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55th KVA Annual Scientific Conference

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MEKONG LIVESTOCK RESEARCH
ADVANCING SMALLHOLDER LIVESTOCK PRODUCTION AND HEALTH

Success of a 'new medicine' for treating FMD: case report from Laos

Peter Windsor, Isabel MacPhillamy, Francesca Earp
The University of Sydney

ANIMAL ETHICS

OIE

SEACFMD

Epidemiology and Infection
Cambridge University Press

A history of FMD research and control programmes in Southeast Asia: lessons from the past informing the future

Stuart D. Blacksell, Jarunee Siengsanan-Lamont, […], and Peter A. Windsor

Transboundary and Emerging Diseases

ORIGINAL ARTICLE

Foot-and-Mouth Disease Control and Eradication in the Bicol Surveillance Buffer Zone of the Philippines

P. A. Windsor[1,2], P. G. Freeman[1,3], R. Abila[4,5], C. Benigno[4,6], B. Verin[4], V. Nim[1,7] and A. Cameron[8]

Transboundary and Emerging Diseases

ORIGINAL ARTICLE

Assessment of Farmer Knowledge of Large Ruminant Health and Production in Developing Village-Level Biosecurity in Northern Lao PDR

S. Nampanya[1], L. Rast[1], S. Khounsy[2] and P. A. Windsor[1]

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Transboundary and Emerging Diseases

REVIEW ARTICLE

Improving Smallholder Farmer Biosecurity in the Mekong Region Through Change Management

J. R. Young[1], S. Evans-Kocinski[2], R. D. Bush[1] and P. A. Windsor[1]

[1] Faculty of Veterinary Science, University of Sydney, Camden, NSW, Australia
[2] Behavioural Insights Pty. Ltd., Main Beach, Qld, Australia

**Transboundary and Emerging Diseases**

ORIGINAL ARTICLE

Financial Impacts of Foot-and-Mouth Disease at Village and National Levels in Lao PDR

S. Nampanya[1], S. Khounsy[2], R. Abila[3], J. R. Young[1], R. D. Bush[1] and P. A. Windsor[1]

Transboundary and Emerging Diseases

ORIGINAL ARTICLE

Financial Impact of Foot and Mouth Disease on Large Ruminant Smallholder Farmers in the Greater Mekong Subregion

S. Nampanya[1], S. Khounsy[2], A. Phonvisay[1], J. R. Young[1], R. D. Bush[1] and P. A. Windsor[1]

Outbreaks (Jan-Jul, 2017)
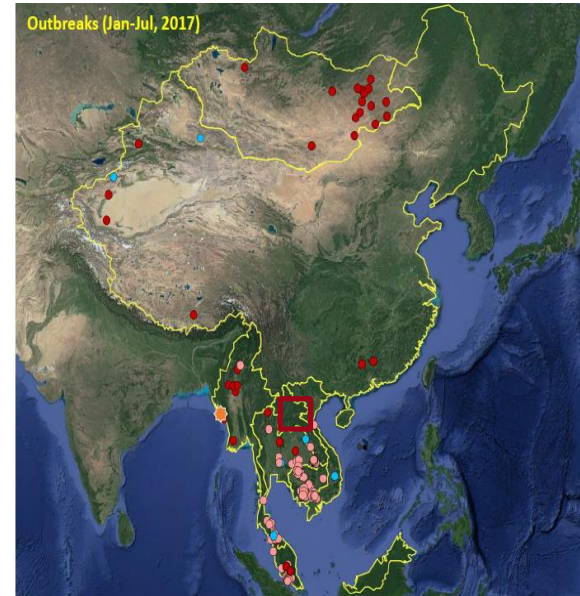
O — (red)
A — (blue)
Untyped — (pink)
Asia 1 — (star)
This study — (box)

FMD epidemic cost ~ 12% of farm gate value of large ruminants

FISQ: FMD high financial losses @ household, esp. Tx with antibiotics
Partial budget analysis: USD22/cow, 33/buffalo if vax for FMD
Evidence: strongly positive incentive if cattle vax 2x/yr

1.6m doses vax in north Laos 2012-16; suppressed clinical FMD 2013-'17
Outbreaks re-emerged 2018-'19; ? sustainability of FMD vax programs
Esp. as farmer priority is treatment of sick animals!

Epidemiology and Infection

cambridge.org/hyg

Implementing large Foot and Mouth Disease vaccination programmes for smallholder farmers: lessons from Lao PDR

Original Paper

S. Nampanya[1], S. Khounsy[2], R. Abila[3] and P. A. Windsor[1]

Cite this article: Nampanya S, Khounsy S, Abila R, Windsor PA (2018). Implementing large Foot and Mouth Disease vaccination programmes for smallholder farmers: lessons from Lao PDR. Epidemiology and Infection 1–10. https://doi.org/10.1017/S0950268818002443

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Abstract

This study assessed smallholder finances and their attitudes towards the Foot and Mouth

Introduction: motivation

- Motivating smallholder farmers to rapidly report outbreaks of FMD & use preventative vax & biosecurity?
- When priority is therapy to reduce suffering, return animals to health
- This is despite low efficacy of traditional remedies (lemon juice) & high cost of antibiotics use widely
- Currently an AMR & food safety risk from routine FMD Tx

- Need for a new therapeutic approach:
- Use a non-antimicrobial pain relief wound 'spray-on' dressing Tri-Solfen® (Animal Ethics, Australia)
- Registered for use in aversive livestock husbandry procedures in Australia, NZ, others pending
- Applied to lesions on FMD-affected large ruminants in Laos & Cameroon in 2019
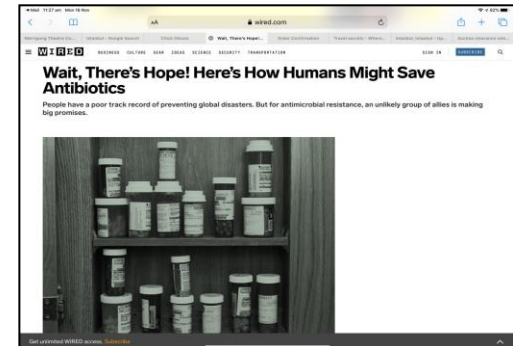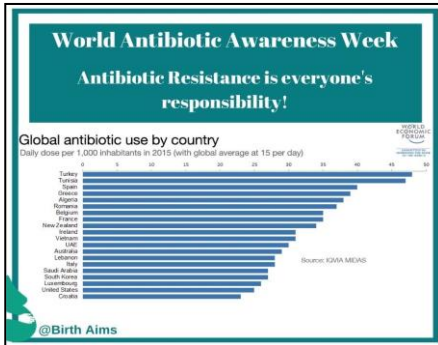
April 2019: Laos
FMD-affected buffalo (n=99) & cattle (n=37) presented for Tx with PR
From a population (n =238) of large ruminants, from 15 rural households
Partly vax village
Clinical responses & farmer interviews recorded.

October 2019: Nigeria & Niger
PR applied to FMD-affected cattle in several FMD outbreaks; images

November 2019: Cameroon
PR then applied to FMD-affected cattle (n = 36) in an outbreak
Clinical responses & recoveries from Tx on 3 equal groups of animals (n = 12),
Compared:
(i)   application of PR to lesions;
(ii)   IM oxytetraycline (5% Oxy-Moore, China) commonly used for FMD;
(iii)   an untreated control group.
Appetite scores, lesion healing scores, and changes in dimensions of lesions
Recorded over 15-day period.
Tx choices & costs for FMD therapy modelled:
Support therapy decisions for individual farmers & public health policy

January 2020: Kenya
PR applied to FMD-affected dairy cattle on 4 dairies in major FMD outbreak
Rapid recovery of teat lesions
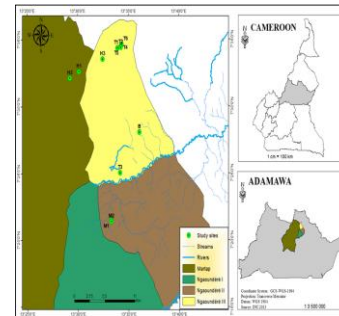
Topical anaesthetic formulation:

1.TA's: lignocaine 40.6 g/L, bupivacaine 4.5 g/L

2. haemostatic: adrenalin

3. antiseptic: cetrimide 5 g/L

4. gel matrix

Affordable, immediate, prolonged, practical.

Pain Cascade:
1. Nociception – local anaesethetics
2. Sensitization - NSAIDs
3. Cognition – opioids; & 4. Modulation

PRODUCTION ANIMALS

Impact of topical anaesthesia on pain alleviation and wound healing in lambs after mulesing

S LOMAX,ᵃ M SHEILᵇ and P A WINDSORᵃᶜ

Blocks nociception: rapid & wound analgesia, reduced pain-related behaviour & improved wound healing   **AVJ 96:159**
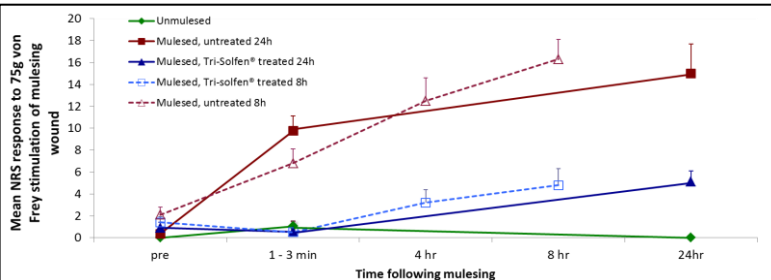
Duration of action of a topical anaesthetic formulation for pain management of mulesing in sheep

S Lomax,ᵃ* M Sheilᵇ and PA Windsorᵃ

Lasts >24hrs; haemostasis (adrenalin), barrier effect of gel & inhibition of the inflam. cascade following blockage of nociception. **AVJ 91:160**

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What is TS?

Lameness in cattle:
debriding foot lesions

Human wounds:
debriding ulcers

Received: 13 December 2018 | Revised: 28 February 2019 | Accepted: 19 March 2019

DOI: 10.1111/iwj.13129

IWJ WILEY

ORIGINAL ARTICLE

Innovative pain management solutions in animals may provide improved wound pain reduction during debridement in humans: An opinion informed by veterinary literature

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Email: chris@clinicalresolutions.co.uk

Painful animal husbandry procedures are routinely performed in a range of livestock species without analgesia. Recently, innovative strategies have been developed to address wound pain in these animals. In particular, a farmer-applied "spray and stay" approach that is administered directly to open wounds was developed (Tri-Solfen® Medical Ethics Pty Ltd., Melbourne, Victoria, Australia). This strategy anaesthetises the wounds immediately upon their formation, with long-lasting effect. This development, described as a "pain management revolution," has become firmly established in the Australian livestock industries and has global potential. The positive outcomes of this approach provide insights and highlight potential benefits that may be accrued from its use in human wound care, providing rapid-onset wound analgesia and/or anaesthetising wounds prior to cleansing and debridement procedures. If these benefits are realised from a clinician and patient perspective for wound debridement as an initial indication, it could provide new horizons in pain management for a spectrum of wound-related procedures. Evidence from use in animal husbandry does support the concept that multimodal anaesthesia holds great potential in the field of wound management across many procedures.

Journal of Dairy Science
ELSEVIER
Available online 25 April 2019
In Press, Corrected Proof ⓘ

Use of topical local anesthetics to control pain during treatment of hoof lesions in dairy cows

G.T. Stilwell [1] ⚲ ✉, A.M. Ferrador [1], M.S. Santos [1], J.M. Domingues [1], N. Carolino [2]

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https://doi.org/10.3168/jds.2018-15820   Get rights and content

ABSTRACT

Hoof pathologies in dairy cows have a major effect on both production and animal welfare. Trimming of excess or diseased hoof tissue is essential for the treatment of

- Chronic wounds & ulcers harbor bacterial biofilms
- Need painful debridement
- Esp. diabetes type 2; 'Medi-Solfen®' in current trials
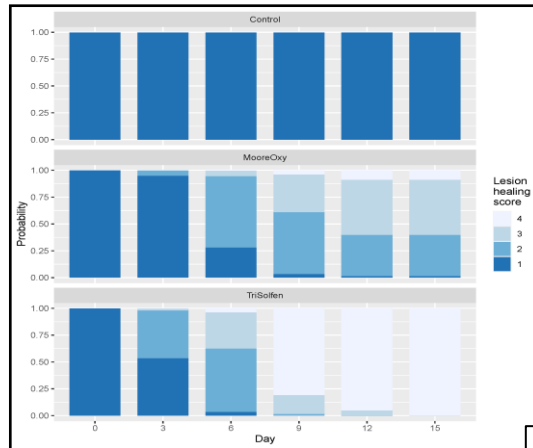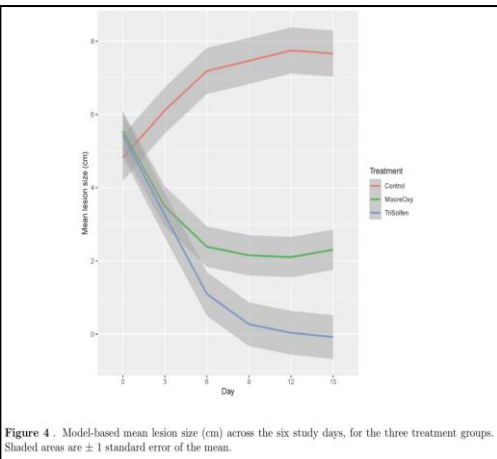
Results: efficacious & appreciation

Laos

- Tx with PR resulted in **immediate** improvement in demeanor & locomotion
- No adverse impacts, with presentation of all FMD-affected animals from the village &
- Insistence by farmers that all lesions be treated.
- Interviews: farmers advised animals eating & lesions healed in 2 & 5 days, respectively.
-

Cameroon

- Tx with PR resulted in: superior appetite and lesion-healing scores,
  - more rapid reductions in dimensions of lesions & return of mobility
  - less time required for return to eating & cessation of XS salivation.
- Analysis of costs of 6 Tx options: minimal diff's between Tx choices.
- Est. cost of PR of USD1.50-2.50/animal unlikely impediment to choice of PR

Figure 4. Model-based mean lesion size (cm) across the six study days, for the three treatment groups. Shaded areas are ± 1 standard error of the mean.

Treatment choice	Application	Est. cost/day (USD)	Treatment days	Est. cost/animal (USD)
Moore Oxy	Injection	0.85	3	2.55
Procaine penicillin	Injection	0.17	3	0.51
Oxytet 30%	Injection	0.85	3	2.55
Survidium	Injection	0.85	5	4.25
Insecticide & Petrol	Topical	0.42	7	2.94
Traditional drugs	Topical/oral	0.51	7	3.57
OXYDOZER 50	Injection	0.85	3	2.55
Tri-Solfen	Topical	2.50	1	2.50

Table 5. Tx types used; application method, days of tx & estimated daily and total costs.
Moore Oxy® has a 7 day milk WHP and 21 meat WHP.
Tri-Solfen® has a recommended 4day WHP for milk and meat in Lao PDR

Within 24 hours of treatmen

- walked more just after treatment

- eat more

- steady increase in milk production

- back to normal 10days after treatment

- a visible change in body condition
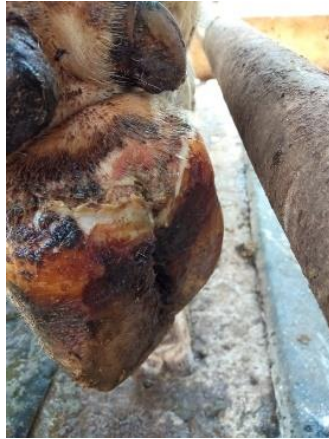
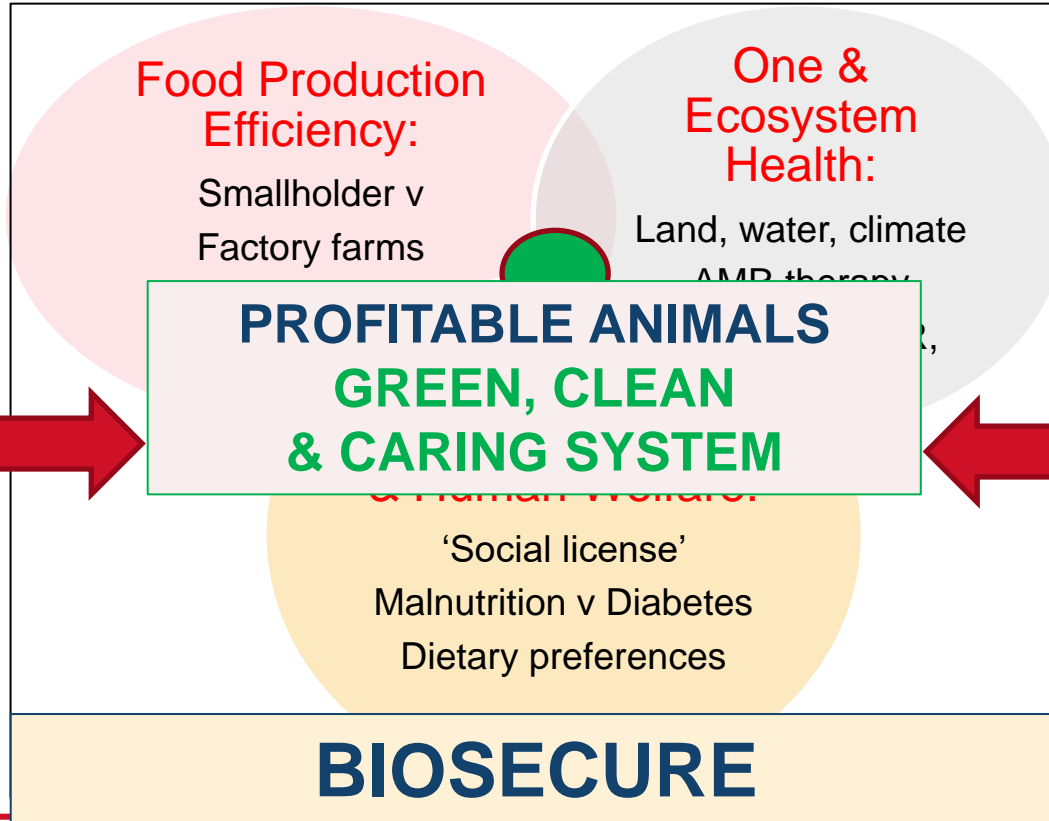Udder 6 days post-Tx: healing of teat lesions

"the animals walked more just after treatment, they could eat more, many but not all returned to normal production, there was an increase in herd milk production compared to no treatment, and an increase in body condition after a week"

All respondents confirm encouraged to report FMD if they had ready access to Tri-Solfen®

Clinical observations of improved animal welfare, enthusiasm by farmers in all countries

Authorities registered TS in Laos, registration in Cameroon, Kenya & elsewhere pending

Conclude: FMD is severe & a welfare issue (see QR code video)

Does it reduce FMDv loads? Examined for orf in lambs in Spain; yes!

Tx with PR: reduces pain, time to recovery & negative productivity impacts.
PR therapy imposes **no additional financial burden on farmers**
Potentially **replaces antibiotics & reduces risks of AMR & residues** in food chain.
PR therapy **increases likelihood of presentation of animals for Tx**,
Motivate improved disease reporting/surveillance & biosecurity awareness?

A role for inclusion in FMD control programs?

Cultural factors in smallholder communities is necessary for effective disease control
Provision of a therapy for FMD that improves welfare, reduces AMR & potentially viral loads
Is consistent with increased ownership of disease control strategies by smallholder farmers

Food Security Challenge: more efficient & sustainable global food system

Pain therapy for husbandry/disease reduces suffering, costs, risks, empowers producers; 'we care' attitude

Problems

Solutions

Food Production Efficiency:

Smallholder v Factory farms

One & Ecosystem Health:

Land, water, climate

AMR therapy

PROFITABLE ANIMALS
GREEN, CLEAN
& CARING SYSTEM

& Human Welfare:

'Social license'

Malnutrition v Diabetes

Dietary preferences

BIOSECURE