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ORIGINAL RESEARCH

Calf health veterinary services: Making them work for calves, farmers and veterinarians

Kath Aplin[1] | **Lisa Morgans**[2,3] | **Laura Palczynski**[2] | **David Main**[3] | **Charlotte Debbaut**[4] | **Lucy Hepworth**[5] | **Jemma Reed**[6]

[1]Boehringer Ingelheim Animal Health UK, Bracknell, UK

[2]Innovation for Agriculture, Kenilworth, UK

[3]Royal Agricultural University, Cirencester, UK

[4]Synergy Farm Health, Evershot, UK

[5]Friars Moor Livestock Health, Sturminster Newton, UK

[6]Paragon Veterinary Group, Dalston, UK

Correspondence
Kath Aplin, Boehringer Ingelheim Animal Health UK, Ellesfield Avenue, Bracknell RG12 8YZ, UK.
Email: Kath.aplin@boehringer-ingelheim.com

Funding information
Boehringer Ingelheim Animal Health UK

Abstract

Background: Despite an appetite among UK veterinarians (vets) and farmers to improve calf health, vets face challenges in delivering and sustaining proactive calf health services.

Methods: Forty-six vets and 10 veterinary technicians (techs) participated in a project to determine what makes calf health services successful while improving their own services. In four facilitated workshops and two seminars, carried out between August 2021 and April 2022, participants described their approaches to calf work, discussed measures of success, identified challenges and success factors, and addressed knowledge gaps.

Results: Many approaches to calf health services were described, and these could be categorised into three overlapping models. Success involved enthusiastic, knowledgeable vets/techs, supported by their practice team, fostering positive attitudes among farmers by providing the services they need, creating a tangible return on investment for farmers and the practice. Lack of time was identified as the most prominent challenge to achieving success.

Limitations: Participants were self-selected from one nationwide group of practices.

Conclusion: Successful calf health services depend on identifying the needs of calves, farmers and veterinary practices, and delivering measurable benefits to each. More calf health services embedded as a core part of farm veterinary practice could bring wide ranging benefits to calves, farmers and vets.

INTRODUCTION

Good calf health is critical for sustainable dairy and beef production.[1–3] There is scope to improve calf health in the UK.[4] There is also increasing incentive to do so, as drives to reduce carbon footprints,[5] input costs[6,7] and antibiotic use[8] all focus attention in this area, alongside improved calf values associated with the use of sexed semen and an expanding beef from dairy sector.[9,10]

The role of the farm veterinarian (vet) in promoting herd health and preventing disease is well established,[11] but calves tend to receive less proactive veterinary attention than adult cattle.[12–14] Vets describe challenges in delivering and sustaining calf health services, although there are examples of success (in the authors' experience).

Therefore, we set out to investigate what calf health services in the UK look like and what makes calf health services successful, using the knowledge and experience of practising vets and veterinary technicians (vet techs), through participatory action research (PAR).[15,16] Participants applied the findings to improve their practice during the course of the project.[17]

METHODS

We used PAR (a methodology where researchers and participants investigate a problem together while

working to improve it[15,16]) with qualitative thematic analysis[a] to seek answers to the following questions:

1. What do calf health services look like?
2. How to measure success?
3. What are the barriers to delivering successful calf health services?
4. Primary question: What makes calf health services successful?

'Calf health veterinary services' encompassed any proactive services delivered by a veterinary practice intended to improve calf health and productivity, focusing on artificially reared calves (i.e., dairy calves and beef from dairy) in the UK.

Self-selected prospective participants from XL Vets UK were recruited if they demonstrated experience in calf health work and a commitment to engage with the project and implement change in practice. Forty-six vets and 10 vet techs,[19] representing 28 practices, were recruited. Participants were split into two groups by the first author (K. A.) to achieve an even spread of practice size and geography in each. The project consisted of three online, professionally facilitated peer-learning workshops (90 minutes each) for each group, two online seminars from external experts, a poster competition and one half-day face-to-face meeting over a 9-month period from August 2021 to April 2022.

The workshops used shared experience to investigate the study questions, overcoming barriers to success using the expertise within the group where possible, and identifying areas where external expertise would help. Seminar topics and speakers were selected based on the outcomes of these workshops. Participants developed or improved their calf health services during the project and had the opportunity to showcase their work in a poster competition. The posters were displayed at the face-to-face meeting, aimed at facilitating knowledge sharing, consolidating the learnings from the project and developing a network for continued knowledge exchange. Table 1 describes the content of the project.

Data collection and analysis

Notes were taken during the workshops by the first author (K. A.) (plenary sessions), and facilitators (L. M. and L. P.) or participants (breakout rooms). The workshops were also recorded for reference, except for breakout rooms, which could not be recorded. Soon after each workshop, K. A. collated the notes, shared them with all participants and used them for planning the next workshop. Between workshops, conversations between individual participants, their practice colleagues and K. A. added context to the data gathered during the workshops.

Thematic analysis, as described by Braun and Clarke,[18] was conducted on all written free-text answers to questions posed during the project. Data from both groups were combined into one dataset in a spreadsheet.[23] After familiarisation with the data, answers were coded manually by K. A., and initial themes were developed inductively. During the project, as more data were generated, themes were reviewed and finalised. Notes from discussions during and between the workshops were used for triangulation of data (as described by Carter et al.[24]), informing thematic analysis and adding context.

Some contributions to the project were made as a practice, some were assigned to individuals and others were anonymous. For analysis, participants and their practices were identified as follows:

- Participating vets/vet techs: Vn (n = 1–56)
- Participating practices: Pn (n = 1–28)

RESULTS

Many approaches to calf health services were described. Measuring success involved measuring benefits to calf health, farmers and veterinary practices. Success involved enthusiastic, knowledgeable vets/technicians (techs), supported by the rest of the practice team, fostering positive attitudes among farmers by providing the services they want and creating a tangible return on investment for farmers and the practice. Lack of time was identified as the most prominent challenge to achieving success.

Enrolment and attendance

Forty-six vets and 10 vet techs from 28 practices in England and Wales took part in the project. Most of the vets had graduated in the last 10 years, and five were practice owners or directors. Table 2 shows attendance numbers at each stage of the project.

Reasons for not attending were not requested, but a busy practice workload was the most common reason volunteered (particularly for the final meeting in the spring). Some participants left the practice or went on maternity leave during the project.

Question 1: What do calf health services look like?

Calf work described during the project is summarised in Table 3.

When asked what was working well, experiences differed, with examples of almost all the items listed above working well for some practices and not for others. For example, practice 20 had found that the vet tech services that saved farmers time were popular but had struggled to engage farmers in monitoring growth rates. Practice 21 had found monitoring growth rates to be popular and found that benchmarking 'gets farmers excited', whereas for practice 13, benchmarking 'went down badly' as farmers were concerned about sharing data with other farmers.

[a] Qualitative thematic analysis is a means of summarising key concepts from study questions and conversations by assigning codes to answers and grouping into themes.[18]

TABLE 1 Content of the project

Workshop 1 (August 2021)	
Goals	**Methods**
Establish participants' current approach to calf health work	Small group discussion in breakout rooms, spokesperson reporting back to plenary session
Agree how to measure success and pool ideas on what's important for success	Mentimeter[20]: multiple choice voting questions and free-text questions: **'What do you (as a vet/tech) measure success by?'** and **'Why are some calf health services more successful than others?'** All anonymous
Identify challenges to delivering successful calf services	Small group discussion in breakout rooms, spokesperson reporting back to plenary session
Workshop 2 (September 2021)	
Goals	**Methods**
Consolidate what a successful calf health service looks like	Plenary session: two vets with different calf health services described their approach, including what was contributing to its success Small groups in breakout rooms: participants discussed what a successful calf health service looks like for their own practice
Identify barriers to success or resource gaps and propose solutions, including what continued professional development (CPD) could help	Mentimeter: multiple choice voting questions and free-text question: **'What gaps in your practice resources present challenges for delivering successful calf services?'** All anonymous. Answers were used to select topics for the two seminars
Participants to establish how they will measure success in their practice	Small group breakout rooms answering the question: **'How might you measure success in your own practice?'** Reporting back to plenary session
Seminar 1 (October 2021)	
Calf nutrition—identified as a knowledge gap area in workshop 2	
Workshop 3 (November 2021)	
Goals	**Methods**
Reflect on learnings from the calf nutrition seminar	'Pearls, puzzles and proposals' using virtual post-it notes on Mural.[21] Participants shared the pearls of wisdom they had acquired, their remaining puzzles and proposals for using their new knowledge
Review models of successful calf health services	Plenary session: the author summed up calf health services described during the project, using three models Breakout rooms, one for each of the models: participants discussed the practical implementation of the model most relevant to them
Each practice to create their own action plan	Each practice created their own plan; a template was provided Plenary session: two volunteers shared their action plans to highlight different approaches
To review packaging and pricing structures of calf health services	Mentimeter: voting and free-text short answers to questions, all anonymous, followed by discussion
Seminar 2 (December 2021)	
Communication and behaviour change—identified as a knowledge gap area in workshop 2	
Poster competition	
Goals	**Methods**
To showcase participants' calf services and facilitate more knowledge exchange	Template provided with the following questions to answer: • Brief description of your calf services • Benefits your farmers have seen or are expecting to see • Benefits your practice has seen or is expecting to see • What are you doing differently since starting the project? • **'Key features of your calf services that make them effective and sustainable'** • Plans for the next 12 months Completed templates were formatted and printed by BIAH
Face-to-face meeting (planned for January 2022 but postponed to April due to a COVID-19 surge)	
Goals	**Methods**
Share the key attributes of a variety of approaches to calf health work	Posters from the competition displayed for participants to read, discuss, ask questions of the authors and vote for the poster that best showed evidence of effective and sustainable calf services, with measurable benefits for calves, farms and the practice
Share ideas on data tools for enabling efficient data analysis and reporting	Two participants shared information about the systems their practices used, and a guest from Nottingham University described their open access Herd Health Toolkit[22]
To practice the principals of facilitation	Facilitation workshop led by the project facilitator
Come to a consensus on what makes calf health veterinary services successful	Written anonymous answers to the question: **'What in your opinion are the three most important features of successful calf health veterinary services?'**

Note:Thematic analysis was conducted on answers to questions inbold.
Abbreviations: BIAH, Boehringer Ingelheim Animal Health UK; tech, technician; vet, veterinarian.

TABLE 2 Attendance numbers

	Number of practices	Date
Workshop 1	27	25.8.21
Workshop 2	24	29.9.21
Workshop 3	19	24.11.21
Face-to-face meeting	16	26.4.22

The services described could be grouped into three models:

- ·Vet services, with the vet/farmer relationship at the centre.
- ·Vet tech services, with tasks provided by a vet tech alongside consultancy from a vet-led team.
- ·Calf clubs, using peer learning between farmers to exchange knowledge and motivate change, usually alongside one or both of the above.

The three models overlapped in practice, with many practices offering a combination of all three. All models used data and the combined expertise of the farmer and vet or vet-led team to make improvements. The key differences between the models were the focus on consultancy, tasks or knowledge exchange and the different people and relationships involved in motivating change.

Question 2: How to measure success?

Three themes related to measuring success were derived: calf health, farmer satisfaction and veterinary practice benefits. Calf health and farmer satisfaction were more likely to be monitored than veterinary practice benefits. Calf health was normally monitored as part of the service and was considered important for engaging farmers. Farmer satisfaction was generally gauged by the number of farms signed up to a service—the most popular single measure of success. Few practices were monitoring benefits to veterinary practices, although farmer satisfaction was considered an important practice benefit. A small number monitored income from calf work by recording calf time separately from other work. Table 4 shows examples of responses to the questions around measuring success.

Farmer satisfaction was associated with measurable improvements to calf health, such as improved growth rates, and subjective indicators such as 'The calves look so much better' (farmer quote, P19). Direct benefits to the farmers themselves were also described—these included saving time, enjoying being part of a discussion group and having data to base decisions on.

When measuring benefits to the practice, improved farmer engagement was most often cited. Good publicity for the practice was also described. Financial benefits included increased chargeable time on farms, increased vaccine sales and increased demand for other services. Improved job satisfaction and interaction with colleagues were also described, providing an important but less tangible measure of success:

> 'Before the calf club, when I'd ask about calf health on X farm it was just brushed aside. But now with the regular vet tech feedback, I feel much more informed and often the routine visit ends with discussions in the calf building' (Poster competition—quote from partner, P16)

Question 3: What are the barriers to delivering successful calf health services?

Gaps in resources described in workshop 2 were grouped into five themes, summarised in Table 5.

Time

Lack of time was the most often cited resource gap; it was a recurring theme for participants, their colleagues and farmers. Insufficient time to analyse data and write reports was described, along with time to plan and promote calf services and on-farm time for vets and farmers to look at calves.

Adding calf reviews to routine fertility visits on a regular basis was described as a time-efficient approach. This often worked well but depended on motivated individuals finding the time and ran the risk of not happening if vets or farmers were busy.

> 'I try to be proactive in asking about calves. It doesn't have to be a specific service, it can be part of the routine visit, but it needs to be tailored to the farm. It's possible to make sure there's time at the routine visit' (V20, workshop 1)

> 'Time is often the main issue. After doing a 2-hour routine there can often be another call which you need to get on to so the extra 10–15 minutes to sample some calves is skipped. Both farmers and vets are probably guilty of putting more importance on other areas of the farm'. (V9, workshop 1)

Scheduled vet tech-delivered services were less likely to be squeezed out through lack of time. Services that saved farmers time could free up time for more engagement in calf health.

> 'Our vet techs work independently of farmers to save farmers time, which is especially popular with the farm labour shortage' (Quote from poster—P16)

Good administrative support from the practice could also free up vet time and improve efficiency.

> 'Vets are bad at admin—a good admin team makes things happen' (V25, workshop 2)

TABLE 3 Calf health work described in the application form, workshop discussions and the poster competition

On-farm tasks carried out on a regular basis	
Data-gathering tasks	Blood sampling for total protein to check passive transfer of immunity
	Calf weighing
	Collecting calf morbidity and mortality data
	Colostrum sampling for laboratory total bacterial counts
	Calf health scoring
	Calf lung scoring
Tasks to save farmer time/improve compliance	Disbudding
	Vaccinations
Calf environment monitoring	
Calf management reviews	
Routine disease sampling for pathogen identification (primarily pneumonia and diarrhoea)	
Data analysis and reporting	
Data listed above analysed using a range of different software, commercially available or developed in-house. Reports generated automatically, with standard templates or bespoke for each farm	
Benchmarking	
Medicines analysis including antibiotic use	
Knowledge exchange	
Farmer educational meetings, featuring a speaker (usually the veterinarian)	
Calf clubs for peer-to-peer knowledge exchange	
On-farm training	
Online training	
Logistics/format	
Regular visits, pre-booked as a package	
Subscription services with a menu of package options	
Basic subscription service with optional add-ins	
Calf time added on to end of routine fertility visit	
Individual approaches tailored to individual farms	
Services tailored to groups of farms based on, for example, calving pattern	

Some participants described spending much time gathering and analysing data. No single software system universally provided what was needed; some had developed their own. Those with systems that were working well had automated data analysis and reporting as far as possible, sparing vet time for meaningful interpretation. They also made good use of admin staff for organisation and data inputting or were encouraging farmers to gather and input data themselves.

Farmer engagement

Participants expressed frustration with farmers either not seeing the issues they could see or acknowledging the problems but lacking the time or motivation to change.

> 'Farmer blindness is a problem, getting farmers to see issues. And farmers don't have the time to deal with things' (V25, workshop 1)

Solutions to engaging farmers in calf health centred around empathy and finding out what the farmers want.

> 'My experience during maternity leave of being told what to do by professionals has helped me develop more empathy with farmers; I found I was given facts but not helped with how to use them'. (V12, workshop 1)

Finding out what farmers want was considered important but not straightforward.

> 'Farmers don't always know what they want' (V42, workshop 2)

P21 conducted a farmer survey—they found that asking the right questions was key and more difficult than expected. A one-to-one approach to ascertaining individual farmer needs was more often used. Offering a trial was another approach, for example, P6 offered free calf weighing for a limited time to gauge interest before launching a subscription service.

Once farmers were engaged with calf health monitoring, it could still be difficult to motivate change.

> 'You can feel like a broken record, saying the same thing twice a year' (V38, workshop 2)

TABLE 4 Examples of anonymous responses to Mentimeter question in workshop 1 and proposals for specific measurables in your own practice in workshop 2

Calf health services—measures of success	Workshop 1 question: What do you (as a vet/tech) measure success by? Example responses	Workshop 2 question: How might you measure success in your own practice? Example responses
Calf health	'Decreased mortality' 'Improved growth rates' 'Calves doing well' 'Improved calf health' 'Reduced age at first calving'	'Improved farm data' 'Reduced age at first calving' 'Reduced sales of calf antibiotics'
Farmer satisfaction	'Number of farmers using services' 'Increasing calf club members' 'Farmer engagement' 'Farmers changing what you suggest' 'Happy clients'	'Number of farms signing up to scheme' 'Farmer retention on scheme' 'Farmer feedback—to each other and to vets'
Veterinary practice benefits	'Financial return' 'Vaccine sales' 'Good practice reputation' 'Farmer satisfaction'	'Charged time on calf work' 'Increased vaccine sales' 'Number of vets feeling passionate about calves'

Abbreviations: tech, technician; vet, veterinarian.

TABLE 5 Responses to Mentimeter question in workshop 2: 'What gaps in your practice resources present challenges for delivering successful calf services?'

Theme	Challenge	Examples
Time	Lack of time Lack of staff Other priorities Not enough assistance on farm	'Not enough time' 'Not enough vet techs' 'As the vet I currently do the reporting—it takes a lot of time each month and restricts me expanding the service'
Engaging farmers	Farmers not engaged	'Lack of keen clients' 'Varying expectations from a farm client base—hard to please everybody with a one-size-fits-all' 'Gaining the trust and confidence of farmers'
Engaging the practice	Lack of engagement from other vets	'Lack of engagement with wider team as they are busy with their own priorities'
Knowledge	Lack of clinical knowledge	'Enough knowledge to keep delivering something new to farmers'
	Lack of data processing skills	'Knowing how to analyse the data and display it to farmers'
	Lack of knowledge about communication/behaviour change	'Having more persuasive communication skills'
Generating income	Not knowing how to charge	'Knowing how to charge'

Abbreviations: vet, veterinarian; vet tech, veterinary technician.

Motivating change was considered a skill that could be improved with training. Several participants had undergone training in communication skills for motivating change, particularly motivational interviewing. Benchmarking and peer learning among farmers were highlighted as good ways of motivating change.

> 'Farmers know stuff, getting them to do it is the hard bit. Farmer-to-farmer learning could help' (V45, workshop 2)

> 'It's the stories behind individual farms that make benchmarking really mean something and make things happen' (V23, workshop 2)

Engaging the practice

Having the whole practice team engaged with any calf health service was considered important for encouraging farmer engagement and behaviour change and enabling service delivery. Teamwork and good support staff were highlighted as valuable resources within some practices and were considered a challenge for others.

> 'The routine visit vet is supposed to pick up on the [calf health] report but that's quite variable' (V31, workshop 1)

> 'We have strong relationships between vets, techs and farmers who are passionate

about calf health and inspire other members of the team' (Quote from poster competition, P18)

Knowledge

When discussing the challenges in delivering calf health services, lack of knowledge did not feature as a key barrier to success. However, when looking at resource gaps and how to fill them, knowledge gaps in specific areas were identified and most participants were keen to expand their knowledge.

> 'Confidence is important—you need enough knowledge to give you confidence, but you can get knowledge—you can go away and look things up' (V22, workshop 2)

A level of clinical knowledge above the expected norm was considered necessary to deliver ongoing improvements.

> 'Internal referrals are useful. When the "calf expert" goes onto another vet's routine farm for calf advice, things are more likely to change' (V37, workshop 2)

Generating income

Charging enough to generate a profit was described as a challenge. Some practices were competing for calf work with other advisors such as calf feed providers, who might use feed sales to subsidise advisory work. Small farms presented a particular challenge to delivering a cost-effective service for a small number of calves. Pricing structure was difficult to get right—subscription packages, hourly rates and rates per task all had pros and cons, and different practices had different experiences of which worked best for them.

> 'We used to have a subscription service but found that some farmers ended up paying for something they weren't using, so we went back to charging an hourly rate—it's more flexible'. (V28, workshop 1)

P9 offered a range of subscription packages for farmers to choose from, and several others charged a low basic subscription rate, with vet time charged separately, to keep the headline cost down and maintain flexibility. There was no consensus on the best approach; flexibility was considered important.

Generating income was addressed in more detail in Question 4.

Question 4: What makes calf health services successful?

Answers to questions relating to the primary study question were grouped into six themes:

- Enthusiastic, knowledgeable vets/techs
- Farmer attitude
- Providing the services farmers want
- Return on investment for farmer
- Return on investment for veterinary practice
- Practice support

Enthusiastic people delivering the service clearly emerged as one of the most important factors. Farmer attitude featured more strongly at the start of the project; as the project progressed, factors that might influence farmer attitude, such as providing the services farmers want, became more prominent. There were a range of ways of providing what farmers want, reflecting the value of a tailored service. What farmers want or think they need and what vets think they need clearly differed at times:

> 'We vets feel under pressure to produce reports on time, but I've noticed farmers don't ask for them if we don't'. (V15, workshop 2)

Discussions suggested that it was important to provide farmers with what they wanted initially; engagement in other areas often followed. The author attended a farmer meeting at practice P16 where a farmer commented:

> 'We've had [the vet tech] doing the vaccinations for a while, it's a no-brainer really, it's one less job for us to worry about. Now she's weighing them too and we're getting quite into the growth rates'.

Value for money for the farmer featured much more highly than financial return for the practice, which was mentioned least often. It was suggested that financial returns should follow once other things were in place. However, financial returns were not considered essential if there were other benefits to the practice, such as increased client engagement, generation of other work, client bonding to the practice, job satisfaction and increased vaccine sales. These benefits were considered important in themselves as well as bringing indirect financial returns.

> 'It's ok if it's a loss leader if it helps engagement with other things'. (V45, workshop 1)

Focusing on efficiency and ease of delivery for a cost-effective service was considered important, to maintain perceived value for money for the farmer.

Practice support encompassed practical help from the support team with administrative and logistical work and general practice teamwork and engagement. Often, the two went together. Practices with good practice support also tended to be clear about the benefits the calf service was delivering to the practice.

Each theme encompassed many individual factors that could impact success, reflecting the value of detail in the practical delivery of calf health services.

> 'The little things are important. We've found some of the small details have been very beneficial to improving our calf health service' (V42, comment on poster submission)

Table 6 summarises written responses to the questions relating to what makes calf health services successful.

DISCUSSION

This project has shown that effective and sustainable calf health services must address the needs not only of calves but also of farmers and veterinary practices. The needs of calves are well established; however, to make ongoing improvements, continuing to expand our knowledge is important. Previous work has addressed engaging farmers and understanding farmers' needs to motivate change.[12,25–30] This project highlights the challenges around engagement and motivating change in relation to calf health and reveals how they are being tackled in practice. To date, there has been less focus on addressing the needs of veterinary practices. The outcomes of this project suggest that understanding the practice's priorities and ensuring calf health services bring benefits aligned with those priorities can help to engage the whole team and embed calf health work as a core part of the veterinary business.

Addressing the needs of farmers

Engagement

The project has confirmed that engaging farmers in calf health and motivating change is not easy. Providing what farmers want is key, but this is not straight-forward: farmers do not always know what they want from a calf health service, and if they do, it might not be what is most important for their calves' health. Therefore, an important part of establishing a calf health service is to help farmers understand what is important to them and to address their initial needs. Even if this does not directly improve calf health, it opens the door and generates engagement.

Efforts have been made to identify farmer motivations by segmentation; however, the complexity of most farm situations means that this approach is not always useful.[31] Given the personal relationship veterinary practices already have with their farmers, a one-to-one approach is often more appropriate. Farmers who are already engaged in calf health are likely to be early adopters of calf services, but engagement, or lack of it, is not fixed; experiences shared during the project showed that engagement can be nurtured and is contagious.

Short-term practical gains such as saving time or calves looking healthier might often be more engaging than potential financial returns, which may be large but can be difficult to measure and are delayed until calves are sold or join the adult herd. Estimating potential financial gains from improved calf health may be more useful for understanding return on investment than as a tool for engagement.

Motivating change

After the initial engagement in calf health, behaviour change is necessary for outcomes to improve. The three models of calf health services—vet services, vet tech services and calf clubs—make use of different relationships to motivate change.

The veterinary services model often uses an already strong vet–farmer relationship. There was a tendency not to view this model as a calf health service, being less formal than, for example, a vet tech service. However, this regular, proactive veterinary engagement in calf health was clearly effective and sustainable in several practices and should be recognised as a valuable service.

In the vet tech model, the vet–farmer relationship remains important, with the vet tech providing another route for knowledge exchange and motivating change. Participants noted that some farmers were more likely to discuss calf issues with a vet tech than with a vet, perhaps because they are associated with routine calf management rather than tackling disease.

The calf club model adds a third communication route—farmer to farmer—with opportunity for benchmarking and peer-to-peer learning. Having several sources of knowledge exchange can help farmers put new knowledge into context and apply it to their own situation.[32] This has been shown to be a powerful driver of change.[30] Balancing the role of the vet as an expert provider of knowledge, coach and facilitator of peer learning was acknowledged as difficult but a skill that could (and should) be developed with training and practice. Each role is important. Drawing parallels with knowledge exchange during this project, vets valued both the peer learning and the expert-led seminars—each would have been less valuable without the other.

Making calf health services work for veterinary practices

The project has shown that a key element of success is enthusiastic, committed people; there are many such people delivering successful calf health services. But enthusiasm and commitment alone are not enough. Practices with calf health services that had proven sustainable in the medium to long term tended to

TABLE 6 Themes, codes and example quotes from responses to workshop 1 anonymous Mentimeter question 'Why are some calf health services more successful than others?', poster competition question 'Key features of your calf services that make them effective and sustainable' (quotes attributed to practices) and anonymous survey at a face-to-face meeting 'Based on your experience so far, what in your opinion are the three most important features of successful calf health veterinary services?'

Theme	Codes	Examples
Enthusiastic/knowledgeable vets/techs	Enthusiastic, knowledgeable people driving the service	'Capable, enthusiastic vet techs. Interested, knowledgeable vets' 'Committed member of farm veterinary team to drive the service' 'Someone enthusiastic to drive the service'
	Keep momentum up over the long term	'How engaged the vet is and the service they can provide over time. Not just short term'
	Building relationships	'The opportunity to get onto a farm and build a good relationship'
Farmer attitude	Farmer attitude	'Farmer engagement/willingness to listen' 'Area of the country'
Providing the services farmers want	Ask farmers what they want	'Constant engagement with our clients and delivering what they want and need rather than what we feel would be best' 'Farmer led' 'Willing to listen and learn' 'Match the service to the client. Make it bespoke and what they want. This will vary from farm to farm for us' 'Respond to what farmers (think they) need' 'Market research/farmer requirements'
	Save farmers time/make life easier	'Vet techs work independently of farmers to save farmers time' 'Labour saving for farmers, for example, disbudding and vaccinating'
	Regular, prompt reports	'Monthly reports with comments which inspire vet–client communication' 'Quick turnaround of reports'
	Regular visits	'Attending the farm regularly and effective communication between vet and farmer'
	Benchmarking	'Benchmarking data meetings'
	Farmer meetings	'Farmer discussion meetings'
Tangible return on investment for farmer	Measurable improvements in calf health	'Measurable outcomes' 'Measurable improvements—daily liveweight gain, mortality, pneumonia' Improvements in growth rates'
	Basic low-cost subscription, charge vet time and other services separately	'Taking the vet out of the subscription cost' 'Simple, relatively low-cost monthly fee' 'Tag on services for farms wanting more than basic packages so as not to price out majority'
	Demonstrate value to farmer	'Standing out in a crowded market for giving calf advice' 'Quantifying improvements' 'Farmers need to see the results to continue to buy in to the service'
	Cost effective for farmer	'Value for money' 'Return on investment for both farmer and practice'
Return on investment for practice	Measurable benefits to practice	'Generating revenue for the practice' 'Charging effectively' 'Measurable benefit in sales/time of farm to encourage directors to continue to support' 'Return on investment for both farmer and practice'
	Efficient delivery (data analysis and time on farm)	'Tag on to RFV saves time and improves the cost efficiency' 'Kept simple and low cost' 'Vet tech-led with vet support provides a cost-effective service' 'Efficient system so it can be good value for money for farmer and vet and both parties can benefit and see value for money' 'Good, simple and easy data analysis'
Practice support	Teamwork/communication within veterinary team	'Co-ordinated by one person at the practice with the help of the vet tech/admin team as needed' 'Training all staff on the service offered so they have a true understanding of what is involved' 'Working with our marketing manager and learning from other aspects of the practice'
	Enough time	'Time: for vet/tech to dedicate and maintain farmer engagement to keep service running for long enough to prove its worth'

Abbreviations: RFV, routine fertility visit; tech, technician; vet, veterinarian; vet tech, veterinary technician.

generate clear benefits to the practice and to have broad practice engagement and support.

Return on investment

For some practices, the priority may be generating income; for others, it may be, for example, recruiting and retaining vets, attracting or retaining clients or expanding services. As for farmers, the immediate need may be different from the longer-term goals.

Generating financial returns was described as a challenge; a certain level of financial return is necessary for a sustainable service, even if it is not the priority. Financial viability depends on efficiency to keep costs low, with fees that reflect the benefits to the farmer and the cost of delivering the service. The time-consuming nature of some calf health services combined with concern about keeping prices low carries a risk of a high investment of time for a low financial return.

Few practices were tracking benefits to the practice from calf health work or the cost of delivery. The predominantly young demographic of the participants and of those generally involved in calf work might explain the lack of focus on return on investment; however, practice owners (in conversations with the author during the project) tended to agree that calf health work was probably not very profitable but felt the other benefits made it worthwhile. The value to businesses of defining and measuring non-financial return on investment alongside financial returns is well recognised.[33] Better tracking of overall return on investment for calf health work, focusing on what is important to the practice, could help with keeping the whole team engaged, allocating appropriate resources and adjusting the focus of the service if necessary. This could help elevate it from a 'nice to have' service to becoming an integral part of the business in more practices.

Practice engagement and support

Practices with well-supported calf health services across the veterinary team had good communication channels, such as weekly team meetings and regular communication about individual farms. Practices with less regular team communication did run successful services, but they tended to be smaller and more dependent on individuals. The principal barrier to good communication and practice support was lack of time. The UK veterinary workforce shortage[34] has exacerbated this challenge; however, the project showed that busy vets and vet techs in busy practices can, and do, run effective and sustainable calf health services tailored to the practice resources with appropriate time allocated across the team.

For practices with limited resources, growing services organically from a small start was an opportunity to gauge what farmers want, creating a service driven by demand, to which resources (e.g., vet techs) could be added if needed. Larger practices with more available resources might start with customer research followed by a launch of a more formal service.

Calf data collection and analysis was time consuming for many practices, particularly compared with that for the adult dairy herd, which has benefitted from more technological innovation. Future technological solutions to collecting calf data could save time and improve engagement; in the meantime, improved data analysis and reporting software could help. Practices that had developed their own systems had clearly benefitted, but had invested time and expertise in doing so. There is a need for systems that are flexible, quick and easy to use, with automatically generated, easily editable reports. Data analysis also needs to be useful and engaging for the farmer: A shift from the current predominantly descriptive data analysis to a more forward-looking predictive or prescriptive approach aimed at informing decision making could improve engagement and improve outcomes.[35]

When time was limited, delivering the best service to farmers tended to be prioritised. It was, however, noted that what vets thought was important might not always be the farmer's priority. Understanding what is important to farmers might be valuable not only for farmer engagement but also for allocating time; in some instances, practice engagement might be the priority.

With many demands on their time, practice owners/leaders were often not directly involved with calf health services. This was not considered a problem, with capable, enthusiastic people successfully leading calf services. However, active support and promotion of calf health services from practice leaders could have a significant impact on engagement (with farmers and within the practice) and on allocation of appropriate resources. Pearson et al.[36] described the challenges of veterinary leadership in the context of a high workload and multiple responsibilities. In the short term, supporting the development calf health services adds to these challenges; however, in the longer term, it brings opportunities to create variety in farm vets' work and to 'shape leaders at all levels'—an ambition of the RCVS workforce action plan[37] to improve recruitment and retention of vets.

CONCLUSION

This project has confirmed that a wide range of approaches to calf health veterinary services can be effective and sustainable, and practices of all types are delivering successful calf health services. But significant challenges exist. Although no participant in the project would say they have overcome all the challenges they face, the combined experience of the participants addressed all the challenges to some extent, demonstrating the value of facilitated peer-to-peer knowledge exchange alongside targeted knowledge transfer.

A successful calf health service identifies the needs of calves, farmers and the veterinary practice and delivers measurable benefits to each of these groups. Knowledge of what calves need is, in the main, already out there. Meeting the needs of farmers—which are varied and not always readily apparent—is an integral part of engagement and motivating change. This is challenging, but the veterinary profession's understanding and application of this area of science is growing. Faced with a ubiquitous lack of time, there is often less focus on the needs of the veterinary practice; a team approach to understanding the needs of the practice and ensuring calf health services address those needs could help to embed calf health services as a core part of more veterinary practices.

When successful, calf health services can significantly improve calf health, welfare and productivity; they can also contribute to job satisfaction, career development and income for farmers and vets, and may in the long term help with retention in the veterinary and farming professions.

AUTHOR CONTRIBUTIONS

Kath Aplin conceived and managed the project and drafted the manuscript. Lisa Morgans and Laura Palczynski facilitated the workshops and contributed to the project design. David Main advised on research methodology, interpretation and reporting. Jemma Reed, Charlotte Debbaut and Lucy Hepworth participated in the project and reviewed the results. All authors reviewed and approved the manuscript.

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CONFLICT OF INTEREST STATEMENT

Kath Aplin is an employee of Boehringer Ingelheim Animal Health UK, which funded the project. The other authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data is available on request from the authors.

ETHICS STATEMENT

The project received ethical approval from the Royal Agricultural University as part of an MSc undertaken by the first author. All participants provided informed consent.

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