

BVD 'Stamp It Out' – The impact on 150 farms in North West England

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Laura has worked as a veterinary assistant at Nantwich Farm Vets, a dedicated farm only veterinary practice, since 2009. She manages the veterinary work for 10 dairy farms, averaging 200 milking cattle and has a Certificate in Advanced Veterinary Practice (Cattle). In addition, Laura has advanced surgical skills and has trained her more recent graduate colleagues. Laura is also a BCVA Johnes Advisor and managed the practice BVD Stamp It Out Project. Despite a busy professional life, Laura finds time to keep fit by running and cycling.

* INTRODUCTION

The new BVD 'Stamp It Out' scheme gave opportunity for 150 farms in North West England to ascertain their current BVD status. 32 (21%) of farms showed evidence of active BVD infection and 34 cattle were identified as persistently infected with BVD virus. The scheme gave a significant boost to BVD Free England and had a positive impact on the number of farms vaccinating for BVD and using BVD ear tags.

* BACKGROUND

In 2018 a £5.7 million funding package was made available to help farmers in England tackle Bovine Viral Diarrhoea (BVD) virus. The 'Stamp It Out' project was designed to bring likeminded individuals together with the aim of working towards eradicating BVD on their farms and hence reduce the disease in the national herd (DEFRA, 2018). 'Stamp It Out' funding was granted for 150 Nantwich Farm Vets clients. The project involved a four-stage process for every farm:

- An initial cluster meeting
- An on-farm visit to undertake testing for BVD (budget £61.80)
- A second on-farm visit to discuss the results and perform a Persistently Infected (PI) hunt with an additional £440 if necessary
- A final follow-up cluster meeting

The farms included 107 Dairy farms (71%), 22 Beef farms (15%), 20 Dairy and Beef farms (13%) and 1 Heifer rearer (1%) located in Cheshire, Shropshire and Staffordshire. To partake in BVD 'Stamp It Out' farmers must own *breeding* cattle; this differs from other national eradication programmes. The herd size ranged from 5 to 2,050 breeding cattle. The average herd size was 243 breeding cattle. In total, 36,454 breeding cattle were included across 150 farms.

* HERD BVD STATUS – Testing

The aim of the initial on-farm visit (Fig.2) was to ascertain current Herd BVD Status. On 119 farms a 'check' test was performed; 5 blood samples for BVD antibody were taken from heifers in each separate management group of 9-18 month old unvaccinated animals. 27 farms did not have any check testing carried out. These were 'flying' herds with no available young stock, farms with evidence of a PI within the last 12 months or farms that had already used ear tags for so long that negative BVD status was already known. 4 small beef farms aiming for CHecs accreditation had blood sampling for BVD antigen carried out.



Check test results: In total, 1,141 blood samples for BVD antibody were taken. 243 samples (21%) came back as positive on 53 different farms, 898 samples (79%) were negative. Fig. 1 illustrates the number of positive samples found on each farm

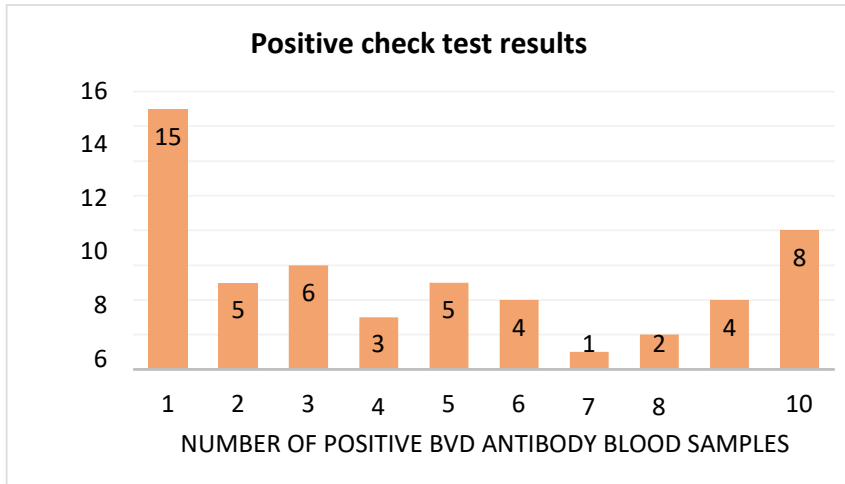


Fig.1 The number of positive BVD antibody blood samples found at the check test

- 66 farms had completely negative results.
- 15 farms had a single BVD antibody positive animal and 5 farms had 2 positive results. It is possible that, on vaccinated farms, these results could be due to waning maternal BVD antibody. It could also indicate the start of a BVD outbreak. More testing is required on these farms to confirm BVD status.
- Farms with 3 or more positive BVD antibody samples on check testing were deemed infected and granted extra funding for a PI hunt.
- 4 farms had false positive results as animals that had been vaccinated were tested in error. Further testing was carried out on these farms.

Boehringer Ingelheim provided additional funding towards a single Bulk Milk BVD PCR test for all dairy farms involved. In total 114 bulk milk samples were tested. 100 samples (88%) were negative and 14 samples (12%) were positive. Only one farm with a positive bulk milk BVD PCR had a negative heifer check test.

* PI HUNT METHODS

Direct contact with a PI animal is a frequent primary source of infection (Burgstaller et al., 2016) so in order to eradicate BVD, all PIs must be removed. After all initial testing was complete, PI hunt funding was granted for 32 farms. PI hunts were applied for based on: 3+ positive individuals within a check test, repeated positive Bulk Milk BVD PCRs or evidence of a PI animal on farm within the last 12 months (e.g. positive BVD antigen ELISA).

The majority of PI hunts were carried out by farmers beginning to use BVD Antigen ELISA or BVD PCR testing on auricular tissue of newborn calves. Once a positive calf was identified it was isolated and retested 3-4 weeks later by blood sample for BVD antigen. The calf's dam was also blood tested for BVD antigen.

In total, through these PI hunts, 34 PI animals have been identified on 14 farms. To date, 29 of these animals have died or been euthanased, 5 remain on one farm but have been placed in isolation. As calves continue to be tested it is expected



that the number of PIs identified will rise. 18 farms have not yet identified a PI. This may be due to the PI having already died or left the farm.

Two PI hunt examples can be found in Appendix 1.

* THE IMPACT OF 'STAMP IT OUT'

- **'Know your status'**: 'Stamp It Out' provided an opportunity for farmers to find out their current BVD status in preparation for the expected introduction of legislation in 2021 for farmers in England to 'know their BVD status'. Many farmers were unaware that BVD was present on their farm until the check testing was performed.
- **Increased vaccine use**: Increasing awareness of infected status and encouraging discussion about the disease has led to a slight increase in overall vaccine use and importantly converted farms from lapsed vaccine use to full vaccine use.
- Interestingly, the vaccination status of the 32 farms granted PI hunts was 13 (41%) fully vaccinated, 5 (15%) lapsed vaccinators and 14 (44%) not vaccinating. This is slightly lower vaccine use when compared to the 150 farms as a whole. Of the farms that buy BVD vaccine there has been a slight shift towards the use of Bovela BVD vaccine.
- This change can be explained by lapsed vaccinators and new vaccine users tending to choose Bovela. Bovela is more expensive than Bovilis but it is easier to follow the vaccine protocol correctly as it is a single dose.
- **BVDFree England**: A voluntary industry-led scheme, working to eliminate BVD from all cattle in England by 2022 (BVDFree,2020). The 'Stamp It Out' scheme has given a much needed boost to BVDFree England. In July 2018 Nantwich Farm Vets had 19 of the 150 farms signed up to BVDFree England and now there are 148 farms registered on the database.

To achieve BVDFree Test Negative herd status there are 2 options:

1. Tag and test (for BVD virus) all calves born for two years minimum or
2. Youngstock blood sample (for BVD antibody) at least 5 unvaccinated animals per management group (at 9-18 months of age) for two years minimum (BVDFree,2020).

66 farms have now completed Year 1 accreditation and will hopefully become fully accredited over the next 12 months

- **Increased BVD monitoring**: There has been a 75% increase in the number of herds using BVD ear tags on all newborn calves (19% to 33% of farms). There has been a small increase in the number of farmers only BVD ear tagging replacement heifers (3% to 5% of farms). Farms that only BVD ear tag heifers still need to perform check testing to meet the requirements of BVDFree England.

Several farms that do not vaccinate for BVD have signed up to regular monitoring such as NML BVD Herdcheck which includes quarterly bulk milk BVD PCRs and annual heifer BVD antibody check testing.

- **Future BVD Planning**: 50 farms (33%) will BVD ear tag everything born, 79 farms (53%) will use heifer check testing, 17 farms (11%) have no plan and 4 farms (3%) will continue antigen blood testing. Nine of the farms with 'no plans' are flying herds. Flying herds are not yet engaging fully with testing for BVD. The only option for flying herds to reach BVDFree testing standards is to BVD ear tag every calf born. This additional cost on calves that are only on farm for the first few weeks of life is a difficult sell to farmers. Legislation will be needed to bring flying herds in line with BVDFree requirements.



The decision was made to carry out further investigation consisting of BVDv PCR testing for the whole herd. The main improvement noticed on farms that have eradicated BVD is in calf health. One farmer commented that they no longer need to add antibiotics to milk powder to treat sick calves. PI animals spread BVD and cause immunosuppression in their cohort. BVDV Npro protein mediates immunosuppression by reducing S100A9 protein availability/activity in infected cells resulting in reduced type 1 interferon production (Darweesh et al. 2018). This increases incidence of disease such as pneumonia and scours.

* CONCLUSIONS

Appendix 2 summarises the key achievements of 'Stamp It Out'. BVD is an important infectious disease of cattle worldwide and has major economic impact (Richter et al. 2017). The identification and removal of PIs must be combined with effective vaccination to eradicate BVD. The BVD 'Stamp It Out' funding was originally based on 20% of farms in England being infected with BVD. This seems to be consistent with Nantwich Farm Vets clients as PI hunts were performed on 32 (21%) of 150 farms involved. In the short time since the initial testing the status of many farms has changed. Vets need to continue to emphasise the importance of biosecurity to protect BVDFree Test Negative farms and to help them maintain their free status going forward. More needs to be done within the industry to advertise the benefits of BVDFree Test Negative status and promote the BVDFree England scheme as we work towards complete eradication of BVD in England.

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* APPENDIX 1 Two PI Hunt Examples

Farm 1

An all-year-round calving herd milking 150 crossbred cows. All replacement heifers are home reared. This is a closed herd apart from the purchase of a stock bull. This farm began vaccinating with Bovela BVD vaccine in 2016.

1. The farmer signed up to BVD 'Stamp It Out' in November 2018.
2. 1st on farm visit: 10 out of 10 positive on Heifer BVD antibodies 'check' test, Bulk Milk BVD PCR negative. PI hunt funding was granted.
3. 2nd on farm visit: This farmer was planning to sell up so urgent identification of PIs was preferred - in one week the farmer tagged every animal on the farm not contributing to the negative bulk tank sample. The farmer used PI hunt funding to claim £3 back for every tag that was used.
4. 3 PIs found & culled – 2 bulling heifers, 1 in-calf heifer (poor doers).
This farm continued to vaccinate with Bovela and eartagged all newborn calves until every animal was sold from the farm. The farmer was able to sell his animals with confidence that he was not selling on a PI animal.

Farm 2

An all-year round calving herd milking 200 Holstein Friesian cows. The farm rears half of the heifer replacements required and purchases half. This farm is fully vaccinated with Bovilis BVD vaccine.

1. The farmer signed up to BVD 'Stamp It Out' in November 2018.
2. 1st on farm visit: Positive bulk milk BVD PCR, PI hunt funding granted.
3. 2nd on farm visit: At the next milk recording every milking animal was tested for BVD antibodies on individual milk samples. There were 3 negative animals found that were then blood sampled for BVD antigen. 1 was positive, a bought-in animal. This cow was removed from the tank and then the bulk milk BVD PCR was rerun. This was then negative.
The farm began BVD ear tagging and continues to vaccinate with Bovilis.
4. 1 PI cow and 3 PI calves born and culled so far.

* APPENDIX 2

Key achievements of BVD 'Stamp It Out' at Nantwich Farm Vets			
		2018 Before 'Stamp It Out' (%)	2019 After 'Stamp It Out' (%)
BVD vaccination status	Fully vaccinated	52	61
	Lapsed vaccinator	7	1
	Non vaccinator	41	38
BVD vaccine products	Bovela	54	63
	Bovilis	45	37
	Bovidec	1	0
BVDFree England Registered		13	99
Year 1 accreditation achieved		0	44
Test Negative status achieved		0	6
BVD ear tags on all newborn calves		19	33
BVD ear tags on replacement heifers		3	5

