

## The use of in-depth interviews to understand the process of treating lame dairy cows from the farmers' perspective

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### Abstract

*Interventions aimed at improving animal welfare on farms may be more successful if greater attention is paid to the points of view of farmers. For example, understanding how different dairy farmers detect lame cows, decide to treat them, get them to the point of treatment, and how practical considerations that impact on this process may be important for reducing lameness on dairy farms. In-depth interviews with twelve dairy farmers were carried out to explore how this occurred on their farms. This in-depth approach allowed a number of factors influencing lameness treatment to be uncovered. The language used by farmers to describe lameness gave important insight into their perceptions of lameness and into the value they placed on prompt treatment. Farmers' perceptions of lameness were found to affect the speed of treatment, with treatment of cows perceived to have impaired mobility or to be less severely lame sometimes delayed. Other priorities on the farm, skilled labour availability, farm infrastructure and farmers' emotional responses to lameness treatment were all found to impact on whether or when a lame cow was treated. In order to encourage farmers to promptly treat all lame cows their perceptions of lameness and the benefits of prompt treatment must be addressed. The language used when communicating with farmers about lameness may be key to achieving this. The practical barriers, such as time and labour constraints, associated with the treatment process, must also be understood, taken into account and seen in the context of the farm management as a whole.*

**Keywords:** animal welfare, dairy cattle, farmer, lameness, qualitative, treatment

### Introduction

Welfare improvement requires insight into on-farm practice from the farmers' point of view. Welfare scientists must appreciate both the farmers' rationale for managing their stock in the way they do and also what motivates, encourages or prevents them from changing their current practice. Until recently there has been "relatively little attention paid to [experiences of] those [people] who implement [welfare] measures and practices on farm" (Hubbard *et al* 2007). As such, on the topic of welfare improvements, the voice of the producer has rarely been heard. In this paper, we examine how incorporating the voice of the dairy farmer into research debates about lameness treatment may be vital for tackling this significant welfare problem.

Research suggests that farmers frequently underestimate the number of lame cows in their herds (Whay *et al* 2003; Leach *et al* 2010a), that treatment, especially of less severely lame cows can be delayed (Alawneh *et al* 2012) and that this treatment delay results in increased lameness prevalence (Bell & Huxley 2009; Leach *et al* 2012). In 2008, DairyCo

(the GB dairy levy body), launched a mobility scoring system to help and encourage farmers to both detect and treat a greater proportion of their lame dairy cows. The DairyCo Mobility Scoring system (DairyCo 2012a) was developed by researchers in conjunction with farmers, veterinary surgeons and other health and welfare advisors (Bell & Huxley 2009). The aim was to create a simple, standardised, scoring system, which dairy farmers could use themselves, on their farms, to assess the mobility of their cows. Farmers are encouraged to make at least monthly observations of all cows in the herd walking on a hard, non-slip surface. Further to this, in 2011, DairyCo launched the Healthy Feet Programme, an industry-wide initiative to reduce lameness in Great Britain (DairyCo 2013).

Despite the launch of these initiatives and an overall increased understanding of lameness risk factors, assessment, prevention and treatment, it continues to be a welfare concern on many dairy farms. This paper argues that further progress in reducing lameness may be made through gaining a greater understanding of farmers' personal experiences of lameness detection and treatment as it occurs on their farm.

In 2006, Lund and co-workers made a call for interdisciplinary, integrated welfare science to address the complex nature of animal welfare problems. “Where human-animal interactions occur, [...] the social sciences should be part of the collaborative effort” (Lund *et al* 2006). The treatment of lame cows relates directly to the day-to-day interactions between a farmer and his or her lame cattle. Consequently, in this research we have turned to qualitative social scientific methods (Coffey & Atkinson 1996) to investigate how this human-animal interaction, and other on-farm factors, shape lameness identification and treatment. This work builds on a developing field that integrates social science research methodologies into animal welfare science (*Animal Welfare* special issue ‘Minding Animals’ 2011).

The aim of this study was to use in-depth qualitative interviews with dairy farmers to explore how farmers talk about the practices and processes of lameness control based on their ongoing experiences of tackling it on their farm. The focus of the study was on farmer experiences of treating lame cows, as prompt and effective treatment has been identified as a key way in which lameness prevalence can be reduced (Leach *et al* 2012). It was anticipated that this approach would allow farmers to openly discuss the process of treating lame cows as it occurred on their farm. It was also hoped that the insight gained through this approach could be used to make practical suggestions for working more effectively with farmers to promote the prompt and effective treatment of lame dairy cows.

The paper makes two arguments to support strategies for tackling lameness. Firstly, to argue for greater consideration of the language used to communicate with farmers and greater understanding of how they understand lameness both through and beyond the scope of mobility scoring, as the research uncovered disagreement in terms of the meanings and understandings of what lameness is between the scientific research community and farmers. Secondly, to argue that greater consideration is needed for how and why lameness identification, treatment and form of treatment is related to the broader farming context.

## Materials and methods

### Recruitment and participants

Twelve dairy farmers were recruited from a sample of 84 farmers who had previously responded to a telephone survey relating to on-farm lameness treatment (Horseman *et al* 2013). Contact information for the telephone survey came from two sources: (i) a previous telephone survey conducted with dairy farmers at the University of Bristol; and (ii) two contact lists provided by DairyCo; a randomly generated list of levy payers and a list of farmers provisionally recruited by DairyCo extension officers. The farmers completing the telephone survey, and subsequently interviewed, were all involved in making treatment decisions and carried out treatment of lame cows on their farms. To recruit farmers for the present study, a list of the original 84 farmers was created and each of these farmers was assigned a number between one and 84 using a random number generator.

Farmers were then contacted in numerical order, working through the list, until twelve farmers had been recruited. It was envisaged that 12 interviews would be sufficient to reach ‘data saturation’ (see *Notes on the methodology*). A total of 19 farmers were contacted to obtain the desired sample. The seven farmers who declined to participate in this research gave lack of time as their reason. On initial contact with the farmers the main aims of the study were outlined. The farmers were asked if they would be willing for the researcher (SVH) to visit them on their farm and interview them for approximately one hour. The researcher also asked if the interview could be conducted whilst the farmer either treated a lame cow or foot-trimmed a non-lame cow to encourage relevant, practical discussion on the research topic. Verbal permission to audio record the interviews was sought. All of the farmers recruited were male. Each participant was assigned a pseudonym to allow quotes to be used anonymously in the *Results* section, and to help readers to build a picture of the different farmers through the paper. Table 1 gives each farmer’s pseudonym along with demographic information about their role on the farm, geographic location and herd size.

### Interviews

The interviews lasted between one and two hours and were all conducted face-to-face on-farm. Prior to commencing the main study a pilot interview was carried out to explore the different ways questions could be phrased to encourage farmers to talk freely and openly about the process of treating lame cows. All 12 interviews were conducted by the same researcher to ensure consistency in the types of questions asked. Immediately before the interviews began farmers were reminded of the aims and objectives of the study and were asked to sign a consent form to meet University of Bristol ethical approval guidance. In the introduction, emphasis was put on the farmers’ anonymity and the researchers desire to explore issues that were important to the individual farmer in relation to the treatment of lame cows. With the exception of one farmer, all farmers were interviewed whilst they either treated or trimmed the claw(s) of at least one cow. In order to build a rapport with the farmer and put him at ease, initial questions covered areas such as the number of cows in milk and the farm history. Subsequent questions focused on the process of treating lame cows as it occurred on that particular farm. Questions were asked to explore how lameness was detected on the farm, what signs the farmers looked for to determine if a cow was lame and how quickly cows were treated after they were recognised as lame. Farmers were asked how they treated the most common causes of lameness and how they decided which treatment method to use. Foot-trimming techniques and training were discussed. Farmers were asked questions about the layout of the farm, the equipment on the farm, the daily routine, staffing levels and how these impacted on the treatment process. By interviewing the farmers whilst they brought cows into the crush and trimmed and/or treated them, the researcher was able to use what the farmer was doing at the time as a prompt to stimulate conversation in particular areas. As an example, the researcher could ask

**Table 1 Demographic information and pseudonym for the 12 farmers interviewed, including information about additional interviewees where present.**

Farmer (pseudonym)	Role on farm (described by interviewee)	Location	Herd size	Additional interviewee and pseudonym)
Farmer Lucky	Partner <sup>†</sup>	South West	300	
Farmer John	Owner	Scotland	500	
Farmer Water	Herd manager	South East	280	
Farmer Burt	Partner	South West	100	
Farmer Jones	Partner	South West	130	
Farmer Giles	Herd manager	South West	100	
Farmer Tony	Partner	North	120	
Farmer Bob	Partner	South West	260	Farmer Taylor (Herd manager)
Farmer Bowman	Herd manager	South West	200	
Farmer Billy	Partner	South West	200	Farmer Keith (Herd manager)
Farmer Smith	Partner	South West	100	Farmer Goodman (Son)
Farmer Frank	Partner	North	160	

<sup>†</sup> Partner is the term used by the interviewee to describe their role on the farm which we understood as short-hand for farm business partner.

how long the cow being treated had been lame, what the farmer had noticed and how the farmer was going to treat her. The farmer was also able to describe his foot-trimming technique whilst carrying out the process. At the end of the interview farmers were asked to discuss anything which had not already been mentioned that they felt was important to them in relation to treating lame dairy cows on their farm.

### Data handling and analysis

The 12 interview recordings were transcribed (*verbatim*) for analysis. The transcripts were analysed both by the first author and HRW to allow cross-validation of the emerging themes. Both researchers analysed the transcripts independently to identify the key themes emerging from the texts and then discussed these with each other. There were no substantial differences in the themes identified by each of the researchers. In the first section of this paper we discuss a theme which relates to the language farmers used to talk about lameness, how they identified lame cows and classified different severities of lameness using existing knowledge and/or the DairyCo mobility scoring procedure, and how this knowledge informed decisions about whether cows needed treating and when. The second section discusses the theme which relates to lameness treatment as articulated by farmers. This theme includes barriers and motivating factors which were often found to be intermediary factors between recognising a cow needed treatment and the point when she was actually treated.

### Notes on the methodology

This study aimed to take an in-depth look at the practices and process of treating lame cows on farms, through gaining the perspective of individual farmers via interview. As such, the findings cannot be generalised to any population of dairy farmers, other than that directly studied. However, the

authors aimed to reach 'data saturation' whilst carrying out this study. Morse (1995) defines 'saturation' in qualitative data as 'data adequacy' and states that this is achieved when data are collected until no new information is obtained. During the last few interviews conducted, no new themes emerged which had not previously been discussed by other farmers suggesting that saturation was reached and that the results may be applicable to a larger sample size of dairy farmers than that studied. In addition, by taking this approach it was possible to gain greater in-depth understanding of lameness treatment as it takes place on farms and to explore some of the reasons why lame cows are not always promptly and effectively treated. The process of talking to farmers as they carried out lameness treatment acted as a valuable prompt to engage farmers in the topic and thus stimulate conversation. This research was supported and funded by the dairy industry and so the findings are discussed within a framework of acceptable industry standards which may differ from the perceptions of those outside the dairy industry.

### Results and Discussion

Analysis of the transcripts highlighted some broad themes relating to the interviewees' experiences of lameness in their cows. These included their perceptions of the causes of lameness and ways in which it could be managed and reduced based on their personal experiences. Within the following sections we discuss two prominent themes that emerged from the interviews relating to lameness detection and treatment and analyse them in the context of existing literature.

#### The language of lameness

Some of the farmers interviewed used language which suggested a sense of empathy and an understanding that

lameness and/or its treatment could result in pain and suffering:

‘It’s not very comfortable for us to have a bad foot’  
(Farmer Smith).

Farmer Taylor discussing placing lame cows onto straw:

‘It’s like you. If you had a bad foot you’d be the same. You’d want to sit down’.

Farmer Keith on using an injectable analgesic:

‘so [I] try and make it a little bit pain free for them... it’s just not very nice seeing a cow hopping about. If you’ve got a sore foot you want a Neurofen and I kind of look at it at the same way really’.

These farmers could be described as articulating the cow as a sentient animal. However, through the majority of the interviews lame cattle were referred to in clinical terms, rather than the more emotive language of animal pain and suffering. It is possible that this is a reflection of the study design as farmers were not specifically asked questions about pain in relation to lameness and its treatment.

#### Lameness detection

During the interviews farmers discussed how they detected lame cows on their farm.

‘As the lame ones go we tend to pick those up fairly easy in the parlour’ (Farmer Lucky).

‘You stand and watch them come in across the field... so if anything is hanging behind you pick them up immediately’ (Farmer Smith).

The overall impression given by farmers interviewed was that they felt able to detect lameness adequately, although they did on occasion suggest other people on their farm were less skilled at detecting lameness.

‘[The staff] stood on the corner there. Two cows I had seen lame... neither of them had seen them’ (Farmer Water).

Previous research has shown that farmer estimates of lameness prevalence are frequently lower than prevalence figures determined by researchers (Whay *et al* 2003; Leach *et al* 2010a). Mobility scoring has been advocated to farmers to try to address this gap between scientific and farmer identification of lameness. However, further to feeling that their existing detection methods were adequate, a significant number of farmers interviewed felt that mobility scoring would add nothing more to their detection process.

‘I don’t need you [outside observer] to tell me that’s a score three [severely lame cow] because I know that already’ (Farmer Burt).

‘I think that good stockmanship should see a lame cow without having someone externally to tell you’ (Farmer Giles).

‘No, I didn’t see it as a hassle... it’s just giving a return on the time. You know you go through the score sheet afterwards and yes I know that one’s slightly lame and I know why that one’s slightly wrong... I know it up here [in my head]...’ (Farmer Frank).

Many farmers viewed mobility scoring as unnecessary because they felt that they were able to detect lame cows in their normal working practices through daily contact with cows.

‘As a farmer milking my own cows day in day out, I know the cow’s lame before you come and tell me’  
(Farmer Burt).

‘You just wonder how much I actually learn because by bringing the cows in for milking, scraping up, feeding, you see how the cows are indirectly... not by specifically scoring every cow. Because its stockman’s eye, the experience, the flavour that you build by doing the job seven days a week’ (Farmer Bob).

The farmers involved in the study spoke rarely of carrying out regular formal mobility scoring on a monthly basis, despite being aware of the DairyCo mobility scoring system. The only exception was the following farmer who, despite seeing the benefits of having his cows mobility scored, and stating that he regularly mobility scored, still spoke of reasons why this was sometimes hard to achieve.

‘It’s good for someone else to do it because it can be a bit biased. It does help with someone else scoring them for me’ (Farmer Bowman).

‘Um, probably once a month depending on time wise and what’s been going on. Over the winter we’ve had a quite busy time calving so a lot of time’s been spent calving cows and me just doing the feet’ (Farmer Bowman).

This farmer sold his milk to a retail buyer that included ‘mobility scoring’ as part of their bespoke quality assurance scheme.

Although farmers may not have been heavily engaged with the system there was still broader acknowledgement of the benefits of the ‘DairyCo mobility scoring’.

‘So your score threes you’d be picking those up anyway because they’re lame and you notice them. But the ones that are starting to go a bit lame, you notice actually she’s not walking quite right and you pick those up sooner’ (Farmer Billy).

‘Sometimes you can be too close and don’t always see everything... another pair of eyes may see things differently. So [mobility scoring] might be a good thing... they might see something we haven’t’ (Farmer Taylor).

It was also recognised as a useful surveillance technique for monitoring cow well-being for farm managers who have less than daily contact with the animals.

‘Perhaps it would be useful if I was a farm manager or I had people in doing all my cow work for me’ (Farmer Frank).

This conversation between Herd Manager Keith and Farmer Billy demonstrates how, even where the benefits of mobility scoring are recognised, the practicalities of implementation can be seen as a barrier. This point was reiterated by another farmer (Farmer John).

Interviewer: ‘So you’ve been reading about mobility scoring and you sound quite positive about it. Is there anything that’s stopping you implement it on the farm?’

K: ‘having the right person to do it, because you’re not meant to mobility score your own cows are you?’ (Herd Manager Keith).

B: ‘I reckon I could probably do it now because I don’t have so much to do with the cows now... at the minute we are serving [AI] a lot of cows, the routine is taking a lot of time to get on top of but certainly before too long

we should be able to find time to have a go' (Farmer Billy).

'It's finding a place to do it and finding a person to do it. I don't see much point in chopping and changing, it needs to be the same person all the time' (Farmer John).

These comments illustrate how farmers have practical concerns that influence how easy it is for them to mobility score. Here, these included the appropriate person to do it and finding the time and the place for it in a busy farming routine. This is discussed in much greater detail in section two which is concerned with barriers and motivators.

#### 'Lame' or just 'not walking quite right'?

It has been argued that farmers' lack of formal lameness monitoring has resulted in them underestimating the number of lame cows in their herds when compared to researcher estimates. However, another explanation is that different definitions exist between researchers and farmers of what constitutes a lame cow. The DairyCo (2012b) definition of lameness refers to:

...any abnormality which causes a cow to change the way that she walks, and can be caused by a range of foot and leg conditions, themselves caused by disease, management or environmental factors.

In this study, farmers used a variety of terminology to describe cows that were potentially lame under the scientific definition. The phrases below illustrate the different ways in which farmers talked about cows which were potentially lame:

'you notice she's not walking quite right' (Farmer Billy).

'[cows which are] just a little bit impaired in how mobile they are' and 'it's just her mobility is not very good' (Farmer Bob).

'[they] aren't walking correctly' and '[they are] walking a little light' (Farmer Tony).

'Maybe I'm not good enough at noticing the poor mobility or the impaired mobility' (Farmer John).

'so I think generally her mobility is suffering a bit' (Farmer Taylor).

Farmer Smith on the consequences of prompter treatment: 'well they'd get better quicker, better mobility quicker'.

What is striking is how farmers avoided using the word lame by using terms such as 'impaired mobility' to describe less severely lame cows and the use of the term 'score three' to describe more severely lame cows. In the development of the DairyCo mobility scoring system it has been reported that language was adopted that would help make the initiative more palatable and acceptable to farmers (Bell & Huxley 2009). For example, the term 'mobility scoring' was chosen instead of lameness scoring. Cows are scored in terms of good mobility (score 0), imperfect mobility (score 1), impaired mobility (score 2) and severely impaired mobility (score 3) rather than in terms of lame/not lame. Although the majority of farmers in this study were not actively engaged in the mobility scoring system, it appeared that the language used within the scoring system had been adopted by some farmers and was influencing the way they talked about lameness. Further to this, analysis of the language used by the farmers offers another explanation for farmer under-estimation of lameness prevalence, which

may have less to do with under-detection and more to do with misleading labelling of the severity of lameness as degrees of mobility impairment.

#### Speed of treatment

There is some evidence from this study that how farmers defined and labelled the mobility of their cows also impacted on the speed at which individual cows were treated. Whilst lame cows were seen as needing prompt treatment, some farmers expressed a belief that cows whose mobility was simply impaired could be left for longer. For example, farmer Burt said:

'[Cows which are] physically lame you try to get on top of as quickly as possible.... there's a difference between a lame cow and a cow with overgrown feet who is not always lame'.

Another farmer (Tony), described how he decided which cows to treat and when. Pointing to a cow in his herd he said:

'She wants doing in the next month. I mean, she's not lame in any way, she's just not walking correctly' (Farmer Tony).

The farmers interviewed also described how the severity of the presenting lameness determined how quickly cows were treated, with most farmers reporting treating severely lame cows more promptly. Two farmers told the interviewer why the treatment of the cow they were treating at the time of the interview had been delayed. The first, farmer Smith, said:

'This one, [is] not seriously lame... she has not walked properly on that foot for quite a while... she's not hacking along as if I want a crutch on it but it's not quite right. We've left this one because she hasn't appeared too bad'.

The second, farmer Frank, said of the cow he was treating:

'It's one of those that's just rumbled. It's never been that bad that you want to say "right we've got to get her in" because she's always got about'.

In contrast, farmers talked about how severely lame cows were treated quicker. For example, farmer Lucky stated:

'If I've got one really bad lame one suddenly, then we'll have a go tomorrow'.

As with their definitions of lameness, the treatment strategies used by farmers seem to give insight into how farmers are interpreting treatment recommendations, for example, from the DairyCo mobility scoring process, which due to the language used, may not be conveying sufficient urgency about treating cows with impaired mobility. Within the additional descriptors provided with the DairyCo scoring sheet, only cows with impaired and severely impaired mobility are described as lame. Within the suggested actions attached to each score, cows with imperfect mobility (score 1) are described as benefitting from routine trimming. Cows with impaired mobility (score 2) are described as 'likely to benefit from treatment'. These cows, the scoring system states, 'should be attended to as soon as practically possible'. Only cows with severely impaired mobility (score 3) are said to 'benefit from treatment'. The scoring system states that these cows require further attention and nursing, should be kept on straw or grass and

not be made to walk far. In many ways the treatment strategies being adopted by the farmers in this study reflect the recommendations of the DairyCo mobility scoring system in which only score 3, severely impaired cows are said to 'require urgent attention' (DairyCo 2012a). Recent research has suggested that there may be greater value to the prompt treatment of less severely lame cows (ie, score 2 cows) than is currently implied within the scoring system. In a study conducted by Leach *et al* (2012) score 2 cows treated in < 48 h of detection had less severe lesions and were also less likely to require re-treatment than cows in the control group, where treatment was often delayed. Further to this, four weeks after enrolment a significantly higher proportion of the cows in the treatment group were sound (ie, not lame) than in the control group. This would suggest that there are benefits to treating score 2 cows promptly especially when considered in conjunction with evidence of the hyperalgesia experienced by lame cows and the positive effects of treatment on this (Whay *et al* 1997, 2005).

The farmers in this study had varying perceptions of lameness and used different language to define it, as our previous illustrations show, and these different articulations of the degree of 'lameness' seemed to relate to the speed with which treatment was perceived to be needed. Leach *et al* (2012) showed that farmers are more likely to treat severely lame cows than less lame cows and that severely lame cows are more likely to be treated promptly. Alawneh *et al* (2012) attribute treatment delay of less severely lame cows by farmers to farmers not identifying them. In this current study, whilst many farmers discussed how severely lame cows were treated more promptly, many of the comments made by farmers strongly suggested that less severely lame cows were, in fact, still being recognised by farmers despite the majority not carrying out any formal mobility scoring. Therefore, lameness identification may not be the main reason for treatment delay, but rather that farmers may not always describe lame cows as lame and may not always recognise the benefits of prompt treatment. This may in part be a reflection of the language and terminology which has been used by herd health advisors to talk to farmers about lameness and its treatment. Further to this, there may be additional barriers to treating a greater proportion of cows with varying degrees of lameness as shall be discussed in further detail in the following section.

#### Barriers and motivating factors mediating the gap between lameness detection and lameness treatment

It is easy to assume that once a lame cow is recognised as lame and the farmer has acknowledged the value of treating her that she will be treated. Typically, lameness treatment involves the following stages: separating the cow out from the rest of the herd; restraining her in some way; lifting her foot; trimming the foot; in some instances applying an orthopaedic block (this is made from either plastic, rubber or wood and attached to the sound claw in a lame foot to take the load off the affected claw), bandage and topical treatment may be applied; in some instances antibiotics or

analgesia may be administered. In many ways lameness treatment is not a straightforward process and necessarily coexists alongside other day-to-day farming concerns including routine management tasks, staffing, business administration, crop and field management, and other herd health and welfare concerns. In light of this, it is important for us to understand how individual farmers identify barriers to lameness treatment.

Previous studies have highlighted some of the barriers and motivating factors associated with lameness control, of which treatment plays a part (see Leach *et al* 2010a,b). During the interviews, farmers discussed some of the barriers and motivating factors associated specifically with the process of treating lame cows. In this section, we illustrate some of the perceived barriers experienced by farmers in this study and also highlight some of the improvements that farmers had made on their farms which facilitated lameness treatment.

#### Balancing lameness treatment with other tasks

Farmers discussed how they had to balance treating lame cows with other tasks which needed to be completed on the farm.

'You've got the rest of the farm to run at the same time so you can't always do everything perfect as regards to feet' (Farmer Lucky).

'Sometimes if you knew you had to get some spray somewhere or various other things that needed doing as well. Then say on the Monday then a lame cow got put off to the Tuesday or Wednesday' (Farmer Billy).

'I know a cow needs her foot done straight away if she's lame but it's stupidity to ruin your silage for the sake of doing some feet' (Farmer Lucky).

A previous study has shown that lameness control has to compete with other herd health issues, namely mastitis and infertility, in terms of the effort farmers put in to it (Leach *et al* 2010a), strangely there is no research that situates lameness control methods against a broader set of farm tasks, for example crop management or lambing. This current study suggests that farmers balance lameness control against competing priorities on commercial farms of all sizes, not necessarily due to a lack of appreciation of the need to treat but more due to competing demands on the farmer's time throughout the year, which can become more critical during certain seasons:

'On the farm in Spring I've got to get my cows out, get my fencing right, measure me grass, milk the cows twice a day. There's a hundred and one other jobs that are priority at any time of year, over one cows foot which you know isn't stopping her coming in the parlour' (Farmer Frank).

The farmers in this study, like Farmer Frank and Farmer Lucky, acknowledged that, in their attempt to balance different priorities, lameness treatment may be sub-optimal. Rather than being a conscious or desired management strategy this was seen as an inevitable part of running a commercial farm. There is likely to be an element of stress for farmers who constantly feel they have to make compromises in treatment of their lame cows for the sake of the farming business as a whole.

### Staff levels and skills

Along with staffing being an identifiable issue in relation to detection of lameness, farmers also discussed how quantity and skill-level of their staff influenced lameness treatment:

‘We basically run one short all the time here’ (Farmer Smith).

Another (Farmer John) described his herdsman’s lameness detection skills with the words, ‘he could be better’. In general, the quality of the staff was more of an issue than the quantity of staff available.

‘He says all sorts of things about feet but he doesn’t know anything I’m afraid. So he hasn’t picked a cows foot up since he’s been here nearly three years’ (Farmer Water).

Not only were there concerns about skill levels, but problems were caused when they or staff were away on holiday:

‘I had a couple of days off at the end of the week. When I came back on the Tuesday the following week the first thing I did was fetch the cows in and there was four lame cows in the field’ (Farmer Water).

‘On an occasion when a cow needed treating and I wasn’t here I would probably get the vet cos nobody else that I employ has anything really to do with feet’ (Farmer Giles).

In another example, Farmer Bowman disclosed that after a weekend away it took till the following Wednesday ‘to catch up’ and have the time to treat the cow. Below are extracts from a conversation between Farmer Bob and Farmer Taylor. They discuss and acknowledge a potential weakness to their lameness treatment practices and a strategy which they had in place aimed at overcoming this weakness.

B: ‘There are times we are guilty when we don’t jump in on it quick enough, or it’s the weekend and you think that one will be done on Monday or whatever. Well [Farmer Taylor] ain’t here on a Sunday and I suppose if it was this time of year [month of May] I might be in a position to have more time to do it, but in winter time I wouldn’t have a chance.

T: I mean if it was a really badly lame cow it would go up in the shed and it would be done Monday morning. And they are on straw. And after they have been milked they will go back [to the straw yard] so they haven’t done any walking.

B: Now whether the failing is we’ve just got one man who tends to be doing the foot trimming I don’t know. I am capable of doing it but it’s one thing I do less of [in my role].

T: If a cow was really bad on Sunday morning she would be done. But if she was slightly lame I would put her on straw and do her Monday morning when I have got more time’.

These findings indicate, through in-depth discussion about the topic, how labour affects lameness treatment; it is an issue of the shortage of sufficient skilled labour at particular times of the week, or at particular times of the year, that creates problems, especially when considered in combination with farmers’ needs to balance different priorities on their farms.

### Cow flow

The majority of the farmers interviewed felt that the layout of the farm, cow flow (ie, the ease with which a dairy herd moves around the farming system), and cow handling facilities all impacted on lameness treatment on their farms. Some farmers felt aspects of the farm layout and/or their equipment acted as a barrier to treatment.

‘[the crush] could be better. It’s a bit too small for some of our cows... so that’s probably the biggest thing is getting them in and out. Once they’re in it’s OK’ (Farmer John).

‘They go through the foot bath when they are grazed the other side of the road. You’ve just got to keep shuffling cows around. Anything to do with the whole herd having to come through all the system is a bit of agro’ (Farmer Smith).

Many farmers were using an all-purpose crush rather than one specifically designed for foot-trimming and therefore found trimming or treating front feet challenging.

‘It’s a little difficult doing front feet because you’ve got no front winch, you just physically man handle it up’ (Farmer Burt).

In recognition of the importance of cow flow many farmers either had or were continuing to look for new ways to modify their farm accordingly. As Farmer Frank stated ‘It’s no secret. You’ve got to be able to handle your animals’, and previous research has shown that farm infrastructure has affected farmers’ decisions in relation to a number of dairy health-related issues (mastitis: Beekhuis-Gibbons *et al* [2011]; Johne’s disease control measures: Sorge *et al* [2010]; and lameness control measures: Leach *et al* [2010a]).

‘I can shed them up into the holding pen at the top of the parlour so as they come out I can just shed them off, so there’s no problem with that’ (Farmer Bowman).

‘We recently done these two bays here for the foot bath and foot crush. We didn’t really have anywhere to do foot trimming properly before, so we used to put [the crush] down on the end of the race there. But we used to have to lift it out after a day’s foot trimming which wasn’t too convenient really. And if we had a lame cow to do it was a bit of a hassle to drop the crush in and do it. Now its there ready to go. Because it’s no big deal to do a lame cow now we just keep her in in the morning, and the crush is all ready to go so you get on with it. Certainly some of the overgrown ones I wouldn’t have got round to unless the crush was moved’ (Farmer Lucky).

‘I wanted to have a crush that was within a race so I could put them in easy. We used to have a crush that was in an open yard and you could only really treat cows on dry days, sunny days and day-time. It is easier having undercover and also treat them when the light’s a bit inclement without having a torch’ (Farmer Giles).

### Farmers’ emotional response to lameness treatment

In this study it was found that farmers showed awareness of the effects of having a poor farm layout and made efforts to identify ways of implementing improvements. Where farmers reported having a well set up farm or had improved the infrastructure of their farm this was seen to directly increase the frequency and/or promptness of lameness treatment.

Indeed, many farmers reported enjoying the process of treating lame cows:

'I enjoy doing them. I don't think there's anything more satisfying than when you get a lame cow in and you sort her out and she walks out' (Farmer Keith).

'There's a sense of satisfaction to it. It's nice to put the foot down and see her walk off better than she came in' (Farmer Bowman).

In general, farmers' enjoyment of treatment was connected to the satisfaction they felt when they could identify the cause of the lameness and when their treatment improved the cows mobility.

Job satisfaction was highlighted as an important motivating factor for farmers in relation to mastitis control (Valeeva *et al* 2007). Farmers also felt satisfaction associated with seeing cows walk better after treatment. Kristensen and Enevoldsen (2008) reported that farmers felt a degree of personal satisfaction related to being around healthy animals. It is likely that the sense of satisfaction motivated farmers to treat more lame cows. Farmers may also express confidence in their treatment skills which maybe a motivating factor.

'It's not rocket science... it's just common sense a lot of it' (Farmer Water).

'Because you are doing it on a regular basis it's reasonably obvious' (Farmer Tony).

This suggests that some farmers feel positive about the treatment process and confident in their ability to treat lame cows. The barrier that exists appears to be in relation to bringing the cow to the crush for treatment, described by one farmer in these terms:

'I used to dread doing feet because getting them into the crush was a nightmare' (Farmer Water).

Farmers also expressed how the thought of doing it was worse than actually carrying out the treatment:

'It's the psychological mindset for me... It's actually quite satisfying when you've done it. It's the thought of it, worse than doing it' (Farmer Billy).

What is being referred to 'as doing it' we would suggest is more than just picking up a cow's foot and trimming it. As many of the farmers interviewed have articulated, lameness treatment is not a simple operation and relies upon staff planning, planning priorities and organising the farm infrastructure effectively.

### Animal welfare implications and conclusion

This study has shown that a qualitative social science methodology can provide important insights into the perceptions and behaviour of dairy farmers which will be invaluable in the process of reducing lameness on dairy farms. Qualitative approaches are likely to be a necessary research tool where other complex animal welfare problems need to be solved or reduced.

This study found that farmers used a range of different terms to describe the mobility of their cows, and this impacted on the urgency to treat. By different terms we mean the variety of language used and the perceptions that accompanied this language. This has relevance for how mobility scoring is used in future communication between farmers, science and industry about lameness. Our findings also point to a number of barriers and potential motivators for treating lameness. Lameness is a priority amongst many farmers but when

considered alongside limited staff resources (both quantity and quality) prompt treatment of lame cows is not always seen as possible. Further, the farm layout can support the effective and speedy treatment of cows, whilst in other places be a hindrance. And, finally, there is an emotional component related to a farmer's confidence and the satisfaction that they can feel from treating a lame cow.

We also suggest that greater insight is needed to more clearly understand what 'effective treatment' consists of both from a scientific perspective and the dairy farmers' point of view. We have framed our discussion on research which shows that early treatment is one of the key ways that lameness prevalence can be reduced (Alawneh *et al* 2012; Leach *et al* 2012). However, Leach *et al* (2012) also found that, even without intervention, some lame cows reverted to soundness for at least four weeks. This may support a 'wait and see' approach as one effective strategy, both in terms of the outcome for the cow and use of farmers' resources. None of the farmers in this study directly discussed a 'wait and see' strategy as part of their lameness control programme. However, discussions regarding lesion identification and treatment did suggest that they may see benefits in this approach, for example some farmers expressed frustration when they could not see a lesion on the foot they were examining, and conversely satisfaction when the cause of the problem was immediately obvious. Whilst acknowledging that promptly treating all lame cows using current conventional treatment strategies reduces lameness prevalence and, based on our current understanding, can be viewed as 'best practice', there is a lack of understanding of how 'effective treatment' relates to lesion resolution, pain management and farmer resources, knowledge and skills. The lack of evidence-based knowledge on how best to treat lameness-causing lesions, especially sole ulcer and white line disease, as highlighted in a review by Potterton *et al* (2012) limits the advice that can be given to farmers about which cows' feet to pick up and when.

There has been a tendency to attribute high lameness prevalence to farmers simply not detecting lame cows. This study offers new evidence that this is a myopic view towards tackling lameness on farms. We would argue that it is not simply a question of farmers' ability to detect lameness but rather their ability to call what they are seeing as lameness and to understand the value of promptly treating all lame cows, especially early onset lameness.

We would suggest that the language used in any communications to farmers about lameness will be key to achieving a change to the stage of lameness development at which farmers are encouraged to treat. This study also points to barriers and motivators associated with both lameness detection and treatment which clearly demonstrates that tackling lameness is not just about improving detection but requires a holistic approach. For example, mobility scoring will continue to have limitations if used in isolation without considering the many competing priorities farmers face on a day-to-day basis and the physical infrastructure on the farm in which lameness treatment takes place. In an environment in which lameness treatment is perceived to be



easily achievable and where lame cows can be detected and treated early because of the number of skilled staff available, there is likely to be a positive emotional impact on the farmer and thus his motivation to regularly maintain lameness detection and treatment practices. Those supporting farmers to treat lame cows more promptly need to understand and appreciate how the wider context in which lameness treatment occurs can both hinder and facilitate prompt treatment. There may be value in farmers sharing their positive experiences, for example of modifying their handling facilities, to encourage other farmers to make similar changes.

If we think towards how this could be put into practice we may want to consider how the veterinary surgeon, DairyCo extension officer, farm assurance assessor or retailer can be more mindful of the multi-faceted context within which lameness detection and treatment is practised. This may guide them in how they approach understanding specific farming scenarios where lameness detection and treatment rates are troubling. Additionally, in this paper we have drawn attention to how the language that is used will impact on the success of any lameness control strategy. We may also want to look towards existing Codes of Recommendations, Codes of Practice and farm assurance assessments as these provide an existing framework in which the factors discussed in this study, can be identified and addressed to support prompt and effective lameness treatment. In other words, the breadth of engagement with the farming environment offered by these wide-lensed governance tools can also support lameness treatment.

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