

Disbudding and Pain Management

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Animal Health

AC11: Have you established and implemented a Standard Operating Procedure for animal health practices (e.g. disbudding/dehorning, castration, supernumerary teat removal) and branding that includes appropriate pain control where required?

Animal Health

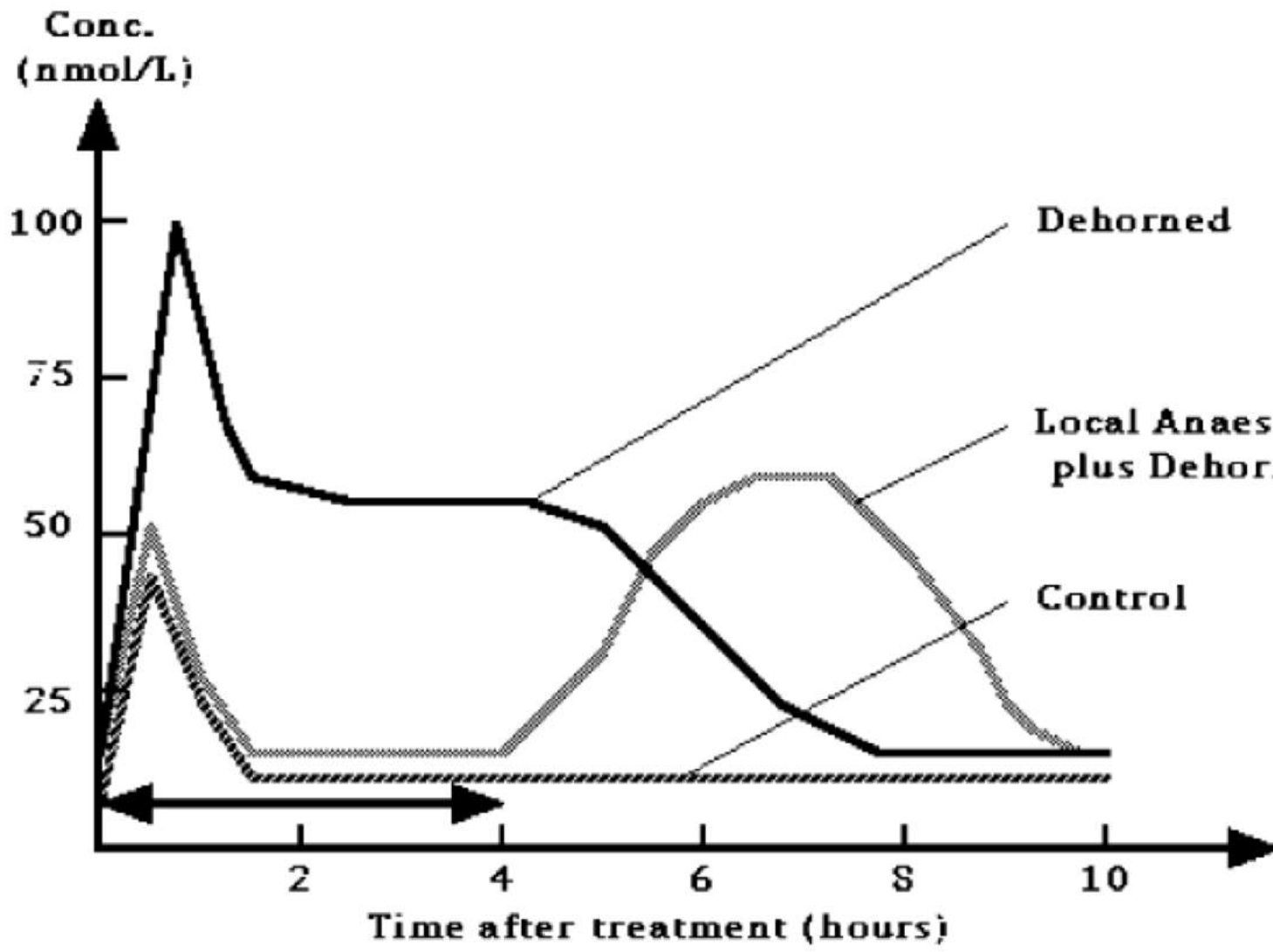
AC11: Have you established and implemented a Standard Operating Procedure for animal health practices (e.g. disbudding/dehorning, castration, supernumerary teat removal) and branding that includes *appropriate* pain control where required?

Agenda

1. Are NSAIDs necessary for pain control?
2. What about caustic paste?
3. Xylazine – should we recommend it?
4. Is this the bottom of the barrel....?
5. Further discussion

But first....

1. Are NSAIDs necessary for pain control?

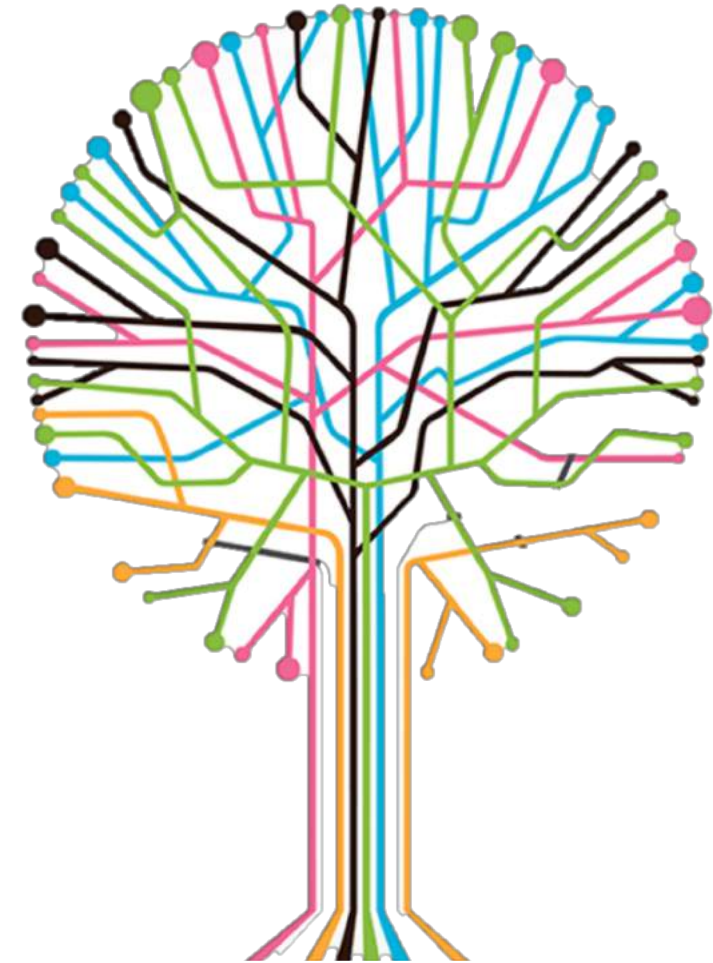
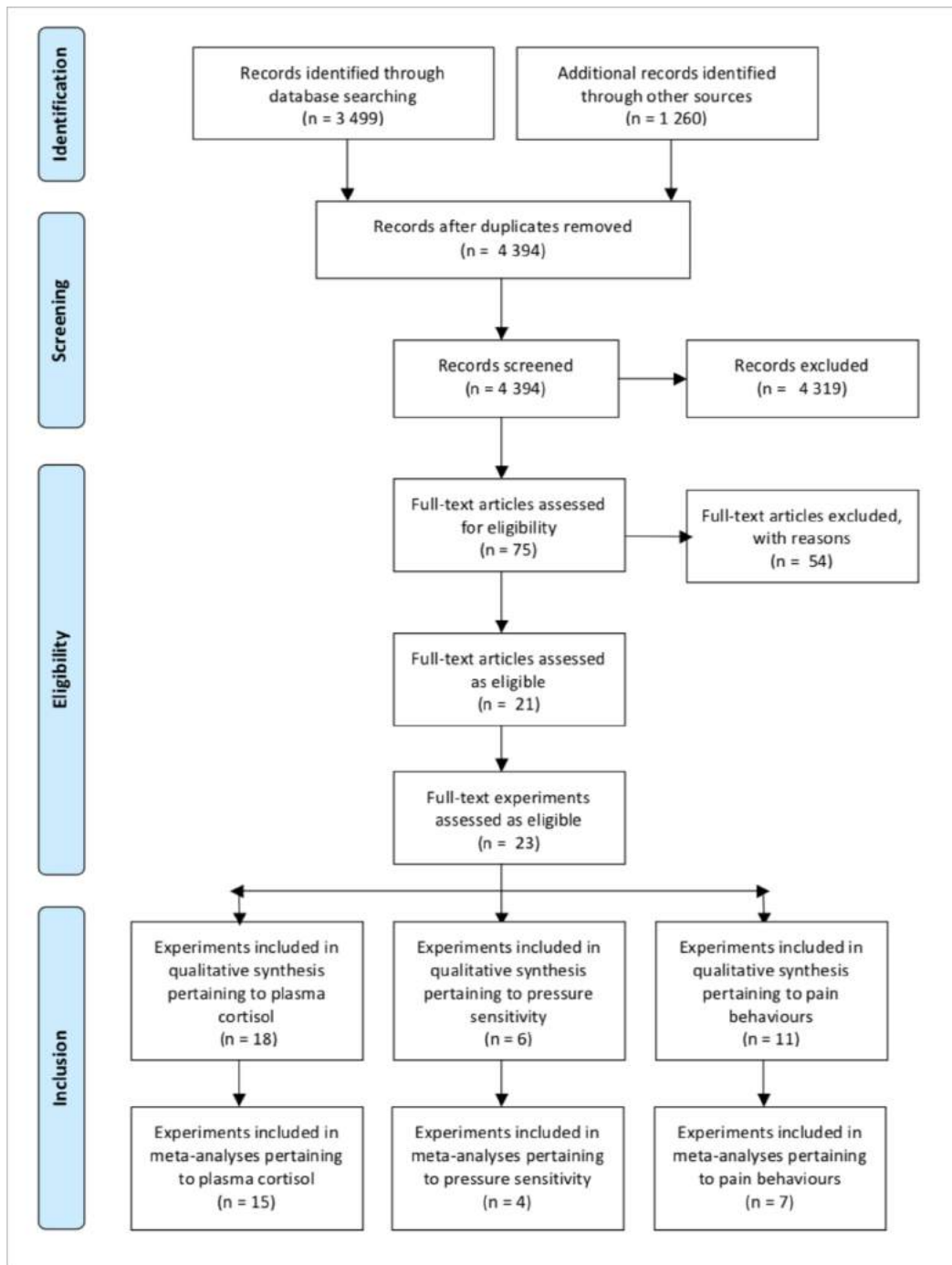


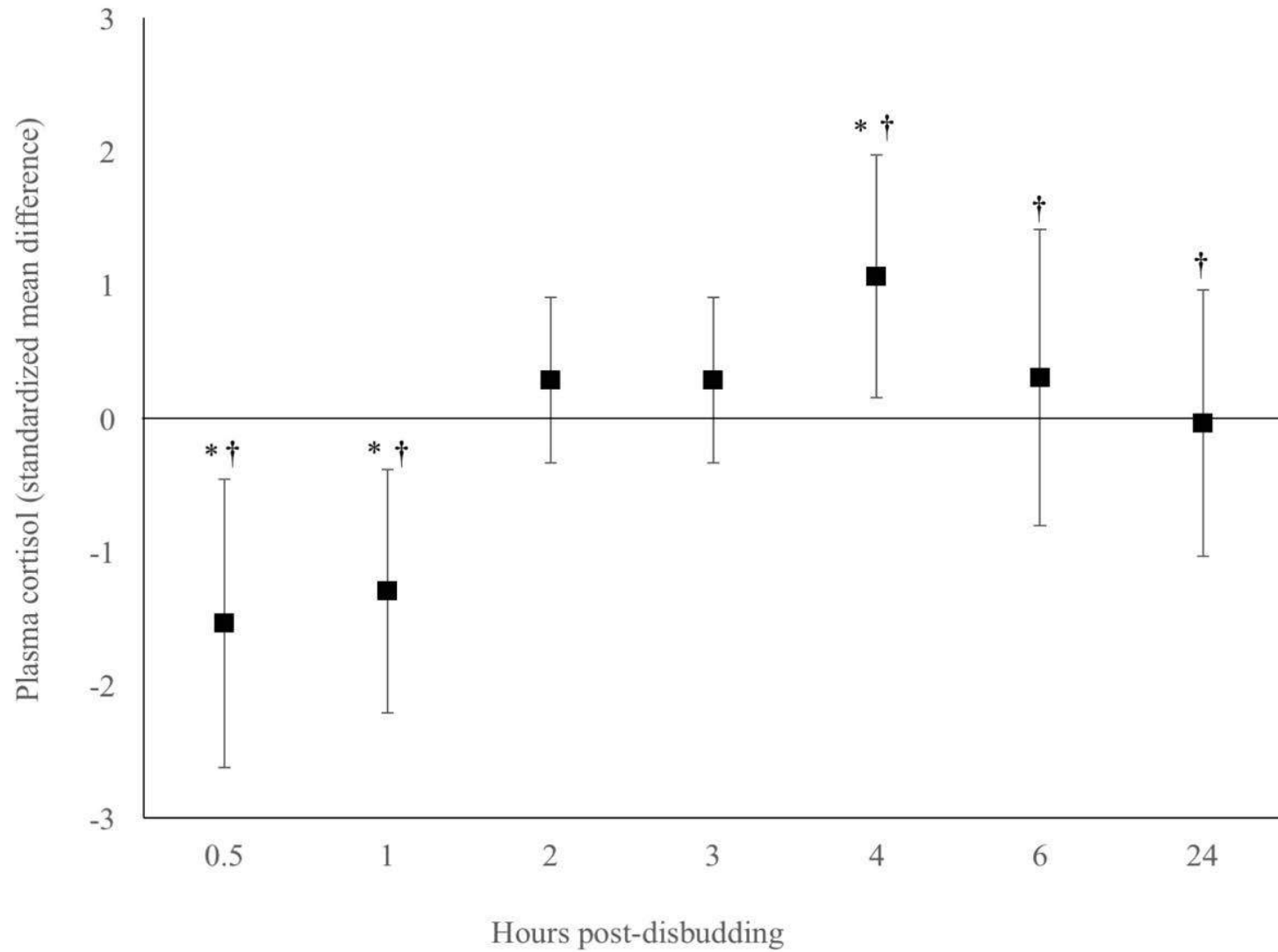
Stafford & Mellor, 2005



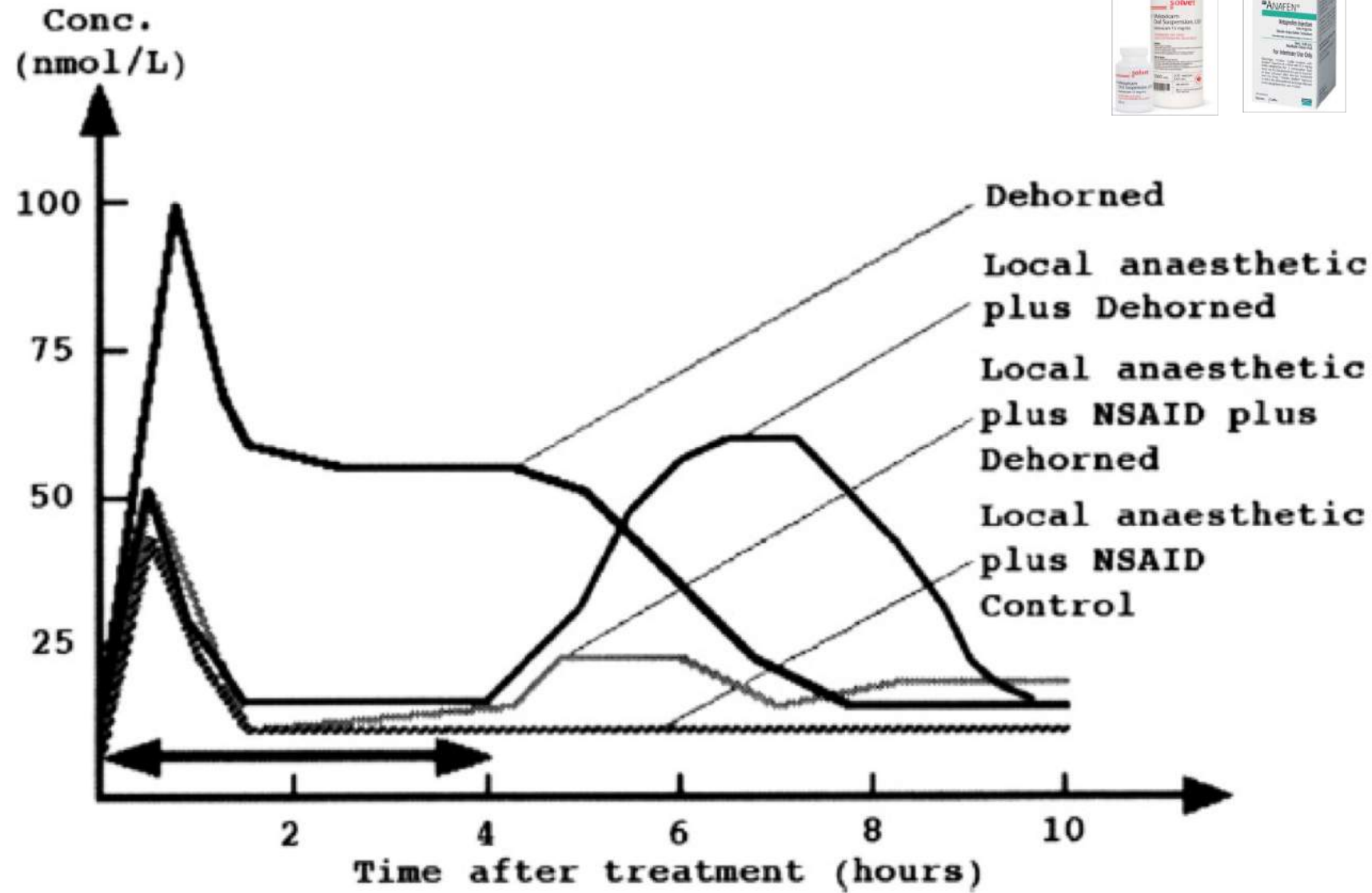
Anderson & Edmunson, 2013

Petrie et al., 1996
 McMeekan et al., 1998
 Sylvester et al., 1998
 Sylvester et al., 2004
 Stewart et al., 2009
 Grøndahl-Nielsen et al., 1999
 Graf et al., 1999



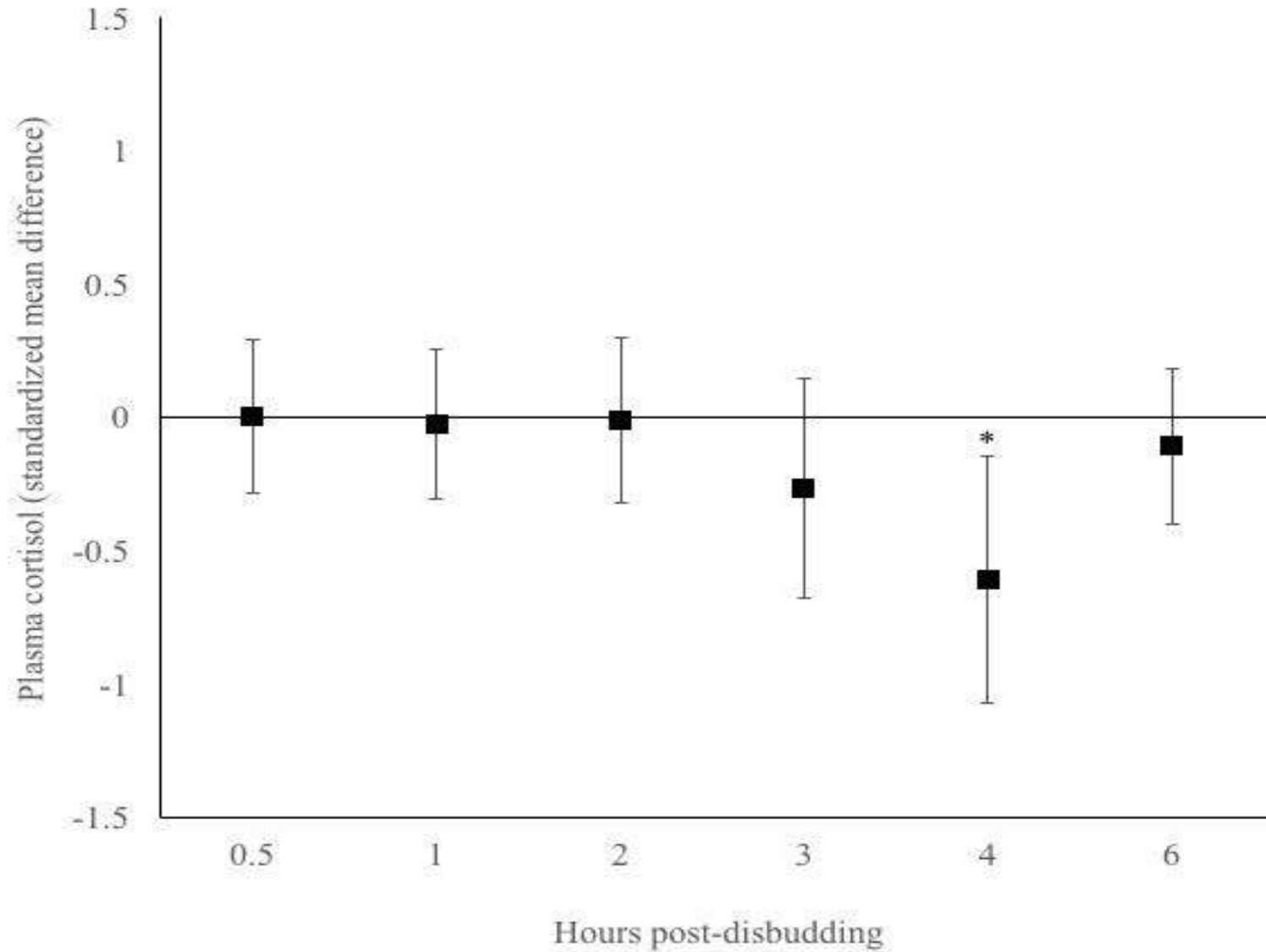


Local anesthetic v. control
Serum cortisol
n = 3 to 7

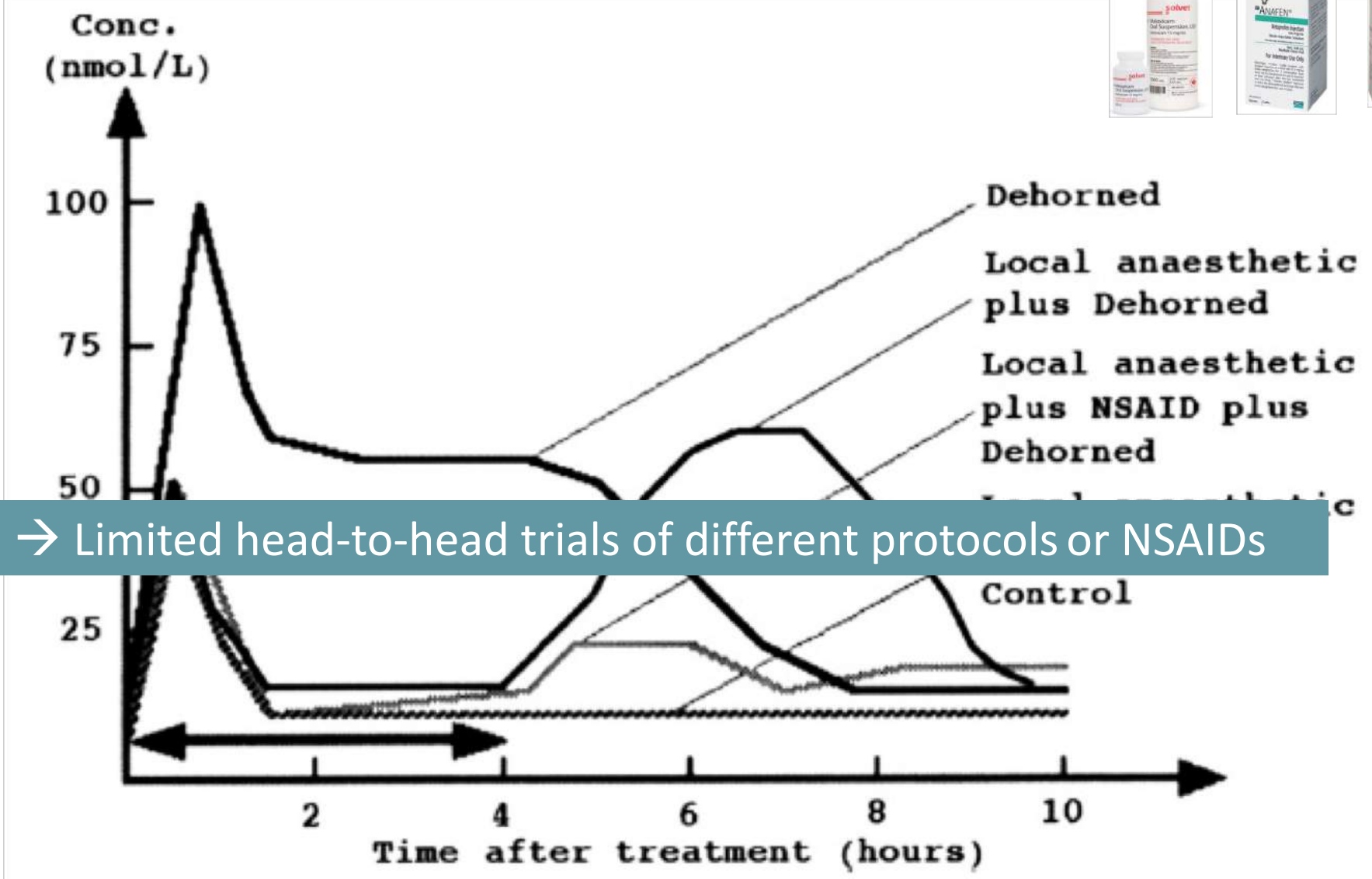


Stock et al., 2013 (modified from Stafford & Mellor, 2005)

McMeekan et al., 1998
 Stilwell et al., 2009
 Milligan et al., 2004



Local anesthetic & NSAID
v. Local anesthetic
Serum cortisol
n = 3 to 7



Stock et al., 2013 (modified from Stafford & Mellor, 2005)

Allen et al., 2013
 Huber et al., 2013
 Stock et al., 2016
 Stock et al., 2015

McMeekan et al., 1998
 Stilwell et al., 2009
 Milligan et al., 2004

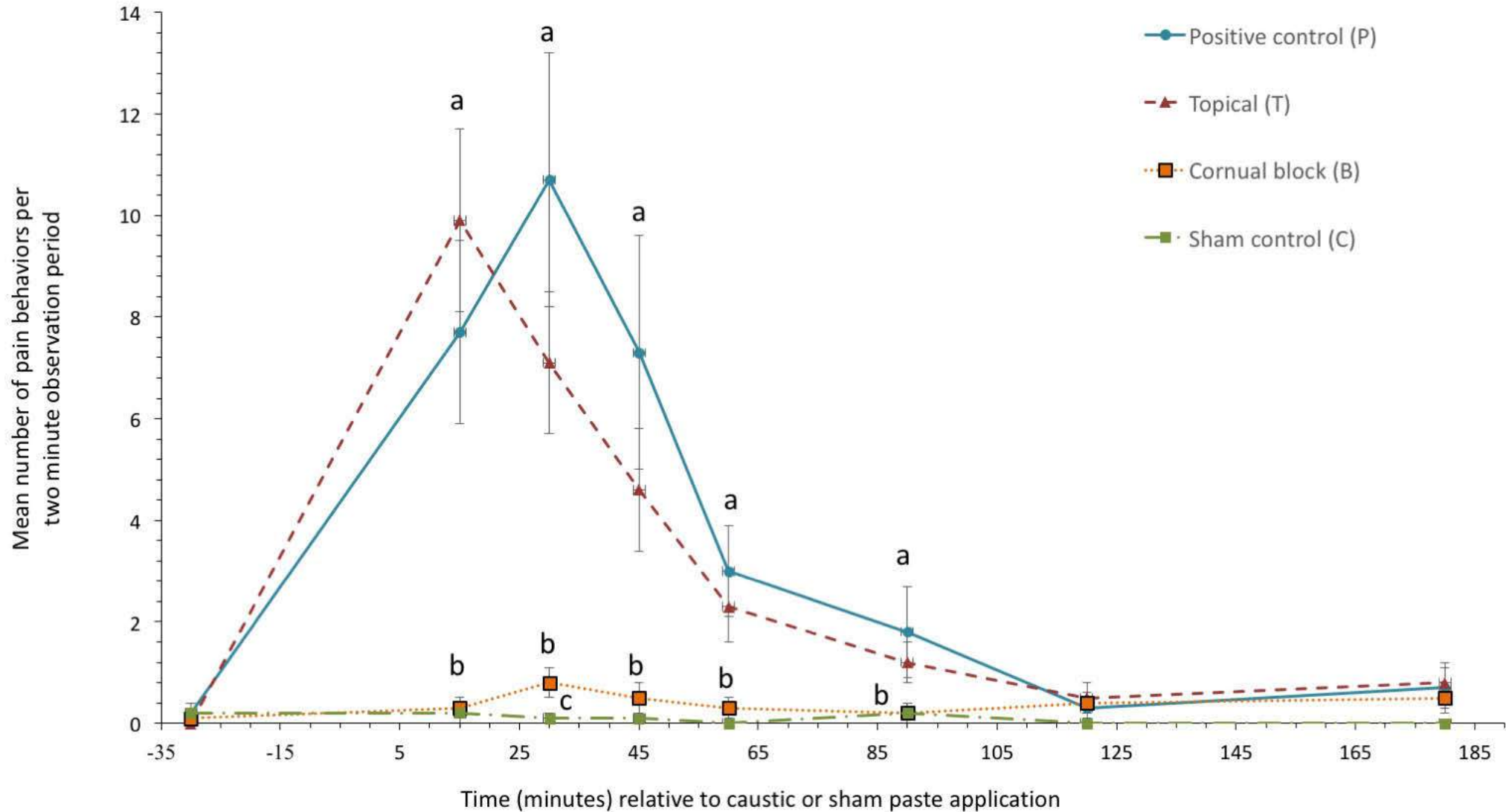
Table 2. Nonsteroidal anti-inflammatory drug (NSAID) protocols among the 17 treatment trials that compared local anesthetic and NSAID to local anesthetic alone, which were included after full-text screening

NSAID	Study	Route	Dose	Time
Carprofen	Stilwell (2009)	i.v.	1.4 mg/kg	15 min predisbud
	Stilwell et al. (2012)	i.v.	1.4 mg/kg	15 min predisbud
	Stock et al. (2015)	Oral	2.0 mg/kg	5 min predisbud
	Stock et al. (2016)	s.c.	1.4 mg/kg	10 min predisbud
	Stock et al. (2016)	Oral	1.4 mg/kg	10 min predisbud
Dexketoprofen	Korkmaz et al. (2015)	i.v.	3.0 mg/kg	30 min predisbud
Firocoxib	Stock et al. (2015)	Oral	0.5 mg/kg	10 min predisbud
	Stock (2015)	Oral	2.0 mg/kg	5 min predisbud
Flunixin meglumine	Huber et al. (2013)	i.v.	2.2 mg/kg	At disbudding
	Huber et al. (2013)	i.v.	2.2 mg/kg	At disbudding, 3 h postdisbud
	Stock (2015)	Oral	2.3 mg/kg	5 min predisbud
Ketoprofen	Duffield et al. (2010)	i.m.	3 mg/kg	10 min predisbud
	Faulkner and Weary (2000)	Oral	3 mg/kg	2 h predisbud and 2 and 7 h postdisbud
	Milligan et al. (2004)	i.m.	3 mg/kg	10 min predisbud
Meloxicam	Allen et al. (2013)	Oral	1 mg/kg	12 h predisbud
	Allen et al. (2013)	Oral	1 mg/kg	At disbudding
	Heinrich et al. (2009)	i.m.	0.5 mg/kg	10 min predisbud
	Heinrich et al. (2010)	i.m.	0.5 mg/kg	10 min predisbud
	Mintline et al. (2013)	i.v.	0.5 mg/kg	55 min predisbud
	Stock (2015)	Oral	2.0 mg/kg	5 min predisbud

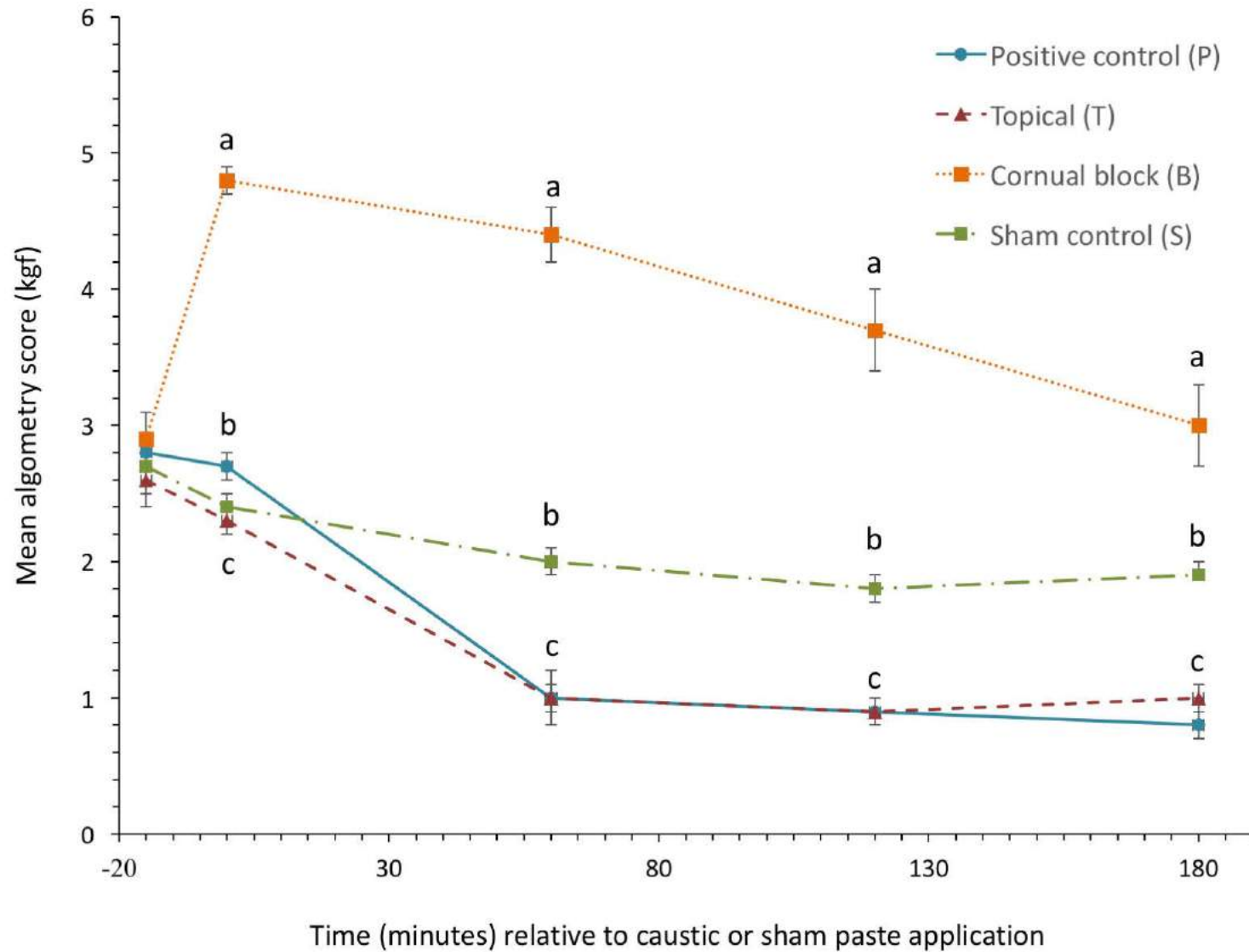
2. What about caustic paste?

- Local anesthetic + NSAID reduces cortisol, pain behaviours, and pressure sensitivity
- Ring block is not recommended → use cornual nerve block
- NSAID or opiate given alone is ineffective

→ Calves given a **cornual nerve block** had fewer pain behaviours



→ Calves given a **cornual nerve block** had **reduced pressure sensitivity**



2b. But those trials aren't with very young calves.....?

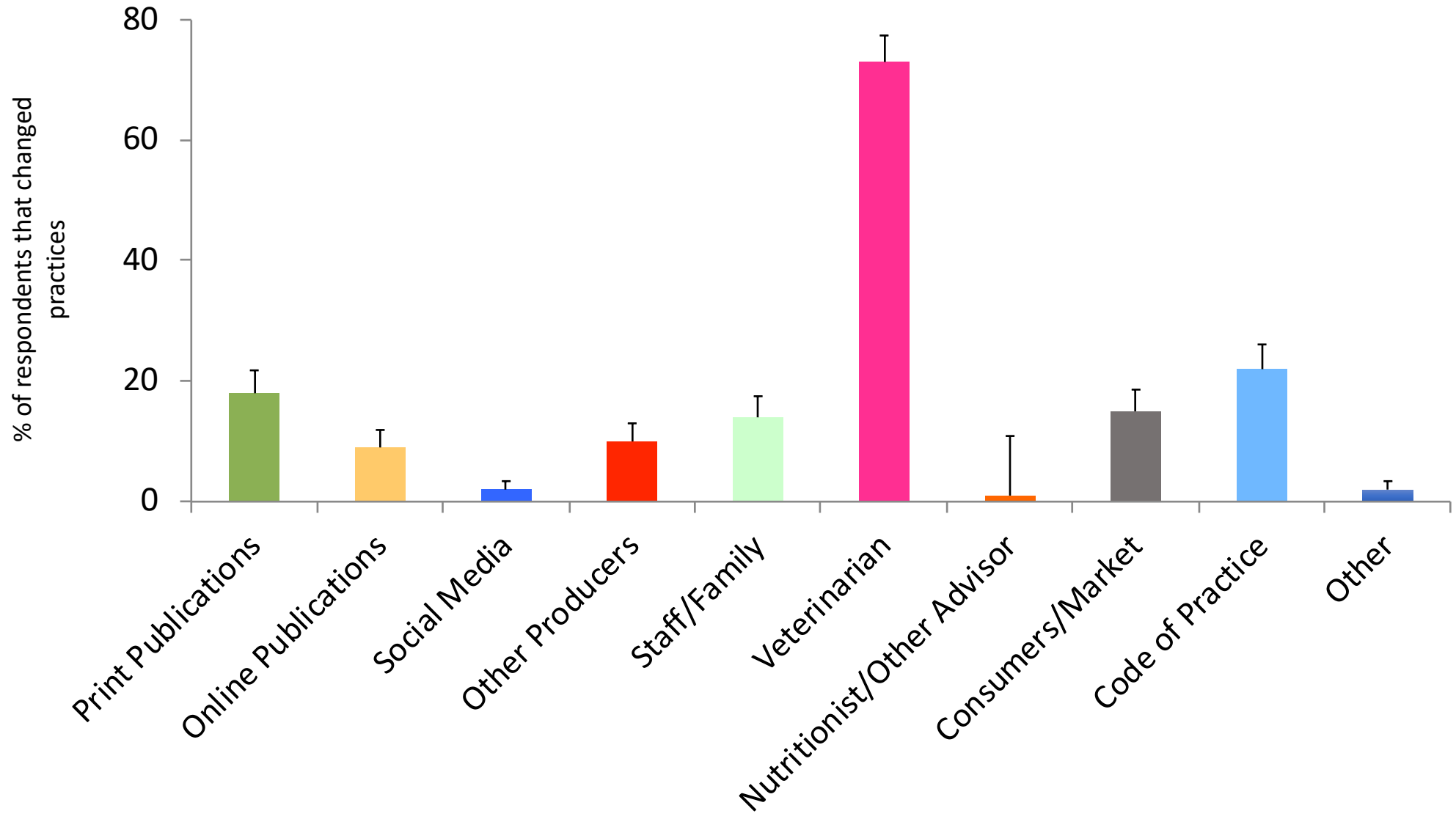
- Mean age (2.6 weeks) similar to use in US (2.3 weeks)
- Moderating effect of age not seen
- Recent trial – 145 heifer calves, 1-5 days of age
 - Local anesthetic
 - Meloxicam SC
 - Local anesthetic + meloxicam SC
 - No pain control
 - Sham paste
- **Stay tuned!**

3. Xylazine – should we recommend it?

- Some indication for a reduced initial response to handling
- Behavioural signs of pain are **not** reduced, but may change (ear flicks v. head shakes)
- Cortisol is an unreliable indicator....why??
- NO well designed trials examining the impact of sedation on calf behaviour or ease of handling
- **Stay tuned!**

4.









Farmers learn

5. Further discussion?