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## ORIGINAL RESEARCH

# Dispensing antimicrobials to farmers in Wales: The roles and experiences of veterinary practice staff

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Email: [Deborah.Butler@bristol.ac.uk](mailto:Deborah.Butler@bristol.ac.uk)**Abstract**

**Background:** Veterinary practice staff are directly involved in the dispensing of prescription veterinary medicines (POM-Vs) to farmers as prescribed by registered veterinary surgeons to animals ‘under their care’. The role of veterinary practice staff has, to date, been underresearched. The objective of this study was to investigate the roles played by veterinary practice staff, exploring their expectations and perceptions of the front-of-house (FoH) role, their interactions with clients in day-to-day veterinary practice and their experiences relating to the dispensing of POM-Vs.

**Methods:** Thematic analysis was used to analyse data from 20 semi-structured interviews of veterinary practice staff. Participants were recruited from 80% of the large animal or mixed species veterinary practices across Wales.

**Results:** Four key themes—‘piggy in the middle’, learning on the job, practice organisation and facilitating change—were identified, illustrating the multifaceted and diverse nature of this type of employment.

**Limitations:** This study is not intended to be representative of the perceptions of FoH staff on the dispensing of antimicrobials. Larger-scale studies are required to substantiate these findings.

**Conclusion:** Understanding the roles of non-clinical veterinary staff allows practice managers and veterinary surgeons to better identify and meet training and staffing needs and improves recognition of this key area of practice work.

## INTRODUCTION

The threat of antimicrobial resistance (AMR) to both human and animal health is well documented and has led to an increasing focus on the use of antimicrobials, including agricultural and environmental uses.<sup>1,2</sup> While recent efforts in the UK have led to a 53% reduction in the sales of antibiotics for food-producing animals over the last 4 years, coupled with a 68% reduction in the sales of the highest-priority critically important antibiotics in the same period,<sup>3</sup> addressing the use of antimicrobials in agriculture has been identified as a key area for reducing overall antimicrobial use and improving stewardship.<sup>4</sup> Such is the seriousness of the AMR threat that England, Scotland and Wales all have their own 5-year AMR implementation plans, which complement the UK-wide 5-year action plan.<sup>5–7</sup>

There are a growing number of roles working alongside veterinary surgeons and veterinary nurses, both

employed by and external to the core practice team. These roles, including practice managers, receptionists, animal physiotherapists and equine dentists, are seldom the primary subject of peer-reviewed research.<sup>8,9</sup> If little has been written about the role of the veterinary nurse, even less has been written about ‘front-of-house’ (FoH) staff. There is, however, some published work on medical receptionists in human healthcare settings,<sup>10–14</sup> and similarities do exist between this role and that of veterinary receptionists. Medical receptionists are viewed either as support staff<sup>15</sup> or administrators<sup>12</sup> whose roles and responsibilities encompass mainly clerical duties to ensure that various office systems continue to support the delivery of care.

While antimicrobials are POM-V medicines that require prescription by veterinarians to animals ‘under their care’,<sup>16</sup> FoH staff are intimately involved in the routine ordering, stock keeping and dispensing of

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these medicines to farmers. Although FoH staff are not required to have undertaken any formal training and are not regulated by a governing body, they have an important and responsible role. These staff act as gatekeepers, helping to preserve the boundary of the veterinary practice. They form the hub for practice communication, controlling access to a veterinary surgeon.<sup>9,17</sup> Increasingly, the roles and responsibilities of FoH staff are becoming broader and more diverse, an example being the provision of advice on preventive medicine protocols,<sup>18</sup> and, like medical receptionists and administrative staff, they are asked to make important 'hidden' contributions to quality and safety in repeat prescribing, making themselves accountable to clients.

Research by Kinnison et al.<sup>8,17</sup> has focused on the importance of, and tensions surrounding, the integration of veterinary nurses and FoH staff into a veterinary practice. These authors advocate the use of the term 'interprofessional practice' to describe the roles of veterinary nurses and FoH staff as true partners within a veterinary team, thus reflecting their importance in delivering care.<sup>8,17,19</sup> To this end, FoH staff should not be seen merely as a 'colourless sounding board'<sup>1</sup> or passive agents but rather as 'colourful receptionists' in recognition of the crucial role that FoH staff play in veterinary practice.<sup>20</sup>

Drawing on semi-structured interviews with FoH staff working for farm- or mixed-animal veterinary practices, this paper aims to provide a comprehensive understanding of the roles played by FoH staff in relation to antimicrobial dispensing to UK farmers. We explore participants' experiences and perceptions of the FoH role and their interactions with clients in day-to-day veterinary practice.

## METHODS

The aim of this study was to explore the contextualised subjective experiences of FoH staff. A qualitative framework was used to achieve this aim, as it was the most suitable research method to explore the inherent subjectivities of participant experiences in this role. Data analysis was carried out using thematic analysis, as theories can be applied flexibly<sup>21-23</sup> without single a priori theoretical assumptions about what may be learned from the data.<sup>21</sup> Thematic analysis is an iterative process that gives the researcher the opportunity to ask whether a set of data answers the questions posed within the interview schedule in a meaningful way.<sup>24</sup> As such, the researcher is able to interpret individuals' accounts of their experiences and their perspectives of working in their role as well as generate unanticipated insights into their daily routines.<sup>25</sup>

### Participant recruitment

Participants were recruited from a pool of Welsh veterinary practices taking part in the arwain vet

cymru (AVC) project.<sup>26</sup> Recruitment consisted of three targeted approaches:

1. All the veterinary prescribing champions from the AVC project were invited to name a member of their FoH staff who would be suitable to participate in the interviews. Any named staff were contacted directly by the research team and asked if they would be happy to participate in the research.
2. Practices were contacted directly by collaborative partners on the AVC project (Menter a Busnes and Iechyd Da) to enquire whether any FoH staff would be willing to participate in the interview process. Willing participants' names and contact details were provided to the research team for further contact and recruitment.
3. Practices were contacted directly by the research team to enquire about willing FoH staff able to participate in the interview process, with participation established either directly with the FoH staff themselves or through a member of practice management.

The inclusion criterion was that the member of staff was a non-veterinary surgeon who played a pivotal role in the practice's antimicrobial dispensing to farmers. This role encompassed reception staff, registered veterinary nurses and other administrative and animal care-related roles. The pool of practices from which FoH staff were drawn represented 80% of all veterinary practices undertaking farm animal work in Wales. In total, 20 female FoH staff members were identified and agreed to take part in the project. The participants had no prior relationship with the interviewer. No incentive was offered to participants.

### Interview schedule

The interview schedule had three sections: part one explored participants' expectations and perceptions of the FoH role, as well as their interactions with clients in day-to-day veterinary practice. Part two asked participants about their experiences, beliefs and values relating to the dispensing of POM-Vs. Part three delved into the roles that FoH staff play within their practice's prescribing and dispensing systems. The interviews were conducted remotely via videoconferencing software or telephone between Spring and Summer 2020 due to restrictions imposed by the COVID-19 pandemic. The interviews were carried out by A.B. and G.R. and lasted between 60 and 90 minutes (see [Supporting Information](#) for interview schedule).

### Data analysis

The interviews were recorded, transcribed and analysed by two experienced qualitative researchers. Themes were identified and organised using an inductive approach.<sup>21,22,27</sup>

## RESULTS

Through the iterative and inductive process described, four key themes were identified that best described the working roles and responsibilities of the FoH staff interviewed. These themes were as follows: (1) Being 'piggy in the middle', (2) learning on the job, (3) practice organisation and (4) facilitating change. The four themes did not form discrete topics—all themes were affected by aspects of the social, organisational and physical context of the veterinary practices. These aspects affected the way FoH staff worked and dealt with queries regarding the dispensing of antimicrobials.

### Being 'piggy in the middle'

All FoH staff commented on how they were usually the first point of contact with whom a farmer would converse when coming into the reception area or to whom a farmer would speak over the telephone.

I think that's what I've always said about our job. We are the go-between between the client and the vet so the client asks us, we ask the vet. The vet tells us and then we tell the client. So, we are a go-between, we are.

Humour and open communication were considered useful to help with potentially difficult situations.

We try and make them laugh ... to be honest. We have a bit of banter with them. I mean if they are [grumpy], they are. It's all part and parcel of it. It's down to, we just say it's down to the vet. We can't give it [antimicrobials], the vet has to. And then the vet will come along and they're as nice as pie to the vet.

The roles of FoH staff are much more than answering the telephone or passing drugs from a veterinary surgeon, thus highlighting the hidden contribution that FoH staff make to the dispensing of antimicrobials to farmers. In order to do their role in a professional manner, FoH staff must learn to manage their emotions as an integral part of conforming to work role requirements. This underpins another skill and attribute FoH staff must cultivate: being the gatekeeper.

### Being the gatekeeper

As illustrated, FoH staff play an important role in the management and dispensing of antimicrobials and act as the conduit between veterinary surgeons and farm clients.

If they came in and said they wanted a jab of ... [an antimicrobial drug] for some lame sheep, then we'd ask a few questions as to what do the lesions look like, how long have they had it, is there a smell to it, things like that, then we would be able to advise them that was okay to give but we wouldn't ask a vet every time. Sometimes we don't have a vet free to come and speak to them because sometimes they're operating or are consulting so we have to juggle things a bit.

In other situations, the responsibilities of dispensing were predicated upon the knowledge of farm clients. For example, where a farmer requested a small amount of an antimicrobial (one they had not had before) or in a large quantity, FoH staff would use their discretion and experience when deciding on the best course of action.

If I knew you [farmer] and the amount of livestock, three bottles [of Pen-Strep] sometimes wouldn't be a problem to give out [without contacting a vet]. If I knew you were like a smallholder I would think, "Why do you want three bottles of Pen-Strep?" I would question it. If you've only got 20 sheep and then I'd be questioning, "There's no need for you to have three bottles" and then that's the problem. That's the reason when you get the vet to ring them back and question [them]. It's not that we're not believing that you [farmer] want those three bottles but what's the reason you want those three bottles? Do you know what you're treating for and why do you need Pen-Strep rather than something else? How do they [the smallholder] know?

One FoH staff member felt that some farmers thought of them as 'bloody doctor's receptionists' when there was no veterinary surgeon available to give permission to dispense antimicrobials.

FoH staff found themselves under pressure from farmers who wanted drugs that had been moved onto the highest-priority critically important antimicrobial (HP-CIA) list. This list details specific drugs considered the most important for human health and whose use must thus be preserved; in the pursuit of reducing AMR, they are no longer readily available for use in livestock.<sup>28</sup>

... I had a phone call from one farmer... and he goes, 'I want a [particular HP- CIA].' I was like, 'Mmm, you're not going to get [that].' 'Well,' he says, 'I want it!' I was like, 'What you want and what you get are two different things.' His argument was, 'The dairy boys have it.' I was like, 'Well, I don't think they get it but they're probably just

telling you it's the best thing to get.' So he was like, 'Oh well if I speak to a vet, a vet will give it to me.' I was like, 'No, they definitely won't.' So, he has a bit of a tantrum so I just put him onto the [vet practice] partner anyway. But he didn't get it in the end. Some people are set in their ways, saying, 'I want this!' But I think if you just chat to them and say, 'Listen, antibiotic resistance, ...' things like that, then they're not too bad. Generally they will kind of agree with you and get onto what you are saying. It's probably like one every now and again that's 'I want this and that's the end of it!'

This quote helps demonstrate how, in interactions with clients in day-to-day veterinary practice, FoH staff used their discretion and experience relating to the dispensing of POM-Vs as well as educating clients about antibiotic resistance.

## Developing personal-professional relationships

Getting to know farm clients professionally helped considerably as FoH staff learned, through their dispensing role and their interaction with veterinary surgeons and clients, what a farmer's regular prescriptions were. FoH staff explained how dairy farmers tended to have similar prescriptions every month, whereas sheep and beef farmers tended to be more seasonal in their prescription needs. FoH staff could also check each farmer's records on the computer system. When they knew the client and a prescription had been verified by a veterinary surgeon on the farmer's practice account, FoH staff were happy to dispense larger amounts of an antimicrobial than the amount a farmer would usually take.

Building up trust and a rapport were perceived as being important when communicating and developing a farmer-FoH relationship. The skills of FoH staff included going beyond politeness and tolerance to encompass the ability to empathise with or care for the farmer, while at the same time holding boundaries and being able to say no to dispensing antimicrobials on demand.

They [farmers] like to know who they're speaking to on the phone and as I said we've got staff here that have been here for years and years and years and they prefer [them] ... It's nothing to do with being better at your job, it's just talking to somebody you know. And I'm a bit like that as well. When I phone somebody up, I like to know who I'm speaking to. So, it's definitely a big part and it definitely helps.

Where farmers have used certain antimicrobials every year, for example, to treat newborn lambs with a rou-

tine dose, whether it was known to be needed or not, there was a perception within veterinary practice teams that resistance had built up, with some farms now finding their 'go to' drug no longer works. FoH staff found it difficult to suggest to farmers not to use these medicines despite these concerns but were aware of the consequences of giving out the same antimicrobials to farmers when there were alternative treatment plans that could be put in place.

I think it's quite good we're trying to cut down on giving out antibiotics ... I think it's quite good because like everything else you can get resistant to it. I'm one for pushing the vaccines like with the sheep abortion. I'm quite well known for pushing farmers to vaccinate the ewes rather than giving them [oxytetracycline].

In some situations, however, suggesting alternatives created tension.

Older farmers would say "I'm not listening to that. I want the [oxytetracycline]. It works for me. It's worked the last 40 years and I want it". The younger farmers will take on board what the vet is saying. The youngsters are a different generation ... and they will try different things whereas the older farmers are so set in their ways.

It appeared, from what FoH staff intimated, that having to make these suggestions was mainly a generational thing, although 'you do get the odd older farmer who is quite keen on the new stuff'.

There is also the possibility, however, that FoH staff could work against antimicrobial stewardship by suggesting that antimicrobials would be required, driving clients to expect antimicrobials, which might not be appropriate. This could also be made more complex by the ever-changing landscape of antimicrobial products and branding, combined with farmers often relying on FoH staff's working knowledge of this landscape when seeking veterinary services.

## Learning on the job

FoH staff often received little formal training regarding the complexities of antimicrobial use and dispensing. This meant knowing where medicines were located and what each medicine did was made more difficult, affecting both their interactions with veterinary clients in day-to-day practice and their experiences relating to the dispensing of POM-Vs. The lack of structured FoH training heightens the significant challenges they face in antimicrobial dispensing, balancing client needs, their perceived self-competence and regulatory procedures.

New staff explained how they picked up knowledge and information by listening to what veterinary

surgeons said to farmers, as well as listening to other FoH staff who were able to guide and instruct them on dispensing antimicrobials.

Because I've been here quite some time so when I do get the opportunity to train the younger staff that start, you take them under your wing and you try and explain a lot of things. We have a traffic light system, when it comes to dispensing medicines, so that gets explained to any new member of staff that starts. They shadow a member of staff for a period of time before they let them to their own devices. It emphasises any problems, anything they're not sure of they're told not to just go willy-nilly dispensing these products, you need to check with either a member of staff that's more senior than yourself or you need to find a vet to actually check with them.

## Practice organisation

The key attributes that FoH staff thought were important for practice organisation were:

Good communication skills, being able to work as part of a team ... being able to manage different situations, sort of being able to deal with farmers when they are being particularly stressed at us ... keeping calm and ... open minded to different things, different people.

One of the key areas many FoH staff manage is the pharmacy. Each practice had its own system for cataloguing, organising and ordering in antimicrobials.

Typically, FoH staff described using a 'traffic light' system for categorising antimicrobials as red, amber and green. Red meant the same across all practices—essentially, restricted access at the discretion of a veterinarian—with all HP-CIAs marked as red, for example,

Anything that we are outright not allowed to give out they've all got red dots on them ... it's a 'no, this can't happen, you need to speak to a vet and the vet sorts it from there ... we try and keep them all on one shelf together, so it's more of a sort of this shelf is a no-touch zone!

Amber and green typically suggested antimicrobials considered of medium (amber) and low (green) importance with regards to limiting accessibility and use, based on their significance in animal and human health treatments and/or methods of application (systemic or topical).

In terms of ordering stock in, this tended to vary between practices. In some practices, one FoH member would have the responsibility:

We have a stock person, stock coordinator ... she is kind of in charge of it, but I then as head receptionist I make sure we have enough in the pharmacy for the farmers, so we have got a store room as well as a pharmacy and you kind of get to know how much of everything you need to keep and then we try to re-order them, try to do one bulk a week and then top up then if we need to.

Whereas, in others, this responsibility was shared:

Well everybody is responsible for making sure that there is adequate stock on the shelf, so if you know that you're giving the last one then we have an order book, so we have to write a list down and then at the end of the day either myself or the partners put an order through directly [to the suppliers]. So it's an accumulation of everyone making sure that there's stuff on the shelves and stock, as well as the nurses when they're using equipment such as catheters and things.

Although veterinary practices are businesses, none of the FoH staff reported feeling any pressure to sell more antimicrobials to farmers.

No, not particularly, I mean antibiotics—we're trying to reduce anyway, so we're trying to sell less of those if anything.

## Facilitating change

The FoH staff recognised that antibiotic resistance was a consideration impacting on their role with regards to expectations for dispensing and client-facing behaviours:

Well, it is a big consideration really, yeah, it's a big consideration that we take into mind. I don't know how affects us in such that obviously we're trying to provide care, I'm just trying to think how to explain it. We wouldn't just be happy to continue on the dispensing that was maybe in the past, much more questions get asked now, and I think a lot of antibiotics could be reduced and are being reduced, so yeah, definitely it's a big consideration, yeah.

Certain products farmers once used regularly have now been categorised as HP-CIAs, which are

considered necessary to protect due to their importance to human health.

Farmers initially were, 'it's [an HP-CIA]; the only one that works.' So we say to them, 'Well, it might not be, unless we test for it [the disease], you're not going to know,' but I think it's definitely become more of a discussion topic with the farmers and a lot of them are getting more clued up and will say, 'Yes, we need to start reducing what we're using.' Especially as they're getting inspected now on the farm by certain bodies like Red Tractor, they want to know what they're using every 12 months.

*(Red Tractor is a food-chain assurance scheme and the logo can only be used on food that has been produced, transported, stored and packed to the required standards defined by the Red Tractor licensing rules).<sup>29</sup>*

Some farmers, however, were initially resistant to change, but FoH staff sought innovative ways of highlighting to farmers that change was imperative, both through their own interactions with clients and through orchestrating specific veterinarian–farmer prescribing discussions.

Yeah, the ones that have done it the same way for years and years tend to be the ones that are more likely to not like what you have to say to them or can't understand. 'Well, why can't I just have that bottle of whatever it is? This is how we've always treated this animal,' and it's like, 'No, it's time for change. You need to speak to one of our vets.' ... one of the vets we've got here at the moment is a locum and obviously the recently graduated vet as well. It's quite nice to have young fresh blood through that don't know our farmers because we often find that if they want to speak to a vet they always have to speak to the vet that they've always had, and sometimes even if that vet can speak to them they still won't accept gracefully what they're being told. Whereas if we can throw a new vet in front of them that they've never met, they haven't got a clue where they've come from or what they've done, they kind of behave! And it's a bit like, 'Oh, okay, fine. I guess I'll have to do it this way then.' So, yeah!

## DISCUSSION

This study explored the roles played by veterinary practice staff and investigated participants' expect-

tations and perceptions of the FoH role as well as their interactions with clients in day-to-day veterinary practice.

The role of FoH as 'piggy in the middle' in the farmer–FoH staff–veterinary surgeon relationship meant that they were responsible for the 'bridging' work<sup>14</sup> between farmer and veterinary surgeon. The work of FoH staff may initially appear mundane and standardised, and many of the tasks—such as mopping the surgery floor, cleaning, cashing up and other routine duties—were 'invisible', as has been found in nursing.<sup>30</sup> Much of the 'invisible' work of FoH staff is difficult to quantify and even describe; as such, this work may be undervalued. It is also interesting to note that frontline service positions, as examined in this study, tend usually to be filled by women, perhaps partly because of their stereotypical roles as emotionally expressive nurturers.<sup>31–33</sup>

## Gatekeepers

FoH staff are often seen as gatekeepers—mediators who have the power to grant or withhold access to people or situations,<sup>33</sup> which may, in some situations, make the clients feel more vulnerable.<sup>13</sup> As gatekeepers, FoH staff are the hub of practice communication, are central to the client experience, provide information and may be able to suggest preventative veterinary treatments as opposed to using antimicrobials per se.<sup>9</sup> They have the power to deny a client's access to, for example, a veterinary surgeon or to deny a farmer's request for antimicrobials whether authorised by a veterinary surgeon or not. As gatekeepers, they must navigate a path between dispensing antimicrobials on client demand and complying with veterinary regulations.<sup>16</sup> The portrayal of doctors' receptionists as 'dragons', fiercely guarding access to healthcare professionals, is one that has been widely circulated in mainstream media.<sup>11,13,34</sup> Similarly, framing FoH staff helps to obstruct an understanding of the complex tasks that FoH staff perform as well as the conflicts that are inherent in their roles, such as when they can or cannot dispense antimicrobials without consulting a veterinary surgeon.

While FoH staff are not ultimately responsible for prescribing POM-Vs, they play an important role as physical gatekeepers of the medicines and in the quality assurance of prescribing and dispensing. By ensuring that FoH staff are aware of the principles of prescribing (where only veterinarians can prescribe) and the cascade,<sup>16</sup> it follows that those principles are more likely to be adhered to in practice.

## Developing personal–professional relationships

Getting to know farm clients through practice activities—both through the FoH dispensing role

and associated interactions with veterinary surgeons and their clients—helped FoH staff considerably when dispensing, as staff became familiar with farmers' personalities and expectations as a client and were able to forge personal–professional relationships. This, in turn, meant that they were able to predict how a client would respond if their requests for antimicrobials were not met, which could, as we have illustrated, create frustration on behalf of clients. The FoH staff reported experiencing tension in these instances that was associated with the experience of the stereotypical doctor's receptionist, who may need to deny patients' requests. Indeed, in human health, receptionists are described by patients as 'the dragon at the desk' for their role as gatekeepers of patient care and their potential discretionary role in determining access to the general practitioner.<sup>11</sup> To avoid similar tension associated with their role as gatekeepers of antimicrobials within veterinary practice, FoH staff reported the critical place of cultivating a positive working relationship with farm clients established through, for example, an empathic and caring approach, taking care to be familiar with a client's regular prescriptions, being comfortable in dispensing these and being confident with regards to when to escalate queries to veterinary colleagues for support and advice versus when to hold their boundaries.

## Learning on the job

Knowing a client's regular prescriptions and being comfortable in dispensing them infers a complex process of acquiring and converting both explicit and tacit knowledge that can be used when called upon to dispense antimicrobials. FoH staff used explicit knowledge and codified information (e.g., farmers' veterinary records, typically computerised), which could be readily shared among staff. Learning on the job can be facilitated by discussions with colleagues and mentors or by observing how others apply knowledge of what can and cannot be dispensed.<sup>35–38</sup> Seeking advice from those with the most experience, regardless of their professional status, was a factor that Kinnison et al.<sup>8</sup> identified as being important when creating an interprofessional work environment. FoH staff were in a working environment best described as a type of informal learning organisation.<sup>39,40</sup>

Work is in progress across the veterinary sector to raise the profile and acknowledgement of the roles that FoH staff must perform in carrying out their daily duties. The British Veterinary Receptionist Association (BVRA), established in 2017, was founded in recognition of the crucial role that FoH staff (specifically veterinary receptionists) play in veterinary practice.<sup>41</sup> The BVRA intends to raise the status of FoH staff within the UK veterinary sector, evolving the FoH role through accredited veterinary receptionist awards, affordable continuing professional development and bespoke training.<sup>20,42</sup>

FoH staff can also train to become what was once known as a suitably qualified person, now referred to as a responsible animal medicine advisor (RAMA).<sup>43</sup> A person with such a qualification can prescribe and/or supply certain medicines under the Veterinary Medicines Regulations.<sup>16</sup>

Nevertheless, while RAMA training is widely available, 56% of receptionists surveyed by the BVRA claimed that lack of time to train was a barrier to them receiving further qualifications, especially when continuing professional development could only be taken in the veterinary receptionist staff's own time.<sup>43</sup>

## Practice organisation

FoH staff conduct a range of activities essential to the smooth running of a veterinary practice. These range from the interpersonal—such as managing the flow of information from farmers to veterinary surgeons and vice versa—to the practical—such as maintaining computer records, carrying out laboratory work (worm egg counts, for instance), printing out invoices, carrying out stock checks and ordering in products as needed (including medicines, ensuring sufficient stock of different antimicrobials to dispense is maintained). FoH staff often reported feeling integral to engaging clients in discussions and actions supporting responsible antimicrobial use.

## Facilitating change

FoH staff did, however, find it difficult to suggest that farmers change their behaviour surrounding areas such as routine medicine use, despite concerns over specific practices, feeling these suggestions could create tension in the personal–professional relationship.

In an ideal world, farmers would be moving away from reliance on using antimicrobials as a management tool and instead move towards a more proactive approach of preventing animal disease and using antimicrobials only as a last resort. However, influencing human behaviour in relation to the use of antimicrobials is complex<sup>44</sup> and potentially difficult to accomplish,<sup>45,46</sup> given the highly personalised and situated practices surrounding antimicrobial use.<sup>46</sup> Within the field of veterinary medicine, factors such as social norms, knowledge, personal and relational experiences and socioeconomic conditions all influence farmers' understanding and behaviours towards responsible medicine use.<sup>26</sup> FoH staff seem to ideally facilitate changes in medicine use through supporting and influencing both the veterinarian–farmer relationship and farmer decision making surrounding antimicrobial usage. However, communication on change is complex, making practical training opportunities invaluable for the FoH role.



## CONCLUSION

As we have illustrated, the roles of veterinary practice staff (FoH staff) range from the mundane and standardised—for instance, answering the telephone—to complex roles negotiating, advising and placating farm clients when demands for antimicrobials cannot be met.

The experiences of FoH staff with veterinary clients meant that they were the conduits and gatekeepers between veterinary surgeons and farmers—a complex occupational role that necessitates building a rapport with farmers and responding to their concerns. Their role included making important ‘hidden’ contributions to quality and safety when dispensing medicines, and they often regarded themselves as accountable to clients for these contributions.

As outlined in this paper, FoH staff play a pivotal role in the flow of antimicrobials from veterinary practices onto farms and ultimately into animals. Despite having such an important part to play, these staff members are rarely appropriately trained, not professionally recognised and poorly remunerated. Their role has perhaps been overlooked historically when undertaking academic research and when implementing antimicrobial stewardship interventions. Further research aimed at understanding the training needs and potential for FoH staff to become involved in antimicrobial stewardship interventions is clearly needed, as these key members of the team are underutilised and underresourced. Concurrently, there needs to be an improved recognition of the value of motivated, well-trained FoH staff to the veterinary-led team.

## AUTHOR CONTRIBUTIONS

Deborah Butler analysed the data and wrote the paper in consultation with Alison Bard, Gwen M. Rees and Kristen Reyher. Alison Bard and Gwen M. Rees collected the data. Gwen M. Rees, Kristen Reyher and Alison Bard contributed to the design and implementation of the research project.

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## CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

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## DATA AVAILABILITY STATEMENT


The data that support the findings of this study are available upon request from the corresponding author.

The data are not publicly available due to privacy or ethical restrictions.

## ETHICS STATEMENT

Ethical approval for this study was granted by the University of Bristol's Faculty of Health Sciences Research Ethics Committee (reference number 99522).

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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