



Veterinary *Pharmacist*

October 2007

FROM THE EDITOR

Dear Reader

The nights are fair drawing in, as folks up here in Scotland say, and winter will soon be here. The golf clubs, tennis racquets and bicycles are stored away, so what better a time to consider widening your knowledge? I refer, of course, to the Royal Pharmaceutical Society veterinary pharmacy education programme, which is now web-based (this page). Last year, more people signed up than ever before and we are hoping for a good cohort this year, too. Prices are up a bit, but the courses still represent great value and are cheaper than those offered elsewhere.

Important issues that are currently in the news include biosecurity, drug resistance (this time in fish farming) and the veterinary medicines distribution category review. All these are covered in this newsletter.

With reference to the last item, I was disappointed to see that the proposed new distribution category that was to be called POM-V(HP) was not met with general approval by stakeholders (pS2). Many colleagues thought that several vaccines and other medicines currently classified as POM-V might be safely transferred to this new category. These medicines would have required an initial diagnosis by a vet but could be further used as part of an ongoing farm health plan (FHP), with supply through vets, pharmacists and suitably qualified persons. Perhaps the idea will come forward again when the whole concept of the FHP is more developed.

Thank you to all those who sent in pictures of their pets — there were some great shots. No competition in this issue, but it will be back next time. If you have a photo of an unusual breed of animal that I could use, please send it to vetpharmnewsletter@yahoo.co.uk.

Steven Kayne

Education programme on web



Pharmacists and support staff who completed the residential week at Harper Adams University College in July

Changes have been made to the way in which the Royal Pharmaceutical Society's veterinary pharmacy education programme (VPEP) is administered. In future, the course documentation will be made available via a new website (www.vpep.net).

Full details of the programme and application forms for the 2008 courses that start with the Certificate in Companion Animal Healthcare on 7 January are available to download.

The residential week for modules 3 and 4 of the Diploma in Veterinary Pharmacy will take place at Harper Adams University

College, Newport, from 13 to 18 July 2008. Fees have been increased this year but are now totally inclusive (apart from the course textbook). Previously, the certificate teaching day and the residential teaching week attracted supplementary charges.

Further information may be obtained by sending an e-mail to info@vpep.net.

□ **Diploma** Jayne Stanley, a community pharmacist at Rowlands Pharmacy in Liverpool, and Peter Seville, lecturer in pharmaceuticals at Aston University, Birmingham, have both been awarded the Diploma in Veterinary Pharmacy.

Bluetongue disease arrives in England

The bluetongue virus, which has killed livestock across Europe, has infected a Highland cow on a farm near Ipswich. At the time of writing, five cases had been confirmed. Farmers say the arrival of the infection is devastating for an industry already struggling with outbreaks of foot and mouth disease.

The virus affects sheep, cattle, goats and deer. In some breeds of sheep, up to 70 per cent of a flock can die from the infection and meat and wool production is reduced. Bluetongue is transmitted by the *Culicoides imicola* midge. It cannot be spread directly between animals so compulsory slaughter of

infected livestock is not normally carried out. Animals with the disease experience discomfort, with flu-like symptoms, swelling and haemorrhaging in and around the mouth and nose, and lameness.

Since July, there have been almost 3,000 cases of bluetongue in northern Europe. No bluetongue vaccines are suitable against the outbreak of the strain involved. It has been suggested that climate change could be allowing the virus to spread — midges have gradually been moving north with warmer temperatures.

Humans are not thought to be at risk.



IN BRIEF

Rise in parasitic disease

The wet conditions this past summer, with no drying out to postpone hatching, have allowed high larval survival on pasture, and high larval uptake in lambs. For example, rather than levelling off in August, the reported cases of liverfluke rose nationally, as it did last year. In cattle, incidences of parasitic pneumonia also increased during August. Figures were particularly high in Scotland, the South West and Wales. There were over twice as many cases than in August 2006, although the figure remains close to that of the average for the three years from 2003.

Feral terrapins terrorise ducks

More than 100 red-eared terrapins from the ponds of Hampstead Heath, London, are being deported to Tuscany at a cost of £25 each. The American freshwater turtles, which are among the 100 most invasive species in the world, have been devouring ducklings, traumatising young children in the process. Their popularity as a pet was fuelled by the *Teenage Mutant Ninja Turtles* craze of the early 1990s. Thousands were quietly released into the wild when they grew too big to care for. — *The Independent*

Competition winner

The Pet-pix summer competition was won by community pharmacist Lee Knecht, from Northampton, whose picture shows Adele, a two-and-a-half-year-old blue colourpoint ragdoll. Adele is an indoor cat. A characteristic of her breed is that they have no outdoor survival skills. According to Ms Knecht, Adele chatters, and likes to take pens and pencils for a wander. Ms Knecht also has another cat and four rabbits.



POM-V(HP) category dropped

The proposal to establish a new category, provisionally entitled POM-V(HP), for veterinary medicines administered as part of a farm health plan (reported in the June newsletter) has not generally met with stakeholders' approval and will not be implemented.

The report of the independent review of dispensing by veterinary surgeons of prescription-only medicines (Marsh Report) and the Competition Commission's report on the distribution of prescription-only veterinary medicines in the UK both recommended that the Veterinary Medicines Directorate carry out a review of distribution categories of currently authorised veterinary medicinal products.

The VMD consulted stakeholders in July 2005, requesting proposals to identify any

products, or groups of products, to include in its distribution categories review. A small expert group from the veterinary products committee was then set up to carry out the work.

The first two product groups to be considered and released for consultation were cat flea treatments and equine vaccines. The Veterinary Pharmacists Group welcomed the proposal to declassify a range of cat flea products from POM-V to NFA-VPS, but the move has still to be confirmed by the VMD. The equine vaccines are likely to remain unchanged as POM-V.

A summary of the responses to the VMD concept note for a proposed additional distribution category may be found at <http://tinyurl.com/2lcmdo>.

HSE finds leaking pipes at Pirbright site

The recent cases of foot and mouth disease have drawn attention to the biosecurity of the animal health laboratories in Pirbright, Surrey, where some deficiencies are likely to have led to nearby farms becoming infected with the virus. A report on the August outbreak, conducted by the Health and Safety Executive, highlighted inadequate drainage and a leaking pipe at the site, which is shared by the Institute for Animal Health and Merial Animal Health.

Most worryingly, it appears that site personnel had been aware of the broken pipe for several years. In the absence of a positive identification of the source of the outbreak, which resulted in the slaughter of 600 cattle, no prosecutions for negligence are likely to follow.

"Biosecurity" is defined as being the policies and measures taken to protect against biological harm. It encompasses the prevention and mitigation from diseases, pests and bioterrorism. Poor biosecurity carries serious implications for the economy, the environment, public health and animal welfare, as demonstrated by the recent outbreak of foot and mouth. Biosecurity covers food and water supplies, agricultural resources and production, pollution management, and blood and blood product supplies. In short, it is about being aware of the ways disease can spread and taking every practical measure to prevent the introduction and spread of disease among animals. Good biosecurity should be practised at all times, not just during an outbreak.

Test kits for detecting early illness made available

Diagnostic testing kits, developed by the University of Glasgow, are to be made available to vets, farmers and pet owners for the first time. The tests will detect sub-clinical symptoms of inflammation, infection and disease in both companion and farm animals.

The new tests exploit acute phase proteins, a group of blood proteins that change in concentration in animals subjected to challenges, such as infection, illness, surgical trauma or stress. Quantification of their concentration can provide diagnostic and prognostic information. It is hoped that the tests will allow pet owners and farmers to know if an animal is unwell before any visible symptoms appear, enabling early intervention with the best treatment.

Homoeopathic veterinary products registered

A Scottish homoeopathic pharmacy has registered the first five homoeopathic products under the Veterinary Medicines Regulations 2006. The Veterinary Medicines Directorate has classified Freeman's aconite, arnica, belladonna, nux vom and rhus tox as AVM-GSL.

Under the 2007 Regulations, which come into force in October, these products can be used in both non-food and food animals. In addition to these remedies, the VMD has granted grandfather rights under the Veterinary Medicines Regulations 2006 to a list of other homoeopathic medicines from various manufacturers.

Full details are available at www.vmd.gov.uk/ProductInfo/homeopathic.htm.

What should be considered when medicating farmed fish using feed

Concerns have been raised recently over emerging resistance to products used as in-feed medication for farmed fish. **Tony Wall**, a veterinary surgeon practising in Inverness-shire and specialising in aquaculture farming, explains the problems



Improved aquaculture farming practices and development of vaccines against some of the common bacterial pathogens have led to a reduction in the need to include medicines in fish feed. Currently, in-feed medicines include antimicrobials, ectoparasiticides (to treat sea-lice infestations) and anthelmintics (to control tapeworm).

These medicines are usually mixed into a commercial diet at the feed mill, although some farms are licensed to do the mixing on their own premises. The medicated diet is fed to the fish in a similar manner to normal food — usually taking advantage of automatic, computerised systems. It is common practice, however, to top up the bulk of the medicated food that is fed automatically with some hand feeding. This ensures that the feeding response and behaviour of the fish is evaluated and that smaller, sub-dominant fish get some of the ration.

It is a legal requirement that any medicine to be included in an animal feed must be accompanied by a veterinary written directive, detailing type and amount of food, inclusion rate of medicine and active ingredients as well as details of the owner and animals to be treated.

Furthermore, a licence to discharge any medicine into the aquatic environment must be in place. This is an additional requirement compared with medicines used on terrestrial farms and is over and above the environmental safety evaluation that takes place before a market authorisation is granted.

Giving medicated food to a population demands special consideration. Uneaten medicated food can pose a risk to the environment so the amount of food predicted to be eaten is reduced slightly (to about 90 per cent) when dosing to ensure none is left un-

eaten. If the amount is reduced too much, however, the bigger dominant fish will eat a disproportionately larger share than the smaller fish, and this can lead to underdosing and a potential for the development of resistance.

Moribund or anorexic fish are not amenable to this type of in-feed therapy. Removing dead and dying fish is necessary to prevent reinfection of successfully treated fish as well as for humane considerations, but this is usually easier said than done. (Trying to catch an anorexic salmon in a 30-metre diameter cage in the Irish sea in a force 8 gale can be difficult.)

With the advent of sexual maturity, some fish will become naturally inappetent. This is a particular problem for maturing Atlantic salmon. For example, a sea lice treatment is necessary, a sub-therapeutic dose of the ectoparasiticide may be achieved and rapid re-infestation of the healthy fish will occur. The concern over the development of resistance to sea lice medicines is, in part, thought to be related to some fish receiving less than a full therapeutic dose of the medicine.

There is also emerging evidence that some salmon weighing over 3kg will binge feed. This can play havoc with medication strategies. Increasing the amount of medication per given weight of fish, as well as extending the treatment times can, to some extent, ensure all feeding fish are effectively treated.

In spite of the gloomy caveats noted above, in-feed medication remains one of the safest methods of treating fish, for the fish themselves, the operator, consumers and the environment. In some circumstances, however, alternative strategies will need to be adopted — maybe the topic for another article for another day.

From the VPG chairman

We are at that time of year when the new intake of students for the postgraduate Diploma in Veterinary Pharmacy 2008 is being assembled. This is the time to apply. The ideal place to start your learning of veterinary pharmacy is, of course, at undergraduate level and the VPG committee is working hard to have appropriate content included in the core syllabus of schools of pharmacy in the UK.

At the time of writing, a consultation document is out from the Veterinary Medicines Directorate, indicating that a number of POM-V products are likely to be transferred into POM-VPS. In the companion animal sector this will bring products into our over-the-counter armoury, supplementing the introduction of Frontline OTC last year.

There is a realisation that infections of zoonotic origin are likely to be considerably under reported as far as their origin is concerned. A project to look at this and its implications for public health is under consideration by the VPG. How we can work in co-operation with vets in the future is also a major issue to be addressed and this is receiving the VPG committee's energetic attention.

I would like to thank Robert Clayton, head of practice at the Royal Pharmaceutical Society, for chairing our highly successful annual conference in June, an event marked by several key moments not least of which was the defeat (unsurprisingly) of David Catlow, British Veterinary Association president, who was opposing the motion that "Pharmacists are an essential part of the future animal health team". Thank you to Rod Jones, VPG committee member, for carrying the day.

A full report of the VPG summer conference was published in *The Pharmaceutical Journal* (23 June, pp741–3).

Feline fibrosarcoma group calls for more research

The European Medicines Agency organised a focus group meeting with stakeholders in July, to discuss the problem of feline fibrosarcoma. This was part of the continued surveillance of injection site sarcoma in cats within the European Regulatory Network.

The group, comprising 19 experts, discussed clinical options and ways of monitoring the condition. They concluded that further research into injection site sarcoma and the suspected relationship to veterinary medicinal products is necessary.

The development of fibrosarcoma in cats at the site normally used for the injection of veterinary medicinal products is recognised as a rare but serious occurrence.

Reports of such lesions are available both in the public literature and in the European pharmacovigilance system.



Important differences between cats and dogs

Sam Haig, a community pharmacist and teacher practitioner who is currently studying for the Diploma in Veterinary Pharmacy, discusses the formulation of veterinary medicines. In the first of three articles she looks at biophysiology of the target species

The history and development of veterinary medicine have been closely linked to those of human medicines. There are common themes of biopharmaceutical considerations that run through both disciplines but the diversity of the companion animal world brings other challenges, alongside questions of ease of administration and cost. There are safety aspects surrounding not only the pet but also the owner, as well as any potential risks to the environment to consider. I will discuss each of these with reference to the support that can be given in community pharmacies and the options of treatment available.

In order to determine whether or not a drug will have any beneficial effect it is imperative to understand the biophysiology of the intended patient. When developing medicines for humans there is only one target species to consider. Absorption, metabolism and elimination routes have been studied in depth and, in most situations, the metabolic journey of a class of drug can be predicted. Things are not as straightforward with animals. Each species has to be treated individually and biovariation often means metabolic pathways can differ even between breeds or strains.

Over thousands of years, an animal's internal systems will have evolved to manage the food that it eats efficiently. For example, cats are classed as obligatory carnivores — they naturally only eat food material derived from



other animals and have developed a shorter intestine-to-body size ratio than omnivorous animals, such as dogs, which will happily eat food derived from both animals and plants.

The pharmacological consideration derived from this is that cats have a pronounced first pass effect and, therefore, drugs are metabolised much faster, compared with dogs. A particular metabolic consideration with cats is that although the phase 1 metabolic pathway is complete, their phase 2 pathway has a deficiency in UDP-glucuronyl transferase, which increases the potential for toxicity of several drugs, especially non-steroidal anti-inflammatories.¹

There is an even greater risk with paracetamol because the defective phase 2 mechanism means that the liver uses phase 1

pathways, resulting in highly toxic metabolites. These metabolites cannot be effectively eliminated and death can be caused by doses as low as 500mg² — a well meaning owner seeing his or her cat in pain after an injury can easily kill the much loved pet by giving it a painkiller from the medicines cabinet.

Carnivores also tend to have a well developed small intestine with a simple colon compared with omnivores, which tend to have more complex lower intestines. This means that dogs have trouble with some sustained release dosage forms.³

There are also drug distribution differences between species because of different lipophilicity, protein binding and blood flow characteristics. For example birds, unlike mammals, have nucleated red blood cells that can produce new structural or repair proteins and enzymes. They also do not have lymph nodes but a special organ in the cloacal region, known as the bursa of Fabricius, where the development of B cells occurs.²

References

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2. Kayne SB, Jepson M. Veterinary pharmacy. London: Pharmaceutical Press; 2004.
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The Editor's literature review

First UK canine knee replacement

The recipient of the UK's first canine knee replacement is Grace, a seven-year-old grey and white bearded collie with severe arthritis, the *Veterinary Record* reports (2007;161:284). Euthanasia had been considered because she could not tolerate non-steroidal anti-inflammatory drugs. The dog's owners, from Whitley Bay, Tyne and Wear, took their pet to Solihull in the West Midlands, where a team of vets opened up the knee in the rear left leg, removed damaged cartilage and inserted a cobalt chrome and plastic prosthetic joint during a three-hour operation. The state-of-the-art canine treatment was introduced 18 months ago in the US but had never before been performed in the UK. The veterinary practice in Solihull is one of only three in Britain registered to carry out the delicate operation.

Fat cats facing soaring diabetes

A study at Edinburgh University has shown that one in 230 pet cats in the UK has diabetes. Overweight cats are said to be more than three times as likely to suffer from the condition than those who are not overweight, with neutered males that do not get adequate exercise particularly at risk. Between 85 and 95 per cent of diabetic cats suffer from type II diabetes, which has topped hyperthyroidism as the most common hormonal problem in cats. The number of diabetic cats is almost five times higher than in a previous study, carried out in the US in the

1970s. The research, published in *The Journal of Feline Medicine and Surgery* (2007;9:289–9) was based on an analysis of more than 14,000 cats whose owners had taken out private pet insurance. Burmese cats were found to be three times more likely to develop diabetes than any other pedigree. Cat owners have been warned to cut down on treats for their pets and to keep them active.

Man's best friend can be good for health

A paper published in the *British Journal of Health Psychology* (2007;12:145–56) considers the value of dogs to physical health in humans, exploring the evidence that this species can prevent us from becoming ill, facilitate our recovery from ill health, and even serve as an early warning system for some underlying ailments, including cancer, oncoming seizures and hypoglycaemia. The relationship between dogs and psychological health in humans is also examined. Taken together, studies suggest that dogs can have prophylactic and therapeutic value for people. However, many of the studies carried out in this area have not been methodologically robust, making it difficult to draw definite conclusions. Dogs also can pose a risk to health, spreading zoonoses, causing allergies, biting and, in extreme circumstances, killing people. However these risks can be reduced to an acceptable minimum through proper selection, training, veterinary care and control.