

# Numnuts® – consistent, safe delivery of local anaesthetic for lamb castration and tail docking

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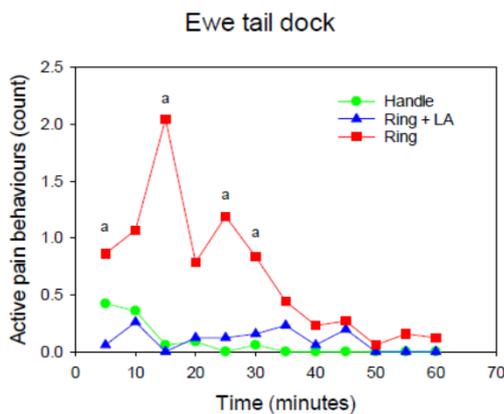
Castration and tail docking are painful, routine husbandry procedures applied to almost all lambs. Ring castration and tail docking are increasingly popular in comparison with incisional methods, due to the reduced risk of haemorrhage, wound infection and fly strike. Traditionally, use of local anaesthetic agents has been limited to veterinarians due to regulatory provisions and the potential for operator error leading to self-injection, or inappropriate or inaccurate injection techniques, and the challenges posed by sharps disposal requirements.

## NUMNUTS®

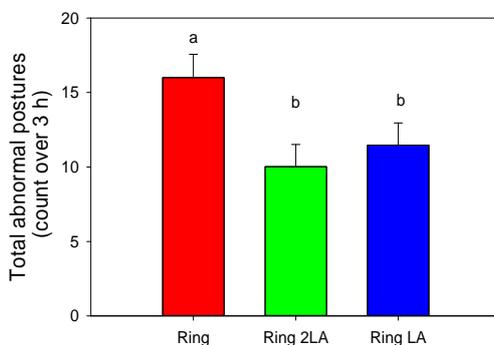
A 4-year international collaboration between 4cDesign (Scotland), Moredun Research institute (Scotland) and CSIRO (Australia)

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## Early work

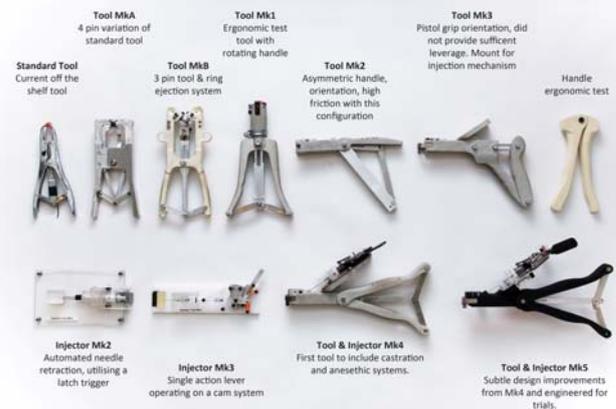


Ring + 1.5 mL LA (Lignocaine 20 mg/mL) significantly reduced acute pain related behaviours in ewe lambs being tail docked (P<0.001)



Ring + 1.5 mL LA (Lignocaine 20 mg/mL) delivered as a central deposit in the scrotal neck achieved similar reductions in pain related abnormal postures as did veterinary injection of 0.75 mL into each spermatic cord (Ring 2LA), in male lambs undergoing ring castration (without tail docking)

## Design Evolution



## Current research (V12 prototype)

NUMNUTS (ring + 1.5 mL Lignocaine 20 mg/mL delivered at each site) significantly reduced acute pain related behaviours in a mixed group of ewe lambs being tail docked and male lambs (combined) being castrated and tail docked (P<0.02)

