

TITLE: Farmer Needlestick Injuries - Risk & Recommended Treatment
TYPE: Guidelines
DEPARTMENT: Clinical
SECTION: National Centre for Farmer Health



PURPOSE

WDHS is based in an agricultural area that produces livestock. As part of livestock husbandry veterinary chemicals are used. Occasionally needlestick injuries occur which may have poor outcomes if not treated correctly. To provide a table of livestock injection products and recommended treatment options.

Whilst due care has been taken with compiling this document it is not a complete list of all animal health products (vaccines, drenches, antibiotics and mineral supplements) that if accidentally self-administered have potential to cause injury.

No responsibility can be held by the authors for how this information is used and outcomes. Readers must independently verify recommendations contained in this document.

TARGET AUDIENCE/SCOPE

Emergency Department staff

VMO's, HMO's

Nursing staff if admitted

DEFINITION/S OF KEYWORDS

APVMA Australian Pesticides and Veterinary Medicines Authority

NCFH National Centre for Farmer Health

CLINICAL ALERT

All animal health companies with products registered with the APVMA have a legislated requirement to report human exposure to their products to the APVMA but they can only do this, if notified of incidents. Please note that agriculture workers, and farmers can and should report the adverse event to the APVMA and be encouraged to do so. They do not have to wait for the animal health company to do it. Similarly health and medical professionals, VMO's, HMO's should also report to the APVMA.

For all mineral oil needlestick injuries a surgeon must be contacted, regardless of self - reported category of injury.

EQUIPMENT

<https://apvma.gov.au/sites/default/files/images/311-adverse-experience-reporting-form.pdf>

<https://portal.apvma.gov.au/aerpexternal/welcome.htm>

Please keep a copy of the APVMA adverse report to go into health record

PROCEDURE/PROTOCOL/GUIDELINES

See Appendix 1

CONSUMER INFORMATION

N/A

EXPECTED OUTCOME

Patients optimally treated first time for needlestick injuries from animal health products.

Medical and Nursing staff utilise procedure

Adverse events are reported to the APVMA.

Farmers and agricultural workers are provided with copy of Farmer needlestick injuries brochure.

EVALUATION

Annual review of needlestick cases to Emergency Department and whether they were treated appropriately undertaken by NCFH.

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KEY ALIGNED DOCUMENTS

KEY LEGISLATION, ACTS and STANDARDS

REFERENCES TO BEST PRACTICE

- Richardson, G Links, I, & Windsor, P (2005) Gudair (OJD) vaccine self-inoculation: a case for early debridement Med J Aust; 183 (3): 151-152.
- Alfredson, M, Heath, T (2009). Fingertip And Distal Phalanx Necrosis after Self-Inoculation with the Johne's disease Vaccine: A Case Report and Review of the Literature. The Internet Journal of Hand Surgery 3 (1)
- Gwynne-Jones D, Lyall P, Hung NA, Meikle G. (2008) Accidental human injection of Excenel RTU: ceftiofur hydrochloride in cottonseed oil. Clin Toxicol (Phila). 2008 Nov;46 (9):908-10.
- Jennissen C, W. J., Donham K, Rendell D, Brumby S,. (2011). Unintentional needlestick injuries in livestock production: a case series and review. Journal of Agromedicine, 16(1), 58-71.
- Burke, F., Robertson, C., Ackerman, N., & Reilly, W. (2017). Needlestick and inoculation injuries in veterinary and animal workers. 39(3), 138. In Practice,, 39(3), 138. doi:doi:http://dx.doi.org.ezproxy-f.deakin.edu.au/10.1136/inp.j868
- Lunz, R., Brumby, S., Clifforth, S., & Yoshimitsu, Y. (2019). Minor farm injuries: How to treat [How to treat]. *Australian Doctor*, (September 2019), 15-22. Retrieved from <https://www.ausdoc.com.au/how-treat/minor-farm-injuries>

Risk Rating

Medium

AUTHORS / CONTRIBUTORS OF CURRENT VERSION

	NAME	POSITION	SERVICE
Document Owner	Susan Brumby	Director National Centre for Farmer Health	AgriSafe Clinic
Lead Author / Reviewer	Mr Stephen Clifforth	Surgeon	Glenelg Surgical Clinic
Contributor/s			
Validation			
Committee/s & date/s	Clinical Care Review Committee June 2021		

CHANGE HISTORY

VERSION	AUTHOR	CHANGES	DATE
# NEW	<i>Name (Position)</i>	<ul style="list-style-type: none"> • Trigger for review: Scheduled Review / Revised Legislation / Incident / Best Practice / Other • Key changes / amendments • If no update required, record "No update deemed necessary" or word to that effect 	<i>Date</i>
# 1	Susan Brumby	Scheduled review	2021
# 2			

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Appendix 1
Table of Livestock Injection Products 1.
Farmer Needlestick Injuries Risk & Recommended Treatment

David Rendell¹, Sue Brumby², Richard Lunz², Scott McCombe², Stephen Clifforth³, Kelley Donham⁴ - updated 2021

Livestock Injection Product	Operator Exposure Risk	Recommended Treatment & First Aid Guidelines
<p>Vaccines that contain Mineral Oil (also known as Paraffin Oil) adjuvants</p> <p>Vaccines include:</p> <ol style="list-style-type: none"> 1. Gudair (Sheep Johnes Disease) 2. Silirium (Cattle Johnes Disease) 3. Piliguard (Cattle Pink Eye) 4. Rotavec Corona (Calf scour vaccines) 5. Vibrovax (Cattle Vibrio) 6. Bovilis MH & MH/IBR vaccines (Cattle respiratory diseases) 7. Bovilis S (Cattle Salmonella) 8. Ovills Campyvax (Sheep abortion) <p>Note: The adjuvant contained in vaccines 1- 5 can be referred to as Freunds</p> <p>Note: Vaccines 6 to 8 also contain mineral oil but is mixed with an 'Emulsigen' oil in water</p>	<p style="text-align: center;">Mineral oil when injected into tissue is non-degradable and highly irritant</p> <p>Accidental self-injection of these vaccines (1-8) can cause serious local reactions both short and long term.</p> <p>Note - refer to Mr Stephen Clifforth or onto nearest hospital /emergency service with information on vaccine type.</p> <p>Emulsigen oil in water precise nature is not disclosed, is less irritant but can still cause serious local reactions.</p> <p>Note: Elevation can increase pain intensity from spread of paraffin oil adjuvant due to gravity</p>	<p style="text-align: center;">Recommended Treatment following self-inoculation of Mineral Oil or Paraffin Oil Adjuvant Vaccines</p> <p>Category 1 injury (<i>superficial skin exposure</i>). Wash the contaminated area in warm soapy water. If vaccine material is splashed onto mucosal surfaces (e.g. eyes) there is greater risk and topical corticosteroids should be considered here</p> <p>Category 2 injury (<i>needlestick injuries without injection</i>). Allow the wound to bleed freely and do not squeeze or interfere with the injection site. Clean the wound thoroughly with soap and water, and keep it clean and dry. NB: All mineral oil category 2 injuries are to be treated as if category 3 and reviewed by surgeon. Ensure appropriate tetanus cover; prescribe topical corticosteroids and oral antibiotics to prevent opportunistic infection).</p> <p>Category 3 injury (<i>injection of vaccine material</i>). Acute pain and inflammation is usually immediate, intense and persists for at least 24 hours. Perform early surgery and drainage to remove the oil-based vaccine material before it spreads or elicits a severe granulomatous reaction.</p> <p>Category 4 injury (<i>Needlestick injury that has progressed to necrosis or granulomatous ulceration</i>). Perform surgical debridement to remove any residual vaccine material. Skin grafting may ultimately be required.</p>

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Livestock Injection Product	Operator Exposure Risk	Recommended Treatment & First Aid Guidelines
<p>Vegetable Oil Based Adjuvants</p> <ul style="list-style-type: none"> • Arrachis (peanut) cotton seed & sesame oil <p>Injectable Drenches</p> <ul style="list-style-type: none"> • Dectomax 70% sesame oil <p>Hormones</p> <ul style="list-style-type: none"> • Testosterone e.g. Ropel, Tepro and Testoprop • Progesterone oestradiol (Crestar) <p>Antibiotics</p> <ul style="list-style-type: none"> • Moxylan • Excenel 	<p>Moderately irritant</p> <p>Accidental self-injection of these can cause local reactions depending on amount and location. Note: tendon sheaths more irritant</p> <p>Dectomax post injection slaughter study in cattle by Pfizer claim low tissue irritant. Industry experience shows vegetable oil adjuvants are much less reactive in animals than mineral oil or Paraffin oil adjuvant vaccine</p> <p>NZ farmer Excenel NSI case required extensive debridement and skin grafts see Ref</p>	<p>If possible the application of gentle squeezing pressure with absorbent material (e.g. facial tissue) at the injection site will swab up unabsorbed material. Strong squeezing of the site should be avoided. The damaged area should be thoroughly cleansed and a topical antiseptic applied.</p> <p>Treat symptomatically (e.g. ensure appropriate tetanus cover; prescribe topical corticosteroids and oral antibiotics to prevent opportunistic infection).</p> <p>Less likely to need surgical flushing or debridement but NZ case indicates need to review this</p> <p>Medical grade “arachis” oil (peanut oil) too refined to cause peanut allergy</p>
<p>Specific adjuvant not disclosed</p> <p>Vaccine:</p> <p>1. Singvac 1 & 3 non-mineral double oil emulsified base?</p> <p>Drench</p> <p>2. Cydectin LA “Water miscible non-aqueous solution”.</p>	<p>Moderately irritant</p> <p>Unable to get more detail as to precise nature of these. Anecdotally Singvac causes intense reactions</p> <p>Cydectin LA has caused at least one intense NSI reaction that required surgery to flush and remove oil</p>	<p>Consider surgical flushing if acute pain and inflammation within 24 hours</p>
<p>Eweguard, Weaner Guard...</p>	<p>Low irritant. Adjuvant not specified and manufacturer only disclose confidentially to a Dr treating a case</p>	<p>Manufacturers claim similar risk to water based and Aluminium adjuvant vaccine see below *</p>

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Pestiguard, Eryvac, Ultravac. <i>Botulinium water based Aluminium adjuvant vaccines</i>	Very low irritant. Risk of infection as with all livestock injections due to reuse of needles and working in a relatively dirty environment	As per normal needlestick infection
Solvent: Glycol solvent injections E.g. Paramectin injection drench	Less likely to be irritant Injected - Effects vary in severity according to the quantity e.g. localised site reaction (pain, redness, and swelling) to a more acute systemic reaction Skin - Poisonous if absorbed through skin. May irritate the skin	Symptomatic treatment as unlikely to need surgical flushing and debridement Advice to Doctor Poisoning by may cause neurological symptoms. Treat symptomatically. Require large dose~ 50 x dose safety margin
Water based & aluminium adjuvant vaccines Sheep 5 in 1 & 6 in 1 vaccine e.g. Glanvac, Ultravac, Tasvax Cattle 5 in 1 and 7 in 1 vaccines e.g. Cattle vax Ultravax Adjuvant not specified	Low irritant <ul style="list-style-type: none"> • Relatively low irritant adjuvant, main risk is opportunistic infection from needle contamination • Some risk of hypersensitivity from injection. Contains safety tested inactivated bacterial toxins • Many contain ~0.05% formalin Category 2 carcinogen – but insufficient quantity to be risk 	Symptomatic treatment as most unlikely to need surgical flushing and debridement unless infection introduced at time of injection

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Livestock Injection Product	Operator Exposure Risk	Recommended Treatment & First Aid Guidelines
<p>Potentially Toxic: Hormones Oxytocin e.g. Syntocin</p>	<p>Self-Injection can induce premature labour</p>	<p>Not to be used by pregnant women</p>
<p>Prostaglandins (PG) Cloprostenol, e.g. Estramil, Juramate Dinoprost E.g. Lutalyse</p>	<p>If self-injected or comes into contact with skin Causes abortion in pregnant women. May cause bronchospasm in humans. May cause peritonitis if have a pyometral condition with a stenosed cervix.</p>	<p>If possible the application of gentle squeezing pressure with absorbent material (e.g. facial tissue) at the injection site will swab up unabsorbed material. Strong squeezing of the site should be avoided. The damaged area should be thoroughly cleansed and a topical antiseptic applied. Seek immediate medical attention if self-inject</p>
<p>Ovastim sheep vaccine</p>	<p>Accidental self-injection may affect fertility in both women and men, and pregnancy. A mild transient swelling may occur at the injection site</p>	<p>As above</p>
<p>Bopriva cattle vaccine</p>	<p>As Above do not use if of child bearing age or have had NSI with this product</p>	<p>As above</p>
<p>Oestradiol /progesterone e.g. "Crestar" injection® (intervet)</p>	<p>Wide number of potential side effects and contradictions in people particularly those with depression</p>	<p>As above</p>

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Livestock Injection Product	Operator Exposure Risk	Recommended Treatment & First Aid Guidelines
<p>Antibiotics with specific toxicity</p> <p>Micotil Tilmicosin</p>	<p>Injection of Micotil 300 in humans has been associated with fatalities and cardiac arrest</p> <p>Caution Statement: Tilmicosin phosphate is classified as a severe allergen because repeated unprotected exposures are likely to cause allergic reactions. Effects of exposure may include changes in heart rate/rhythm and heart tissue changes.</p>	<p>In case of human injection, consult a doctor immediately and apply ice or cold pack to injection site while avoiding direct contact with the skin. Minimise movement and do not massage injection site.</p> <p>Contact Poisons Information Centre on 13 1126.</p> <p>NOTE TO DOCTOR: The cardiovascular system is the target of toxicity and should be monitored closely.</p> <p>Cardiovascular toxicity may be due to calcium channel blockade. IV calcium reverses symptoms Epinephrine contraindicated</p>
<p>Most animal medications including antibiotics (eg penicillins and oxytetracyclines) and anthelmintics (worm treatment)</p>	<p>Possible allergic reaction. Whilst risk is highest if self-injected severe allergic dermatitis has been reported following skin exposure of minute traces. Risk of sensitisation with contact over time.</p>	<p>Persons with hypersensitivity or anaphylactic reaction must receive immediate medical attention.</p>
<p>Live vaccine infectious to humans</p> <p>Scabby guard</p>	<p>Infectious to humans</p> <p>Skin Irritation and very slow healing wound with crusty scab (Orf)</p>	<p>Rinse area and apply disinfection procedures. Do not use brush or use abrasive material to wash as can cause skin trauma and assist virus entry</p>

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Livestock Injection Product	Operator Exposure Risk	Recommended Treatment & First Aid Guidelines
<p>Vax safe</p> <p>Newcastle Disease vaccine for poultry</p> <p>Note Websters ND vaccine has no such warnings</p>	<p>Eye: Following direct exposure, individuals allergic to the milk-derived buffer may experience immediate irritation and inflammation.</p> <p>Newcastle disease virus infection in the operator can also occur from eye contact or inhalation of the vaccine but is rare and usually mild, causing moderate conjunctivitis with flu like symptoms developing up to 72 hours later.</p> <p>Skin: No evidence risk for humans</p>	<p>Not available for general use. Requires Chief Veterinary Officer permit to use</p>

For more information - National Centre for Farmer Health Phone: 61 3 5551 8533 www.farmerhealth.org.au

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Even for products assessed as being a low risk, if pain and swelling or other clinical signs develop after exposure to animal health products or any agricultural or veterinary chemical;

- seek immediate medical advice
- call the 1800 number on the product packaging and speak to the manufacturer
- Access the relevant MSDS (material safety data sheet) and it is safest to go direct to product manufacturer as most other websites including MIMS can be out of date (Note MSDS vary in quality)
- Contact Poisons Information Centre on 13 1126 and ask for medical information for practitioners

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Adverse experiences must be reported to APVMA.

To report an unintended effect from the use of registered agricultural or veterinary chemicals

CONTACT

Australian Pesticides and Veterinary Medicines Authority AVMPA.

Free call: 1800 700 583 (within Australia) - charges apply for calls made from mobile phones

Fax: +61 2 6210 4776

Email: aerp@apvma.gov.au

Report Online <https://apvma.gov.au/sites/default/files/images/311-adverse-experience-reporting-form.pdf>

All animal health companies with products registered with the APVMA have a legislated requirement to report human exposure to their products to the APVMA but they can only do this, if notified of incidents.

The following surgeons have had surgical experience with Category 2, 3 and/or 4 Needlestick Injuries involving Gudair and Vibrovax

Mr. Stephen Clifforth
Glenelg Surgical Clinic
Hamilton Vic
(03) 5572 5233

Dr Gary Kode:
Plastic and Reconstructive Surgeon,
Launceston
(03) 6334 9313

Dr Stephen Salerno, Plastic
and Reconstructive Surgeon,
Essendon, Victoria.
T: (03) 9337 0032 (office)
or (03) 9076 2000 (The Alfred
Hospital, Melbourne)

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References

1. Original version from NCFH - National Opening the Gates on Farmer Health Conference Oct 2010
2. Richardson, G Links, I, & Windsor, P (2005) Gudair (OJD) vaccine self-inoculation: a case for early debridement Med J Aust; 183 (3): 151-152.
3. Alfredson, M, Heath, T (2009). Fingertip And Distal Phalanx Necrosis after Self-Inoculation with the Johne's disease Vaccine: A Case Report and Review of the Literature. The Internet Journal of Hand Surgery 3 (1)
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7. Lunz, R., S. Brumby, S. Clifforth and Y. Yoshimitsu (2019) "Minor farm injuries: How to treat." Australian Doctor, 15-22.