

A quick jab

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Clostridial Diseases - sheep

5 (6) in 1

- *Cl novyi* - black disease
- *Cl chauvoei*) black leg
- *Cl septicum*) malignant oedema
swelled head
- deep necrotic lesions
- gas
- septicaemia
- rapid death
- Black disease occurs only in
liver fluke areas.

2 (3) in 1

- *Cl tetani* - tetanus
- *Cl perfringens* –
enterotoxaemia(PK)
FSE

+

- neurotoxins
- convulsions
- rapid death

In WA, only use 5 in 1 products in valuable sheep eg: rams

Clostridial vaccination

- Tetanus
 - Minor disease on most farms.
 - High spore load in soil where horses co-exist
 - Use of rubber rings provides deep necrotic wound as entry point for *Cl. tetani*
 - 2 doses for lifetime immunity
- Pulpy kidney(enterotoxaemia)
 - A production disease – rapidly growing unprotected young sheep
 - Spring flush
 - Feedlotting
 - A common clostridial disease in WA, organism lives normally in sheep's gut.

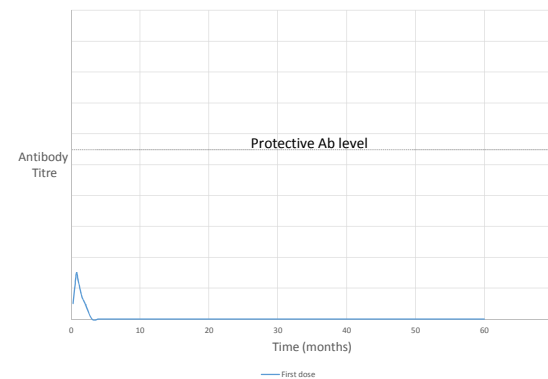
Enterotoxaemia

- Sudden death on exposure to high feed intake
- No or inadequate vaccination history
- PM: all non specific signs
 - Pin point haemorrhages – heart wall, muscles, intestines, kidney (hence PK), brain
 - Rapid carcass decay
 - Excess pericardial fluid
- Diagnose with histo on brains and mouse epsilon toxin test
- Field diagnosis is response to vaccination ie: do the deaths stop?

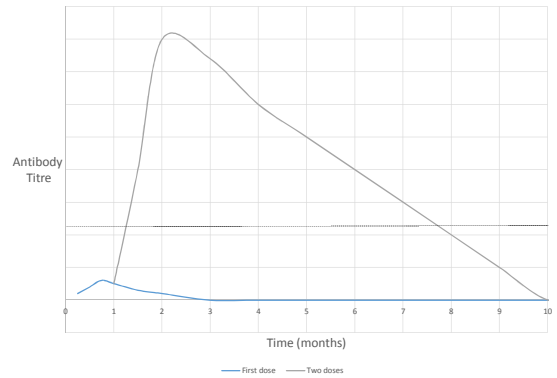
Prevention of Enterotoxaemia

- Induce a temporary growth check
 - Muster and mark the lambs
 - Stress of marking(with or without mulesing) will stop lamb deaths temporarily
 - Give 3 in 1 at the same time.
- Vaccination
 - Ewes prelambling protects lambs via colostrum for 8-10 weeks
 - Lambs 2 doses 4-6 weeks apart
 - How many and how often?

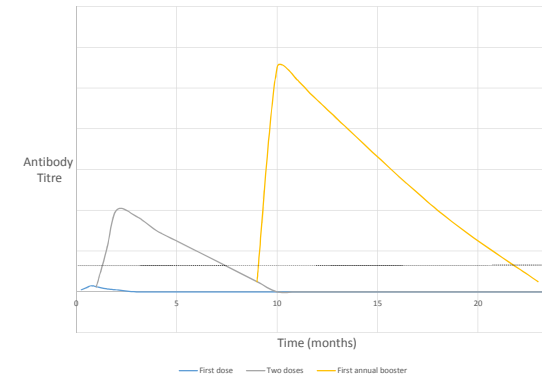
How many doses of PK vaccine - one?



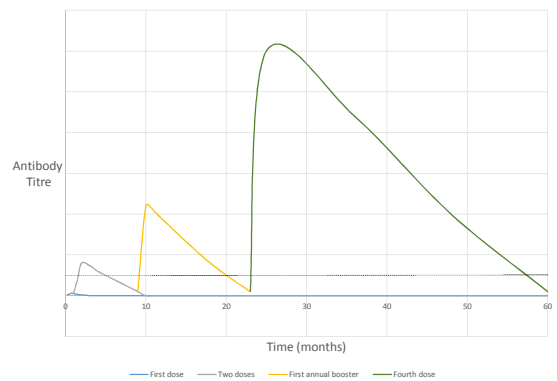
How many doses of PK vaccine - two?



How many doses of PK vaccine - three?



How many doses of PK vaccine?



A note on Cheesey Gland

- A production disease:
 - Reduced wool production (4-7%) in year of infection (generally yr 1 or 2).
 - Carcass wastage
- Spread at shearing by coughing up bacteria onto skin cuts of other sheep.
- 2 doses required to initiate immunity then annual booster prior to shearing.

3 in 1 vaccination program – a suggestion

- 2 doses as lambs 4-6 weeks apart **(MANDATORY)**
 - Gets immunity started and is the basis for effective boosters thereafter
- Booster dose in second season
 - Upon entry to feedlot **(MANDATORY)**
 - Prior to hogget shearing or prior to spring flush, whichever occurs first.
- Booster prelambling as maiden 2yr ewe.
 - Provides protection via colostrum to lamb up to marking
 - This booster lasts several years for enterotoxaemia, and CLA risk period has largely past(?).
- Prelambing booster to 6yo ewes being carried past 4 lambings.

Observe the packs of vaccine



Selenium deficiency

- Occurs over the whole sheep belt in WA, worse in higher rainfall areas
- May not be present on wheatbelt farms → BLOOD TEST
- Causes: white muscle disease and sudden death in weaners
ewe infertility(delayed return to service)
- Easy to diagnose – blood tests for glutathione peroxidase and PM;
though need to rule out Vitamin E in summer/autumn
- Biggest losses due to selenium is production → subclinical deficiency will
reduce weight gain by 2-3kg over summer and 200g clean wool in merino
weaners.

Selenium in drench

- Inclusion rate is equivalent to 0.1mg/kg(therapeutic dose rate)
- Sufficient to last the sheep only 6-8 weeks.
- Cost: peanuts
- Value: similar, read the label claims “As an aid in control...”

Selenium in vaccine

- Inclusion rate is equivalent to 0.1mg/kg in a 10kg sheep. Lower in weaners and adult sheep.
- Selenium is efficiently absorbed and stored in the liver, then utilised as the body requires it.
- This dose lasts 6-8 weeks
- Inadequate when used alone or with drenches to prevent subclinical deficiency over long term.
- Cost: \$0.028/dose for Selenium component in Glanvac 3S

Selenium Bullets

- Work well for 18months-2years (main deficiency risk period)
- Require grinder or cobalt bullet in calcareous areas
- Occasional losses
- Cost \$0.51/pellet = \$0.25/year

Selovin(Deposel)

- Long acting barium selenate as subcutaneous injection
- 1mg/kg
- Weaners 0.5mL on marking cradle
- Adults 1mL
- 0.5mL good for 2 years at least
- Cost \$0.095/weaner per year

Selenised Fertiliser

- Plants accumulate Selenium
- Highly effective means of delivering selenium to whole flock
- 3kg of 1% Selenium chip/tonne costs \$10.
- Suitable for 450mm rainfall
- @ 100kg application rate
 - = \$1/ha
 - = \$0.10/DSE per year if running 10DSE/ha.
- Tips:
 - Add it to your cropping fertiliser blend → Se in stubbles and supplementary feed
 - Test need for Selenium if in wheatbelt

Cobalt Deficiency

- Cobalt is part of haemoglobin, the complex molecule in red blood cells which transports oxygen around the body.
- Anaemia and poor growth
- Lush springs – rapidly growing pastures have poor cobalt uptake
- Sandy soils (west and south coasts)
- Prevention:
 - B12 in vaccine \$0.19/dose for 6-8 weeks control
 - B12 plus selenium injection \$0.09/dose
 - Cobalt bullet – only in severe deficiency districts

Arthritis

- Inflammation of joints(one or many)
- Very common at a low prevalence(<1%). Occasionally cases of 10% plus
- Most of the causative bugs are naturally in sheep's environment
- Arthritis has many causes – a number of species of bacteria and a chlamydia
- Distinguish from Selenium deficiency, scabby mouth, acidosis, rickets etc.
- Eryvac only covers *Erysipelothrix rhusiopathaei* which accounts for about 20% or more of cases.

Arthritis risk factors

- Environmental conditions –
 - Low lying swampy ground inhabited by water fowl
 - High organic matter soils
 - Favour high survival of arthritis bugs
- Husbandry causing open wounds –
 - Marking
 - Mulesing
 - Shearing
- Hygiene during husbandry procedures

Arthritis – what approach?

- **Concentrate initially on finding out the cause(diagnosis):**
 - Observe and record when infections are occurring ie: premarking, post marking, post weaning, post shearing.
 - Serial autopsies of new infections.
 - Modify or clean up husbandry issues
 - Vaccination trial targeting the greatest period of risk
 - ie: decide on vaccination of the ewe(premarking protection) or vaccination of the lamb at marking and weaning(postweaning/mulesing protection)

Arthritis costs and cost effectiveness

- Costs:
 - initial 2 doses = \$1.10/lamb
 - Ewe booster = \$0.55/ewe
- Therefore needs to reduce prevalence by 0.5-1% to recover cost.

Abortion in Sheep

- Many causes
 - Campylobacter spp
 - Toxoplasmosis
 - Chlamydia
 - Listeria
 - and others incl Q fever
- Abortion conclusion may be premature so investigate carefully.
- Needs be low % lambs marked to ewes diagnosed pregnant, where perinatal mortality is not elevated.

Campylobacter abortion

- Only cause for which there is a vaccine
- C Fetus fetus – specific pathogen
- C jejuni – common gut bacterium
- Spread – ingestion
 - Faecal – oral
 - Exposure to aborted material
- Ewes acquire natural immunity over time, biggest losses in an outbreak in young ewes

Campy presentation

- Younger or naïve ewes
- Late term abortion - placentitis
- Still born lambs
- Lambs which fail to thrive
- Sick ewes
- PM signs of aborted materials
- Serology (blood test) during active infection

Campy prevention

- Vaccine \$1.30 per dose
- 2 doses 4-6 weeks apart(2nd prior to main risk period.
- Expose naïve ewes to infected pastures well prior to pregnancy??
- (Antibiotic blanket therapy in face of an outbreak) try to prevent this strategy through vaccination.

Johne's Disease

- A bacterial disease of the gut
- causes progressive emaciation, some may scour.
- Initial signs means sheep been infected for > 2 years.
- Lambs infected preweaning.
- Bacteria spread via water courses, dung spread and feed.
- Bacteria will persist in environment for 2 summers.

OJD vaccination

- In infected flocks best done before first infection(<16weeks of age).
- Effective in halting further establishment of the infection
- Reduces OJD deaths by 90%
- Reduces shedding of the bacteria by about 90% but does not eliminate it.
 - Does not prevent spread of OJD from farm to farm via sheep.
- Can be used in sheep of all ages in the event of a new farm infection. Take care to assess individual mob status first because cost is \$2.25/head.

Reducing the risk of clinical disease

- Reduce the sheep grazing intensity
 - Proportion of farm in crop
 - Cattle
- Active and intensive abattoir monitoring (flock 500 test)
- PFC
- Active observation for skinny older sheep → Post mortem
- Vaccination where disease is known to exist
- Preparation of low risk paddocks – contamination decreases by 90%/month over summer
- Keep flock turnover high
 - Sell ewes at younger age
 - May be sufficient in lower risk areas(lower rainfall, shorter season, lower grazing intensity)
- Open communication with neighbours, regular sheep suppliers

Reducing your risk of getting infected

- Closed flock
- But water, trucks etc???
- Ram source with active and ongoing monitoring program. Promise to maintain information flow on OJD status.
- Ram source vaccinating is less important and could be detrimental to your making an early diagnosis in your flock due to masking of clinical disease at source.

Scabby Mouth

- A pox virus
- Highly host specific, although humans infected rarely(Orf)
- Lives for years in the soil
- Natural infection gives life time immunity
- Infection causes some short term check
- Vaccine is a live and fully potent virus
 - Clinically seems to be highly pathogenic in naive flocks.
- Thanks to the Saudi live sheep market, it is now spread over nearly all sheep farms.



Worm Control – Seasonal Comments

- Wean @ 12-13 weeks old
- First summer drench early those mobs requiring it
 - Hoggets
 - XB lambs, merino lambs
 - Battery of mob FECs
- Further summer drenching using FEC as a guide

Short v Long Acting

Short(Liquid drenches)

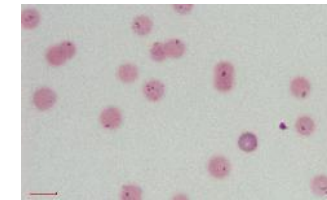
- Cheap
- Higher frequency of redrenching
- Kill all worms present
- Less selection for resistance

Long(Moxi LA, capsules)

- Expensive
- Once off treatment
- Long acting on Black scour worm only(Moxi injection).
- Greater selection for resistance

E ovis

- Protozoal blood parasite
- Causes anaemia, sudden death about 4-6 weeks after initial infection
- Spread by mosquitoes, biting midges, husbandry procedures involving blood contamination
- Often affects best lambs??
- Rarely a major problem
Antibiotic may be effective



Closing Comments

- 4 dose clostridial vaccination program
- Make sure lambs being finished are vaccinated again prior to feeding
- Selenium – consider Selovin or selenised fertiliser for better coverage of the whole flock
- Arthritis – spend time and \$ on a sound diagnosis before commencing vaccination
- Consider Campy where low lamb marked in younger ewes where perinatal mortality not elevated
- OJD – maketh the art of good communication between all players!!