



Research

# Evaluation of the practice of veterinary pharmacy

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## Abstract

**Background:** In the United Kingdom (UK), pharmacists' roles have expanded considerably in recent decades to encompass clinical practice through more direct patient care. However, dispensing and compounding remain core activities for pharmacists. A lack of marketed preparations for species specific animal use results in veterinary pharmacy practice compounding, retaining its prominence. Current participation by pharmacists to support this sphere of practice would appear to be minimal.

**Objectives:** This study was undertaken to determine the opinions and views toward the practice of veterinary pharmacy by a cross-sectional group of pharmacists.

**Methods:** Research data were collected via a self-administered survey questionnaire, distributed at the 2012 annual conference of the Royal Pharmaceutical Society. Sampling was purposive, with random distribution of the questionnaire to pharmacists during the conference sessions.

**Key findings:** Interaction by pharmacists with veterinary pharmacy is currently minimal primarily due to lack of knowledge of veterinary medicines. Respondents revealed a lack of veterinary pharmacy courses during their undergraduate studies. This has led to situations where some veterinary prescriptions are dispensed without adequate checks being performed by the pharmacist. Pharmacists on occasion do not dispense veterinary prescriptions presented to them, due to insufficient knowledge of veterinary medicines and/or a lack of consultable reference sources. The effect on practice is that pharmacists do not always participate as fully as would seem logical.

**Conclusions:** Pharmacists' participation in veterinary pharmacy is limited by a lack of knowledge of veterinary medicines, mostly resulting from inadequate tuition on veterinary pharmacy during their initial education.

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**Keywords:** Veterinary pharmacy; Veterinary medicines; Pharmacy education; Pharmacists continuing professional development (CPD)

## Introduction

Pharmacists are medicine experts who most frequently use their professional knowledge in community (primary) or hospital (secondary) health care settings.<sup>1,2</sup> In recent decades, a

pharmacist's role has expanded to encompass clinical practice through patient care (via medicine monitoring), prescribing, and medicine usage reviews.<sup>1–3</sup> Importantly compounding, the manipulation of a drug product resulting in a made-to-order drug dosage form, and dispensing remain core activities of pharmacists.<sup>1,4–6</sup>

Historically, due to the lack of marketed preparations available for animal use, compounding was also a core skill of veterinary surgeons.<sup>5</sup> However, availability of commercially prepared veterinary medicines has expanded rapidly

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over recent years, making possession of such skills less critical. This is illustrated by the extensive portfolio of veterinary drugs marketed by Novartis Animal Health (NAH) (acquired by Elanco January 2015), Zoetis (a Pfizer subsidiary), and Merck Sharp and Dohme [Merck Animal Health in United States (US)], three of the largest pharmaceutical companies servicing this important health care sector.<sup>7–9</sup> Veterinary products sold globally by NAH, Zoetis, and Merck in 2012 included those for companion animals and livestock including pig, poultry, cattle, and sheep as well as medicines for other animal classes including equine and piscine species. Product applications ranged from parasiticides for companion animals to antimicrobial agents for food animals. The total global sales value of these veterinary products in 2012 was \$1.1 billion for NAH, \$4.2 billion for Zoetis, and \$3.3 billion for Merck Animal Health.<sup>7–10</sup> Given the financial returns from this expanding sector, most pharmaceutical companies have ongoing research and development programs for new products, as these companies recognize the substantial commercial benefits that will accrue.<sup>7–9</sup> Limited United Kingdom (UK) pharmacist involvement in veterinary pharmacy is indicated by the supply in 2009 of 75% of prescription-only medicine—Veterinarian (POM-V), medicines directly by veterinary surgeons through their clinics.<sup>11</sup> Pharmacists' poor involvement in over-the-counter (OTC) sales of veterinary products such as worming preparations and anti-flea products is illustrated by the share in 2009 by UK pharmacies of just 1.5% of the total veterinary medicines market.<sup>11</sup>

Veterinary label drugs must be approved by the Food and Drug Administration (FDA) and the Centre for Veterinary Medicine (CVM) (a center within the FDA) before the legal marketing and distribution of these medicines can occur in the United States.<sup>12</sup> Approval by the FDA/CVM also constitutes marketing authorization for both veterinary and human medicines.<sup>12</sup> A single application for a marketing authorization may be made to the European Medicines Agency (EMA) valid for all European Union (EU) states, Iceland, Liechtenstein, and Norway.<sup>13</sup> Obtaining such authorization is costly; a 2014 FDA application fee for licensing a product containing clinical data in the United States alone is approximately \$2.2 million, being half this sum for products without clinical data.<sup>14</sup> Current UK application fees for 2014 stand at approximately £100,000.00.<sup>13</sup> Due to this expense, pharmaceutical companies license a product in a specified formulation for use in a particular species in each country or area.<sup>6,15</sup> Therefore, compounding remains routinely required in veterinary practice to permit dose alteration, changes to routes of administration, or off-label use of products for interspecies treatment, permitted under the US federal law Animal Medicinal Drug Use Clarification Act (AMDUCA).<sup>5,6</sup> Such changes are necessary, as doses and dosage forms formulated for human medications are not always conducive to the needs of diverse animal patients.<sup>5,6</sup> Alterations to

licensed products via compounding are a cause for concern because drug instability or incompatibility issues can result in therapeutic failure or potentially cause harm to the animal patient.<sup>5,6,16</sup> Although current veterinary graduates in the UK complete approved degree courses from the Royal College of Veterinary Surgeons (RCVS) and can prescribe, dispense, store, and dispose medicines correctly, graduate knowledge of pharmaceuticals, drug formulation, and compounding is absent.<sup>17</sup> Veterinary curricula in the United States are similarly lacking inclusion of courses such as pharmaceuticals.<sup>16</sup> The General Pharmaceutical Council (GPhC), the regulatory body of the pharmaceutical profession in the UK, stipulates that one of the requirements of graduate pharmacists is the ability to apply pharmaceutical principles for the formulation, preparation, and packaging of products.<sup>18</sup> In practical terms, this makes pharmacists the ideal professionals to undertake alterations to product vehicles, excipients, or dosage forms in order to optimize drug delivery, absorption, and efficacy for all patients, including animals.<sup>16</sup> Accredited MPharm degree courses are offered by 29 Schools of Pharmacy in the UK,<sup>19</sup> yet beyond information for safe storage, dispensing, and supply of veterinary medicines safely and effectively, no School of Pharmacy MPharm syllabus details specific courses, compulsory or elective, in veterinary medicine delivered to pharmacy undergraduates.

While market size and innovation of veterinary medicines and product formulations are increasing, current interaction by pharmacists in the UK with veterinary pharmacy is minimal.<sup>20</sup> The potential for expansion of a pharmacist's role in the practice of veterinary pharmacy that would benefit non-human patients is a viable option.<sup>20,21</sup> A requirement for pharmacists' knowledge of veterinary medications may be necessary sooner rather than later, should legislation similar to the pending US Fairness to Pet Owners Act be enacted in the UK.<sup>22</sup> This Act requires prescribers of veterinary medicines in the US to provide pet owners with a copy of a veterinary prescription and a written disclosure permitting dispensing of said prescription in a pharmacy of the pet owner's choice.<sup>22</sup> Should such legislation to be introduced in the UK, pharmacists could find themselves facing increased numbers of veterinary prescriptions and the need for greater knowledge of veterinary medicines.<sup>22</sup>

Little published data are available regarding the views and opinions of registered pharmacists toward the practice of veterinary pharmacy due to limited research in this area of pharmaceutical practice. However, a recent investigation with a relatively limited sample population found that this low-level participation with veterinary pharmacy is largely due to lack of information and knowledge of veterinary medicines.<sup>21</sup> Delivery of minimal information on veterinary pharmacy in the undergraduate pharmacy curriculum was attributed by these pharmacists as the main cause for their poor participation with this sector of pharmaceutical practice.

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