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The Impacts of Tuberculosis Testing on Veterinarians and Practices in Wales

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Views expressed in this report are those of the authors and not necessarily those of the Welsh Government.

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Contents

Executive Summary

This report presents the findings of a research project exploring the role and impacts of tuberculosis (TB) testing upon veterinary surgeons (vets) and practices. The research set out to provide a robust evidence base upon which to understand the impact of TB testing within the context of current challenges facing the veterinary profession. The research aimed to support and inform discussion on the future of TB testing in Wales.

Approach

The research engaged vets and other stakeholders for their views, including through an online survey, in-depth interviews, and at a round table. It also mapped and synthesised broader evidence that supports our understanding of the role and impacts of TB testing on vets and practices.

Background

Vets engaged in farm animal practice are central to the promotion of animal health and welfare and safeguarding public health in Wales. Farm animal practice and the veterinary sector as a whole support a range of positive clinical and economic outcomes, as well as working towards broader societal and environmental objectives. This includes being at the forefront of responses to persistent and emergent disease challenges, and in supporting farmers and the food supply chain more broadly.

The veterinary profession in Wales face challenges that present risks to the sustainability and impact of farm animal practice. The UK's departure from the EU, the additional pressures brought about by the COVID-19 pandemic, and the continued increases in small animal ownership, for example, have all served to exacerbate existing workforce challenges. This includes challenges in the recruitment and retention of vets working in farm animal practice, as well as presenting constraints on vet capacity.

These issues limit the ability of the veterinary profession to respond to clinical challenges, and in furthering strategic outcomes in the Welsh Government's Animal Health and Welfare Framework. Addressing workforce challenges therefore represents a key strategic necessity for the short- and long-term sustainability of farm animal practice, and in ensuring and improving the contribution that it makes to the agricultural sector more broadly, including in tackling issues such as TB.

Tuberculosis in Wales

A key area of focus for farm animal practice is the identification and eradication of TB. The disease is one of the most pressing animal health issues in Wales, with broader implications for public health. Alongside animal health, the disease has a significant social and financial

impact on farmers, their businesses, and the wider rural community. Due to its significant impacts, tackling TB is a priority for Welsh agriculture and the Welsh Government.
A key strategic element to the Welsh Government's approach to TB includes the Eradication Programme. Measures such as close surveillance through TB testing has seen the incidence of TB amongst Welsh herds decreasing gradually since it was introduced in 2008. Human cases of TB have also significantly reduced over the last decade. Despite this, the disease remains a significant public health priority, both in Wales and internationally.

The programme does place significant demands on vet capacity, with an estimated 2.1 million skin tests being completed in 2020. Routine TB testing is a key tool in the monitoring and early identification of disease, and the primary testing method is the tuberculin skin test. Historically, testing has been conducted by veterinary surgeons working either for governmental agencies (including APHA) or for private vets working in their capacity as Official Veterinarians. Animal Health Officers, which are also known as technicians or 'lay testers', working within APHA can also conduct tests.

Impacts of TB Testing on Vets and Practices

Beyond the important clinical animal and public health outcomes of the Eradication Programme, conducting TB testing itself confers a range of broader impacts for vets and practices. These include both positive and negative impacts of testing upon vet capacity, for example, and the economic contribution that it can make in supporting practices and other services, such as out-of-hours emergency provision. Moreover, there are broader clinical impacts including those derived from broader engagement with farmers whilst testing.

Recruitment

In consultation with vets as part of this research, 72 per cent of vets reported facing challenges in recruiting staff in farm animal practice very often or always. Many felt that TB testing was itself a key driver in the challenges that they were experiencing with regard to recruitment, with 83 per cent of respondents suggesting that it was having negative or major negative impacts. For some, the challenges surrounding recruitment were particularly acute, presenting risks to business viability.

Workload

Alongside challenges in recruitment, vets tended to report increases in workload over the last year. Examining the role and impact of TB testing, it was broadly felt that TB testing had significant negative impacts on vets' workload. For many, TB testing represented a significant commitment in time. In more open conversations, some vets were concerned that there was very little spare capacity within the system, which presented a range of risks including for practices, their clients, and in responding to novel disease challenges. Conversely, for some smaller practices, income generated from TB testing supported an appropriate scale within a farm team which creating sufficient capacity for a more balanced workload.

Job Satisfaction

Vets expressed concerns about the implications of TB testing on job satisfaction. Together, 66 per cent of respondents felt that testing was either unenjoyable or very unenjoyable. Those that were agnostic or more positive tended to cite that they enjoyed the opportunity to get on farm. There were concerns from some senior vets towards their more junior colleagues, where they felt it was important to not overload them with too much testing. These findings mirror broader research that found evidence to suggest job dissatisfaction, including with high levels of routine testing, can lead to vets drifting away from farm animal practice.

Retention

In more open conversations, vets expressed concern surrounding the possible impacts of low job satisfaction upon the retention of vets. This tended to be offered more as a perception of general risk with farm animal practice than as any specific instance. A key challenge faced by some practices, however, was the decrease in the retention of international colleagues, including those from the EU. This served to heighten concerns surrounding retention and the role and impact of TB testing, as international colleagues were often focused on the delivery of more routine work including testing.

Economic Impacts

On average, vets reported that testing represented 24.8 per cent of income for farm animal practices. Those engaged in mixed practice reported an average of 6.6 per cent of practice income. In more open conversations, testing income was variously described as 'bread and butter'. From this perspective, testing income provided a constant that was valued, including for short- and medium-term planning.

There were conflicting views on the relative importance of testing income for the viability of other farm animal practice. Some felt that testing income supported sufficient scale within farm teams to support other services such as out-of-hours emergency provision. Others felt that time spent on testing incurred significant opportunity costs, limiting or crowding out opportunities to engage in other work, including in preventative advisory services.

Exploring this issue further, in aggregate economic terms, responses suggested that TB is a low-margin endeavour. Comparing the time spent and income generated, the findings suggest that vets spend proportionately more time on testing than they generate in income. In more open conversations, however, it was felt that there was considerable variability in the economics of testing. It was often expressed that testing larger herds was quicker and easier than testing smaller herds, which made them more valuable than smaller herds. Others highlighted that they felt as though testing on smaller units was more likely to generate further work, which heightened the economic value of engaging with them.

Clinical Impacts

Beyond the clinical benefits of TB testing itself on animal and public health, there are other potential clinical impacts. These include impacts derived from vet capacity supported by testing income, the services that they are able to offer, and the broader clinical work that vets take on as a result.

Views on the relative importance of TB testing on broader clinical outcomes were mixed. Those who felt more positively tended to cite the importance of the opportunity to be on the farm and to passively inspect cattle for other issues or notifiable diseases whilst testing. This could generate conversations and other clinical work. Testing also offered opportunities to explore other aspects relating to TB, including biosecurity measures, disease reduction, purchasing policy, stock introduction, and quarantine measures.

Those who were more hesitant towards the value of testing tended to cite that there were other more valuable opportunities to explore broader clinical issues, including on farms less likely to have regular contact with their vet. These included the introduction of other initiatives, services and support, such as prescribing champions, as well as farm assurance work.

Importantly, in thinking about broader clinical impacts, there was a general perception that testing workload limited opportunities for innovation and professional development. Overall, 64 per cent suggested that testing was only slightly or not at all supportive of innovation. There were also concerns surrounding the negative implications of high workloads for professional development and career progression more broadly. From these perspectives, TB testing potentially undermined the longer-term efficacy of the profession in tackling novel challenges, as well as reducing the attractiveness of farm animal practice.

Overall Impacts

The weight of evidence suggests that the negative impacts of TB testing (as it is currently formulated) are exacerbating risks facing the profession. These include the role of testing in shaping trends in recruitment and retention, as well as in undermining general levels of capacity to meet existing commitments.

Conclusions

There was consensus on the value and importance of exploring how TB testing could be reformed in order to address some of the negative implications whilst retaining the benefits, including both economic and broader clinical outcomes. This view was shared by broader stakeholder groups, including farming representatives.

In terms of potential solutions, there was also consensus on the potential greater role that suitably trained para-professionals could play in alleviating some of the short-term challenges surrounding capacity. Asked the extent to which para-professionals could undertake the delivery of tests, 66 per cent of respondents felt that they should very often or always do so.

Conversely, 22 per cent of respondents felt that vets should very often or always undertake tests.

In terms of the potential impacts of drawing more heavily on para-professionals, vets cited a broad range of potential benefits. These included freeing up time to devote to other more meaningful work, such as greater attention towards and involvement in breakdown prevention and management of TB.

Whilst there was consensus, respondents highlighted a range of considerations or caveats. Respondents highlighted, for example, the importance of considering the implications of drawing on para-professionals on compliance, oversight, and conflicts of interest. Some felt that it was important to consider the levels of expertise required by para-professionals, how they would be trained, and who would be responsible for accreditation.

There were also concerns surrounding the potential economic implications of drawing more heavily on para-professionals. Some felt that there would be cost implications to recruiting, training and supervising para-professionals, for example, and were keen to highlight that this option would not generate cost savings. Others were concerned that they may not be able to take on a para-professional without risking the viability of a vet within the farm team. This was especially the case for smaller, independent practices.

Overall, many vets felt that the potential benefits associated with greater use of suitably trained para-professionals to address short-term capacity constraints and longer-term recruitment and retention challenges outweighed the risks. How they were drawn upon, including issues surrounding governance, compliance, training, and the precise responsibilities that para-professionals could hold, was felt to require careful consideration.

2 Introduction

This report presents the findings of a research project exploring the role and impacts of TB testing upon vets and practices.

Aims of the Research

The research set out to provide a robust evidence base upon which to understand the impact of TB testing within the context of current challenges facing the veterinary profession. These include acute capacity constraints, and those in the recruitment and retention of vets within farm animal practice. Ultimately, the research set out to inform discussion between the veterinary profession, the farming community, and the Welsh Government, as well as generating ideas on the future of TB testing in Wales.

Approach

In working towards these objectives, the research drew on a range of data to support our understanding. This included mapping and synthesising the evidence base in order to ensure that the research built on existing research and experience. Furthermore, the research undertook consultation with vets and practices across Wales through an online survey (n= 55), in-depth interviews (n= 9), and a roundtable (participants n= 6). Broader stakeholders were also consulted, including representatives from the farming community and Veterinary Delivery Providers (VDPs, n= 3).

For a more detailed outlined of the approach to this research, please see Technical Annexe: Methodology.

How to Navigate this Document

In communicating the findings of the research and in considering their implications, the report is structured as follows:

- Chapter 2 provides a summary of the broader context surrounding the research, including the nature and composition of farm animal practice in Wales, and the challenges facing the veterinary profession.
- Chapter 3 summarises TB in Wales, the challenges that it presents, and the focus and organisation of the TB Eradication Programme.
- Chapter 4 explores the substantive findings of the research, including the views and experiences of vets and practices towards TB testing.
- Finally, Chapter 5 presents the conclusions and implications emanating from the research for TB testing in Wales.

3 Background

Here we present a summary of the broader context surrounding the research. Drawing on existing evidence and data, it examines the composition and focus of the veterinary sector in Wales, as well as trends shaping farm animal practice. It goes on to examine the nature and extent of some of the challenges and risks facing vets and practices, including in the delivery of farm animal practice.

The Veterinary Sector in Wales

The veterinary sector in Wales comprises 2,691 veterinary surgeons as well as 1,301 veterinary nurses registered to practise[1]. Active vets are engaged in a range of activities and a diverse range of organisations, including in private practice and governmental agencies.

Small animal practice represents a significant focus for the veterinary sector in Wales and across the UK. For example, 2019 data from the UK found that an estimated 52.6 per cent of veterinarians were mainly focused on small animal practice. A further 11.7 per cent were mainly engaged in mixed practice, with 3.2 per cent focused on farm animal practice. The remaining focus of vets includes a diverse range of other activity, including equine practice (5.5 per cent), referral practice and consultancy (6.4 per cent), and engaging in activity on behalf of the Animal and Plant Health Agency (APHA, 1.5 per cent)[2].

Farm Animal Practice

Vets engaged in farm animal practice, either through mixed practice or in its entirely, are central to the promotion of animal health and welfare and safeguarding public health. Whilst farm animal practice represents a small proportion of the overall focus of the veterinary profession in Wales, the role and impact of this work are substantial. In terms of the numbers of animals in their care and the public significance of their work, veterinarians engaged in farm animal practice play a crucial role in Welsh society.

Through farm animal practice, vets working in private practices provide farmers with a range of services, support and advice. The focus and intensity of the support can vary, including in the treatment of an individual sick animal, or more broadly to focus on disease prevention and population health through vaccination, housing, and husbandry advice and guidance. It can include the monitoring, surveillance and reporting of notifiable diseases through diagnostics such as taking blood and performing ultrasound or x-ray exams, as well as performing routine TB tests.

More broadly, vets engaged in farm animal practice also support the food supply chain. This includes trade assurance of animal production and products through the provision of farm certification and Export Health Certification. Moreover, Food Standard Agency (FSA) Official Veterinarians carry out meat hygiene checks to ensure that there have been no issues concerning the welfare of animals presented for slaughter, including with regard to TB.

[1] Facts and Figures from the RCVS (2019)

[2] The 2019 Survey of the Veterinary Profession, RCVS (2019): N.B. These figures provide only an indication, rather than a definitive account, of the precise focus of veterinary surgeons based in Wales.

Vets also play an important role in ensuring biosecurity, which can pose significant risks to livestock farmers. Furthermore, they are increasingly involved in supporting knowledge transfer and behavioural change amongst farmers through the communication of scientific evidence and practical strategies for improving animal health, welfare and productivity.

Whilst all veterinarians look after animals in their care, those engaged in farm animal practice are actively engaged in more extended and complex relationships with a broader range of stakeholders. In deploying their expertise in the care and treatment of farm animals, for example, vets serve as key intermediaries between animals and farmers, between farmers and government, and between agriculture, the food industry, and consumers.

The centrality of their role within food production and animal health also subjects vets to complex and shifting demands. Vets are at the forefront of responses to persistent and emergent disease challenges, for example, such as TB, cattle mastitis, bluetongue, and highly pathogenic strains of avian flu, amongst others. They are also at the forefront of responses to public health risks posed by TB, E. coli, campylobacter, BSE, and other food and waterborne zoonoses.

Farm animal practice and the veterinary sector as a whole support a range of positive clinical and economic outcomes, as well as working towards broader societal and environmental objectives. The diverse range of outcomes supported by vets include 'protecting animal health and welfare, the natural environment, biodiversity, managing invasive species, climate change, food security, research and development, and [addressing] antimicrobial resistance'[3].

Trends Shaping Farm Animal Practice

The broader context within which farm animal practice operates is transforming. The relationships that connect vets with farmers, the food industry, consumers, and the government are themselves continuously evolving. These and other drivers, including changes in the political, regulatory and economic environment, have influenced shifts in the objectives, extent and organisation of farm animal practice in Wales.

Diversification and Specialisation

[3] Taking charge of our future: A vision for the veterinary profession for 2030, Vet Futures Project Board (BVA, RCVS), (2015)

Over the last 30 years, for example, there has been significant diversification and specialisation within the veterinary sector. This includes a shift in veterinary attention away from mixed practice (which includes farm animal practice) towards small animal practice[4]. Between 2010 and 2019 across the UK, for example, those vets mainly engaged in small animal practice increased from 45.8 per cent to 52.6 per cent. Correspondingly, those mainly engaged in mixed practice decreased from 22.1 per cent to 11.7 per cent over the same period[5].

The impacts of greater diversification and specialisation upon farm animal practice are complex and multifaceted. There have been concerns, for example, surrounding the potential adverse impacts of an increased focus on small animals upon the long-term sustainability of farm animal practice. These concerns have long roots. In response to the foot and mouth disease inquiries of 2001, for example, the UK House of Commons Environment, Food and Rural Affairs Committee (EFRACom) reported:

> *'Although there are sufficient vets in total, there are concerns about whether there are enough large animal practitioners* [those mainly engaged in farm animal practice]. *The economics of farming is leading to less use of veterinary services and is further reducing the attractiveness of large animal practice. At the same time the government's animal health and welfare and veterinary surveillance strategies appear to require a greater on-farm presence of veterinary surgeons.'*[6]

Together, greater diversification and specialisation have precipitated a shift in focus of the profession away from the provision of farm animal practice. This includes reducing the overall capacity of the sector to address clinical challenges facing farming communities, as well as adding inflationary pressures to attract available vets to work in farm animal practice.

Consolidation

Alongside greater diversification and specialisation, there has also been a gradual consolidation of practices within the veterinary sector. Historically, the prevailing business model within practices has tended to be small, independent and locally owned. There has been a gradual expansion in business models that seek greater consolidation and the centralisation of certain functions. This includes the expansion of corporations, chains, and joint ventures operating within the sector. Greater consolidation in Wales reflects broader international trends, including across Europe and the US, as well as reflecting shifting patterns of investment and in business organisation.

[4] For example, Buzzeo et al. (2014)

[5] The 2019 Survey of the Veterinary Profession, RCVS (2019)

[6] House of Commons Environment, Food and Rural Affairs Committee (2003)

Demand for Farm Animal Practice

Structural changes influencing farm animal practice, including apparent diversification, specialisation and consolidation within the profession, have been variously attributed to economic drivers shaping farming animal practice. These include fluctuations in the demand for services. Demand for farm animal practice is shaped by a range of actors, including government and the agricultural industry. What is more, it is influenced by a range of factors and considerations, including in the provision of public and private goods.

There is, however, little apparent robust evidence with which to support our understanding of the extent of fluctuations in the demand for farm animal practice, including in Wales. This is due in part to the fact that farm animal practice is complex and varied. There are both public and private customers for farm animal practice, as well as both public and private providers of veterinary services. Private vets serve the needs of both private customers and government. Government, in turn, operates as a contractor for certain veterinary services, particularly in the provision of public goods. This presents challenges in accurately mapping and understanding aggregate demand and how changes in animal health and welfare policy could impact vets and practices.

In terms of public demand for veterinary services, historically, government has acted as a significant sponsor of both the veterinary profession and, to varying degrees, the agricultural industry. Government has therefore had a significant influence on the demand for both public and private veterinary services supporting farming communities. In addition, through both its direct client role and its sponsorship of the agricultural industry, government has also generated much of the necessary short- and medium-term demand required to sustain key elements of farm animal practice.

Public demand for farm animal practice is currently determined in large part by governmental policy and programming. This is influenced by the prevailing disease control and public health priorities and commitments. Moreover, it is established through legislation and regulation, which shape the activities and responsibilities of vets, including with respect to the assurance and certification of animal production and products. The strategic orientation of the government's approach is outlined in the Wales Animal Health and Welfare Framework 201424. The Framework sets out a long-term vision for animal health and welfare and seeks to work towards five strategic outcomes. These seek to ensure continuing and lasting improvements in standards of animal health and welfare, whilst protecting public health and making a positive contribution to the economy and environment.

The precise dependence of veterinary practices upon the demand for public goods in Wales is not well understood. There is largely anecdotal evidence with which to suggest that practices are vulnerable to fluctuations in the demand for public goods, including those brought about by changes to policy and programming. The removal in 2008 of the brucellosis testing programme, for example, negatively impacted practices, particularly in Scotland and

North Wales, whilst accounting for only a relatively small fraction of the total funding for TB eradication[7]. At the time, the UK Government Department for Environment, Food and Rural Affairs (Defra) attracted criticism for the lack of notice given for the decision to withdraw funding. This suggests that fluctuations in the demand for public goods can have significant financial implications for vets and practices. These impacts may vary according to local circumstances, including the historic and existing prevalence of specific diseases and in the composition and organisation of local veterinary provision.

Farm animal practice is also influenced by fluctuations in private demand from farming and industry. This is influenced, in turn, by a range of factors, including broader market forces and the prospects of the livestock industry as a whole. The financial environment in which livestock farmers operate shows large temporal fluctuations due in large part to the influence of market forces and currency exchange rates upon input costs and product prices. These fluctuations can also impact the demand for farm animal practice; however, to what extent is not clearly understood.

The Welsh livestock industry faces strong competition not only from UK and EU countries but also, increasingly, from global markets. It continues to adjust structurally to changes in market access and the accompanying regulatory environment resulting from the UK's decision to leave the EU. At the same time, animal producers face increasingly higher environmental, welfare, and food assurance regulations and standards, driven in part by higher consumer expectations.

Private demand for veterinary services has also been influenced by structural changes in animal production on Welsh farms. The agricultural sector, too, has witnessed the consolidation of farms and businesses, which has served to reduce the aggregate numbers of farms in Wales. What is more, there have been reductions in the total numbers of animals kept on farms. Between 2005 and 2019, for example, there has been a decrease of 14.7 per cent in the number of calves and cattle, and 17.1 per cent in sheep and lambs[8].

The focus and extent of the economic support offered to livestock farmers may also influence the demand for veterinary services. Historically, economic support for farmers has been coordinated through the Common Agricultural Policy (CAP). The Sustainable Farming Scheme, the Welsh Government's proposed successor to the CAP, seeks to support greater environmental protection and restoration, the development of natural capital, and encouraging the provision of ecosystem services. There are also provisions that seek to improve animal welfare through rewarding those achieving standards in excess of the minimum statutory requirements.

[7] The changing role of veterinary expertise in the food chain, Enticott et al. (2011) R. Soc. B, Volume 366, Issue 1573, pp. 1955-1965, 2011.

[8] Survey of Agriculture and Horticulture, Welsh Government (2019) NB. Latest available data for long-term comparisons.

Demand is also shaped by broader advances in the knowledge and understanding of how to best support animal health and welfare. Challenges such as antimicrobial resistance are requiring vets and farmers to think differently regarding how they approach animal health. This has precipitated in part a greater emphasis within farm animal practice upon preventative medicine. This has redefined and expanded the professional status of vets from providing tangible remedial services towards providing greater and more detailed disease prevention advice. This shift in focus has presented vets with a range of challenges alongside opportunities, including in shifting towards more advisory business models that are less reliant on medicine sales to supplement their income.

The Future of Farm Animal Practice

Together, the economic viability and sustainability of farm animal practice, and, by extension, services such as out-of-hours emergency provision, are influenced by the range of factors and trends including those outlined above. The economics of farm animal practice are highly contextual and shaped by the environment, geography, history and tradition. These include, amongst others, the organisation and extent of local veterinary provision, the types of farms and the farming communities that they serve, the disease burden of an area, and the broader regulatory and macroeconomic context shaping local responses.

Prevailing trends have served to create a dynamic environment requiring both farmers and vets to adapt. The structure and practice of farming, and, by extension, the veterinary profession, are likely to undergo further change. This has consequences for veterinary practices and the wider public interest in the health and welfare of production animals. Furthermore, it has implications for the governance of veterinary services.

Challenges Facing Farm Animal Practice

These trends have offered the veterinary sector a range of opportunities, including in successfully responding to the increase in companion animal ownership. They have, however, also exacerbated existing or presented new challenges, especially in the recruitment and retention of vets in farm animal practice. The UK's departure from the EU, the additional pressures brought about by the COVID-19 pandemic, and the continued increases in small animal ownership, for example, have all served to exacerbate existing workforce challenges facing farm animal practice.

Trends and concerns regarding shortages of farm animal vets have a long standing. These shortages have, however, been largely addressed by attracting international colleagues to work in the UK. Vets who have qualified overseas, including in the EU, make a significant contribution to farm animal practice in Wales and the UK. The British Veterinary Association reported that prior to Brexit in 2014, 43 per cent of new vets in the UK trained in EU vet schools[9]. According to data published in 2018, as much as 80 per cent of vets working in the Animal and Plant Health Agency in Wales were trained overseas[10].

The reliance on international colleagues in the delivery of certain aspects of farm animal practice has been explained by several factors. Some have argued that this has been driven by shortages of UK-trained vets to take on more routine work such as TB testing as well as certification and inspection work. Others have suggested that this has also been driven by UKtrained vets moving away from mixed or farm animal practice, instead seeking opportunities to work with small animals[11].

With the UK's departure from the EU, there has been a marked decrease in the numbers of international colleagues coming to work in the UK. Figures from the RCVS Register show a marked decrease in vets joining the UK profession in the past two years, from 2,782 in 2019 to 2,061 in 2021. Meanwhile, there has been a marked increase in vets leaving the UK since 2018, either by leaving the Register entirely or moving to another registration category. As a result of these trends, the net number of vets working in the UK has decreased substantially since 2019. This trend has been driven in large part by a significant decrease in the numbers of vets joining from overseas, particularly from the EU. In 2018, over half (53 per cent) of new registrants were EU-qualified, but in 2021 this was less than one fifth (19 per cent). Workforce challenges have been exacerbated by COVID-19. The RCVS's recent survey of the veterinary profession with regard to their experiences of the pandemic found that during this time many had to take on additional responsibilities (54 per cent) and alter their working patterns (71 per cent). Eighty per cent of respondents found an increase in their caseload due to an increase in companion animal ownership. Many felt that this had taken a toll on them personally, with 65 per cent experiencing conflict between their well-being and their professional roles. The pressures that vets feel have been exacerbated by a continued increase in small animal ownership, including marked increases as a result of the pandemic.

The consequences of workforce shortages are significant, especially for farm animal practice. These include limiting or undermining the impact and sustainability of the sector to address clinical challenges, such as in the monitoring and treatment of disease and in furthering broader strategic animal and public health objectives. This includes furthering strategic outcomes included in the Welsh Government's Animal Health and Welfare Framework. Shortages may also limit the focus that can be applied to improving engagement with

[9] Brexit & The Veterinary Profession, British Veterinary Association, 2017.

[10] Research Briefing: Brexit implications for Bovine TB in Wales, Gareth Enticott, January 2018

[11] Mobile Work, Veterinary Subjectivity and Brexit: Veterinary Surgeons' Migration to the UK, Gareth Enticott, Sociologia Ruralis, Volume 59, Issue 4, pp. 718-738, 2019.

preventative medicine. The continued loss of farm animal vets through poor retention may also serve to undermine the knowledge and experience base that can be pivotal in effective responses to emergent disease challenges.

Addressing workforce challenges therefore represents a key strategic necessity for the short- and long-term sustainability of the veterinary sector, and in ensuring and improving the contribution that it makes to the agricultural sector more broadly, including in tackling issues such as TB. The nature and extent of these challenges are explored in more detail in the subsequent chapter outlining the findings of the research. We now proceed to describe TB in Wales, and the Welsh Government's response through the Eradication Programme.

4 Tuberculosis in Wales

A key area of focus for farm animal practice is the identification and eradication of TB. The disease is one of the most pressing animal health issues in Wales, with broader implications for public health. Furthermore, it places significant demands on vet capacity, with an estimated 2.1 million skin tests being completed in 2020[12]. Here we briefly describe the characteristics and epidemiology of TB in Wales, before outlining how it is being addressed through the Eradication Programme.

Characteristics of TB in Wales

Public Health

Alongside animal health, TB is a public health priority because it is a zoonotic disease, which means that it can be naturally transmitted from animals to humans under certain conditions. In humans, TB can be a serious and sometimes fatal disease. Due to the comprehensive TB Eradication Programme in Wales, including measures such as close surveillance through TB testing, human cases of TB have significantly reduced over the last decade. Public health controls such as routine pasteurisation of milk have also been highly effective in preventing infection in humans. As a result, the latest available surveillance data found that the annual number of reported human TB cases decreased by 53 per cent between 2009 and 2019 to 100 cases[13]. Despite this, the disease remains a significant public health priority, both in Wales and internationally[14].

Animal Health

[12] Epidemiology of bovine tuberculosis in Wales, Annual surveillance report 2020, APHA (2021)

[13] Reports of cases of tuberculosis to enhanced tuberculosis surveillance systems: UK, 2000 to 2019, Public Health England (2020)

[14] Tuberculosis in Wales Annual Report 2019, Data to the end of 2018, Public Health Wales (2019)

In cattle, TB is primarily a chronic respiratory disease that usually affects the lungs and lymph nodes. It is caught by inhaling or ingesting the bacterium Mycobacterium bovis (M. bovis). The primary transmission route is from cattle to cattle, with bacteria from an infected animal being released into the air through coughing and sneezing, which can spread the disease to others. This usually happens when animals are in close contact with one another; therefore, animal density is a major factor in the transmission of M. bovis.

Indirect transmission of TB is also possible through contact with material from an infected animal, as well as contaminated food and water. Moreover, M. bovis can be transmitted from infected cows to their offspring during suckling, and through the feeding of infected unpasteurised (raw) waste milk to calves. The disease can also pass from cattle to badgers and from badgers to cattle through direct or indirect contact. Other mammals, including camelids, deer, goats, and domestic animals, are also susceptible to TB.

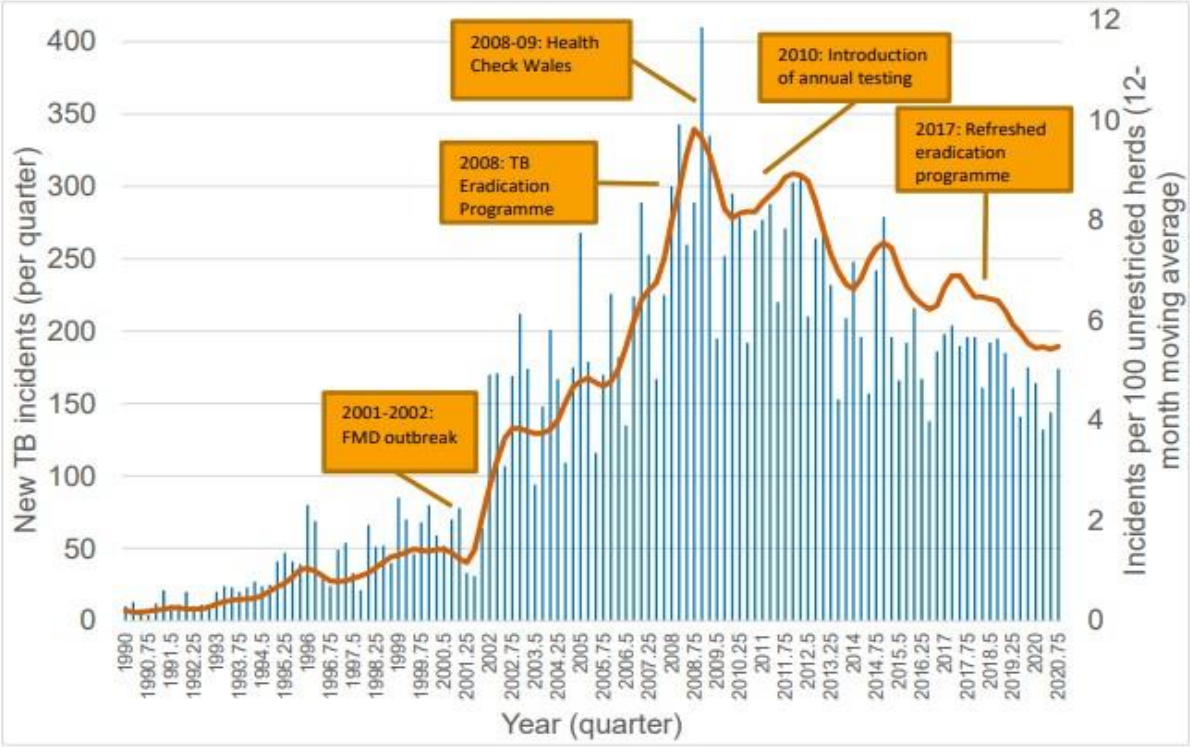
TB can have profound implications for animal health and welfare. Amongst infected animals it can cause increased mortality, reduced fertility, weakness, a loss of appetite, weight loss, fluctuating fever, intermittent cough, diarrhoea, and large prominent lymph nodes. TB can also have a prolonged course, and symptoms may take months or years to appear. In most cases, infected cattle are able to transmit the disease before they show any symptoms, which may be many months after they have been infected. Controlling TB therefore depends on detecting and eliminating infected cattle as early as possible.

The Extent of TB in Wales

The latest available data suggest that, apart from small fluctuations, the incidence of TB amongst Welsh herds has been decreasing gradually since the introduction of the TB Eradication Programme in 2008 (see Figure 1):

Figure 1: Number of new TB incidents each year, and 12-month moving average of incidents per 100 unrestricted herds, 1990–2020[15]

[15] Epidemiology of bovine tuberculosis in Wales, Annual Surveillance Report 2020, APHA (2021)



The number of new TB incidents decreased by seven per cent in 2020 (in comparison to 2019) and was the lowest observed level for over 10 years. In 2020, a total of 614 new TB incidents were recorded, 90 per cent of which were classified as Officially Tuberculosis Free-Withdrawn (OTF-W)[16]. In the monitoring and eradication of TB, cattle herds in Wales are given a status of either a clear test history (Officially TB Free, OTF), when there is suspicion of TB infection within the herd (Officially TB Free Suspended, OTFS), or OTF-W when additional evidence suggests that infection is more likely to be present.

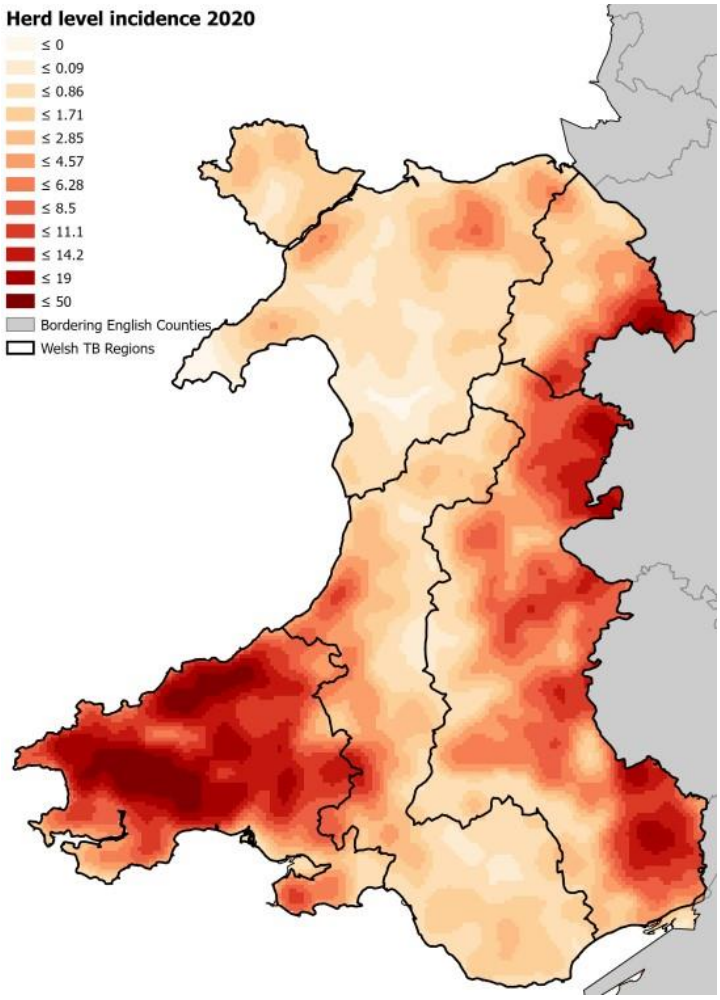
The risk of a herd becoming infected with TB is associated with risk factors such as herd density, herd size, production type, TB history, and location. These factors contribute to spatial concentrations of TB in cattle herds within areas of Wales. Dairy herds, for example, have had a significantly higher TB incidence rate than have beef herds, with this effect remaining after adjusting for herd size and location. Similarly, herds with more than 300 animals have the highest incidence rates. This results in a higher incidence in areas that have larger concentrations of dairy or bigger farms.

Due to the spatial distribution of TB, eradication efforts have been focused on ensuring that those areas most at risk are more closely monitored. To support this, Wales has been divided into five TB areas: High TB West, High TB East, Intermediate TB Mid, Intermediate TB North, and Low TB[17]. As can be observed in the map below, the largest clusters of new incidents were found in High TB West and High TB East along the border.

[16] Ibid.

[17] Bovine TB dashboards, April to June 2021, Welsh Government

Figure 2: Herd-level incidence of TB in Wales in 2020[18]



In terms of understanding the scale of TB, an estimated six per cent of Welsh herds incurred a new TB incident in 2020, and 5.3 per cent of herds were under movement restrictions in mid-December 2020. What is more, this trend is highly concentrated in high TB areas. The prevalence remained highest in HTBAW, where over half of all TB incidents are located. The five per cent decrease in prevalence observed in Wales overall in 2020 (in comparison to 2019) is driven by the decrease observed in HTBAE and HTBAW, which still constitute most TB incidents in any given year.

Broader Impacts of TB

The disease has a significant social and financial impact on farmers, their businesses, and the wider rural community. Poor cattle health and welfare resulting from TB can impact

[18] Epidemiology of bovine tuberculosis in Wales, Annual Surveillance Report 2020, APHA (2021)

significantly on farm productivity, for example. An extensive analysis on the impact of TB found an average milk loss of 10 per cent and a meat production loss of between six and 12 per cent over 5 years[19]. A more recent small-scale study on Irish dairy farms found a significant decrease in milk production by TB reactors (ranging from 120 to 573 kg) when compared to non-reactor cows[20]. The presence of TB can therefore have significant negative economic impacts.

Furthermore, a TB breakdown has several direct and indirect impacts on farm businesses. A detailed study exploring the impact of TB incidents upon farmers in Wales and England found that the costs associated with a breakdown averaged circa £6,600, with an interquartile range of circa £20,800[21]. This suggests that costs can vary significantly for different types of farms. Costs were found to increase with herd size, reflecting the scale effects of handling and maintaining more animals; breakdown duration (which reflects the increasing effort both in complying with testing and in coping with movement restrictions); and the number of animals compulsorily slaughtered (reflecting disruption to planned production).

There are little apparent data that point to the aggregate costs of TB for the agricultural industry in Wales as a whole. This may be due in part to the empirical challenges of identifying and capturing the full range of costs associated with lost animal productivity due to TB, and the subsequent costs of remedial measures once it has been identified in a herd. One estimate provided by Aberystwyth University suggested that the costs to industry were in the region of £6.4m per year[22].

More broadly, TB also has cost implications for public finances. These include the administration and implementation of the TB Eradication Programme and the associated measures, including testing, surveillance and compensation. Aberystwyth University again estimate these costs to be in the region of £25m per year[23].

TB Eradication Programme in Wales

Due to its significant impact on animal welfare, farmer welfare, and business viability, tackling TB is a priority for Welsh agriculture and the Welsh Government. A key strategic element to the Welsh Government's approach to TB includes the Eradication Programme. Introduced in 2008, the programme includes a suite of measures designed to strengthen biosecurity, surveillance and monitoring in the control of infected cattle and in financially supporting

[19] Meisinger G. Economic effects of the elimination of bovine tuberculosis on the productivity of cattle herds. 2. Effect on meat production. Monatsh. Veterinarmed. (1970) 25:7–13.
[20] Boland F, Kelly GE, Good M, More SJ. Bovine tuberculosis and milk production in infected dairy herds in Ireland. Prev Vet Med. (2010) 93:153–61. doi: 10.1016/j.prevetmed.2009.09.021
[21] Barns et al. Estimating the consequential cost of bovine TB incidents on cattle farmers in the High Risk & Edge Areas of England & High and Intermediate TB Areas of Wales, Defra (2020)
[22] Bovine TB, detection, protection and control, Aberystwyth University (2022)
[23] Bovine TB, detection, protection and control, Aberystwyth University (2022)

farmers in responding to a TB outbreak. It aims at tackling all sources of infection to carry out its long-term goal of eradicating TB in Wales.

The Eradication Programme is run by the Welsh Government and delivered in partnership with the Animal and Plant Health Agency (APHA) and veterinary delivery partners who conduct TB testing and farm visits. The TB Eradication Programme Board oversees the programme and comprises a range of stakeholders associated with farming. There are three regional eradication delivery boards in Wales (West, South/Mid and North) which are composed of local farmers, vets, and other agricultural stakeholders.

Since its introduction, the programme has evolved. Annual routine herd testing was introduced as the default throughout Wales in 2010, alongside measures with which to increase TB test sensitivity. There was an extension of cattle controls and measures for enhancing the management of prolonged breakdowns. Together, the Programme is composed of a number of different elements and interventions, including:

- testing of cattle herds (annually and biannually – depending on the area);
- a wide range of cattle control measures such as pre-movement testing; • movement restrictions on infected herds;
- slaughtering infected animals.

Routine TB Testing

Routine TB testing is a key tool in the monitoring and early identification of disease. The primary testing method is the tuberculin skin test, wherein a small amount of antigen is injected into the skin and the immune reaction is measured. Definitive diagnosis is made by growing the bacteria in a laboratory, a process that takes at least eight weeks to complete. The tuberculin skin test is widely used around the world.

Since 2010, routine TB tests have been conducted on Welsh cattle farms at least once a year. Where cattle react to the test, these reactors are slaughtered, and further tests, i.e. shortinterval tests, must be passed before the farm can be declared 'officially TB free'. Historically, testing has been conducted by veterinary surgeons working either for governmental agencies (including APHA) or for private vets working in their capacity as Official Veterinarians. Animal Health Officers, which are also known as technicians or 'lay testers', working within APHA can also conduct tests.

Following changes to the way in which TB testing was procured by the Welsh Government in 2014, testing is currently organised by two companies in North (Menter a Busnes) and South (Iechyd Da) Wales. Most testing is conducted by private vets on behalf of these organisations. Governmental vets working for APHA conduct an estimated 4–5 per cent of tests.

We now turn to explore the impact of TB testing on vets and practices.

5 Impacts of TB Testing on Vets and Practices

This section draws on a range of data to explore the impacts of TB testing upon vets and practices. It considers feedback from consultations with vets and other stakeholders, including through a survey, in-depth interviews, and a roundtable (which were completed as part of the research). Furthermore, it draws on broader research that further supports our understanding.

Understanding Impact

Beyond the important clinical and animal health and welfare outcomes of the Eradication Programme, conducting TB testing itself confers a range of broader impacts for vets and practices. These include positive and negative impacts of testing upon vet capacity, for example, and the economic contribution that it can make in supporting practices and other services, such as out-of-hours emergency provision. Moreover, there are broader clinical impacts including those derived from broader engagement with farmers whilst testing.

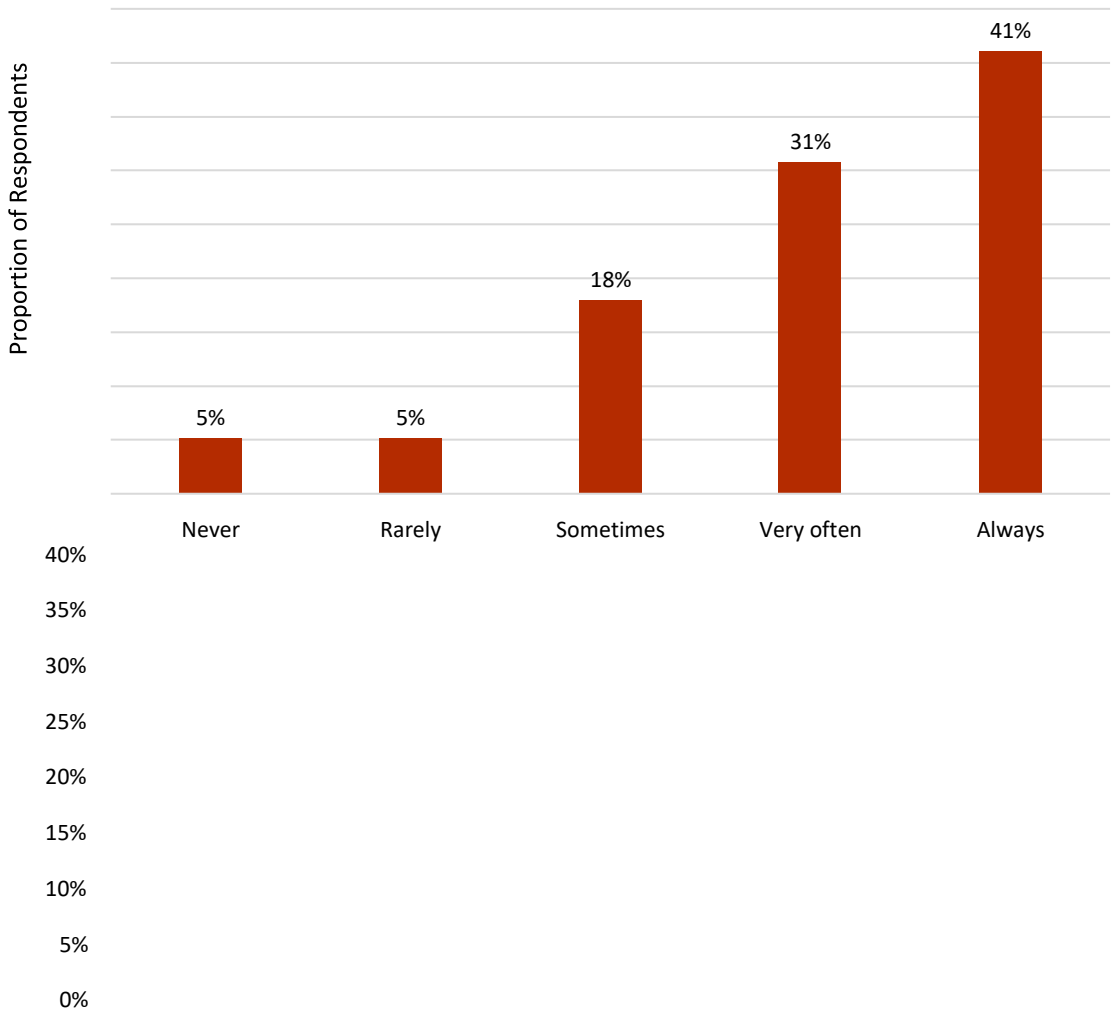
Capacity

Recruitment of Vets

There was consensus amongst vets regarding the extent of the challenges in recruiting new vets. Together, 72 per cent of vets reported facing challenges in recruiting staff very often or always.

Figure 3: Extent of challenges in recruiting new vets in the last financial year

45%



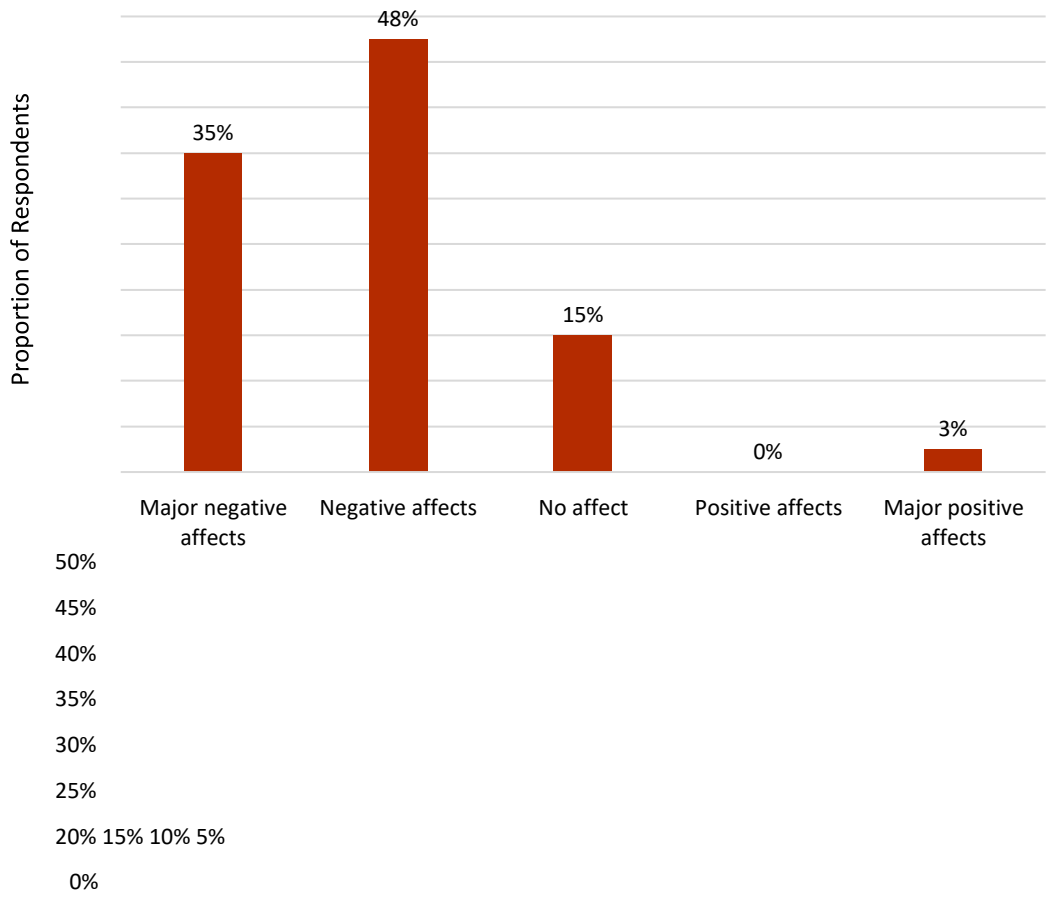
In conversations with vets, there were examples of practices that had seen reductions in staff due to their international colleagues returning home to work, or in which there were no longer as many candidates from overseas stepping forward to fill vacancies. This suggests that broader trends, including a marked decline in vets joining the UK profession in the last 2 years, are impacting Welsh practices[24].

The role and impact of TB testing upon recruitment were explored in more open conversations. Many felt that TB testing was itself a key driver in the challenges that they were experiencing with regard to recruitment. It was often raised that the differences in testing arrangements between Wales and England had put Welsh farm animal practice at a disadvantage. It was felt that prospective vets weighing up their options were finding a lower TB testing workload in England to be more attractive. One senior vet, for example, described an instance of an applicant whom they had interviewed deciding to practise in England. A reason was that they would have greater opportunity to engage in broader clinical work that would help to advance their careers.

[24] The 2019 Survey of the Veterinary Profession, RCVS (2019)

For some, the challenges surrounding recruitment were particularly acute. One small, independent and rural farm animal practice, for example, had been operating significantly understaffed for a considerable period of time. This had been causing immense pressure, so much so that they had been considering their future in the profession. Overall, vets felt strongly that TB testing was exacerbating challenges with regard to recruitment, with 83 per cent of respondents suggesting that it was having negative or major negative impacts:

Figure 4: The extent of impact of TB testing on the recruitment and retention of vets



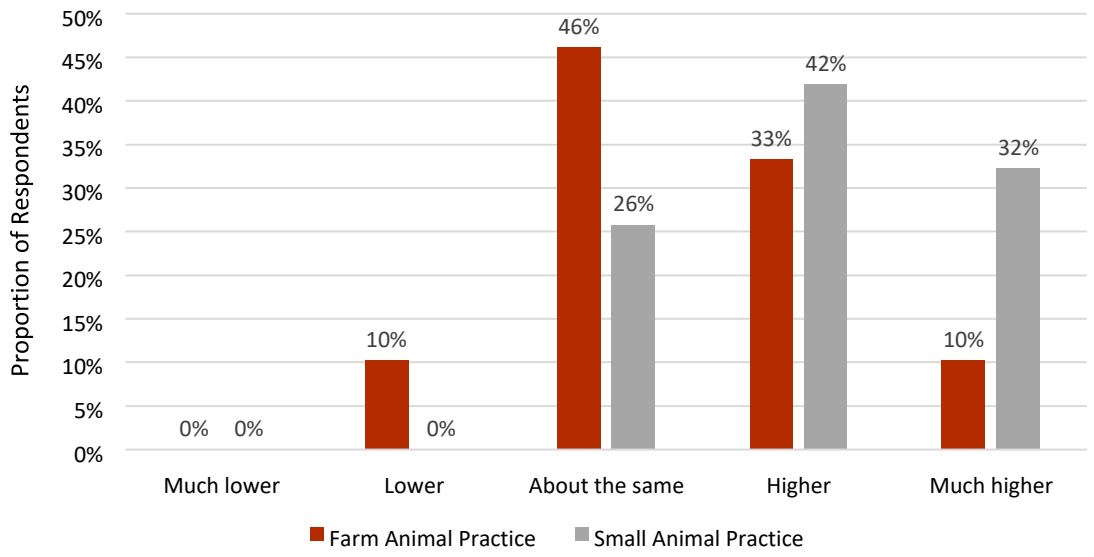
These findings also appear to align with broader research into trends in perceptions and attitudes of farm animal practice amongst trainee or newly qualified vets. Routine and challenging tasks such as TB testing have been found to be at the root of some negative

perceptions, which can serve to discourage subsequent engagement with farm animal practice[25].

Workload

Alongside challenges in recruitment, vets tended to report increases in workload over the last year. Whilst increases in small animal caseload within mixed practices were more pronounced, the general picture was one of an increasing workload for most vets.

Figure 5: Fluctuations in caseload across farm animal and small animal practice over the last year



Exploring the factors contributing to increases in workload, the reasons were complex, varied, and often shaped by local circumstances. Within mixed practice, for example, one respondent suggested that pressures from an increased workload from small animal practice had spilled over onto the farm team. Others had experienced increases in workload due to vet shortages to cover the full range of responsibilities.

Examining the role and impact of TB testing upon workload, responses were unanimous. It was felt that TB testing had significant negative impacts on vets' workload by 83 per cent of respondents. For many, TB testing represented a significant commitment in time, sometimes requiring long days that had to be balanced with other commitments such as being on call to provide out-of-hours emergency care.

[25] The future of cattle veterinary practice: Insights from a qualitative study, Woodward et al., Veterinary Record, Volume 185, Issue 7, 2019.

In more open conversations, some vets were concerned that there was very little spare capacity within the system, which presented a range of risks including for practices, their clients, and in responding to novel disease challenges. Others felt that there were opportunity costs to the challenges presented by high workloads, including crowding out other important work. These included personal development, and in exploring ways of more firmly establishing an advisory model with their clients. In addition, there was a general sentiment, both explicitly and implicitly within conversations, that TB testing was reducing the scope for important clinical work which some found to be more meaningful and enjoyable.

Conversely, some vets highlighted the positive role of income generated from TB testing, which supported an appropriate scale within a farm team. From this perspective, the income generated from testing created sufficient capacity for a more balanced workload, including in delivering out-of-hours provision through the rota. This perspective tended to be highlighted, albeit not always, by smaller practices focused mainly on farm animal practice.

Job Satisfaction

The implications of TB testing were also expressed in terms of job satisfaction. Some described TB testing as physical, often difficult, and in some cases dangerous work. Asked explicitly to what extent they enjoyed TB testing, most found it not to be enjoyable. Together, 66 per cent of respondents felt that testing was either unenjoyable or very unenjoyable.

Those who were agnostic or more positive about TB testing tended to express that they enjoyed the opportunity to be on the farm. This was especially the case for smaller herds, including suckler cattle, where the volume of testing was not so great and there were opportunities to have broader conversations with farmers. Conversely, others found testing smaller herds to be less enjoyable, citing that the animals were more challenging to handle and were time-consuming.

There were concerns from some senior vets towards their more junior colleagues with regard to the impacts of TB testing upon job satisfaction. They cited trying not to overload them with too much testing. Moreover, there was the perception from some that their colleagues were looking to improve their work–life balance and that their expectations had changed. These observations reflect broader trends and data which have found increases in the proportion of vets working part-time, alongside a decrease in vets personally undertaking their own out-ofhours work[26].

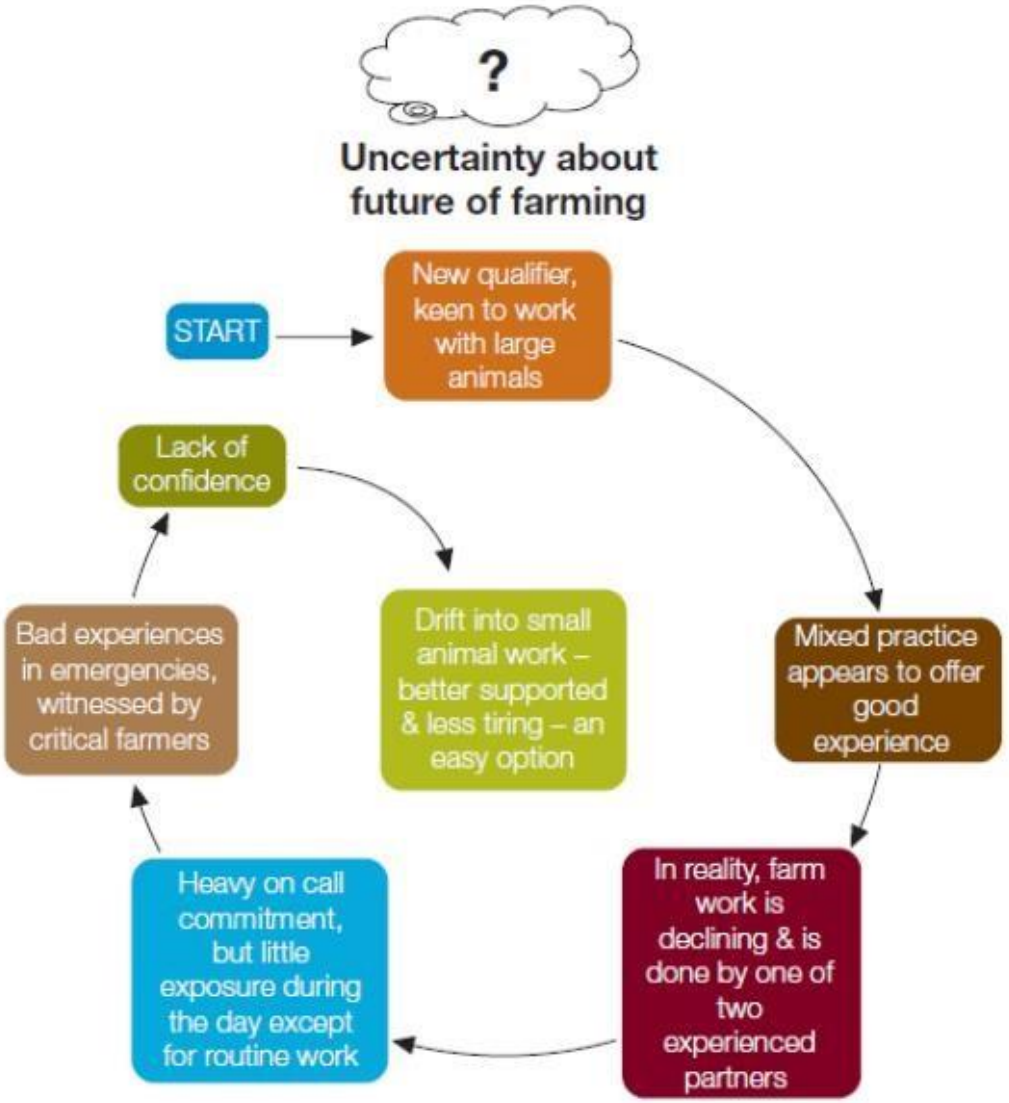
Broader research suggests that 80 per cent of vets report high job satisfaction, perhaps reflecting the nature of the job and the connection that many feel with the animals in their care. They are also likely to report high levels of stress as a result of their work, however, and those working in farm animal practice tend to report higher levels of dissatisfaction with the profession.

[26] The 2019 Survey of the Veterinary Profession, RCVS (2019)

More broadly, Robinson et al. (2004) found evidence with which to suggest that for newly qualified vets, many were unprepared for the realities of working with farm animals. This

included high levels of out-of-hours work exacerbated by a shortage of farm animal veterinary provision in some areas; challenges from farmers' attitudes towards younger vets; cash flow issues in farming and their limits on the demand for clinical advice (i.e. animals have a finite economic value); difficulties with physical and strenuous work; bureaucracy associated with farm animals; and high levels of routine, repetitive work (including dehorning and TB testing). Furthermore, Robertson et al. found evidence to suggest that dissatisfaction can lead to vets drifting away from farm animal practice towards small animal practice over time — even where that was not their original intention (see Figure 6).

Figure 6: Spiral of disillusionment (Robinson et al., 2004)



Retention

In more open conversations, there was expressed concern surrounding the possible impacts of job satisfaction upon the retention of vets. This tended to be offered more as a perception of general risk with farm animal practice than as any specific instance. A key challenge faced by some practices, however, was the decrease in the retention of international colleagues, including those from the EU. This served to heighten concerns surrounding retention and the role and impact of TB testing, as international colleagues were often focused on the delivery of more routine work including testing.

Working conditions and job satisfaction are important because they are predictors of retention. Broader evidence suggests that factors supporting the retention of vets within farm animal practice include working in a practice in which staff appraisals are carried out; coming from a family with a commercial farm; spending more time on clinical work; and being on call with an experienced vet in one's first job following graduation. Conversely, working in a practice in which accommodation is provided and an increasing number of years since graduation have been associated with significantly lower odds of remaining in farm animal practice[27].

Overall Impacts on Capacity

Vets often reported that capacity constraints that they were experiencing were particularly acute. The nature and extent of the challenges appeared to depend on specific local circumstances, including the size and focus of the practice and the farming communities that they serve. Conducting TB testing was generally viewed as incurring negative impacts on capacity, including with respect to recruitment, job satisfaction, and the retention of vets. Some, generally smaller practices, described a careful balancing act in achieving sufficient scale within farm teams in fulfilling their commitments. From these perspectives, TB testing conferred some positive impacts on capacity.

Vets did, however, generally express a sense of urgency regarding the question of capacity, a finding that was confirmed within discussions at the roundtable. Despite some concerns surrounding the implications of potential solutions to this question, vets were unanimous that something needed to be done. Even amongst those expressing caveats or further considerations regarding reconfiguring how TB testing was undertaken, it was seen to be a valuable place to start.

[27] Adam et al. (2015) Retaining vets in farm animal practice: a cross-sectional study

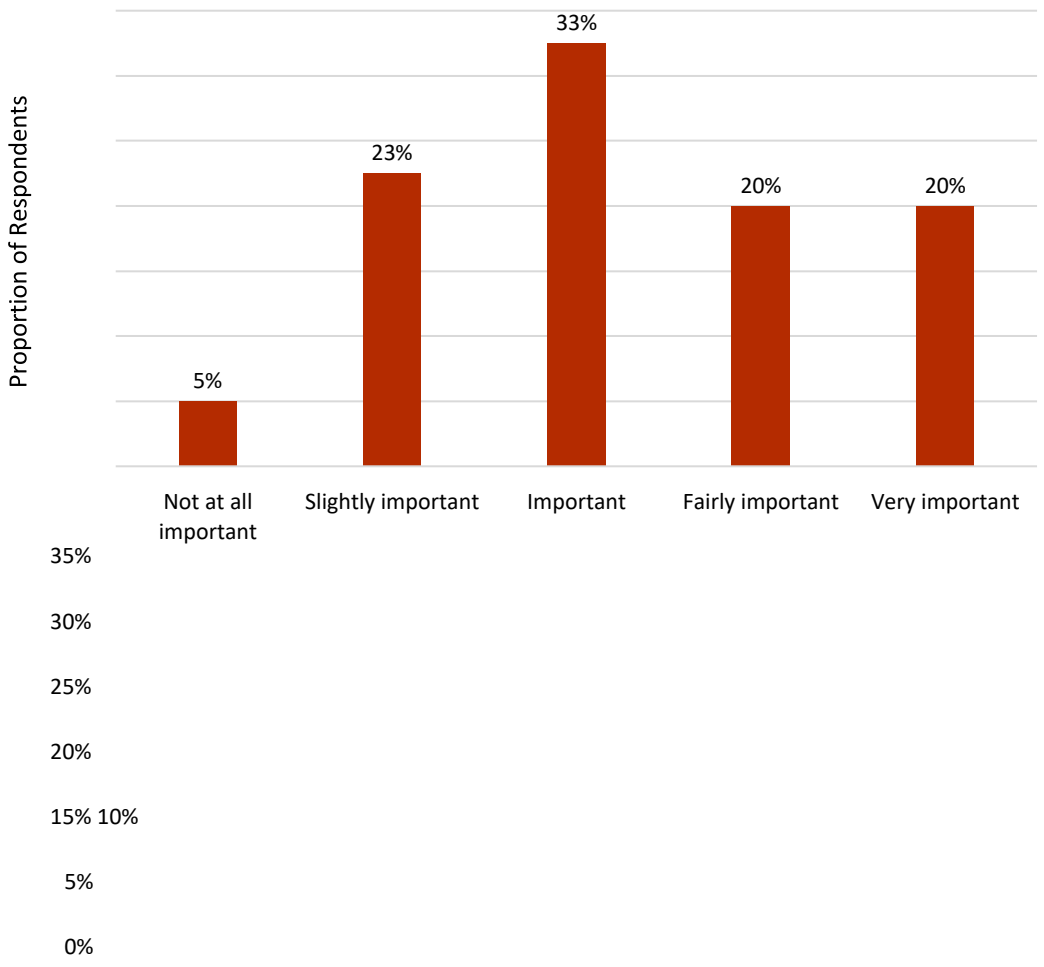
Economic Impacts

A significant impact of TB testing is the income that it provides to practices. For routine annual testing, practices receive a set fee of £95 per farm visit, alongside £2 for every animal tested. In understanding the significance of this income, existing estimates vary with respect to the precise contribution that testing makes to the economic viability of farm animal practice. In terms of testing income as a proportion of all practice income, estimates range from 25 per cent to 37.5 per cent[28].

Within the survey conducted as part of this research, respondents were asked, in broad terms, what proportion of their income is generated through TB testing. On average, testing represented 24.8 per cent of income for farm animal practices. Those engaged in mixed practice reported an average of 6.6 per cent of practice income being generated through testing. There is considerable uncertainty in the data, however, and these estimates should therefore be considered an indication, rather than a definitive account, of the proportion of practice income derived from testing.
Respondents were also asked for their views on the relative importance of TB testing income to their practice. Together, 40 per cent of respondents reported that testing income was fairly or very important to their finances.

Figure 7: Relative importance of testing income to practice finances

[28] Relational distance, neoliberalism and the regulation of animal health, Gareth Enticott, Geoforum, Volume 52, pp. 42-50, 2014 and Economic Impact Assessment of Bovine Tuberculosis in the South West of England, Butler et al., CRPR Research Paper No. 30, 2010

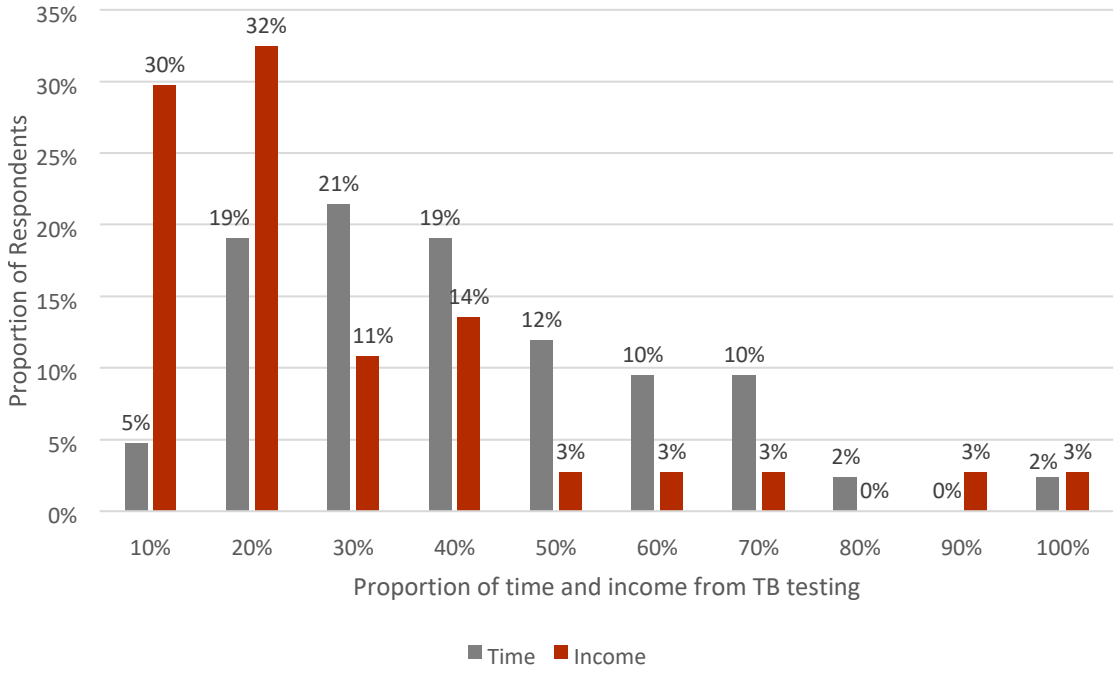


In more open conversations, testing income was variously described as 'bread and butter'. From this perspective, testing income provided a constant that was valued, including for short- and medium-term planning. Critically, in more open conversations, some described the importance of testing income in supporting sufficient scale within farm teams to support other provision such as out-of-hours provision.

There was conflicting evidence, however, regarding the extent and importance of testing income for the viability of other farm animal practice. Asked whether testing income supported other activity such as out-of-hours provision, respondents were divided. Views were polarised, with 25 per cent of respondents at either end of the spectrum between being not at all supportive and extremely supportive.

In more open conversations, those who felt that testing did not support other activity tended to offer the perception that time spent on testing incurred significant opportunity costs. This mirrors broader research that has found that vets are less likely to generate additional clinical work and that testing detracts from the level of service offered by practices[29].

Exploring this issue further, in aggregate economic terms, responses suggested that TB is a low-margin endeavour. Comparing the time spent and income generated, the findings suggest that vets spend proportionately more time on testing than they generate in income. This may further support the observation that there are significant opportunity costs associated with testing, which may serve to crowd out potentially more valuable work: Figure 8: Proportion of practice income generated by TB testing against time spent testing



The observation that TB testing presented significant opportunity costs was generally not recognised by vets in more open conversations. It was felt that there was considerable variability in the economics of testing. It was often expressed that testing larger herds was quicker and easier than testing smaller herds, which made them more valuable than smaller herds. Others highlighted that they felt as though testing on smaller units was more likely to generate further work, which heightened the economic value of engaging with them.

[29] Economic Impact Assessment of Bovine Tuberculosis in the South-West of England, Butler et al., CRPR Research Paper No. 30, 2010 and Written evidence submitted by Dr Gareth Enticott, Environment, Food and Rural Affairs Committee, January 2012

Furthermore, when asked about the extent of other clinical work that vets could undertake on farms, some felt that there were limited opportunities through a lack of demand, especially regarding preventative medicine. This suggests that testing may not be easily substituted for other activity such as further advisory services and support.

Economic Impacts for Society

Conceptually, income from TB testing could be considered as both generating public goods and as a public subsidy to the veterinary sector. Publicly available data on the aggregate scale of expenditure on testing and the income that it generates for practices appear to be limited. We estimate that the aggregate financial impact of testing for the veterinary sector is in the region of £4.3m per year[30].

Aggregate income from testing may serve to expand veterinary capacity within farm animal practice but only to the extent that it supports the delivery of public goods. Beyond these important impacts, there are no further broader economic benefits to society, as the investment in testing represents a transfer of resources between the exchequer and private businesses. Transfers benefit the recipient and are a cost to the donor and, therefore, do not make society as a whole better or worse off[31].

Clinical Impacts

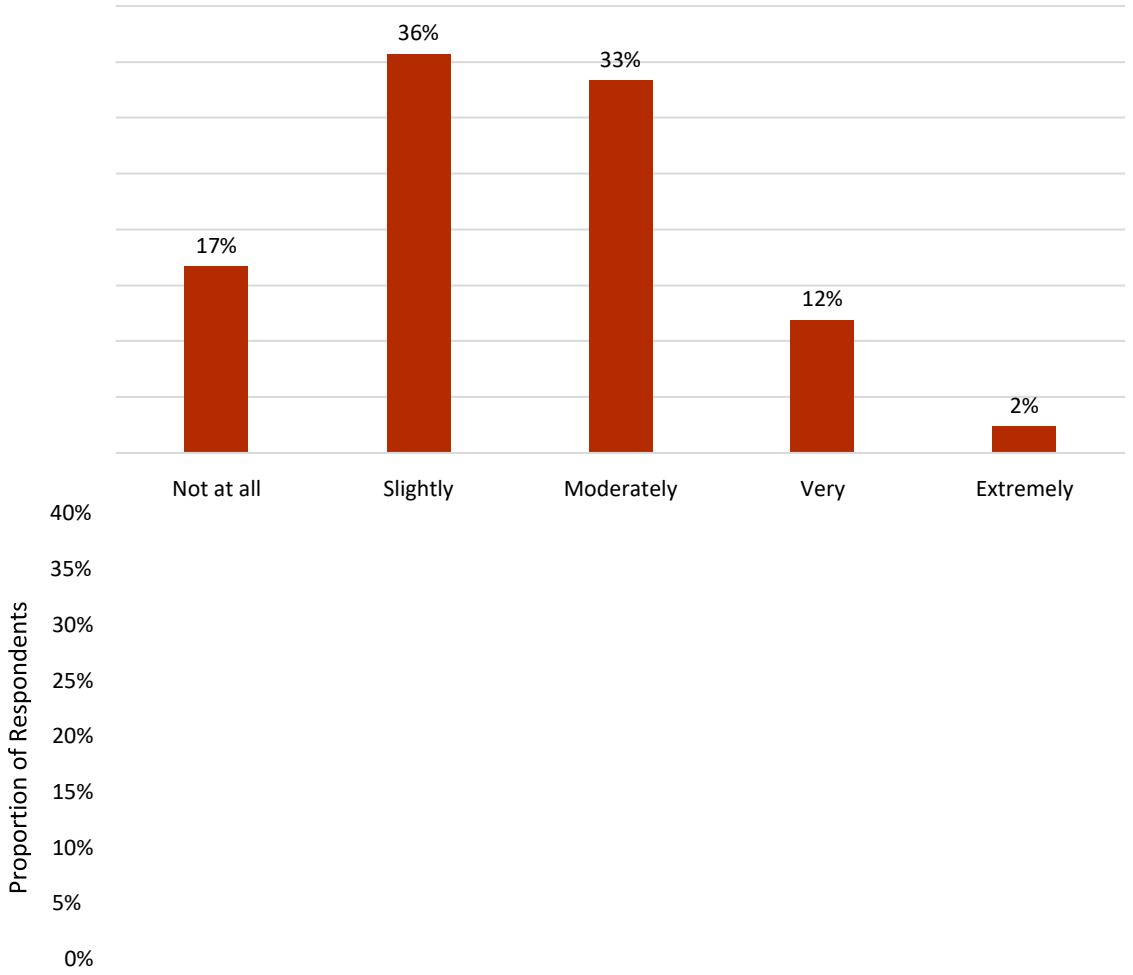
Beyond the clinical benefits of TB testing itself on animal health and welfare, there are other potential clinical impacts. These include impacts derived from vet capacity, the services that they are able to offer, and the broader clinical work that vets take on as a result.

In understanding the role and significance of these impacts, respondents to the survey were asked the extent to which testing undertaken by vets improves broader health and welfare outcomes. Together, 52 per cent of respondents felt that it only slightly improves outcomes, or not at all.

Figure 9: Extent to which TB testing by veterinary surgeons improves broader clinical outcomes

[30] Assumes vets across Wales undertake 2.1m tests per year at £2, with a £95 organisation fee paid for at least one visit to each of the 11,589 herds across Wales. Aggregate testing and herd data from Epidemiology of bovine tuberculosis in Wales, Annual Surveillance Report 2020, APHA (2021)

[31] The Green Book: Central Government Guidance on Appraisal and Evaluation, HM Treasury (2022)



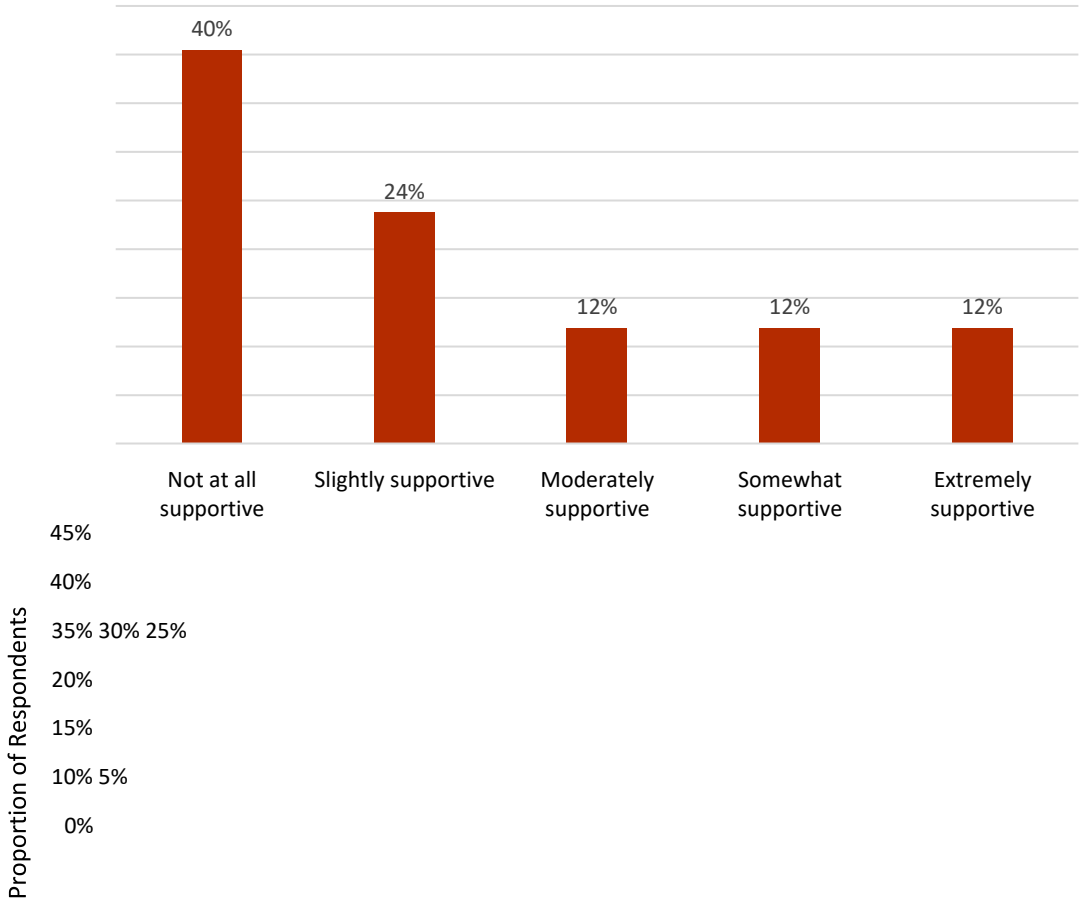
Exploring this in further detail, those who felt that testing had a more limited role in furthering broader clinical outcomes tended to cite the fact that it offered limited opportunities to expand discussions with farmers to other clinical or welfare topics or challenges. This was especially the case for larger herds, where there was limited time on site beyond testing and they were more likely to have other opportunities to discuss any clinical challenges.

Those who felt more positively about the impact of testing tended to cite the importance of the opportunity to be on the farm and to passively inspect cattle for other issues or notifiable diseases whilst testing. This could generate conversations and other clinical work. From this perspective, vets often talked about the trust and good relationships that they were able to build with farmers which were reinforced by TB testing. What is more, there was knowledge of and familiarity with the unit, and the prevailing health and welfare issues (both on the farm and more locally), which improved the advice and guidance that they were able to offer. Testing also offered opportunities to explore other aspects relating to TB, including biosecurity measures, disease reduction, purchasing policy, stock introduction, and quarantine measures.

Stepping back, overall views on the value and importance of testing for developing and maintaining relationships with farmers broadly mirrored views towards the impact of testing upon broader clinical outcomes. Together, 43 per cent of vets felt that it was only slightly or not important at all, with 24 per cent suggesting that it was important or very important.

Those who were more hesitant towards the value of testing tended to cite that there were other more valuable opportunities to explore broader clinical issues, including on farms less likely to have regular contact with their vet. These included the introduction of other initiatives, services and support, such as prescribing champions, as well as farm assurance work. The proposals set out in the Sustainable Farming Scheme (which may create further opportunities for engagement with farmers) were also cited as diminishing the importance and impact of TB testing for other clinical challenges.
Importantly, in thinking about broader clinical impacts, there was a general perception that testing workload limited opportunities for innovation and professional development. Overall, 64 per cent suggested that testing was only slightly or not at all supportive of innovation.

Figure 10: Extent to which TB testing supports innovation in the services and information offered to farmers



In more open conversations, vets outlined issues surrounding the opportunity costs of engaging with testing, which prevented them from focusing on other activities. These

included a diverse range of activities, from developing their advisory offer regarding preventative medicine through to establishing knowledge transfer initiatives such as herd health clubs and information seminars. Although more peripheral, there were also concerns surrounding the negative implications of high workloads for professional development and career progression more broadly. From these perspectives, TB testing potentially undermined the longer-term efficacy of the profession in tackling novel challenges, as well as reducing the attractiveness of farm animal practice.

Overall Impacts

The impacts of TB testing upon vets and practices are complex and varied. They are highly context-dependent, and impact different vets and practices depending on local circumstances. Testing does have both positive and negative impacts on veterinary capacity, as well as broader economic and clinical considerations.

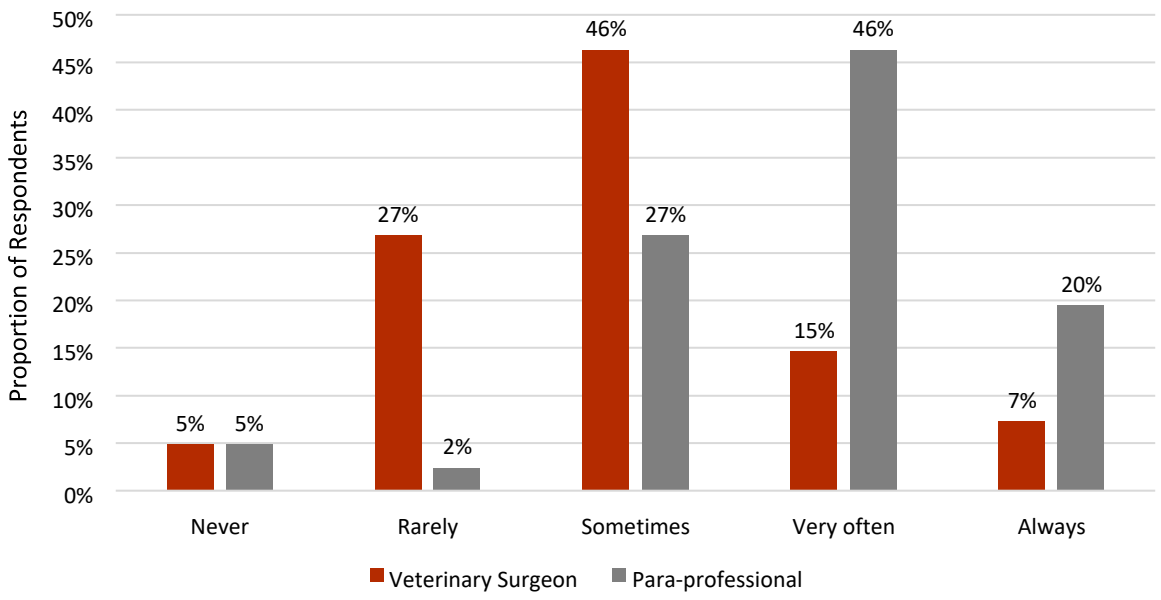
The weight of evidence suggests that the negative impacts of TB testing (as it is currently formulated) are exacerbating risks facing the profession. These include the role of testing in exacerbating the challenges that practices face in relation to recruitment and retention, as well as in undermining general levels of capacity to meet existing commitments. This is creating significant short- and medium-term risks, including in limiting the ability of the veterinary sector in Wales to respond to novel disease outbreaks. They also present longerterm barriers to the profession, including in efforts to move towards a greater focus on preventative medicine.

6 Conclusions

Across all stakeholder groups, there was general recognition of the urgency of the situation. There was consensus on the value and importance of exploring how TB testing could be reformed in order to address some of the negative implications whilst retaining the benefits, including both economic and broader clinical outcomes. In conversation with representatives of farming families and businesses, for example, they recognised the capacity constraints facing vets and practices and the risks that they posed in the vital role that they play in Welsh agriculture.

In terms of potential solutions, there was also consensus on the potential greater role that suitably trained para-professionals could play in alleviating some of the short-term challenges surrounding capacity. Asked the extent to which para-professionals could undertake the delivery of tests, 66 per cent of respondents felt that they should very often or always do so. Conversely, 22 per cent of respondents felt that vets should very often or always undertake tests.

Figure 11: Extent to which vets and suitably trained para-professionals should be able to undertake TB testing?



There is broader evidence with which to support this observation. In 2017, for example, the Royal College of Veterinary Surgeons found that there were high levels of support among vets and veterinary nurses for greater use of nurses in TB testing[32]. Although not directly comparable to greater use of para-professionals, the data do suggest that there is considerable and longstanding support for drawing on broader colleagues beyond vets in the conduct of TB testing within the profession.

Within this research, greater use of para-professionals was also shared by broader stakeholders, including NFU Cymru. They felt that para-professionals could play an important role in ensuring that vets had sufficient scope and time to effectively support farmers. This included by supporting farming families in managing breakdowns and devising strategies for eradicating TB on farms. They felt that vet time could be better utilised in communicating with farmers and helping them to understand and respond to the broader issues presented by TB, such as improved biosecurity as well as other health and welfare challenges on farms.

In terms of the potential impacts of drawing more heavily on para-professionals to undertake testing, vets cited a broad range of potential benefits. These included freeing up time to devote to other more meaningful work. This included greater attention towards and involvement in breakdown prevention and management of TB. As one vet eloquently summed up the range of potential benefits, greater use of para-professionals could:

> *'improve the professional lives of vets, allowing them to expand and practise their skillset; it would mean more realistic and reliable working hours for vets and improve our ability to cover emergency and routine work; it would mean recruitment and retention of vets would improve; and overall the service we can offer our clients and patients would be better.'*

[32] The Future Role of the Veterinary Nurse: 2017 Schedule 3 Survey: A report for the Royal College of Veterinary Surgeons, Institute for Employment Studies, October 2017

Employed Assistant

Whilst there was consensus on greater use of suitably trained para-professionals in testing, caveats and concerns were also raised. A key consideration was that of the implications for issues such as compliance, oversight, and the accuracy of testing. These were felt to be important considerations in any subsequent policy formation. At the roundtable, however, vets were undecided regarding the potential implications and mitigating measures surrounding para-professionals in relation to conflicts of interest. Some felt that it would be more difficult for para-professionals to report a positive test, while others felt that the potential distance of para-professionals from practice clients would reduce potential conflicts of interest.

Some felt that it was important to consider the levels of expertise required by paraprofessionals, how they would be trained, and who would be responsible for accreditation. Some felt that there was potential for Veterinary Technicians to take on the role whilst also delivering broader, more routine services and support. Conversely, there were concerns surrounding the potential impacts that these types of expanded roles would have upon the job prospects and opportunities for career progression amongst vets.

There were also concerns surrounding the potential economic implications of drawing more heavily on para-professionals. Some felt that there would be cost implications to recruiting, training and supervising para-professionals, for example, and were keen to highlight that this option would not generate cost savings. Others were concerned that they may not be able to take on a para-professional without risking the viability of a vet within the farm team. This was especially the case for smaller, independent practices. Others expressed concerns regarding the possibility that greater use of para-professionals could result in a loss of testing income altogether for a larger organisation. This concern was strongly felt, with one respondent highlighting that they felt that the overall practice would not be viable without testing income.

Whilst many expressed caveats or concerns, they tended to agree that something needed to be done and that greater use of para-professionals was almost an inevitability. In thinking about how para-professionals could be drawn upon within their practice, some vets described a careful balancing act, particularly from smaller practices. They felt that there were fine margins between retaining sufficient vets to cover their responsibilities and recognising that there were risks involved in maintaining the status quo to the longer-term sustainability of farm animal practice — especially in terms of recruitment and retention.

Across most conversations, the importance of trust and autonomy was felt to be valuable in thinking about how practices could draw on para-professionals. For different reasons, the full spectrum of practices interviewed as part of this research felt that they could apply paraprofessionals in different ways. A handful of practices felt that they were too small to recruit a full-time para-professional without implications for the number of vets within the farm team. From these perspectives, options such as being able to draw on locums

(paraprofessionals who fulfil certain duties for a certain period of time), would potentially allow practices to address capacity constraints whilst maintaining existing rotas. Some larger practices felt that para-professionals had a potentially bigger role to play, including in supporting vets with work beyond testing.

Overall, many vets felt that the potential benefits associated with greater use of suitably trained para-professionals to address short-term capacity constraints and longer-term recruitment and retention challenges outweighed the risks. How they were drawn upon, including issues surrounding governance, compliance, training, and the precise responsibilities that para-professionals could hold, was felt to require careful consideration.

Technical Annexe: Methodology

In the conduct of this research, the authors undertook to collect and analyse a range of primary and secondary qualitative and quantitative data. The research was completed between May and June 2022, and undertook:

Evidence Review and Data Mapping

In grounding the research, a detailed review of the existing evidence base was conducted. This included systematic searches of bibliographic databases designed to identify research exploring the economic and social impacts of TB testing on vets and practices.

Online Survey

In gathering the views and perspectives of vets and practices from across Wales, an online survey was implemented. It was designed to gather a range of information across a range of domains, including the economics of testing and broader impacts on recruitment, retention and capacity. The sample frame was drawn from publicly available information of farm animal vets and practices from across Wales. Links to the survey were distributed via email. The BVA kindly distributed links through their weekly newsletter.

A total of 55 responses were received, including vets working across 47 distinct practices. The sample is over-represented by more senior veterinarians, including directors (27.2 per cent), and employed assistants with more than 10 year's experience as a practicing vet (30.9 per cent). This suggests that the views expressed within the survey should be considered as

indicative, rather than definitive, of those held by the profession as a whole towards TB testing.

In-depth Interviews

Drawing on a semi-structured approach, further in-depth conversations were completed. These aimed to explore the impacts of TB testing in greater detail, including in further understanding the specific context under which testing operates. A purposive sample of vets that completed the survey were engaged. This approach sought to obtain a broad range of perspectives and experiences, including in the size, focus and geography of practices represented within the research. A total of 9 interviews were conducted. A further 3 interviews were completed with broader stakeholders, including farming representatives and VDPs

Round Table

Finally, a round table was convened in order to present emerging findings of the research and to explore their potential implications for vets and practices. In total, 6 vets kindly attended the session.

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