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A survey of UK prescribers' experience of, and opinions on, anthelmintic prescribing practices for livestock and equines

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ABSTRACT

The aim of this study was to determine practices, attitudes and experiences of UK prescribers of anthelmintics for horses and livestock. A questionnaire was sent by direct email to groups licenced to prescribe these medicines. These were veterinarians, Suitably Qualified Persons (SQPs, registered with the Animal Medicines Training Regulatory Authority) and veterinary pharmacists. The survey was also advertised through social media. It comprised questions relating to demographics, training experiences, current prescribing practices, as well as personal opinions on anthelmintic selection, diagnostics and anthelmintic resistance. A total of 193 veterinarians and 326 SQPs were included in final analysis. Pharmacists were excluded from detailed analysis due to the low numbers that responded (n = 3). The results indicated that SQP participants were more likely to receive post-certification parasitology training than the veterinarians, and that both channels consulted similar sources for information about helminths and their control (paper articles in journals, online sources). The SQP participants stated a higher frequency of face-to-face interactions with clients/customers (96.1%) than the veterinarians (76.4%), who stated a higher frequency of telephone interactions (55.1% and 73.5%, respectively). Veterinarians were more likely to state that there were specific factors that limited interactions with their clients (54.1%) than SQPs (19.6%), such as competition from other suppliers. SQP participants considered a wider range of factors as important when deciding on which anthelmintic to recommend (i.e. knowledge of specific parasites, knowledge of specific anthelmintics, discussion of measures to avoid anthelmintic resistance and time to talk with clients/customers); however, the veterinarian participants were more likely to consider the results of diagnostic tests. While discussions about anthelmintic resistance were stated with similar frequency in both groups, less frequent were specific discussions about anthelmintic sensitivity testing. In-house faecal egg count analysis was more likely to be available from those that prescribed anthelmintics for equines alone, compared to prescribers who dispensed anthelmintics for livestock alone or livestock and equines. The SQP participants indicated that they felt a large number of organisations were responsible for ensuring that anthelmintics are used responsibly, whilst veterinarian participants were more likely to place responsibility on the prescribers alone. Taken together, these findings provide an insight into how prescribers of anthelmintics in the UK interact with their clients/customers before and at the point of sale and act as a unique source of information on how best practice advice pertaining to sustainable helminth control is disseminated by the various prescribing channels.

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1. Introduction

Gastrointestinal helminths represent a welfare challenge to equids worldwide (Kaplan and Vidyashankar, 2012) and cause substantial production-limiting disease in farmed livestock (Charlier et al., 2014). For the last five decades, the control of parasitic worms in these hosts has been achieved via a combination of the frequent administration of anthelmintics and the implementation of management procedures that reduce exposure to infective stages in the environment. Depending on the host species, three to five classes of anthelmintic are used to treat and control parasitic nematodes of livestock and equines. Anthelmintic resistance (including multi-class resistance) to Classes 1 (benzimidazoles), 2 (imidazothiazoles and tetrahydropyrimidines) and 3 (macrocyclic lactones)

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is an escalating issue in nematodes of horses (Matthews, 2014) and ruminants, particularly sheep (Papadopoulos et al., 2012). Some of the Class 3 anthelmintics are also licenced for the control of a number of ectoparasite species. In some regions, two new anthelmintic classes, Class 4 (amino-acetonitrile derivatives) and Class 5 (spiroindoles), have been approved for use against nematodes in sheep. Already, resistance to the Class 4 compound, monepantel, has been reported (Mederos et al., 2014; Cintra et al., 2016). The status of anthelmintic resistance in pig nematodes is less clear as few studies have been performed to investigate this. In addition to anti-nematode products, there are a variety of anthelmintics licenced for the treatment and control of trematode infections in ruminants. Again, there have been several reports of anthelmintic resistance in the common liver fluke, *Fasciola hepatica,* especially to the most potent compound, triclabendazole (Fairweather, 2011; Flanagan et al., 2011).

Key to reducing the further spread of resistance is the implementation of 'best practice' control procedures that aim to preserve the potency of the currently effective anthelmintics. Advice transferred to end-users (i.e. farmers, horse owners) at the point of prescribing is critical in ensuring that these best practice principles are implemented at farm and yard level. Recent publications have indicated that uptake of some of the critical guidelines (i.e. ensuring accurate dosage, implementing effective quarantine) is low (Bartley, 2008; Morgan and Coles, 2010; McMahon et al., 2013). If anthelmintic potency is to be maintained, then improvement in uptake of 'best practice' measures on-farm, along with more evidence-based control (for example, in the use of diagnostics to underpin treatment decisions), is vital (Abbott et al., 2012; Matthews, 2014). The transfer of appropriate knowledge at the point of anthelmintics prescribing is a major part in ensuring that these medicines are used responsibly. Whilst legislation in some EU countries requires involvement of a veterinarian and establishment of a parasitological diagnosis prior to dispensing anthelmintics, prohibiting treatment on a purely prophylactic basis (Nielsen et al., 2006; Nielsen, 2009), in other EU states, anthelmintics distribution does not require a specific diagnosis. The UK situation is unique. Here, anthelmintics are classified under different categories (VMR, 2011). The two new classes of anthelmintic, available only for sheep, are categorised as medicines that can be sold as prescription only by veterinarians or dispensed by pharmacists on a veterinary prescription (termed POM-V medicines). All other equine and livestock anthelmintics are categorised as prescription by veterinarians, pharmacists or Suitably Qualified Persons, SQPs (termed POM-VPS medicines). POM-V medicines can only be prescribed following clinical assessment of an animal under a veterinarian's care. For POM-VPS medicines, there is no requirement to carry out a clinical assessment before prescribing and the animal does not have to be under the prescriber's care. There has been recent debate about the complexity of this system, especially regarding which channel, if any, is best placed to prescribe and supply anthelmintics (Anon 2013a, 2013b). In consideration of all this, the aim here was to investigate how UK prescribers transfer information regarding anthelmintics for use in livestock and equids and to explore their attitudes to responsible distribution. To do this, a online questionnaire was used to assess how current best practice control guidelines are disseminated at the point of prescribing and to investigate those factors that might act as drivers or barriers to transferring the appropriate information regarding sustainable helminth control.

2. Materials and methods

2.1. Ethical statement

Approval for the survey was granted by the UK Department for Environment Food & Rural Affairs (DEFRA) Survey Control Unit. With regards to respondent confidentiality, all information was stored on a secure server at Moredun Research Institute (MRI). Data on this server is backed up daily at an external site. Informed consent was sought from participants undertaking the survey.

2.2. Study population and study design

2.2.1. Study populations: veterinarians, suitably qualified persons and pharmacists

For selection of veterinarians, details of UK large animal (livestock and equine) practices were obtained from the Royal College of Veterinary Surgeons (RCVS, www.rcvs.org.uk) database. This database was organised to; a) group branch practices together and b) exclude practices that were not first-opinion, such as referral services, or services delivering fertility/embryo transfer. These details were then verified with practice websites to ensure that veterinarians on the list currently attended ruminant, pig and/or equine species. This resulted in a final database of 755 UK-based veterinarian or practice email addresses. This was augmented with 384 veterinarian/practice emails obtained from a British Equine Veterinary Association (BEVA, beva.org.uk) list, and cross checked for duplicates, to give a total of 1139 veterinary surgeons or practice email addresses. It was not possible to establish the exact number of veterinarians working on each species per practice as this information is not available from the RCVS or BEVA. An introductory email inviting veterinarians to take part in the survey was distributed directly to this list, detailing background to the study with a link to the questionnaire in SurveyMonkey© (see below). To widen participation, this link was shared on the pages of the following groups on Twitter (twitter.com/): the BVA, BEVA, British Cattle Veterinary Association (BCVA), Pig Veterinary Society (PVS) and Sheep Veterinary Society (SVS), as well as the large animal veterinary practice group, XLVets (xlvets.co.uk/). The prescriber's views survey link was also shared via websites or forum pages of the SVS, PVS, BEVA and BVA. The SQP sample was achieved directly via Mr Stephen Dawson, Secretary General of the Animal Medicines Training Regulatory Authority (AMTRA). A total of 2847 SQPs covering advice provision for the equine, ruminant and pig industries (i.e. E, EA, G, J, K, L and R-SQP license holders) were emailed directly from AMTRA Head Office with the same text and link sent to the veterinarians. The same link was shared on Twitter at https://twitter.com/SQPWebinars. Email invitations to take part were also distributed to SQP members of the Animal Health Distributors' Association (AHDA, ahda.co.uk). This is an organisation comprising UK animal health product distributors and represents 90% of the POM-VPS and Non-Food Animal – Vet, Pharmacist, SQP animal medicines' market. For veterinary pharmacists, the link was advertised on the Twitter and forum page of the Veterinary Prescriber (veterinaryprescriber.org) and also sent directly to a list of veterinary pharmacists (n = 7) supplied by Ms Andrea Tarr (Editor, Veterinary Prescriber).

2.2.2. Study design

The survey is available in Supplementary materials (Appendix A). The survey comprised several demographic questions to ascertain profession, age, gender and location of respondents, as well as the nature of the prescribing premises in which they were employed and their position within the premises. Respondents were directed to different premises/position lists based on their channel (veterinarian/SQP/pharmacist). The details of which options were presented are summarised in Table 1. Respondents were also asked to indicate specific practices for relevant livestock and equines (i.e. prescribe only, supply only or prescribe and supply). The prescribing groups (veterinary surgeons, SQPs, pharmacists) were considered for cattle, sheep, pigs and horses, together or separately, depending on the qualification or main clinical interest of each respondent. The demographic questions

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