



FAQ's For BCVA Accredited Johne's Veterinary Advisors

1. My client has never had a clinical case of Johne's disease and does not think they have a problem. Are they correct?

Clinical cases of Johne's disease are the "tip of the iceberg" and their absence **DOES NOT** mean a herd isn't infected. Infection with Johne's disease is commonly associated with production losses and infected animals may be culled prematurely due to other reasons (such as increased SCC and lameness), which the farmer may not link to Johne's disease. Where clinical cases are seen there will be many other sub clinically infected animals in the herd, a proportion of whom are likely to be infectious.

2. How can I establish a herd's Johne's disease status?

A 30 cow screen has a 95% chance of correctly identifying a herd as infected or non-infected. Sampling all animals on farm >2 years old is useful for identifying infected animals in addition to being a confirmatory test. Whilst bulk milk testing is available it is **NOT a suitable method** of determining a herd status as a negative result gives little information about the herd's Johne's disease status. The **MINIMUM** level of testing to establish herd status is a cull cow screen.

3. Are blood tests more accurate than milk?

The same ELISA test is used on blood and milk (cut off values are adjusted to fit each sample). So long as samples are accurately identified the sensitivity and specificity of both tests are the same (40-80% and >99% respectively).

4. Which samples should I take?

Individual milk samples are easy to obtain, especially in herds which milk record and allows for frequent testing; this is the mainstream of monitoring dairy herds. Generally, blood samples are more appropriate for beef herds and can be obtained when animals are handled for other reasons, such as worming or TB testing. Milk sampling is not an option for bulls! Faecal culture and PCR are generally used to diagnose clinical Johne's disease or in attempt to identify MAP shedding.

5. When should I sample cows for control purposes?

Strategic testing allows for informed management decisions by identifying high risk animals and preventing them from spreading disease further. The most suitable time to sample is at drying off which allows positive cows to be managed differently with respect to calving accommodation and colostrum/milk management. Ideally cows should also be tested prior to breeding. This allows decisions such as breeding to beef or perhaps not re breeding to be made (which will depend on the protocols of a particular unit). The more frequently an animal is tested the more confidence we have in the test result. The **MINIMUM** requirement for effective testing for monitoring and control is a single blood or milk ELISA test pre dry off.

6. Does TB testing affect Johne's disease testing?

TB testing interferes with Johne's antibody testing. A **MINIMUM of six weeks** should be left between TB testing and Johne's ELISA tests (antibodies remain raised in blood for longer than milk). It is always worth speaking to the laboratory to ascertain their recommended interval between TB testing and Johne's screening.



7. Where a herd is thought to be free from Johne's disease, what is the biggest risk of introducing disease?

Whilst there are many ways of introducing Johne's onto a farm, **by far the greatest risk is bought in cattle**, whether that be adult cows, breeding bulls or calves. As such purchasing animals should be avoided if possible. The risk of disease introduction increases with both the number of animals introduced and the frequency. For example a herd which purchases one breeding bull every 2 years is at a much lower risk than a farm which purchases 2 replacement heifers every week at a market. Johne's may also be introduced onto a farm via slurry and colostrum/milk from infected farms in addition to other animals such as sheep and wildlife, although these routes pose a significantly lower risk than purchased stock.

8. A client is expanding their herd by purchasing a group of bulling heifers. Should they be tested for Johne's disease?

Generally testing young animals (<2 years old) is of little value as a negative result does not rule out infection and so is not cost effective. Ideally replacements should be sourced from CHCS accredited herds (although accredited dairy herds are not as commonplace as accredited beef herds). A useful assessment of risk is to audit the herd of origins status. A truly closed herd with multiple negative 30 cow screens could be considered low risk. If buying animals from multiple sources of unknown Johne's status it would seem inevitable that Johne's will be brought into the herd eventually. Utilising your knowledge of Johne's disease risks can be usefully applied to review the likely risks of Johne's disease presence on the vendor's herd.

9. Which strategy is most appropriate for my client?

Every farm is unique and as such no one strategy is appropriate to every farm. Clinical judgement is required to choose the most suitable approach for your client. The choice of strategy will be driven by the predicted or actual prevalence as determined by structured risk assessment and testing, and combining this with farmer aspiration and resources.

Strategies such as breeding to terminal and vaccination are low aspiration strategies which may be considered when all other options have been explored and deemed unworkable (unsuitable, unachievable or something similar!).

Strategies such as test and cull and improved farm management suit higher aspiration/ motivated clients with low prevalence of disease/ risk.

Strategies such as 'Improved farm management and strategic testing' are designed to reduce the expected prevalence and risk of disease transmission within the herd and are suited to herds of higher prevalence and aspiration. Often the testing programs simplify the overall control and can lead to greater long term engagement, as results can readily be discussed and tracked over time. The objective is to help engage the farmer and improve the farmer aspiration to taking positive action by adoption of the appropriate strategy, or in some cases moderate an unrealistic aspiration or expectation. Implementing for instance an aggressive test and cull program in a herd with high incidence may not be appropriate unless there are substantive numbers of replacements. It may be appropriate to start with a test and manage approach and then shift over time to test and cull if appropriate.

Control options are driven by Risks, Aspiration & Prevalence



10. When would Biosecurity Protect and Monitor be appropriate?

Biosecurity Protect and Monitor is **only** appropriate for herd with **NO EVIDENCE OF JOHNE'S DISEASE**. A minimum of a targeted 30 cow screen or whole herd testing of animals > 2 years is a good starting point to establish this. Ideally herds should be closed in order to reduce the risk of buying in Johne's. If animals are to be purchased, sourcing animals from low risk CHeCS accredited herds should be encouraged. It is important to remember that ongoing screening is essential and a **minimum of 6 monthly 30 cow screen or a cull cow screen** is necessary to monitor for incursion of disease. Remember that aspects of this strategy may be incorporated into other control strategies, for example a biosecurity and biocontainment plan is a sensible part of any control plan.

11. Regular testing is not feasible. Which strategy is appropriate?

Whilst frequent testing should be encouraged, where there is reluctance to test, improved farm management alone may be the most suitable approach. In this scenario every cow must be assumed to be **HIGH RISK** and efforts made to prevent cow to calf transmission. This includes snatch calving (or individual cleaned calving pens) and attention to calf management. Improved farm management only is very **LABOUR INTENSIVE** and so if testing is not conducted due to staffing shortages this approach has the potential to fail (and as little testing is done it is hard to track this progress one way or another). This strategy is most suitable to herds with **a low risk of entry and spread and a low prevalence of Johne's disease**. Typically smaller herds may adopt this strategy where the R value for transmission is low in any event.

12. A client is keen to reduce their Johne's disease prevalence and thinks culling positive cows is a quick way of achieving this. Should I encourage this?

Whilst culling positive cows does quickly reduce the apparent prevalence of Johne's disease in the **short term**, culling on its own **DOES NOT eliminate Johne's disease from the herd**. In addition it is not economically viable to cull all positive cows as they arise in high prevalence herds. Culling high risk cows is an important part of Johne's control but **ONLY AS AN ADJUNCT TO IMPROVED FARM**



MANAGEMENT and immediate culling of all high risk cows is only suitable in herds with **LOW PREVALENCE**.

13. Could I use vaccination as an adjunct to Improved Farm Management?

Although firebreak vaccination is one of the six management options several factors need to be seriously considered before deciding on this strategy. **Vaccination is generally the strategy of last resort** and should **only be used where none of the other strategies are achievable**. Once vaccination is implemented ELISA tests are extremely difficult to interpret (positives due to vaccine or field exposure?) and as such it is often impossible to use any strategic testing. Additionally vaccinated cattle may give rise to false negative or false positive tuberculosis test results. Vaccination does **NOT reduce disease prevalence** but may delay the onset of clinical disease. If considering vaccination due to a high prevalence and reluctance to change management protocols breeding to a terminal sire is probably a more preferable option. A number of milk processors/retailers will not support vaccination as a strategy.

14. If a client is reluctant to feed calves individually what advice should I give?

Colostrum/milk from high risk cows should **NEVER** be fed to replacement heifer calves. Good milking hygiene is imperative in preventing contaminated faeces being incorporated to the milk fed. Own dam to calf is the aim. If this is not possible colostrum hygienically harvested and stored from another test negative dam is perfectly acceptable and can be more practical in larger herds. Pooling of milk and colostrum and feeding this raw especially when there is risk of high risk cows contributing to this milk can introduce a risk of infection of “one cow to many calves”. Pasteurisation of colostrum and milk at 60°C for 60 mins is thought to be sufficient to eliminate MAP. Indeed pasteurisation of colostrum is beneficial to calf health in many different respects also.

15. How do you manage farms where they are not able to segregate test positive cows at calving?

A common reason for Johne's disease control plans not working is the inability of farmers to reliably separate high risk cows from the maternity areas. Key areas to focus on in the control plan are helping farmers with identifying higher risk cows (test positive, offspring of test positive animals) and clearly identifying these animals using tags and leg bands.

Ensuring repeat test positive and animals with high ELISA results are removed prior to calving will reduce the burden on segregation.

If there are periods where segregation is not possible then increased hygiene measures/ snatch calving/ clearly identifying calves as high risk if they are thought to be contaminated during the calving period will help reduce the risk of spread. Ultimately if a test and segregate program cannot be applied reliably another strategy may be more suitable (i.e. breed to terminal sire)

16. When is the best time to cull a test positive cow?

The ELISA test helps identify cows most likely to shed MAP and become infectious. In the early stages of disease progression the ELISA result may fluctuate in herds using quarterly or repeat testing, or indeed individuals may enter a period of remission which may last 2-3 years. As a general rule animals with rapidly rising titres, those with 2 consecutive results as strongly positive (> 60 on Herdwise), or those with high titres (greater than 100) are more likely to be heavy shedders. Animals repeatedly testing negative are deemed to be low risk of shedding. Failure to cull animals has been shown to be a common reason why JD programs fail. The MAP burden can build on the farm (in pens or in slurry) and this can then overwhelm the biocontainment measures put in place to prevent



spread. There is a higher risk that dam to calf transfer can occur in the neglected high risk animal leading to further risk of a calf being born which may shed intermittently and contribute to calf to calf spread.

17. What are the economic benefits of culling cows prior to calving?

Culling of cows prior to calving has many benefits. This reduces the need to manage the high risk cow through the maternity period and also reduces the risk of an infected calf being born (which may also be a potential shedder). Maximal cull values can be achieved with early culling, with less risk of development of clinical disease in late dry or early lactation. An economic argument can be created that the uplift in carcase value can offset in part the additional milk produced prior to clinical disease and the lower carcase value in the animals removed later in the disease process. A key part of the control plan is to encourage farmers not to serve cows which are strongly or repeat test positive. Breeding all remaining test positive animals to terminal beef sire will reduce the risk of disease transmission if full segregation of both dam and calf can be achieved. With reduction of prevalence in a herd there is more scope to take a more aggressive stance with test positive cattle. This is heavily influenced by replacement numbers and farmers aspiration and resources

18. What top tips are there to help reduce the spread of infection from cow to calf in calving yards?

Hygiene is the key control point and this is achieved by a balance of space, bedding levels and routine cleaning. Attention should be devoted to potential "inoculation points" around leaking water troughs or where slurry can build up. The aim is to reduce the loading of potentially infected slurry on the feet which in turn is transferred to the flanks and udders of the cows. Reducing the anticipated number of high risk cows in the maternity area by selection of the correct strategy is important. In most higher prevalence herds (more than 3% test prevalence) testing of animals during lactation or prior to drying off will help identify high risk animals for segregation thus reducing the challenge in the main maternity pen. Reducing the number of animals at risk in a pen between cleaning out will obviously help reduce the population potentially exposed. A large maternity pen with 30 cows in an untested herd with a moderate prevalence would have a shedding cow within the pen most of the time. The same 30 cows split into smaller groups and pens would reduce the number of calves potentially at risk at any one time. More ingenious solutions can be adopted which facilitate snatch calving such as creating "cuddle pens" (see www.cowsignals.com) or plastic containers which can be used both for calf transport and segregation within the calving yard. This further reduces the risk of cow to calf transmission

19. What is the best way to source low risk Johne's disease replacements?

The lowest risk route is to close the herd to future purchases and increase the use of sexed semen and breed heifer replacements from heifers. Assuming the farm's control plan is robust and effective then future generations of Johne's disease free breeding animals can be produced. Alternatively the farmer could seek to purchase lower risk stock. The lowest risk herd will be a herd with an effective control and surveillance plan who can clearly demonstrate the within herd prevalence and measures taken to control spread. This herd should have a well-established protocol for at least 3 years to reliably assess the risk of JD spread using retrospective surveillance measures. The lower the prevalence within the herd and the higher the farmer aspiration to control the disease the more exacting the purchase requirements become. Given the challenges of identifying infection in individual animals these herds would often seek to control infection by robust biosecurity measures rather than risk purchase from a herd of lower demonstrable prevalence.

20. How important is dam to calf spread (apparent vertical spread) compared to any cow to calf spread (apparent horizontal spread)?



The most serious route of infection for spreading disease is the “one to many” route. This is where a heavy shedder cow infects a large number of calves through its faeces or milk. This produces clustering of infection with many animals with consecutive ear tags developing infection in later life. However there is increasing association between dam to own calf spread. Infected cows are at higher risk of producing an infected calf through direct (in utero/ colostrum) and also indirect means (contamination of udder with dam’s faeces). Both routes must be tackled for effective control.

21. How do I engage the farmers not already tackling Johne’s disease?

Engaging farmers in Johne’s disease control is driven in large part by their milk contract and also farmer aspiration. Proactive farmers are quick to identify the benefits of Johne’s disease control. However there is a significant group of farmers who can be categorised as “Unconcerned” about Johne’s disease control. The disease is not a priority, as perceived prevalence may be low or unidentified, or the economic arguments for control have not been explained. Recent survey work undertaken by the Johne’s Action Group identified that this group of farmers require more convincing that the costs of control outweigh the benefits, that JD control works and they are looking for further financial incentives to engage. The optimal method of engagement is likely to be peer pressure and facilitated farmer to farmer discussion, mixing those farmers already engaged with those yet to engage.

22. How do I ensure that the agreed protocols are adhered to on farms with my control plan?

The implementation of the key control points is essential. To ensure the farmer remains motivated quarterly feedback of results or regular reviews of the key control points ahead of the calving season are required. Use of accepted tools to generate risk reports can highlight the hazards of non-compliance, laminated sheets of key control points and clear identification of high risk animals can help enthuse the whole team to engage in effective Johne’s disease control. The plan is as strong as its weakest link and often this is the team member who least understands the plan and the importance of the control points.