
AUGUST 2019 DAIRY NEWSLETTER

Calf Immunology 2019

We hope this newsletter finds everyone on your farm, two legged as well as four legged, in good health. Below are some bullet points regarding calf immunology and why we recommend certain vaccines at certain times. This topic is timely as it fits nicely with the article you received in July regarding scours and colostrum management. As fall approaches, with it comes an increase incidence risk of pneumonia. Please give it a read through and please discuss with your herd vet at our next visit.

Neonatal Immunology

- All food animals are immune competent at birth.
- Fetal calf will respond to infections: viruses at 90-120 days and bacteria >180 days gestation
- Usually consider 150 days of gestation breakpoint for immune competence
- The normal calf is born without antibodies
- Colostrum supplies the calf with all its antibodies
- Newborn calf's immune system will respond to viral antigens < 1 week of age
- Newborn calf's immune system will respond to bacterial antigens > 3 weeks of age

Maternal Antibodies

- Antibodies produced by the dam 2-5 weeks before calving
- Transferred to the calf via the colostrum
- Pass through pores in the intestinal wall and absorbed into the calf's blood stream in the first 24 hours
- Maternal Antibody Interference
 - Small amount of vaccine antigen (vs. natural infection) is quickly neutralized by the maternal antibodies
 - Vaccine virus does not infect calf cells -> no replication -> no immune response
- Vaccinating Calves <4 weeks of age: diseases to consider...
 - E. coli
 - Rotavirus
 - Coronavirus
 - Clostridia

The most effective and practical way to vaccinate this age of calf is through the colostrum.

Intranasal (IN) Vaccines

Advantages:

- Faster protection vs vaccines given IM or SC
- Production of mucosal antibodies
- Neutralization of viruses, bacteria, toxins and enzymes by lumping pathogens together for elimination
- Not affected by maternal interference
- Stimulated mucosal cells can be found all over the body...therefore they travel through lymph nodes
 - ➔ IM or SC vaccines will booster IN vaccines

Disadvantages

- Immunity not as long lived as IM or SC vaccines
- Vaccine must use adjuvant or if not modified live
- Hard to measure immune response

Farm Questionnaire

- ? Are you currently vaccinating your calves
- ? At what ages are the calves being vaccinated
- ? What product(s) are you using
- ? Are the cows vaccinated with a scour vaccine

Farm census:

- ? # of milk fed calves
- ? # of weaned to 6 months
- ? # of 6-12 months

What age of calf are you most likely to treat for scours?

What age of calf are you most likely to treat for pneumonia?

What do the farm (CQM) records say about incidence of scours? Of pneumonia?



In the last 12 months, your farm has spent \$_____on medicines developed for the treatment of scours.

In the last 12 months, your farm has spent \$_____on antibiotics developed for the treatment of pneumonia.

Should your farm be adding...

- Scour vaccine?
- Intranasal vaccines?
- Calf coats?
- Ventilation?

Again, if you have any questions or things to discuss please do so at our next visit. Hope everyone has a safe and bountiful corn silage season.