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BVD - THE DISEASE

What is the cause of BVD?

BVD is caused by Bovine Viral Diarrhoea virus (BVDV). Viruses are extremely small infectious organisms. 1ml of blood from an infected animal may contain more than 1 million infectious viral particles. Persistently Infected (PI) cattle animals excrete extremely high levels of the virus continually throughout their life. The infectious dose for calves is less than 500 virus particles.

How long will the virus survive outside the animal?

BVD virus is relatively fragile and will not survive for extended periods outside the animal. There is little definitive data available but it is likely that infectivity will have disappeared after 3-4 weeks. Damp, cold and dark conditions favour virus survival. Buildings should be cleaned and disinfected to minimise the risk of carry-over of infection, particularly where in-calf stock are present.

Is it necessary for direct contact between animals to spread infection or can it spread indirectly e.g. through equipment?

While purchase of a PI animal (or an animal carrying a PI calf) remain the single biggest risk for introduction, it is possible for the virus to be transferred between animals and between herds by indirect means. PI animals shed virus in all secretions and excretions, including dung, urine, milk and colostrum, saliva and discharges from the eyes, nose and reproductive tract. Movement of these substances between farms, or clothing or equipment contaminated by them are also potential means of transferring and introducing the virus. This could occur via large items of equipment such as machinery or smaller items such as calving aids or nose tongs. All such items should be thoroughly cleansed and disinfected to minimise the risk of transmission in this way.

Will a bull calf have the same amount of BVD virus as a female calf?

Any calf, whether male or female, that is exposed to virus as an unborn calf between the second to fourth months of pregnancy will be born PI, if it is not aborted. PI bull calves will carry the same level of virus in their bodies as heifers and will shed virus at a similar level. If these PI bull calves survive to adulthood they will shed virus in their semen, providing a very efficient means of transmission to susceptible female animals.

Can BVDV be transferred to humans?

There is no known health risk to humans from the BVD virus.

Are wildlife affected by BVDV?

Wild ruminants are also susceptible to BVD virus. This includes both wild deer and goats. Limited studies carried out at the Central Veterinary Research Lab in Dublin indicate that the level of exposure of wild deer in the Republic of Ireland to BVD virus is low and they are considered to represent a low risk of infection to cattle. Wild ruminants have not been considered to be a major source of infection for cattle in successful eradication programmes run in Scandinavian countries. Therefore, it is believed that wild deer are likely to pose a low risk to cattle in N. Ireland.

Does BVDV affect sheep and goats?

Small ruminants including sheep and goats are susceptible to infection with BVD virus. In addition, they may also carry a related virus known as Border Disease virus (BDV) which causes similar clinical signs. Two separate Irish studies have shown that the level of infection at flock and animal level with BVDV and BDV in sheep is much lower than is present in cattle, and indicates that the pressure of infection is from cattle to sheep rather than from sheep to cattle. Nonetheless co-grazing of sheep with cattle does present a low risk for transmission of infection.

If an animal tested negative for BVD virus and was sold, can that animal pick up virus during trade?

A negative test result for a given animal for BVD virus, is consistent with that individual not being persistently infected (PI) with BVD. Should that animal come into contact with the virus at any stage, during trade or otherwise, then it would become transiently infected (TI) for a short period before clearing the infection and becoming immune. TI animals are much less efficient transmitters of virus than PI animals, but nonetheless can transmit the virus infecting other animals. In addition, if the animal becomes TI during early pregnancy it is likely to produce a PI calf. Where there is a possibility that purchased animals may have been in contact with BVD virus at or immediately prior to, the point of sale, then it is recommended that they are isolated for a period of 3-4 weeks after purchase. It is particularly important to keep them separate from pregnant animals. Where a pregnant animal is purchased this animal should be kept isolated until she has calved and her calf has returned a negative virus result on testing.

If all of my calves test negative this year, does that mean that next year's calves are automatically clear?

No; a negative result for all calves in a given year is consistent with none of the cows that produced the calves being persistently infected (PI). However, it is possible that one or more cows could be exposed to virus during the next pregnancy and undergo transient infection. If this occurs between approximately 30 and 120 days of pregnancy, then the resulting calf will be PI. For this reason, it is necessary to test calves born each year of the programme to ensure infection has not been introduced.

Since the 1st March 2016 BVD has become subject to Legislative Control - what are the implications of this?

The Bovine Viral Diarrhoea Eradication Scheme Order (Northern Ireland) 2016 requires all herdowners to 'Tag and Test' all calves born on or after 1st March 2016. Only animals that have a negative BVD test result are permitted for movement to other holdings. In filling in a MC2 declaration prior to sale, vendors are declaring that the animal/s are not under any restriction including any relating to BVD. It is encouraged that vendors selling animals born on or after 1st March should provide evidence that the animals for sale have a valid negative BVD test. Animal test declarations can be downloaded and printed from the AHWNI website (www.animalhealthni.com). Purchasers should ask for a test declaration certificate for each animal being purchased that has been born on or after 1st March to assure themselves that the purchased cattle are BVD free.

How long should I wait before spreading slurry from positive animals?

There is no definitive answer on how long the virus survives in slurry. In practice, the longer it can be held before spreading the better. In the environment the BVD virus is not particularly robust so 4-6 weeks should see a large reduction in the level of live virus present. There will also be further decline in virus levels after spreading. It would be advisable not to graze pregnant cattle on treated ground for as long as possible, but any risk to animals acquiring infection should be significantly reduced after two months.

VOLUNTARY PROGRAMME

What were the main findings from the voluntary phase of the programme?

In the voluntary phase approximately 400,000 tags were ordered for use in 4,700 herds. In total almost 608,000 animals were assigned either a direct or an indirect infection status. Initial test results showed 0.51% positive, 0.01% inconclusive and 98.57% negative. 19% of herds had one or more animals with a positive or inconclusive result. 90% of calves that had an initial positive result and were subject to re-test were found positive again and were considered to have been PI, while the remaining 10% were considered to have been transiently infected.

Does my participation in the voluntary programme count within the Compulsory programme?

The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 requires all herdowners to 'Tag and Test' all calves born on or after 1st March 2016. This includes those herds that have been testing within the voluntary phase of the BVD programme. For those herds that have successfully controlled infection during the voluntary phase, the purpose of ongoing testing is to ensure that infection is not introduced into the herd and that PI animals are not inadvertently sold onwards. AHWNI is currently seeking ways to recognise herds that have a high probability of being uninfected.

How many herds had a high prevalence of positive results during the voluntary phase?

19% of participating herds had one or more animal with a positive or inconclusive result. Of these, less than 5% had 5 or more such results. 9 PI calves was the highest number identified within a single herd during the voluntary programme.

PROGRAMME DETAILS

Does a farmer who has no disease problems and is not vaccinating for BVD, still need to participate in the programme?

Yes. Under The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 all calves born on or after 1st March 2016 must be tagged and tested for BVD.

Will herds be able to achieve a BVD-free status within the programme?

Through successive rounds of tag testing, direct (subjected to BVD testing) and indirect (mother of one or more calves that have tested negative) results for each animal in the herd accumulate. With time, all animals in many herds will have either tested negative or have produced a virus-negative calf demonstrating them to be non-PI. In other herds, a few animals of unknown status may remain, which can then be identified and tested. AHWNI and the industry BVD Implementation Group is currently seeking ways to recognise compliant herds that have been testing in the BVD programme and have a high probability of being uninfected.

If blood testing in a CHeCs programme for BVD accreditation, will I have to do the tissue tag test?

Yes. Under The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 all calves born on or after 1st March 2016 must be tagged and tested for BVD. Herds participating in the CHeCS programme typically use check testing for antibodies of 5-10 animals from separately managed groups aged 9 – 18 months to screen for possible presence of infection in the herd. The use of tissue tag testing however provides a definitive result for each individual animal, demonstrating that animals with a negative test result are non-PI. The majority of herds participating in CHeCS programmes are pedigree, and are possibly already testing stock to provide virus-negative results for breed society sales. It is possible to generate a declaration of negative results for animals tested within the programme via the AHWNI database for this purpose. The CHeCS technical document has been updated to specifically recognise tissue testing of calves as an acceptable alternative surveillance method for achieving and maintaining accredited BVD free and BVD vaccinated monitored free status within CHeCS programmes.

I have previously tested my herd for BVD. Can these results be entered on the AHWNI database and do I need to take part in the programme?

Results from previous BVD testing may be transferred to the AHWNI database by arrangement with the testing laboratory. This will only be available where testing has been carried out in a designated laboratory using an appropriate accredited test, and where full traceability of the result to an animal is possible. Typically, this will require samples to be blood samples which have been collected by your vet and which have been submitted with their full official identification numbers. The laboratory will require the necessary data sharing permissions to be given by the herdowner before the transfer of results can proceed.

Herds that have conducted testing prior to the launch of the compulsory programme in 2016 are still required to perform tissue tag sampling. Under The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 all calves born on or after 1st March 2016 must be tagged and tested for BVD. While such earlier testing will hopefully have provided strong reassurance that infection was not present in the herd, testing of calves is necessary as an on-going means of surveillance within the programme and to provide negative results to enable animals to be traded.

For how long will the programme run?

The programme in Northern Ireland is based on programmes that have run, or are running, successfully elsewhere. However, successful delivery within the optimal timescale will require farmers

and the wider industry to engage and cooperate fully with the programme. Where PI calves are identified early and removed quickly it is likely that the disease can be eradicated quickly. Where this does not happen the rate to achieving eradication is likely to be slowed.

Is the programme open to abuse?

The farming industry will be the beneficiaries of a successful eradication programme. The ultimate success of the programme lies at the hands of our farmers. While it is not possible to prevent all abuses of the programme, it is hoped that any such abuses will be infrequent. The introduction of legislation, policing of the programme by DAERA and the facility to investigate the mis-association of dams and their calves following tissue tagging should be effective deterrents.

Are there penalties for abusing the programme?


Specific legislation (The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016) has been introduced. Breach of this legislation will lead to prosecution. Knowingly selling a BVD positive animal may lead to imprisonment for up to one month or receive a fine of up to £5,000 or, in the case of more than five animals, receive a fine of up to £1,000 per animal under the Diseases of Animals Order. Anyone found guilty of selling an infected animal may also be in breach of the Sale of Goods Act which could result in further financial penalties.

Is compensation available in the Compulsory Phase of the Programme?

There is no compensation available during the compulsory phase. However a financial incentivisation scheme to encourage the removal of PI animals was in place from 01 February 2017 to 30 September 2017.

How do I access my BVD results?

In order for a herd owner to access their BVD results online, go to <http://www.animalhealthni.com>

and click on the  button. Enter your Government Gateway ID (issued by DAERA) and password in the appropriate box to log into the AHWNI results database. If a herdowner requires assistance with finding these log in details, they should contact the DAERA helpline on 03002007855. It is possible for a herdowner to view all of their testing results and print negative results declarations from within this database.

All of my cattle have negative BVD statuses – why do I need to keep using the ear tissue tag test?

While the prevalence of the BVD virus has reduced significantly, the virus has not been eliminated from NI and therefore still presents a risk to cattle. Prompt identification of PI calves is vital to the success of the eradication scheme, so that they can be removed promptly. Scientific advice indicated in 2018 that for the ROI programme (which commenced three years before the NI programme), there would be drawbacks in moving away from direct (tissue tag) testing and more limited opportunities to enhance the effectiveness of the current programme. The options for moving towards an indirect programme will be kept under review by the BVD Implementation Group. In Low Risk status herds, every precaution should be taken to prevent entry of the BVD virus.

TAGS AND TAGGING

Can you still register calves on-line?

Yes, this facility is still available. There has been no change to how calves are registered online using APHIS Online. BVD test results will only be reported when the calf has been registered DAERA. Queries regarding calf registration should be directed towards DAERA (03002007840).

How do I ensure my order for tags comes on time as I have animals that I need to tag to comply with the programme guidelines?

Order tags as soon as possible (as they will take approximately 7-10 days to be delivered). These tags can be obtained from any of the designated tag suppliers. Details of suppliers of these tags can be found at www.animalhealthni.com/documents or contact the helpdesk on 028 79639333 for advice.

Is a new tagger required for tags and will it be sent with the tag order?

A new tagger is needed to insert the tissue sample tags. This tagger can be obtained when ordering BVD tags with your tag supplier.

I have surplus official ID tags left over, can these be used after March 2016?

Yes. Supplementary (button) tissue sample tags can be ordered from your tag supplier to match existing pairs of approved identity tags already in your possession that you have carried over after March 1st 2016. These button tags must bear the full identification number of the animal on which they are used to ensure sample traceability. When ordering you should ensure that you allow sufficient time for the tags to arrive before you need to start tagging. These will take approximately 7-10 days to be delivered.

On which ear should the tissue sample tag be inserted?

It is recommended that the tissue tag is inserted in the right ear (i.e. the right ear from the animal's perspective).

Where on the calf's ear should the tag be positioned to get an accurate test?

A leaflet giving details of the tagging process is included with your initial tag order. This is also available from www.animalhealthni.com. Always place the female part on the inside and the male part on the outside of the ear. Use a firm constant pressure to close the applicator. The tag should be inserted in the centre of the ear as usual.

Should the calf be registered before the sample is collected?

This is not necessary. Because the sample is taken at tagging, you will be tagging (which is the beginning of the registration process) and sampling the calf at the same time. However, you should subsequently avoid any delay in registering the calves as results will not be reported back to you until the registration process on APHIS is completed.

There was a delay in registering the calf but a sample was submitted for BVD testing.

When will the result come back?

AHWN is only able to issue results when the calf has been registered on APHIS. Therefore, it is essential to register your calves promptly.

If the tissue sample tag is damaged while inserting into the calf's ear, what should I do?

You will need to re-sample this animal(s) to determine its BVD status. This can be done using a replacement button tag for the sample which can be ordered from your tag supplier. Alternatively, you can use the next set of official ID tags and discard the damaged tag (and its matching pair) by

cutting it up and disposing of it, or have a blood sample collected and submitted by your veterinary practitioner.

If I am notified that the tissue sample tag is empty - what should I do?

You will need to re-sample this animal(s) to determine its BVD status. This can be done using a tissue sample collected by yourself using a supplementary (button) tag bearing the matching ID number which can be ordered from your tag supplier. Alternatively, you can arrange for a blood sample to be collected and submitted by your own veterinary practitioner.

Is it acceptable to send the samples in the post?

Yes – Royal Mail will process any samples provided they are correctly packaged and labelled. Samples should be placed inside a sealed plastic bag, which in turn is placed inside an envelope/outer bag (all supplied with your tags). The envelope/outer bag will already be pre-addressed by your tag supplier with the appropriate lab details, it should also be displayed with the following words “BVD tag Test- Exempt Animal Specimen”. The package should also be clearly labelled with your herd number and return address. Please ensure the correct postage is applied. Royal Mail advises that the large letter fee should be sufficient for up to 10 samples provided they are packed flat, rather than bulked up within the envelope. Please see for www.royalmail.com for an up to date listing of postal charges. Underpayment and failure to package samples appropriately may lead to sample processing being delayed or samples being destroyed by Royal Mail.

What happens if the samples are lost in the post?

If you do not receive results for registered calves within 7 working days, you should contact the AHWNI helpdesk on 028 79639333 who will investigate the matter for you. Where the samples have been lost in transit, it will be necessary to re-sample the calves. This can be done using a tissue sample collected by yourself using a supplementary (button) tag bearing the matching ID number which can be ordered from your tag supplier. Alternatively, you can arrange for a blood sample to be collected and submitted by your own veterinary practitioner.

Why can't we blood sample all of the cattle in Northern Ireland and remove the disease in one year?

Logistically this would be a significant challenge. In addition, even having done this, it would not give a test result for the unborn calves being carried during that year, requiring all calves to be tested after birth anyway. The current programme of testing calves automatically gives a result for the dams also, with a negative calf result indicating that the mother of that calf is also not PI. In addition, testing of the dam only gives a snapshot for those animals on that day.

Why can't we round up all the calves and tag on a single day, rather than within 7 days of birth?

Early identification of calves helps to ensure that they are accurately assigned to the correct mother. Early identification of PI animals allows their removal at a stage when there has been minimum investment in them (feed, veterinary medicines etc.) and minimises the negative impact of their presence on farm. Early tagging ensures that persistently infected (PI) animals are identified as soon as possible after birth. This will minimise their opportunity to transmit infection to other calves, which would become more susceptible to scours and pneumonias, or to in-calf animals which would be at risk of infertility, abortion, stillbirth or producing further PI calves the following calving season.

Why do I need to put samples in a plastic bag before posting them?

Tissue punch samples have an exemption from the packaging regulations that usually apply to diagnostic samples based on the low disease risk associated with them. To comply with the terms of this exemption, the samples must be posted in a triple layer of packaging, of which the first two must

be leak proof. The cap that goes over the metal punch of the tag provides the first of these layers, the sealed plastic bag the second and the outer envelope/bag the third. The envelope/outer bag should be labelled "BVD test- exempt animal specimen" to indicate that it is being posted using this exemption.

Note that it is the herdowner's responsibility to ensure that samples are suitably packaged and that the appropriate postage is paid. Failure to package samples correctly or pay the full postage may delay samples being processed or may see them disposed of untested.

What happens if I mix up my BVD tags

If you realise you have used the wrong BVD tag on an animal BEFORE you send it away to the lab for testing, then please DISCARD it and order a supplementary button tag for that animal. If you realise you have used the wrong BVD tag on an animal AFTER you have received a result, then please call the AHWNI BVD help desk on 028 79639333 for guidance. We will notify the appropriate lab so the result can be removed. In such a case you must order a new supplementary tag for the animal and retest it with the correct number. The BVD tag must ALWAYS match the ID tag.

What do I do if I insert a supplementary (button) tag in the wrong animal?

Each button tag is labelled with an official ID and must only be used in the matching animal to provide traceability of the result back to that animal. If you realise you have used a button tag in the wrong animal BEFORE you send it off to the lab for testing, then you need to DISCARD the sample and order a further supplementary button tag for that animal. If you realise you have used the button tag on the wrong animal AFTER you have received a result, then please call the BVD help desk on 028 79639333.

TESTING

In the programme, why are you only testing calves and not weanlings – would it speed up the eradication programme to test weanlings as well?

The level of testing within the programme is a balance between what is desirable, practical and affordable. PI animals have a markedly reduced life expectancy compared to non-PI comrades, with approximately 60% of PI animals estimated to be less than 1 year of age. Therefore, testing newborn calves targets the population which is most likely to contain PI animals and allows this to be done by the farmer in a cost-effective manner. Where all calves born in the first year are tested negative, this is an indication, although by no means a guarantee, that the herd is free from infection. Where PI calves are identified, additional testing, including of weanlings, is justified to identify and remove any further PI animals as quickly as possible. It remains open to all herd owners who wish to accelerate testing in their herds to also screen weanlings and these results can also be transferred by designated labs to the AHWNI database and used to demonstrate that they are not PI if subsequently presented for sale.

Can you test other animals on your farm and include them in the eradication programme?

It remains open to herd owners to conduct additional testing over and above the required tagging of calves, even when all of the tag results are negative. This may be done to accelerate the programme of herd screening to confirm that the herd is free from infection as quickly as possible or to target specific groups of animals for sale purposes to demonstrate that they are not PI. These additional samples should be sent to designated labs for BVD testing, which can then transfer the results to the AHWNI database in the same way as that for tissue tag results. A list of designated labs and the samples (tissues, blood, milk) for which they are designated is available at www.animalhealthni.com. The laboratory will require the necessary data sharing permissions to be given by the herdowner before the transfer of such results can proceed to the AHWNI database.

BVD testing apart from tissue samples?

It is envisaged that the primary means of sampling of calves will be the tissue tag. However, this may be supplemented by blood sampling. For example, herd owners may use their veterinary practitioners to re-sample animals where there has been a problem with sample collection initially or, more commonly, to carry out re-testing of calves with positive or inconclusive results and the dams of these calves. Veterinary practitioners may also use blood sampling and bulk tank milk RT-PCR testing as part of wider herd-level investigations. The results of such testing, provided it is fully traceable, has been carried out by designated laboratories and the required data sharing permissions have been given, will also be held on the AHWNI database.

Can the blood samples taken for Brucellosis be used for BVD testing?

PI cattle are most likely to be found among calves. Screening older animals will only confirm that they are not themselves PI, giving a snapshot of the herd at that time. Because the majority of PI calves occur following a transient infection of the mother, a negative test result for heifers and cows is no guarantee that they will not produce a PI calf from the current or later pregnancies. In contrast, testing the calf crop gives an on-going screen for the birth of PI calves, allowing these to be identified and removed as quickly as possible. In addition, if a given calf is virus negative, its dam cannot be PI. In this way, tagging of calves gives a “two for-one” result, so that in addition to the direct virus result for each calf, indirect results also accumulate for all cows that have produced a calf.

Do you test an aborted foetus?

Yes. Under The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 all calves born on or after 1st March 2016 must be tagged and tested for BVD. BVD virus can be a cause of abortion, and this may be the first sign noticed following introduction of infection. Make sure the ear of the aborted foetus is dry before taking the sample to minimise the chance of the tag slipping and no tissue being collected.

Do you test stillborn calves?

Yes. Under The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 all calves born on or after 1st March 2016 must be tagged and tested for BVD. The screening of all calves born (including abortions and stillbirths) each year provides intensive surveillance of each herd. Dry the ear of the still born calf before taking the sample to minimise the chance of the tag slipping and no tissue being collected.

Is it necessary to test both animals when twins are born?

A negative virus result for one of a pair of twins generally confirms that neither animal is PI with BVD virus and that the mother of the twins is also not PI. However, there are occasional descriptions of one twin being PI and the other one not, presumably due to infection of calves that are at the upper age limit at which unborn calves can become PI (approximately 120 days of pregnancy). In any event, the Bovine Viral Diarrhoea Order requires that all calves born on or after 1st March 2016 are tagged and tested.

When should you test the cow if you receive an initial positive result for its calf?

You have the option to re-test the calf to confirm it is a PI. The dam should be blood tested in order to obtain a direct blood sample result. In practice, if the calf is being re-tested it is most straightforward to test the cow at the same time. If you do not intend to re-test the calf, then you should test the dam as soon as possible. It is crucial that at least 21 days are left between first sample collection and the second (blood) sampling of the calf. An interval of at least three weeks will allow time for virus to be cleared from a transiently infected (TI) animal.

If a cow does not produce a calf but is retained for breeding, should she be tested for BVD?

The Bovine Viral Diarrhoea Eradication Scheme Order (NI) 2016 requires that all calves born on or after 1st March 2016 onwards are tested for BVD. If you have a cow that doesn't produce a calf in 2016, her status will be determined when her calf is tested the following year. However, if you have all other animals tested on the farm it may be a prudent management decision to test this animal as well, especially as she will be running with the herd at mating time.

How soon should you test a newborn calf?

It is recommended that calves are tested as soon as possible after birth. In practice this means once the calf is dry.

Why wait until a calf is dry to tag it?

This reduces the chance of a mistake in the tagging process due to the wetness of the ear.

If a re-test is required following an empty sample, how long will it take to receive a button tag?

The delivery time for button tags is approximately 3 – 4 days. Contact your tag supplier for further information. You can collect the second sample from the calf at the earliest possible convenience.

If a re-test is required following an initial positive result, how long should be left between the two tests?

It is recommended that at least 21 days are left between first and second sampling. An interval of at least three weeks will allow time for virus to be cleared from a transiently infected animal. The animals should be strictly isolated until the retest result is known. The second sample must be a blood sample collected by a veterinary surgeon and submitted with the appropriate paperwork to the designated laboratory.

What is the turnaround time for a blood sample on a retest?

Designated laboratories undertake to report 95% of results within 7 working days with an median turnaround of 5 days or less. In practice, many results are reported more rapidly.

How stable are samples after collection?

It is recommended that samples are sent to the laboratory as soon as possible after collection but in any event within seven days. In the interim, it is recommended that samples are stored in a cool, dark place, ideally in a non-domestic fridge. Stability studies have shown that using current test methods samples are stable beyond this period, even when held at higher temperatures.

Can a button tag be used to test a cow?

Yes. A matching supplementary button tag bearing the official ID number of the animal can be used. It can be ordered from your tag supplier, and should take approximately 4 days to be delivered. Please contact your tag supplier for further information. The dams of positive calves should be tested using a blood sample taken by your PVP.

If a calf has a negative result when first tested, can it turn positive in the future?

A negative result is consistent with the calf not being PI. However, it may still become transiently infected (TI) for a short period. If sampled during this period, it is likely to test positive for virus. A negative repeat test 3-4 weeks later would confirm this as a transient infection.

Should you test stock bulls for BVD virus?

Pedigree stock animals may have been tested for BVD virus, to confirm that they are not PI, prior to sale at certain registered breed society sales. However, it is strongly advisable and good practice to ask for confirmation of this prior to purchase. Where the status of the bull is not known, it would be wise to have his BVD status confirmed as soon as possible.

Is there a provision to use existing BVD blood test results obtained for individual animals in the voluntary phase of the programme?

Blood tests carried out in herds taking part in the voluntary phase of the programme may be captured in the database and made available in the compulsory phase subject to certain conditions.

Firstly, the samples need to have been tested to an accredited standard in a designated laboratory; the samples must be identified with the full national ID number for each animal; the laboratory must be willing to effect the transfer and the farmer or vet must provide a written instruction to transfer the results.

Does the age of the calf affect the accuracy of the test?

Older calves may have come in contact with a BVD virus and thus may have a transient infection (TI) which will show up as a positive result. Therefore, it is important to collect the sample by tagging as early as possible after birth. Note that blood samples from young calves may NOT be reliably tested by ELISA (typically below 75 days of age) due to the possibility of false negative results caused by interference from maternally derived antibodies (MDA). This period is often referred to as the

“diagnostic gap”. The ELISA currently in use for testing ear punch samples is marketed as not having a diagnostic gap, although it is possible that false negative results may occur occasionally. Should a false negative result be suspected, you should isolate the animal in question and contact the testing laboratory with a view to arranging a re-test. There is considered to be no diagnostic gap when testing samples by RT-PCR.

If in-calf animals are blood tested with negative results does this mean the herd is free of infection?

Not necessarily; this only indicates that there are no PI breeding females. It does not give the status of the calves that they are carrying. Approximately 90% of PI calves are born to mothers that are not themselves PI, but instead have undergone a transient infection in the early part of pregnancy. Testing of successive generations of calves provides ongoing assurance that the herd has not been exposed and further PI calves created.

Should purchased heifers be tested for BVD before being inseminated?

Purchased cattle represent the single biggest risk for the introduction of BVD infection. Where the BVD status of purchased cattle is not known it is good practice to isolate these from the rest of the herd, particularly pregnant stock, until they have been tested with negative results.

Define ‘isolation’, in terms of purchased animals.

On purchase, animals should ideally be quarantined for at least 4 weeks by physical separation i.e. they should be in separate airspaces, sheds and paddocks from home-bred animals, with separate drainage. The use of shared equipment or utensils should be avoided.

Can the tissue sample be used to identify other diseases?

These samples are not suitable for testing for other diseases.

What costs are associated with blood samples taken for confirmatory testing?

Required confirmatory testing will be conducted on blood samples collected by a veterinary surgeon. The laboratory charge for blood tests submitted for confirmatory testing of calves and testing of DAMPI (mother of positive calf) and OFFPI (offspring of positive mothers) animals when these samples are submitted to Agri-Food & Biosciences Institute (AFBI) is included in the fee that you pay to your vet. A submission form for these samples is included with the letter that you will be sent identifying animals to be tested. This form must be returned with the blood samples. You will be liable for any costs incurred with sample collection by your vet.

When retesting using a supplementary button after an empty sample, is this free?

No. You will have to order and pay for the supplementary button tag in the usual way. Please contact your tag supplier for further advice. In most cases you will only pay for the button tag and not the test as this will already have been paid for.

Is there a set price for testing in designated laboratories?

No, the price for testing is incorporated when purchasing a tag with a designated tag supplier. Please contact your tag supplier for further advice.

How reliable are the results of the testing?

No biological test is 100% accurate.

All designated laboratories are independently accredited for BVD testing and the test methods (ELISA or RT-PCR) used will, in the great majority of cases, accurately detect the presence or absence of virus

in tissue and blood samples when submitted and tested correctly. However, results relate only to the sample as received by the laboratory and, whilst laboratories warrant that their tests will meet their applicable declared specifications, the laboratories make no other warranty and accept no responsibility or liability in respect of false results which are within the limits of the declared specifications of the tests offered. Estimates from programmes elsewhere suggest that false negative results may occur in between 0-3% of PI calves while false positive results occur at a lower level still (less than 1%). Should false negative or positive results be suspected, the animal should be isolated and re-tested. Any query relating to the reliability of tests or test results should be addressed directly to the laboratory concerned.

If a calf gets colostrum, will the antibodies from the mother interfere with the test?

The tissue tag test is the most suitable for testing young calves. Blood samples from very young calves may not be reliably tested by ELISA due to the possibility of false negative results caused by interference from maternally derived antibodies (MDA) and for this reason negative results from such animals are considered valid only if produced by a RT-PCR test. Typically, this applies to calves up to 75 days of age, although the lower age limit for ELISA testing should be confirmed with individual laboratories before submitting samples to them. This period is often referred to as the “diagnostic gap”. Samples submitted for confirmatory testing are processed using protocols that take this diagnostic gap into account. The ELISA currently in use for testing ear punch samples is marketed as not having a diagnostic gap, although it is possible that these may occur occasionally. Should a false negative result be suspected, you should isolate the animal in question and contact the testing laboratory with a view to arranging a re-test.

Why do all laboratories not use the same test?

Each designated laboratory has been independently accredited for the provision of testing. As part of this accreditation process each laboratory is able to choose the test method and kit that they will use, being required to select a method that meets the needs of the customer and which is appropriate for the situation in which it is being used (in this case primarily the detection of BVD virus in ear notch samples). Should a false negative or positive result be suspected, the animal should be isolated and re-tested using a blood sample or supplementary tag.

Each designated laboratory should be able to provide customers with further details of the test methods used and the claimed performance of those methods.

What non-laboratory factors may affect the accuracy of test results?

A variety of factors may influence the accuracy of the test result reported for a given animal. These include errors in tagging, storage and submission of samples. It is recommended that samples are submitted as soon as possible after collection, and certainly within 7 days. In the mean time they should be stored in a cool, dark location, preferably a non-domestic refrigerator.

RETESTING

What age does the calf have to be for retesting with blood ELISA tests?

The tissue tag test is the most suitable for testing young calves. Blood samples from very young calves may not be reliably tested by ELISA due to the possibility of false negative results caused by interference from maternally derived antibodies (MDA) and for this reason negative results from such animals are considered valid only if produced by a RT-PCR test. Typically, this applies to calves up to 75 days of age, although the lower age limit for ELISA testing should be confirmed with individual laboratories before submitting samples to them. This period is often referred to as the “diagnostic gap”. Samples submitted for confirmatory testing are processed appropriately using protocols that take this diagnostic gap into account. The ELISA currently in use for testing ear punch samples is marketed as not having a diagnostic gap, although it is possible that these may occur occasionally. Should a false negative result be suspected, you should isolate the animal in question and contact the testing laboratory with a view to arranging a re-test.

What is required for confirmatory blood testing?

Blood samples must be submitted to an approved lab for confirmatory testing. All labs approved to carry out confirmatory testing are listed on the AHWNI website. Confirmatory testing will only be conducted on blood samples collected by a veterinary surgeon. A submission form for these samples is included with the letter that you will be sent identifying animals to be tested. This form must be returned with the blood samples. You will be liable for any testing and sample collection costs incurred. Blood samples from young calves must be tested using specified protocols to ensure accuracy of testing. These protocols are typically more expensive than those used for ear punch samples or blood samples from older animals.

How long does confirmatory testing take?

Designated laboratories undertake to report 95% of results within 7 working days with a median turnaround of 5 days or less. In practice, many results are reported more rapidly.

RESULTS

How quickly will results be available?

Designated laboratories undertake to report 95% of results within 7 working days with an average turnaround of 5 days or less. In practice, many results are reported more rapidly. The results will then be transmitted to AHWNI, linked to APHIS and sent by text directly to the farmer where AHWNI has their mobile number.

Why are the results going to AHWNI and not the farmer in the first instance?

One of the challenges of a national eradication programme is the handling and coordination of all the test data that will be generated. Experience in other countries has shown that the use of a central database for handling results is highly beneficial for the efficient delivery of the programme.

In addition, the use of a central database reduces the workload for the diagnostic labs and therefore the cost associated with testing. The AHWNI database is ideally placed to provide this, with interactions with DAERA's systems allowing results to be transferred, the movement of PI animals to be controlled and the facility to identify the mothers of virus positive calves and to monitor the progress of the programme over time.

I have received a positive result for a strong, apparently healthy calf- is it definitely a PI?


Many PI calves can be deceptively healthy looking in early life but will generally deteriorate as they grow older. You have an option to do a re-test three to four weeks after the initial sample was taken to clarify the calf's status, with a second positive result confirming it as PI. A negative result on a re-test is typically due to the calf having been transiently infected (TI) with BVD virus when the first sample was collected. Even when apparently healthy, PI calves represent a significant risk of infection to other animals in your and neighbouring herds and you are advised to isolate them prior to confirmatory testing and to cull them as soon as possible after confirmation of PI status.

Are the results of all BVD testing transferred to the AHWNI database?

The criteria by which laboratories are designated for provision of test results for the BVD eradication programme requires them to forward without delay the results of all BVD tests relating to animals born after 1st March 2016 to the AHWNI database. BVD test results from other animals can be uploaded to the database provided they have been tested by an approved lab using an approved method, that the sample is identified with the full tag number of the animal and that the herdowner has given the necessary data sharing permission.

How do I access my BVD results via AHWNI Database?

In order for a herd owner to access their BVD results online, go to <http://www.animalhealthni.com>

and click on the  button. Enter your Government Gateway ID (issued by DAERA) and password in the appropriate box to log into the AHWNI results database. If a herdowner requires assistance with finding these log in details, they should contact the DAERA helpline on 03002007855. It is possible for a herdowner to view all of their testing results and print negative results declarations from within the AHWNI database.