



Farm Solutions

EMPOWERING PARTNERS IN ANIMAL HEALTH

Pain MANAGEMENT



A
BEST PRACTICE
GUIDE



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INTRODUCTION

Minimising pain and inflammation in farm animals is a major focus for farmers to ensure high standards of animal health and welfare as well as to maximise productivity. Despite these high standards, supported by farm assurance regulations, farm animals get ill, suffer injury and undergo necessary husbandry procedures which can all result in pain and inflammation. However, the prompt and/or pre-emptive treatment with pain relief is an important tool for farmers to mitigate against pain and inflammation in many of these situations.

A pain relief procedures policy must be included in all written health plans and implemented as part of standard day-to-day operating procedures to meet farm assurance standards.

Considerations for implementing pain and inflammation management will be discussed in this booklet, to help aid you to formulate and understand the correct plan for your stock and your farm in conjunction with your veterinary surgeon.

WHAT IS PAIN?

Pain can be described as being physiological, psychological and/or emotional. It is a response to a negative stimulus that is actually (or potentially) damaging to tissues, causing nerve impulses to fire along pain-specific nerves towards the spinal cord and brain.

This stimulus causes a protective response:

- **Conscious:** attempts to escape or avoid the painful stimulus
- **Unconscious:** withdrawal reflex, cardiovascular response, inflammation

Psychological/emotional

The conscious perception of a previously painful stimulus that leads to the animal “remembering” and changing its behaviour to avoid/minimise exposure to the painful stimulus.

e.g. not eating because the animal does not want to walk to the feed trough because walking is painful

Physiological

What the animal actually feels as a direct result of a condition, procedure or injury.

e.g. lameness caused by pain in the foot





TYPES OF PAIN

Acute pain

Acute pain is a protective mechanism that can be defined as “**the everyday experience of discomfort that occurs in response to a simple insult or injury.**” Acute pain makes animals notice an injury and move away from the danger that caused the injury; thus, it is generally short-lived.

Chronic pain

Chronic pain is a persistent kind of pain that may or may not be associated with recent injury, but is generally associated with inflammation and changes to nerve cells in the spinal cord and brain. This “**wind-up**” phenomenon is an increase in sensitisation of excitable nerve cells and thus, something normally mildly painful becomes very painful after repeated insults.

Where chronic pain cannot be managed appropriately then advice should be sought from a veterinary surgeon.

INFLAMMATION

What is inflammation?

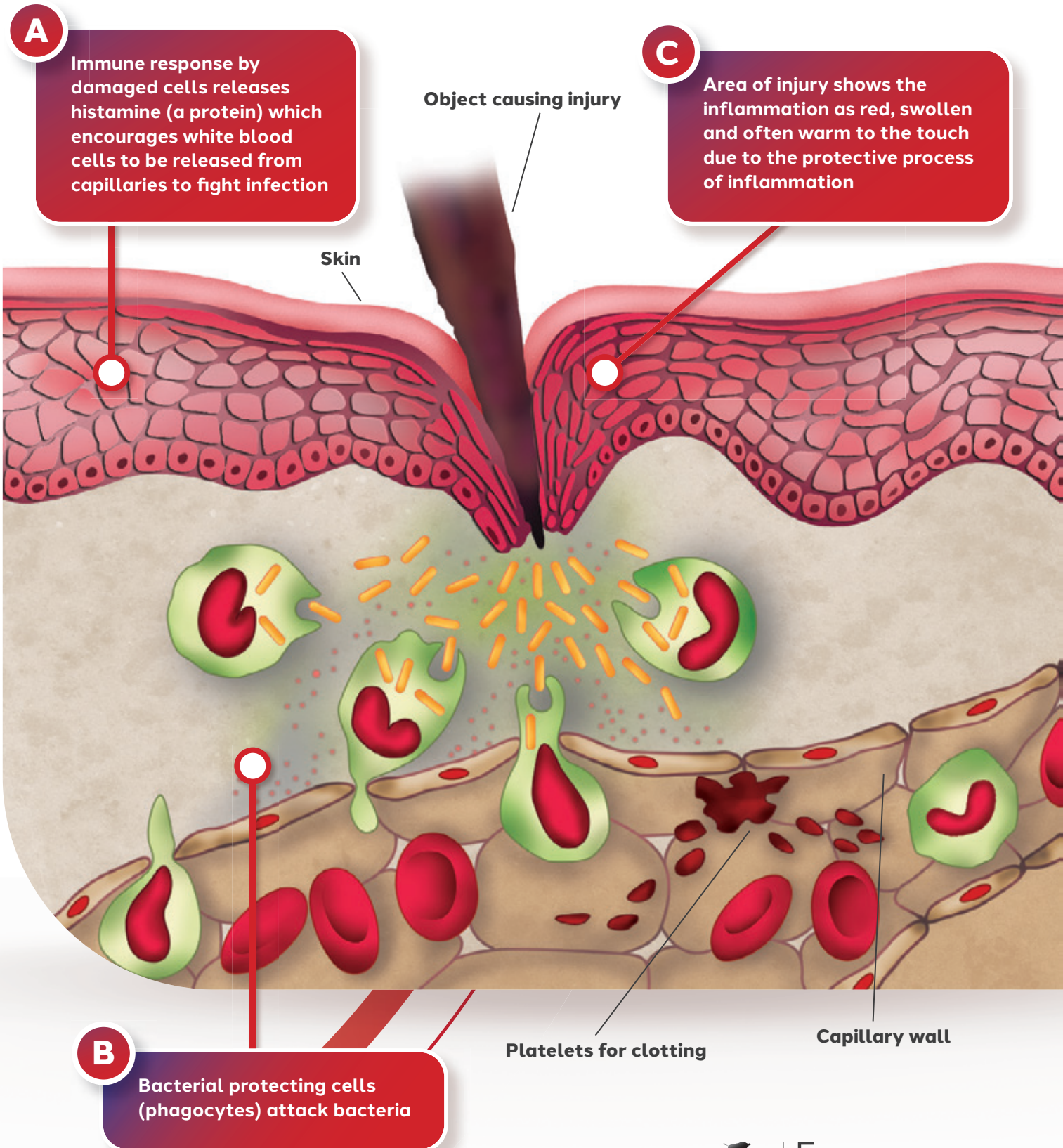
Inflammation is a localised protective response stimulated by injury or destruction of tissues, which serves to destroy, dilute, or wall off both the agent responsible and the injured tissue.

The inflammatory response can be provoked by physical, chemical, and biological agents, including mechanical trauma or infectious agents such as bacteria, viruses, and other pathogenic microorganisms. Infectious agents can produce inflammation but it is important to note that inflammation and infection do not always go hand in hand.

The classic signs of inflammation are heat, redness, swelling, pain, and loss of function.

Figure 1:

Illustration of the process of inflammation through skin invasion/injury from a foreign object.



WHEN IS PAIN AND INFLAMMATION SEEN IN LIVESTOCK?

Pain and/or inflammation can occur as a result of illness, disease or injury. Some important husbandry procedures cause pain and inflammation and require adequate pain relief to avoid unnecessary welfare concerns.



Diseases/conditions:

- Lameness
- Mastitis
- Metritis
- Pneumonia
- Scour
- Downer cows
- Assisted calvings
- Eye problems

...This list is by no means exhaustive!

Management procedures:

- Disbudding
- Dehorning
- Castration
- Assisted births



SIGNS OF PAIN AND INFLAMMATION

Animals cannot tell us when they are in pain and therefore assessment and quantification of pain and inflammation in livestock is difficult.

As already mentioned the cardinal signs of inflammation are heat, redness, swelling, pain and loss of function. However, it is important to consider that sometimes a disease process can be progressing internally. For example with pneumonia the cardinal signs may not be immediately visible; however, research has proven that cattle who suffer pneumonia display behavioural indicators of discomfort and that the lungs can undergo significant loss of function as a result of the inflammatory response to infection.

Signs of pain in livestock vary hugely and can range from subtleties such as mild postural changes and inappetance, to recumbency (animals unable to get up) and extreme vocalisation.



Signs to look out for are:

- Abnormal head position or shaking
- Abnormal ear position or twitching
- Abnormal facial expression
- Vocalisation
- Lameness
- Arched back
- Kicking/rolling/restlessness
- Swelling/bruising/redness/injury
- Dullness
- Tooth-grinding/salivation
- Tail swishing
- Lack of appetite
- Difficulty getting up/lying down
- Decreased productivity
e.g. milk yields, liveweight gain



INDUSTRY INITIATIVES

More research needs to be done to standardise subjective assessment of pain in livestock on farms. Research into the strategy for scoring lameness in dairy cattle is at present the most advanced. AHDB has developed an industry standard Mobility Scoring system for use on farms. This allows benchmarking within and between farms (an increasingly compulsory requirement for farm assurance schemes). Implementation of these scoring systems enables early identification of affected animals and for prompt treatment to be administered which results in improved long-term outcomes. Your vet can provide more details about available industry initiatives.

LEGAL RESPONSIBILITIES

Farm animals are recognised as sentient beings (experiencing sensations or feelings) within the EU Treaty of Amsterdam 1999. There are regulations in place to prevent animals suffering; some are more specific to livestock farmers.

The Animal Welfare Act 2006:

It is an offence on the part of the person responsible for an animal to cause or permit it to suffer.

The Farm Animal Welfare Council (FAWC)

“Five Freedoms” detail the following as general guidelines to the basic care of farm animals:

- Freedom from **hunger and thirst**
- Freedom from **discomfort**
- Freedom from **pain, injury or disease**
- Freedom to express **normal behaviour**
- Freedom from **fear and distress**

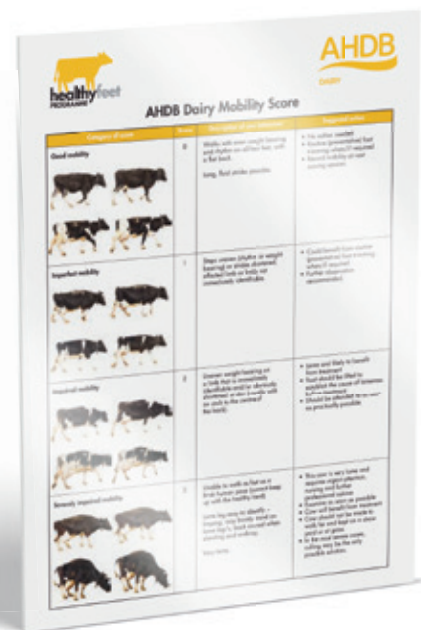
ECONOMICALLY PAINFUL!

The average cost of an incidence of lameness, in terms of treatment costs, loss of milk yield and potential for earlier culling of the cow is estimated to be up to £350; at current levels of incidence this could equate to a **financial loss of nearly £7,500 for an average-sized herd**, or to put it another way, **a cost of nearly 1p per litre of milk produced on the farm¹**. This equates to £2.20 for every day that a cow is lame.

It has been shown that there is a **negative correlation between animals' average daily weight gain** and the extent of lung lesions due to bovine respiratory disease (BRD)², and it is likely that the pathogenesis of the lesions is associated with an excessive inflammatory response³.

Acute E.coli mastitis is one of the major sources of economic loss in the dairy industry due to **reduced milk production, treatment costs, discarded milk**, and occasional **fatalities⁴**.

Cows with a difficult calving take an **extra 8 days to resume ovarian activity**, are more prone to subsequent abnormal cycles, and thus **take 23 days longer to conceive** than normal herd-mates. If a caesarean operation is required, the consequences for fertility are significant: many farmers cull these animals but if the cows are rebred, **an extra 40 days are required to achieve conception⁵**.





HOW LONG DOES LOCAL ANAESTHETIC LAST FOR?

30 – 90 minutes. Therefore the addition of a non-steroidal anti-inflammatory drug with longer duration of action should be considered in any procedures considered worthy of local anaesthetic, and more besides!

If pain or inflammation is too severe to be controlled by a combination of drug therapy and environmental management, euthanasia may have to be considered as an appropriate way to alleviate suffering.

TREATMENT OF PAIN/INFLAMMATION IN LIVESTOCK

Drugs used in the alleviation or prevention of pain in livestock can be divided into **THREE main categories:**

Non-steroidal anti-inflammatory drugs

- Licensed for specific conditions, eg. mastitis
- Less side effects
- Long or short duration of action

Examples: meloxicam, flunixin, carprofen

Steroids

- Very potent
- More side effects
- Broadly licensed for general inflammation
- Long or short duration of action

Examples: dexamethasone sodium phosphate

Local anaesthetics

- Licensed for use during surgical procedures
- Very short-acting

Examples: procaine hydrochloride

Which class or classes of drug are most appropriate for your needs must be discussed in conjunction with your veterinary surgeon. Factors to consider in choosing the right drug for your animal may include:

- Speed of action
- Duration of action
- Potency
- Additional properties e.g. alleviation of pain, reduction of inflammation, anti-endotoxic effect, reduction of temperature

Sometimes, during disbudding, your veterinary surgeon may choose to use a combination of classes: for example, local anaesthetic as a skin block as well as a non-steroidal anti-inflammatory. This approach is called 'multimodal'.

When carrying out procedures on farm, it will always be recommended to administer any of the anti-inflammatory or pain relief therapies in advance of the painful stimulus, rather than after, to help prevent the 'wind up' phenomenon, and decreased sensitivity to the drugs used.

Small ruminants

There are very few licensed drugs for pain management in small ruminants.

Please consult your veterinary surgeon for advice about what products to use and when to use them.

The importance of environmental management of animals suffering pain or inflammation will not be negated by the use of drugs. Considerations must also include:

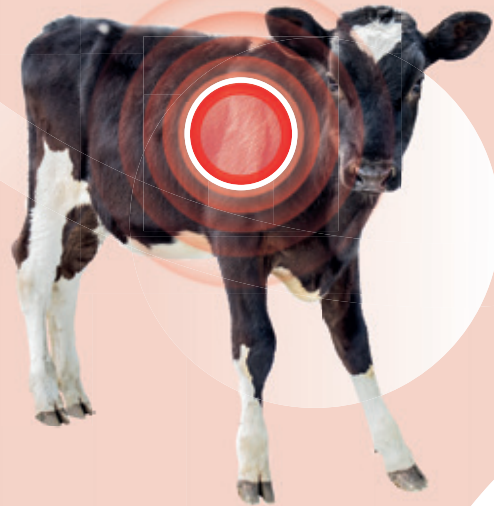
- Providing comfortable deep beds for animals who are reluctant to stand or cannot stand
- Constant access to food and water in the immediate vicinity
- Regular repositioning of heavy recumbent animals, e.g. downer cows
- Environmental management
- Bandaging of wounds where appropriate
- Husbandry practices

WHAT EVIDENCE DO WE HAVE TO JUSTIFY THE PREVENTION/ TREATMENT OF PAIN OR INFLAMMATION IN LIVESTOCK?

The answer is, a great deal!

Pneumonia

Non-steroidal anti-inflammatory drugs have been shown to **reduce temperature** for up to 24 hours⁶⁻⁹, improve clinical signs⁷⁻⁹, reduce lung pathology⁶⁻⁹, and **increase average daily weight gains in calves**¹⁰ with respiratory disease compared to untreated calves or calves treated only with antimicrobial drugs⁶.



Mastitis

Non-steroidal anti-inflammatories administered to cows with *E. coli* mastitis resulted in:

- Reduced temperature post-treatment
- Restore gut motility faster
- Earlier improvement of clinical signs¹¹
- Reduced inflammation of the udder¹²
- Higher milk yields after treatment¹³
- Reduced somatic cell counts¹⁴



Youngstock - disbudding/ dehorning

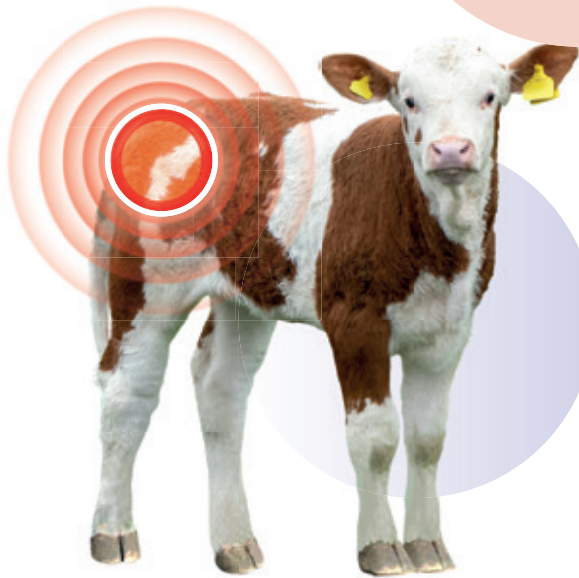
- Whilst you're administering local anaesthetic, administer a non-steroidal anti-inflammatory
- **Recommended by industry leading groups (e.g. BVA/BCVA)**
- **Required by some processors**
- Administration of a non-steroidal anti-inflammatory will;
 1. **Lower stress** response¹⁵
 2. **Less ear-flicking** and head shaking post disbud
 3. **Reduce pain** sensitivity¹⁶
 4. **Quicker weight gain** in the 10 days post procedure¹⁷
- Clear cost benefit for the use of a non-steroidal anti-inflammatory



Calf diarrhoea

Animals treated with non-steroidal anti-inflammatory drugs alongside other therapies such as fluid therapy and anti-infectives:

- Start eating and drinking earlier and eat more
- This results in faster bodyweight gain and therefore earlier weaning¹⁸



Assisted calvings - dam and calf¹⁹

Newborn calves from assisted calvings given a non-steroidal anti-inflammatory:

- Had improved VIGOR scores by 2 points
- Improved suckling reflex
- Higher milk intakes
- Faster growth rates the first week of life

Care should be taken in cows around calving:

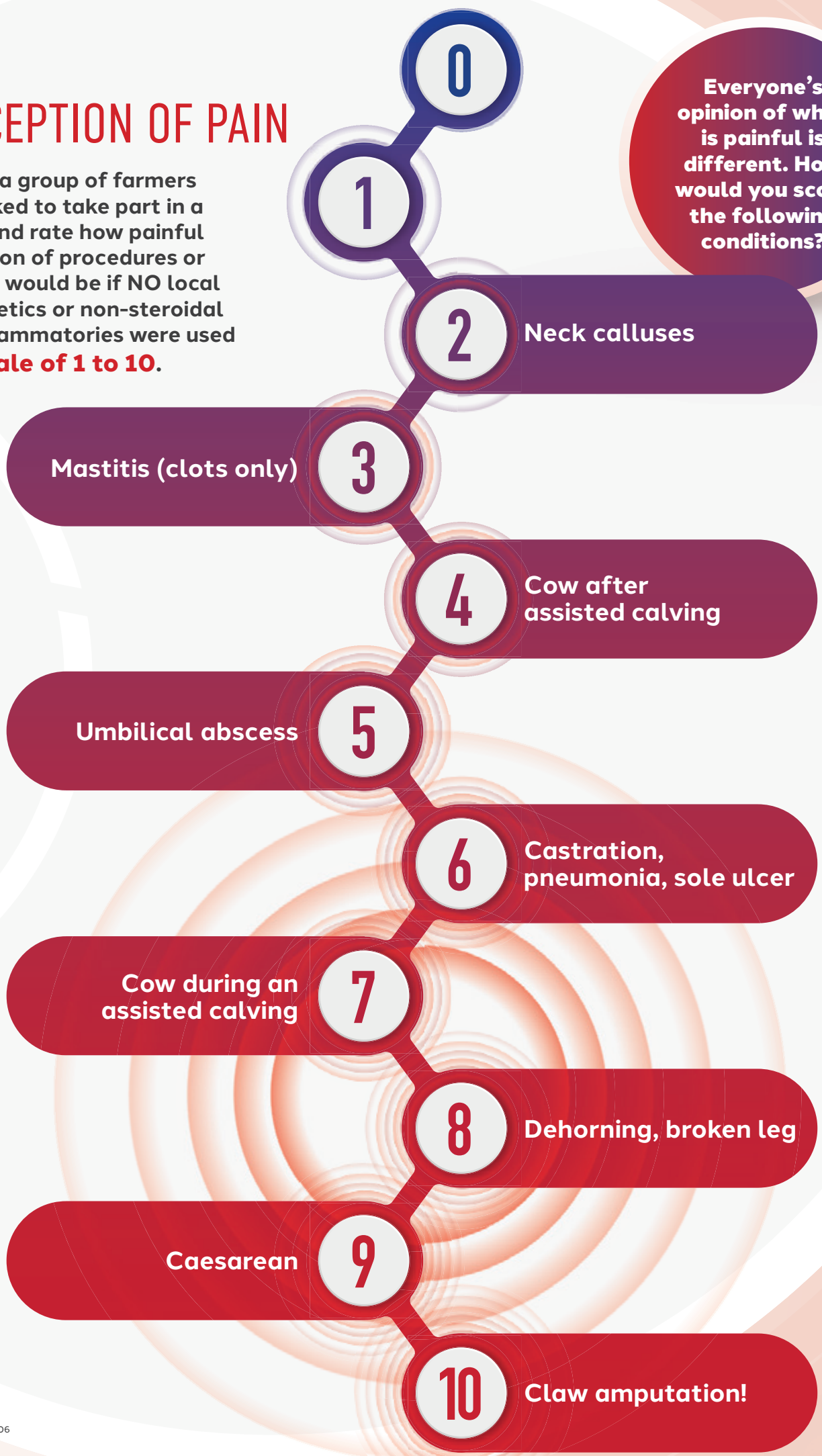
- Pre-calving use of flunixin increases the risk of stillbirth
- After assisted calving, the use of flunixin in dams increases the risk of retained placenta by 2.6x. This is not seen with the use of other non-steroidal anti-inflammatories.



PERCEPTION OF PAIN

In 2006 a group of farmers were asked to take part in a survey and rate how painful a selection of procedures or diseases would be if NO local anaesthetics or non-steroidal anti-inflammatories were used **on a scale of 1 to 10.**

Everyone's opinion of what is painful is different. How would you score the following conditions?



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