

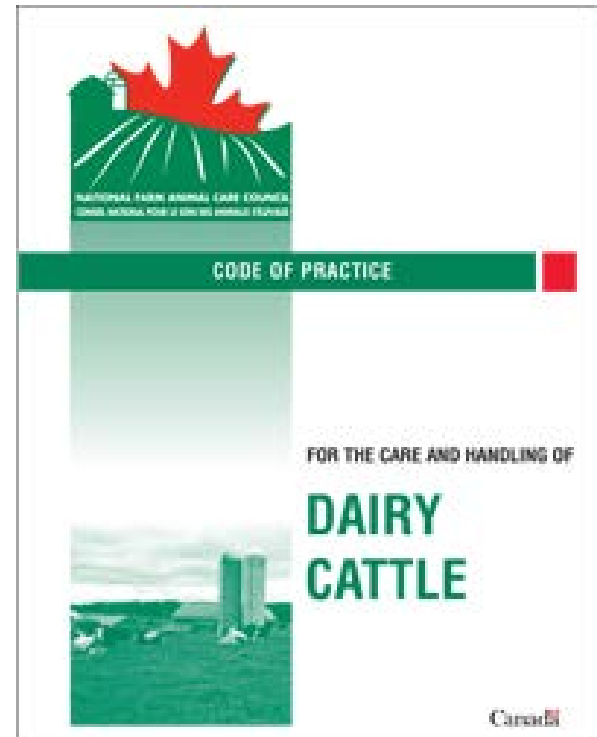
# **Pain Control in Dairy Cattle**

**Christopher Luby**

**Western College of Veterinary Medicine**

# Take home points

- What painful procedures do we perform?
- What can we do to prevent and manage pain?
- Focus on Dairy Welfare Code



# Procedures and the welfare code

- Pain mentioned 30 times
- Dehorning/disbudding: Pain control must be used
- Castration: Pain control must be used
- Supernumerary teat removal: Pain control should be used

# Consequences of pain

- **Pain causes stress**
- **Stress harms immune responses**
- **Increased respiratory disease, diarrhea**
- **Reduced weight gain and reduced productivity**

# Disbudding/dehorning

- **Recommended best practices:**
  - disbud before three weeks of age
  - adequately restrain the calf
  - use a method that is appropriate for the size of horn and/or age of animal
  - ensure only trained persons carry out disbudding/dehorning procedures
  - use a combination of sedatives, local anesthetics and analgesics
  - isolate calves following the use of caustic paste (to avoid accidental caustic burns to other animals)

# Nerve blocks

**Table 1** Efficacy, onset and duration of four anesthetic techniques: 1) cornual nerve block (C); 2) ring block (R); 3) cornual nerve block using a percutaneous jet delivery technique (JET); and 4) topical EMLA cream (EMLA)

Analgesic technique	Efficacy: number of successful blocks ( <i>n</i> = 8)	Median onset time (range) in minutes	Median duration (range) in minutes
Cornual nerve block	7 87.5%	2 (0.5–5) <sup>a</sup>	304 (107–512) <sup>b</sup>
Ring block	8 100%	3.25 (1–9) <sup>a</sup>	147 (62–299) <sup>c</sup>
JET delivery	3 37.5%	8 (0.5–9)	132 (101–155)
EMLA cream	0	n/a	n/a

Values with different letters in superscript identify statistically significant differences ( $p = 0.05$ ).

- **Cornual block: 5ml 2% lidocaine with epinephrine each side**
- **Ring block: 6ml 2% lidocaine with epinephrine each side**

Veterinary Anaesthesia and Analgesia, 2012, 39, 431–435

doi:10.1111/j.1467-2995.2012.00717.x

SHORT COMMUNICATION

## **Onset, duration and efficacy of four methods of local anesthesia of the horn bud in calves**

Erin E Fierheller\*, Nigel A Caulkett\*, Derek B Haley†, Darrel Florence\* & Lorraine Doepel‡

\*Department of Veterinary Clinical and Diagnostic Sciences, Faculty of Veterinary Medicine, University of Calgary, Calgary, AB, Canada

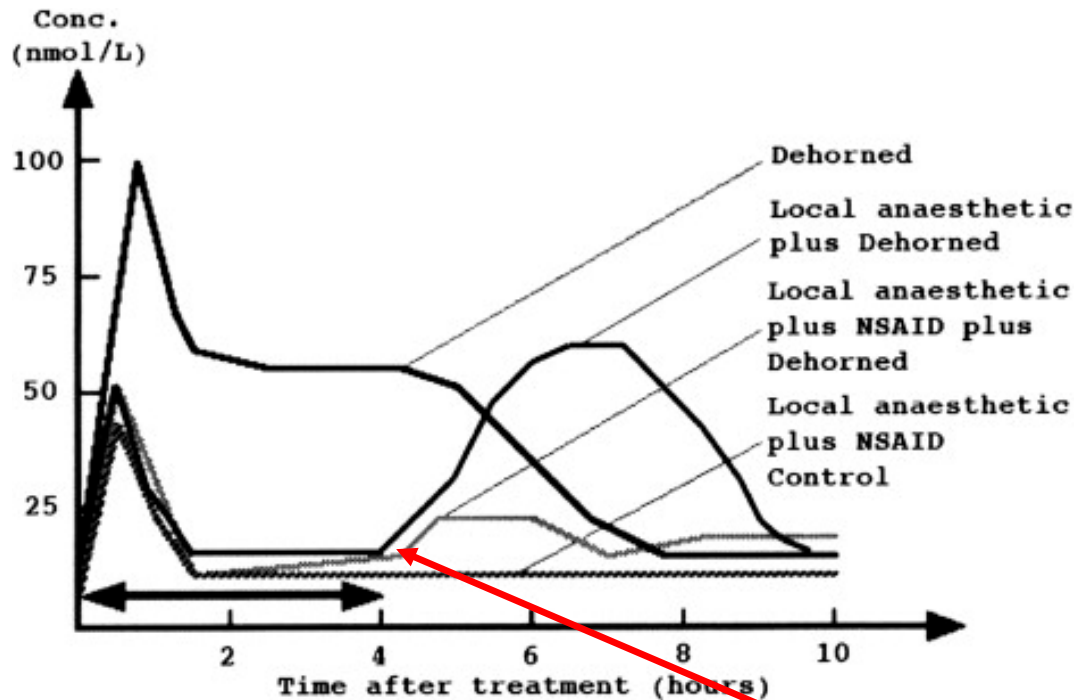
†Ontario Veterinary College, University of Guelph, Guelph, ON, Canada

‡Department of Production Animal Health, Faculty of Veterinary Medicine, University of Calgary, Calgary, AB, Canada

# Pain medications

- **Drugs labeled for pain in dairy cattle:**
  - Ketoprofen (anafen)
  - Meloxicam (metacam)
- **Metacam labeled specifically for dehorning/disbudding**

# Lidocaine plus anafen



Matthew L. Stock, Sarah L. Baldrige, Dee Griffin, Johann F. Coetzee

## Bovine Dehorning : Assessing Pain and Providing Analgesic Management

Veterinary Clinics of North America: Food Animal Practice, Volume 29, Issue 1, 2013, 103–133

<http://dx.doi.org/10.1016/j.cvfa.2012.11.001>

**Lidocaine  
wears off**



# Castration

- **Castrate calves, if required, at a young age**
- **Use anesthetics, sedatives and analgesics to reduce the calf's response to pain.**



J. Dairy Sci. 96:6285–6300

<http://dx.doi.org/10.3168/jds.2012-6238>

© American Dairy Science Association®, 2013.

**Effects of local anesthesia and flunixin meglumine on the acute cortisol response, behavior, and performance of young dairy calves undergoing surgical castration**

**H. B. Webster,\*<sup>1</sup> D. Morin,\* V. Jarrell,† C. Shipley,\* L. Brown,\* A. Green,‡ R. Wallace,\*§ and P. D. Constable#**

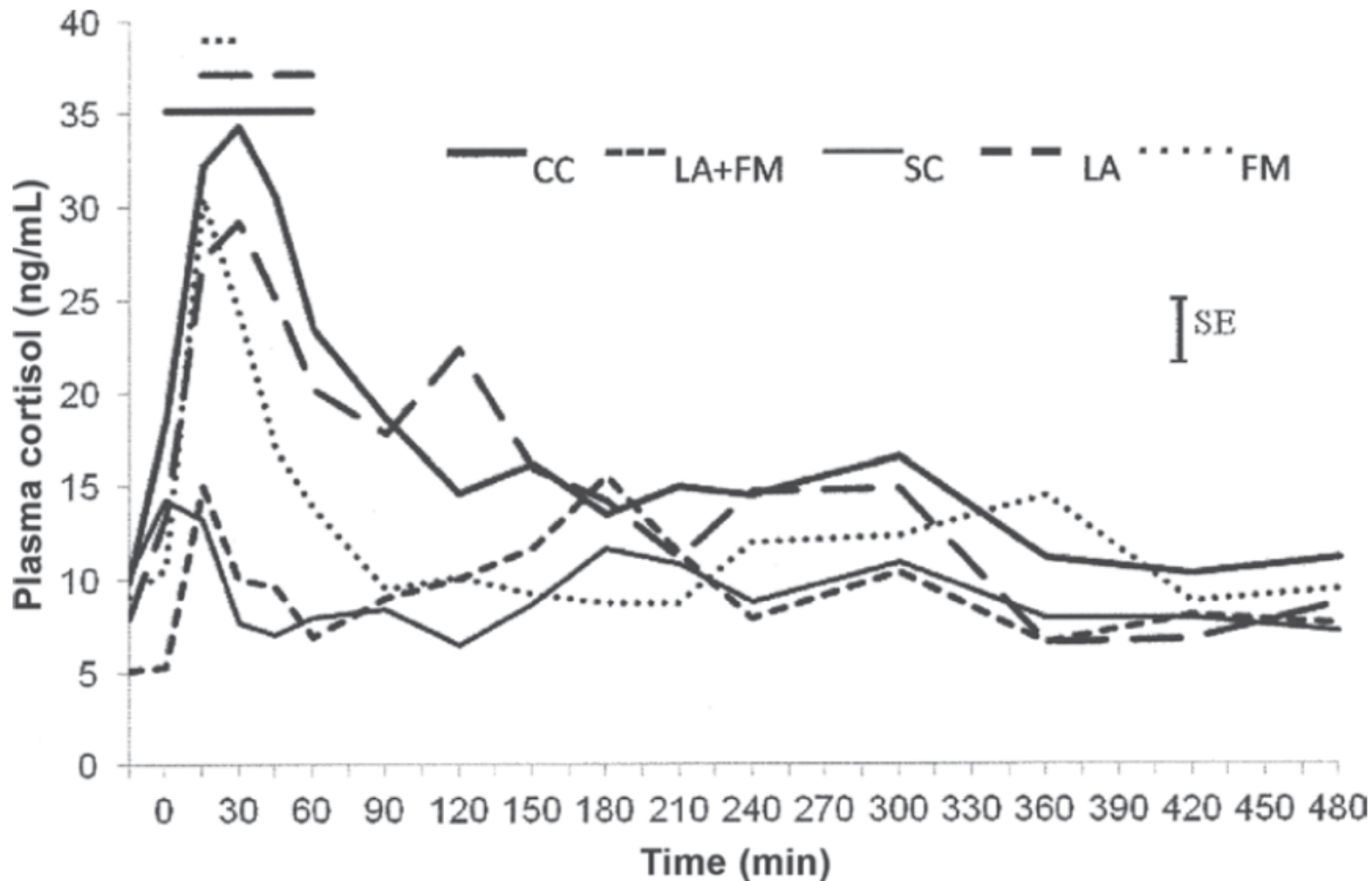
\*College of Veterinary Medicine,

†Department of Animal Sciences, and

‡Department of Agricultural and Biomedical Engineering, University of Illinois, Urbana 61802

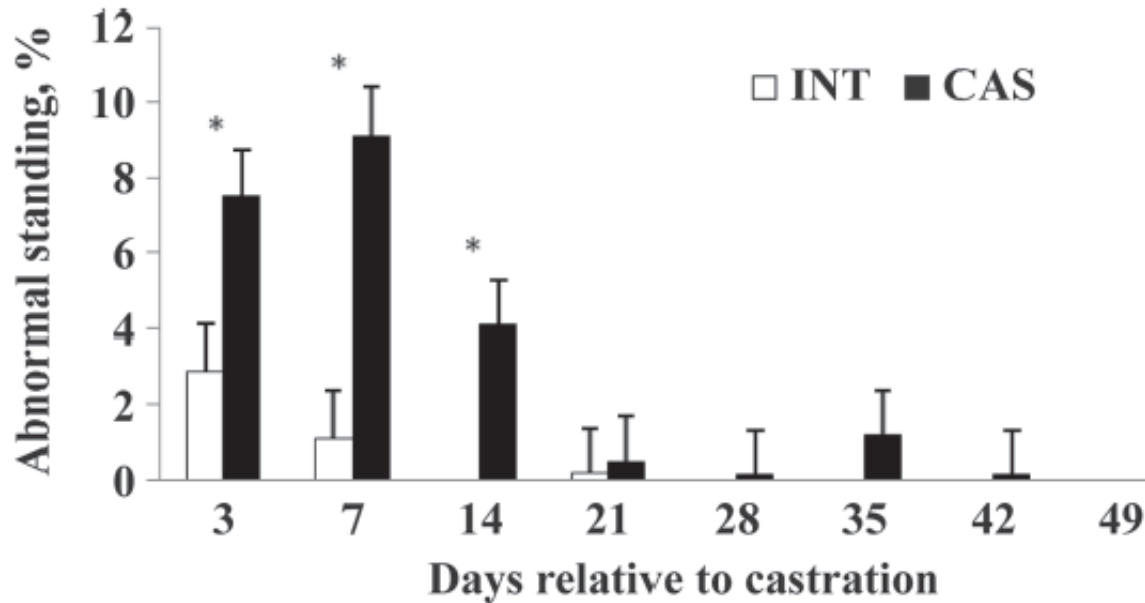
§Pfizer Animal Health Veterinary Operations, Champaign, IL 61820

#College of Veterinary Medicine, Purdue University, West Lafayette, IN 47907



**Figure 2.** Least squares means plasma cortisol concentration values over time for calves castrated surgically without anesthesia or analgesia (CC) or administered a local anesthetic agent (LA), an i.v. injection of flunixin meglumine (FM) or a combination of both treatments (LA+FM) before castration ( $n = 6/\text{group}$ ). The SC calves were sham-castrated controls ( $n = 6$ ). Drug or placebo administration was performed 20 min before castration or sham castration ( $t = -20$  min). Time 0 = time of castration. Lines at the top of the graph correspond to the matching treatment group and represent the time period from 0 to 180 min where cortisol values were significantly different ( $P < 0.0056$  after Bonferroni adjustment) from baseline. Vertical bar represents the overall standard error (SE) for least squares means.

# Banding/ring castration



These animals received lidocaine and flunixin

Banding seems to be no less traumatic

**Figure 2.** Evolution of abnormal standing posture (%) of intact Holstein calves (INT) or 3-mo-old ring-castrated Holstein calves administered local anesthesia and analgesia (CAS) at castration. An asterisk (\*) indicates a difference within day ( $P < 0.05$ ).

Effects of ring castration with local anesthesia and analgesia in Holstein calves at 3 months of age on welfare indicators<sup>1</sup>

S. Marti,\* A. Velarde,† J. L. de la Torre,‡ A. Bach,\*§ A. Aris,\* A. Serrano,\* X. Manteca,‡ and M. Devant\*<sup>2</sup>

J. Anim. Sci. 2010. 88:2789–2796  
doi:10.2527/jas.2009-2408

# **Supernumerary teat removal**

- **remove extra teats as soon as they can be identified**
- **pain control should be used when removing extra teats (e.g., at the same time as dehorning)**
- **use proper equipment and veterinary techniques**
- **control bleeding.**

# Keys for removal

- **Early**
- **No studies on pain control:**
  - **Local anaesthetics and pain medication likely to be helpful**

# Take home messages

- **Establish protocol with herd veterinarian:**
  - For both method of procedure and pain control
- **Always use nerve block plus a pain medication (e.g. lidocaine, anafen)**
- **Wait 5 minutes for nerve block to work**
- **Local anesthetic creams do not work**
- **Use all drugs according to label**

# Questions?

