National Johne's Management Plan

Johne's disease is a chronic, debilitating and irreversible disease of ruminants that affects the lining of their intestines, reducing their capacity to absorb both fluid and nutrients. While only a small proportion of cattle will show clinical signs of wasting or scour at any one time, it is likely that a much larger proportion of the herd are infected and only showing very mild (e.g. higher cell counts, reduced milk yields, and increased susceptibility to other diseases) if any, signs of the disease.

Johne's disease is caused by a bacteria known as *Mycobacterium avium* subspecies *paratuberculosis* (commonly known as MAP). The bacteria can be shed in the faeces, colostrum or milk of infected animals, and is able to survive in the environment for a considerable period of time. Johne's disease is, however, most commonly introduced to a herd through purchasing infected replacement stock (including bulls). Importing slurry from other herds which may be infected, including stock from grazing off farm, and swapping colostrum between herds can also pose risk of introducing the disease into a herd.

Animals are usually infected as calves with at least 80% of infections occurring within the first month of life. Infection is mainly caused by ingesting faeces often through contaminated bedding, udders, teats or buckets or from colostrum or milk. Much less commonly the disease can be acquired in the womb or later in life. Youngstock in particular can be infected but may not yet be infectious, and so may be difficult to detect with currently available tests. Many animals will carry the infection harmlessly throughout their lives without being a danger to themselves or to others, but some become infectious, and some become clinically diseased. We can use the tests currently available to detect infectious animals and manage them effectively.

Johne's disease can adversely affect the physical and economic performance of a dairy herd. A recent study of 385 UK Dairy Herds by James Hanks of the University of Reading (2013) showed that Johne's disease test positive cows were 2x more likely to have a cell count > 200,000 cells/ml and were 2x more likely to have milk yields 25% below their adjusted herd average. Johne's disease costs can rise to excess of 1-2p/ litre with higher disease incidences and these costs remain for a number of years until the disease is brought under control. With Johne's disease, the cost of the disease is not just from clinical disease of infected animals. In most herds, the major costs come from increased susceptibility to other conditions and increased forced culling and the retention of cows that should otherwise be culled.

International experience has shown that if a rigorous control program is implemented and applied robustly Johne's disease can be brought under control. In Denmark the Johne's disease test prevalence for herds adopting the national control program has reduced from 10% to 2% over 6 years.

If you have Johne's disease in your herd you are not alone. This National Johne's Management Plan provides a way for the industry to work together to reduce the prevalence of Johne's disease in the national dairy herd. One of the six strategies for Johne's disease control from the National Johne's Management Plan, worked through with your vet as part of your herd health plan, will help you manage the risk of Johne's disease on farm.

National Johne's Management Plan: Six Control Strategies

1. Biosecurity Protect and Monitor

This option is suitable for herds which have completed appropriate screening tests and have no evidence of disease. A robust biosecurity protocol must be established to minimise the risk of bringing the disease in, this must address buying practice, slurry and grazing management. Surveillance testing is required to monitor the herd status and detect incursions of disease. The level of surveillance required will depend on farmer aspiration and the risk of introducing Johne's disease into the herd. For example a farm which buys in multiple animals would require a higher level of surveillance than a truly closed herd.

A herd wishing to pursue accreditation through the Cattle Health Certification Standards (CHeCS) (which may attract a premium when selling stock) would need to undertake whole herd testing as per the scheme requirements. It must be remembered that with minimal surveillance testing it may be possible to miss the arrival of the disease and allow it to gain a foothold within the herd before it is identified, especially if the herd has management strategies which would facilitate spread.

2. Improved Farm Management

This option relies on breaking the cycle of disease transmission from cow to calf through management changes implemented across all cows in the herd. These changes will concentrate on calving, colostrum and milk management. No individual cow testing is undertaken and so all cows must be treated as if they are infected and a risk. The important thing to bear in mind with this strategy is that these changes MUST be implemented across EVERY cow in the herd.

This option is best suited to smaller herds with low risk and low prevalence which are able to commit labour resource to the system. Without excellent compliance this strategy will not work, and as there is no testing, there is no way of monitoring the disease. A level of herd surveillance testing should be considered, at least to establish a starting point and then periodically to be able to assess the effectiveness of the control programme.

3. Improved Farm Management and Strategic Testing

This option uses strategic individual cow testing to identify those cows most at risk of spreading Johne's disease and implementing management changes to break the cycle of transmission for these cows only. This allows the management changes to be targeted at those cows which pose the highest risk whilst allowing normal management of the remainder of the herd. Testing is carried out to identify high risk cows at a time appropriate to reduce the risk of transmission through management changes.

There are three options which are described in more detail below. It should be noted that the more frequent the testing, the more sensitive the results.

4. Improved Farm Management Test and Cull

An addition to the Improved farm management & strategic testing option with immediate culling of test positives rather than retaining and managing them. This option would be suitable for low prevalence herds wanting to quickly remove infected animals. This option would not be suitable for high prevalence herds as it may be uneconomic to pursue and alternative strategies may be more suitable in the first instance.

5. Breed to Terminal Sire

In this strategy, no replacement animals are bred, all cows are served to a terminal beef sire and all offspring are fattened for slaughter. Replacements are sourced from herds with lower levels of Johne's disease. In effect they become a 'flying herd'. This strategy may be suitable for herds with a high risk

and high prevalence with no wish to breed their own replacements or the ability/resource to manage the risks through improved farm management. This is not a way to remove Johne's disease and its effects from a farm.

Cows will still develop Johne's disease and will need to be removed from the herd, hopefully this number will reduce over time as they are replaced with uninfected bought in cows. It must also be remembered that on a farm with very high levels of Johne's disease transmission between adult animals is possible. It may still be prudent to undertake testing to help identify cows for removal. ALL calves produced in this system MUST be slaughtered for beef and NOT enter the suckler herd as breeding animals.

6. Firebreak Vaccination

A vaccination is available for Johne's disease, however its efficacy is limited. In the dairy herd calves will frequently become infected within the first 24 hours of life meaning that they are already infected by the time they are vaccinated. The vaccine does not prevent infection, nor will it prevent an infected cow from shedding the bacteria and infecting others. It does extend the period before an infected cow shows clinical signs thus giving that cow a longer productive period before she succumbs to Johne's disease. Vaccination may be an option for high risk, high prevalence herds as a firebreak to 'buy some time' until another strategy can be adopted. Vaccination should not be undertaken without a clear exit strategy and a good understanding of the implications of vaccination. Once a herd is vaccinated it becomes very difficult to determine whether an animal is infected as the tests cannot differentiate between antibodies from vaccination and infection. This complicates the management of the disease. Vaccination must be undertaken under the advice and supervision of your vet

Be realistic about the timescale and what you can achieve

With Johne's disease, it is vital to build a flexible, feasible, long term strategy with your vet - even when positive steps are fully implemented it can take 4-5 years to see significant progress to Johne's disease control on farm, but the improvements in your herd's general health will be worth the steps you need to take. The animals protected from Johne's disease are those born after plan is in place so lots of animals are already on the farm that have to work their way through the system.

Remember:

- Events over 3 years ago affect Johne's disease outcomes today
- It is important that all staff understand how the disease works and how they can manage it on farm
- A series of targets will help keep a sense of achievement as you progress with managing Johne's disease on your farm

The National Johne's Management Plan 6 strategies for control are there for you and your herd vet to work through to find the approach that's right for your farm. For more information please log on to www.actionjohnesuk.org