



Adopting new practices

Using individual calving pens to help cows during calving may help decrease spread of Johne's infection in your milking herd

Ontario's on-farm Johne's program has primarily focussed on management changes at calving to prevent infection spread to newborn calves. Close examination of farms using the Johne's risk assessment and management plan has led to specific recommendations to help producers. However, the effect of these changes is not always known. For example, if a producer makes a change to one management aspect, what percentage of Johne's cases could be prevented by the change?

It would be ideal if 100 per cent of cases could be prevented. However, we know this is not economically achievable. The goal is to achieve the highest prevention rate at the most reasonable cost. Great strides have been made in on-farm Johne's prevention programs, but like many good things, the more you learn, the more questions you have.

Recent research has revealed cer-



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tain management practices are associated with Johne's reduction. However, not many studies have quantified the impact of specific Johne's prevention strategies in a farm setting. For instance, using individual calving pens (ICPs) as opposed to group calving pens (GCPs) may benefit cow health during calving.

The early hours of a calf's life is the most critical time to prevent new Johne's infections. Johne's disease is caused by *Mycobacterium avium subspecies paratuberculosis* or MAP.

Newborn calves are more likely to be exposed to disease-causing bacteria, viruses or parasites in crowded calving areas, especially during certain times of the year. Management problems and sub-optimal calving facilities also increase your calves' chance of developing diarrhea caused by other bacteria and viruses in early life, and later, Johne's disease.

Keeping only one cow in a calving pen, instead of having cows calving in groups, has been frequently recommended as a good management prac-



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tice to prevent Johne's. A calf born in a pen is less likely to have contact with manure from a larger, transient group of cows. This practice has been widely accepted.

However, calving cows in a close-up, dry-cow pen may be easier and less labour intensive for moving and feeding cows, and cleaning pens. Some producers believe it is more natural for cows to calve in groups.

A recently published long-term study compared the Johne's infection rate between cows born in ICPs with those born in GCPs in three Johne's-positive U.S. herds. The herds had four, eight and 14 per cent of their cows test positive on a Johne's ELISA when the study began.

The ICPs on each of the study farms were created within the existing GCPs. A solid barrier was erected to prevent cow-to-cow contact and manure transfer between the ICPs. Both pen types had their own feed and water source. To keep the ICPs clean, soiling was removed after each calving and new straw added.

Each farm cleaned their GCPs according to their own routine. The GCPs were either cleaned once a month, every six months or only once a year.

Cows from each of the three herds calved in either an ICP or a GCP throughout 2005, the year the study took place. The cows were tested for MAP shedding by fecal culture at calving. In 2007, their calves were also tested for Johne's using fecal culture and serum ELISA when they entered the milking herd. This testing was also done for two to four years after their birth, in 2009 and 2010.

After following the calves into adulthood and testing them for Johne's, the researchers found 14 per cent of the cows born in the GCP were ELISA positive compared with only 10 per cent of those born in an ICP. The ICP cow infection rate was reduced by a third.

Using the ICPs did not completely eliminate MAP infection, but it did reduce its prevalence. Some calves born in the ICPs became infected with MAP, although at a lower rate. This

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could have been due to manure in the pens, or after calves left the calving pens and ingested colostrum or milk infected with MAP. Calves may also have come into contact with manure later in life, or been exposed to MAP in alleys, manure storage areas or sick pens.

Calves born in ICPs were also exposed to their mothers. The final cow infection rate was related to the mothers' infection status at the time the calves were born, regardless of whether the calf was born alone or in a group pen. If the calves' mothers were heavy MAP shedders at calving time, their calves were three times more likely to shed MAP when they were tested as cows.

Calving cows in an ICP instead of a GCP protected the calves from exposure to MAP bacteria shed from infected cows. The likelihood the protected calves would become MAP shedders when they grew up was reduced by a third. This reduction means the prevalence of MAP-shedding cows declines with each generation and future calves will be less exposed to MAP at birth making protection easier.

The study provides real evidence ICPs work and could prevent about one third of MAP infections, especially in larger herds with significant Johne's infection rates. Producers

with larger herds who believe ICPs are too much work and take up room may benefit the most from using them. Calving large numbers of cows together over a short time period greatly increases the risk of infecting a larger cohort of calves if a MAP-shedding cow is in the group.

The impact of ICPs on disease spread should be considered by everyone involved in building and designing barns for Ontario's future dairy herds. With good planning, ICPs can be accommodated in any barn design, resulting in easier cow and calf movement, reduced labour, and efficient pen cleaning.

Certain Johne's prevention practices may be counter to industry management and barn design trends. Proving these recommendations work will help increase their adoption. 

Ann Godkin works in the veterinary science and policy unit for the Ontario Ministry of Agriculture and Food in Elora, Ontario. See: Is an individual calving pen better than a group calving pen for preventing transmission of Mycobacterium avium subspecies paratuberculosis in calves? Results from a field trial. Pithua P, LA Espejo, SM Godden and SJ Wells. Research in Veterinary Science (2013). <http://dx.doi.org/10.1016/j.rvsc.2013.03.014>.



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