



National Johne's Management Plan (NJMP)

Background

1. Johne's disease is a chronic, progressive intestinal disease caused by infection with *Mycobacterium avium* subspecies *paratuberculosis* (MAP).
2. Animals are usually infected as calves with approximately 80% of infections occurring within the first month of life. The calf may be infected while in the womb, by drinking infected colostrum and milk, or by ingesting faeces with the latter being by far the most important. MAP may last for a year in slurry or on pastures. An infected cow can shed billions of MAP bacteria into the environment for years prior to showing any clinical signs of the disease. Generally only 1-5% of infected cows in a herd will show clinical signs of the disease. The rest of the infected animals will appear healthy, highlighting the need for testing. Infection is almost always introduced to a herd by purchasing infected replacement breeding stock including bulls.
3. Johne's disease will cause a severe economic impact on a dairy herd if the disease is allowed to spread within the herd. Johne's disease will cause a reduced yield in affected animals, greater associations with other diseases, such as mastitis and cell count, and increased risk of premature culling. If the prevalence of Johne's rises further consequential losses occur as additional emergency cull rates lead to retention of cows with poorer economic performance and fertility potential.
4. A recent study of 385 UK Dairy Herds by James Hanks of the University of Reading (2013) showed that Johne's 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.
5. International experience has shown that if a rigorous control program is instituted and applied robustly Johne's disease can be brought under control. In Denmark the within herd Johne's test prevalence for herds adopting the national control program has reduced from 10% to 2% over 6 years. Ireland and Holland are also progressing with coordinated national control programmes. The UK needs to ensure that its performance in tackling the disease is comparable to its main international competitors.
6. The National Johne's Management Plan (NJMP) will contribute to 'Leading the Way, the British dairy industry's sustainable growth plan', which was launched in June 2014.

Leading the Way was developed jointly by DairyCo, the NFU and Dairy UK and endorsed by over 40 major industry organisations. Leading the Way sets out twelve principles for industry development. The NJMP will contribute to the delivery of the principles covering constantly improving standards of animal health and welfare, and producing safe and nutritious food that is valued by the consumer.

Objective of the Plan

7. To manage and then reduce the incidence of Johne's disease in dairy cattle and engage 80% of dairy farmers in Great Britain in credible and robust Johne's management activities.

Scope

8. The geographic scope of the plan is Great Britain. Initially it would only focus on dairy cattle. In the long term the plan would be open to co-ordination with the beef sector.

Governance

9. The overall approach to governance is based on inclusiveness, co-operation and voluntary action.

Membership

10. The membership of the plan will be organisations that agree to commit dairy farmers to delivering the requirements of the plan. Relevant organisations could be:
 - Dairy co-ops
 - Dairy processors
 - Supply Groups
 - Producer Organisations
 - Or any other farmer based organisation that can collectively represent dairy farmers

Management

11. The NJMP will be overseen by the Action Group on Johne's (AGJ). Secretariat support for the AGJ will initially be provided by Dairy UK. Depending on the evolution of the plan this will be open to review.

12. The AGJ is open to;

- Members of the NJMP
- Trade bodies drawn from the dairy industry supply chain, defined as:
 - o Dairy farmers
 - o Dairy processors
 - o Related farm supply industries (Vets, Testing Laboratories, etc)

13. Direct management of the plan will be responsibility of a NJMP Steering Group which will consist of:

- Members of the NJMP
- Those organisations providing resources for the implementation of the plan
- Farming unions and representative industry bodies

14. Decision taking will be by consensus.

15. The management structure will be reviewed depending on the development of the plan.

16. The NJMP will endeavour to maintain the engagement of all relevant stakeholders in the development, implementation and evolution of the plan.

17. The plan will be implemented in two phases.

Phase 1: 1st April 2015 – 30th September 2016

18. The objective of phase 1 would be to:

- Educate farmers on the disease and the feasibility of its control
- Obtain the involvement of dairy farmers through determination of their Johne's risk and status and putting in place appropriate individual management strategies
- Create a market dynamic between farms that would underpin industry efforts to tackle the disease
- Ensure consistent, coherent and technically sound advice is available to vets, farmers and farm advisors
- Ensure the veterinary profession is engaged to provide consistent quality advice to farmers
- Encourage understanding and engagement of operators involved in the marketing of dairy cattle
- Build the foundations for a more coherent approach in dealing with Johne's

19. The plan would be formally launched on the 1st April 2015.

20. Organisations that become members of the plan would commit to:

- a. ensuring that their supplying farmers carry out a risk assessment to assess the risks of entry, presence and spread of MAP infection in their herd and determine their Johne's risk and status within one year of the launch of the plan.
- b. ensuring dairy farmers implement one of the six control strategies developed by the Action Group on Johne's in consultation with their vet by 1st October 2016. The six control strategies are detailed in the annex below.

21. Farmers would determine, and when relevant, demonstrate their Johne's status to other parties by whichever method was most appropriate to their business. The plan would

aim to give farmers flexibility and choice in meeting the requirements of the plan.

22. Testing will form a part of the Johne's disease management plan on many farms. Control of this disease is possible using the testing methods currently available as part of a credible management plan. Whilst the limitations of existing tests are fully recognised, the success of national management plans in other countries and of individual farms in the UK demonstrates that tests are sufficiently robust as to enable farmers, in conjunction with their vet, to make appropriate decisions to effectively manage Johne's disease on farm.
23. A key goal in Phase 1 is for farmers to identify those herds at low risk for Johne's disease and provide these farmers with the knowledge and professional support to allow them to increase their confidence over time of being at very low risk of MAP infection and to protect their herds from the on-going risk of introduction of this disease.
24. In Phase 1 the NJMP will aim to provide herds identified as being infected or having a low confidence of freedom from infection with the knowledge and professional support to allow them to control and reduce the prevalence of the disease over time and ultimately to achieve a high confidence that their herd is at low risk of MAP infection.
25. At minimum all dairy farmers associated with members of the plan would be required to put in place an appropriate biosecurity strategy to match the needs and aspirations of the farmer.
26. Organisations becoming members of the plan would also commit to:
 - Contributing resources for the implementation of the plan, particularly a financial contribution to the employment of a service provider to the plan.
 - Providing their associated dairy farmers with an appropriate level of information and support
27. The service provider would be employed as a contractor by Dairy UK. The facilitator would be responsible for further recruitment of organisations to the plan and for the delivery of the action points specified by the plan.
28. The AGJ would create a roadmap for the improvement of risk based trading between dairy farmers to prevent the spread of Johne's by infected cattle. This would include:
 - endorsing appropriate herd certification systems that dairy farmers would be encouraged to use
 - supporting livestock industry plans for access to data to facilitate risk based trading
 - co-ordinating with other industry initiatives that sustain risk based trading such as 'BVD Free'
29. The AGJ would develop criteria for identifying laboratories that would be recommended to undertake Johne's testing on behalf of the industry, maintain a list of such

laboratories and encourage the sharing of aggregate data that would facilitate the realisation of the plan.

30. The BCVA would ensure that the veterinary profession had training to ensure the availability of consistent advice to dairy farmers on Johne's Disease, including implementing biosecurity, consistent with the objectives of the plan.
31. The service provider would ensure that through the scheme website coherent and comprehensive information was available for both the members of the plan and dairy farmers on:
 - a. The structure and progress of the plan
 - b. Methods for tackling the disease
 - c. The commercial advantages of doing so
32. Under the direction of the AGJ the service provider would also develop an appropriate communications programme directed at prospective plan members, farmers, key opinion formers and agricultural press. An NJMP technical manual would be developed and regularly updated as new research evidence becomes available.
33. Plan members would monitor the delivery by dairy farmers of the commitments specified in paragraph 20 by a standardised approach using agreed categorisation, e.g.; plan members would obtain declarations from farmers on the approach used to assess risk and determine the disease status of the farm and the control strategy put in place. Plan members would make aggregate information available for collation by the service provider.
34. The plan would not require farmers to declare their Johne's status to their milk purchaser.
35. Funding for the NJMP would be sought from the Rural Development programmes in England, Wales and Scotland with the objective of ensuring some uniformity in activity across the three countries.

Phase 2: 1st October 2016

36. The NJMP Steering Group will review Phase 1 and consult on objectives for Phase 2 by the end of 2015. In 2015 the NJMP Steering Group will evaluate and refine the various plan components, including data handling, diagnostic and on-farm risk assessment and advisory elements that would be required to support Johne's disease controls.
37. The broad approach in Phase 2 would be to move towards:
 - a more centralised approach to aggregate monitoring of the prevalence of the disease
 - uniform industry standards for sharing information and undertaking action

38. Dairy farmers would review their risk assessments, herd Johne's status and control plans at an appropriate interval using a protocol to be developed by the AGJ. Aggregate information would continue to be passed to the service provider to permit monitoring of progress in improving control of the disease.
39. The service provider would seek to raise membership of the plan to achieve 95% of the dairy supply in Great Britain.
40. Once this target coverage had been achieved a wide ranging industry discussion with all relevant stakeholders would be initiated to determine how the delivery of the plan could be taken forward.
41. Dairy farmers would be encouraged, by an agreed timetable, to undertake trading of cattle through certified systems that centralised information on the status of individual herds.
42. The scope and aspiration of the plan will be reviewed dependent on progress and the performance of the industry relative to its international counterparts.

Annex: Six Control Strategies

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. Also 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.

- ***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.

- **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.

- **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.

- **Breed to Terminal Sire**

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.

- **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.

- **Improved Farm Management and Strategic Testing**

Risk based (quarterly testing)

Suitable for herds of moderate to high prevalence who are not able to dedicate the resources or have the facilities required for IFM on all cows calving. Frequent testing allows the creation of a low risk group (green cows, typically 90% of the herd) which are managed normally and a high risk group (red and amber cows) of cows which are separated at drying off into a dedicated segregation area to prevent contamination of green cows and green cow areas. Test results are also used to inform breeding and culling decisions.

This programme is especially suited to herds which undertake milk recording as the Johne's testing can be carried out on the milk recording samples.

The overall cost of the program may be offset by savings on labour and higher cull prices for cows identified early in the infection cycle.

Single test (Pre Dry off)

This is a less rigorous testing programme, with just a single test performed before drying off. This result is used to segregate test positive cows at drying off into a dedicated area away from the low risk cows.

The single test will not be as sensitive as repeated testing and as such not all infectious animals may be identified allowing some to enter the calving area and spread the disease.

This option may be suitable for block calving herds with low prevalence which can test all of the animals in one session pre dry off. It is more challenging to ensure timely testing in a year round calving herd with cows going dry every month. Adequate resources are needed to ensure cows are sampled at the appropriate time.

Double test (Pre Dry off and Pre Breeding)

This increased testing provides greater sensitivity than the single test and also provides a test result pre breeding to allow breeding decisions to be made.

This option may be suitable for block calving herds with low to medium prevalence.