

Eradicating *Salmonella* Dublin How to eliminate S. Dublin from your herd

Jay Olyniuk operates a research dairy herd for the veterinary school in Saskatoon, Saskatchewan. They currently milk 110 cows using a variety of different systems including a parlour, robotic milkers, and a tie-stall. He houses his calves in a separate calf barn where they are individually housed until weaning. Jay always maintained a closed herd and had not purchased any animals in many years, however, despite this practice they were still hit with *Salmonella* Dublin (S. Dublin).

Finding *Salmonella* Dublin in the herd

In Fall 2017, Jay and his staff started to notice that they were having significant bouts of respiratory disease in their calf barn. Initially, they thought it was a case of a virus going through the barn as calves had classic signs of respiratory disease, including runny nose, coughing, and heavy breathing. But what was very different was the response of the affected calves to treatment. They simply did not respond to multiple courses of different antibiotics. Jay decided the best decision was to phone their veterinarian when they had their first calf die. The veterinarian ended up euthanizing another calf and sent the calves away to a laboratory to complete a post-mortem. From bacterial culture they diagnosed the calves with S. Dublin. Jay said that without doing this post-mortem they never would have known, and it could easily have become a much bigger issue for them.

Focusing on human safety and identifying carriers

Jay said that he felt he was lucky to have a great relationship with his veterinarian. They were also fortunate to be able to work with researchers from the University of Saskatchewan and a S. Dublin expert from the United States. They worked as a team to develop and implement a plan to eradicate S. Dublin from their farm.

The first thing that the advisory team highlighted was the zoonotic potential of this bacteria, meaning it can transfer from cows to cause severe disease in humans. Jay was really worried about the impact on his staff and made sure to highlight the importance of handwashing and hygiene after working with the cows and calves. In addition, the staff was reminded about the transmission that could occur through raw milk.

After discussing the importance of minimizing the risk of transmission to humans, they started their work with the cows. Jay said the first thing they checked was if S. Dublin was present in the milking herd, so they used a blood test on multiple cows in the milking herd. To their surprise, a number of cows came back positive. Jay said at that moment it hit them that the personnel on the farm were likely responsible for moving the bacteria all over the farm through their boots and equipment.

Once they realized it was in the milking herd, they started tracing infected calves back to their dams by completing blood tests. These cows were deemed to be carriers which look completely healthy but were shedding S. Dublin in their milk and manure. These cows were immediately culled from the herd. They then tested the remaining milking cows to determine if there were more carriers. Every cow that was suspect or positive on the blood test was moved into a new group and separated from other animals in the barn to control the spread of S. Dublin. They implemented a strict protocol for this group. They were always milked last, and the staff followed heightened biosecurity protocols, including the use of a footbath and cleaning and disinfecting equipment used with those animals. Over time, they continued to blood test the animals for S. Dublin and cows that were positive on three consecutive tests were culled.

Beyond segregating the milking cows, they also made a number of other biosecurity changes. As S. Dublin can survive for a long period of time in the environment, they removed all the calves from the calf barn to properly clean and disinfect using chlorine dioxide. After the cleaning and disinfection process, they viewed the calf barn as a segregated area where they had separate boots and equipment and only had one point of entry. They also focused on the calving environment as that is often where carrier cows can shed S. Dublin in their manure and infect newborn calves. Specifically, they made sure the calving area was very clean and removed the calf immediately after birth. For visitors, they ensured that they were wearing clean coveralls and boots when entering the farm and kept everyone away from the segregated group unless they needed to work with them.

Another important consideration that Jay and his advisors discussed was making sure that they were not responsible for infecting other farms. They had discussions with everyone buying their calves to make sure they were aware that they had S. Dublin and when they sold youngstock, they made agreements that these animals were to be fed out and culled, not sold again.

Advice for dairy farmers that have *Salmonella* Dublin

Jay said S. Dublin is not the end of your farm, but you need to take action and be diligent. Make sure that you are working closely with your advisors as they have a network of resources that can help to rectify the situation. Jay also mentioned what when you are dealing with this bacterium, nothing happens overnight, which can be really frustrating. The key is to keep at it and stay the course to eliminate S. Dublin.

Advice for those that do not have it

Jay highlighted that with this bacterium, you cannot see visually who is infected, so you need to be diligent with your biosecurity. Not buying in carrier cows is critical as they are often responsible for widespread infections on dairy farms. As Jay never really determined the source of the infection, he said that you need to place a high emphasis on the biosecurity of visitors, making sure they do not have manure on boots or clothing as it can be as simple as that for entry of S. Dublin. Jay also mentioned that when you have problems, complete post-mortems as it will help identify problems early in their course. He believes it is money well spent, as the longer you wait, the worse it gets.

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For more information:

References available upon request.

This fact sheet does not replace medical advice. Producers are encouraged to discuss preventative measures to limit the risk of S. Dublin occurring on their farm with their veterinarian, and work with them to accurately assess and diagnose any sick animals, especially if S. Dublin is suspected. New resources on S. Dublin will be made available for veterinarians to access in the Vet Portal on calfcare.ca.

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