more than six months old; and
 - 3) the operator is trained or it is done under direct supervision of a veterinarian or a trained person; and
 - 4) alternative restraining methods are not adequate to hold cattle sufficiently for the procedure being performed.
- S5.8 A person must not use electro-immobilisation on cattle as an alternative to pain relief.

GUIDELINES

- G.1 Any benefits from using electro-immobilisation on cattle should be judged against its aversive effects.
- G.2 The lowest setting of current for electro-immobilisation that produces restraint should be selected.
- G.3 Operators using electro-immobilisation should undertake formal training and assessment to a high level of competency.
- G.4 Electro-immobilisation should not be used for routine procedures as a substitute for feasible upgrading of handling facilities.

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. See the glossary for more information.

ANIMAL WELFARE IMPLICATIONS

There is no scientific evidence that EI provides consistent pain relief during husbandry procedures. (Carter *et al* 1983; Lambooy 1985; Rushen and Congdon 1987).

EI, particularly at the higher currents, significantly affects respiration. On induction of EI, the incidence and duration of apnoea and asphyxia is the major animal welfare concern. There are infrequent reports of death associated with the use of EI, presumably from hypoxia due to the respiratory paralysis, combined with tachycardia. Its use is very risky when an animal has chronic or sub-acute respiratory disease, or cardiac abnormalities.

The question of how aversive is EI has been studied by several workers. (Pascoe 1986) showed that mature Holstein cows found EI more noxious than an intramuscular injection. He did make the point that the cows used in the study were handled frequently and cattle that aren't handled frequently can be severely stressed by handling and that their attempts to escape may injure themselves and/or their handlers.

MLA 2009 evaluated aversive behaviour in infrequently handled *Bos indicus* females by movement through a race, into a crush and into a head bail before, and at 96 hours after treatments. The treatments included controls (physical restraint), mock insemination, EI, WDOT spaying and flank spaying. In overall impact of procedures on the welfare of cattle when compared to physical restraint alone, the ranking (from highest to lowest impact) was flank spaying, WDOT spaying, electro-immobilisation alone and AI.

In the hands of a skilled veterinarian using a moderate level of current initially for a very brief period, then immediately reducing the current to a low level, the technique minimises struggling and enables procedures to be completed quickly with a minimum of stress due to physical restraint (Letchford pers. comm).

(Carter *et al* 1983) used EI for dehorning of heifers 18-22 months old. They measured blood cortisol and found that control animals had the same blood cortisol levels as those on which EI was used. They concluded that the level of the stress of the procedure was not modified significantly by the use of EI.

A study carried out by (Lambooy in 1985), using calves, sheep and pigs; found that breathing was impaired in all animals during administration of an electrical current using an EI device. Body temperature, plasma cortisol and pulse rate were raised and the pulse rate was irregular. ECG recordings showed unspecified pronounced changes in cardiac activity.

In summary the main animal welfare implications of EI for cattle are:

- Immobilisation may mask an animal's ability to react normally to pain and distress
- It does not produce pain relief and it may be abused to carry out surgery without anaesthesia
- It causes asphyxia (at least initially) followed by dyspnoea
- It may have profound cardiac effects
- There is evidence that it is aversive for the animals
- There is potential for misuse with inappropriate settings and prolonged use.

REVIEW OF NATIONAL POLICIES

The **Australian MCOP** for Cattle is silent on the use of electro-immobilisation.

The **NCCAW** Position Statement on electro-immobilisation of animals (Sept 1994) was reviewed in June 2008, considers that EI is not a means of analgesia or an acceptable restraint of animals on animal welfare grounds. The statement acknowledged that restraining large animals can be difficult, especially when they are uncontrolled and that more research is needed into easily used, safe, humane methods of restraint.

In **NSW**, under the *Prevention of Cruelty to Animals (General) Regulation 2006*, the use of EI is restricted to restraining cattle by a veterinarian for purposes other than as an alternative to analgesia or anaesthesia. In **Tasmania** under the *Animal Welfare Regulations 1993* the use of EI is also restricted to veterinarians. In **South Australia**, under the *Animal Welfare Regulations 2000*, EI may be used on specified classes of animals (including cattle); must be an approved device; must be used for as short a time as possible for routine husbandry procedures only; and the user (or their supervisor) must be certified or have acquired the device prior to 11 July 1996. VIC - EI is not permitted, approved devices are monitored.

The **Australian Veterinary Association (AVA)** 3.5 Electro immobilisation Position Statement states: *“Electro-immobilisation for veterinary interventions should only be used for animal restraint where there is no feasible alternative. Use of the instrument should take into account the welfare of the animal and the safety of the operator. The Australian Veterinary Association recommends that electro-immobilisation be conducted by veterinarians as it involves complex aspects of animal welfare.”*

RSPCA Australia 2008 relevant policy is as follows:

4.7 Electro-immobilisation of animals

“4.7.1 RSPCA Australia is opposed to the technique of electroimmobilisation to prevent voluntary movement of fully conscious animals. RSPCA Australia supports the use of alternative, humane restraining devices that do not cause injury, suffering or distress to the animal concerned”.

REVIEW OF INTERNATIONAL POLICES

These 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.

The use of EI is not banned by the **European Union**, but some individual member states such as the UK and Ireland have banned its use. The Irish report into their use, published in 2005, stated that ‘it is quite a cruel form of restraint, causing distress and aversive reactions, and may increase the likelihood of minor surgical procedures being carried out cruelly, ie without analgesia’. It discussed

restricting its use to veterinarians, but concluded that veterinarians already had enough options for sedation, anaesthesia and analgesia.

Neither the **New Zealand Veterinary Association** nor the **Canadian Veterinary Medical Association** (CVMA) supports the use of EI. The CVMA Position Statement states that 'controlled studies on electro immobilization have shown that it may cause unnecessary pain and distress and that no significant analgesic effect is demonstrated'. The **American Veterinary Medical Association** (AVMA) stated in 2008 that EI is likely to be disturbing to animals and detrimental to their welfare.

DEFINITIONS

direct supervision	<p>A person (the supervised person) is acting under the direct <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; 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>
electro-immobilisation	<p>The use of pulsed, low-frequency electrical current to restrain an animal.</p> <p>The process produces tetanic contractions of skeletal muscles and therefore voluntary movement is not possible. The process does not produce pain relief.</p>
pain relief	<p>The administration of drugs that reduce the intensity and duration of a pain response.</p>

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