REARING HEALTHY CALVES

Calf scours and vaccination

Coopers Animal Health
CALF SCOURS

• What causes scours/diarrhoea?
• Prevalence study
• Vaccination
• Colostrum
INFECTIOUS DIARRHOEA

Infectious Agents

- Bacteria
- Viruses
- Protozoa

Management

- Failure Passive Transfer
- Overcrowding
- Calving and calf shed
- Hygiene
- Nutrition
- Colostrum quality
- Vaccination status
## Infectious Diarrhoea

<table>
<thead>
<tr>
<th>Viruses</th>
<th>Bacteria</th>
<th>Protozoa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rota</td>
<td>E. coli</td>
<td>Cryptosporidial</td>
</tr>
<tr>
<td>Corona</td>
<td>Salmonella</td>
<td>Coccidial</td>
</tr>
<tr>
<td></td>
<td>C. perfringens</td>
<td></td>
</tr>
</tbody>
</table>

*Image of a cat lying on a wooden surface with green stools.*
THE NEWBORN CALF

- Born with no antibodies = no protection (IgG doesn’t cross placenta)

- Cow sheds bugs in manure - contaminated environment

- Weather extremes or difficult calving – weak calf, poor sucking behaviour

- Poor quality colostrum – low level of antibodies
  - 40% of calves do not receive enough colostrum antibodies
### Calf Scours Timetable (approximate age in days):

<table>
<thead>
<tr>
<th>Infectious Cause</th>
<th>Calves (days old)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.coli</td>
<td>1-2</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>3-4</td>
</tr>
<tr>
<td>Coronavirus</td>
<td>5-7</td>
</tr>
<tr>
<td>Salmonella</td>
<td>8-9</td>
</tr>
<tr>
<td>Crypto</td>
<td>10+</td>
</tr>
</tbody>
</table>

[Image: INFECTIOUS CAUSES TIMELINE]
ROTAVIRUS and CORONAVIRUS

- Infection from faeces
- Rotavirus often leads to other infections – e.g. Crypto, Salmonella
- Survive in environment for months
- Long term intestinal damage
- Antibiotics ineffective
- Covered by the new vaccine
AxCSS-4 DIAGNOSTIC KIT

- *E. coli* K99, *Crypto*, *Rotavirus*, *Coronavirus*
- Doesn’t detect Salmonella – send sample to lab to rule out
- On-farm test: 10 - 15 minutes
- Fresh sample – no deterioration of the sample in transit
- Kits can be stored and used in temp from 4°C - 37°C
TREATMENT OPTIONS - General

• Fluid therapy - Dehydration (oral/IV fluids) is what kills most scouring calves

• Antibiotics – septicaemia (blood poisoning) – not effective against viruses

• Nursing – shelter, hygiene

Treat cases early and aggressively……..
Largest study performed in Australia:
  • 76 dairies
  • 540 dairy calves sampled
  • 95% samples yielded pathogens

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Positive calves</th>
<th>Positive Dairy Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotavirus</td>
<td>477 (80%)</td>
<td>73 (96%)</td>
</tr>
<tr>
<td><em>Crypto. parvum</em></td>
<td>349 (58.5%)</td>
<td>67 (88%)</td>
</tr>
<tr>
<td><em>Salmonella</em> spp</td>
<td>142 (24%)</td>
<td>37 (49%)</td>
</tr>
<tr>
<td>Coronavirus</td>
<td>129 (22%)</td>
<td>28 (37%)</td>
</tr>
<tr>
<td><em>E. coli</em> K99</td>
<td>104 (17.5%)</td>
<td>42 (55%)</td>
</tr>
</tbody>
</table>

Izzo et al 2011
RESULTS BY PROPERTY

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC</td>
<td>100%</td>
</tr>
<tr>
<td>NSW</td>
<td>90%</td>
</tr>
<tr>
<td>TAS</td>
<td>80%</td>
</tr>
<tr>
<td>WA</td>
<td>70%</td>
</tr>
<tr>
<td>QLD</td>
<td>60%</td>
</tr>
<tr>
<td>SA</td>
<td>50%</td>
</tr>
</tbody>
</table>

- **Rotavirus**
- **C. parvum**
- **Salmonella spp.**
- **Coronavirus**
- **E. coli K99**

Tas: 11 properties
69 samples

Izzo et al 2011
MULTIPLE PATHOGENS - dairy properties

3 or more bugs on 83.5% farms

Izzo et al 2011
## PERSISTENCE IN ENVIRONMENT

<table>
<thead>
<tr>
<th></th>
<th><strong>E. coli</strong></th>
<th><strong>Rotaviruses – Coronavirus</strong></th>
<th><strong>Salmonella</strong></th>
<th><strong>Crypto-Coccidia</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of excretion by sick calves</td>
<td>Clinical + 1 to 2 days</td>
<td>2 to 6 days</td>
<td>10 to 40 days</td>
<td>10 days</td>
</tr>
<tr>
<td>Persistence in the feces</td>
<td>2 to 3 months</td>
<td>5 to 6 months</td>
<td>6 months to 2 years</td>
<td>1 to 2 years</td>
</tr>
<tr>
<td>Bedding</td>
<td>2 to 3 weeks</td>
<td>5 months</td>
<td>4 months</td>
<td>1 to 2 years</td>
</tr>
<tr>
<td>Hard-surfaced area</td>
<td>–</td>
<td>6 to 12 months</td>
<td>–</td>
<td>1 to 2 years</td>
</tr>
</tbody>
</table>
Vaccinate the pregnant cow to protect the calf via colostrum

**ROTAVEC CORONA**  
(rotavirus, coronavirus, *E.coli*)

**BOVILIS S**  
(Salmonella)

**BOVILIS E**  
(*E.coli*)
SCOURS MANAGEMENT

Immune support

Colostrum

Hygiene

Scours Management
“Vaccination should be considered as part of an overall management program, not as a replacement for good management”
# Coopers® Bovilis® Rotavec Corona

**Calf Scours Vaccine**

## Pathogen | Strains covered
---|---
Rotavirus | Type G6 and G10
Coronavirus | Types 1 and 3
E.coli | K99 (F5)
Clostridium perfringens | Types C and D
Rotavec Corona Vaccine Schedule

Unvaccinated cows and heifers

- 2mL subcutaneously at each vaccination
- Initial vaccination 10-12 weeks before expected calving
- Booster vaccination 4-6 weeks after initial vaccination (ie 4-6 weeks before calving).

Annual Booster

- 4-6 weeks prior to calving

Pack Size: 100mL (50 dose), 20mL (10 dose)
Colostrogenesis

Vaccination around the start of colostrogenesis boosts specific anti-rota, corona, *E. coli* and *Cl. perfringens* antibodies.

Booster 4-6 wks prior to calving
SCOURS MANAGEMENT

- Colostrum
  - Quality (Antibody Content)
  - Quantity
  - Timing (Quickly)
Antibody levels in colostrum

- Antibodies have already declined by 50% at 12 hours after calving
- Milk cow within 12 hours of calving
- Feed young calves first milking colostrum
- Feed calf within 12 hours of birth

Image courtesy of Dairy Australia
Colostrum: Quickly

Time to first feeding:
• Absorption highest at between 0 - 4 hours after birth
• Decreases to zero by 24-36 hours after birth
  – Immunoglobulins can then only act locally in gut

Timing of subsequent feedings
• Allow time for digestion (4-6 hrs)
Colostrum: Quality

High quality colostrum > 50g/L
(22% Brix on your refractometer)

Low quality colostrum: 30g/L

Various factors affect quality
- Age
- Volume at first milking
- Pooling
- Delayed milking
- Short dry period
- Mastitis/high ICCC
Colostrum: Quantity

- Guide: 10% of bodyweight within 12 hours of birth then follow up with a similar volume in the next 12 hours

- 40kg calf:
  - Feed 4 litres in first 12 hours and repeat with the same volume in next 12 hours

- Feeding of large volumes in a single feed may contribute to scours in some calves
  - Space feeds by a couple of hours (max 2L at each feed)

Higher quality colostrum – less volume required
Colostrum management – Key points

• Feed calves right quantity of good quality colostrum as quickly as possible after birth

• Harvest colostrum as soon as possible after a cow has calved

• Test colostrum before feeding it - if poor quality, discard or feed to older calves

• Feed calves as soon as you can – remember a calf’s intestine can only absorb antibodies for a short time after birth

• Collect colostrum using clean equipment and refrigerate or freeze
SCOURS MANAGEMENT

- **Hygiene**
  - Minimise pathogen contact
  - Control pathogen shedding
  - Minimise colostrum contamination

- Reducing exposure of calves to infectious agents – stocking rates, shed ventilation and hygiene, pen rotation, disinfection etc
A BREAKTHROUGH VACCINE

96% of dairy farms tested positive to rotavirus infection¹

A rotavirus vaccine delivers the single biggest ‘breakthrough’ in scours management

Most farms scours infections occur from more than one pathogen.

A Multi-pathogen vaccine offers preventative tool missing in scours management

QUESTIONS?