When *Salmonella* Dublin hits
How an Ontario veal farmer managed an outbreak

Chandler Nickele, along with his family, produces veal in southwestern Ontario. He starts calves in several different facilities. Some are housed outside individually in hutches, while others are housed in a mechanically ventilated barn. Calves go to a feedlot at 136 kg (300 lbs.) and are harvested at 340 kg (750 lbs.). When it comes to disease prevention, Chandler has several key strategies, including using all-in, all-out housing in early life to reduce pathogen load, having a specific, tailored vaccine protocol to control respiratory disease, using oral electrolyte protocols early in the course of diarrhea to prevent dehydration, and feeding a high-quality milk replacer. He has had good success with this approach in the past, and that is reflected in the number of calves he has to treat for disease and his lower-than-average mortality rate.

Salmonella Dublin: a new and challenging experience

Before having *Salmonella* Dublin (S. Dublin) diagnosed on his farm, Chandler did not really know much about the disease. He knew it was out there but had mainly heard it was a problem in other provinces, so he was not familiar with how the disease presented in terms of clinical signs and symptoms. He also did not fully appreciate the impact it could have on a veal operation in terms of how quickly it can spread and how many losses could occur in an outbreak.

In his first encounter with S. Dublin, calves that were growing well and in good body condition died suddenly, with no clinical signs around two months after they arrived. He also had calves with severe, chronic respiratory disease. These calves were treated multiple times with antibiotics, but they would not respond to the common treatments that are typically effective. This was a significant red flag for Chandler, and he called in his veterinarian to do some post-mortem evaluations on calves at the height of illness and loss. His veterinarian was not 100 per cent sure what it was, so she took some samples and sent them to the lab. After bacterial cultures were prepared and incubated, a diagnosis of S. Dublin was made. His veterinarian told him that this was a notifiable disease that can cause exactly what Chandler was seeing, high rates of respiratory disease and sudden death with poor response to antibiotics.

Chandler began to realize firsthand the impacts S. Dublin can have. He found his deadstock bill was much higher in subsequent groups of calves, his labour costs went up because staff needed to manage these calves more, and they used a lot more medications to treat sick calves. As this was his first time dealing with it, Chandler had lots of questions, including how to manage those that are infected, and how to prevent it from occurring again. Frustratingly, he found there were not a lot of answers to his questions, and he had to try different strategies to manage the outbreak to get it under control.

Managing *Salmonella* Dublin: human safety and biosecurity

A risk to animal and public health

One of the first things that Chandler was alerted to is that S. Dublin is a zoonotic disease, meaning not only does it affect calves, but it can affect humans as well. He made sure his staff understood that it could cause severe disease and hospitalization in humans and ensured that all staff wore gloves, washed their hands after handling animals, and did not eat food outside of designated areas such as their lunchroom. This is NOT something he wanted finding its way into his team members.

Getting things under control

After he made changes to ensure the safety of his staff, Chandler shifted his focus to the group of calves that S. Dublin had initially infected. His veterinarian explained that this bacterium spreads like many do, through fecal-oral transmission, meaning that uninfected calves need to ingest feces from infected calves to get the disease. So, his first step was to require that different boots and coveralls be worn between barns to ensure each barn was contained; nothing new comes in or out on his staff or their equipment. He also made sure that once the calves in the infected barn left, he would clean and disinfect the barn thoroughly with accelerated hydrogen peroxide to get rid of any fecal material that could be harbouring, and let the barn sit empty for two weeks. He and his vet felt this was ample downtime to ensure that the new group of calves were not at risk of infection. Chandler found this approach was effective for controlling spread, but not without a lot of hard work and extra effort. One big lesson learned has been just how challenging this disease is. It has taken a toll on his animals, his staff, and himself.

A recurring issue

Beyond the initial barn that presented with S. Dublin, Chandler has since found it in several other of his barns. Over time, he has come to feel that it is difficult to keep S. Dublin out of the herd entirely when veal producers are always buying in calves that could be carriers and shedding it in their manure to infect other animals. The risk is always going to be there, especially if the disease is spreading across Ontario farms. So, he treats every group of calves like they have S. Dublin and maintains protocols of using different boots and coveralls for the different barns. He and his staff have become very focused on cleaning and disinfecting the barns to ensure new infections are not arising from within their own facility. They also continue to use down time as a key part of their strategy, allowing each room to sit for one to two weeks before introducing new calves.

Advice for other veal producers

When asked if he had any advice for veal producers that had not had S. Dublin, Chandler said that they need to be prepared to manage an outbreak before one hits. It should be considered a matter of ‘when’ rather than ‘if’. He felt strongly that producers need to have proactive discussions with their advisors on how to contain an outbreak when it happens, and if necessary, to have a way to provide medication to the entire group. He also notes that if you have not had a problem to this point, stick with the sources that you are purchasing calves from, as it is likely they do not have S. Dublin on their farms. It might even be worth having a discussion with those sources to help understand what they are doing to keep it out of their farms. Doing everything you can to prevent introduction in the first place is going to lead to fewer headaches in the long run.

Where do we go from here?

Chandler was frustrated with the lack of understanding about S. Dublin. While he admits he did not know as much about it as he should have, he was amazed at how much we still do not know and how challenging it was to find information, especially on how to improve control strategies. His experience has taught him that these control strategies need to start at the source dairy farms by increasing dairy farmers' understanding and awareness about S. Dublin, as it could have long lasting negative effects in the veal industry. Chandler also said the veal and dairy industry along with the veterinary community need to get ahead of it before it becomes a bigger problem. Taking a proactive approach as an individual producer, and as an industry, is the best path forward.

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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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