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Salmonella dublin: What is it and how do we control it?

David Renaud for Progressive Dairyman

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Salmonella dublin is a multi-drug-resistant bacterial disease that has become an emerging threat in Canada. Historically, it has been found in the U.S. and sporadically in Alberta, but cases of *Salmonella dublin* have been recently found in both Ontario and Quebec.

It has caused outbreaks of disease resulting in high levels of mortality on dairy and veal operations.

Who does *Salmonella dublin* affect and what are the signs to look for?

It will mostly affect youngstock between 2 to 5 months old but can also cause abortions in pregnant females. In young calves, there can be a wide variety of clinical signs, but infected calves typically present with pneumonia that is unresponsive to treatment or septicemia, where calves become sick very quickly and may be found dead.

Salmonella dublin is also a serious threat to human health. The consumption of raw milk from herds infected with *Salmonella dublin* may lead to human disease and is one of the major ways humans are infected.

How does it spread between farms?

Salmonella dublin is typically transmitted herd to herd through carriers but can also be spread by infected calves not yet showing clinical signs. Carriers are typically yearling heifers or mature cows that show no clinical signs of disease but will consistently or intermittently shed the bacteria in their feces and milk.

These animals become a source for spreading this disease between farms but also maintaining the disease once on the farm. It is very difficult to truly identify carriers of *Salmonella dublin*, but there is some evidence to suggest an antibody test done 60 days apart might be required to identify an animal as a non-carrier. Waterfowl and feral cats can also be involved in the transmission and dissemination.

How does it spread within the farm?

Transmission of *Salmonella dublin* within the farm typically occurs via the fecal-oral route, where young calves ingest feces from a carrier shedding the bacteria in their manure. It can also be transmitted if the dam is infected during gestation, through feeding unpasteurized milk and by respiratory secretions.

Treatment of *Salmonella dublin*

As it is a multi-resistant bacterium with more than 75 percent of isolated strains showing resistance to at least one group of antibiotics, it is very difficult to treat. There will often be a very poor response to treatment, resulting in high levels of mortality in affected calves.

Prevention and control of *Salmonella dublin*

The priority with this disease is to prevent its entry onto farms, as once *Salmonella dublin* becomes established, there is a high risk calf health will be compromised for a long period of time.

Effective prevention and control strategies should be focused on reducing exposure and improving immunity, which can be achieved by putting increased emphasis on biosecurity, the calving pen, and calf and heifer management.

1. Biosecurity

Purchasing animals is a major risk factor in the introduction of *Salmonella dublin*. Pre-screening replacement animals with an antibody test prior to purchase is a potential strategy to reduce the risk of introducing a carrier animal to your herd.

However, this may be difficult to practically implement. If animals need to be purchased, choose replacements from herds of known disease status, transport incoming animals directly from farm of origin to minimize commingling and isolate all new arrivals for a minimum of four weeks.

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Besides purchasing animals, visitors such as veterinarians, A.I. technicians and service technicians can be a source of transmission as well. Thus, ensuring proper sanitation protocols are in place for all visitors will provide an additional layer of protection for farms.

2. Calving pen management

The calving area is another critical area to focus on. As carriers may begin to increase shedding at calving, and newborn calves are very susceptible to disease, there is a huge risk for transmission.

Ideally, calves should be removed within two hours of birth while minimizing the number of cows in the calving pen, ensuring bedding is clean and avoiding the use of the calving pen as a sick pen.

Regular cleaning and disinfection of the calving area is another good strategy to minimize exposure, as *Salmonella dublin* is a hardy bacterium that can survive up to three years in the environment.

3. Calf and heifer management

Calves less than 3 months old are most susceptible to infection, and preventative strategies in this area will reduce disease due to *Salmonella dublin*.

Good colostrum management (avoiding colostrum pooling and bacterial contamination), not feeding waste milk to calves, minimizing contact with older animals and maintaining a clean environment are some examples of management practices to reduce transmission of this disease.

The reports of *Salmonella dublin* occurring in eastern Canada emphasize the need for improved vigilance by farms to prevent its entry. Absolute prohibition of entry of this disease onto the farm through implementation of strict biosecurity measures should be the target.

Work with your veterinarian to develop farm-specific preventative measures to minimize *Salmonella dublin*'s impact on herd profitability and welfare. 🌱

PHOTO: The calving area is a critical spot to manage in order to minimize the spread of *Salmonella dublin*, a deadly disease becoming more prominent in eastern Canada. *Staff photo.*



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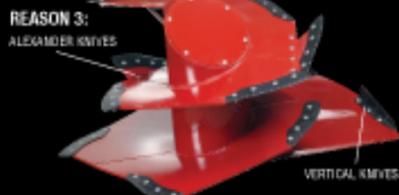
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