

Reducing the impacts of dehorning

New research on wound treatment and management

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I acknowledge the Traditional Custodians of the many First Nations lands we are joining from today, across Australia, and pay my respects to Elders past and present.

I am joining from Camden, on the lands of the Dharawal People, and I pay my respects to their continuing connection to Country, culture and community.

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What will we cover?

1. **Why dehorning outcomes matter**
2. **What drives poor outcomes**
3. **Evidence on wound treatments**
4. **When horn tipping may be appropriate**
5. **Practical recommendations**
6. **Future directions**

POLL 1

What is the greatest challenge associated with dehorning cattle in your operation?

A. Animal welfare (e.g. pain, delayed healing, wound complications)

B. Production losses (e.g. mortality, reduced weight gain or performance)

C. Access to suitably skilled labour

D. Cost of carrying out the procedure

E. Other (please tell us in the chat)

Why does this matter?

Dehorning complications:

- Pain
- Bleeding
- Infection
- Flystrike
- Delayed healing
- Reduced weight gain
- Mortality





What producers told us

Producer priorities included:

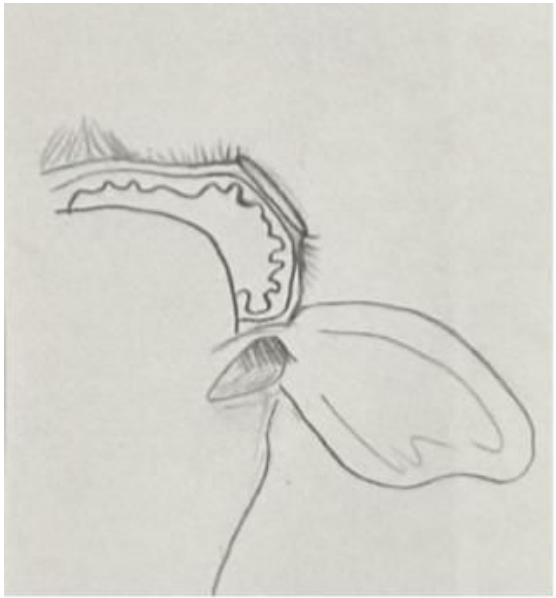
- ✓ Practical solutions
- ✓ Easy application of treatments
- ✓ Reduced bleeding
- ✓ Better healing
- ✓ Cost effective strategies

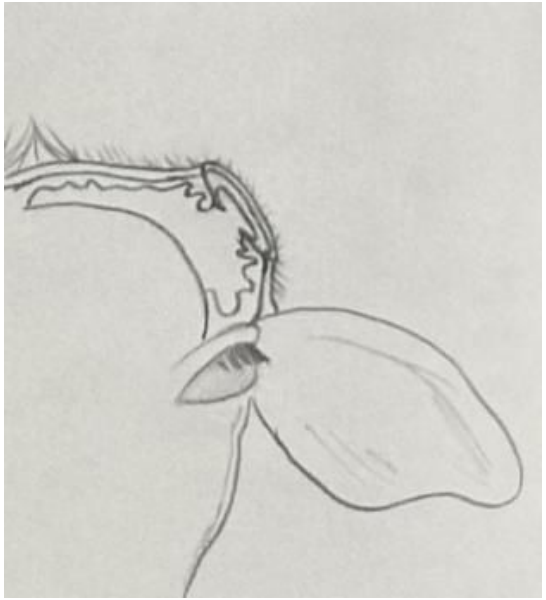


Understanding the horn

Why anatomy matters

1. Horns become increasingly attached to underlying structures with age
2. Larger horns create larger wounds
3. Sinus exposure increases complication risk





Illustrations by Shannon Beale

POLL 2

In your experience, how often do cattle die as a result of dehorning-related complications?

- **A** Never
- **B** Rarely (<1% of dehorning events)
- **C** Occasionally (1-5% of dehorning events)
- **D** Commonly (>5% of dehorning events)
- **E** Unsure

What do we actually know about dehorning associated mortality?

1. **Mortality appears uncommon**
2. **Accurate estimates are difficult**
3. **Bleeding and infection remain major concerns**

What factors contribute most to mortality?

What would the ideal dehorning wound treatment do?

1. **Limit haemorrhage**
2. **Prevent infection**
3. **Improve healing**
4. **Deliver pain relief and/or antiseptic**
5. **Repel flies**

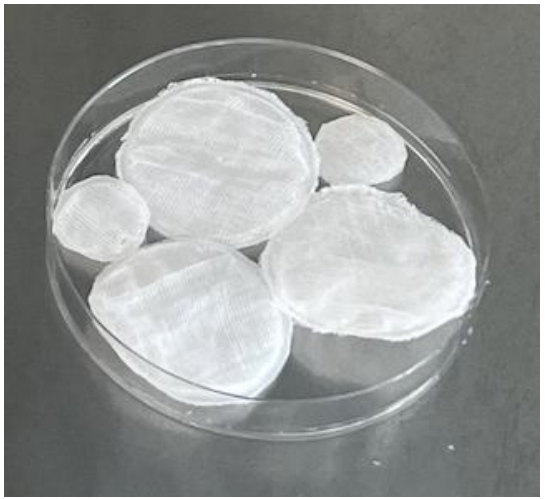
To work, a treatment must stay on the wound. Adherence and durability were the major barrier for most products we have tested.

Novel wound treatments investigated

The project initially focused on development of new wound dressings

Project aims:

– Improve haemostasis
– Protect wounds
– Reduce infection
– Enhance healing



PCL patch



Hydrogel patch

Existing wound treatments investigated

Products assessed:

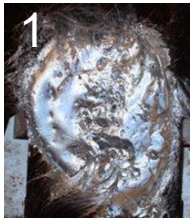
- Aluminium spray (Aluspray)
- Topical anaesthetic (Tri-Solfen)
- Stockholm Tar
- Veterinary haemostatic gel (Vetigel)

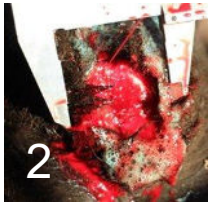
Selected because they are:

- Commercially available
- Practical
- Anecdotal reports of use

A small-scale experiment showed that Aluspray stayed on and reduced bleeding

Treatment	Adherence / Practicality	Bleeding	Healing	Infection / Flystrike
1. Aluspray	Easy application; highest retention (80% visible at Day 7)	Reduced post-operative haemorrhage	No treatment effect detected	1 infected wound
2. Tri-Solfen	Easy application; limited persistence on wound	Higher bleeding than AL	No treatment effect detected	1 infected wound
3. Stockholm tar	Slow, messy application; accumulated debris	No clear bleeding benefit	No treatment effect detected	No clear advantage
4. Vetigel	Easy application but required removal of surface blood and sustained pressure to achieve adhesion	Reduced perioperative haemorrhage compared with HG	No treatment effect detected	No clear advantage
5. Hydrogel patch	Difficult application; poor retention (44% retained at Day 7)	Highest haemorrhage scores	No treatment effect detected	3 infected wounds; 1 mortality associated with severe haemorrhage
6. PCL patch	Difficult application; required glue fixation; 45% retained at Day 7	No bleeding advantage detected	No treatment effect detected	Highest infection incidence (7 wounds); 1 flystruck wound













Wounds are highly variable

One of the challenges in assessing treatments is that the wounds are highly variable.

Surgical technique

Wound size

Bleeding intensity

Sinus exposure





Why Aluspray progressed to larger studies

Among all treatments evaluated, Aluspray demonstrated several advantages:

- ✓ **Very easy to apply**
- ✓ **Formed a protective film**
- ✓ **Adhered to wounds for several days**
- ✓ **Lower bleeding scores observed**
- ✓ **Reduced foreign debris accumulation**

Based on these findings, Aluspray was selected for evaluation in larger-scale commercial studies.

Key lesson from the small-scale wound treatment study

The strongest finding was not a treatment effect.

Wound severity matters.

Open sinus wounds were:

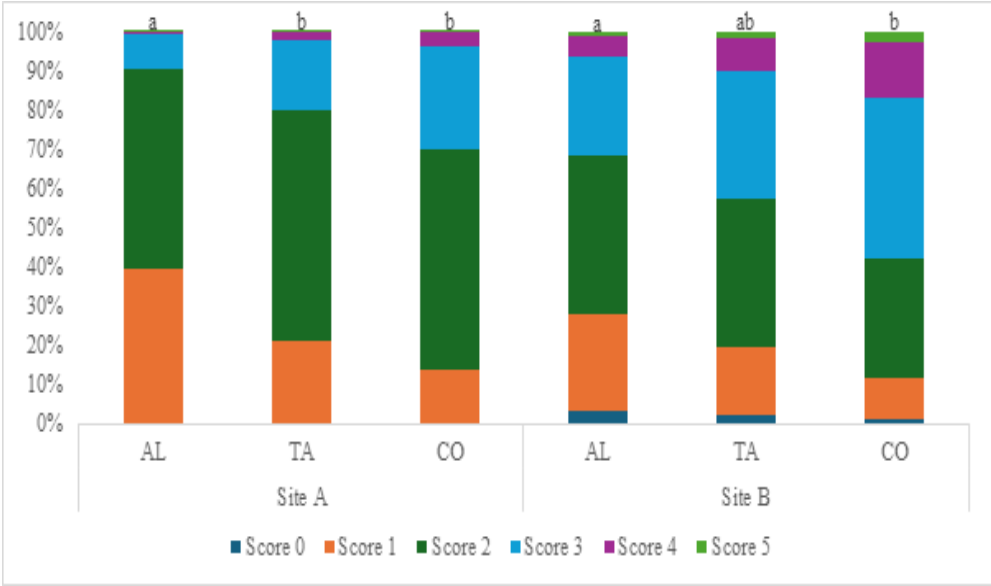
- More likely to become infected
- More likely to bleed excessively
- Slower to heal

Larger experiments – Haemorrhage outcomes

Aluminium spray was associated with lower bleeding scores.

What we don't know

- Bleeding is hard to measure accurately
- Whether stopping peri-operative bleeding changes total post-operative bleeding
- How wound treatments compared to no wound treatment



Predicted proportions of perioperative haemorrhage scored within the first 30 seconds following horn removal viaknife disbudding, amputation dehorning or heavy tipping in Bos indicus calves two different sites in northern Australia. Wounds were treated with either aluminium spray (AL), topical anaesthetic (TA) or combination of AL and TA (CO). Different superscripts (a, b) indicate significant differences between treatments within a site (P<0.05).

Larger studies – Infection outcomes

- Infection was higher following amputation dehorning compared to knife disbudding or tipping
- Wounds with open sinuses were 3× more likely to become infected
- Larger wounds had increased infection risk
- Aluminium spray was associated with lower infection rates than a combination of Aluspray and Tri-Solfen at one of the experimental sites

KEY TAKEAWAY

Larger wounds and sinus exposure remained important drivers of infection



Larger studies - Healing outcomes

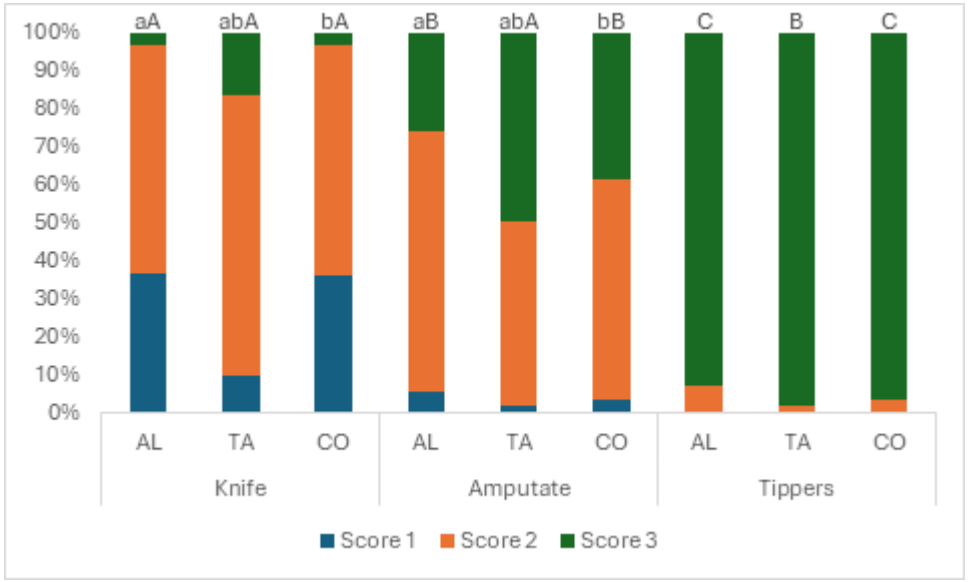
Faster healing of wounds treated with Aluspray compared to wounds treated with both Aluspray and Tri-Solfen

Limitation

No comparison to untreated wounds







Predicted proportions of wound healing scores approximately 6 weeks following knife disbudding, amputation dehorning and heavy tipping of Bos indicus calves at Site B in northern Australia. Wounds were treated with one of three wound treatments: aluminium spray (AL), topical anaesthetic (TA) or a combination of AL and TA (CO). A score of 0 indicated reepithelialisation of the wound was complete, a score of 1 indicated reepithelialisation was in progress, and a score of 2 indicated early stages of reepithelialisation with the possibility of infection Different lowercase superscripts (a, b) indicate significant differences between wound treatments within a horn removal method. Different uppercase superscripts (A, B) indicate significant differences between horn removal methods treated with the same treatment. For all comparisons a P value <0.05 was considered significant.

Larger studies - Weight gain outcomes

Weight gain was influenced by:

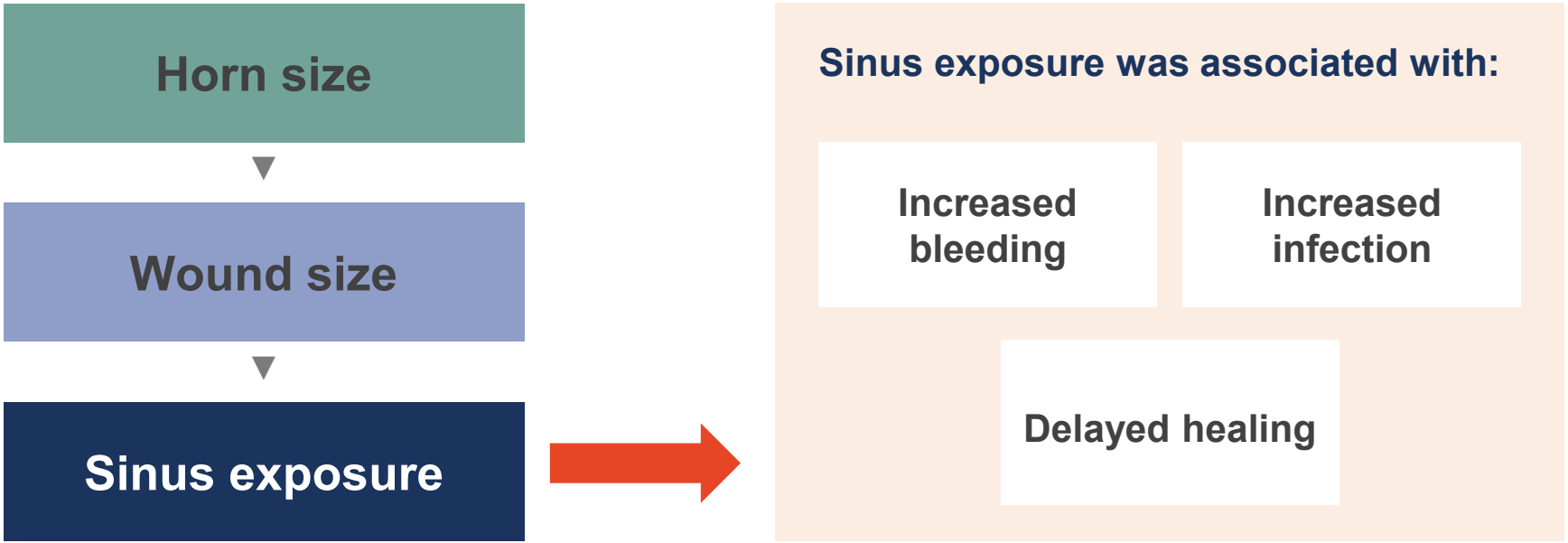
Wound size*
*trend *P* = 0.06

Experimental site

Method of horn removal ⟷ **Wound treatment**

Weight gain appeared to be influenced by multiple interacting factors, and production impacts should be interpreted cautiously.

What drives dehorning outcomes?



The same pattern was seen consistently across experiments.

Better outcomes require more than better products

1. Timing
2. Training
3. Animal handling and facilities
4. Animal behaviour
5. Ambient temperature and environment
6. Nutrition

KEY MESSAGE

Management decisions have an impact on outcomes.

POLL 3

For cattle with larger horns (horn lengths equal to or greater than ~8 cm), which management option would you be most likely to choose?

A. Dehorn

B. Horn tip

C. Leave the horns intact

D. I would aim to dehorn/disbud cattle before horns reach this size

E. It would depend on the specific animal and situation

What did we learn about horn tipping?

Potential advantages include:

- ✓ Smaller wounds
- ✓ Less tissue disruption
- ✓ Reduced impact on weight gain

FUTURE WORK

Is horn tipping a useful alternative in selected situations?



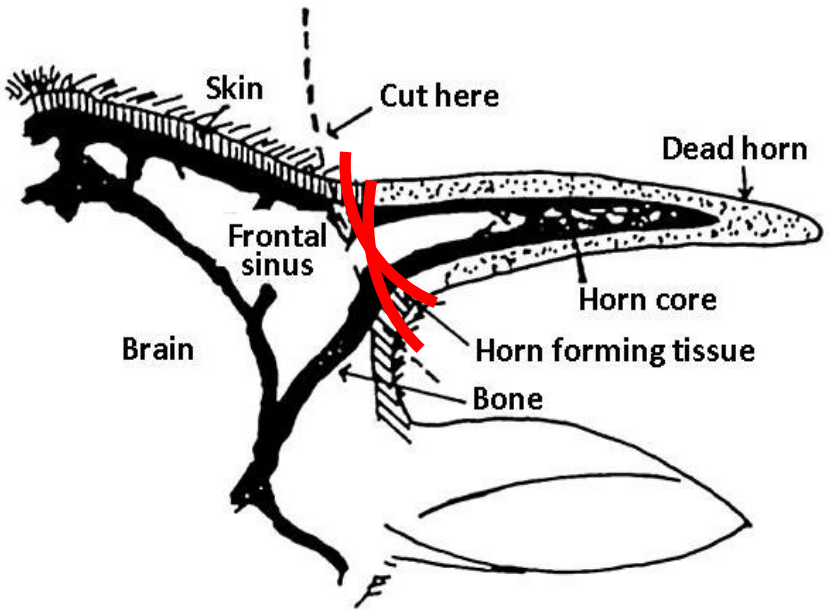
Illustrations by Shannon Beale

A modified dehorning technique

Research investigated an alternative approach designed to reduce wound severity.

Potential benefits

- **Reduced sinus exposure**
- **Reduced bleeding**
- **Improved healing**



Producer decision-support framework

< 2 months	2–6 months	> 6 months
Disbud	Dehorn	Assess horn size
▼	▼	▼
Pain relief	Modified technique if practical	Small–moderate: dehorn
▼		▼
Consider aluminium spray		Larger horns: consider tipping or leaving intact

Always assess: market requirements • transport requirements • welfare implications

Future directions

1. **Decision-support tools**
2. **Refined novel treatments**
3. **Economic analyses**
4. **Horn tipping recommendations**
5. **Extension resources**
6. **Further field validation**

Translating findings into practical recommendations producers can use.

POLL 4

Where do you feel producers need the most support when making dehorning decisions?

- **A** Determining the best timing for horn removal
- **B** Deciding between dehorning and horn tipping
- **C** Managing dehorning in challenging seasonal conditions
- **D** Selecting effective pain and wound treatments
- **E** Other (please tell us in the chat)

Take-home messages

1. **Remove horns as early as practical.**
2. **Avoid sinus exposure where possible.**
3. **Aluminium spray may improve bleeding and healing outcomes.**
4. **Meloxicam is a suitable option for pain relief.**
5. **Strategic management decisions may improve welfare and productivity.**

Acknowledgements

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mla donor COMPANY

FutureBeef

The research team

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Questions?
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