Principles of Johne's prevention and control

The Workbooks for Dairy and Beef Veterinarians in Section V provide more detail and a step-by-step to guide to designing appropriate Johne's control programs.

- Preventing Johne's disease is always cheaper and easier than control.
- Principles apply to all farms
- Specifics of Johne's control and prevention plans vary in importance from farm to farm.
- A farm's unique strategy needs to be determined for their circumstances, goals, and resources.
- Prevention and control requires routine long-term attention and will fail if half-hearted.
- Prevention practices for Johne's should become established routine procedures in herds at risk or where Johne's infection is known to be present.

Three Components in Johne's Control Plans	Control Principles
Prevent Introducing Infection into the Herd	Be the *"Buyer Beware"* when introducing animals. Investigate the source, and request a history for health programs and specific diseases. Assess the risk and potential impact of introducing diseases into the herd. Be prepared to isolate and prevent spread in the herd at home. This strategy applies to several important disease risks: Johne's, BVD, *Strep ag, Staph aureus*, and Mycoplasma mastitis, infectious foot diseases, Salmonella, Neospora
Preventive Management	Prevent young susceptible animals**, minimum 12 mos and preferably 24 mos**, from ingesting *M. paratuberculosis* via manure, colostrum, milk, feed, and water. Same applies to older animals, but they are less susceptible (extent unknown) to infection from the same exposure/dose.
Testing Strategies	Identify the most infectious animals – by observation and an appropriate testing scheme. Segregate or cull high-risk animals, or manage them differently to prevent them from contaminating premises and exposing and infecting susceptible animals.

Developing a prevention or control plan

- There is no clear-cut recipe – approaches will vary for different desired outcomes
- Plans must be realistic, effective and have owner and employee support to succeed
- Producers should use teamwork, at a minimum working with their veterinarian and the employees who will carry out the plan
- The time to achieve the goals depends on the prevalence of infection and aggressiveness of the control efforts.
- Experience has taught that a systematic and complete process produces the best plan: customized to the circumstances, goals and existing farm systems and resources.
- Don't over-focus on Johne's disease as a special problem. View Johne's as one more reason to do the basics better and better meet the overall health, performance, and management goals for the herd.

Considerations and tasks in developing a Johne's prevention and control plan

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1. Learn the facts about Johne's disease and the tests, if testing may be part of the plan.

2. Review the farm's short and long term business, performance, and health goals.

3. Review the history of Johne's in the herd (20 years)
- Estimate the risk and level of infection that may be present.
- Estimate current and potential future costs of Johne's to the herd and farm operation.

4. Do a walk-through risk assessment: maternity, calves, youngstock, cows, in that order.
- Identify practices that are a risk for spreading Johne's.
- Rank their importance to control
- Evaluate overall level of satisfaction with the management situation
- Consider options to improve – for Johne's as well as related health and performance
- Consider feasibility and cost
- This becomes the basis for the control plan.

5. Define Johne's control objectives and target a time frame for achieving them
- Objectives can range from preventing introduction, to minimizing escalation of existing infection, to reducing or eliminating infection.
- Time may range from three years to several years.
- Extent of infection, objectives and time determines the aggressiveness and cost of the plan

6. Outline a management plan
- Define the measures you will implement, how, who and in what time frame
- Fix the important and or easy risks first
- Set up multiple hurdles for Johne's: target to reduce every risk to the greatest extent feasible – 85% is a goal.
- Decide how you will monitor implementation and effects
- Choose individuals to be responsible to oversee, implement, and monitor specific efforts.

7. Consider whether to use a testing strategy to help accomplish the goal; design a scheme.

8. Agree on the final plan
- Put it in writing.
- Commit to monitoring, reviewing, and evaluating the plan regularly.
- Modify it as problems arise or as management can be refined. It will need it if you pay attention.

A well thought-out plan that guides consistent effort over time may be the most important factor in controlling Johne's and making the effort into a long run opportunity. The plan can be useful to inform other advisors about goals and practices that have been adopted and provide a structure for further input.

Critical management points (HICP) for Johne's disease control in dairy herds

Critical management points or hazard identification control points (HICP) are aimed at reducing the major risks for spreading Johne's disease. Ten points are offered as a guide and they address the most important risks commonly identified on the farm. The principles can be adapted to beef management systems but the feasibility and emphasis on some critical management points will be different.

The more infected adults there are in the herd, the greater the risks and the more aggressive the effort needed to control them. Critical management points to protect young susceptible animals and those that are most practical or inexpensive to get in place are a high priority to implement first. Since it is not possible to eliminate all risks completely, the goal is to put several controls in place that together break the cycle of exposure and infection in future replacement animals. It is the cumulative effect of managing many risks reasonably well that will have the long term effect of turning infection around as young less-infected animals replace the mature herd. Testing with management and culling of the most infectious animals can enhance the effectiveness of management and hygiene and make control more aggressive.

It is not possible to know how much is precisely enough. Putting multiple hurdles in place, each doing its part to help prevent the Johne's bacteria from spreading it's infection, that is ultimately the most effective. Set a goal to reduce each identified risk by 85% (author's recommendation from experience). Control efforts must be evaluated regularly as to how well they are being carried out, to identify and fix problems, and to improve them further whenever feasible.

Capitalize on Johne's disease

Good management and hygiene of maternity areas, calves and heifers, and clean feed and water are basic for Johne's control but also prevent spread of other bacteria, viruses, and intestinal parasites spread by fecal shedding.

- Johne's prevention will help to minimize calf diseases caused by *E.coli,* Salmonella, BVD, Rota and Corona viruses.
- Clean and clean environments promote the health of periparturient cows.
- Attention to keeping feed, water and facilities clean for growing animals can improve growth and help control coccidia, cryptosporidia and nematodes.

Most farms can capitalize on the decision to control Johne's disease by coordinating efforts and finding several additional reasons to target improvements in management procedures in key areas. Examples include improving maternity management and fresh cow monitoring; improving feed quality, feed delivery, grouping strategies and thus growth in heifer groups.

Refer to Johne's Articles 2 (Dairy) and 3 (Beef) for details

10 Critical Management Points for Johne's Control in Dairy Herds

Reduce Infections by Managing Manure – Assume "All manure is guilty"

1. **Reduce newborns' exposure to *M. paratuberculosis* at calving**
   Goal: Calves should be born in a clean dry area used only for calving.

2. **Provide clean feed for youngstock (preferably to 24 months)**
   Goal: Feed clean feed, uncontaminated with manure from infected shedding animals.

3. **Provide clean water for youngstock (preferably to 24 months)**
   Goal: Supply adequate clean water, uncontaminated with manure from infected shedding animals.
4. **Keep youngstock separate from adults and their manure**
   Goal: Raise youngstock in separate facilities or areas segregated from adults and manure.

Manage Colostrum and Milk

5. **Feed "low-risk" colostrum**
   Goal: From healthy low –risk cows, preferably low risk on recent test(s)

6. **Feed "low-risk" milk**
   Goal: Milk replacer, pasteurized milk, or from healthy low-risk cows, preferably low-risk on recent test (s).

Manage Known Infectious Animals

7. **Identify and quickly "remove clinical and late-stage infected animals from the herd**
   Goal: Watch for, confirm diagnosis, segregate, and cull suspect or high-risk animals early.

8. **Test to manage subclinical infectious animals and monitor herd status**
   Goal: Develop a test strategy and decision plan for high- and low-risk animals based on results; coordinate testing so results are available at critical decision times such as dry off, calving, breeding, turn-out to pasture

9. **Be *"Buyer beware"* when adding animals to the herd**
   Goal: Know the risk in the home herd and investigate the risk in the source for infections that may be introduced i.e. Johne's, BVD, *Strep ag*, *Staph aureus*, Mycoplasma mastitis, infectious foot diseases, Salmonella, Neospora

> ***An ounce of prevention is worth MORE than a pound of cure***
> ***Prevention at home is the best protection***

10. **Producer, Veterinarian and employees develop a Johne's plan**
    Goal: Integrate the plan with the farm's business, performance and health goals
    Keep it feasible with farm resources
    Write it down
    Evaluate and modify the plan as needed to get to your goal