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A survey of the on-farm treatment of sole ulcer and white line disease in dairy cattle

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ABSTRACT

A telephone survey of UK dairy farmers was conducted to investigate current on-farm practice in the treatment of mild sole ulcer (SU)/sole bruising (SB), and white line disease (WLD), and the potential barriers associated with therapy. A total of 84 dairy farmers were questioned about the process of detecting and treating lame cows on their farm as well as about the specific treatments they applied. Farmers were also canvassed for their views on the efficacy of different potential treatments for mild SU/SB and WLD.

In general, respondents discussed treatments for SU and WLD rather than specifically for mild SU/SB and WLD. Furthermore, when describing treatment methods, farmers rarely differentiated between SU and WLD. Trimming the affected claw with or without the additional use of orthopaedic blocks was the most commonly reported treatment method considered effective and practical by the majority of farmers. Antibiotics and/or analgesics were used by a small number of farmers, and some housed their most severely lame cows in straw pens. Lack of time, inadequate equipment and poor farm layout were identified by many survey respondents as barriers to the prompt and/or effective treatment of their lame animals.

Introduction

Lameness in cattle is estimated to cost the UK dairy industry £127 million[1] annually (Wilshire and Bell, 2009). Reduced fertility (Walker et al., 2010), and milk yield (Amory et al., 2008), along with an increased risk of culling (Booth et al., 2004) have all been linked to lameness and contribute to the associated financial losses. In addition, lame cows have an increased sensitivity to noxious mechanical stimuli or hyperalgesia (Whay et al., 1997). Lameness therefore significantly impacts on the welfare, health and productivity of dairy cows.

Barker et al. (2010) reported that the prevalence of 'farm level' lameness ranged from 0% to 79.2% (mean 36.8%) demonstrating that some dairy farmers manage lameness more effectively than others. Whilst the differences could be explained by a wide range of factors, the variation may in part be explained by the different treatment regimes used on farms which would impact on both the promptness and/or effectiveness of the treatment of individual lame animals.

Evidence for the risks associated with delayed treatment and the important role of prompt and effective treatment in reducing lameness on farms is growing. Bell et al. (2009) found that inadequate detection and treatment, including delayed treatment, was a significant risk factor for severe lameness, and Barker et al. (2010) found that lack of prompt treatment, defined as farmers not treating lame cows within 48 h of detection, was associated with an increased prevalence of lameness. Leach et al. (2012) conducted a study on commercial farms to investigate the effects of a prompt treatment programme on lameness. An 'early threshold' protocol was instigated in which cows were treated within 48 h of being identified as lame during fortnightly mobility scoring. This approach was compared with the farmers' method (control group) where treatment was often delayed, sometimes for several weeks. The 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. Thus research to date suggests farmers may not always treat lame cows promptly, but where such treatment is given it can contribute to reducing the prevalence of lameness.

In addition to prompt treatment, the effectiveness of the treatment given is also likely to be critical in reducing lameness. However, while the scientific literature describing treatments for digital dermatitis (DD) is increasing, there remains a dearth of information relating to effective treatments for both sole ulcers (SU) and white line disease (WLD) (Potterton et al., 2012). Furthermore, studies to date have focussed on research-based treatments (Lischer et al., 2002a; Manske et al., 2002), rather than on more applied, on-farm approaches. Studies investigating the treatments farmers are currently using for SU and WLD, the barriers/motiva-

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tions involved, and the attitudes of farmers to particular treatment methods are currently lacking.

The aim of the present study was to investigate the methods used by dairy farmers in the UK to treat mild SU/sole bruising (SB) and WLD. A telephone survey was conducted to investigate current on-farm practice, and to glean the attitude of farmers to the practicality and efficacy of specific lameness treatments. We also sought to identify the perceived barriers and motivating factors of dairy farmers as regards the treatment of their cattle.

Materials and methods

Data collection

A telephone survey of dairy farmers in the UK was conducted during November and December of 2011. Contact information for the farmers came from two sources: (1) a previous telesurvey addressing the detection and treatment of DD by farmers (64 contact numbers); (2) two contact lists provided by DairyCo (the UK dairy levy body), following a secure data transfer protocol – the first a randomly generated list of DairyCo levy payers (200 contact numbers), and the second a list constructed in conjunction with DairyCo extension officers and consisting of farmers which these officers felt would be willing to complete the survey (95 contact numbers). Prior to the main study the survey was piloted with six dairy farmers based in the South-West of England. Given that the farmers interviewed during the pilot indicated that 10 min was the maximum amount of time they were willing to spend responding to a questionnaire, questions of similar content were combined to shorten the questionnaire accordingly.

The surveyed farmers were contacted by telephone after morning milking (between 0900 and 1100 h), at lunch-time (1200–1400 h) and in the evenings (after 1900 h). The interviewer aimed to contact an equal number of farmers from each of the three contact lists. When initial contact was made a brief outline of the project and its aims was provided and the caller asked if someone involved in the treatment of lame cows on the farm (described as 'the farmer') would be willing to respond to a 10 min telephone survey.

The survey was devised to reflect the key areas of interest including current practice on the farm as well as potential barriers and motivations in relation to the treatment of mild SU/SB and WLD. As prompt treatment has been recognised as an important part of effective lameness control the terms mild SU/SB and WLD were used within all questions in an attempt to ascertain information about lesions which were treated early. A combination of 'closed' and 'short-answer open-ended' questions were employed to maximise the information garnered. Where open-ended questions were used, respondents were asked supplementary questions to obtain further information.

Questions were asked relating to current on-farm practice: 'what types of lameness do you get on your farm?', 'who is responsible for treating lame cows on the farm?', 'what strategies are currently used to treat mild SU/SB and WLD?', and 'how soon after detection are lame animals treated?'. Questions were also asked so as to identify any potential barriers to treatment and factors which may motivate treatment. Respondents were asked: if they felt able to treat their lame cows as quickly as they would like and the reasons why; if there were aspects of treatment which they particularly liked or disliked; about their foot-trimming equipment and any training they had received in relation to foot trimming.

Views were also sought on the potential effectiveness and practicality of four different treatment options for mild SU/SB and WLD which the farmers may or may not already have been using: trimming affected claws; trimming affected claws and applying an orthopaedic block on the unaffected claw; trimming affected claws and giving the animal access to a straw bed; and trimming affected claws and administering antibiotics. In this context a 'therapeutic trim' was defined according to the Dutch 'five step' method as both 'routine' to restore the shape of each claw and 'corrective' in taking pressure/weight off the painful claw, and removing loose/under-run horn and hard ridges (Toussaint Raven, 1985). Responses were recorded during the telephone conversation, including notes based on responses to the open questions.

Statistical analysis

The data, including the descriptive responses, were analysed using PASW (version 18, SPSS). The median and inter-quartile ranges of the herd size were recorded as the standard deviation was found to be greater than the median value – indicating that herd size was not normally distributed. The data from the closed questions were analysed to determine the percentage and/or numbers of responses in each category (e.g. the number of farmers who did/did not feel able to treat their lame cows as quickly as they would like). Where open questions were used the responses were reviewed and sorted into key themes using a qualitative analysis approach (Silverman, 2001). Once identified, the themes were grouped and analysed to allow percentage/count data to be reported in a similar manner to the closed question data.

Results

Respondents

Of the 102 farmers contacted, 84 completed the survey. Of the 18 farmers contacted but not interviewed, seven were no longer involved in dairy farming and a further 11 did not wish to participate. Of the 84 farmers who completed the survey, 27 were recruited from the group of farmers who had previously completed the DD survey, 27 were recruited from the randomly generated list provided by DairyCo, and the remaining 30 from the list provided in conjunction with the advice of the DairyCo extension officers. Thirty-eight of the farmers surveyed were located in the South-West of England, 11 in the South-East, six in the Midlands, and 18 in the North, as well as five in Scotland and six in Wales. Herd sizes ranged between 57 and 1050 with median and inter-quartile ranges of 170 and 128, respectively.

Details of on-farm practice

When asked 'what types of lameness do you get on your farm?', 93% reported that both SU and/or SB occurred, while 83% indicated that WLD was a problem. Ten reported having SU/SB but not WLD, and two responded that their animals only had WLD. On 69% ($n = 58$) of farms lame cows were treated by someone working on the farm, either owner, manager, herdsman/woman or another member of the family. None of these farmers reported using a veterinary practitioner or foot-trimmer to treat their lame cows. On 26% ($n = 22$) of the farms lame animals were treated by a combination of someone 'on-farm' and a veterinary practitioner or foot-trimmer. Only four farmers (5%) relied on a veterinarian/foot-trimmer to treat all lame cows.

Seventy-five per cent of farmers reported that they treated their lame cows within 48 h of detection. Of these, 5% said they sometimes delayed treatment at busy times or if the cow was noticed lame over a weekend. Thirteen per cent ($n = 11$) reported treating lame cows within 1 week of detection. Where lame cows were treated by a foot trimmer or veterinary practitioner, this took place within 1 week of detection ($n = 2$), or could be delayed for up to 1 month ($n = 2$), as such treatments typically were only carried out during monthly routine visits.

On 8% ($n = 7$) of farms speed of treatment was determined by the severity of the lameness, with the more severely affected animals receiving attention more rapidly. Sixty-two per cent of those surveyed felt they were able to treat their lame cows as quickly as they would like, 19% ($n = 16$) felt they were not always able to do this, whilst 18% felt they were unable to treat their lame cows as promptly as they would like. While questions relating to treatment methods asked specifically about mild SU/SB and WLD, the responses given by the farmers about their own treatments were largely in relation to all severities of SU and WLD and not just early-stage/milder lesions. Therefore responses do not reflect these differences in severity, unless otherwise stated.

During interviewing it became apparent that many farmers did not differentiate between SU and WLD in terms of the treatments carried out. Of those reporting both SU and WLD, 37% discussed treatments for SU and WLD together. Nineteen per cent discussed the treatment of SU and WLD separately but ultimately described a process which was fundamentally the same in each case. Thirteen per cent of farmers discussed the treatment for either SU or WLD but when prompted indicated they carried out the same procedure for both conditions. Seventeen per cent of farmers ($n = 14$) described treatments which differed for SU and WLD. This differentiation was in relation to the use of bandages, which were used for cows with SU but not with WLD. Copper sulphate was the most