

# Johne's disease control strategies

*With our current knowledge of the disease, there are control strategies we can put in place on the dairy to help manage the disease and/or prevent it.*

**By Geni Wren**

*Editor's note:  
second in a series*

***When purchasing cattle, it's much more important to look for negative Johne's disease status of the herd of origin than the individual test status of an animal for purchase.***

Johne's can be a difficult disease to get your hands around, especially if you've got a client that may have it in his herd. But before you go through the time and expense of testing a client's herd, sit down with that client and take a look at current management practices that might be instrumental in spreading this disease, as well as others, in the herd. Though this article focuses on control

strategies for dairy herds, an upcoming article in *Bovine Veterinarian* will discuss management strategies for beef herds.

"Control procedures can be implemented without testing, and will be beneficial in limiting some other diseases as well," says Frank Garry, DVM, MS, Colorado State University. "Many of the management strategies for controlling Joh-





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**Scott Wells, DVM, PhD, says a veterinarian must consider historical, economical, regulatory and other factors before setting up a Johne's program with clients.**

ne's disease are worth implementing from a good hygiene point of view, even in those herds free of Johne's."

But testing is still important. "Testing is an extremely important tool for assessing disease status, for monitoring progress, for helping establish goals, for enhancing the removal of affected cows to decrease contamination more than would be accomplished by these management practices alone," adds Garry. "There are important reasons to combine control and testing." Conversely, testing without a plan for control, and without prior consideration of feasibility of control measures, may be counterproductive by raising concern without a plan of attack.

### Good management

Much of animal health relies on old-fashioned good management practices, not necessarily the latest product to come through a needle. Good herd health management works hand in hand

with appropriate vaccination schedules and prudent drug use. So why do good management practices often slip through the cracks?

"Producers and veterinarians fail to appreciate the seriousness of Johne's disease," says Mike Collins, DVM, PhD, University of Wisconsin School of Veterinary Medicine. "This is partly due to the slow rate of information diffusion and the human tendency to hold onto old ideas. Another reason is that the epidemic in herds develops over years and we only perceive changes in disease incidence that happen over the course of months."

"There are certainly management practices that seem unimportant, and thus they are ignored," adds Garry. "Management choices always have to be made, and realistically only the most important ones will receive attention and effort. As long as there is no driving force or conviction of the importance of a given management tactic, it's unlikely to be done."

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## How to start

Scott Wells, DVM, PhD, USDA: APHIS, suggests you contact your state veterinarian concerning regulatory questions, help form a state advisory committee if one is not available and work to change regulations to create a favorable environment for Johne's control and prevention.

Here are factors to consider before starting a control program:

1. **What is the historical information on Johne's disease in the herd?**
  - Is Johne's disease likely to be a problem in this herd?
  - Previous diagnosis in herd.
  - Number of cows culled with clinical signs of Johne's disease in the past two years.
  - Current knowledge level of producer/herd manager about Johne's disease.
2. **Regulatory status of Johne's disease in the state:**
  - There are no current federal regulatory programs in place, but state programs exist in some states, though variable, and are being developed in other states. Check with your state veterinarian.
  - What are the implications of test-positive herd status?
    - Is there a quarantine placed on positive herds?
    - Are positive cows designated for slaughter when they leave the farm?
    - Will I, as a veterinarian, be able to sign future certificates of veterinary inspection for cattle leaving the farm?
    - What are the implications of test-negative herd status?
    - Is there a market for breeding cattle from test-negative herds?
3. **What are the business goals of the producer?**
  - Short-term and long-term goals? (Johne's disease control is usually long-term)
  - Financial constraints placed on producer?
4. **Is there a team of people in place to help the producer with the control strategy?**
  - Does the team include key consultants (veterinarian, nutritionist, breeder, extension agent, banker)?
  - Does this group of people understand Johne's disease or know how to find information on Johne's disease (e.g., herd veterinarian) to help make decisions?
5. **After considering the above issues, the producer, veterinarian and other team members can more effectively choose a Johne's disease control strategy.**



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### Veterinarian's role

As the herd veterinarian, your role is a multifaceted one that includes education of clients about the disease, methods for its avoidance and control on that particular operation, consideration with the producer on what that producer's approach to the disease should be, then setting up a game plan that includes both management and testing for Johne's.

"I believe we can never control this problem without producer education," says Garry. "In the end it will be the producers that control the disease, and they will never be willing or able to do so without education about the problem."

"In infected herds with control programs in place, veterinarians need to work with producers to test herds to see if the observed decline in Johne's disease prevalence matches the predicted decline," says Collins. "If it doesn't, then the vet must search for the reason why, e.g., the producer is not following recommended management practices as religiously as required, or the focus of management is not appropriately targeted."

But it's a waste of time and money to employ control strategies on the dairy if you're going to let Johne's disease walk right through the farm gate. "Producers must follow through by never allowing cattle to be purchased that are *Mycobacterium paratuberculosis*-infected," says Collins. "Why spend time and money controlling or eradicating an infection when you then turn around and buy it back into a herd?"

### Three steps for control

Before you begin a control program, you need to assess the individual operation (see "How to start"). "Most farms require an individually designed program," says Collins. "For example, exposure of heifers to watering holes contaminated with feces from the adult herd may be the number one problem on some dairies, while nonexistent on others. Also, some producers may elect a more aggressive, higher cost but more rapid eradication program while others, strapped for cash, may prefer a slower, less costly program. Breeders, for example, with their higher value animals and strong dependency on cattle sales for income, usually elect a more aggressive control program."

Collins offers these three steps you should take with your client once he/she chooses to pursue control of paratuberculosis:

- 1 Determine the infection rate in the herd.** The number of clinical cases of paratuberculosis that develop in a herd each year is a rough indication of herd infection rate. As-



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suming the clinical cases are infected cows born and raised in the herd (not purchased), for every clinical case of paratuberculosis seen in the past year there are likely to be 5 to 10 cows with sub-clinical *M. paratuberculosis* infection.

When many of the clinical cases are heifers after delivery of their first calf, there is likely something seriously wrong with the way calves are being raised for replacements (e.g., heavy exposure to infective feces, most often in unclean maternity pens or extensive feeding of waste milk from infected cows).

Either a serum antibody test, like ELISA, or fecal culturing could be used to test the entire adult herd (all animals age 2 or older). If 5 percent of a herd tests positive (apparent prevalence), it should be assumed that approximately twice as many cows in the herd, 10 percent, are actually infected (true prevalence). Testing methods will be discussed in the next article in this series.

- 2 Survey the management practices on the farm.** Emphasis should be placed on manure management and contact between calves and the adult herd. Feeding of waste milk to calves is a second, often overlooked practice that can transmit *M. paratuberculosis*. Routine use of diagnostic tests on the herd can help by identifying cows that are more likely to be infected; then, feeding their colostrum and milk to calves can be avoided.

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**3 Outline a paratuberculosis control/eradication program consistent with the economic capabilities of the owner and the findings from steps 1 and 2.** There are many recommendations listed in the literature for paratuberculosis control — too many to be implemented immediately and the herd manager and veterinarian can feel overwhelmed. Generally, on most farms, the largest benefits will be realized from changes in calf-rearing practices, which is frequently one of the farm management areas given least attention.

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**Johne's disease control strategies**

Once you decide to pursue control strategies, you have to look at the feasibility of the strategies you choose, whether it's a labor, economic or logistic consideration. There are certain facts we know about how Johne's disease is transmitted, and because of this, there are management strategies we can employ regarding calves, cows and new arrivals to help prevent, control and/or eliminate the disease. These strategies are also good management practices that can help your client's overall herd health by controlling the spread of other infectious diseases. Garry outlines some of what we know about Johne's and how we can implement basic control strategies around that knowledge.

**Fact:** Johne's disease has a long incubation or 'silent disease' period before development of clinical signs or test positive status.

**Therefore:**

1. When purchasing cattle, it's much more important to look for negative Johne's disease status of the herd of origin than the individual test status of an animal for purchase.
2. Monitoring and control procedures must be repetitive and long term in order to eliminate the 'silent carriers'.
3. In a herd with Johne's disease, all adult animals should be considered potential carriers/shedders when looking at means to reduce spread to calves.
4. Buy as few animals into the herd as possible.

**Fact:** Johne's disease organisms can be shed in extremely high numbers in feces of affected animals before development of clinical signs, and fecal contamination is considered the single most important mode of disease transmission.

**Therefore:**

1. Contact of calves and young stock with feces from the adult herd must be minimized.
2. Things that allow fecal contamination, that can be monitored and managed include:
  - Feeding utensils (buckets, troughs, skid loaders used for manure and feed).
  - Feedstuffs contaminated by feces (example: via skid loaders).
  - Calf contact with adult cows.
  - Time before removal of calves from the maternity pen — calves should be removed as soon as possible after birth, preferably within 6 hours.

**Fact:** Neonates are most susceptible to becoming infected by *M. paratuberculosis*.

**Therefore:**

1. Test and cull test-positive cows at dry-off, before introduction to the maternity pen.
2. Consider the maternity pen contaminated and wash teats and udder before milking colostrum or allowing nursing.
3. Separate calves from dams and the maternity pen environment as soon as possible after birth.
4. House calves away from adult cows.
5. Employ separate personnel for calf care from those handling the cow herd.
6. Manage the calf environment to minimize calf contact with adult cow feces
7. Do not use equipment to handle calf and heifer feed that has had contact with adult cow feces.

**Fact:** Johne's Disease organisms can be shed in colostrum and milk, especially from heavily shedding cows.

**Therefore:**

In a Johne's disease test-positive herd:

1. Do not pool colostrum — use colostrum from the calf's dam.
2. Recently tested negative cows are the best alternative colostrum source.
3. Do not feed waste milk to calves.
4. Preferable feed is milk replacer administered by clean utensils.

**Fact:** Johne's Disease can be transmitted *in utero*, especially from heavily shedding cows.

**Therefore:**

1. Consider calves from test-positive cows to be high risk individuals for later developing the disease, and consider culling recent offspring of test-positive cows.
2. Consider testing cows at dry-off and cull affected cows before calving. ■

*Next: Johne's testing strategies*