ONLINE EDITION VOLUME FOUR | ISSUE FOUR | JULY /AUGUST 2016

FOR PERSONAL & PROFESSIONAL DEVELOPMENT

ANIMAL TRANSPORTATION

The vet's role in protecting animals in transit



Johne's disease Its control on dairy farms

Health and safety Keeping the equine practice safe Chameleons and geckos Husbandry and veterinary care

Fractures of the humeral condyle A canine update

THE JOURNAL OF VETCOMMUNITY.COM

Practice Makes Perfect

PPS have been providing successful solutions to the veterinary profession since 1998.

We are the only consultancy providing financial advice and services exclusively to the veterinary profession.

VETERINARY BUSINESS CONSULTANCY

Practice Finance & Sales | Wealth Management Partnership and Share Protection | Mortgage Advice Retirement Planning | Employee Benefits

For a confidential, no obligation chat



Professional Practice Services is authorised and regulated by the Financial Conduct Authority.

Call 01527 880345

www.pps-vet.co.uk

Veterinary Insurance Specialists

PPS GI provide a full portfolio of general insurance products and services exclusively to the veterinary profession.

GENERAL INSURANCE

Tailor Made Surgery Insurance | Locum Insurance Equipment Finance | Private Medical Insurance Motor Fleet & Home Insurance



Why not have a chat with our friendly team?

Call 01527 909200 www.ppsgi.co.uk

PPS GI is authorised and regulated by the Financial Conduct Authority.





UP FRONT...

Our 'Comment' article in this edition of *Veterinary Practice Today* deals with the difficult question of animal transportation. It is complemented by an 'Insight' written by Graham Duncanson, who is currently cycling from Norfolk to Cape Town to raise funds for the Animal Welfare Foundation. By the time you read this, he should be "somewhere in Italy".

Graham reinforces the argument that for us as veterinary professionals, the welfare of the animal must come first, and gives some examples of the kind of counter-intuitive approaches that he has used to ensure animal well-being during transportation.

This responsibility to safeguard animal welfare does not always sit comfortably with the transport of live animals for slaughter, especially those being transported long distances. Research has shown that even healthy animals transported under the 'best' conditions still show significant stress. Should the profession be doing more, should they stand up and be counted?

Counting – or at least making your vote count – has been on the minds of most of us as I write this 'Up Front' just after the EU Referendum. Elections have also been in the veterinary news recently with the RCVS elections for both veterinary surgeons and veterinary nurses at the end of May. This year only 10.9 per cent of veterinary nurses voted in the VN Council elections. This means that almost nine out of every 10 nurses failed to vote.

There seems to be a general and consistent apathy within the veterinary professions when it comes to veterinary politics and representation. Over the last 10 years, the average percentage of vets voting for candidates for the RCVS Council has been about 17 per cent, while veterinary nurses have averaged 10 per cent.

The latest edition of *VN Times* interviewed the two new VN Council members who had enthusiastic views on how to raise the awareness of the profession, support the 'Mind Matters Initiative' and move the veterinary nursing profession forwards. These are dedicated nurses who want to do something for the profession, but who are receiving only minimal support from their members – who nevertheless continue to protest about issues such as the Government's refusal to protect the VN title.

The fact is that a lot of things are changed through politics and representation and having a strong voice is imperative if change is to be achieved. If only 10 per cent of a profession has the enthusiasm to vote for its council representatives, then the voice they have is perhaps no more than a cry in the wilderness.

I admire the veterinary nursing profession which has changed out of all recognition over the last 10 to 20 years. Veterinary nurses are highly professional people carrying out important and often difficult jobs. They deserve to be recognised, represented and rewarded; but they also need to stand up, be counted and make the effort to vote for those who are going to be their mouthpieces where and when it matters.

Maggie Shilcock Editor

You can receive Veterinary Practice Today by registering your details at www.MRCVS.co.uk and/or www.VNonline.co.uk. Alternatively you can subscribe for £120 per year (plus postage and packing for overseas subscriptions) by emailing subscriptions@veterinarypracticetoday.com

Printed in Great Britain by Swallowtail Print Ltd, Norwich Tel: 01603 868862 www.swallowtail.co.uk

©2016 Vision Media. No part of this publication may be reproduced in any form without the written permission of the publisher. Veterinary Practice Today is a trade mark of Vision Media. All other trade marks are acknowledged.

PracticeToday

Publisher

Published six times a year by Vision Media, a department of Central Veterinary Services Ltd.

Elmtree Business Park Elmswell Bury St Edmunds Suffolk IP30 9HR

Tel: 01359 245310 Fax: 01359 245253 enquiries@veterinarypracticetoday.com www.veterinarypracticetoday.com

Editorial

Editors Maggie Shilcock maggie.shilcock@visionline.co.uk Tel: 01359 245310 David Watson david.watson@visionline.co.uk

Associate editor Sarah Kidby sarah.kidby@visionline.co.uk Tel: 01359 245310

Design

Graphic designers Melody-Anne Neville Gemma Baker Bradley Young Hanneke Lambert designer@visionline.co.uk

Production

Publications manager Clara Ashcroft clara.ashcroft@visionline.co.uk Tel: 01359 245310

Advertising

Media and marketing co-ordinator Carole Bloys carole.bloys@visionline.co.uk advertising@veterinarypracticetoday.com Tel: 01359 245310

Subscriptions

subscriptions@veterinarypracticetoday.com Tel: 01359 245310

©2016 Vision Media

All rights reserved. Reproduction, in part or in full, is strictly prohibited without the prior consent of the publisher. The content of this magazine is based on the best knowledge and information available at the time of publication. Every effort has been made to ensure that all advertisements and editorial are correct at the time of going to press. The views expressed by the authors are not necessarily those of the publisher, proprietor, or others associated with its production. © Images used under licence from Shutterstock, Inc. and iStock.com

ISSN: 2053-440X



The paper used for the publication is a recyclable and renewable product. It has been produced using wood sourced from sustainably managed forests and elemental or total chlorine free bleached pulp. This magazine can be recycled.

Contents

Comment

COVER STORY

6 The role of veterinary surgeons in protecting animals in transit Fulfilling the responsibility.



Small animal

9 Why dogs should not play with Nature's toys The nurse's role in triage.

COVER STORY

- 12 Humeral intracondylar fissure and condylar fractures in dogs New treatment methods show promising results.
- 17 Steps towards a cat-friendly practice Making a 'visit to the vets' more pleasurable for feline patients.
- 21 Household hazards The potential toxins to which pets are most exposed are in our homes and gardens.





- 28 Adverse events in companion animals The key role veterinary surgeons have in reporting.
- Insight: pet insurance a casualty of complexity? The need for pet insurance to be more transparent.

Equine

COVER STORY

- 34 Health and safety in an equine veterinary practice The particular hazards faced by equine veterinary employees.
- **38** The equine respiratory system A practical approach for nurses.



Large animal

COVER STORY

- 50 Control of Johne's disease on dairy farms How herd management and the National Johne's Management Plan helps combat this disease.
- 55 Providing a veterinary service for smallholders Smallholders require a different approach from their veterinary surgeon.
- 58 Insight: veterinary surgeons and animal transport – some personal reflections The most important consideration must always be welfare.









Exotics and wildlife

62 Honeybees as food-producing animals A review of legislation.

COVER STORY

65 Chameleons and crested geckos Husbandry and veterinary care.



Management

- 71 Marketing is a 'must do' The money you spend on marketing should prove to be a great investment.
- 76 Common claims against veterinary surgeons Mistakes cannot be completely eliminated, but some simple strategies can significantly reduce the risks.

Industry

79 Profile Ross Tiffin – strategy and development adviser.



Featured contributors



Bruce Maclean BSc(VetSci) BVM&S MRCVS

Bruce graduated from the University of Edinburgh's Royal (Dick) School of Veterinary Studies in 1992. Following graduation, he

spent time in the avian and exotic department at Utrecht University further studying the veterinary care of birds and exotic animals.



Ed van Klink DVM(Utrecht), PhD(Waageningen Agricultural), Dip(ECVPH)

Ed van Klink joined the University of Bristol School of Veterinary Sciences as

senior lecturer in veterinary public health in 2011. During his career, he has spent time in animal disease control, as a research assistant in food hygiene and as a 'government vet' for 26 years. Ed and a colleague are currently setting up a bee unit for teaching purposes at Bristol.

Lesley Tench LLB(Hons) MA Tech IOSH

Lesley is an experienced health and safety consultant with a legal background, having gained a Bachelor of Laws Degree,

Her primary role at Citation, where she has worked for 10 years, is to provide technical and practical health and safety advice to a wide range of businesses and industries, including veterinary clients.



Anthony Wilkinson BVSc MSc MRCVS

Anthony graduated from Bristol in 1981. He spent time working on a yak project in the Himalayas, worked in mixed practice

in West Sussex and completed the Tropical Animal Health and Production MSc in Edinburgh before moving to Friars Moor Livestock Health in 1990 to carry out both pet and farm work. He is chairman of the XLVets Farm Executive.

Are we nearly there yet? The role of veterinary surgeons in protecting animals in transit



James Yeates BVSc CertWEL DWEL MRCVS

Dr James Yeates is chief veterinary officer of the RSPCA, RCVS registered specialist in Animal Welfare Science, Ethics and Law, editor of the Journal of Animal Welfare Science, Ethics and Law and previously chair of the BVA Ethics and Welfare Group and honorary secretary of the SPVS.

Most farm animals are transported during their lives – between units or to slaughter. Some journeys are relatively short. Others require hours or days of travel across several countries and involve not only many farm animals, but also large numbers of horses and dogs.

The trouble with travel

There is abundant scientific evidence, across many species, that transportation can involve welfare compromises. These include stress, exhaustion, thirst and injuries, particularly as a result of rough handling, poorly-designed vehicles, bumpy roads or choppy seas. Animals may suffer hunger and dehydration as a consequence of not being given enough appropriate food and water or rest breaks during which to consume it.

Some individuals may become hyperthermic, especially if many animals are moved together for long periods in hot weather. And probably many will suffer distress, as most are neophobic and have not been habituated to the travel conditions that are (hopefully) very different to their normal farm conditions. The



TRANSPORT

probability and severity of such suffering can increase with journey time – those over eight hours being most likely to cause problems; but even 'short' journeys may involve significant welfare compromises.

The long arm of the law

The legal standards under which the animals are moved may be poor. Current EU – and many national – laws allow insufficient space, overly long journeys and imperfect vehicles. For example, the main UK ferry port, Ramsgate, lacks appropriate facilities or inspections and animals are often put onto a converted tank carrier. Even in 'higher-specification' vehicles, animals may still be moved in temperatures of up to 35°C, and it is the nature of things that some animals will be either very old or very young – perhaps as young as two weeks old.

In addition to this, there is limited enforcement. Checks by the European Commission's Food and Veterinary Office, and investigations by the RSPCA, have shown that the authorities in many countries do not enforce the rules effectively. And many animals are transported to be raised or killed in ways that would be illegal in the UK.

Veterinary checks

In the legislation that does exist, veterinary surgeons rightly play a vital role. We need to make good decisions on whether animals are fit for travel and we can have even more influence when fulfilling our professional role. Animals should only be transported (except to a veterinary practice) if they are deemed 'fit to travel', depending on their age, pregnancy status and injuries. The guidance on 'signing off' is a bit vague, and this is unhelpful for us in making our assessments on whether an animal is fit to travel.

Thank goodness that we are veterinary professionals, trained to evaluate current health and predict future compromises, compassionate about animals and obliged to put animal welfare as our first priority. In the absence of clear guidance, there remains professional judgement. So the vagueness of the criteria is no reason for us to be overly permissive – we are relied upon to exercise our judgement in choosing whether or not we sign off animals for journeys.

In exercising that judgement, we should assess each individual's overall fitness objectively; based on clinical evaluations, rather than making just a relatively subjective decision – simply compared to similar animals, for instance. We should be assessing the animal's overall health and fitness, rather than just identifying exceptional cases of pathology, youth or pregnancy. If all of the animals are unfit to travel, then we should be saying so – even if that means declaring a whole lorry load of animals as unfit to make the journey.

"We each have a choice – a moral choice – not to be complicit in a practice that we consider to be wrong" "Veterinary professionals should be very careful in signing off any animal for a long journey – especially when there is an argument that they should not be signed off at all"

We should also be making the assessment as to whether the animal is fit to undergo the particular journey proposed. While a veterinary surgeon cannot be certain (and, therefore, cannot certify) as to how the animals will be treated once out of his or her sight, we should be considering the likely length and method of the transportation, based on the journey plan, when signing it off. An animal may be fit for a short trip, but unfit for a more demanding journey.

Where are we going?

There are also campaigning opportunities here for us as a profession, keen to show that we care. We can argue for refinements to transportation methods, such as better vehicles, loading, stocking rates, staff competence and journey lengths; but for something that causes such health compromises and is unnecessary, such a weak response risks making our profession look as if we do not care enough.

We should, therefore, be calling for live transportation to be limited to only genuinely necessary moves between farms, to veterinary practices and to nearby abattoirs. There is simply no need for long-distance transportation to slaughter, because refrigerated trucks can transport carcasses or processed meat. We can support the efforts of the Federation of Veterinarians of Europe (FVE) and engage with the Eurogroup for Animals's 'Stop the Trucks' campaign. But, as a great deal of animal transportation is intra-national, we should also focus on more local transportation.

Society's safeguards

However, it is not a matter of campaigning on the one hand, whilst continuing to sign off transportation with which we disagree on the other. On this issue, our two roles coincide. If we know that animals are likely to suffer in the planned transportation, we should think twice about signing them off as 'fit' for such suffering.

That is because there is a wider ethical issue here. Legally, we do not have to sign off animals for transportation. We each have a choice – a moral choice – not to be complicit in a practice that we consider to be wrong. Indeed, our integrity in making such choices is one reason why we are trusted as a profession, and particularly why we are trusted to protect animal welfare. So if we think a practice is wrong, we should not sign it off.

In our professional role, we also have a duty to make welfare our first priority. Long-distance transportation is not done for the welfare of the animals and there are alternatives, such as closer slaughter or on-farm culling. So we should not sign off transportation if it is not putting welfare as the first priority. And I struggle to think of cases where long-distance transportation is putting welfare first.

Put another way, we can consider whether we want to be supporting that practice. Even if we think that animals could



survive a particular journey, we may think that it is ethically wrong. If so, we should consider not being involved.

The end of the line

Some specific practices can help highlight this issue – particularly the long-distance transportation of 'cull' animals for slaughter at the end of their productive life.

Many veterinary surgeons may feel that no animal is fit enough for really long-distance journeys. Much of the research to date has been done on healthy animals, and they still show major stress, dehydration or other physiological responses. Objectively, if one asked vets which animals are fit for hyperthermia, rough handling, overcrowding and dehydration, the answer would have to be, "None of them." Veterinary professionals should be very careful in signing off any animal for a long journey – especially when there is an argument that they should not be signed off at all.

Indeed, many animals that are transported long distances are cull sows or ewes, and 'spent' hens, which are generally of impaired health. Indeed, the reasons they are marked for culling is often because their reduced fitness makes them less productive. We should consider their health objectively, not as a relative assessment that they are as healthy as normal for cull animals. On that basis, this impairment may make all cull animals unfit for certain longer journeys.

Sometimes, cull sows, ewes and hens are transported for long distances because of a lack of abattoirs that will slaughter them. But the fact that there are no closer factories does not mean that they are fit to undertake that journey. The veterinary surgeon involved should consider each individual animal's state and the transportation to which it will be subjected. As a consequence, this may mean making harder decisions.

Society gives us the responsibility to safeguard the welfare of these animals – a responsibility we voluntarily undertake on entering the profession as the condition of having the right to practise. It is a responsibility we *must* fulfil. \blacksquare

"Society gives us the responsibility to safeguard the welfare of these animals"

National Veterinary Data Service



A complete lost and found service for your clients



To find out more about this service please email: enquiries@nvds.co.uk or visit: www.nvds.co.uk



NATIONAL VETERINARY DATA_SERVICE



Victoria Bowes RVN Dip. RSA MIFL QTLS

Victoria is a qualified veterinary nurse with 15 years' experience in both small animal and emergency practice environments. She has been a lecturer at Warwickshire College for the past 10 years and is currently course manager for veterinary nursing.

As a practical examiner for the RCVS, Central Qualifications and City and Guilds she also has the pleasure of assessing the next generation of veterinary nurses.



*Suggested Personal & Professional Development (PPD)



TRAUMA

Why dogs should not play with Nature's toys

Some members of the public still feel it is acceptable to allow their dogs to play with sticks, because the experience of a 'stick injury' has not happened to their pet. But if you ask most veterinary practices, they will confirm that they have dealt with some horrific injuries as a result of owners allowing their dogs to play with – or chew – sticks.

Having worked in emergency critical care veterinary practices for many years, the number of stick injuries that I have nursed is extremely high. There are certain trends that occur in emergency critical care during the year - around Easter and spring we see the stick injuries and chocolate poisonings. In the summer, we deal with a high incidence of heat strokes and, again, stick injuries. Then Christmas is another key season for poisoning from chocolate and other tasty goodies.

There is one case that still haunts me to this day. The dog was playing in the park and its owner threw a stick. They had been throwing sticks for many years with various dogs that they had owned and had not had any problems. Unfortunately, on this occasion, the stick bounced as the ground dipped and the dog died on impact as the stick impaled its chest/ throat area.

The guilt that the owners had was unbearable – to think an accident like that had happened. So the message to owners is simple: 'Throwing sticks for your dog can be dangerous and lead to horrific injuries that can be very distressing for both you and your dog, such as causing cuts to their mouths and tongues or getting the stick lodged in their throat' (Webster, 2016).

Although the unseen majority of dogs presumably enjoy



Figure 1. Many dogs carry sticks without incident.

the game without incident (Figure 1), an unknown proportion will suffer from an oropharyngeal or even oesophageal perforating injury (Charlesworth, 2013). Some dogs will be presented as an emergency owing to the initial trauma or damage, whereas some individuals may be presented up to a week later as no significant damage was seen at the time (Griffiths, 2000).

The extent of the injury mainly depends on the type and shape of the stick, the angle and speed of impact (**Figure 2**).

This article will focus mainly on how the immediate situation should be approached when the client first comes into the practice. We shall also review how a practice can help to inform clients about the dangers of stick injuries and how to avoid them.

What to do when the animal arrives

When an animal is presented in the veterinary practice with a stick injury, it should be triaged immediately - the extent of stick injuries can easily be disguised

"Veterinary nurses have a particularly important role to play in the education of clients to prevent injuries from sticks"



Figure 2. The extent of the injury mainly depends on the type and shape of the stick, the angle and speed of impact.



Figure 3. Dog with stick wedged across the inside of its mouth.

in the blood, 'dribble' and stress from the owner. One of the key things that you must do is calm the owner – if he or she continues to be stressed, this has an immense effect on the animal.

Remember too, the owner is likely to be suffering from extreme guilt as he or she was the one who threw the stick. This can easily be transformed to anger at the situation and, unfortunately, then directed at veterinary personnel.

It is advisable to take the animal out of reception to be triaged and usher the owner to a private room with another member of staff. This staff member can then be there to calm and support them through this stressful period of time; whilst the clinical team can be undertaking triage of the animal.

Triage is the placing of an animal into a distinct category; the evaluation and allocation of treatment to patients to organise and increase survival rates (Brown and Drowbatz, 2007). It can be difficult to triage a stick injury as the splinters may be missed and can cause problems a few days later. Carrying out the primary survey will give you a critical generalised view of the patient prior to stabilisation. It is likely they will be in shock and pain. Once this has been done, you can commence treatment and your secondary survey.

Carrying out a primary survey

When completing the primary survey it is important to observe A-B-C (Airways, Breathing, and Circulation). It can also be reclassified as C-A-B if any major complications are noted during the assessment – these must be addressed immediately. It is likely that these key indications will be disrupted as a consequence

"The situation is not helped by celebrities who support the use of sticks for playing with dogs" of injuries inflicted by the stick. This is mainly because the injuries will be in the oral/ chest regions and will affect breathing. The temperature, pulse and respiration should be monitored because these are key as indicators for shock.

The secondary survey

Once the primary survey is complete and appropriate emergency treatment has been provided, a secondary survey is performed. This includes a full clinical examination of the patient to include neurological assessment. Blood tests and reflexes will also be assessed.

Most of the presenting wounds from traumatic stick injuries tend to be in the mouth or are impaled injuries from when the stick bounced or was caught in mid-flight. If there are wounds presenting in the mouth region, it may be a struggle to provide wound care until a method of sedation or pain relief has been initiated (Charlesworth, 2013).

In cases where the animal is presented with an impaled

injury, a ring bandage can be applied if deemed appropriate. *Do not ever remove the penetrating object.* This should only be done once preparations have been made to undertake full surgery, otherwise further damage can be done or bleeding may occur as the stick may have become a haemostat or be acting as a plug for chest wounds.

The dog in **Figure 3** was presented having chewed an electric wire. He also chewed sticks and it hadn't been noticed that he had one lodged between his teeth. This could have migrated and caused further oesophageal or pharyngeal injury. It is extremely important to determine promptly whether an oesophageal perforation is present - this may need emergency surgery and, unfortunately, gives a poorer prognosis (Doran, 2008).

How can we prevent stick injuries?

The easiest and most appropriate answer would be to stop throwing sticks in the first place – but, as we know, life is not as simple as that!



Figure 4. As veterinary professionals, we should be advocates of playing without sticks.

The key to preventing serious injuries is constant and consistent owner education. Stick injuries have been a big discussion point in the media for years and the subject has also been a major issue in veterinary practice.

Veterinary nurses, in particular, can be advocates of playing without sticks (Figure 4). We need to ensure that we are educated enough ourselves to give coherent direction to owners. We also need to be figureheads - by showing pictures of veterinary staff using 'non-stick' synthetic toys to play with dogs. You could also offer a free frisbee with your practice details printed on it - this then becomes a safe tov and a valuable tool for marketing purposes.

What is the best method of owner education? Any method of educating owners will prove beneficial – even if you prevent only one or two injuries, this is a justification.

One dramatic method of education could be for you to provide images of the injuries. *But* this can be brutal. The images may be disturbing for the general public to see and this method would require serious consideration of the most suitable images to use.

Another method – which I personally feel is the most effective – is the use of 'survivor' stories. With the appropriate use of images and owner/veterinary points of view, this can be an extremely significant incentive to owners. This makes the message more tangible along the lines of: 'It happened to another dog, so it could happen to mine'.

Leaflets can be produced to show the effects of stick injuries, and with owner permission, photographs

"We should become bigger advocates of synthetic stick alternatives"

can be used in a positive way to reinforce the importance of not playing with sticks. Careful advertising of a synthetic alternative toy is valuable too, possibly showing videos on your practice internal video system, if you have one.

Veterinary nurses have a particularly important role to play in the education of clients to prevent injuries from sticks. This could be fulfilled by holding an evening health seminar on the subject or an expanded nursing clinic. Other aspects of care can be brought into your health clinic - correct feeding, exercise and oral health, for example.

It would be beneficial to start early on at puppy checks or clinics because you really need to explain the reasons and problems that can occur with stick playing at an early stage. If you can persuade the owner to stop at this point, the benefit is immense.

Summary

Unfortunately the saga of stick injuries is not going to end any time soon. The situation is not helped by celebrities who support the use of sticks for playing with dogs.

We need to ensure that, as veterinary professionals, we increase our level of client education to prevent future injuries – and fatalities – resulting from sticks. We should become bigger advocates of synthetic stick alternatives.

References

BBC (2016) Who, what, why: Is it dangerous for dogs to fetch sticks?. Available at: http://www.bbc.co.uk/ news/magazine-35361664 (Accessed: 30 March 2016).

Brown, AJ and Drobatz KJ (2007). Triage of the emergency patient, in King LG and Boag A(eds.) BSAVA Manual of Canine and Feline Emergency and Critical Care (2nd edn) Gloucester, BSAVA. pp 1-7.

Charlesworth T (2013). In the stick of it – a playful pastime with perilous consequences for dogs. Available at: http://www.vettimes.co.uk/article/ in-the-stick-of-it-a-playful-pastimewith-perilous-consequences-for-dogs/ (Accessed: 30 March 2016).

Doran IP et al (2008). Acute oropharyngeal and esophageal stick injury in 41 dogs, Vet Surg 37: 781-785.

Gray L (2013) Playing fetch with sticks can harm dogs, vets warn. Available at: http://www.telegraph.co.uk/ news/health/pets-health/10150473/ Playing-fetch-with-sticks-can-harmdogs-vets-warn.html (Accessed: 30 March 2016).

Griffiths LG et al (2000). Oropharyngeal penetrating injuries in 50 dogs: a retrospective study, Vet Surg 29: 283-288.

Kirk M (2014). 'Initial stabilisation and treatment of traumatic wounds', The Veterinary Nurse, 5(8): 442–447.

Vetsnow (2009). Your pet stories I dangers of toy sticks to dogs. Available at: https://www.vets-now. com/pet-owners/your-stories/ beware-of-the-dangers-of-toy-sticks-todogs/ (Accessed: 30 March 2016).

Webster in Gani A (2016). Don't throw sticks for your dogs to fetch, say vets. Available at: http://www.theguardian. com/lifeandstyle/2016/jan/20/dontthrow-sticks-for-your-dogs-to-fetch-vets (Accessed: 30 March 2016).

Worley W(2016). Letting dogs play with sticks is 'dangerous', top vet warns pet owners. Available at: http://www.independent.co.uk/ news/uk/home-news/dont-letdogs-play-with-sticks-vets-tell-petowners-a6822366.html (Accessed: 30 March 2016).



John Innes BVSc PhD CertVR DSAS(orth) MRCVS

John is a RCVS specialist in small animal orthopaedics and has published over 80 peer-reviewed papers. He is the president of the European Society for Veterinary Orthopaedics and Traumatology, referrals director for CVS (UK) Ltd, and clinical director at ChesterGates Veterinary Specialists.



Ben Walton BVSc DSAS(orth) CertSAS MRCVS

Ben graduated from the University of Liverpool in 2002 returning in 2010 to undertake postgraduate training and clinical research in orthopaedics. He joined ChesterGates in 2013 and has special interests in fracture management and complex lameness investigations.



*Suggested Personal & Professional Development (PPD)



ORTHOPAEDICS

Humeral intracondylar fissure and condylar fractures in dogs

Fractures of the humeral condyle are common in dogs, particularly certain breeds such as springer and cocker spaniels, Yorkshire terriers and Labrador retrievers. The most common fracture configuration is a fracture of the lateral portion of the condyle and this type accounts for approximately 90 per cent of humeral condylar fractures.

Fractures of the medial humeral condyle account for approximately five per cent, and the remainder are double condylar fractures with a 'Y' or 'T' configuration. Factors that contribute to this distribution are thought to be the anatomical structure of the lateral aspect with a relatively narrow epicondylar ridge of bone compared to the medial side and 'incomplete ossification of the humeral condyle' (IOHC) or 'humeral intracondylar fissure' (HIF).

The humeral condyle develops as two secondary centres of ossification, medial and lateral. Skeletally immature dogs may suffer condylar fractures at three to five months of age because of this inherent weakness in the midsection of the condyle. 'Incomplete ossification of the humeral condyle' refers to the assumed failure of the intracondylar growth plate to ossify and the persistence of a cartilaginous plate. However, other authors have suggested that failure of ossification is not well documented and

the mid- that failure of ossification is not well documented and Some term c cases of a typical hymeral intracondular feature

Figure 1. CT scan image of a typical humeral intracondylar fissure. Bone is often sclerotic adjacent to the fissure reflecting the 'non-union' scenario.



the appearance of a fissure in the humeral condyle may represent a condylar stress fracture (Butterworth and Innes, 2001); hence the term 'humeral intracondylar fissure' (HIF) has been proposed.

Some support for the latter term comes from reported cases of individual dogs that have had a normal humeral condyle on a CT scan and subsequently developed HIF at a later date. In addition, one report documented propagation of a limited HIF to a fracture line that extended through the humeral condyle (Witte PG et al, 2010).

Such cases suggest that HIF lesions can develop in the mature skeleton and are not necessarily a result of failed ossification of the cartilaginous plate during skeletal maturation. Thus HIF lesions can be partial (not extending from articular surface to the supracondylar foramen) to complete.

Complete lesions are associated with minor instability and, therefore, cause pain and lameness; whereas partial HIF lesions are clinically silent. HIF lesions are often surrounded by dense



Figure 2. (a) A novel self-compressing titanium 'IOHC' screw developed by the authors is available (Veterinary Instrumentation, Sheffield) for treatment of HIF/IOHC in spaniels and other breeds of a similar size. The screw is placed using a specific step-drill which creates a bone void around the non-threaded mid-portion of the implant. The void is filled with demineralised bone matrix (Veterinary Tissue Bank, Wrexham); (b) Eight-week follow-up radiograph of a springer spaniel treated with a HIF screw demonstrating union across the humeral intracondylar fissure in the region of the bone void grafted at surgery with DBM. (Photo: Mark Straw).

sclerotic bone as noted on CT scanning (**Figure 1**).

Diagnosis

Diagnosis of HIF can be challenging in the absence of cross-sectional imaging modalities. Pain on elbow extension in an at-risk breed should raise a suspicion of HIF. A craniocaudal elbow radiograph may show the fissure line in the humeral condyle. Radiographs may also show periosteal reaction on the lateral epicondylar ridge as a result of the increased stress on this area and the resultant response of bone.

Computed tomography (CT) scanning provides the best method to diagnose HIF. An epidemiological study estimated that the presence of HIF (partial or complete) in UK springer spaniels is approximately 15 per cent (Moores AP et al, 2012). This provides some insight as to why springer spaniels are so often presented with lameness resulting from HIF or with condylar fractures, with or without prodromal lameness.

Management of painful HIF is controversial and evolving. The initial approach was to treat the fissure fracture as a standard intra-articular fracture and apply the traditional principles of 'accurate reduction' and 'rigid internal fixation' with a lag screw technique to compress the fracture line. However, it became apparent that, whilst such an approach provided pain relief from the resultant stability, the fracture line tended not to heal. Occasionally dogs would re-present acutely months or years later with a broken screw at the fissure line; a screw broken through fatigue because of cyclic loading and a failure of the surrounding bone to heal.

Because of this, most surgeons would place a large screw diameter (4.5mm cortical screw, for example) to maximise the core diameter and the 'area moment of inertia' with a resultant increased resistance to bending forces. Thus, there is an argument to consider painful HIF lesions as a nonunion fracture scenario.

Some surgeons also suggested that a positional screw was preferred over a lag screw because purchase of threads in both portions of the condyle provided less likelihood of screw loosening and loss of stability. Given the fact that compression of the fracture line did not seem to help fracture healing, there was some logic to this argument, and it also avoids the risk of over-compression of the fracture, which can occasionally occur with the relatively uncontrolled compression of a standard lag screw.

Traditional approaches to HIF have been of limited success and with high complication rates (Hattersley R et al, 2011). Of 79 elbows with HIF, treated at six UK referral centres, the overall complication rate was 59.5 per cent. Common complications include seroma formation, surgical site infection (SSI) and implant failure.



Figure 3. (a) A lateral condylar fracture in a four-year-old springer spaniel; (b) immediate postoperative craniocaudal radiograph of the same dog; as a breed at risk of HIF, the surgeon has used the novel self-compressing titanium screw and created a bone void using the step drill which was grafted with Canine DBM. To buttress the lateral epicondylar ridge and to prevent rotation, a plate with locking screws has been placed caudolaterally; (c) immediate postoperative mediolateral radiograph of the same dog showing placement of the self-compressing screw in the humeral condyle and caudolateral placement of the plate and locking screws.

The reasons for such a high SSI rate are not clear but some surgeons apportion blame to the lateral surgical approach and advocate a medial approach. That particular study revealed a reduced SSI rate in cases treated with a lag screw compared to a positional screw, but the reasons for this are unclear.

Even when transcondylar screws remain stable and cause resolution of lameness, it is not uncommon for such implants to fatigue months or years later. This is because HIF cases treated by such methods seem to fail to heal and the screw is, therefore, subjected to ongoing shear stress in the plane of the HIF. Because of this, some surgeons prefer to maximise the volume of metal at the HIF by using a shaft screw (Moores AP et al, 2014). The shaft screw provides a significant increase in resistance to bending and shear but has a relatively short threaded section at the tip and does provide for thread/bone interface in the this portion of the condyle. Loosening of shaft screws is, therefore, a complication that can occur.

The usefulness of bone grafting in HIF was demonstrated in a series of nine dogs (Fitzpatrick N et al, 2009); seven of eight elbows assessed by CT had bridging bone across the intracondylar fissure. A novel cannulated and fenestrated implant, the 'F2T2' has been investigated as a potential implant to provide stability and accommodate bone graft within the internal structure (Coggeshall JD et al, 2014). More recently, a selfcompressing titanium screw placed in a bone void created using a customised step-drill bit and filled with canine demineralised bone matrix (DBM, Veterinary Tissue Bank) has been reported and is commercially available ('IOHC screw', Veterinary Instrumentation, Sheffield) (**Figure 2**).

This implant aims to try and address some of the problems with treating HIF – it is made of titanium to try and reduce surgical site infections, it is headless to try and reduce seroma formation, it is self-compressing to provide compression of the HIF whilst still engaging thread on each side of the fracture, and it is sized to be suitable for springer spaniels, the most common breed affected by HIF. These latter 'biological' approaches are based on the assumption that clinical HIF cases are inactive non-unions and require debridement, bone grafting and rigid internal fixation to achieve union and long-term success. DBM is produced from donor animals and is a biologic product containing canine growth factors, such as bone morphogenic proteins (BMPs) and other growth factors, which promote recruitment of host multipotent mesenchymal stem cells for bone formation.

As such, DBM is an osteoinductive material with bone-promoting properties shown to be similar to autogenous cancellous graft in canine clinical cases (Hoffer MJ et al, 2008). DBM is provided as a freeze-dried powder to be mixed with saline, or with a nanocrystalline sterile carrier which allows it to be injected through an 14-16G needle as a paste. It is this formulation that is particularly useful in HIF cases because it can be injected into the drill hole to fill the bone void created.

The treatment of clinicallysilent HIF is controversial. It is not uncommon to find partial – or even complete – HIF in the contralateral elbow of dogs presented with HIF or condylar fractures. The authors' opinion is not to treat HIF unless there is pain or lameness associated with the elbow joint. This is because the reported complication rate of treating HIF may risk making a clinically-silent situation worse.

HIF as a feature of condylar fractures

In adult dogs that suffer complete condylar fractures, there may be a suspicion that HIF was a predisposing factor. Because of this, some surgeons now approach such cases in a similar manner to HIF, although further stabilisation is clearly necessary if the condyle is completely fractured. Traditionally, an antirotational pin may have been employed; but recent evidence suggests that such an approach is associated with a higher complication rate compared to the use of a second screw or a small bone plate (Perry KL et al, 2015). Accordingly, many surgeons will now utilise a second screw in the epicondylar ridge, or a small plate contoured on the lateral epicondylar ridge (Figure 3).

Summary

Humeral intracondylar fissure is common in dogs of certain breeds and is a major risk factor for the development of lameness or complete and acute fracture of the humeral condyle. HIF is a challenging clinical scenario but newer treatment methods involving a self-compressing screw in combination with bone grafting show promising results in comparison to traditional techniques.

PPD Questions

- 1. In the UK, which is the most common dog breed to be affected by humeral intracondylar fissure?
 - A. Labrador retriever
 - B. Cavalier King Charles spaniel
 - C. cocker spaniel
 - D. springer spaniel
 - E. German shepherd dog
- 2. In that breed, what is the approximate prevalence of incomplete ossification of the humeral condyle?
 - A. 2%
 - B. 5%
 - C. 15%
 - D. 25%
 - E. 35%
- 3. Complications of using a 4.5mm diameter stainless steel cortical screw placed for treatment of humeral intracondylar fissure do not include:
 - A. surgical site infection
 - B. seroma formation
 - C. immune reaction to stainless steel
 - D. screw loosening and backing out
 - E. screw breakage
- 4. Properties of demineralised bone matrix (DBM) do not include:
 - A. osteoinduction
 - B. provision of cells for bone formation
 - C. provision of growth factors for bone formation
 - D. an immune response is possible to dog leucocyte antigens in the product
 - E. produced as a freeze-dried, sterile product for rehydration at the operating table
- 5. Which of the following properties is not a feature of the new 'IOHC' screw?
 - A. made from 316L stainless steel
 - B. self-compressing design endowed through variable thread pitch between cis-and trans-portions of the screw
 - C. headless
 - D. inserted with a hex-head 4.5mm screwdriver
 - E. suitable for springer spaniels and other similarly sized dogs

Answers 1.D 2.C 3.C 4.B,D 5.A.

References

Butterworth SJ and Innes JF (2001). Incomplete humeral condylar fractures in the dog. Journal of Small Animal Practice 42(8): 394-398.

Coggeshall JD et al (2014). Biomechanical Comparison of Two Implants for the Stabilization of Incomplete Ossification of the Humeral Condyle Lesions in Dogs. Veterinary Surgery 43(1): 58-65.

Fitzpatrick N et al (2009). Treatment of Incomplete Ossification of the Humeral Condyle with Autogenous Bone Grafting Techniques. Veterinary Surgery 38(2): 173-184.

Hattersley R et al (2011).

Postoperative Complications after Surgical Management of Incomplete Ossification of the Humeral Condyle in Dogs. Veterinary Surgery 40(6): 728-733.

Hoffer MJ et al (2008). Clinical applications of demineralized bone matrix: A retrospective and casematched study of seventy-five dogs. Veterinary Surgery 37(7): 639-647.

Moores AP et al (2012). Prevalence of incomplete ossification of the humeral condyle and other abnormalities of the elbow in English Springer Spaniels. Veterinary and Comparative Orthopaedics and Traumatology 25(3): 211-216.

Moores AP et al (2014). Clinical assessment of a shaft screw for stabilization of the humeral condyle in dogs. Veterinary and Comparative Orthopaedics and Traumatology 27(3): 179-185.

Perry KL et al (2015). Effect of Fixation Method on Postoperative Complication Rates After Surgical Stabilization of Lateral Humeral Condylar Fractures in Dogs. Veterinary Surgery 44(2): 246-255.

Witte PG et al (2010). Propagation of a partial incomplete ossification of the humeral condyle in an American cocker spaniel. Journal of Small Animal Practice 51(11): 591-593.



Spectrum Practice Management System complete access wherever you are.

enquiries@vetsystems.com | 01359 243 400 |







Vanessa Howie

Having graduated from the RVC in 2000, Vanessa spent a short spell in mixed practice before leaving the UK to go travelling, working and volunteering abroad. After returning to the UK she worked in small animal practice.

For the past eight years, Vanessa has worked as a field veterinary officer for Cats Protection. She is passionate about feline welfare and behaviour and has developed a keen interest in feline practice and shelter medicine.



BVetMed MRCVS

With approximately eight million cats currently residing in the UK (PFMA Pet Population Report, 2014) and 17 per cent of households owning a cat, it makes great business sense to ensure your practice is the place where cat owners want to bring their cats. Showing that you care about cats reassures clients they are getting the best possible care and all-round experience for their money.

vets' more pleasurable for your feline patients.

Understanding your feline patients

Thought to have been domesticated around 9,500 years ago, the domestic cat that we know today shares ancestry and many similarities with the solitary African wildcat. In contrast, the domestic dog - which started the process of domestication as early as 40,000 years ago - is thought to have evolved from the grey wolf, which is a social pack animal.

Understanding how the cat has evolved - both physically and behaviourally - is key

to creating a cat-friendly practice. Cats are naturally solitary hunters that are crepuscular (most active at twilight) - hunting when their prey is most active. They are perfectly equipped with the tools to hunt and weapons to defend themselves against any perceived threats.

Steps towards a cat-friendly practice

Designing a cat-friendly practice doesn't simply mean changing the layout of the building and buying shiny, new equipment, it is also about changing the ethos of the practice to accommodate cats and understand their needs. Providing practice staff and owners with information to change the way they think – and their attitudes towards cats – will make a practice more cat friendly and help make a 'visit to the

> Cats are obligate carnivores and are used to eating up to 20 small meals per day. They are territorial and communicate by scent, making them particularly sensitive to smells. Each cat will have a territory that it is prepared to defend – although they are fearful of new situations, easily stressed and would prefer to avoid conflict. However, if conflict does occur and a cat feels threatened, defensive aggression may be employed.

Making your premises cat friendly The building

Having a practice that has both cats and dogs as patients can be challenging; however,

creating an environment that is quiet, calm and free from perceived danger will help settle feline patients when they visit. Cats consider dogs a threat and may become fearful and stressed the moment they see, hear or smell one. If possible, the provision of separate entrances to the practice for your feline and canine patients will help to prevent an initial encounter.

The waiting room

Separate dog and cat waiting rooms or areas are the ideal. Where separate entrances are used, the cat entrance should open into - or adjacent to - the cat waiting area, away from the dog area and vice versa. Put up signs to inform owners that the waiting area is only for cats and to inform dog owners that there should be no dogs in that sector (Figure 1).

Cats feel vulnerable when placed on the floor and prefer to have a higher vantage point from where they can

Figure 1. Use polite signs to inform owners this is a cat-only waiting area.

Figure 2. Partitions in the cat waiting area may help to minimise cat-to-cat visual contact.





*Suggested Personal & Professional Development (PPD)



FELINE PRACTICE



Figure 3. The use of a low wall as a visual barrier around the dog waiting area.

survey the surrounding area. Consider using shelves or perches for cat carriers, 1.2 metres above the ground. Cats may also perceive other cats as a threat, so use partitions between where cat carriers are placed and opposite facing seating (Figure 2).

Where it is not possible to have shelves or partitions for cat carriers, make clean towels or blankets available for owners to cover their carrier whilst waiting, in order to avoid cat-to-cat visual contact. Smooth-surfaced seating that can be wiped clean, or tables, may be an alternative to shelves.

Encouraging owners to spray a synthetic pheromone containing the F3 fraction of the feline allomarking facial pheromone (Feliway, Ceva) in the cat carrier before bringing their cat to the vets will help offer reassurance to the cat whilst it is in an unfamiliar environment. Similarly, pheromone diffusers can be used in the waiting room and hospital ward of the practice.

Notice boards in the cat waiting area bearing specific information about cats, along with cat-focused magazines and other literature, will be appreciated by cat clients and help broaden their understanding of their pets. Making the area more personal with clients' photos of their cats is also a great idea.

Consideration should be given to the reception desk. Where can the cat carrier be placed when an owner is at the desk? An extra shelf on which to place the cat carrier or a low, wide reception desk may be appropriate; or a bank of partitioned shelving for placement of carriers could be an option. But remember all of these ideas should be away from - and out of reach of - dogs.

But there's no space for a separate waiting room

If separate cat and dog waiting areas are not an option, using shelving, partitions and covering cat carriers will help keep cats out of reach of dogs and minimise stress. Ask noisy dogs to wait outside rather than in the waiting area to try and keep the area quiet. Alternatively, having dedicated cat-only consulting times, when only cats will be in the waiting area, may help.

Consulting room

When cats leave the waiting room for the consulting room, it is advantageous to have a one-way system set up. If it can be cat-only to avoid all contact with dogs, this is even better. This is also true for walkways between the consulting room, hospital ward and preparation area. The placement of low walls may be an option if the cat's walkway is past an area where dogs are situated, particularly in the waiting area (Figure 3).

A 'dedicated' consulting room for cats is highly commended because it allows cats to feel more relaxed and decreases stress. Care should be taken to minimise smells in all cat areas of the practice, but it is particularly important in the consulting room. Use of low-scented disinfectants is desirable. It is important to wash hands and the table between cats to remove the scent of the previous cat. A synthetic pheromone spray containing the F4 fraction of the feline facial pheromone (Felifriend, Ceva) can be used to help create a feeling of confidence between the cat and an unfamiliar person, such as the veterinary surgeon or nurse.

As with all areas of the practice where cats will be located, particular attention should be paid to ensuring the consulting room is escape-proof, with no holes or small gaps through which the cat can squeeze or become stuck behind.

The examination table should have a non-slip rubber surface to help make the cat feel secure during its clinical examination. Ideally, the consulting room should be big enough to allow the veterinary surgeon or nurse to sit on the floor and examine the cat there, if necessary. Consider having cat-friendly equipment for the consulting room (Figures 4 & 5):

 weighing scales (suitable for cats)



Figure 4. Smaller, mobile weighing scales suitable for cats.



Figure 5. Consider purchasing

rapid-reading, soft-tipped

otoscope with small cones

quiet, cat-friendly clippers.

stethoscope (suitable

for cats)

thermometer

floor during an examination and avoid scruffing. A large thick towel can be used to help restrain, if needed.

Hospital ward

Fibreglass hospitalisation cages tend to be better for cats because they are quieter and warmer compared to stainless steel cages. Reflections from stainless steel cages may cause stress to some cats. Try to keep cages off the floor - raising them up at least 20cm off the ground - as cats prefer not to be at floor level. Consider larger cage sizes for comfort too. The ISFM-Purina Guide to creating a cat-friendly clinic suggests minimum internal dimensions (Table 1).

Ideally, the cage should have somewhere for the cat to perch and to hide. Some cages have built-in shelves (**Figure 6**). Using a cat carrier with a towel or blanket over it, or a Cats Protection Cat Hide (part of the Feline Fort) provides the perfect place for a cat to feel safe and secure (**Figure 7**). Failing that, an upturned cardboard box with a hole cut in the side makes a cheap, DIY hiding place.

If there is more than one bank of cages, think about placement - cats should have no sight of other cats. For those staying at the practice, ask the owner to bring in some bedding which has a familiar scent from home.

Consideration should always be given to the cat's needs:

- does the cat prefer a covered or uncovered litter tray?
- what type of litter does the cat prefer?
- what type of food does the cat prefer?
- does the cat mind human company when eating?
- does the cat prefer to eat alone and at night?
- would the cat benefit from being groomed daily?

Try to place litter trays and food and water bowls as far away from each other as possible because this is the way cats prefer them. Having bigger cages will obviously make this easier. For longerstay patients, environmental enrichment - toys, feeding balls, puzzle feeders and outside-facing windows where the cat has something to watch - may help to reduce boredom and stress levels.

When transporting cats around the practice, consider using a trolley on which to place the cat carrier and keep the carrier covered at all times.

Operating theatre

Cat-friendly items for carrying out surgical and dental procedures include appropriate anaesthetic agents, silicon endotracheal tubes (rather than 'red rubber' ones), cat-sized laryngoscopes, warm air blankets (such as Bair huggers) and a selection of cat-specific surgical and dental instruments (**Figure 8**).

More than just building design

A cat-friendly practice needs a cat-minded team – a team that knows and understands cats and their needs, including how to handle them appropriately (**Figure 9**). Appointing a cat 'advocate' makes a great addition to the practice team – a member of staff who can help educate and encourage the practice and act as a point of contact for cat clients.

Keep up-to-date with felinerelated CPD and consider

Table 1. Suggested minimum internal dimensions for cathospitalisation cages

Cage type	Height (cm)	Width (cm)	Depth (cm)
Day patient	60	60	75
Overnight patient	60	70	75
Stay >24 hours	70	100	75



Figure 6. Cages with built-in shelves allow somewhere for the cat to perch and an outside-facing window can provide stimulation for longer stay patients.



Figure 7. Somewhere for the cat to hide and sit up high will help it feel safe and secure.



Figure 8. A warm, air-filled blanket will help to keep your feline patients warm whilst anaesthetised.

joining feline organisations such as the International Society of Feline Medicine (ISFM) or the American Association of Feline Practitioners (AAFP). Why not become an ISFM-accredited

Cat Friendly Clinic and make your practice a feline stressfree zone (Figure 10).



Figure 9. Use posters around the practice to remind staff how to handle cats.



Figure 10. You'll know you have things right when you have stressfree, content feline patients.

PPD Questions

- 1. What is estimated to be the current cat population in the UK?
 - A. six million
 - B. seven million
 - C. eight million
- 2. When is it thought that cats were first domesticated? A. 950 years ago
 - B. 9,500 years ago
 - C. 40,000 years ago
- 3. What is the recommended height above the ground that cat carriers should be placed in the waiting area? A. 0.2m
 - B. 1.2m
 - C. 2.2m
- 4. What is the best way initially to try and restrain a cat?
 - A. holding it by the scruff of the neck ('scruffing')
 - B. holding it tightly so it cannot move or escape
 - C. minimal restraint, keeping all four feet on the floor
- 5. Choose (from the following list) the signs you would expect to see if a cat is stressed:
 - A. hiding at the back of the cage
 - B. dilated pupils
 - C. lying at the front of cage
 - D. rubbing face on bars of cage
 - E. flattened ears
 - F. seeking attention and wanting to be stroked
 - G. ears pointing forwards
 - H. bushed-up tail
 - I. swishing tail
 - tail held up
 -].
 - K. arching back

1.C 2.B 3.B 4.C 5.A,B,E,H,I & K. **S19W2NA**



Jane Ellison BSc(Hons)

Jane is an information scientist who has worked for the Veterinary Poisons Information Service (VPIS) and the human poisons service at Guy's Hospital, on and off since 1984, and has also worked in the pharmaceutical industry. Jane was a founder of the veterinary service in the 1980s and has recently returned to work for the service in the 24-hour rota team.





POISONS

Household hazards – the garage and garden shed

Whilst not wishing to state the blindingly obvious, it should come as no surprise that, because companion animals live with us, the potentially toxic things to which they are most exposed are those that we have in our homes and gardens. This article will focus on hazards that can be found by animals in garages or garden sheds.

Antifreeze (ethylene glycol)

Often stored in garages or sheds – a much-loved haunt of pets, particularly cats – most motor vehicle antifreezes contain ethylene glycol, which is also found in some screenwashes and de-icers. It is very toxic to domestic animals, with only small amounts needed to cause death.

The long-standing myth that it is sweet tasting and is, perhaps, palatable is unsupported, because it actually tastes acrid – not that the VPIS team would endorse your confirming this for yourself! Cats, of course, lack the functional protein to even taste sweet substances. Many products contain added bittering agents, such as denatonium benzoate, although animals are invariably undeterred.

Most antifreeze is more or less pure ethylene glycol – even the 'ready-to-use' radiator 'top-up' fluids contain around 50 per cent. Most car engines



will have around 50 per cent antifreeze in their cooling system too, so it follows that both the neat product and 'run-off' or drained antifreeze are a danger.

Only a few millilitres can cause serious toxicity and death in cats. The often quoted lethal dose in cats is around 1g (or 1ml)/kg. Effectively, therefore, any amount can be fatal. Cats are more susceptible to ethylene glycol than dogs and signs progress more rapidly. The reasons for this are not clear – toxic metabolites may be eliminated more slowly, or metabolites may be converted more rapidly to other more toxic metabolites.

For dogs, we recommend intervention for ingestion of more than 2ml/kg of undiluted product.

Cats presenting with a history of potential antifreeze exposure – or where there may have been an 'outbreak' of such poisonings locally – may have central nervous system signs (caused early on by unmetabolised ethylene glycol). These include depression, vomiting, ataxia, tachycardia and weakness; but there may also be signs of polyuria, polydipsia, dehydration, tachypnoea, acidosis and hypothermia.

Ethylene glycol itself is not the major toxicant. The parent compound is metabolised by alcohol dehydrogenase to form glycoaldehyde, which is then metabolised to glycolic acid - responsible for the acidosis seen with these poisonings.

Oxalate, a metabolite of glycolic acid, causes renal damage and hypocalcaemia by binding to calcium to form calcium oxalate. Calcium oxalate crystals appear in the urine of poisoned animals - a useful diagnostic aid because the crystals may be visible in urine samples that are allowed to stand; although the absence of these crystals does not rule out ethylene glycol poisoning. The aldehydes produced may inhibit oxidative phosphorylation and respiration.

The treatment of ethylene glycol is aimed at blocking the formation of these toxic metabolites and, therefore, the longer the delay between ingestion and initiation of treatment, the less favourable the prognosis.

Cats that present late after exposure and are already unwell, where ingestion has not been witnessed, may have a poor prognosis. Once renal damage has occurred, the outcome is likely to be very poor and at this stage antidotal treatment is of limited – or no – benefit.

Ethanol is a specific antidote for ethylene glycol poisoning, as it is the preferred substrate for alcohol dehydrogenase. This means that the metabolism of ethylene glycol is blocked by the administration of ethanol and is excreted as the parent compound with very low levels of toxic metabolites formed.

Ethanol should be considered in any symptomatic case presenting within 24 hours of the supposed or actual ingestion; obviously the sooner the better. There is no point in giving ethanol to block ethylene glycol metabolism if it has already been metabolised. Ethanol should not be given to an animal in renal failure as it is unlikely to be effective and may be detrimental because ethanol, of course, has its own toxic effects.

Fomepizole (4-methylpyrazole or 4-MP) is another direct inhibitor of alcohol dehydrogenase. This antidote is often used in human poisoning because it has a lack of adverse effects and a slower elimination rate. Clinical reports suggest that fomepizole is successful in treating ethylene glycol toxicity in dogs and recent evidence suggests in cats too. However, fomepizole is not widely available, even for human poisonings, and is very expensive.

Cement powder

Bags of cement – either for ambitious DIY projects or left over from a home's previous occupants – represent a hazard if a cat or dog starts playing with, jumping on or chewing the bag and dispersing the contents.

Cement contains calcium oxide, a strong alkali and alkalis cause liquifactive necrosis with saponification of fats and solubilisation of proteins. They are also hygroscopic and will absorb water from the tissues. These effects result in adherence and deep penetration into tissue.

Following skin exposure, there may be alopecia, erythema, blisters, pain, ulceration and oedema; with the subsequent risk of secondary infection of the damaged skin.



Alkali injuries differ from those of other burns. The injury may be painless and not be immediately evident; and this initial lack of pain may lead to a delay in treatment. The injury can progress over several hours and the skin may be discoloured brown or black within a short period of time, making initial assessment of the burn depth difficult.

All animals exposed to a strong alkali should be assessed and observed for progression of injury. Signs of mucosal damage are expected to start within four hours, but it may take up to 12 hours for the full extent of the injury to be evident.

The most important therapy for dermal alkali injuries is prolonged and copious irrigation. This effectively cleanses the wound of unreacted chemical, dilutes the chemical already in contact with tissue and restores tissue water lost to the hygroscopic effect of alkalis. The earlier the irrigation is begun, the greater the benefit.

Affected areas should be thoroughly irrigated with

saline or water. Care should be taken not to expose other areas of skin, eyes or veterinary staff with 'runoff' and the area between the toes should be checked for any adherent solid material, to ensure thorough decontamination.

If possible, the pH of the skin and irrigating fluid should be monitored with a urinalysis strip or universal indicator paper. Testing the pH of the skin immediately after irrigation may, however, be misleading, so it is recommended that 15 minutes elapse before this is undertaken to allow residual alkali to diffuse up from the deeper regions of the dermis (Herbert and Lawrence, 1989; O'Donoghue et al, 1996).

If the pH is still alkaline, irrigation should be repeated. It may take several hours to decontaminate skin, because the alkali needs to be washed 'out of the skin' rather than just 'off the skin'.

Careful temperature monitoring will be required in animals undergoing irrigation because of the risk of hypothermia and, after decontamination, the burn will require good wound care. It may be necessary to clip the fur around the affected area too, as this will stick to tissue fluid seeping from the wound with a consequent increased risk of infection.

Following ingestion of cement powder, there may be hypersalivation, depression, anorexia, oral inflammation or ulceration, with swelling of the lips. This is followed by vomiting, haematemesis, ulcerative mucosal burns, dyspnoea, stridor, dysphagia and shock. Oesophageal and pharyngeal oedema may occur.

The acute complications of this include gastrointestinal haemorrhage and perforation of the gut – suggested by increasing abdominal discomfort, persistent vomiting, direct and indirect tenderness and a rigid abdominal wall.

In severe cases there may be upper airway obstruction; and metabolic acidosis may develop in animals with severe burns or shock. Late complications may include:

- scarring and tissue loss resulting in loss of mobility of the tongue which will affect an animal's ability to drink and eat
- oesophageal stricture and pyloric stenosis, suggested by repeated vomiting and weight loss. Stricture formation usually begins to develop 14 to 21 days after ingestion and may prevent an adequate nutritional intake
- gastric necrosis and stricture may occur, usually in individuals that have oesophageal injury as well
- oesophago-aortic fistulae and rupture of the aorta are rare complications of corrosive ingestion in humans
- severe corrosive injury to the stomach may result in a small, scarred immobile stomach.

In terms of treatment, gastric lavage and emesis are contraindicated because of the risks of further injury on re-exposure of the oesophagus. Oral fluids may be given unless there is evidence of severe injury. Neutralising chemicals should never be given because heat is produced during neutralisation and this could exacerbate any injury; and activated charcoal has no role in alkali ingestion.

Endoscopic evaluation may be required to assess the extent and severity of the injury. Delaying it until 12 hours after exposure will allow evaluation of the full extent of the injury (Gwaltney-Brant, 2004).

Endoscopy is contraindicated in patients with severe burns of the hypopharynx, burns involving the larynx or those with respiratory distress. If perforation is suspected or severe hypopharyngeal burns are present, radiographic studies with water-soluble contrast media may be used instead. Endoscopy should be avoided in the sub-acute phase (5-15 days) because of tissue sloughing and softening with the consequent increased risk of perforation (Zargar et al, 1991).

Therapy should include analgesia and gastroprotectants – H_2 blockers (such as famotidine, ranitidine, cimetidine) and proton pump inhibitors (such as omeprazole and sucralfate).

Steroids are frequently used in the management of corrosive injury; but analysis of human cases has demonstrated that they are not required for mild injury and appear to be ineffective in preventing stricture formation in patients with severe burns (Pelclová and Navrátil, 2004; Fulton and Hoffman, 2007). If used, steroids should be started within 24 to 48 hours of the injury because the major inflammatory insult occurs within the first 48 hours; and, after this time, steroids have little antifibroblastic activity.

Steroids should not be used in animals with active infection, perforation of the gastrointestinal tract, secondary mediastinitis or significant gastrointestinal bleeding.

Antibiotics are only recommended in animals with evidence of infection.

In severely affected animals, aggressive intervention is essential:

- intravenous fluids should be given for shock
- if possible, blood gases should be monitored and corrected, if necessary
- abdominal and chest X-rays need to be taken to check for perforation – if perforation is suspected or severe hypopharyngeal burns are present, radiographic studies with water-soluble contrast media may be used instead
- intubation and ventilation may be necessary for animals with respiratory distress
- soft foods should be given to animals with suspected oesophageal injury

 in severe cases, syringe feeding or even parental feeding or placement of a PEG (percutaneous endoscopic gastrostomy) tube may be required.

Paint, oil and other sticky things

Some of the most common 'inhabitants' of outdoor storage spaces are leftover, partially opened tins of paint, oil or varnish. Spillage and accidental contact with these often occurs and will result in skin exposure – and cats, of course, will then groom relentlessly.

Whilst generally of low acute toxicity, these substances are difficult to remove from hair and fur. Before washing or wetting the animal, an application of a vegetablebased oil – even margarine or butter – will emulsify the sticky substance, making it easier to remove subsequently with water and a mild detergent. The commercially available preparation Swarfega works in the same way, again on dry fur or hair.

If the animal is coughing, retching or vomiting, it would be advisable to check lung sounds as there is a notional risk of an aspiration pneumonia from oil or solvent-based preparations.

References

Gwaltney-Brant S (2004). Toxicology of common household hazards. http://www.vspn.org/ Library/misc/VSPN_M01290.htm

Herbert K and Lawrence JC (1989). Chemical burns. Burns 15(6): 381-384.

O'Donoghue JM et al (1996). Caustic soda burns to the extremities: difficulties in management. Br J Clin Pract 50(2): 108-109.

Pelclová D and Navrátil T (2004). Corrosive ingestion: the evidence base. Are steroids still indicated in second and third degree corrosive burns of the oesophagus? [Abstract]. Clin Toxicol 42(4): 414-416.

Zargar SA et al (1991). The role of fibroptic endoscopy in the management of corrosive ingestion and modified endoscopic classification of burns. Gastrointest Endosc 37(2): 165-169.

Ipswich Veterinary Centre



The opening of this new state-of-the art veterinary and veterinary nurse teaching hospital in Suffolk has been met with great support from pet owners, student nurses, veterinary surgeons and referring veterinary practices.



he new Centre offers a range of services on a referral basis, as well as providing local practices with access to specialist equipment as an outpatient service. With postgraduate education and professional development for all staff as a central tenet, the Centre also hosts a continuing programme of CPD courses and refresher days.

Facilities include hydrotherapy, physiotherapy, CT imaging and companion animal behaviour training as well as surgical, medical and diagnostic capabilities. With transport links to London, Norwich and Cambridge and a growing diverse client base to serve, the opportunity to open in Ipswich was taken by the Stowe Veterinary Group partnership.

The success of the Centre has escalated, with new services and facilities being continually developed and expanded. With feedback from clients and staff conveying an appreciation for the quality and fine detail applied to the design and construction, the hospital seeks to provide an excellent service to its referring practices.

The teaching hospital located at Ipswich Veterinary Centre is an extension of the existing premises in Bury St Edmunds and Stowmarket where ophthalmology, orthopaedic, small animal dentistry, and exotic pet referral services are based.

Outpatient services

The Centre offers practices a range of outpatient facilities as well as full case referrals.

Partner, Tom Webster, says: "Having a readily available CT service for pets can be a huge help in the diagnosis and treatment of many conditions. We are very pleased to make this and other services available to local practices."

With a varied and extensive repertoire of surgical expertise, the Centre offers TPLOs, TTAs, total hip replacements and a range of minimally invasive surgical procedures. The practice also accepts referrals for reconstructive dentistry and oncology, with subsequent procedures and specialisms being added all the time. The hospital group offers rehabilitation services comprising





acupuncture, physiotherapy and hydro-therapy, housed within purpose-built areas and run by specially trained practitioners. For ongoing maintenance and convenience, the Centre also offers pet grooming and has an extensive pet shop, providing clients with the opportunity to address all their pet's needs.

Forward thinking

"It's fundamentally important in all decision-making to employ vision," says partner, Martin Barrow. "Cater for how you want the Centre to function in years to come. This is the group's fourth new-build and

we have embraced new developments in veterinary science as well as best ways to deliver professional veterinary services".

Accessibility to the resource is key. For practices looking to use the specialist services on a referral basis – or for those bringing their pets to the practice – there is easy access to the site with ample parking.

Maintaining a high level of service commands a good work ethic from its team of staff. Priding themselves in reinforcing a positive work environment, the management at the Centre strive to provide staff not only with the opportunity to train and work with great facilities, but also to develop professionally and extend their skill sets with opportunities for career progression.

Educating

Further reinforcing its presence as a veterinary hub, the Centre hosts the Ipswich campus of the Central College of Animal Studies. The campus provides both full and part time veterinary nurse training, veterinary CPD and postgraduate training for vets and nurses as well as dog grooming courses and client education classes.

Access to the knowledge and expertise of the staff on site and enjoying the benefits of the facilities means that the College is able to offer its students the experience of learning in a brand new, custom-built environment.

Client education also has its place at the Centre, with additional services including canine agility, client training courses, puppy training courses, obedience, and canine behaviour consultations.



Hydrotherapy unit.



CT scanner.



Small animal dentistry.



Training students at the Centre.



Design influences

When walking around the Centre, the impression is one of space and perspective. It has been built with the luxury of an opportunity to create spacious, open areas designed to accomodate everything with comfort - from the waiting room and shop through to the theatres and kennels.

Using current practices as a benchmark, Stowe Veterinary Group not only consulted specialists and architects when finalising measurements and floor plans, but also made staff feedback a priority when adjusting templates. Practice manager, Denise Wright, explains why staff input was so vital. "The design was all about flow. Being able to make a brand new space to help everybody achieve their best at work."

Designing and equipping the training areas was a collaborative process with the Central College of Animal Studies providing vital information about how best to utilise the space. The build itself was conducted with strict deadlines and planning to ensure that, on opening day, quality and detail were not compromised.

"The design was all about flow. Being able to make a brand new space to help everybody achieve their best at work"





Reception area.



Ultrasound.



Operating rooms.



Donald Mackintosh and piglet.







Digital imaging.



Tribute

Whilst impressive in its sleek and clean appearance and its modern fixtures and fittings, the Centre is an acknowledgement of growth and expansion from more humble beginnings. The decision to name the road built to accommodate the Centre, 'Donald Mackintosh Way', is a tribute to an early partner of Stowe Veterinary Group, as a testimony to the long term hard work and investment often required to develop a practice of such size and scale.

Donald Mackintosh was well known and respected in Suffolk's community and amongst his peers. One half of the 1960s founding duo 'Shorter and Mackintosh', he was influential in the Suffolk farming industry and renowned by his contemporaries.

Roger Harvey, a friend and colleague of Donald's and a partner at the Stowe Veterinary Group, said of the new road name: "It is a lovely way to remember his contribution to the veterinary profession, during a career that spanned over 50 years."

Without losing the personal and personable appeal of an independent veterinary practice, the Centre boasts a wealth of opportunity for clients, staff and referring surgeries alike.



Declan O'Rourke MVB MBA FRCVS

Declan graduated from University College, Dublin in 1979. Following a couple of years in practice in England and Canada, he worked for over 20 years in the animal health industry. In 2006, he set up Ortec Consultancy specialising in pharmacovigilance, marketing and technical support and clinical trial management.

He holds a Diploma in Marketing, a Master of Business Administration and a Fellowship of the Royal College of Veterinary Surgeons; and is an honorary associate professor at Nottingham veterinary school, past president of the British Cattle Veterinary Association and a member of the Veterinary Products Committee (VPC).



*Suggested Personal & Professional Development (PPD)



PHARMACOVIGILANCE

Adverse events in companion animals

In the third article of this three-part series, adverse events (AEs) in companion animals (dogs and cats) are reviewed.

Pharmaceuticals

We shall begin this section by examining the most common adverse events seen in practice – those involving non-steroidal antiinflammatory drugs (NSAIDs).

NSAIDs

In dogs, these are associated with the digestive tract - vomiting, diarrhoea, haemorrhagic diarrhoea, for example; and long-term use can lead to more serious effects, such as gastric ulceration and disorders of the liver and kidney (**Table 1**). Idiosyncratic hepatotoxicity has been described in Labrador retrievers treated with carprofen at recommended doses.

Use of NSAIDs in cats is not without risk. In 2008. the Veterinary Medicines Directorate (VMD) received nine reports of renal dysfunction in cats. Products containing meloxicam are contraindicated for the treatment of animals suffering from gastrointestinal or haemorrhagic disorders, or with impaired hepatic, cardiac or renal function. Whenever possible - and particularly in older animals - it is important to screen cases to determine their health status, before

initiating treatment. In 2009, there were nine reports associated with the oral administration of meloxicam after its parenteral administration. This dosage regimen is not authorised for use in cats. Of these nine cases, eight cats developed renal insufficiency and one developed dyspnoea and died 48 hours after the start of oral meloxicam administration.

Parasiticides

Ectoparasiticides and endoparasiticides are extremely effective but not without the risk of precipitating adverse events.

Active substance	Number treated	Number reacted	Number died	Clinical signs	Speed of onset
carprofen	1	1	0	lethargy, inappropriate defecation/urination	4 days
carprofen	1	1	blood in vomit, blood in 1 faeces, increased heart rate, death		<= 14 days
meloxicam	1	1	1	inappetence, vomiting, duodenal ulcer, death by euthanasia	10 months
meloxicam	1	1	1	vomiting, abdominal discomfort, abdominal pain, peritonitis, duodenal ulcer, circulatory shock, death	<= 7 days
meloxicam	1	1	0	vomiting, polyuria, polydipsia, anorexia, depression	<= 14 days
robenacoxib	1	1	1	anorexia, emesis, polydipsia, liver failure, death by euthanasia	> 30 days
robenacoxib	1	1	0	elevated liver enzymes, emesis, anorexia, dullness, constipation, icterus	<= 30 days
firocoxib	1	1	0	lethargy, limb weakness, anorexia, melaena, tachycardia, regenerative anaemia, hypoproteinaemia, gastric ulcer	<= 48 hours

Table 1. Adverse events with oral NSAIDs in dogs (Source: 2010-2014 IMB* Annual Reports)

Initially these products were for topical application – with the most common adverse events being skin reactions, such as hair loss, itchiness and redness at the application site, which are normally self-resolving. On very rare occasions, neurological signs, such as tremors and depression, can occur.

Table 2. Incidence of adverseevents in cats involvingpermethrin spot-on authorisedfor dogs

Year	Ratio of number of cat deaths to number of dog doses sold
2006	1 : 416,000
2007	1 : 269,000
2008	1 : 475,000
2009	1 : 216,500
2010	1 : 589,000
2011	1:302,000
2012	1 : 287,500
2013	1 : 473,500

In recent years, tablet formulations have been launched. Their use can lead to vomiting and neurological signs are more common with these formulations.

The use of a permethrin spoton is contraindicated in cats. Typical signs of permethrin toxicity in cats are convulsions, muscle tremor (twitching) and death. It is of concern that there is still a failure to observe the warnings or contra-indications for these spot-on formulations and the number of deaths in cats has not decreased since 2006 (**Table 2**).

Aural products

Use of ear drops containing antimicrobials for otitis can on rare occasions lead to deafness, irrespective of the active ingredient concerned (**Table 3**). This occurs within a few days of treatment and is mainly in elderly dogs. It is reversible in the majority of cases. Whether the deafness is caused by the product used or the actual physical presence of fluid in the ear canal is debatable. In human medicine it is known that the presence of fluid in the ear canal can lead to temporary deafness.

Anaesthetics

Even in a healthy animal, use of an anaesthetic protocol (single product or a combination of a number of products) is not without risk. It is estimated that the incidence of death involving anaesthetics is one in 800. The most common adverse events are those associated with systemic signs within 30 minutes of administration (**Table 4**).

Injectable anaesthetics can cause local reactions. In 2009 and 2010, the VMD received 90 reports associated with propofol. The most common reactions seen were localised injectionsite reactions, including injection-site pain, oedema and, in a few cases, ulceration or sloughing of the skin at the injection site. Lameness resulting from swelling of the limb used for administration of the product was reported.

Ciclosporin

Gastrointestinal signs primarily vomiting and diarrhoea - are the most often-related events, accounting for about 50 per cent of the adverse effects with ciclosporin (Table 5). These are usually mild, do not require treatment, and rarely require discontinuation of ciclosporin. Most of the adverse effects with ciclosporin occur with daily dosing and tend to resolve with acclimatisation, dose reduction or discontinuation.

Enrofloxacin

There have been reports of retinal damage associated with the use of enrofloxacin in cats resulting in temporary or permanent blindness. Investigation revealed that in these cases there was overdosage arising from a failure to weigh patients. Similar findings have been found in the USA where it is recommended that greater attention should be paid to dosage of enrofloxacin in geriatric cats or those with renal or liver impairment.

Table 3. Adverse events with ear preparations in dogs (Source: 2010-2014 IMB* Annual Reports)

Active substance	Number treated	Number reacted	Number died	Clinical signs	Speed of onset
diethanolamine fusidate & framycetin sulphate & nystatin & prednisolone	1	1	0	deafness	5 days
marbofloxacin & clotrimazole & dexamethasone	1	1	0	deafness	<= 48 hours
miconazole nitrate, polymyxin B sulphate & prednisolone acetate	1	1	0	deafness	<= 24 hours
gentamicin, betamethasone & clotrimazole	1	1	0	deafness	<= 48 hours

Table 4. Adverse events with anaesthetics in dogs (Source: 2010-2014 IMB* Annual Reports)

Active substance	Route	Number treated	Number reacted	Number died	Clinical signs	Speed of onset
propofol	IV	1	1	0	'hives', hypersensitivity	<= 24 hours
propofol	IV	1	1	0	tremors, tachycardia, hyperthermia	immediate
propofol	IV	3	3	0	cardiac arrest	<= 30 mins
isoflurane	inhalation	1	1	0	tachypnoea, arrhythmia, bradycardia, muscle tremor	<= 30 mins
isoflurane	inhalation	1	1	0	tachypnoea, bradycardia, muscle tremor, dyspnoea	<= 30 mins

Adverse clinical signs	Absolute incidence ¹
ALL SUSPECTED ADVERSE EVENTS	71.81
vomiting	27.57
diarrhoea	13.46
lethargy	9.58
abnormal test result ²	8.59
pruritus	7.80
anorexia	6.65
hyperactivity	3.22
gingival disorder	2.98
tachypnoea	2.96
polydipsia	2.58

(1) Number of dogs affected/million capsules sold

(2) Includes various clinical pathology values outside their normal range

Table 5. Top 10 adverse clinical signs associated with ciclosporintreatment in dogs reported September 2002-March 2012(Nuttall et al, 2014)

Vaccines

The most common adverse event reported with vaccines is anaphylaxis or anaphylactic type reactions - such as vomiting, collapse, pale mucous membranes and circulatory collapse - which can, on occasions, lead to death. This is in line with the Veterinary Products Committee (VPC) report that showed that digestive and systemic signs were more frequent with vaccines when compared to other products (Figure 1).

Lack of efficacy (LOE)

In 2013, the VMD noted an increase in the number of reports related to the treatment of epilepsy; and in 2014, more than half of the LOE cases reported concerned this treatment. This coincided with the authorisation of a new treatment option for this condition. Although a reporting bias can be expected for new formulations, it appeared that many of the cases related to the products not being used in accordance with the summary of product characteristics (SPC).

In 2015, the VMD reminded veterinary surgeons that the product is indicated 'for the reduction of the frequency of generalised seizures due to idiopathic epilepsy in dogs for use after careful evaluation of alternative treatment options'. It is not authorised for the treatment of seizures resulting from other causes and should only be used after consideration is given to other treatments available for the control of seizures caused by idiopathic epilepsy. As a result, it is recommended that veterinary surgeons should not 'transition' dogs from other treatments in those situations where the dog is stable on its current treatment regimen and is not suffering from any adverse effects.

There was an increase in the number of reports involving suspected lack of efficacy to parvovirus vaccination in 2004 and 2005 and this increase continued until at least 2011. In 2006, the VMD requested the marketing authorisation holders (MAH) of UKauthorised vaccines containing canine parvovirus to submit detailed safety reports for their products, in order to



investigate an apparent change in the patterns of efficacy of such vaccines. The possible introduction of the recently described parvovirus type 2c was suspected.

Owing to the many factors influencing the reporting of lack of efficacy, it was not possible to compare the efficacy profile of individual vaccines. The investigation revealed an overall upward trend in the incidence of canine parvovirus in dogs that had been vaccinated according to the vaccine manufacturer's recommendations. Unfortunately, the limited amount of information made it impossible to assess the impact of levels of maternal antibodies in the canine population on the response to vaccination, or to evaluate the effect of the timing of the first booster vaccination.

Benefit/risk

The ongoing collection and analysis of adverse event data allows a veterinary surgeon to assess the benefit/risk of using various products from the point of view of efficacy and adverse events. For example, comparison of topical versus oral formulations of ectoparasiticides indicates that digestive, neurological and systemic signs are more common with the tablet formulation (**Table 6**).

Conclusion

Veterinary surgeons have a key role in ensuring that adverse events are reported. Postauthorisation surveillance (pharmacovigilance) based on spontaneous report data is a powerful tool for detecting adverse event signals of direct clinical impact and helps veterinary professionals in assessing the benefit/risk of the products they use.

* The IMB changed to HPRA (Health Products Regulatory) in 2014. However, for the sake of continuity, IMB is used throughout this article. Figure 1. Vaccine and non-vaccine SARs (1985-1999) – distribution of VeDDRA (Veterinary Dictionary for Drug Regulatory Activities) codes for dogs. (Source: Veterinary Products Committee Working Group on Feline and Canine Vaccination – Final Report to the VPC (2000).



Table 6. Comparison of the occurrence of the most commonly reported clinical signs for spot-on and chewable tablet products for the treatment of external parasites in dogs (Source: Veterinary Medicines Directorate)

	Spot-on	Chewable tablet
disorientation	1.3	1.9
hyperactivity	3.7	0.5
diarrhoea		3.8
emesis	3.5	10.6
haemorrhagic diarrhoea		2.9
ataxia	4	4.3
convulsion	2.6	5.3
muscle tremor	1.5	2.9
pruritus	5.5	0.5
anorexia		4.3
death	3.1	2.4
lethargy	6.2	10.6
application site inflammation	3.3	
application site pruritus	3.7	
application site reaction NOS**	2.4	

**NOS - not otherwise specified (not described)

References

Nuttall T et al (2014). Life-long diseases need life-long treatment: long-term safety of ciclosporin in canine atopic dermatitis Veterinary Record 174 (Supp 2): 2-12.

Suspected Adverse Event Reports to Veterinary Medicinal Products, 2010 to 2014, Health Products Regulatory Authority.

Veterinary Pharmacovigilance in the United Kingdom: Annual Review 2014 (https://www.gov. uk/government/publications/ veterinary-medicinespharmacovigilance-annualreview-2014).



Veterinary nurse training in a professional clinical environment

Training campuses nationwide, talk to us about excellence in veterinary nursing

Veterinary Nursing Assistant > Diploma in Animal Nursing > Diploma in Veterinary Nursing

For more information on nurse training and an application pack T: 01359 243 405 or E: enquiries@ccoas.org.uk

www.ccoas.org.uk

Pet insurance – a casualty of complexity?

A recent survey by the comparison website www.money.co.uk found that it is likely that payment of one in three pet insurance claims is declined. Bearing in mind that the pet insurance market is worth in the region of \pounds 1bn, it seems ironic that so many claims are failing.

Ironic – but not really that surprising. Pet owners used to have the choice of, perhaps, half a dozen different pet insurance companies. In the days before the introduction of regulations by the Financial Services Authority (FSA) restricting the promotion of pet insurance, veterinary surgeons would probably recommend one, or possibly two, insurance companies to their clients – companies they thought provided a good service, whose insurance options were relatively well-defined and the type of policy required, easy to decide upon.

How things have changed! Look on the www.money.co.uk website today and you can find a list of 79 pet insurers from which owners can choose. Add to this the various options and types of insurance that can be bought - then look at all the clauses and restrictions and the whole exercise becomes mind boggling. It is not surprising then that some claims are rejected.

Many of the refused claims will be because clients will have not read the small print or have misunderstood the restrictions or exclusions; and some will, no doubt, have tried knowingly to claim on a policy that does not provide the correct cover.

Whatever the reasons for the failure of the claims, this is a sorry state of affairs. Pet insurance claims are rejected far more often than those for car insurance (1%), home insurance (21%) and travel insurance (13%).

Perhaps insurance companies need to make their policies a lot simpler?

There is a wealth of competition out there offering special deals. So a simple policy that is easy to understand, has no hidden costs or clauses, and does what it says on the label, may just attract a substantial number of weary clients who are tired of wading through involved policy documents – but still worrying about whether or not their pet is insured for the condition that has just developed or the accident that it has just had.

If you 'Google' the phrase pet insurance, you will find that the top six insurance



companies all 'offer' something to potential customers – 45 per cent off, 12 months for the price of eight, a £30 voucher, a £20 gift voucher or a 10 per cent discount by registering online. All this simply adds to the already confused picture and does nothing to help customer choice.

As with all insurance, pet insurance is a gamble. You may spend the equivalent of £500 each year on insuring your cat for 15 years – well over £7,500 in its lifetime – and never make a claim. Or you may, after just one year, have claimed 10 times this amount for your pet's treatment. It is up to owners to decide whether or not to insure their pets; and it increasingly makes sense to do so as the cost of veterinary care rises, in a large part as a consequence of the availability of complex and innovative – but expensive – techniques.

The price of pet insurance varies depending on factors such as breed, age and location, whether it is a working animal or pet, whether the animal is vaccinated, neutered and/ or microchipped, and what previous conditions it may have developed. The main types of policy are: 'accident-only', 'time-limited', 'maximum-benefit' and 'lifetime'; but there are myriad variations within these options.

Under the current pet insurance system, it is difficult to imagine how the rejection of claims will not increase as treatments become even more complex and insurance companies tighten up their claims procedures. The worst case scenario is, of course, that fewer owners will insure their pets because of the fear of claim rejections, preferring to 'take a chance' that their pet will remain healthy. And in the end, it will mean difficult decisions for owners and veterinary surgeons alike and it will be the pets that will suffer.

So pet insurance is a good thing, but it really has to be made more accessible and easily understood by pet owners. The FSA brought in the regulation of insurance back in 2005. Perhaps now is the time when we need some new regulations controlling the *complexity* of insurance – at least in the pet world.



Lesley Tench LLB(Hons) MA Tech IOSH

Lesley has a legal background. Having gained a Bachelor of Laws Degree, she developed an interest in Sports Law and has a Master of Arts Degree in that subject. She is an experienced health and safety consultant, who has worked at Citation Professional Solutions for 10 years, where her primary role is to provide technical and practical health and safety advice to a wide range of businesses and industries, including veterinary clients.

> Lesley has presented on health and safety topics at SPVS/VPMA Congress and the SPVS/VPMA 'Focus on Human Resources' day and, prior to working at Citation, she worked for a publishing company and a high street bank, providing guidance, advice and drafting legal documentation.



*Suggested Personal & Professional Development (PPD)



HEALTH AND SAFETY

Health and safety in an equine veterinary practice

Health and safety legislation applies to all organisations, including veterinary practices. However, many businesses – irrespective of their type or profession – can view health and safety as an inconvenient and time-consuming burden. It is often found that where priority for the provision of health and safety is low, an unsafe working environment can develop. This may lead to accidents and injuries, followed by the potential for enforcement authority action, such as improvement or prohibition notices, fines and civil claims for personal injury, for example.

Why does health and safety matter?

Before I refer to the particular hazards faced by equine veterinary employees, and how those can be managed, I shall provide a summary of the health and safety obligations that are placed on both employers and their employees (**Figure 1**).

There are moral and legal reasons why health and safety is important to all organisations. Society expects good standards of health and safety and it is unacceptable for people to be made ill, injured or even killed as a consequence of their work. Therefore, we all have a moral duty of care towards other people who might be affected by our actions at work.

From a legal perspective, there is also a civil duty of care on employers and individuals to protect people from harm. A breach of this duty can lead to a potential claim of negligence, if someone owed a duty of care is injured through the negligent actions of someone who owes that duty of care.

From a veterinary practice perspective, it has a duty of

"... we all have a moral duty of care towards other people who might be affected by our actions at work"



Figure 1. An employer has health and safety obligations to its employees and clients.

care to its employees who could sustain injuries from the work they do, either at the practice or whilst on a client's premises. This duty of care also extends to other people who might sustain an injury at the practice, such as visitors or members of the public.

Health and safety law – primarily defined by the Health and Safety at Work Act, 1974 (HASAWA) – also places legal obligations on employers, employees and self-employed people, whose work activities might have an adverse effect on the health and safety of someone. Thus employers are required to:

- ensure their employees' health, safety and welfare at work and, in doing so, provide them with a safe place of work, safe tools and equipment and sufficient information, instruction and training in order for them to work safely
- ensure the health and safety
 of other persons who might
 be at risk of harm from work
 being undertaken in the
 workplace. From a veterinary
 practice perspective, those
 at risk include visitors to
 or contractors on the
 practice premises, who
 might inadvertently be
 exposed to hazards such
 as discarded 'sharps' or
 hazardous waste.

There is also a duty placed on self-employed people,

"While head protection might not prevent an accident occurring, it is almost certain to reduce the severity of a head injury, should there be an impact from a horse"

such as veterinary locums, to protect other people who are not their employees from any harm associated with the work they undertake, whether at a practice or on a client's premises.

Employees, too, have obligations. They are expected to exercise reasonable care whilst at work and consider the effect their actions might have on the health and safety of not only themselves but also of colleagues, visitors to the practice, or clients they visit.

Hazards faced by equine veterinary employees

According to figures published by the Chartered Institute of Environmental Health (CIEH) (Sinclair-Williams, 2015), there were an estimated 944,000 horses in Great Britain in 2015 and it is reasonable to expect that a significant number of these will require some form of veterinary treatment during their lifetime.

With these figures in mind, it is no surprise to find results of a study commissioned by the British Equine Veterinary Association (BEVA) showed that an equine vet was at risk of sustaining up to seven or eight work-related injuries (inhibiting them from practising) during, say, a 30year career.

Being an equine vet carries the highest risk of injury of *any* 'civilian' occupation (BEVA, 2014). This is based on the number of equine vets who sustained an injury compared with figures obtained from the Health and Safety Executive (HSE) relating to workers in other high-risk work environments, such as the construction industry, which have a high injury rate but which employ a much greater number of workers.

The study involved more than 600 equine vets who completed a work-related injuries questionnaire that asked them to describe the 'worst-ever' injury they had sustained whilst working with horses, which part of their body sustained those injuries, and how (**Table 1**).

It is a legal requirement for employers to assess the significant hazards that pose a risk of injury to their employees and other persons (RCVS, 2015).

Although equine veterinary work, and the premises where this takes place, will be subject to many hazards found in other types of veterinary practice - 'slips' and 'trips' and the use and handling of medicines/ pharmaceuticals and chemicals, for instance - there are additional hazards associated with the treatment and handling of horses, that require consideration, not least the physical size of the animals.

The study conducted by BEVA found that many injuries sustained by equine vets appeared to be more common during certain procedures - such as endoscopy of the upper respiratory tract, when vets are only partially sighted whilst using examination equipment; or during wound management/changing dressings, when vets can be crouched next to the horse for quite some time.

Other work involving the handling of horses that carries a high risk of harm includes, dental work (**Figure 2**), scans, radiography and other examinations for diagnosis or for a proposed purchaser. The risk of harm can be exacerbated further by a number of factors, including:

- situations where the behaviour or temperament of a horse is unknown – for example, when attending a call-out to an incident involving a horse
- working on a third party site, where there might be insufficient assistance, inadequate restraint equipment and little control over the working environment/site traffic.

Controlling the risk of harm

Once hazards associated with the handling of horses have been identified – along with who might be harmed and how – the risk of injury must be assessed and adequate controls put in place, such that the risk of harm is reduced to as low a level as possible in circumstances where it cannot be eliminated altogether.

Control measures include:

- awareness of the behaviour/temperament – being aware of, or making enquiries about, the temperament/behaviour of the horse
- sedation standing sedation used prior to physical examination, such as when scanning tendons and ligaments, or prior to some treatments, such as suturing wounds

Figure 2. Equine dental work carries a high risk of harm.

Table 1. Work-related injuries sustained by equine veterinarysurgeons (BEVA, 2014)

most common injuries sustained	fracturesbruisinglacerations
most common causes of injury	 kicks from a hind limb (49%) strikes by a forelimb (11%) crush injuries (5%)
most common sites of injury	leg (29%)head (23%)
hospitalisation of injured party	2 5%
injured persons who became unconscious	• 7%





 restraint - use of (or a combination of) stocks, twitch and experienced/ trained handlers, for example.

Personal protective equipment

Personal protective equipment (PPE) is deemed to be 'the last resort' in the hierarchy of controls during the risk assessment process. This is because other controls – those that might offer protection to more than one person, for example – should be considered first.

That does not mean, however, that PPE should be disregarded altogether. Some PPE – protective gloves, eye protection and non-slip footwear, for example – is routinely worn.

Head protection

The BEVA study shows that one of the most common sites for injury sustained by equine vets is to the head and, currently, there is much debate as to whether head protection should be worn by those people handling horses. Following the study, the former BEVA president reported on the association's concern as to the number of equine vets who suffered head injuries and unconsciousness (BEVA, 2014).

Health and safety law does not expressly require head protection – such as a helmet – to be worn. The decision rests, in part, on the results of risk assessments; although that does mean to say it should only be worn when an assessment justifies it.

If, whilst handling horses, there is a risk of veterinary employees sustaining a head injury and that risk cannot be adequately controlled by other means (not forgetting that some tasks will never be free of some risk,) then head protection should be considered. While head protection might not prevent an accident occurring, it is almost certain to reduce the severity of a head injury, should there be an impact from a horse.

It is also important to consider that use of PPE should not create additional hazards - for example, if head protection is worn and then restricts the wearer from being able to see properly what they are doing, thereby potentially putting themselves, colleagues and clients at risk of harm.

At the time of writing, there appears to be both support for - and resistance to - the wearing of head protection; with younger employees appearing to be more amenable to the idea. During a recent presentation that I gave to a number of equine vets and nurses, the subject of head protection was discussed. There was a mixed response to a suggestion that it should be worn, with junior veterinary staff indicating that they were expected to wear a helmet, but their peers not so.

It was also implied that experienced veterinary staff – many of whom were employers – wanted to protect junior, less experienced, workers until they had gained more experience. But what many employers do not always appreciate is that they too are employees of the practice and are also obliged to consider their own health and safety. Experienced veterinary staff could lead by example and wear head protection, if it reduces the risk of injury.

The argument for wearing head protection has been strengthened, with the 'Think Ahead – Wear a Helmet around Horses' safety campaign set up by a veterinary surgeon. This encouraging equine veterinary staff to wear head protection routinely in a bid to cut down on the number of injuries and deaths in the profession (Think Ahead, 2016).

Putting health and safety into your practice

Although it is important for people to be aware of the hazards they face at work, it is equally important for practices to manage and control these properly. To do this successfully – and to comply with statutory requirements – practices are required to have a health and safety policy (HASAWA in RCVS, 2015)

This should describe how health and safety will be managed, by what means, and by whom. It need not be complicated but must be clear and appropriate for the practice and comprise the following:

- statement of intent a general policy statement, setting out the practice's commitment to health and safety and what is to be achieved
- responsibilities clear lines of responsibility defining who within your practice is to do what in terms of health and safety. It would be impractical for just one person to manage health and safety, so certain responsibilities can be delegated amongst various employees within the practice, for example:

"Although a health and safety policy sets out the 'what', 'by who' and 'how', it will only be effective if it is regularly monitored and reviewed – and employees follow it"
- practice managers who might oversee the safe operation of the practice, arrange for equipment to be serviced and maintained and record and investigate accidents
- veterinary surgeons and practice nurses – who can be involved in creating risk assessments associated with the work they undertake
- reception staff who are often in charge of safety in the reception and other communal areas
- defined health and safety roles - such as health and safety officers, firstaiders, fire wardens, radiation protection supervisor (RPS) and radiation protection adviser (RPA).

Policy arrangements should reflect the results of risk assessments and contain the detail of what the practice is to do to achieve the commitments set out in the statement, for example procedures for dealing with emergencies, fire safety, first aid and welfare arrangements and accident reporting.

Although a health and safety policy sets out the 'what', 'by who' and 'how', it will only be effective if it is regularly monitored and reviewed – and employees follow it.

A policy should also be supported by other documented procedures, which form part of the overall management of health and safety. These include safe working procedures – for example, on the use of lifting, surgical and laboratory equipment and veterinary practice standards.

Consulting on health and safety matters

Employees must also be consulted on health and safety matters. This not only means providing them with health and safety information – such as emergency procedures and results of risk assessments – but also involving them in the development of such (RCVS, 2015).

Engaging employees in this way helps form a more positive safety culture, leading

PPD Questions

 Health and safety law places obligations on groups of people, to ensure the health and safety of other persons who might be effected by their actions. To which one of the following does this obligation apply?

to a safer and better managed

working environment, lower

accident rates and higher

workforce morale.

- A. employers only
- B. employees only
- C. self-employed persons only
- D. employers, employees and the self-employed
- 2. When controlling the risk of harm, why is personal protective equipment (PPE) deemed to be the 'last resort' in the hierarchy of control?
- 3. Can you name three 'defined' health and safety roles that might be found in a veterinary practice?
- 4. Although the law does not specifically require head protection, such as helmet, to be worn, can you give a reason why it should be considered?

controls, for example those that might offer protection to more than one person, should be considered first 3. radiation protection supervisor (RPS); radiation protection adviser (RPA); health and safety officer; first-aiders; fire wardens 4. head protections such as a helmet, might reduce the severity of a head injury, upon impact from a horse. Head protection should also be considered if there is a visk of head injury and there are no other means of controlling that risk.

1.D 2. PPE is deemed to be 'the last resort' in the hierarchy of controls as other controls. For example those that might offer protecting to more than one percent controls.

Answers

References

BEVA (2014). www.beva.org.uk/ news-and-events/news/view/641

RCVS (2015). The Management of Health and Safety at Work Regulations and as described in Module 15.1.16 and 15.1.18 - RCVS Practice Standards Scheme -Modules and Awards - Equine - Core Standards.

RCVS (2015). Module 15.1.15 -RCVS Practice Standards Scheme - Modules and Awards – Equine -Core Standards.

RCVS (2015). In accordance with HASAWA and as described in Module 15.1.13 and 15.1.14 -RCVS Practice Standards Scheme -Modules and Awards - Equine - Core Standards.

Sinclair-Williams M and Sinclair-Williams K (2015). Chartered Institute of Environmental Health – Health and Safety in Horse Riding Establishments and Livery Yards. ISBN 978-1-910676-10-3.

Think Ahead (2016). www.thinkaheadcampaign.org



Marie Rippingale BSc(Hons) REVN clinical coach G-SQP DipHE CVN DipAVN(Equine)

Marie is head equine nurse and a clinical coach at XLVets practice Scarsdale Vets in Derby. Marie is also a lecturer on the veterinary nursing diploma course at Bottle Green Training, Melbourne, Derbyshire.



*Suggested Personal & Professional Development (PPD)



RESPIRATORY

Equine respiratory system: a practical approach for nurses

Horses are natural athletes and require peak physiological function at all times. Respiration is the process by which the horse takes oxygen into its body and also rids the body of carbon dioxide in order to retain optimal function of all its body tissues, especially those associated with exercise.

All veterinary professionals must have knowledge of respiratory anatomy and function in order to be able to identify problems and take appropriate action.

The equine respiratory system consists of the airways of the head and neck, and the lungs. It is, in essence, a series of tubes, starting at the nostrils and ending as a multitude of tiny, thin-walled sacs called alveoli which are in intimate contact with a dense network of blood capillaries (Pilliner & Davies, 2004). The structures involved are the:

- nasal cavity
- pharynx
- guttural pouches
- larynx
- bronchi
- Iungs
- pleural cavity.

Nostrils and nasal cavity The nostrils of the horse are

large and widely spaced, with flexible margins allowing the nasal opening to dilate to increase airflow during exercise. The dorsal part of the nostril leads to a blind-ending pouch known as the false nostril or nasal diverticulum and the ventral part of the nostril leads into the nasal cavity.

This is significant in practice because instruments such as stomach tubes or endoscopes must be introduced into the lower (ventral) part of the nostril to be passed successfully.

The nasal cavities are air-filled spaces that extend caudally from the nostrils to the front of the cranial cavity, divided in the midline by the nasal septum. Turbinate bones (or conchae) project into the nasal cavities from the dorsal and lateral walls. At the caudal aspect of the nasal cavity, the conchae form the complex ethmoidal labyrinth.

The function of the turbinates is to warm, moisten and clean inhaled air. This is important as the air has to move through approximately two metres of 'tubing' within the horse's respiratory tract before it reaches the lungs (Clegg et al, 2012).

Pharynx

The pharynx is the portion of the upper airway that is caudal to the nasal septum and rostral to the larynx. The nasal passages open caudally into the nasopharynx; whereas the oral cavity opens at the back of the mouth into the oropharynx.

The nasopharynx and the oropharynx both communicate with the pharynx but are separated by the soft palate, which is overlapped by the epiglottis. Most of the time this overlapping shuts off the mouth and allows free passage of air to the larynx. Horses, therefore, can only normally breathe through their nostrils and not through their mouths; and this is why they are known as obligate nasal breathers (as are rabbits!).

The guttural pouches form the dorsal and lateral borders of the pharynx (Pilliner and Davies, 2004; Clegg et al, 2012).

Guttural pouches

The guttural pouches are paired enlargements of the Eustachian tube, lying on each side of the head, between the base of the skull and atlas dorsally, and the pharynx ventrally. Each pouch has a capacity of 300 to 500ml and is divided into a large medial and small lateral compartment by the stylohyoid bone.

The true function of the guttural pouches is unknown. They are clinically important because the internal carotid artery, the glossopharyngeal nerve (cranial nerve IX) and the vagus nerve (cranial nerve X) are contained within them.

Associated conditions include strangles and guttural pouch mycosis (Clegg et al, 2012).

Larynx

The larynx is the biological valve lying in the midline at the most caudal aspect of the mouth. It forms the entrance to the trachea and has a complex

"Horses, therefore, can only normally breathe through their nostrils and not through their mouths" arrangement of muscles, ligaments and cartilages, lined with mucous membrane.

Laryngeal functions include:

- protecting the airway during swallowing, so food does not enter the trachea
- controlling the flow of air into the trachea during exercise
- producing vocal sounds (Clegg et al, 2012).

Bronchi

The bronchi divide into lobar bronchi, then into smaller airways called bronchioles, which subdivide into smaller and smaller branches. Terminal bronchioles end in alveolar ducts that open into the alveoli. These have very thin walls, no cilia and a rich capillary blood supply to allow the interchange of respiratory gases (Clegg et al, 2012).

Lungs

The left and right lungs have no fixed shape, and the right lung is slightly bigger than the left. They contain elastic tissue which allows the expansion and collapse of the lungs during respiration.

In the horse, respiratory rate is linked to its gait. At the gallop, the stride rate equals the respiratory rate and this is known as locomotoryrespiratory coupling. This mechanism prevents the muscles of breathing and the muscles of movement from working against each other. As the galloping horse lifts its limbs, the head is raised, the guts move back and the horse breathes in. As the limbs land, the head drops, the guts move forward and the horse breathes out (Pilliner & Davies, 2004).

Pleural cavity

Two thin serous membrane layers - the pleura - line the thorax. The outer layer, the parietal pleura, covers the inner wall of the thorax; the inner layer, the visceral pleura, covers each lung. There is a thin film of fluid - pleural fluid between the two layers to allow them to slide over one another.

The pleura form two closed sacs on each side of the thorax, with the space between them (mediastinum) containing the heart and other thoracic organs (Clegg et al, 2012).

Nursing horses with respiratory disease

Recurrent airway obstruction (RAO) is particularly relevant for RVNs because horses are often admitted to the hospital with signs of this as a secondary condition. It is very important for RVNs to be able to manage horses with RAO as part of a holistic nursing approach.

RAO is a chronic respiratory condition where the horse develops a sensitivity to dust antigens in the environment (Scorer, 2006). When horses with RAO are exposed to allergens, a complex inflammatory cascade is initiated that results in narrowing of the airways and difficulty in breathing (dyspnoea). Monitoring and medical management for an RAO case include:

- environmental management (as discussed in a previous article)
- assessment of respiratory rate – the rate of inspirations or expirations should be counted over one minute (Snalune & Paton, 2012). The normal respiratory rate for a horse is eight to 12 breaths per minute. Lung sounds can also be assessed with a stethoscope (Figure 1)
- assessment for dyspnoea

 a characteristic 'double breath' (heaves) is commonly seen with RAO cases, with the development of a 'heave line' in the caudal abdomen (Snalune & Paton, 2012)
- assessment of mucous membranes – normal would be pale pink in colour. Capillary refill time (CRT), assessed by blanching a

gum with finger pressure and then recording the time for normal colour to return, should be one to two seconds. The mucous membranes may become cyanotic (bluish) if blood oxygenation is reduced as a consequence of illness or lung disease (Snalune & Paton, 2012)

- administering medication

 this can be done orally;
 however, medication often needs to be administered locally (into the lungs)
 in RAO cases. Delivering a high concentration of medication locally can allow the overall quantity given to be reduced and, in some cases, local administration is the only way of achieving appropriate concentrations at the site of action (Roberts et al, 2012)
- local administration of bronchodilators and corticosteroids is achieved with an inhaler device in horses. The RVN must be familiar with using and maintaining the







Figure 2. Twice-daily grooming is a worthwhile adjunct to well-being and recovery.

inhaler when it comes to demonstrating its use to the owner - they are often tasked with taking an inhaler out to an owner on a yard and demonstrating how to use and maintain it

 the RVN may also be required to educate the owner about maintaining the patient in a dust-free environment.

Strangles

'Strangles' is caused by the bacterium Streptococcus equi. The organisms cause local damage to the epithelial lining in the upper respiratory tract and also invade the lymph nodes, precipitating abscesses. In some cases the bacteria may cause systemic infections and produce abscesses at alternative sites in the body, inducing a condition known as 'bastard strangles' which is often fatal. Persistent infections are often established in the guttural pouches.

Strangles is highly contagious and the patient should be isolated immediately. Barrier clothing (disposable over-suits, gloves, aprons and over-shoes) should be worn when dealing with the patient. Nursing care is aimed predominantly at supporting the patient and treating it holistically, rather than just concentrating on the body system affected by the disease.

Patients may have an increased rectal temperature yet will often feel cold. Rugs, bandages and a deep bed should be used to keep them warm and comfortable. They may become depressed too and will benefit from plenty of TLC; so grooming them at least twice daily is very important (**Figure 2**).

Overall, boredom can be addressed by providing licks and stable toys to keep the patient entertained; and the one foodstuff horses will always take an interest in – even if they are unwell – is grass. So it is sometimes helpful to pick grass and feed it to the patient from the floor.

"Because the patient is suffering from respiratory disease, a dust-free environment must be provided"



Figure 3. Endoscopy is an essential part of the diagnostic process.

Because the patient is suffering from respiratory disease, a dust-free environment must be provided. Bedding should be dust extracted and the stable should be well ventilated. Soaked hay or haylage should be fed to reduce exposure to dust, moulds or fungus and all food should be fed from the floor to encourage drainage of mucus. Hard feed should be soaked to make it easier for the patient to swallow and reduce the chance of the patient developing 'choke'.

Hot compresses (surgical gloves filled with warm water) can be applied to abscess sites to encourage maturation and bursting. Any discharge should be cleaned away from the nose or abscess site as regularly as possible, and Vaseline applied to prevent the discharge scalding the skin.

The RVN will be required to assist with endoscopy of the guttural pouches to evaluate the area affected and to obtain diagnostic samples. In most cases, there are few complications from the disease and most horses can be treated at home and make a full recovery. However, in certain cases, patients may also require intravenous fluids and assisted feeding.

Streptococcus equi can survive in the environment for long periods (up to nine weeks) on wood if conditions of temperature and humidity are optimal. This is why barrier precautions and stringent disinfection techniques are essential if the bacteria are to be contained and eradicated once the patient has recovered.

Guttural pouch mycosis

This is a rare - but lifethreatening - condition caused by a fungal infection (usually *Aspergillus fumigatus*) in the guttural pouch. The fungus colonises and erodes the wall of the internal carotid artery within the guttural pouch and may also damage the cranial nerves numbers IX, X and XII.

Symptoms of guttural pouch mycosis include high-volume epistaxis (which may be fatal), dysphagia and dyspnoea. All suspected cases should be investigated promptly by endoscopy of the pouch to confirm the presence of fungi and damage to the arterial wall (**Figure 3**).

Treatment is surgical and involves ligation of the internal

carotid artery and inclusion of an angioplasty balloon proximal to the haemorrhage site (Slater & Knowles, 2012).

Conclusion

A healthy respiratory system is essential to the horse to support it in its athletic function. Specific anatomical and physiological features, such as locomotory-respiratory coupling and being an obligate nasal breather, mean that the horse is unique in comparison most other species and this is something with which the veterinary professional should be acquainted.

Knowledge of the equine respiratory system and function will assist in nursing and result in high quality care being given. A holistic approach will ensure that all body systems are considered when care is given and this will ultimately lead to a faster, more successful recovery.

PPD Questions

- 1. Why would a nasal obstruction be potentially life threatening to a horse?
- 2. Which lung is slightly bigger in the horse the left or the right?
- 3. What is a normal respiratory rate for a horse?
- 4. What is the name of the condition which often arises when the guttural pouches are colonised by the bacterium Streptococcus equi?
- 5. What is Aspergillus fumigatus and what can it cause?

sometimes erode the wall of the carotid artery, causing life-threatening haemorrhage. 6. Aspergillus fumigatus is a fungus that colonises the guttural pouches and can 4. strangles

- 3. eight to 12 breaths per minute 2. the right lung is slightly bigger
- circumstances, breathe through their mouths
- 1. because horses are obligate nasal breathers and cannot, under normal Answers

References

Clegg PD et al (2012). 'Anatomy and physiology' in: Coumbe K (Ed) Equine Veterinary Nursing Manual 2nd edn. Oxford, Blackwell Science.

Pilliner S and Davies Z (2004) Equine Science Oxford, Blackwell Science

Roberts CA et al (2012) 'Medicines and their management' in: Coumbe K (Ed) Equine Veterinary Nursing Manual 2nd edn. Oxford, Blackwell Science.

Scorer T (2006). 'Stable design and management' in: Aspinall V (Ed.) The Complete Textbook of Veterinary Nursing London, Elsevier.

Slater JD and Knowles EJ (2012). 'Medical nursing' in: Coumbe K (Ed) Equine Veterinary Nursing Manual 2nd edn. Oxford, Blackwell Science.

Snalune K and Paton A (2012). 'General nursing' in: Coumbe K (Ed) Equine Veterinary Nursing Manual 2nd edn. Oxford, Blackwell Science.

Central Qualifications Graduation Ceremony

"This is your time to fly!"

In a powerful presentation, TV vet and animal welfare advocate, Mark Evans, inspired the 39 veterinary nurses at the Central Qualifications Graduation Ceremony in London on 11 June.

"You are here today because you are realising a dream and entering the veterinary nursing profession as a career," he said. "Whenever an opportunity presents itself, grab it." He illustrated this point by revisiting a photograph of his year at the Royal Veterinary College on its graduation



Mark Evans, TV vet and animal welfare advocate.



day and pointing out the diversity of jobs that his contemporaries are now involved in. Using a series of entertaining anecdotes about his professional career, Mark emphasised the need for veterinary nurses to retain a flexibility of mind as their careers progressed. They should not undervalue their skills and their ability to make a difference – not only to individual animals, but also to global climate and welfare issues.

He also praised veterinary nurses for their ability to work in teams and encouraged them to use this on a daily basis; and he stressed the importance of recognising the "fantastic, incredible biology" of the animals that we deal with every day. "Extraordinary biology to be nurtured."

"This is your time to fly," said Mark. "What a great time to be taking off!" He said that although specialisation is gathering pace in the veterinary profession at the moment – and that the media heroes appear to attract the limelight – just as heroic are the vets and veterinary nurses working at the coal face of veterinary practice day in day out to promote the very best in animal welfare. The really important areas are those that are preventable – obesity, physical abnormalities, trafficking.



Martin Barrow, chair of CQ governors.

"Just the beginning of a journey"

"Today is about recognising the hard work and achievements of our graduates, and wishing them the very best in their veterinary nursing careers," said Martin Barrow, chair of CQ governors, as he addressed the newly qualified veterinary nurses and their families and friends at the graduation ceremony in Central Hall, Westminster on Saturday 11 June.

It was, indeed, a special occasion being held only a stone's throw away from the Trooping of the Colour and the celebrations being held to mark HM Queen Elizabeth's 90th birthday.

Quoting the ancient African proverb, 'It takes a whole village to raise a child', Martin pointed out that the "village community" that had helped to "raise" this year's CQ graduates comprised the staff from 12 colleges and 400 veterinary practices, "making a total of about 750 lecturers, practical tutors and clinical coaches who had contributed to the training of the nurses who are graduating today."

Martin also reminded the nurses of the role played in their success by their family, friends and colleagues, and asked them to find a few moments to thank all those people who had helped them on their journey. "And when the opportunity arises," he added, "do your best to pass on your skills and knowledge to help train the next generation of veterinary nurses ... and veterinary surgeons."

"I want to see vet nurses doing more to stand up for the welfare of animals, not only in practice but at global and government levels. Please don't just bury your heads in the everyday workload. Stand up, stand back and speak out. It is time for you to be heard, challenge tradition and dare to do things differently..."

"But most importantly, whenever you have the chance to speak for animals, make sure you shout out on their behalf"



"Do your best to pass on your skills and knowledge to help train the next generation of veterinary nurses ... and veterinary surgeons"











Sacha Bailey and family.

Sacha Bailey began her veterinary nursing career with six years working in practice in Malmesbury; but has recently moved to a referral practice in Swindon, where she specialises in 'in-patient care' and particularly enjoys seeing a wide variety of cases.

Speaking about the CQ course she said that it was good and that she "would recommend it to anyone." Sacha especially enjoyed the practical side of the course and achieved a 100 per cent mark in her OSCEs.





Lisa Scrivener and Mark Evans.

Rachel Philip is a veterinary nurse from St Clears in Carmarthenshire. She has been working in the practice for a total of 10 years and began her training with CQ two years ago.

She said that she found the course a "tough, but good, experience" but was "glad to have got here and proud of her achievement" something echoed by her family, especially her mother, Lesley, who had trained as a human nurse.

Lisa Scrivener is a veterinary nurse from Stowmarket who enjoys theatre nursing. She has been in practice for 14 years and embarked on the CQ course just over two years ago.

She said its content and learning style had "particularly appealed"; and that although she had found it "hard work", she too was "glad it was all over and proud to be graduating."

ONLINE EDITION

SOCIAL REVIEW



























Centre, left to right: Mark Evans, Fiona Andrew, Samantha Morgan, Martin Barrow, Jacqui Garrett with the CQ graduates.























Owen Atkinson BVSc DCHP MRCVS

Owen is a farm animal vet who worked for over 20 years in clinical farm practice before establishing Dairy Veterinary Consultancy, based in Cheshire but covering the whole UK – and occasionally overseas. He provides strategic health advice and tailor-made training to ruminant and dairy agri-businesses, as well as veterinary practices and primary producers. He also offers a second-opinion and referral service for practices. Owen was awarded the Diploma in Cattle Health and Production in 2013 and is an RCVS recognised specialist in Cattle Health and Production, and a CowSignals master trainer. He has particular professional interests in bovine lameness, youngstock management, building design, rumen health (nutrition), herd fertility, transition cow management and responsible use of veterinary medicines. He can be contacted at owen@ dairyveterinaryconsultancy.co.uk



*Suggested Personal & Professional Development (PPD)



JOHNE'S DISEASE

Control of Johne's disease on dairy farms

The UK dairy industry has come together to try and control Johne's disease. This article looks at the role of the veterinary surgeon and how we can contribute to reducing this pernicious infection.

Johne's disease is caused by *Mycobacterium avium*, sub-species *paratuberculosis* - MAP for short. It is a chronic, debilitating disease of cattle, leading ultimately to terminal weight loss and scour. Prior to the obvious clinical presentation, there is a long period of a non-infectious carrier state, and then an infective period with low-level production losses and higher susceptibility to other diseases, such as mastitis and lameness.

The progression of disease is variable and unpredictable between individuals, with some cows progressing rapidly to full-blown Johne's disease once they start to be infective and others seemingly persisting in a subclinical – but infective – state for months or even years.

Animals are usually infected as calves, though transmission in older cattle can occur. Figure 1 shows the relative susceptibilities to infection by age. The MAP bacteria enter macrophages in the Peyer's patches of the intestine where they live and replicate without stimulating either a humoral or cell-mediated immune response. Not only, therefore, do they elude the host's usual immune system, but also, without an antibody response, the infection is undetectable by usual ELISA serology methods until shortly before clinical signs and/or shedding occur. The majority of MAP-infected cattle in a herd will be nonclinical, seronegative carriers.

At the point when the bacteria begin to replicate more rapidly

and infective faecal shedding begins, animals also become seropositive. However, 'shedders' can be seronegative and shedding is intermittent. At a point further in time, the animal develops clinical signs. By the time scour is evident, shedding is always occurring and at high levels. Within a herd, adults are the main shedders and youngstock – particularly under the age of six months – are the most susceptible.

Figure 2 shows a typical high-risk situation – a high cell count 'aunty' cow suckling replacement heifer calves. The main route of infection is faecal/oral – with MAP bacteria from faeces contaminating teats, feeding equipment, troughs, straw bedding and pasture. **Figures 3** and **4** list the main routes of infection onto a farm, and within a herd. By far and away the most common scenario is for spread within a herd from an infected adult shedder to one or more young calves.

Certain practices are particularly risky for spreading the disease within a dairy farm, including feeding pooled milk and colostrum, both of which may be infected in

Figure 1. Relative susceptibilities to infection by age.

- 0-6 months
- 6-12 months

>12 months (adult)

decreasing susceptibility to infection

Figure 2. A typical high-risk situation – a high cell count 'aunty' cow suckling replacement heifer calves.





Figure 3. Routes of infection onto a farm.

their own right, or by faecal contamination; group housing calves close to adult cattle; calving infected cows in calving yards or pens that are later used for other dams; and generally poor hygiene.

'Action Johne's Initiative

The MAP bacterium has been linked to Crohn's disease in man, although evidence that it is causative is equivocal at best. Nevertheless, the potential link is reason enough for milk buyers to take Johne's control very seriously.

As far as farmers are concerned, they should take notice because Johne's infection causes huge economic losses on dairy farms and, left unchecked, it can cripple a dairy herd with unsustainably high losses from clinical disease and poor production. These reasons are why stakeholders in the UK dairy industry have pulled together to create the 'Action Johne's Initiative'. This is a strategy to control, reduce and, eventually, eradicate Johne's disease from the national herd.

The first part of the National Johne's Management Plan (NJMP) is for participating farms to know their status their likelihood of having the infection within the herd. This should have been done by April this year. The plan is being driven by milk purchasers and retailers, so different levels of engagement reflect different milk contracts to some extent.

A large proportion of herds now understand their status from either strategic cull cow screening or a targeted 30cow screen, both using ELISA tests in milk or blood. It is estimated around 66 per cent of herds are Johne's positive.

As well as knowing their status, farms are encouraged to perform a risk assessment in conjunction with their veterinary surgeons. There is no prescribed method for this, although several risk assessment checklists exist the MyHealthyHerd and the Animal Health Ireland JD risk assessment tool, for example. The risk assessment should include biosecurity (risk of bringing infection into the herd) and biocontainment (risk of spreading within the herd).

The next part of the NJMP is for farms to adopt one of six management strategies. From October 2016, this must be done in conjunction with a veterinary surgeon who is accredited by the British Cattle Veterinary Association (BCVA) to be fully conversant with the plan and the control strategies – a so-called BCVA Accredited Johne's Veterinary Adviser (BAJVA).

The BCVA has recently launched an online training and assessment programme in order for veterinary surgeons to become accredited. A list of BAJVAs will be displayed on the Action Johne's website. The overriding reason for the industry requesting this

accreditation process is so that there is a consistency of message amongst veterinary professionals, which is then more likely to result in a coordinated approach on farm.

The six control strategies (Figure 5)

Previous research has shown that once Johne's is established in a herd, it takes time and a consistent approach to reverse an exponential trend of increased infection prevalence. As carriers are predominantly undetectable, a test-andcull policy by itself will not halt new infections, and infection will remain in the herd. Likewise, improving management practices, such as snatch calving and feeding heifer replacements calf milk replacer, will reduce the rate of spread but is unlikely to eliminate the infection from the herd.

A combined approach improved management practices plus test-and-cull - is the surest way of reducing prevalence within a herd in a sustained fashion. For a herd with an initial 10 per cent prevalence of infection (this

Figure 5. Six management strategies.

is high), it has been estimated that a combined approach should reduce prevalence to below five per cent after around five years, and to zero in around 20 to 25 years (Collins et al, 2010).

Not all herds are at the same starting point, and each has its own particular risk profile. There isn't, therefore, a onesize-fits-all approach. Every farm, however, should be able to adopt one of six NJMP strategies. The flow diagram in Figure 6 illustrates how a 'decision tree' approach might be taken to decide which strategy would be best suited to a particular farm.

Strategy 1: Biosecurity, protect and monitor

This is suitable for only those farms with no evidence of disease. Good biosecurity to keep the infection out is coupled with biannual screening tests to establish a level of confidence that the herd is remaining Johne's free.

Strategy 2: Improved farm management

This requires a high amount of resources and labour because every cow in the herd

- biosecurity, protect and monitor
- improved farm management
- improved farm management and strategic testing
- improved farm management and test and cull
- breed to terminal sire
- firebreak vaccination



Figure 6. An example of a 'decision tree' flow chart.

is treated as high-risk. There is no testing component to this strategy, so no easy way to track progress. Examples management changes are listed in **Figure 7**. The strategy is focussed on control rather than eradication (risky) and as such might be suitable for lowprevalence, smaller herds with plenty of labour.

Strategy 3: Improved farm management and strategic testing

This strategy allows management changes to be targeted most effectively towards the high- and medium-risk cows. For example, a separate calving yard might be used for these cows, and their colostrum and first milk dumped. Breeding and culling decisions can also be made according to an individual cow's status.

The status of each cow is assessed by continuous strategic testing – as a minimum, each cow must be tested prior to being dried off, and preferably prior to breeding too, or by a quarterly whole-herd screen. The strategy is best suited to higher prevalence herds.

Strategy 4: Improved farm management and testand-cull

This is similar to strategy 3, but all known high-risk cows (likely carriers) are culled as soon as is practically possible. As higher prevalence herds will be less able to do this, this strategy is suited to low-prevalence farms; but it will see a faster reduction in prevalence compared to strategy 3.

Note, however, that a testand-cull policy without improved farm management will not result in a sustained reduction in prevalence.

Strategy 5: Breed to terminal sire

For flying herds, this is probably the natural strategy. For herds with a high prevalence which cannot commit to strategies 3 or 4, becoming a flying herd and breeding to terminal sires may be the only viable option. Its success relies on sourcing replacements from a lower risk source than their own herd. It is important that all youngstock are in fact slaughtered for meat rather than beef-cross heifers being sold into suckler herds – this is a risk that suckler herds need to be aware of when sourcing their replacements.

Strategy 6: Firebreak vaccination

This last strategy is a little controversial. A Johne's vaccine is available for use in the UK under the cascade; although it should be noted that it is not licensed for cattle, and will likely interfere with TB testing. It would only be suitable for highrisk, high-prevalence herds. Vaccination will delay onset of clinical signs, though MAP shedding and transmission will still occur within the herd.

As there is not a DIVA test for Johne's, there is no point combining ELISA testing with vaccination, and so working towards eradication will not be possible – and it is difficult to see the way out of vaccination in the future. Possibly, it may 'buy time' for a herd, whist improved farm management reduced the risk of spread.

Figure 7. Examples of management changes.

- using a separate, disinfected calving area for each cow
- snatch calving immediate removal of calf from dam into a disinfected pen
- pasteurising all colostrum
- only feeding own dam's colostrum followed by calf milk replacer (never pooled milk/ colostrum)
- individual calf pens
- complete separation of youngstock away from adult herd for whole rearing period.

Summary

Johne's disease is an important condition but one that can be drastically reduced with a co-ordinated approach. Hats off to the UK dairy industry for pulling together, without government support or regulation, and starting the Action Johne's Initiative. For veterinary surgeons, this is an exciting opportunity to demonstrate a tangible benefit of herd health management on a wide scale. By working collaboratively, and using the strategies of the National Johnes' Management Plan, it is possible to have both a healthier national herd and a greater confidence in food security. Both goals are worth pursuing if we want to see a viable UK dairy industry in the future.

Reference

Collins MT et al (2010) Successful control of Johne's disease in nine dairy herds: results of a six-year field trial. Journal of Dairy Science, 93(4): 1638-1643.

Further resources

For National Johnes' Management Plan, go to www.actionjohnesuk.org

To become a BCVA-accredited Johnes' Veterinary Adviser, go to www.bcva.eu

PPD Questions

- 1. What is one way that MAP evades the host's immune response?
 - A. 'hiding' in neutrophils
 - B. 'hiding' in macrophages
 - C. suppressing lymphoid function of Peyer's patches
 - D. remaining dormant for long periods of time

2. Which of the following are false?

- A. most dairy herds in UK are infected with MAP
- B. MAP causes Crohn's disease in man
- C. economic losses resulting from MAP are limited to cattle with clinical Johne's disease
- D. MAP can be found in pasteurised milk
- 3. Which of the following is the most important risk area for transmission of MAP within a herd?
 - A. grazing infected pasture
 - B. buying in infected cattle
 - C. calving management
 - D. spreading slurry on pasture

4. Which of the six management strategies is most suited to a herd that has no evidence of MAP?

- A. biosecurity, protect and monitor
- B. improved farm management
- C. improved farm management and strategic testing
- D. improved farm management and test and cull
- E. breed to terminal sire
- F. firebreak vaccination

5. Which of the following are true for a BCVA-accredited Johne's Veterinary Adviser (BAJVA)?

- A. you must be a BCVA member
- B. NJMP-participating farms must use a BAJVA for their Johne's action plans from October 2016
- C. training and accreditation is available only through BCVA
- D. training costs £5 for BCVA members and £25 for non-members and counts towards annual RCVS CPD requirements

Answers 1.B 2.B,C 3.C 4.A 5.B,C and D.

MRCVSonline www.mrcvs.co.uk Keep up-to-date with the latest veterinary news



Register online today

Your profession • Your news • Your views





Anthony Wilkinson BVSc MSc MRCVS

Anthony graduated from Bristol in 1981, has been working at Friars Moor Livestock Health since 1990 and spends time doing both pet and farm work – describing himself as the "last of the dinosaurs"! Anthony is also chairman of the XLVets Farm Executive.

After qualifying Anthony did a project on yaks and yak farming in the Himalayas, worked in mixed practice in West Sussex, before completing the Tropical Animal Health and Production MSc in Edinburgh. He then spent two years in Yemen helping organise rinderpest and goat pox vaccination, FMD reporting, training of local vets and vet technicians.

Anthony is a keen gardener, specialising in profuse weed growth and competitive tomato growing (with the other vets) and is a keen cyclist, who enjoys making beer, cider and cheese.



*Suggested Personal & Professional Development (PPD)



SMALLHOLDING

Providing a veterinary service for smallholders

Farm animal vets are used to – and feel comfortable dealing with – the professional farmer whose priority is the long-term best interests of the farm as a profitable business concern. There is, however, a group of smallholders who keep the same species of animal – cattle, sheep, poultry and pigs – but who may possess a different mind-set and require a different approach from their veterinary surgeon. These smallholders will come from a variety of backgrounds and will have a range of views and motivations.

How do we define smallholders or find out who they are? Stock numbers could be one easily searchable criterion that we can extract from the practice management system; but a smallholder's attitude to their holding and stock is a more difficult thing to determine.

Motivation

There is no single way of categorising the motivation of the smallholder - for many it is the experience of animal husbandry that is of key importance; for others, the enterprise may be part of a portfolio of income streams and might even be run on a commercial farm basis, but on a smaller scale.

Personally, I have come across a wide variety of backgrounds - from a lecturer with a PhD in ruminant nutrition to others retired from military service; as well as followers of the 'good life' ideal or advocates of Small is Beautiful (Schumacher, 1973) or The Complete Book of Self Sufficiency (Seymour, 1976). I remember one woman in her 70s with a small herd of cattle, who had once flown from Cairo to Cape Town single handedly many decades before - so never assume anything or underestimate anyone!

Not all smallholders fit the Tom and Barbara Good model portrayed in the BBC television programme *The Good Life* either; and many may have links to a farming background. It is always worth asking to find out about the smallholder and their motivation. A question about how they started their enterprise and what they did before may be fruitful; and do not forget to pass on relevant information to others within the practice team.

Status

The status of smallholders can be described as amateur as opposed to professional. I would agree with the use of this word, but only in the original etymological meaning of amateur, which is derived from amare, to love. In this sense, amateur is used with the meaning of doing something for the love of it as opposed to for purely financial motives. However, on occasions - notably in the case of my brother-inlaw - I would be able to use the word amateur in its more patronising sense!

When considering the status and motivation of an individual, their love and enjoyment of smallholding can be apparent in their relationship with the stock. In keeping fewer animals than a professional farmer, there is the potential to develop a stronger bond with individual animals and, therefore, there may be some similarities with pet owners in their attitudes and their depth of care and commitment to the individual animal (**Figures 1**, **2** & **3**). This has to be borne in mind when dealing with sick animals, especially when there is a poor prognosis, where euthanasia has to be considered.

Another issue that arises from the smaller size of the holding and the fewer numbers of stock is that the loss of a single animal has, proportionately, a greater effect than on a larger holding.

Advice

Given that smallholders are 'amateurs', the veterinary professional has an additional role in the education of these clients. Separate newsletters, with a different emphasis from those written for professional farmers, are worth considering. The information in these has to be tailored, and must appeal to a wide knowledge base, yet contain worthwhile information for all. Smallholders are often eager for knowledge, but this should always be modified to suit their prior experience and background, because basic handling and husbandry advice may be required (Figure 4).

"Smallholders can often be advocates for the veterinary practice, and enjoy having good relations with the practice and the practice team"







Figures 1, 2 & 3. Smallholders may develop a strong bond with individual animals, to the extent that there may be some similarities with pet owners.

There is probably a rule that the effectiveness of any handling system is inversely proportional to the number of animals kept; although, as with everything, there are exceptions to this. When visiting smallholders, safety of the veterinary surgeon and the smallholder should always be borne in mind when doing anything on the holding. Never be reticent about giving clear directions on how to hold an animal and where to stand - you may have to think for "There is the potential to develop a stronger bond with individual animals and, therefore, there may be some similarities with pet owners in their attitudes and their depth of care and commitment"

several people in a way that would be unnecessary on larger farms, where staff know how stock behave and where to stand, instinctively.

The issue of smallholders' amateur status can at times be of benefit to the veterinary practice. We have found that smallholders have helped us in providing invaluable experience for new graduates in developing their skills in such procedures as calving and lambing. These can be less difficult than on a professional farm where the easier births will have been managed by the more experienced staff.

Another benefit to our new graduates is that the giving of an educational talk to smallholders can be less daunting than addressing their first talk to professional farmers.

Disease issues

The stock numbers on a smallholding may also have a positive impact on spread of infection – keeping a small group of animals will reduce the reservoir of infection and the viral and bacterial infective load and this might have an impact on the disease prevention advice.

Attitudes to vaccination and policies for its application should be considered in relation to the size of the holding and the likely impact of the disease in question. Package and bottle size and quantities of vaccines or medicines might be a factor limiting the use of vaccination or prophylaxis. On large farms, veterinary professionals and farmers must have the long-term interests of the whole herd and farm at heart, whereas on smallholdings, a veterinary surgeon needs to be prepared to adapt normal farm decisions to take account of the owner's wishes, as the financial driver may not be as straightforward.

Economics

Charging for work on smallholdings is an area that needs to be clear and transparent and should always be considerate to both the smallholder and the veterinary practice. All enterprises need levels of fees that are appropriate – a bill for several hours of unexpected chargeable time will not be appreciated.

Courses may be a more effective means of providing advice to several smallholders, rather than charging for many hours of advice to one single holding. Separate courses should be run for smallholders as distinct from professional farmers, and a 'smallholders club' is often a valued service and good fun for attendees and the practice team (**Figure 5**).

The ability to dispense medication that is needed for treatment and prophylaxis of individual animals and small groups is an important advantage for smallholders using their veterinary practice, because keeping unnecessary or large stocks of medicines that will go out of date is not acceptable on either smallholdings or commercial farms. Proper record keeping should always be encouraged as with larger farms. A good knowledge of medicines legislation for the attending veterinary surgeon is just as important when dealing with

smallholders as it is with professional farmers.

Niche farming issues

Some smallholders may be keen to follow organic practices, even if they are not registered under the various organic schemes. They may not be used to the withdrawal times that are a part of professional farmers' daily routines. It is important to find out attitudes to medicines use for individuals and not make assumptions about follow-up treatment - the use of long-acting preparations is often advisable, especially where handling systems and staff numbers make catching and restraining animals difficult.

Our smallholder clients have embraced the practice of worm egg counts before worming and SCOPS (Sustainable Control of Parasites in Sheep) protocols. They have also often been keen to follow current best practice on worming and responsible use of antibiotics, once the principles have been explained.

Summary

Smallholders can often be advocates for the veterinary practice, and enjoy having good relations with the practice and the practice team. All of them take a great deal of pride in what they do and value assistance and advice in doing that job properly, efficiently and productively.

The main differences between smallholders and professional farmers are in scale, motivation, access to resources, staffing levels, time for observation, husbandry skills and knowledge base.

The similarities are the animals, legislative framework, and economic climate. Working with smallholders requires thought and adaptability, but can be a very rewarding part of farm practice work and life. "Courses may be a more effective means of providing advice to several smallholders, rather than charging for many hours of advice to one single holding"



Figure 4. Basic handling and husbandry advice may be required.



Figure 5. Separate courses should be run for smallholders and a 'smallholders club' is often a valued service.

References

Schumacher EF (1973). Small Is Beautiful: A Study of Economics As If People Mattered, Vintage, New edn (16 Sept 1993).

Seymour J (1976). The Complete Book of Self-Sufficiency, DK, Revised edn (23 Jan 1997).

Veterinary surgeons and animal transport – some personal reflections

Veterinary surgeons are in a unique position to give advice on the transport of animals. The most important consideration must always be welfare and this may sometimes involve a counter-intuitive or unconventional approach. In this article, the author reflects on some unusual examples encountered during his varied career.

Graham Duncanson BVSc DProf MSC(VetGP) FRCVS

First of all, the reason for transport must be given careful consideration. Is the journey going to be of potential benefit to the animal – a horse being moved to the nearest surgical facility for surgery, for instance? This is very different from a horse being transported over a long distance for slaughter for human consumption, when slaughter could be performed much nearer to its home.

Some instances will have black or white answers. Others, however, will involve grey areas – which is where the intervention of veterinary surgeons, with their specialist training, provides vital knowledge. So, expanding on the horse example, is it justifiable to transport a horse with colic further to a place of excellence rather than to the nearest facility which might not have the same high success rates?

A case in point

I remember attending a show jumper that had fractured its radius in the ring at the Mombasa Show in 1967. If it had been a compound fracture, I would have shot the horse. However, I could feel the fracture was not involving the carpus. I was under pressure too as it was not only the best show jumper in the country, but it was also a mare.

I was newly qualified and sought advice from an experienced American surgeon at the new veterinary school in Nairobi. He instructed me to anaesthetise the horse on the grass with thiopentone and chloral hydrate and apply a plaster cast as high up the leg into the axilla as I could manage. I then had to transport the horse 320 miles 'up country' to the university.

The road at that time had 150 miles which was not surfaced with tarmac, so I hired 40 men to work as two teams to support the mare on her journey. She made the 10-hour journey without incident. The Kenyan helpers – who



Figure 1. The physical space allowed for each animal must be determined early.

included some trained 'veterinary scouts' - were magnificent, although equine practice was well outside their remit as they had been trained in production animal medicine.

When the mare reached the veterinary school – which had only been open a few months – the American surgeon re-anaesthetised it. He removed my cast and applied traction to the leg by putting wire through the hoof wall, having first anchored the horse to a strong post by a rope across its axilla. The limb was radiographed to ascertain that the radius was in alignment and a cast was applied. After an assisted recovery, the mare was slung in a set of horse slings for 12 weeks, nursed constantly day and night by four men.

Not only did the leg heal perfectly but the mare even jumped again. This was nothing short of a miracle. Even so I often reflect on the welfare implications of transporting an animal for such a distance, bearing in mind that we had no effective means of pain relief in those days.

Five Freedoms are paramount

When a veterinary surgeon considers the transport of animals, at the top of the agenda must be the Five Freedoms.

The physical space allowed for each animal must be determined early; because some species may be best transported separately, whereas others are better in groups (**Figure 1**). Animals should not be newly mixed before transport – this is particularly important for pigs. Horned cattle should not be mixed with polled cattle.

The duration of travel should be worked out such that the animals can be offloaded at regular intervals, and they must

"When a veterinary surgeon considers the transport of animals, at the top of the agenda must be the Five Freedoms" receive food and water at these times. Certain species – horses, for example – may be given access to food during the journey. Although the main focus will naturally be on road transport, there will be situations in which railways, boats and aeroplanes must also be considered. Dehydration is a particular problem for horses being flown on long journeys and constant supervision by a skilled equine veterinary team is advisable. In many ways train journeys are very satisfactory.

Let the train take the strain

I remember in 1969 when azaperone first became available as a sedative in pigs. The manufacturers in Belgium decided to test the drug by injecting it into groups of pigs being transported for slaughter. The idea was to inject only half the pigs and then compare the two groups at slaughter for wounds from fighting. They looked for the longest distance to be travelled by pigs and this happened to be from my place of work in Kenya to the bacon factory at Uplands near to Nairobi.

The pigs were duly loaded onto the train and I went to every other carriage to inject them. I had nearly completed the task when the train pulled out of the station. After a large amount of shouting, the driver eventually heard and stopped the train which had by then covered five or six miles. He then kindly reversed the train and took me back to the original station at OI Kalou, where I completed the task. I was not surprised that there were no differences recorded in the two groups of pigs.

Loaded with logic

It cannot be emphasised enough how important wider veterinary knowledge is when planning transport. I had an exotic example of this fact in 1967 when I was in charge of a regular shipment of heavy cattle and camels from Mombasa in Kenya to Saudi Arabia (**Figure 2**). With the benefit of hindsight, I regret condoning such a long sea journey just so the animals could be killed in a strict Halal manner; however, my veterinary expertise was invaluable when it came to loading the boat.

Animals could be loaded on deck or held below decks where height was a limiting factor. Naturally, one's instinct was to load the cattle below deck and the camels, afterwards, on deck. But, in



Figure 2. A view of the docks in Mombasa with a ship awaiting camel loading in the foreground.

reality, this would have been a disaster. The cattle were not the problem, it was in fact the camels.

They could easily be loaded on deck at the start of the journey. However unloading them at the far end would have been a nightmare because they would have gone into the 'kush' position of sternal recumbency and they would not have unloaded. When they did this, the only way would have been to 'sling' them individually using the ship's derricks to hoist them on to the dock. This would have been an extremely stressful experience for the camels and the veterinary surgeon. It was better to load the camels - albeit with some cajoling below deck and then, when they reached their destination, they were quite happy to leave their dark quarters and walk off the boat into the sunshine!

Closer to home

Transporting production animals that are lame is a matter for very serious veterinary consideration. In the UK it is totally against the law to transport a lame animal to market or to a slaughterhouse. I have been involved in two instances where there was potential for the law to be broken in this respect, with considerable welfare implications.

The first involved a farmer who took four rams – one of which was lame – to the market. The RSPCA inspector 'clocked' the lame animal and the market veterinary surgeon was summoned. He was tempted to tell the farmer to take the lame animal home. However, this would have meant that the veterinary surgeon, as well as the farmer, would then have broken the law and caused unnecessary suffering.

Although more difficult to organise, the correct approach was for the veterinary surgeon to humanely destroy the animal at the market, such that further suffering was prevented.

The second case was of a farmer who brought a lame fat lamb to my veterinary practice for treatment. This was not illegal. When the consulting veterinary surgeon examined the lamb, he found it had a fracture of its femur. Now in some countries the farmer could take this animal on to the slaughterhouse; thereby causing unnecessary suffering. In the UK the law is clear – the lamb must be shot on the practice premises, bled out immediately, transported to the slaughterhouse (with accompanying paperwork) and dressed out within an hour.

Conclusion

No matter what the circumstances, veterinary surgeons are duty bound to put the welfare of the animal (or animals) to be transported first. This will sometimes involve a counter-intuitive approach based upon their training, experience and professional expertise. It may not always be the most popular decision either but it must put the needs of the animal above every other consideration.

"Transporting production animals that are lame is a matter for very serious veterinary consideration"

The digital age

The modern veterinary practice is more often than not equipped with a variety of imaging systems and the opportunities within the field of digital diagnostic imaging are continually advancing.

raditionally, practices would store their diagnostic images and files manually in a cabinet, to be sorted through and pulled out each time reference needed to be made to them. Both time-consuming and, potentially, prone to misplacement, traditional filing systems are rapidly becoming a thing of the past.

It is now universally accepted that the best method for storing digital images is within a comprehensive picture archiving and communication system (PACS).

However, not all PACS are the same, and with the field of veterinary medical imaging evolving all the time, so too is the subject of data storage and accessibility. As with all elements associated with your practice management system, your PACS is an investment worth careful consideration.

The client experience

A high-performance PACS will instantly enhance your client's experience when referring to diagnostic imaging by generating a compilation of images for their pet that can be displayed on screen and attached to their records. Clients can be shown the digital images in various different formats as a means of best explaining their pet's condition and the subsequent treatment plan. For 'mobile vets', PACS can be taken on the road and records can be accessed from laptops, smart devices or other web-enabled hardware.

The professional appearance and efficiency of a PACS will reflect the standard of care your practice endeavours to provide – both in the consulting room and out on site. PACS across multibranch practices will enable clients to view the images at a branch of their convenience, particularly if vets work between multiple locations. PACS will not only make image files accessible and transferable, it will also integrate them into a client record card for ease and instant referencing.

DICOM compliance

Your PACS solution should be DICOM (digital imaging and communications in medicine) compliant. DICOM is the universally recognised file format used for image archiving systems. DICOM files unify your existing hardware and software, servers, workstations and printing devices to produce records that have your patient IDs embedded within them.

Collating the image and the information into one file, DICOM compliance is essential when considering your PACS solution because DICOM files can be compressed without loss of information. DICOM files are also volume-rendering files – an impressive feature that enables them to display two-dimensional images from a three-dimensional data set. DICOM files can generate an idea of three-dimensional space with calibrated sequences of two-dimensional image slices taken by your imaging equipment.

File storage

When considering your PACS solution, it is important that you consider carefully your practice's storage requirements. Work closely with your PACS provider to establish your caseload and subsequent storage needs and consider an initial period of more limited storage that you can later extend or expand. Once practices 'go digital', it is not uncommon for many more images to be taken and stored. The convenience and relatively cost-effective means of processing digital images can result in multiple images when previously vets might only have opted for one. PACS offering one to five terabytes of storage do so to serve the average practice for approximately seven years.

Digital imaging and a PACS solution remove the risk of water or heat damage and also eliminate the loss that could occur in the event of a fire. Provided your practice staff are disciplined with backing up your PACS files and back-up files are stored off site, your data and imaging records will be secure.

IRIS PACS providers offer a fully integrated system, incorporating MRI scans, CT scans, radiographs and ultrasounds on one

centralised server that can be added to and accessed from multiple terminals. It is worth considering a PACS solution that works alongside your existing practice management system for continuity and efficiency.

Endless possibilities

3D imaging is becoming more widespread in general practice. The 3D imaging possibilities intrinsic to IRIS PACS mean that clients can be given a very clear and detailed understanding of the condition or diagnosis being discussed.

With visual and graphic technology constantly evolving, so too are the possibilities when it comes to medical imaging and software. The veterinary profession has recently seen the introduction of 3D printing to convert digital images into 3D models for diagnostic interpretation.

With holographic imaging that can be rotated, sectioned, opened and manipulated becoming more available in human medicine, further advances are inevitable in the veterinary sector. Indeed, imaging may ultimately allow us significantly to limit the level and frequency of exploratory surgery we need to perform.

The IRIS solution

To cope with the demands of the expanding field of data storage and imaging requirements, IRIS is a PACS solution designed to accommodate the vast and varied needs of the developing industry. Enabling storage and distribution of DICOM studies whilst centrally housing and communicating digital media and clinical records, it is a multi-user and multi-screen solution that can also be accessed and worked on remotely from VetStation-Pro terminals and IRIS workstations.

Developed to store DICOM files together with clinical and patient records, text notes, laboratory reports and photographs, the system enables you to walk your clients smoothly through the diagnostic process. Data transfer across the network has been configured to optimise speed and reliability.

IRIS will work alongside your existing practice management system to provide you with two- and three-dimensional options, multi-modal options, and full integration with client and animal



records. For three-dimensional images, volume and surface rendering is available on all networked terminals. With the speed of animation in real time, accelerated or slowed down, 3D image rotation and manipulation is also supported.

With a 24-hour support service and a large data storage capacity that is automatically backed up and synchronised, IRIS is a cost-effective and worthy investment for any forward-thinking practice.





iris@vetsystems.com | 01359 243400



Ed van Klink DVM(Utrecht), PhD(Waageningen Agricultural), Dip(ECVPH)

Ed van Klink joined the University of Bristol School of Veterinary Science as senior lecturer in veterinary public health in 2011. During his career, he has spent some time in animal disease control, as a research assistant in food hygiene and as a 'government vet' for 26 years.

Ed has carried out consultancy work in animal and public health policy and legislation in many countries in eastern Europe, South America and South East Asia, and has worked in a variety of positions - as a district veterinary officer in Zambia, and as a policy officer in the fields of notifiable disease control, food safety, and animal health and welfare in The Netherlands Currently Ed and a colleague are setting up a bee unit for teaching purposes at Bristol.



*Suggested Personal & Professional Development (PPD)



BEES

Honeybees as food-producing animals – a review of legislation

The honeybee (*Apis mellifera*) is a species of animal with which not many veterinary surgeons will be involved in their general practice. Nonetheless, it is a domesticated species and the management of bee colonies has its challenges and difficulties, certainly in relation to health. There are several notifiable diseases of bees that regularly appear and require action (Defra, 2015b) and, as their produce, honey, is a foodstuff, there is legislation governing its safety (Defra, 2015a).

In this brief overview, some of the legislation will be discussed, with emphasis on the latest changes.

European background of legislation

As with many of the rules and regulations in the field of agricultural production, animal health, food production and food safety, the origin of the legislation that is relevant for bee-keeping lies in European legislation.

The 'Single Market' or 'Internal Market' is a central principle (EU, 2015) and its objectives include the free movement of goods and services, removal of barriers to trade and enhancement of competitiveness. Compliance with the European legislation means that products that are in accordance with the requirements laid down in this legislation can be sold anywhere within the European Union and countries belonging to the European Economic Area.

As all products are subject to the same requirements in all European member states, there is nothing that can put barriers in place against their trade. This principle of having the same legal requirements in all member states is called 'harmonisation', which is a core principle of the European Union (EU, 2012).

Legislation related to bee health and disease control, food safety and labelling is all harmonised.

Bee health, disease control and food safety

There are four relevant notifiable diseases/pests of honeybees - American foulbrood, European foulbrood, the small hive beetle and the *Tropilaelaps* mite (Defra, 2006). The last two have not been seen in the UK as yet.

Tropilaelaps spp. are commonly found in South-East Asia (Baker et al, 2005). The small hive beetle originates from sub-Saharan Africa but has spread to a number of countries, including the south of Italy (Neumann and Ellis, 2008). The foulbroods do emerge with

Figure 1. Some links between honeybees and food safety and public health.

- incorrect use of certain veterinary treatments could lead to residues in honey, as would certain environmental contaminants
- bees act as monitors for environmental contamination with several compounds, including some used in agriculture
- honey has been identified as the cause of infant botulism, with spores of clostridial bacteria being present in honey.

some regularity (Williams, 2000) and, upon occurrence, the course of action will normally be the destruction of the affected hives (Defra, 2006).

Formato and Smulders (2011) identified some reasons why bees are relevant in terms of food safety and public health (**Figure 1**).

Honey is subject to the general requirements for food laid down in the General Food Law (European Commission, 2002) and is also subject to the regulations governing food safety in products of animal origin (European Parliament and Council, 2004a, 2004b and 2004c). As with all products of animal origin, the food producer is responsible for the safety of any food put on the market (European Parliament and Council, 2004a). Formato and Smulders (2011) describe 'good farming practices' that could be followed to fulfil these responsibilities.

Legislation related to placing honey on the market

In mid-2015, new legislation was introduced in the UK and other European Union member states on the subject of the sale of honey (Defra, 2015c). This new legislation, the Honey (England) Regulations 2015 (Wales, Scotland and Northern Ireland have similar legislation in force), and the new Directive 2014/63/ EU, contain amendments to the earlier directive on honey from 2001 (European Council, 2001) and regulate the labelling of honey and products related to honey or bee-keeping.

The new directive adapts part of the text of the original 2001 directive and makes some changes to the references to the origin of honey and the way to deal with pollen as an ingredient of honey.

The aims and objectives of the Honey Regulations and both the 2001 and 2014 directives are the same – making sure that what is placed on the market as honey is indeed the expected product. The legislation defines honey, and distinguishes several applications of honey as a product. It also gives rules for the indication of the region of origin of the product.

The definition of honey is given as 'the natural sweet substance produced by Apis mellifera bees from the nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in honeycombs to ripen and mature'. Honey can, therefore, only come from honeybees and is the substance that is collected and processed by these bees as they would normally do.

For the purpose of labelling, various types of honey are distinguished on the basis of their origin (**Figure 2**).

Any product that does not fall into any of these nine categories, may not be called honey. This is, therefore, a guarantee for the consumer



According to its origin:

- **blossom honey** or **nectar honey** must be obtained from the nectar of plants
- **honeydew honey** mainly from excretions of plant-sucking insects (Hemiptera) on the living part of plants or secretions of living parts of plants

On the basis of the way the product is presented or harvested:

- **comb honey** stored in broodless honeycombs made out of beeswax by the bees and sold in sealed whole combs or sections thereof
- **chunk honey** or **cut comb in honey** this contains pieces of comb honey
- drained honey obtained by draining broodless combs after taking off the wax cap
- extracted honey obtained by centrifugation of broodless combs after taking off the cap
- pressed honey honey that is harvested by pressing the combs which can be combined with applying maximum heat of 45°C
- filtered honey the product after filtering it in such a way that any foreign inorganic or organic matter is removed, including the majority of the pollen

On the basis of its application:

baker's honey – suitable for industrial use or as an ingredient in other foodstuffs which are then processed. This honey may have a foreign taste or odour, may have begun to ferment or has already fermented, or may have been overheated.

Figure 2. Labelling of honey.

that what they get is indeed what it says on the label. Blossom/nectar honey, honeydew honey, drained, extracted and filtered honey may simply be called 'honey'. Any of the other products have to be named as stated in the categories above.

Honey needs to be labelled according to its region of origin as well. The country of origin needs to be indicated on the label, but honey can be derived from various origins, in which case the label must indicate that the honey is a blend of EU honeys, blend of non-EU honeys or blend of EU and non-EU honeys. The new legislation provides more clarity about the presence of pollen in honey. It excludes pollen from the requirements of point (f) of article 2 sub 2 of Regulation (EU) 1169/2011 - the definition of 'ingredient'. The reason for this is that pollen is a natural substance in honey as a result of the normal production process by the bees themselves and should, therefore, be considered an integral part of the product.

Finally, there are some provisions on the origin of honey. If honey is claimed to be derived from blossom or mainly from blossom for example, this claim can only be used if it can be substantiated. The product must come wholly or mainly from the indicated source and must possess the 'organoleptic, physicochemical and microscopic characteristics' that are typical of the source. The same applies for regional, territorial or topographical origin – if this is claimed, the honey has to be derived wholly from the region indicated.

In a schedule attached to the new regulations more precise requirements for the composition of honey are formulated. These include minimal concentrations of fructose and glucose, and maximum concentrations of sucrose and a number of honey types from specific plant species. A second schedule deals with several implementation issues of the regulation.

Discussion

The importance of honey as a product is clearly highlighted from the intricate legislation drafted for the regulation of its trade. Honey is a pure product that has a very long shelf life, without the need to add any preservatives of any kind.

As is the case with many subjects of internationally regulated issues, the legislation within the EU - and indeed the UK - is based on international standards that are not only relevant for food products, but also for animal health and disease control and plant health. In the case of food, the standards have been compiled by the Codex Alimentarius Commission (Codex Alimentarius, 2001) that has a long list of standards, of which standard 12 (CODEX STAN 12-1981) refers to honey.

Honeybees are foodproducing animals worthy of attention. There are notifiable diseases that are just as devastating to the beekeeping industry as the more commonly known ones from the livestock industry. There are non-notifiable health issues that are worth looking at as well.

It may still be only on a rare occasion that practising veterinary surgeons will be consulted on bee health issues, but it does also provide opportunities to engage in an interesting branch of domestic animal husbandry.

References

Baker RA et al (2005). Aspects of the history and biogeography of the bee mites Tropilaelaps clareae and T. koenigerum. Journal of Apicultural Science, 49(2): 13-19.

Codex Alimentarius (2001). Codex standard for honey; CODEX STAN 12-1981. Adopted 1981, revised 1987 and 2001. http://www.fao.org/fao-who-codexalimentarius/standards/list-of-standards/en/?provide=standards&orderField= fullReference&sort=asc&num1=CODEX. Accessed 30 March 2016.

Defra (2006). The Bee Diseases and Pests Control (England) Order 2006. http://faolex.fao.org/docs/pdf/uk75729.pdf. Accessed 22 February 2016.

Defra (2015a). Food Safety Act 1990. http://www.legislation.gov.uk/ukpga/1990/16/contents. Accessed 22 February 2016.

Defra (2015b). Guidance; protecting honey bees. https://www.gov.uk/guidance/bee-health#controlling-bee-pests-and-disease. Accessed 22 February 20016.

Defra (2015c). The Honey (England) Regulations 2015. http://www.legislation.gov.uk/uksi/2015/1348/pdfs/uksi_20151348_ en.pdf. Accessed 29 February 2016.

European Council (2001). Council Directive 2001/110/EC relating to honey. http://eur-lex.europa.eu/LexUriServ/LexUriServ. do?uri=OJ:L:2002:010:0047:0052:EN:PDF. Accessed 29 February 2016.

European Parliament and Council (2002). Regulation (EC) No. 178/2002 of the European Parliament and of the Council laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. Official Journal of the European Union, L 31/1. http://eur-lex.europa.eu/LexUriServ/ LexUriServ.do?uri=OJ:L:2002:031:0001:0024:en:PDF. Accessed 29 February 2016.

European Parliament and Council (2004a). Regulation (EC) No. 852/2004 of the European Parliament and the Council, on the hygiene of foodstuffs. Official Journal of the European Union, L138/1. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:139:0001:0054:en:PDF. Accessed 29 February2016.

European Parliament and Council (2004b). Regulation No. 854/2004 of the European Parliament and the Council, containing specific rules concerning official controls on products of animal origin, Official Journal of the European Union, L155/206. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:226:0083:0127:EN:PDF. Accessed 29 February 2016.

European Parliament and Council (2004c). Regulation No. 882/2004 of the European Parliament and the Council, on official controls performed to ensure the verification of compliance with feed and food law, animal health and welfare rules. Official Journal of the European Union, Brussels, L165. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:165:0001:01 41:EN:PDF. Accessed 29 February 2016.

European Parliament and Council (2011). Regulation (EU) no 1169/2011 of the European Parliament and of the Council on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/ EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004. http://eur-lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:32011R1169&from=EN. Accessed 29 February 2016.

European Parliament and Council (2014). Directive 2014/63/EU of the European Parliament and of the Council amending Council Directive 2001/110/EC relating to honey. Official Journal of the European Union, L 164/1. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0063&from=FR. Accessed 29 February 2016.

European Union (EU) (2015). The European Single Market. http://ec.europa.eu/growth/single-market/index_en.htm. Accessed 22 February 2016.

European Union (EU) (2012). Treaty on the functioning of the European Union. http://eur-lex.europa.eu/legal-content/EN/ TXT/PDF/?uri=CELEX:12012E/TXT&from=EN. Accessed 22 February 2016.

Formato G and Smulders FJM (2011). Risk management in primary apicultural production. Part 1: bee health and disease prevention and associated best practices. Veterinary Quarterly 31(1): 29-47.

Neumann P and Ellis JD (2008). The small hive beetle (Aethina tumida): distribution, biology and control of an invasive species. J Apic Res Bee World 47(3): 181-183.

Williams DL (2000). A Veterinary Approach to the European Honey Bee (Apis mellifera). The Veterinary Journal, 160: 61-73.



Bruce Maclean BSc(VetSci) BVM&S MRCVS

Bruce graduated from the University of Edinburgh's Royal (Dick) School of Veterinary Studies in 1992. Following graduation, he spent time in the avian and exotic department at Utrecht University further studying the veterinary care of birds and exotic animals.

On return to the UK, Bruce spent six months in mixed practice and a short period in small animal/exotics practice, before setting up his own dedicated practice 20 years ago. He works exclusively with birds and exotic animals, on both first-opinion and referral bases, and has contributed chapters to BSAVA manuals and several articles in UK- and US-based veterinary publications.

Bruce has been keeping reptiles and amphibians for over 35 years and amphibian medicine is a particular clinical interest.



*Suggested Personal & Professional Development (PPD)



CHAMELEONS AND GECKOS

Husbandry and veterinary care of chameleons and crested geckos

Chameleons

Chameleons are a group of approximately 200 species in the family Chamaeleonidae. They are very distinctive lizards with independently mobile eyes, very long extensible tongues and toes formed into pincer-like arrangements. Many species have prehensile tails and considerable ability to change colour (**Figure 1**).

The natural range of chameleons spans Africa, Southern Europe and South-western Asia, with different species being found in habitats ranging from rainforest to deserts. The commonest species in captivity are veiled or Yemen chameleon, *Chamaelo calyptratus*, and panther chameleon, *Furcifer pardalis*; although several other species may be seen (**Table 1**).

They are generally diurnal, active hunters, with sizes ranging up to 70cm or over (including the tail) for larger species; and a large individual may weigh 250g or more. Chameleons do not autotomize their tails.

Husbandry

Chameleons are not a homogenous group in terms of husbandry – as noted above, they may come from a variety of habitats. Enclosure sizes should generally be relatively large and the ambient temperature range depends on species.

A particular feature of chameleon husbandry – of which the clinician and keeper must be aware – is that many species will not drink from standing water. Dripper systems and/or frequent spraying are, therefore, mandatory. Advice should be



Figure 1. Jackson's chameleon.



Figure 2. Panther chameleon in typical enriched enclosure.

given on the hygiene of such systems, however, because many keepers will not change a spray bottle sufficiently frequently enough given that the recommendation is for this to be done daily.

Although relatively high humidity is often recommended in chameleon enclosures, ventilation must also be adequate. Chameleons are largely insectivorous, although some species, including the veiled chameleon, will take some vegetable matter – leafy salads or safe plants, such as *Ficus benjamina*, should be offered in the enclosure. Plenty of climbing and hiding vines, plants and logs should also be provided (**Figure 2**).

Many chameleon species are sexually dimorphic to a greater or lesser extent – males having horns, tarsal spurs, crests or casques that the females lack or show in reduced form. Hemipenal bulges are usually apparent in adult males (**Figure 3**).

Males are territorial and there should not be more than one in an enclosure – one or more females may be kept with a male. Males generally live longer than females in captivity, probably primarily because females tend to produce eggs on a frequent

Table 1. Common species of pet chameleons

Species	Description/Size	Natural history	Notes
veiled chameleon (Yemen chameleon) (<i>Chamaeleo</i> <i>calyptratus</i>)	large (up to 60cm total length, 280g+); males have large casques and tibial spurs	native to Yemen and surrounding areas. Habitat bushes and shrubs. Diurnal basking species, need good ultraviolet B (uv-B) provision.	usually captive-bred now. Temperature range 35- 22°C (day), 20-18°C (night)
panther chameleon (<i>Furcifer pardalis</i>)	moderately large (up to 50cm total length, 220g+). Males larger, more colourful, slightly larger casque, hemipenal bulges	native to Madagascar and surrounding islands. Forest edge species - relatively hot and humid, basking (need good uv-B)	often further divided by 'subspecies' based on area/ island of origin (e.g. Ambanja, Nosy Be). Temperature range 32-22°C (day), 20-18°C (night)
Jackson's chameleon (<i>Chamaeleo jacksoni</i>); <i>Chamaeleo johnstonei</i> is similar in appearance and requirements	medium/small species up to about 35cm, weight to around 150g. Males have three long horns	native to East Africa around Kenya (large feral population in Hawaii). Montane species, do not overheat. Cool and humid environment	temperature range 28- 20°C (day), 15-20°C (night)
Meller's chameleon (<i>Chamaeleo melleri</i>)	large species (up to 60cm, 400g+). Has single horn on nose. Often difficult to sex – hemipenal bulges may be apparent	savannah/forest edge/forest of East Africa. Avoid overheating (30°C+)	temperature range 29- 20°C (day), 15-20°C (night)
flap-neck chameleon (<i>Chamaeleo dilepi</i> s)	small/medium species to 30cm, 120g	variable habitat, wide distribution in East/ Southern Africa	temperature range 32-22°C (day), 20-18°C (night)



Figure 3. Male panther chameleon hemipenal bulges.



Figure 4. Weighing is an essential part of the clinical examination.

basis. Typical lifespans are two to four years for females and five to eight years for males.

Females lay tens of eggs – often more – and lay them more frequently than they would naturally in the wild. This is probably a contributory factor to their shortened lifespans.

Handling and clinical examination

The routine techniques used for handling and examining reptiles can be applied to chameleons. In terms of any risk to the handler, chameleons rarely bite and do not have other defences. Care should be taken to avoid iatrogenic damage when handling them, especially given the relatively high incidence of metabolic bone disease seen.

Chameleons tend to be quite difficult to dose orally and client compliance should be considered and addressed at the appropriate time.

Other veterinary factors

Chameleons do not have particularly notable requirements in terms of diagnostics (**Figure 4**). All modalities may be used as for other reptiles and venipuncture is via the ventral tail vein. Standard reptile therapeutics and doses may be used in chameleons, although appropriate owner consent should be obtained. The same principle applies to anaesthesia and analgesia. Hospitalisation facilities should include correctly

"A particular feature of chameleon husbandry – of which the clinician and keeper must be aware – is that many species will not drink from standing water"



Figure 5. Multiple masses visible in coelom – egg binding.

proportioned structures for chameleons to grip - they are not designed to sit on flat surfaces!

Common clinical conditions Metabolic bone disease (MBD)

This is probably the commonest problem seen in pet chameleons. It is a 'coverall' term for several diseases affecting bone structure and function. The form most frequently encountered in pet reptiles is nutritional hyperparathyroidism (NHPT), in which a deficiency of adequate calcium and/or vitamin D_3 – either by dietary means or through appropriate ultraviolet lighting – leads to bone problems.

In chameleons, the common presentation is limb deformities – bowing of long bones, a deformed casque (if present) and gait abnormalities – the latter frequently being manifested as incoordination, with the hind limbs grasping front limbs when attempting to move, for example.

Egg stasis

Egg stasis is also a common sign and radiography should be carried out for full assessment. Correcting the husbandry – along with oral dosing of calcium initially – is recommended, although any deformities are likely be permanent.

It should be noted that over-supplementation of calcium is certainly possible, especially in adult males, and calcification of major blood vessels is a not an uncommon finding in older male chameleons. So be wary of diagnosing NHPT in these individuals and consider renal secondary hyperparathyroidism.

Both pre- and post-ovulatory egg stasis are commonly seen in chameleons, often associated with MBD. Pre-ovulatory stasis usually requires surgical treatment, although introduction of a male may facilitate further development and eventual laying. Post-ovulatory stasis will often resolve with increased calcium provision and the arrangement of the environment to include a laying area. Surgical ovariosalpingectomy may be considered to avoid future problems.

Diagnosis is based upon history and clinical signs – such factors as size of the female, typically a gradual reduction in eating, possible weakness and, sometimes, signs of digging. Eggs are often visible as individual bulges in the coelom (**Figure 5**).



Figure 6. Periocular swelling in a panther chameleon (dorsal view).

Parasites

Wild-caught chameleons were notorious for having a high burden of parasites. Most pet chameleons are now captivebred so do not have this problem; but it must always be a suspicion in wild-caught specimens. Care is necessary in treatment because antiparasitic drugs may, through killing the parasites, set up a fatal toxic reaction or septicaemia.

Other conditions

Periocular swelling is a not an uncommon presentation

Figure 7. Tongue prolapse in veiled chameleon.





Figure 9. Close up of a crested gecko.

Australia and north of New

was believed extinct before

rediscovery in 1994. They

and omnivorous, largely

They have a transparent

'spectacle' over the eye,

and they will autotomize

Their toes are webbed,

similar to that seen in snakes

the tail moderately readily -

although it does not regrow.

and their feet are 'sticky' -

allowing them to cling to

Their length (including the

and their adult weight is

tail) is approximately 20cm,

typically between 35g to 42g.

Enclosures for geckos should

have sufficient vertical space.

be approximately 28°-20°C;

but at night a normal room

temperature of 18°-20°C is

30°C should be avoided.

acceptable. Temperatures over

The temperature range should

vertical surfaces.

Husbandry

covered in many minute hairs

nocturnal, lizards.

are primarily tree-dwelling

Zealand) - the crested gecko

although provision at low levels is recommended. The photoperiod should be varied throughout the year and winter cooling is advisable to give the female a break from breeding.

Commercial 'complete' crested gecko diets are available, which are recommended as a staple and have the advantage of ease of feeding a reasonably complete diet. Some live invertebrates will add enrichment, and fruit/ vegetable baby food and soft fruits may also be provided.

It is generally recommended to provide a water dish, but spraying is also necessary as some crested geckos will prefer to lap droplets.

Sexing of crested geckos is, theoretically, relatively easy, but may not be clear cut in practice. Adult males have a distinct hemipenal bulge caudal to the cloaca however, obese females may show some swelling there. Pre-anal pores are present in males and not females and require magnification to see. Both sexes have cloacal spurs on either side of the cloaca,

"Crested geckos are generally slow and deliberate movers, but will jump. And there is a need to beware of their ability to autotomize the tail"

Figure 8. Crested gecko.

in chameleons. Abscesses, retained shed, fluid accumulation, sheddingrelated issues and vitamin A deficiency may all be factors. Centesis and cytology, usually under anaesthesia, is generally recommended, with treatment depending on findings (Figure 6).

Tongue prolapse is sometimes seen in chameleons, and may result in the tongue being swallowed. Replacement should be attempted, possibly with temporary stay sutures, but amputation or euthanasia may be required in severe cases. Hand feeding will

usually be required, at least initially, after amputation (Figure 7).

Crested gecko (Correlophus ciliatus; formerly Rhacodactylus ciliatus)

Crested geckos are relatively hardy, easy to keep and readily breed in captivity. Although endangered in the wild, they are very common as pets and they are named after the eyebrow-like projections around their eyes (Figures 8 & 9).

Native to New Caledonia - a series of Islands in the South Pacific (east of

Figure 10. Calcium sacs visible in roof of mouth of crested gecko.





68 VETERINARY PRACTICE TODAY | VOLUME FOUR | ISSUE FOUR | 2016

and these can be of variable size so are not considered useful for sexing purposes.

Males are territorial, and must not be kept with other males. One or more females may be kept with a male, but they should be observed for signs of bullying or trauma. Females lay two eggs at a time, as frequently as every four or five weeks.

Lifespan estimates for crested geckos are still being fully established, but up to 20 years or so is considered possible.

Handling and clinical examination

Crested geckos are generally slow and deliberate movers, but will jump. And there is a need to beware of their ability to autotomize the tail. A notable feature of the clinical examination is that the calcium sacs in the caudal roof of the oral cavity should be visible on intra-oral examination. If they are not, then calcium deficiency should be suspected, especially in a female (**Figure 10**).

Other veterinary factors

Size is the main constraint on diagnostic examination of crested geckos. Standard reptile therapeutics and doses may be used – no species-specific drug idiosyncrasy has been reported to this author's knowledge.

Common clinical conditions

Floppy tail syndrome Floppy tail syndrome describes a situation in which the tail has little or no muscle tone. It is, however, usually still viable. Possible precipitating factors include poor muscle tone in captivity (although it is seen in the wild as well), MBD, or inappropriate perching upside down in captivity. It is advisable to carry out radiography to assess bone density, but no specific treatment is available.

MBD/NHPT

These two conditions are less common in geckos than in some pet lizards owing to their more varied diet. It does happen, however, with soft jawbones often being the sign most easy to detect on clinical examination given the short squat nature of the limbs. Radiography should be used to confirm your diagnosis.

Other conditions

Amoebiasis, coccidiosis and cryptosporidiosis are parasitic conditions that have been described in crested geckos.

Dysecdysis around the feet can affect geckos' ability to climb smooth surfaces, and lead to extremity loss through constriction of blood supply. Their climbing 'grip' may also be reduced in general illness.

PPD Questions

- 1. When handling a chameleon what is the main concern the handler needs to be aware of?
- 2. What is a typical lifespan for female chameleons?
- 3. In assessment of a supplementation regimen, which of the following animal factors are important?
 - A. sex
 - B. reproductive status
 - C. age D. all of the above
- 4. What is notable about the eye of crested geckos?
- 5. What specific feature must be assessed during the intra-oral view of a crested gecko?

Answers 1. iatrogenic damage 2. 2-4 γεαrs 3. D 4. fused transparent scale over eye (like snakes) 4. fused transparent scale over eye. 5. oropharyngeal calcium sacs.

Further reading

LeBerre F et al (2000). The Chameleon Handbook, Barrons Publishing, Hauppage, New York.

Meyer J and Rubel K (2009). 'The Crested gecko (Rhacodactylus ciliatus): husbandry and medical care' Proceedings of the Association of Reptilian and Amphibian Veterinarians.

General reading on reptiles

Mader D (2006). Reptile Medicine 2nd edn. Saunders Elsevier, St Louis, Missouri.

Nevarez J (2009). 'Lizards'. In Manual of Exotic Pet Practice, Mitchell MA & Tully TN, Saunders Elsevier, St Louis.

There are a large number of care sheets available online for chamaeleon species and crested geckos. These are of variable quality.

Specific veterinary associated sites include Lafeber (http://lafeber. com/vet/species/lizard/#!/species =lizard&topics=husbandry&proced ures=restraint-handling)

Restore a little order

The fast and easy way to manage staff rotas







www.rotamanager.com 01359 243400







Alison Lambert BVSc MMRS MRCVS

After qualifying as a veterinary surgeon from the University of Liverpool, Alison worked in small animal practice for several years before pursuing a business career. She worked with Hill's Pet Nutrition and MARS before founding Onswitch, www. onswitch.co.uk. Alison is a visiting lecturer at the University of Nottingham veterinary school, covering customer understanding.



*Suggested Personal & Professional Development (PPD)



MARKETING

Marketing is a 'must do'

Whilst obvious, it is important to remind ourselves that without clients we don't have a business. When there was no internet and only one veterinary practice in town, marketing was rarely given a thought – every owner would bring all their animals to you. How times have changed.

First, some facts. Vetfile data from October 2015 puts the number of UK practices at 4,805 - that's a lot of competition. And an ageing population brings different challenges for veterinary practices. Three quarters of pet owners live within five miles of their practice; and a quarter of dog and cat owners use more than one practice (often choosing one for basics where prices are low, and another for emergencies and non-routine care, where more expertise is required).

Estimates suggest that fewer than half of the UK's pets do not receive routine preventive care at the recommended frequency, and online searching and purchasing for advice, products and services is now the norm.

The August 2015 internet usage bulletin from the Office for National Statistics illustrates just what a significant role the internet plays in the lives of your clients:

- it is accessed every day, or almost every day, by 78 per cent of adults, compared with 35 per cent in 2006
- almost all young adults (96%) access the internet on mobile devices and outside the home
- social networking is used by 61 per cent of adults, of whom 79 per cent do so every day
- over three-quarters (76%) of adults bought goods or services online, up from 53 per cent in 2008.

With busy clients looking for rapid and easy solutions to their needs – including the care of their pets and horses – and with increased competition online and from the new practice in the next street, it has never been more important for practices to market themselves clearly, consistently and effectively.

Have a marketing plan

In its simplest form, 'marketing' is the way in which we demonstrate to pet and horse owners that our practice is their best choice. Its fundamental purpose is to make the telephone ring, so that we can meet the owner and her companion animals and demonstrate our superior care. Marketing refers not only to what we say to potential clients, but also how we say it - our tone of voice, design elements and so on - and where we say it. So newsletters, Facebook pages, local newspaper adverts and open days are all marketing.

However, it is no use developing a beautifully shot, high-impact advertising campaign detailing your equine dentistry services and then placing it with a publication distributed predominantly in urban areas. It's crucial to understand who your customers are, where they live, and what they want, so that you can tailor your services - and your communications - to show that you meet their needs better than any other practice.

First you need to define your target audience. Draw

"...almost all young adults (96%) access the internet on mobile devices and outside the home"

a 10-minute drive time catchment (for small animal practices) around your practice, taking note of any geographical barriers, such as motorways, mountains or rivers. Which postcodes and suburbs do you cover? For whom are the local supermarkets catering? Waitrose or Iceland? Where are the gaps in the market? Which can you – or do you want to – fill?

The idea here is that if your 'local demographic' lives in high-rise flats, there are neither the pets nor the funds to provide the 1,000 active clients per full time equivalent (FTE) veterinary surgeon that you'll need (250 for equine practice). And if leafy suburbs and private schools surround you, your services can include more cutting edge medicine and added value services.

Three-quarters of pet owners live within five miles of their practice, so there's more benefit to be had from advertising your services in the town's weekly paper than in the region's glossy magazine. The key reasons consistently given by pet owners for choosing a practice are that it is:

- local
- convenient
- recommended by friends and family
- recommended by an expert.

Conversely, for equine practices the regional press and specialist countryside/



equine titles are more likely to yield new clients in significant numbers. For horse owners, 'local' is less of an issue – most practices cover a wide catchment and will often 'zone' visit days to keep costs down; and expert or familiar veterinary surgeons are sought out, recommended by other horse owners and equine businesses.

Once you know whom you are targeting, and where they are, the message you use to speak to these potential clients is key. Your clinical competence is assumed, so you will be judged on the 'customer experience' you provide.

Practice marketing must illustrate your ethos and give a real idea of what it feels like to be a client of yours – demonstrating why your service is better, more convenient, more empathic

and better value than that provided by anyone else. A note of caution, however, if you are considering focusing all your marketing on price our research finds that fewer than 10 per cent of clients are motivated primarily by price when choosing a practice; and even those who are consider the 'value for money' rather than the bare cost. So if your consult fees are 15 per cent higher than your competitors, it won't matter at all if your team members are friendly, caring and always go the extra mile.

Pet and horse owners understand that they get what they pay for. So mention your health plan by all means, show owners that you want to work in partnership with them to provide excellent care at a fair price, but don't ever just be cheap.

Online presence

Not so long ago, an advert in the Yellow Pages was the only marketing most practices did. Please don't do this anymore! Nowadays owners are far more likely to consult the internet, and speak to family, friends and related businesses, in order to find out about the practices nearby.

Research undertaken by Google with Shopper Sciences, finds that consumers consult an average of 10.4 sources before making the decision to purchase. For potential clients of your practice, this will likely include looking at your website, Facebook page, online reviews, local forums or the RCVS's 'Find a Vet'.

When was the last time you looked at your website with critical eyes? I highly recommend asking family and friends to take a look – you might be surprised at their feedback. IS THERE LOTS OF SHOUTY TEXT? Are there 'spilling mostakes'? Is it easy to find information on opening hours and contact details? Are there photos and biographies of everyone in the team? Your

"...our research finds that fewer than 10 per cent of clients are motivated primarily by price when choosing a practice; and even those who *are* consider the 'value for money' rather than the bare cost"
"Not so long ago, an advert in the *Yellow Pages* was the only marketing most practices did. Please don't do this anymore!"

customer care team will be the first and last point of contact every time an owner calls or visits, so it is crucial that they feel central to the practice.

Don't forget...

Then do the same with your Facebook page and Twitter feed – when was the last time a post was added, or a Tweet sent? Daily updates are recommended in order to show that your practice is diligent and professional, and that you understand that social media is immediate and engaging. Are there lots of client reviews? And, crucially, are they positive?

Any negative comments should be addressed immediately with a friendly acknowledgement and an invitation to speak to the originator about the issue. Never delete negative comments because this can easily lead to a sustained and escalating stream of online vitriol that will appear to any prospective clients searching for your practice online. For every one of the few negative comments you will inevitably attract at some point, you'll find that there are 10 delighted clients happy to step in and set the record straight!

Even the least 'tech savvy' of us understands the concept of 'search engine optimisation' - ensuring that your practice is one of the first ones mentioned following a search for 'vets in MyTown'. Some businesses still write their websites over-using key phrases repeatedly throughout in the mistaken belief that this will fool Google's increasingly sophisticated algorithms rather than simply annoying the reader. Nor is paying for Google Ads necessary - the company's own research

finds that 28 per cent of clicks following a search are on the read promoted results, whilst 72 per cent are on the organic, unpromoted results.

The best advice is simply to write your website for the reader, not for the searchbot. Use language that owners use, in a tone that is warm and professional. Oh, and images of cute animals always go down well too!

Adding new content regularly is a 'must' – because it both flags your website as an actual live, current, popular site and also because it encourages owners and clients to keep checking back. Write a quarterly newsletter and have it available to download online, as well as emailing out to all your clients (you'll need to make sure you are collecting and checking email addresses for all your clients for this to work!). Content that you can share online is effective and free marketing, and if you can help your clients share it even further amongst their own friends, then so much the better.

This is where Facebook really comes into its own. The average adult has 338 Facebook 'friends' (Pew Research), all of whom will see every interaction they have with your practice. Encourage your clients to leave reviews and feedback on your page, post pictures of their own pets and share stories and tips. Running competitions on Facebook is a great way to raise awareness of your practice, as is posting funny photos and stories these will encourage lots of shares. Aim to collect 1,000 Facebook friends for every FTE veterinary surgeon at your practice.

If you haven't already established one, add a Friend-Get-Friend scheme to your website and social media, as well as emailing out to your owner database and handing out professionally designed and printed copies to clients. Happy clients are the most effective marketing tool - if you provide a superior customer experience to your owners, they won't be able to stop themselves gushing to friends and family about you. Providing a small financial incentive for both parties simply helps this natural word of mouth along and is a proven mechanism for attracting new clients in significant numbers.

Offline presence

Of course, there are plenty of opportunities to market your practice using the large, free advertising spaces already owned by you – namely your building and your practice vehicles. Aggregated national research finds that 15 per cent of owners first found their practice simply by passing by, so it certainly pays to make sure you stand out.

Bright, fresh signage and distinctive practice livery will raise awareness, especially if the same brand colours and logo run across all your communications, including your website, signage, newsletter, letter headings and so on. Temporary magnetic panels can also be created to attach to the team's cars and vans to advertise the practice as you drive around. Jute bags, horse blankets and 'dogdanas' can even be printed or embroidered with your logo, keeping the practice front of mind for clients every day. And then there are the old

favourites – pens, post-it notes and fridge magnets also do a great (and inexpensive) job of reminding clients of the great care you provide.

Marketing is only the first step

As we said at the very beginning, the point of any/ all practice marketing is to make your telephone ring. Around 90 per cent of initial client contact in the veterinary sector happens on the phone; and from there it's down to your team to deliver a superior customer experience that makes owners want to stay, and tell their friends.

Without effective marketing you simply won't attract the numbers of new owners needed to ensure that your business remains viable. Given that pets and horses die, whilst owners move out of the area or try out a competitor, it is estimated that the average practice loses a third of its clients every five years. Marketing not only attracts new ones to fill the gap, but can also educate existing clients into routine preventive care and joining practice health schemes.

The bottom line is that any money you spend on marketing should prove to be a great investment - one that, increasingly, you cannot afford not to make.

"Without effective marketing you simply won't attract the numbers of new owners needed to ensure that your business remains viable"

Strength in diversity



Independent veterinary practices in the UK face fresh challenges, as large corporate businesses continue to expand.

here has always been strength and influence in numbers and the current situation threatens to leave the independent practice lost in a world of corporate domination.

The Federation of Independent Veterinary Practices (FIVP) seeks to redress this balance by providing an association that represents the interests of independent practices and promotes their values.

The FIVP is committed to supporting and promoting the intrinsic, care-focused principles of independent practices. Our purpose

is to educate clients on the benefits of independent practice and extol the virtues of a personalised service for their pet. FIVP aims to be a cohesive voice for independent practices that currently lack the ability to express their views within the industry. By creating a community of affiliated practices, FIVP also helps to advocate exceptional care, great facilities, and outstanding management.

FIVP helps to strengthen the voice of the independent practice by encouraging vets to have their say on important veterinary issues and influence decision-makers within the industry. It also enables independent practices to promote the advantages and benefits of working in this sector to graduates and to promote the idea of social enterprise.

Membership is for the practice

One of the important functions of the FIVP is to represent and work for the practice, irrespective of species of animal treated or individuals who make up the practice.

Who can become a member of FIVP?

The FIVP is open to all independent practices in the UK – from single-site to multi-site practices, from partnerships to limited companies. The criteria for joining is that the ownership is directly and predominantly involved with the management of the practice, and that the practice meets the core standards of the Practice Standards Scheme or equivalent. To avoid ambiguity, all applications for membership need to be approved by the Executive Committee.

Why become a member of the FIVP?

FIVP members benefit from the Federation's overriding principles of promoting, sharing, representing and supporting.

Promoting

The FIVP represents the interests and promotes the values and benefits of independent practices to the market and consumers.

Sharing

The FIVP assists members to continually improve their practices through sharing best practices in clinical, financial and management disciplines.

Representing

The FIVP represents the voice of the independent practice which currently has no way of putting forward its views to the wider veterinary community.

Supporting

The FIVP gives its members access to preferential rates and services from selected suppliers and associations which support independent veterinary practices.

Our benefits include:

- free subscription to Veterinary Practice Today
- free staff membership to vetcommunity.com
- complimentary copies of PetFocus magazine

Structure

The FIVP is made up of a Governing Body which is responsible for setting the strategic direction of the Federation and a Membership Committee that advises on issues affecting the membership. It is run on a not-for-profit basis.

Principal sponsor

The FIVP was started by its principal sponsor, AT Veterinary Systems. AT Veterinary Systems is a long-standing provider of practice management systems and computer technology to the veterinary profession.

Join now

To find out more, please contact Ian Skates on enquiries@fivp.org.uk or visit www.fivp.co.uk.









Sarah Kidby BA(Hons)

Sarah is a journalist and editor at Vision Media – an agency that specialises in veterinary publications. She works as a news reporter for veterinary websites MRCVSonline and VNonline, as well as creating more in-depth features for veterinary journals and consumer magazines.



*Suggested Personal & Professional Development (PPD)



LIABILITY

Common claims against veterinary surgeons – some guidance (1)

Patient safety and the prevention of errors are subject to increasing scrutiny in veterinary medicine. At the BSAVA Congress in Birmingham this year, Stuart Ellis, a claims consultant for the Veterinary Defence Society (VDS), revealed the top 10 claims made against veterinary surgeons, and how to avoid them. In part one of this two-part series, we look at the first five claims covered.

It is important to recognise that mistakes in veterinary practice cannot be eliminated entirely, but a number of simple strategies can be adopted to reduce the risks significantly.

Routine neutering

Haemorrhage is an acknowledged complication of any surgical procedure and it can occur through no fault of the surgeon, even when everything has gone according to plan. The VDS deals on a daily basis with cases of bleeding after routine neutering, particularly bitch spays. However, cases can be more difficult to explain and defend if the surgeon has failed to apply ligatures or the ligatures are nowhere to be found at post-mortem.

Significant extra costs may be incurred if signs of bleeding occur after the dog has been sent home and the owner telephones the emergency clinic. The same is true in cases in which the dog begins bleeding at the end of the working day and the veterinary surgeon is forced to refer the case or send the dog to an outof-hours clinic. Consequently, owners are unhappy that what they thought was a routine procedure has turned into something far more costly and complicated.

Ovarian 'remnants' are, perhaps, the most common reason for added expense and owner dissatisfaction. In fact, this has come to be known as 'ovarian remnant syndrome'. Owing to the difficulty in locating the remnants, these cases are often referred to specialist centres and the bill can be extremely high. What would ordinarily have been a £45 to £50 cat spay can end up costing as much as £2,000.

Wound breakdown is another complication that can happen even with the most competent surgeon. This is both dramatic and costly for the owner because specialist attention is often necessary.

Although the veterinary surgeon may not have been negligent in any of these situations, who pays for the remedial work? The VDS investigates numerous cases of this nature on behalf of its members and, where a clear mistake has been made, they will generally settle the case without going to court. And often these cases are not the result of any negligence on the part of the veterinary surgeon.

Pet passports and PETS

Problems with completing pet passports under the Pet Travel Scheme (PETS) have been on the rise since new documentation was introduced in 2014 (**Figures 1** & **2**). While it was hoped the new format would help to resolve some of the issues, the VDS is actually seeing an increase in associated claims.

The most common errors are completing tasks in the wrong order - doing the rabies vaccination before inserting the microchip, for example, inputting the wrong dates, or missing off digits on the microchip number.

The most problematic part of the 'new-style' passport involves a change of wording, from 'Date of microchip' to 'Date of application or reading'. This prompts some veterinary surgeons to record the date they read





Figure 1. A pet passport.

Pet passports - what has changed?

- new-style pet passport came into effect on 29 December 2014
- includes laminated strips to help prevent forgeries and requires the issuing vet to provide more contact details.

Changes to the Pet Travel Scheme

- new minimum age of 12 weeks before a pet can receive a rabies vaccination
- EU member states are required to carry out checks on their borders
- definition of 'non-commercial movement' has been tightened up.

Figure 2. Some significant changes to PETS.

the microchip. While this an honest entry, if it post-dates the rabies vaccination, the pet could be stopped at the border and denied entry back into the UK. There are also implications for patient welfare here if the dog or cat has to spend three months in quarantine as a result of passport problems. It is worth noting that there has been a slight shift in the onus of responsibility for errors on the passport. From the early days of the Pet Travel Scheme, up until 2014, the guidance made it clear that the pet owner was responsible for the passport and any mistakes could cost them money. More recent guidance, on the other hand, reads: 'It is the responsibility of the pet owner to ensure that their pet is fully compliant with the rules of the EU Pet Travel Scheme. That said, veterinarians are uniquely placed to assist pet owners and help ensure that they have a trouble-free journey.'

To reduce the risk of passport errors, it is worthwhile referring to the guidance notes by the Animal and Plant Health Agency, http:// ahvla.defra.gov.uk/externaloperations-admin/library/ documents/exports/ET139.pdf

Pharmacy claims

The VDS sees a steady stream of pharmacy claims that relate to the administration of the wrong drug or dose being given, or drugs being administered via the wrong route. Such cases can be devastating for patient safety and welfare.

Another source of pharmacyrelated claims is solvent damage caused by spot-on flea treatments, which can stain furniture and vehicle upholstery, for example. Data sheets for spot-on products include a clause about this and advise that treatments should be allowed to dry before the pet comes into contact with certain materials - such as leather, plastics, fabrics and finished surfaces - but there is no guidance on exactly how long these products take to dry.

Such claims can prove costly when, for example, a client's two-day-old Lexus needs a new dashboard after their dog hops in and shakes himself immediately after the veterinary practice has applied a spot-on treatment. Veterinary surgeons should warn clients about the risks when dispensing or administering these products.

On occasion, the VDS deals with claims where hypertonic saline has been accidentally used instead of normal saline – often resulting in severe illness or the death of the patient. Currently, the packaging is almost identical, which can lead to mix-ups where the wrong bag is picked up in the rush to rehydrate a patient. The VDS is called upon to defend one or two such claims a year.

The human medical profession is steering towards adding a red warning label to hypertonic saline to avoid this and a campaign is under way to make similar changes to veterinary products. Changes of this nature are expensive to implement, however, and there has been some resistance from some pharmaceutical companies.

Timing of Caesareans

This can feel like a 'loselose' situation for veterinary surgeons. If the breeder insists the bitch is ready and the veterinary surgeon



"To err is human, but to persist in error is diabolical" – Georges Canguilhem, French philosopher and physician

decides to wait, the breeder may blame him or her for not carrying out the procedure sooner if things go badly. If the veterinary surgeon decides to perform the operation at the time suggested by the breeder and the puppies are premature, the veterinary professional may still end up being blamed by the breeder for not using their clinical judgement.

Problems can arise too from the use of buprenorphine (Vetergesic, Ceva Animal Health) as the data sheet contains a warning that it should not be used in Caesareans owing to the risk of respiratory depression in the offspring. Data sheets are now readily available to clients over the internet and if puppies start to fade and die, they may request to see the clinical notes and find that buprenorphine was used.

Although the use of opioids in surgery or premedication

may be quite justified in looking after the bitch's welfare, it could compromise the puppies and, if the puppies do fade, it can be difficult to prove this is not the result of the buprenorphine. Owing to the statement in the data sheet, these claims can be difficult for the VDS to defend.

As a useful alternative, many veterinary surgeons will induce first then give opioids later, or obtain informed consent from the client after making them aware of the risks of buprenorphine to puppies, versus the benefits to the mother. This can help a great deal if you need to justify the use of this active later.

Though it can be challenging in an emergency situation, obtaining proper informed consent is as important as ever. Discuss the pros and cons of each option with the owner, make good notes about what was said and, importantly, record the owner's response.

Orthopaedic procedures

A 'hot potato' at the moment, orthopaedic procedures are becoming ever more complicated and these can be catastrophic when they go wrong. When clients are faced with a diverse range of options, rather than one 'failsafe' technique, explaining the pros and cons of each possibility to the client can be difficult. Cruciate ligament repair is a classic example of this as there are many different approaches.

The advice to veterinary professionals is: know your individual limitations and consider the consequences if the procedure goes wrong. Refer the case if necessary. In some cases, it may be worth giving the client a choice about whether they wish to take their pet to a referral centre or have the procedure done at their first-opinion practice.

Be sure to warn the client about the risks and complications with any procedure and, again, gaining proper informed consent goes without saying. Written discharge notes tailored to the client's home life are important and useful too, as clients are often stressed at the practice and may not absorb everything you are telling them.

Prevention is better than cure

When things go wrong, in the majority of cases it is not down to negligence on the part of the veterinary surgeon. Whilst it is not possible to avoid these situations entirely, simple steps – such as those suggested in this article – can often help to prevent many common claims.

Part 2 of this short series will look more closely at patient safety, focusing on another five common claims against veterinary surgeons - those relating to misdiagnosis, lost/ injured pets, missed foreign bodies, retained surgical items and human injury.



Industry Profile



Your name: Ross Tiffin Position: Strategy and development adviser Company: International Society for Feline Medicine, www.icatcare.org

Tell us a little bit about your upbringing and first contact with animals.

I must confess to an early childhood clumsiness that resulted in my dropping a wriggling 'Westie' puppy within hours of it arriving at its new home with us. The poor animal required treatment for a fractured leg and, besieged by guilt, I undertook to attend all the subsequent veterinary visits along with my aunt who brought me up.

We lived in West Wickham which, 60 years ago, was still quite a semi-rural area and, when the puppy had recovered from its ordeal, he and I forged a close partnership that involved us taking long walks together and developing a lasting friendship. That was my introduction to 'proper' pet ownership; although we had always had 'budgies' and a cat maintained in an uncertain period of domestic ceasefire, which kept stress levels on red alert but, miraculously, never ended up in a feathery lunch for the Siamese!

Despite my lengthy and enjoyable association with the International Society of Feline Medicine (ISFM), I have always had a soft spot for dogs, and my wife and I currently have two Labrador retrievers as well as our two remarkably aged cats.

How did your career develop, especially in relation to the veterinary industry?

At the end of the 1960s, teachers' pay was appalling and I soon realised that my career would make penniless progress unless I bailed out into something more lucrative so, in a remarkable miscarriage of justice, I managed to persuade the pharmaceutical company, Roche, to take me on as a representative.

After a few years with Roche – and later with Astra (before it became Astra Zeneca) – I was head-hunted to set up a new division for Colgate Palmolive, selling and marketing a range of dental products, probably on the basis of my earlier role as a product manager for local anaesthetics for Astra, who were the originators of lignocaine.

The Colgate work was quite successful and, when in 1986 they launched their subsidiary, Hill's Pet Nutrition, in the UK, I was invited to become the country manager. Over the next 10 years, I was active in many roles within the business, ending up as commercial director for Northern Europe. Looking back, it was both a terrific opportunity and something of a privilege to be in at the birth of such a business.

I have a raft of amazing memories from that period but the part that makes me most proud, in retrospect, was the work we did in setting up Hill's in an educational partnership with the profession. Many things have changed over the years, but I believe that will remain a lasting relationship.

What are the most significant changes to veterinary practice that you have witnessed since your first contact with it?

I think I have lived through the period when the profession may have changed most profoundly – although that statement presupposes that the period of change is now over; which is patently not the case. If anything, there may be more profound changes yet to come.

Like anyone else who has been involved in and around the profession for the last 30 years, I've seen the transition from large animal and mixed veterinary practice to a predominantly small animal-based practice set-up; with large animal work now being done by a comparatively small number of well-organised, highly mobile practices, many of which cover large geographical areas.

The business model for them has changed dramatically into a B2B model whereby much of the work is now based on tenders and contracts, with a predominant emphasis on herd health. In contrast, the small animal business model remains essentially unchanged – with a strong reliance still on clients crossing the practice threshold but in a far more competitive marketplace.

Much of that competition now comes from the corporate sector; and that too is an innovation that has recently become far better organised, more focused and more business orientated. The drivers for this have been derived from a reluctance among younger vets to buy into the traditional partnership model and the lifestyle that this represented, together with a resulting re-assessment by more senior vets of how their own business exit plans could now be achieved.

Of course, the principal driver for this has been the acceptance that practices need to recognise consumer behaviour and to model their own market offerings to meet consumer demand. That is very different from the 'Alf' Wight era during which the social dynamic revolved around a respect for specialist skills within a more structured society. With the advent of the internet and the ready availability of boundless knowledge without context, small animal veterinary surgeons may now need to reboot their relationship with the local community.

What do you think are the most critical issues facing veterinary practices today?

I don't think it's possible to see the profession as a cohesive entity now and so it is difficult to take a blanket approach.

If we put food-animal and specialist equine practice to one side and look predominantly at small animal practice, we fool ourselves if we think that the business is built on anything other than sand. There is no requirement for people to have pets and, although the relationship between man and pets may go back to the Stone Age, the development of a small animal specialist

"I don't think it's possible to see the profession as a cohesive entity now and so it is difficult to take a blanket approach"



Ross Tiffin with Labrador retriever.

veterinary business is comparatively modern and is predicated on the maintenance of an affluent and generally stable society.

This is also reflected in recent developments in Russia and China, to name just two nations where the emergence of comparatively affluent, middle-class consumers has resulted in a wider incidence of pet ownership, often using pedigree pets as status symbols, and a concomitant rise in the establishment of specialised veterinary practices. I don't think I've ever seen any structured work done on measuring business risk in veterinary practice; but, clearly, our small animal business needs pet ownership to continue at a similar level as today and there are inevitably a number of socio-economic factors which could affect that.

I have, for several years now, felt that the small animal practice business model, if not broken, is well past its sell-by date and I suspect that the development of corporate practice may hasten a reassessment of that model and the design of something rather better suited to today's world.

We may precipitate some major change in this ourselves if we continue to ignore the obvious fact that the number of active patients/FTE veterinary surgeon is not growing – and has fallen significantly over the last 20 years – while we continue to recruit and train more and more veterinary students. I do recognise that a significant number of these are overseas students who will return home on qualification, yet I fear that insufficient work has been done on looking at this holistically; and we may find that technology will hasten a re-think of our existing business model and the way we deploy skilled people.

How should they (the issues) be tackled?

I'm not sure that my views would be representative but it seems to me that the principal danger for the profession would be for

it to allow veterinary services to become a commodity. If – as Denise Kingsmill, deputy chair of the Competition Commission, recommended in 2003 – veterinary practice were to become so competitive that market forces could be relied upon to shape its development, the profession would lose control of its own future and ever-lower pricing would become the norm.

That would cement a dangerous fallacy that veterinary surgeons exist primarily to provide a shop front for products and services that can increasingly be sourced elsewhere. Whereas, I believe that most of the profession would prefer to see themselves as the lynchpin of animal health communication. Health communication provides a lasting platform from which a sound and lasting future can be built for veterinary surgeons and communication is right at the front of the struggle to achieve health promotion objectives.

No-one knows better than this profession how to reduce and manage health risks in animals and, as the disease patterns of different species become ever more closely linked with human health, I believe that the profession must strive to 'own' this area in its dealings with both the public and with government.

What, in your opinion, is the 'public perception' of the veterinary profession?

If we believe the data published by the ISFM, around 10 per cent of pets visit their veterinary practices regularly and their owners do everything they can to ensure the health and longevity of their animals. Around 50 per cent rarely – or never – visit the vet; which leaves around 40 per cent of 'floaters' who would consult a veterinary surgeon if they better understood the risks and opportunities of pet ownership and if the profession conceived a method to charge them on a different basis. Currently, that sector is drifting away from the profession into the grocery and pet channels and it is critical that this slide is addressed.

So, for the 10 per cent, their perception of the veterinary profession is predictably high and respectful. For the foreseeable future, the 50 per cent are a lost cause to us; but the floating 40 per cent probably think well of the profession but don't know enough to realise that their preferred alternative channels fall short of the knowledge and expertise that they actually need to access if they are to care properly for their pets. As they don't recognise the importance of such expertise, they are coming to a view of the veterinary surgeon simply being useful *in extremis*.

To prosper, the profession absolutely needs to recapture this sector if it is not to rely on an ageing, supportive cohort of faithful clients which will, one day, diminish in size.

How well are the profession's leaders doing in facing up to the wider Euro-political and economic realities of life? The simple answer is that I don't know. I'm not a veterinary surgeon, I cannot be a member of BVA and, therefore, don't receive the Veterinary Record. Otherwise, I am dependent on reports in other veterinary publications which are, in turn, dependent on the BVA telling them what it is doing. For the first time in ages, it seems that the BVA has found its voice and

"I have, for several years now, felt that the small animal practice business model, if not broken, is well past its sell-by date" appears to be willing to grasp the nettle of operating in the 'real world'; but I so wish that I knew more about what it is doing.

I suspect that many people still confuse the roles of the BVA and the RCVS – a mistake that can only lead to disappointment because their roles are clear cut and very different! Having said that, I genuinely believe both organisations would benefit from enlisting greater participation of committed lay people to assist them in meeting the challenges that any meaningful interface with consumers would bring.

The temptation for both organisations might well be to fight shy of such an interface but, if either is to retain their role in any meaningful sense, the only way forward will be to walk into the future hand in hand with tomorrow's consumers and, for some within the profession, that has been a difficult concept to embrace.

I applaud the concept of 'Vet Futures' and wish it well. However, I am always concerned when the profession looks inward instead of outward, so let us hope that this initiative produces some apposite observations and a real plan for the future.

What next for veterinary practice? How will it look in 10 years time?

My conviction is that progress will be dictated by technology. I suspect that we shall see biometric measurement of vital signs via implants in animals that are linked to an app which veterinary practices will lease to their clients, thus breaking the cycle of 'promiscuous' use of several practices. The app will monitor vital signs and will be programmed to flag up critical deviance from the norm. These reports will activate activity by the practice, including an examination of the animal by a veterinary surgeon.

If something like this were to occur, it would re-set the relationship between the veterinary surgeon and client, thereby allowing the practice to charge on a capitation basis for a far larger cohort of active clients without the client needing to visit the practice except for activities that would be seen as critical. I think this would involve far more home visits and fewer waiting room queues. Of course, we have a way to go yet, but I suspect that this, more or less, may be indicative of how things may develop.



What would your advice be to a young person considering training to become a veterinary surgeon?

A new graduate today will be looking forward to around four decades of experience within the profession in one – or more – of a number of roles. The vet schools are busy producing 'veterinary scientists'; but, for most graduates, this will mean a lifetime of activity within some form of veterinary practice – and the last four decades have seen huge challenges and changes.

Bearing this in mind, I think that the BVA should be looking into the future to better judge what opportunities lie ahead for tomorrow's graduates and we can only conclude that these will be different – perhaps radically so.

One of the biggest challenges will be in our struggle to feed a burgeoning world population in an ethical and sustainable manner. This will require us to re-think our priorities and re-assess our relationship with animals to the extent that the science will have to be married – not just to the art – but also to the *philosophy* of veterinary medicine, to an extent that we haven't yet experienced.

My advice would be for tomorrow's graduates to develop an open and receptive mind in parallel with their understanding of veterinary science. The provision of veterinary services has always been a 'people business' using animals as its platform rather than an 'animal business' per se, and I'm sure that tomorrow's veterinary surgeons will have to embrace this dynamic far more than has been necessary to date.

In an ideal world, the veterinary surgeon will be sought out as the trusted conduit for all communication and advice about food animals, as well as pets.

How do you relax when away from the hustle and bustle of work?

I'm really not very good at that! My wife complains that even sitting down and watching TV without getting up to do something else seems to be beyond me.

I do, however, find that clay pigeon shooting is my best source of relaxation. Like most hand and eye coordinated sports, I find I do best when I leave it to my addled brain to sort things out – it all starts to go wrong when I over-think it. Apparently, relaxation is the key if I ever manage it.

Other than that, living in the Cotswolds provides endless opportunities to take the two Labrador retrievers out exploring the countryside and, if I'm discovered talking to myself whilst walking along, I can always claim that I was talking to the dogs!

CPD for the whole practice team

We deliver training solutions to meet the needs of you and your team.

Develop skills and update knowledge through a range of events designed to improve performance and encourage professional development.

CPD Events 2016

CT Imaging in First Opinion Practice	13 July	Ipswich, Suffolk
Client Care	6 September	Ipswich, Suffolk
Pain Recognition and Effective Analgesia	19 September	Ipswich, Suffolk
OSCE Preparation Day	24 September	Ipswich, Suffolk

Upcoming CPD Events 2016

- Anaesthesia
- Behaviour
- Emergency and Critical Care
- Fluid Therapy
- Management
- Physiotherapy
- Pharmacy and Stock Management
- SQP Update Days
- Veterinary Ethics
- Wound Management

Dates to follow, to express your interest please email us at the address below.

Join our CPD Club today

• Tailored CPD • Priority booking • Special offers and discounts

T: 01359 243 405 or E: enquiries@ccoas.org.uk www.ccoas.org.uk



Central College of Animal Studies



Spectrum's DDS cluster technology™ the new gold standard for Practice Management Systems

Revolutionary New Technology.

AT Veterinary Systems has over 25 years' experience in delivering quality Practice Management Systems for the veterinary profession.

We understand your needs _____

Start to discover the benefits of Spectrum's unique DDS cluster technology™.

enquiries@vetsystems.com | 01359 243400 |





National Veterinary Data Service



A complete lost and found service for your clients



To find out more about this service please email: enquiries@nvds.co.uk or visit: www.nvds.co.uk



NATIONAL VETERINARY DATA SERVICE