

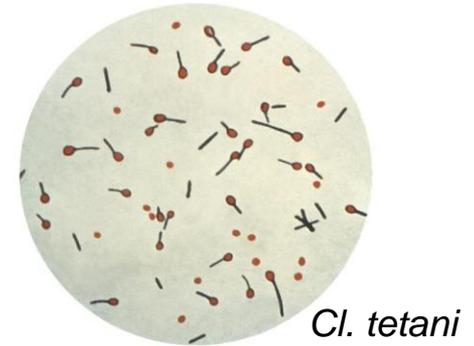
Clostridial diseases

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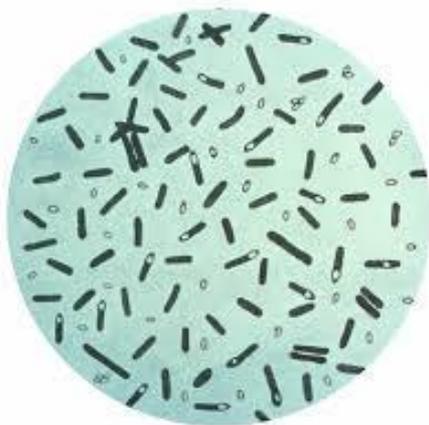
Biosecurity Queensland

Clostridial diseases

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



Cl. tetani



Cl. botulinum



Cl. perfringens

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'



Tetanus

Characteristic rigidity in a recumbent buck.



Protruding 3rd eyelid

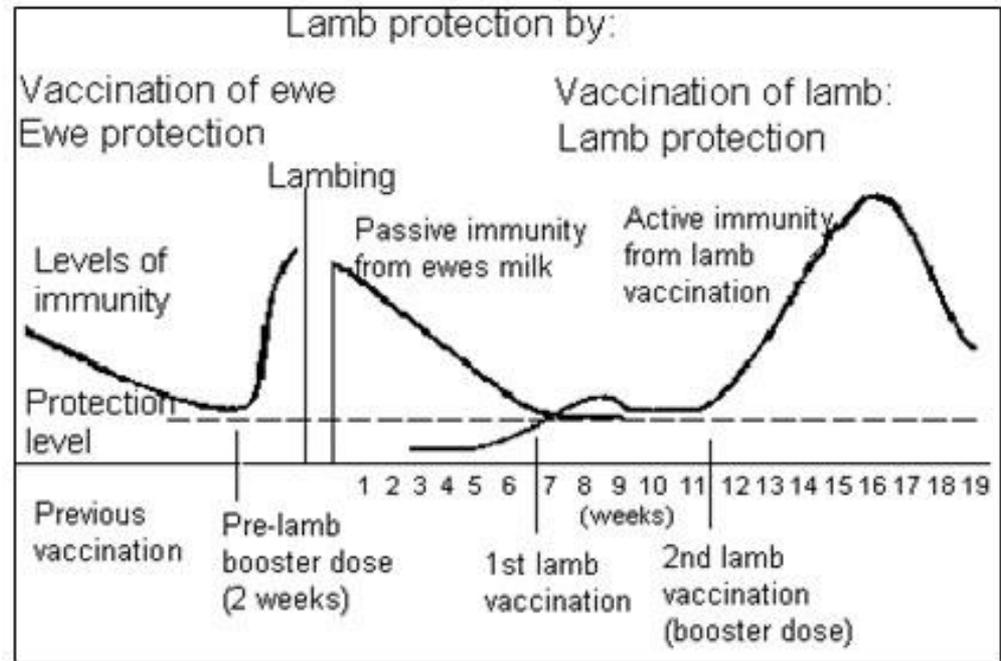


Tetanus

Note the characteristic tail position.

Prevention:

Vaccination



Clean procedures/instruments



Anti-toxin



Blackleg (Cl. chauvoei)

Acute, highly fatal disease

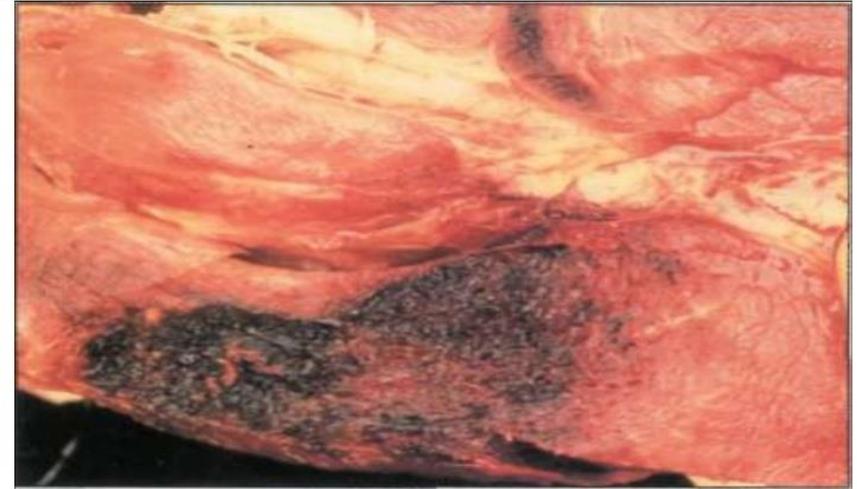
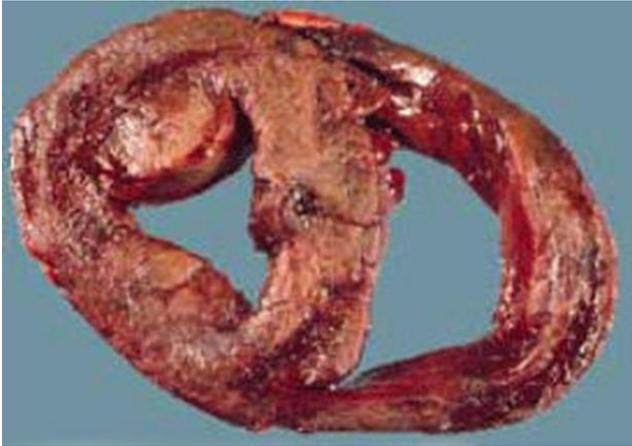
Affects cattle and sheep

Spores in soil and intestinal tract



Sheep:

Result of a wound infection, injury



Blackleg

Note the blackened area of acute muscle necrosis.

Cattle:

No history of wounds,

Bruising or excessive exercise

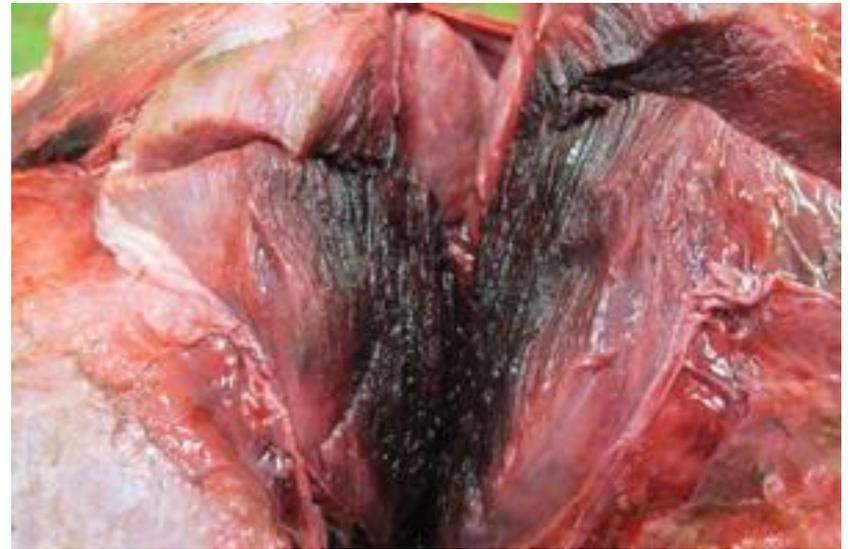
Beef breeds in excellent health, gaining weight

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



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.	Sheep class	Vaccination time
	Ewes	Annually, 2 to 6 weeks pre-lambing.
	Wethers	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)
	Lambs	First dose at marking, second dose 4 to 6 weeks later or at weaning.
	Introduced sheep	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.

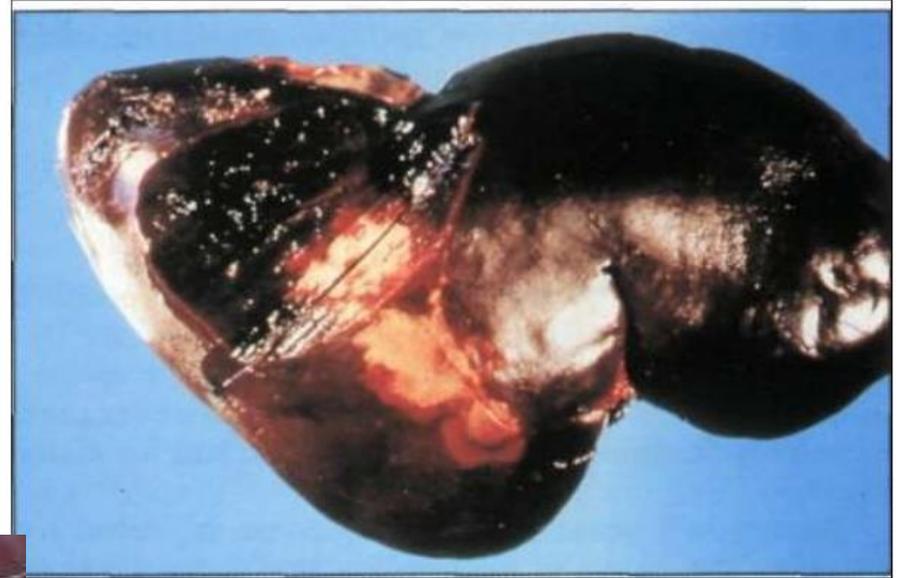
Prevent overcrowding at feeders

Minimise rough handling to decrease bruising

Clean equipment

Blacks disease (*Cl. novyi*)

Acute, highly fatal disease



Black disease.

A focal necrotic lesion in the liver.

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



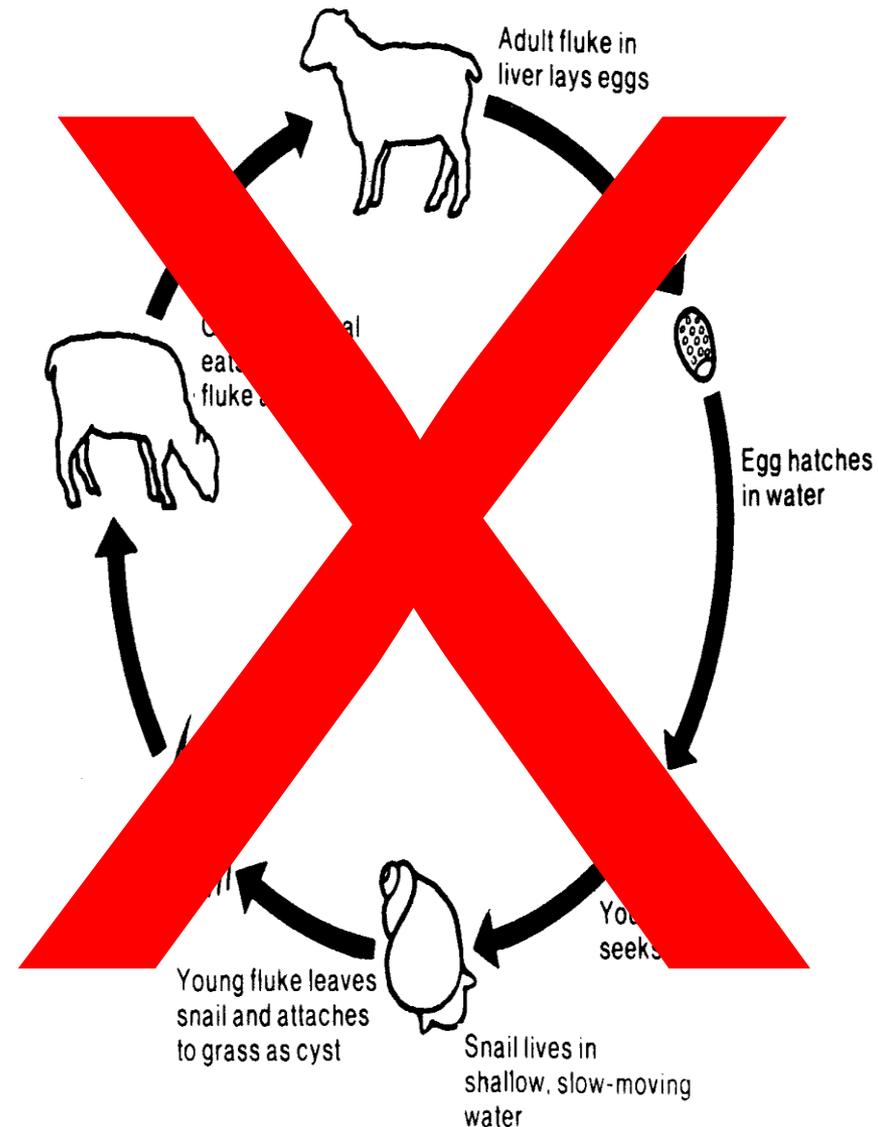
Liver fluke in bile ducts

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



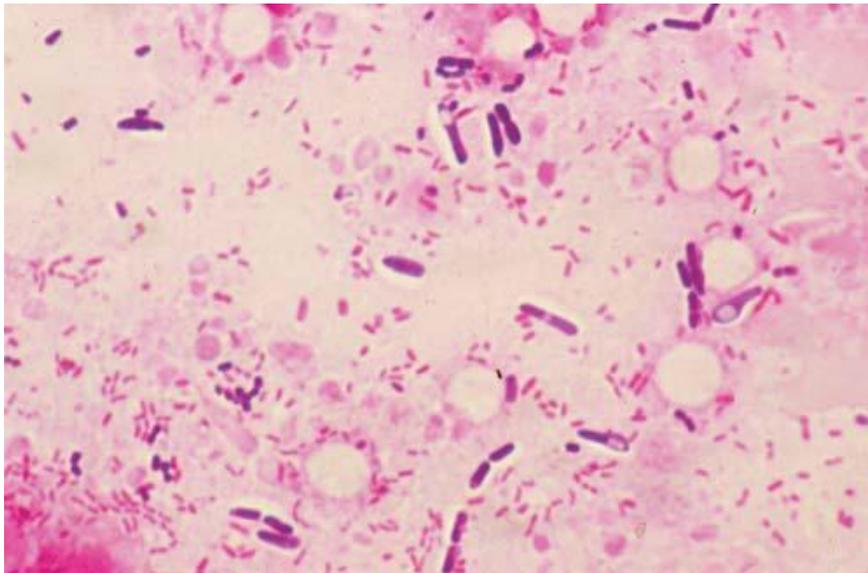
Infection via
Wound contamination
Activation of dormant spores



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

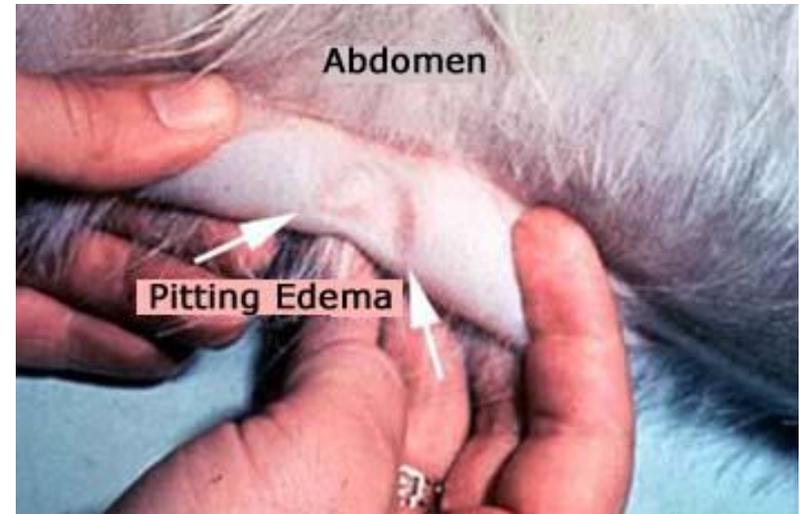
Muscles dark brown to black

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



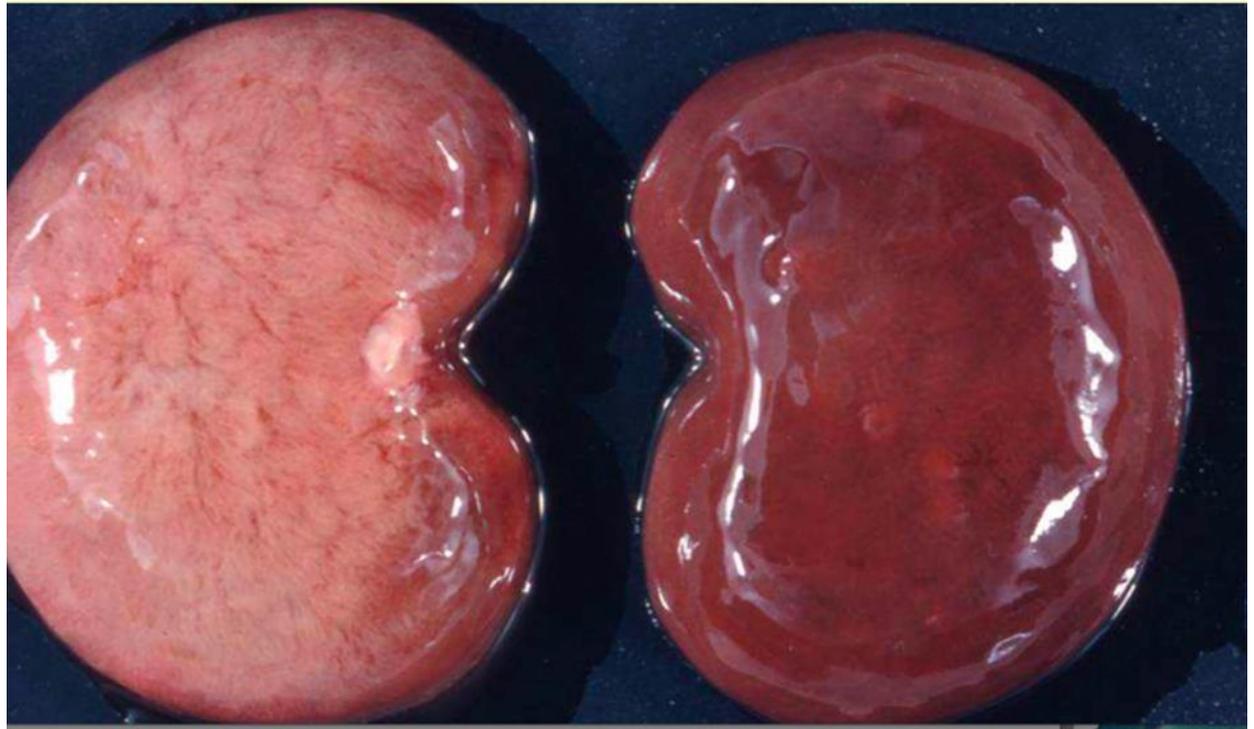
Pulpy kidney

Necrotic 'cotton-wool' kidney cortex.

Multiplication of normal intestinal

- sudden change to a low-fibre, high-carbohydrate diet

Toxin produced



Prevention/control



Routine vaccination

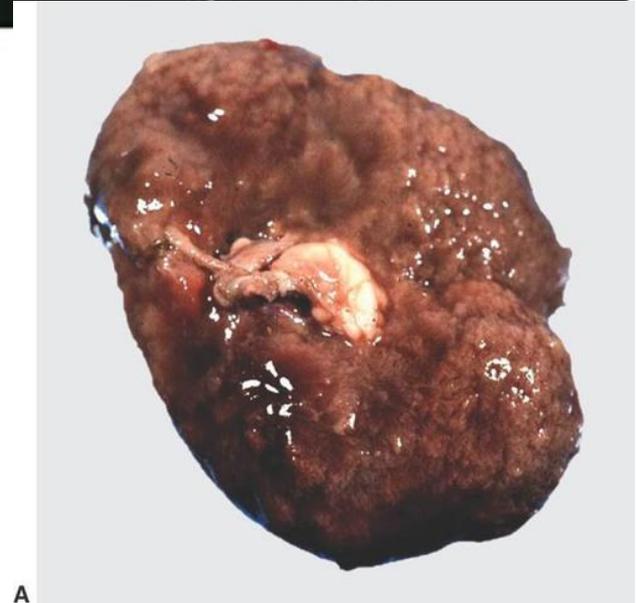
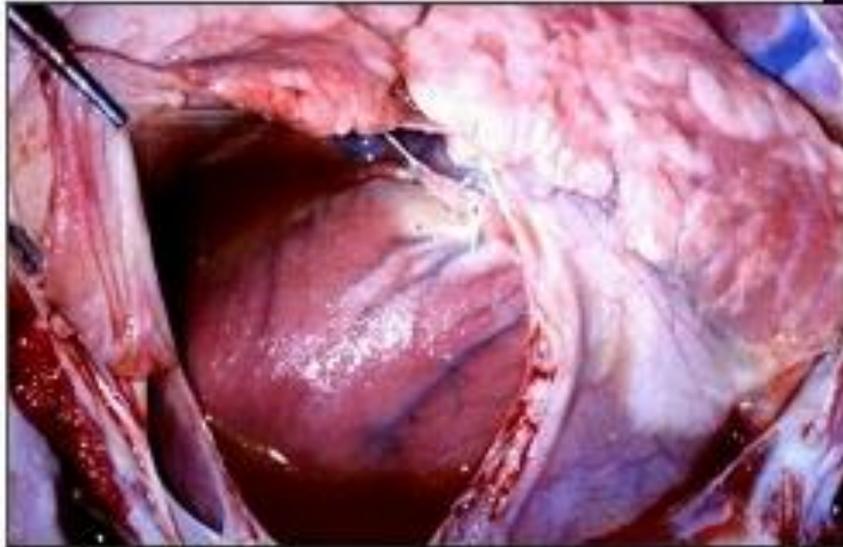
Outbreak:

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%)



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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

