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Salmonellosis in Cattle

GENERAL INFORMATION AND SYMPTOMS

Salmonellosis is a bacterial disease with a rising prevalence in the cattle industry. It is most common in dairy calves one to ten weeks of age, but can also be seen in adult dairy cows and beef cattle. Salmonellosis has a serious economic impact on the cattle industry worldwide. Livestock mortality, treatment costs, abortion, reduced production, discarded milk and reduced consumer confidence all contribute to the cost of salmonella to cattle industries.

Fecal contamination of feed and water from shedding cattle to naïve cattle is the most common source and route of infection. Contaminated milk, contaminated processed feeds, and improperly cleaned calf-feeding equipment can also serve as sources of infection. Ravens, opossums, pigeons, rats and mice can also serve as carriers or vectors.

The top two most common isolates from cattle at the National Veterinary Services Laboratories are:

1) *Salmonella typhimurium* and 2) *Salmonella dublin*. Once ingested, salmonellae colonize and multiply in the intestine resulting in acute infection. Typical clinical signs of acute salmonella enteritis include fever and severe watery diarrhea with subsequent rapid onset of dehydration. The diarrhea is usually putrid and may contain blood and mucus. Salmonellae produce toxins that can contribute to gut damage and have systemic effects. If sufficient damage occurs to the intestinal lining, the bacteria may enter the bloodstream, resulting in septicemia, and the bacteria can spread to the brain, lungs, joints, uterus (causing abortion in pregnant cows) and other organs.

Cattle can be chronically infected and serve as carriers within the herd without exhibiting clinical signs. It has been reported that one carrier cow can shed one billion salmonellae a day in the feces.

Salmonellosis is also a significant public health concern. Humans and other animals can become infected from consumption of contaminated drinking water, raw dairy and milk products, and undercooked meat products.

TREATMENT

Successful treatment by your Veterinarian for bacteremia caused by *Salmonella* includes:

1. Fluids and electrolytes,
2. Antimicrobial drugs and
3. Non-steroidal anti-inflammatory drugs.

The use of antibiotics for salmonella enteritis without septicemia (bacteremia) is controversial. The population of normal intestinal bacterial microflora may be altered as well as the possible development of antibiotic resistance by salmonella organisms.

CONTROL AND PREVENTION

Prevention should involve two avenues, the first being decreasing the chances of exposure to the organism and the second being increasing resistance in cattle.

Critical control points to decrease exposure risks in dairy cattle are:

- Have herd serotested and cull carrier cows.
- Quarantine and serotest replacement stock.
- Isolate sick cows. Use only antimicrobials approved by your veterinarian.
- Avoid wet areas, provide dry loafing areas, clean and disinfect calf pens and maternity area between calves.
- Use clean flush water. Use only water from milking parlor.
- Check feed commodities for salmonella. Store and handle feed properly.
- Control infected rodents and birds.



- Do not allow rendering trucks access to feed or animal areas. Do not use front-end loaders for manure or to haul dead animals and then haul feed with them.
- Avoid prophylactic use of antibiotics.

Increasing resistance in the young calf can be accomplished in two ways. One method is to vaccinate pregnant cows in late gestation with a salmonella bacterin. The pregnant cow will respond by producing increased antibodies to salmonella that will be passed on to the calf through the colostrum. Salmonella bacterins are also helpful in building immunity when salmonellosis is a problem in adult beef and dairy cows. Some less common and exotic salmonella serotypes may not respond to vaccination with the *Salmonella dublin – typhimurium* bacterin and may require an autogenous bacterin to be made specifically for your herd. The second method to increase resistance is to supplement the antibodies by administering an antibody solution containing additional antibodies to salmonella. BOVI-SERA contains antibodies to Salmonella and will supplement the protection the calf received when it consumed colostrum from the cow early in life. BOVI-SERA can also be given later in life when the calves' own immune system isn't fully developed.

It is recommended that producers consult with a veterinarian before instituting a treatment, prevention or control program.

Colorado Serum Company proudly produces SALMONELLA DUBLIN-TYPHIMURIUM BACTERIN and BOVI-SERA to assist producers and veterinarians with Salmonella control and prevention in cattle.

Reference: Bradford P. Smith, DVM, ACVIM; and John K. House, BVMS, ACVIM; University of California, Davis.