Clostridial diseases

Dr Sandy Adsett
Veterinary Officer

Biosecurity Queensland
Clostridial diseases

- Tetanus (*Clostridium tetani*)
- Blackleg (*Clostridium chauvoe*)
- Black disease (*Clostridium novyi*)
- Malignant oedema (*Clostridium septicum*)
- Pulpy kidney (*Clostridium perfringens*)
- Botulism (*Clostridium botulinum*)
Tetanus (*Cl. tetani*)

- Soil and intestinal tract
- Enters through wounds
- Incubation period 10–14 days
- Production of toxin – affects the nervous system
Horses and lambs most sensitive

Limbs rigid, head bent back

Typical ‘saw-horse’ stance

Contraction of facial muscles – ‘grin’
**Protruding 3rd eyelid**

**Tetanus**
Characteristic rigidity in a recumbent buck.

**Tetanus**
Note the characteristic tail position.
Prevention:

Vaccination

Clean procedures/instruments

Anti-toxin
Blackleg (Cl. chauvoei)

Acute, highly fatal disease

Affects cattle and sheep

Spores in soil and intestinal tract
Sheep:

Result of a wound infection, injury

Cattle:

No history of wounds,
Bruising or excessive exercise
Beef breeds in excellent health, gaining weight
6–24 months old
+/- signs – often cattle found dead.

Acute, severe lameness and marked depression.

Fluid filled tissue (oedematous) with crackling (crepitant) swellings in the hip, shoulder, chest, back, neck, or elsewhere.
Prevention/control:

**Vaccinate**

<table>
<thead>
<tr>
<th>Clostridial diseases and cheesy gland*Ideally this vaccination also needs to be within 6 months of shearing, but not at shearing, especially if cheesy gland is known to be a problem.</th>
<th>Sheep class</th>
<th>Vaccination time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewes</td>
<td>Annually, 2 to 6 weeks pre-lambing.</td>
<td></td>
</tr>
<tr>
<td>Wethers</td>
<td>Young sheep should be vaccinated before going to pasture. Immunity in young sheep is relatively short – boosters every 3-4 months (esp if going onto lush pastures)</td>
<td></td>
</tr>
<tr>
<td>Lambs</td>
<td>First dose at marking, second dose 4 to 6 weeks later or at weaning.</td>
<td></td>
</tr>
<tr>
<td>Introduced sheep</td>
<td>If the sheep have not previously been vaccinated or if the vaccination status is unknown, treat them with 2 doses of vaccine, 4 to 6 weeks apart. If the previous vaccination program is known then it should be continued, adapting the timing to fit in with flock management.</td>
<td></td>
</tr>
</tbody>
</table>

Prevent overcrowding at feeders
Minimise rough handling to decrease bruising
Clean equipment
Blacks disease (*Cl. novyi*)

Acute, highly fatal disease
Pasture contamination by faeces - most important source of infection

Multiplication of organism in liver following liver fluke migration
Rarely see clinical signs
Cattle are often found dead
Most prevalent in well-nourished adult sheep infected with liver flukes

Liver fluke in bile ducts
Prevention/control

Fluke control plan

Vaccination programme

Proper disposal of carcasses (burning).
Malignant oedema (*Cl. septicum*)

Acute, generally fatal

All species and ages affected

Found in soil and intestinal tract

Swollen lymph node
Infection via
Wound contamination
Activation of dormant spores

Risk factors
Traumatic lambing/calving, docking, castration
Toxins secreted by bacteria causes cell death and disrupts cell function.

Causes excess inflammation – leads to oedema and tissue death (gangrene).

Bacteria in fluid filled tissue.
Clinical signs:
Soft swellings - pit on pressure
Muscles dark brown to black
Accumulations of gas in tissue
Extremely painful

Rams:
Infections from fighting.
Prevention/control

Vaccination

Endemic areas: before surgical procedures.
Two doses 2–3 weeks apart
Annual vaccination in high-risk areas
Revaccinate after severe trauma.

Separation of rams where possible
Pulpy kidney (*Cl. perfringens*)

Affects sheep, goats, and cattle.

Most common in rapidly growing lambs.

Pulpy kidney

Necrotic 'cotton-wool' kidney cortex.
Multiplication of normal intestinal
- sudden change to a low-fibre, high-carbohydrate diet

Toxin produced
Prevention/control

Routine vaccination

Outbreak:
vaccinate immediately - booster if previously vaccinated
Change diet – poorer feed/hay

* No change in diet, no vaccination: Mortality rates may be as high as 10% - usually the best sheep die.
• Post mortem
  – fibrin in pericardial sac
  – pulmonary oedema
  – malacia in brain
  – glucosuria (50%)
SUMMARY

Clostridial organisms:
Normal intestinal and soil flora

Become problematic with dietary stress, injury, changes in management, parasitism or other unusual circumstances that set up a favourable growth environment

Result in production of potent toxins.
SUMMARY (CON’T)

Carry a very poor prognosis

First sign of illness may be death.

Treatment success is rare, emphasis is properly placed on preventive measures.

Vaccines can be an efficient way to reduce losses

A single vaccination does not provide adequate levels of protection therefore 2 doses 4 to 6 weeks apart then annual booster dose
THE END