

Salmonella Dublin

Salmonella Dublin is an emerging multidrug-resistant bacterium (there are few antibiotics available that can kill it) that can cause a wide variety of symptoms in infected cattle.



What's the Impact?

S. Dublin is an emerging disease of concern for the Canadian cattle industries. An infection of *Salmonella* Dublin can have many different symptoms and commonly affects calves that are 1 week of age to 1 month of age. Common symptoms include sudden onset of pneumonia that is not responsive to treatment, sudden spikes in death rate, and septicemia. No matter the symptom, it is often the case that a high number of calves die when the bacteria is first introduced to the farm.

Salmonella Dublin is also a serious threat to human health. It can infect people and cause illness and death especially in those with compromised immune systems. The main sources of contamination for humans is through consumption of raw milk or unpasteurized cheese, contaminated beef products, or direct contact with feces from infected animals¹.

What Does it Cost You?

Unlike many of the other pathogens highlighted above, the cost of having a herd infected with *Salmonella* Dublin is not well known. On some farms in an initial outbreak, as many as 50% of calves can die or have to be euthanized as a result of *Salmonella* Dublin. Ongoing mortality after an initial outbreak will also be higher, with Danish farms infected with *Salmonella* Dublin having a higher risk of calf mortality compared to negative herds. After initial infection, positive herds also had reduced milk production from 7 to 15 months after herd infection in this Danish study².

In addition, some of the surviving animals may become carriers of this pathogen, especially if infected between 1 year of age and calving or at the time of calving³. These carriers then serve as a source of *Salmonella* Dublin which is shed in manure and milk leading to new infections of young calves.



Danish researchers estimated that *Salmonella* Dublin infection would cost \$77 per lactating cow (or \$7,100 on the average Canadian dairy farm (assuming 100 milking cows) in the first year of infection. In subsequent years, it was estimated to cost \$13 per lactation cow, per year, or \$1,200 per year on the average Canadian dairy farm (assuming 100 milking cows)². All costs listed in Canadian dollars.

Biosecurity Between Farms

As most farms in Canada do not have *Salmonella* Dublin on their farms, it is imperative to prevent the entry of this bacteria. Practicing excellent biosecurity is extremely important. The most significant biosecurity practice is to eliminate or reduce the purchase of infected cattle. Infected "carrier" cattle are the main risk to a herd that doesn't have *Salmonella* Dublin. These carriers are animals that likely got infected and shed the bacteria in their feces and milk but do not show any other symptoms of illness. Cattle should not be bought to prevent the entry of this pathogen, or cows should only be bought from farms that are known not to have *Salmonella* Dublin.

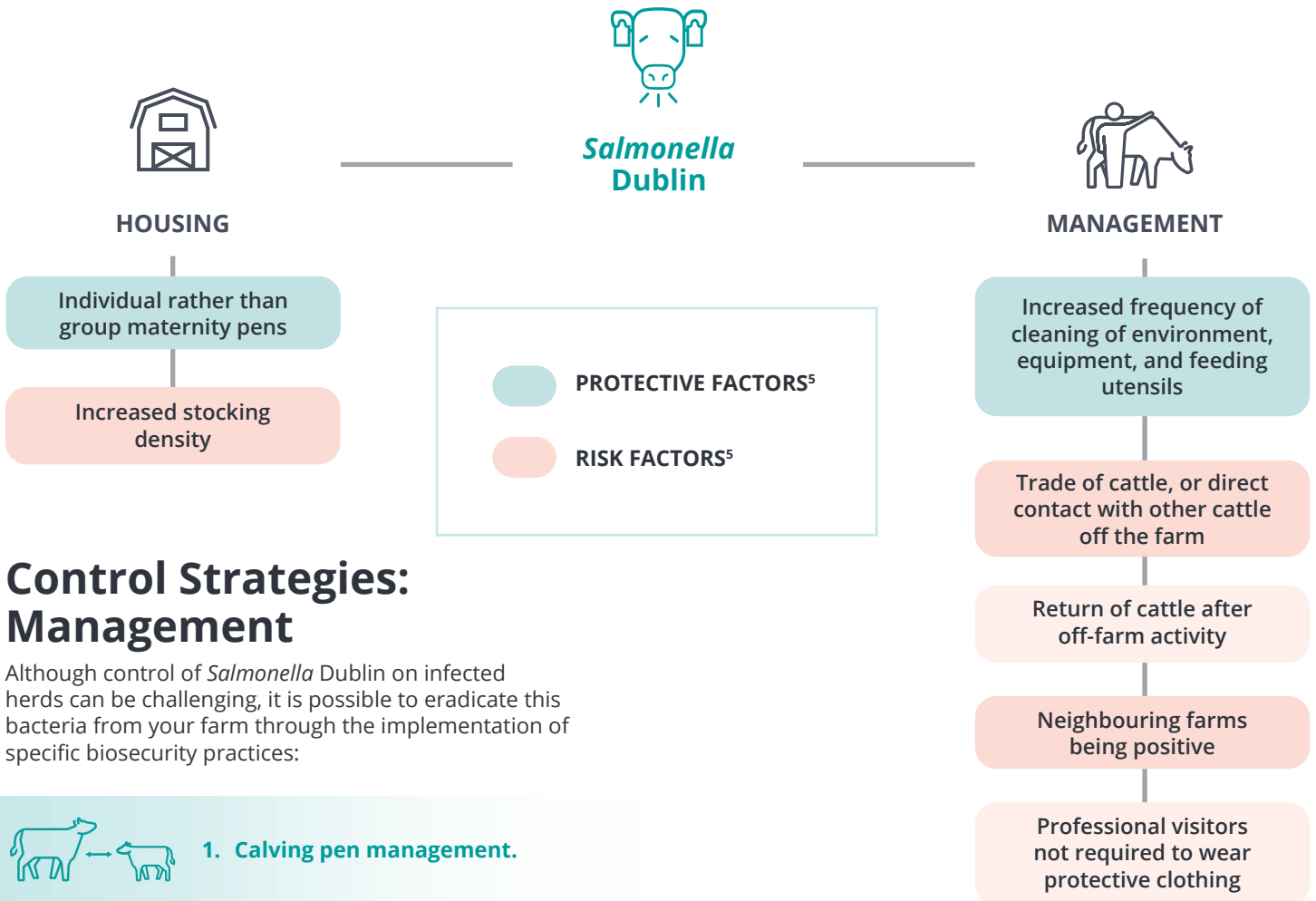
Other biosecurity considerations include ensuring that visitors to the farm wear clean coveralls and boots that are not contaminated with feces, as manure can act as a reservoir for *Salmonella* Dublin⁴.



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Biosecurity Within Farms

There have been many specific risk factors (factors that are associated with a higher level of *Salmonella* Dublin) and protective factors (factors associated with a lower level of *Salmonella* Dublin) that have been identified:



Control Strategies: Management

Although control of *Salmonella* Dublin on infected herds can be challenging, it is possible to eradicate this bacteria from your farm through the implementation of specific biosecurity practices:

1. Calving pen management.

This is one of the most important areas to address as carrier animals will shed *Salmonella* Dublin in the greatest numbers around calving. Ideally, the calf should be removed from positive cows as soon as possible to prevent the calf from being contaminated with their feces. Minimizing the number of other cows in the calving pen will also reduce the burden of the bacteria in the pen. Ensuring that ample bedding is present to cover manure, disinfecting regularly, and avoiding the use of the calving pen as a sick pen are measures that can reduce spread⁶

2. Youngstock management.

Ensuring that adult cow feces does not come into contact with youngstock is another important principle in preventing the transmission of this bacteria. Ensuring that when managing calves, clothing, and boots are free of manure as well as equipment and feeding utensils is essential. Avoiding feeding waste milk to calves is another consideration as feeding waste milk has been identified as a risk factor

3. Avoid purchase or introduction of infected animals.

Testing measures for *Salmonella* Dublin are not well developed, hence, preventing the purchase of animals can help prevent introduction of carriers

What About Testing and Culling Carriers?

The culling of carrier animals may not be necessary to achieve control if proper biosecurity measures are in place on the farm. This is mainly due to the difficulty involved in identifying carrier cows. Work with your veterinarian to create strategies to control this disease on your farm.

Take Home Messages

Salmonella Dublin can be an extremely costly disease and have a significant impact on the welfare of your dairy herd. As many herds in Canada are not currently infected, a focus should be placed on reducing the purchase of potentially infected carrier animals.



If *Salmonella* Dublin is present on your farm, establishing excellent biosecurity protocols with the help of your veterinarian, especially in the calving pen and in the rearing of youngstock will help to control this bacteria.

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