

Pain assessment and management

National Farm Animal Care Conference

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Outline

- Pain
- Can we assess it?
- Are there alternatives?
- Can we manage it?
- Implications

Pain

- Unpleasant sensory or emotional experience associated with actual or potential tissue damage (IASP, 1979)
- Acute pain
- Chronic pain



Painful Procedures



Concepts: subjective states

"Because subjective phenomena cannot be observed objectively in animals, it is idle to claim or deny their existence"



Tinbergen (1951, p.

Concepts: argument by analogy

"Since subjective experiences are known only to those experiencing them, the only way we can infer their existence in any other being, human or non-human, is by analogy..."



Dawkins (1990, p. 4)

Outline

- Pain
- Can we assess it?
- Can we manage it?
- International pressures
- Research Issues

Painful procedures



Band castration Branding Hot iron disbudding

Physiological measures of pain



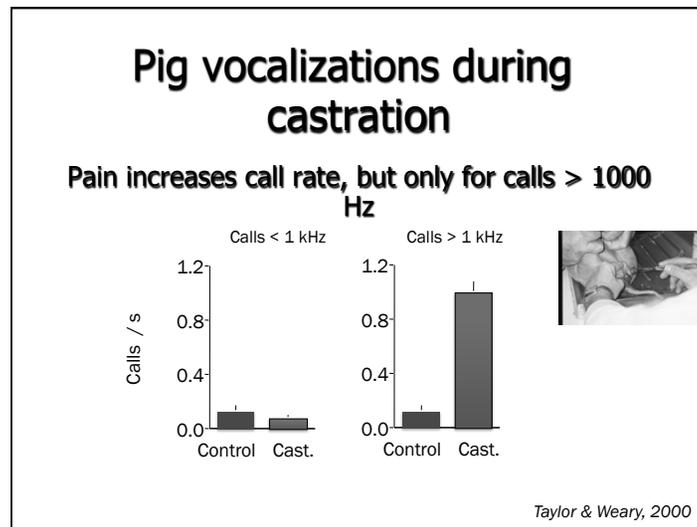
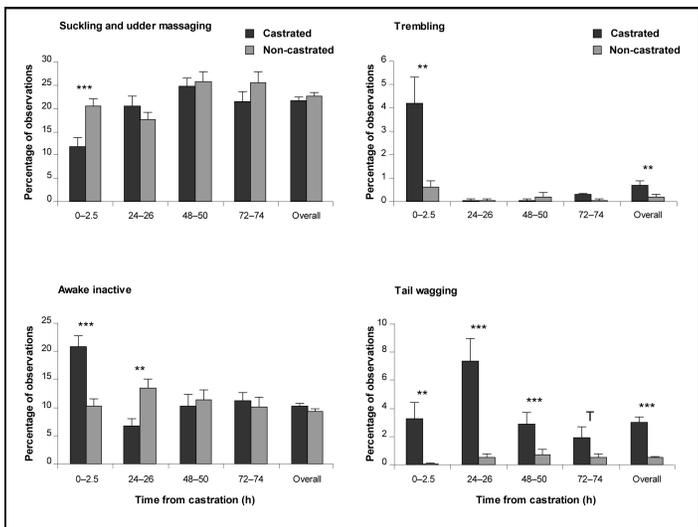
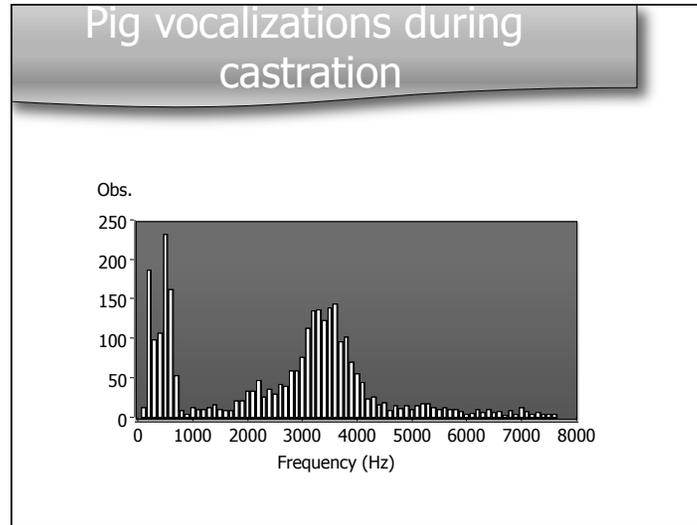
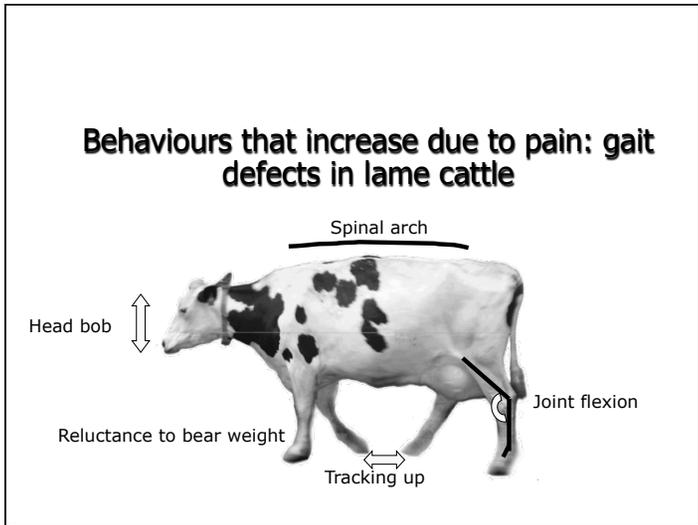
Infrared thermography Saliva sample for stress hormone cortisol Heart rate

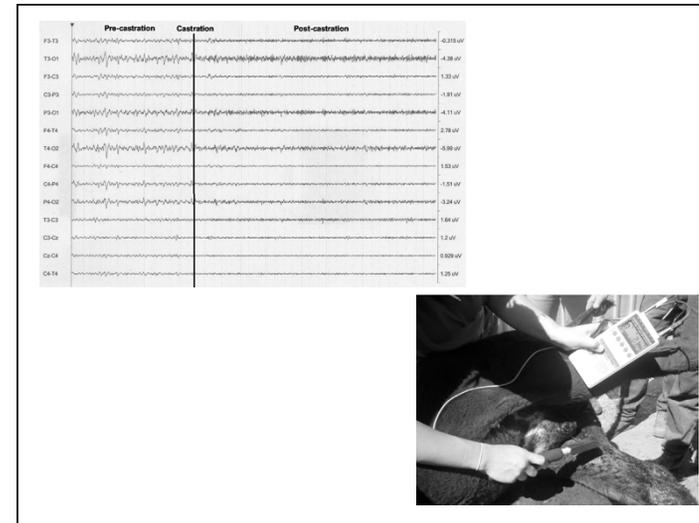
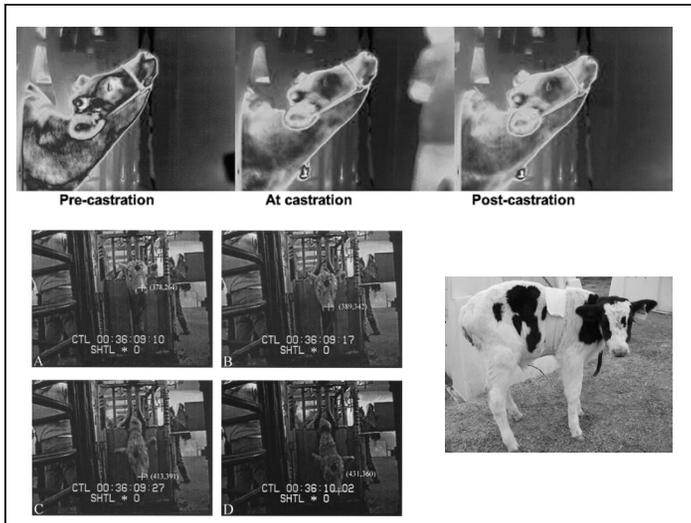
Behavioral measures of pain



Feed intake General behavior Squeeze shoot load cells measure animal movement

Assessment





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New Framework of Analyzing Painful Procedures

- What are the aims of the procedure?
- Does the procedure achieve its aims and what are the negative effects on the animal?
- Can the procedure be modified to reduce pain and distress (including pain management)?

Weary and Fraser, 2008

Alternatives

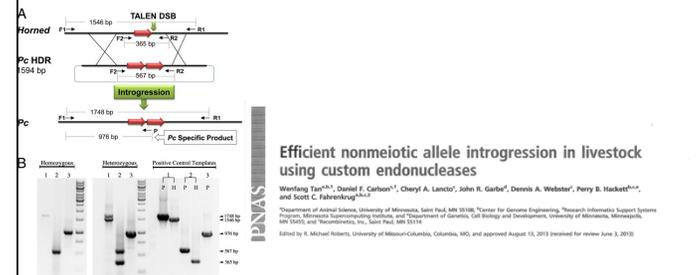
- Various alternatives for most practices
- Dis-budding
- Beak trimming
- Branding
- Castration

Entire (non-castrated) animals production	Castration is avoided. Better value of the meat. Better yields (CI). Strong support on the NGOs' part.	Weak support on the part of the industry branch. Anomalous behaviour in the fattening-finishing stage (aggressions and mountings). Excessive sexual odour risk. Difficult to implement in the case of fatty products.
Semen sexing	Production of females. It would not be necessary to castrate.	This technique is not well-developed and it is expensive. Not in the short term. Sexual odour in the females? Sexing in order to produce males or females?
Genetic selection	Linked to the production of entire males. Definitive solution.	This technique is not well developed and it is expensive. Not in the short term. Sexual odour in the females? Sexing in order to produce males or females?

Surgical castration with anaesthesia	The implementation is quick. There are devices. It eliminates aggressive behaviours in the fattening-finishing stage. 100% effective for the reduction of the sexual odour.	Weak support on the NGOs' part. Expensive (product and time). No reduction of the post-surgical pain. Danger due to the handling of the gas.
Surgical castration with prolonged analgesia	The implementation is quick. There are devices. It eliminates aggressive behaviours in the fattening-finishing stage. 100% effective for the reduction of the sexual odour.	Weak support on the NGOs' part. It is difficult to demonstrate that the surgical pain is avoided.
Surgical castration with anaesthesia and prolonged analgesia	The implementation is quick. There are devices. It reduces the pain due to the castration. It eliminates aggressive behaviours in the fattening-finishing stage. 100% effective for the reduction of the sexual odour.	Weak support on the NGOs' part. Expensive (product and time). Danger due to the handling of the gas.
Immunocastration	Its implementation is quick. It does not need a special equipment. The pain and the discomfort of the castration are eliminated. Elimination of the sexual odour. Until the 2nd dose the animal behaves as an entire pig (IC).	2 injections are necessary. Until the 2nd dose the animal behaves as an entire animal (aggressiveness). Risk due to the worker suffering a possible self-injection.

Future directions

- Molecular biology, Gene editing
- "What traditionally (by selective breeding) takes eight generations (24 years in cows) can now be accomplished in a single generation by gene editing."



ALCASDE
Alternatives to Castration and Dehorning



- Study to improved methods of animal-friendly production, in particular on alternatives for the castration pigs and on alternatives to the dehorning of cattle (2009).



European Declaration on alternatives to surgical castration of pigs



- voluntary agreement to phase out surgical castration of pigs in Europe by **1 January 2018**

- LTO Nederland (Dutch pig farmers organisation)
- NVV (Dutch pig farmers organisation)
- NBHV (Dutch livestock traders organisation)
- ANAS (Associazione Nazionale Allevatori Suini) – Italy
- Union)
- CLITRAVI (Liaison Center for the Meat Processing Industry in the European Union)
- DMRI (Danish Meat Research Institute)
- FESASS (The European Federation for Animal Health and Sanitary Security)
- OIVO - CRIQC (Centre de Recherche et d'Information des Organisations de Consommateurs)
- EEFAC (European Federation for Animal Science)
- FEFAC (European Feed Manufacturers' Federation)
- EFFAB (European Forum of Farm Animal Breeders)
- CIWF (Compassion in World Farming)
- FVE
- The Dublin Society for Prevention of Cruelty to Animals – Republic of Ireland
- Danish Agriculture and Food Council
- Finnish Farm Animal Welfare Council
- DBV (German farmer association)
- Galician Meat Technology Centre – Spain
- VDF (German meat industry association)
- Dutch Society for the Protection of Animals
- HDE (German retail association)
- PROVIEH VgtM e.V. – Germany
- Scientific experts from INRA
- SCIENTIFIC EXPERT from IFIP - "Institut du porc en France"
- COV (Dutch red meat slaughterhouses)

ALTERNATIVES FOR PIG CASTRATION



Commission's Website on Alternatives to Surgical Castration of Pigs

<http://www.alternativepig.eu>

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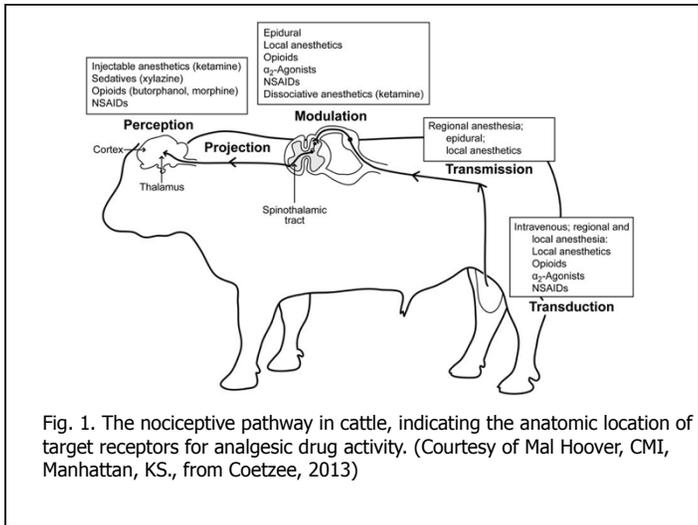
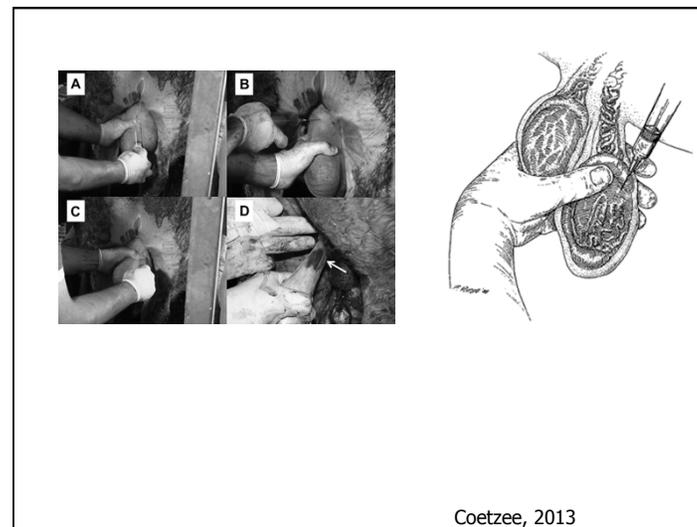
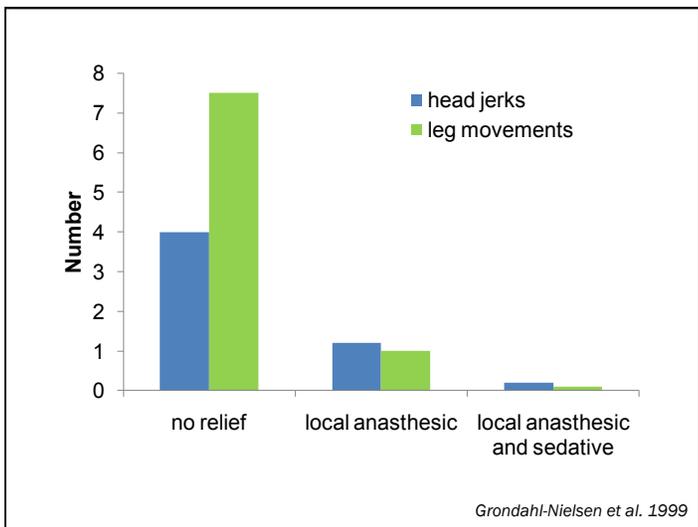
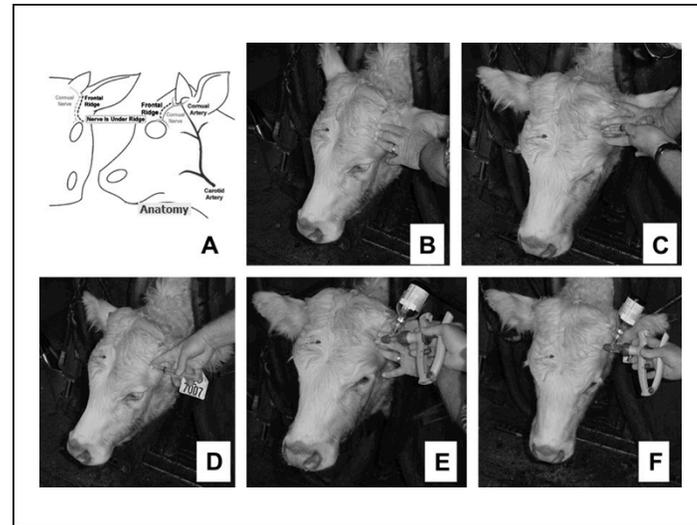


Fig. 1. The nociceptive pathway in cattle, indicating the anatomic location of target receptors for analgesic drug activity. (Courtesy of Mal Hoover, CMI, Manhattan, KS., from Coetzee, 2013)



Self-selection of the analgesic drug carprofen by lame broiler chickens

T. C. DANBURY, C. A. WEEKS, J. P. CHAMBERS, A. E. WATERMAN-PEARSON, S. C. KESTIN

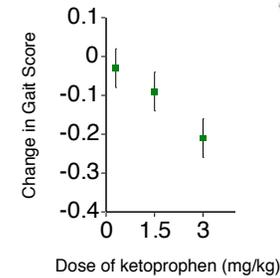
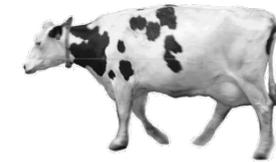
TABLE 3: Mean (se) amount of carprofen (g/kg^{0.75}) selected by sound and lame broilers in experiment 2

Birds	Drugged feed (g) consumed	Undrugged feed (g) consumed	Number of birds
Sound	138.6 (22.7)	241.8 (20.3)	14
Lame	197.7 (8.5)	170.7 (9.1)	47

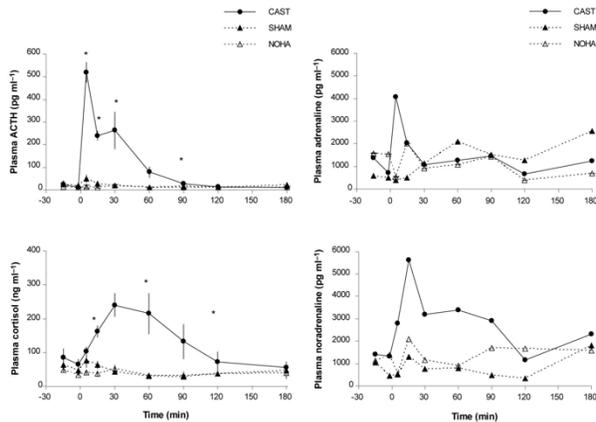
Sound birds had a gait score of 0, lame birds had a positive gait score



Gait score improves with ketoprofen



Flower et al. 2008



IOWA STATE WORKSHOP



- The National Pork Board (NPB) requested a project that would compile, review and summarize the existing scientific literature about pain mitigation strategies in piglets and identify future research needs.
- The Grading of Recommendations Assessment, Development and Evaluation (GRADE) 
- GRADE is a systematic and explicit approach to making judgements about quality of evidence and strength of recommendations

Reviewing the State of Scientific Evidence and Developing Recommendations about Pain Mitigation Strategies in Piglets Undergoing Routine Processing Procedures

Review coordinator and panel facilitator: O'Connor, A.

Review team: O'Connor, A., Dzikamunhenga, R. S., Gould, S.

Iowa State University (ISU) Steering Committee: (in alphabetical order): Coetzee, J.F, Johnson, A. K., Karriker, L. A., McKean, J., Millman, S. T.

External Participants (in alphabetical order): Anthony, R., Bergamasco, L., Lemke, K., Marchant-Forde, J.N., Martineau, G.S. Noem, G., Pajor, E.A., Rutherford, K., Scholl, B., Sprague, M., Sutherland, M., von Borell, E.

- Strong recommendation against the use of CO₂/O₂ mixture general anesthesia for pain mitigation during castration in piglets 1 to 28 days old.
- Weak recommendation for the use of NSAIDs for pain mitigation during castration in piglets 1 to 28 days old.
- Weak recommendation against the use of lidocaine as a pain mitigation strategy for piglets undergoing castration.

- Therefore, it seems the next step in the process is to maximize the value of the research for the decision-making process.
- At present, the committee concluded that the single biggest barrier progress was certainty about the validity and expected variation in measures of pain, which makes interpretation of research extremely difficult.

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- The committee concluded that pain mitigation will become a higher priority area for consumers and retailers as attention moves beyond gestation sow housing.



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- An important societal concern
- Measures and mitigation is possible but more research is needed
- So what do we do now?

Pain

- An important societal concern
- Measures and mitigation is possible but more research is needed
- So what do we do now?
- Delay until more research is done?



EAT AT CPK, TAKE 100% OFF

CALIFORNIA PIZZA KITCHEN GETS ITS CHEESE FROM SUPPLIERS WHOSE WORKERS USE TOOLS LIKE SEARING-HOT IRONS TO BURN COWS' HORN TISSUE OFF OR CAUSTIC CHEMICAL PASTE THAT CREATES A CHEMICAL BURN THAT PAINFULLY EATS AWAY AT THE HORN TISSUE.

TELL CPK TO STOP THIS TORTURE AT PETA2.COM/CPK!

CPK Facebook gets bombarded by campaign to end dehorning of cows, July 2013



ALTERNATIVES FOR PIG CASTRATION



Home Partnership Implementation Research and Innovation Publications Contact

Changes in Agriculture

- Agriculture has an image of being slow to change
- However, numerous changes, can occur quickly (feed additives, supplements, genetic lines etc.)
- Need to be aware of changes in management practices

Conclusions

- Pain in animal is an important societal concern
- Validated and reliable methods exist but additional research is required for improvements
- Alternatives include treatment of pain, changing procedures to minimize pain, or the development of new procedures
- Delaying action on this issue while options are perfected is not a good strategy
- Agriculture is going to be expected to adapt practices for welfare reason quicker than ever before.