ONLINE EDITION
VOLUME SEVEN | ISSUE THREE | MAY/JUNE 2019

Veterinary PracticeToday

FOR PERSONAL & PROFESSIONAL DEVELOPMENT

Our Brexit future

Opportunities for the profession?

10 hours PPD

Chronic pain in dogs and cats
Explaining the pathway

Sheep dogs
Influencing health, welfare and working ability

Sleep deprivation in horses
Understanding the reasons for equine sleep disorders

Giving back to the community
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AT VETERINARY SYSTEMS

UP FRONT...

It is always wise to do some forward planning – not least in the world of publishing, where life is all about copy dates and deadlines. But sometimes, the best laid plans...

Such was the case when commissioning our 'Comment' article in this issue. Back in January, when the planning began, we fully expected to have left the EU before this edition of *Veterinary Practice Today* was on your doorstep and we thought it would be an excellent idea to ask BVA past president, Gudrun Ravetz, to sum up what that leaving really meant for the veterinary profession.

Yet, the fickleness of politics and politicians means that here we are in May still within the EU. Notwithstanding that, Gudrun has written an excellent article on the current situation for the profession.

The effect of leaving the EU on the supply, licensing and prescribing of veterinary medicines has been one of the big issues within the veterinary profession; but just as important is how medicines are used, particularly on farms. Medicine use on farms has changed over the last decade or more and this is discussed in Owen Atkinson's excellent article on medicine stewardship. He highlights the need for better medicine compliance and storage on farms and points to the ever-present threat of antibiotic resistance – looking at how medicine stewardship by the veterinary profession can redress many of these issues.

Staying with the farming theme, Kaz Strycharczyk writes about the farmer's trusty companion, the sheepdog, with particular reference to the health and welfare of these working dogs and the role of the farm vet in their care. As a former owner of a Border collie, whose looks were more impressive than his herding abilities, I read with interest Kaz's comments on the scavenging traits of sheep dogs (Yes, I remember this well!) and the additional welfare risks a farming environment presents.

The country is going through a painful political process, but this is nothing compared to the real pain that our companion and commercial animals sometimes suffer and this is dealt with by two of our authors, Joanna Potter and Marie Rippingale. Joanna's article is the first in a series on chronic pain in dogs and cats that looks to improve our understanding of chronic pain and its management; while Marie takes an interesting look at pain scoring in equines and how the use of facial expressions can be used to assess pain.

Our next issue is due to be published in early July. Who knows if we will still be part of the European Union or be that 'Sceptered Isle floating alone in a silver sea', to slightly misquote Shakespeare's Richard II. Whatever the future holds, we still have to plan our journal well ahead – but no assumptions this time.

Maggie Shilcock
Editor

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

Veterinary PracticeToday

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

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ISSN: 2053-440X

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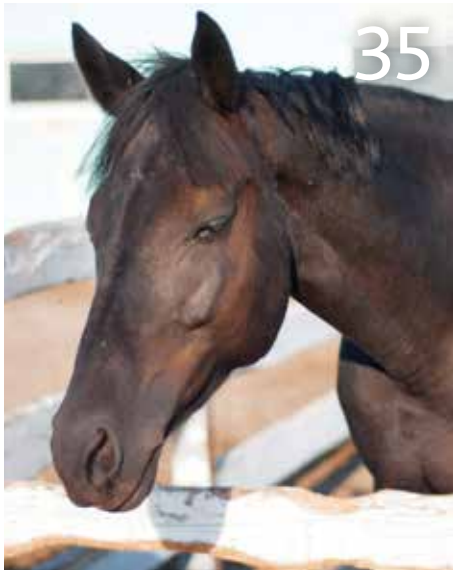
Equine



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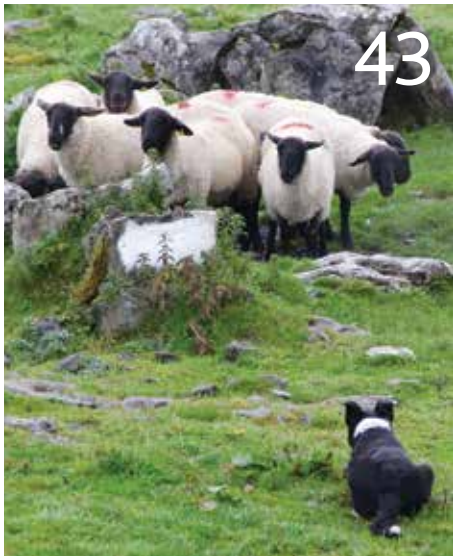

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Correction
We apologise to our readers for an error made in the PPD answers in the article Glaucoma in dogs(2) treatment and considerations, in the last issue of *Veterinary Practice Today* (7[2]). The answer to question 2 should be A and the answer to question 3 should be B.

Our Brexit future

Gudrun Ravetz
BVSc MRCVS

Gudrun qualified from Bristol Veterinary School in 2002. She still does not really know what she wants to be when she grows up, so is very thankful for the varied career and many opportunities the veterinary degree has given her.

She is a past president of the British Veterinary Association and the Society of Practising Veterinary Surgeons and is head veterinary officer for Simply Health Professionals. She also has a graduate diploma in law and a postgraduate certificate in business.

At the moment, Gudrun tries to have one day off a week from talking about EU exit. On the other six days she is passionate about making sure that we take the opportunities and tackle the challenges of EU exit and the vital role that the veterinary profession will play for animal welfare.

Her true loves, however, are swimming, biking and running – preferably on the fells, lakes and back roads of Cumbria.

So why as a profession and as individual veterinary professionals should we be interested in what is happening in politics?

Leaving aside a personal viewpoint – which it is difficult not to have in the current political climate – the question is about our professional interest. In whatever sphere of work that we are in, as veterinary professionals the ins and outs of the 'day job' can be all-consuming. Stepping back and looking up and out at the politics going around does not always hit the top of the 'to-do' list.

BREXIT

Yet I think it is safe to say that EU exit has made us stop, look, listen and think like no other political event for a long time. But why is this?

Put simply, EU exit has propelled the veterinary profession into the political spotlight and affects all aspects of our profession. In 2016, the value of UK animal and animal product exports was £7.6 billion[1] and this is underpinned by the work of vets. But it is by no means confined to trade and aspects of food production. Veterinary medicines, workforce, animal health and welfare, research and development are all affected – and don't forget the Pet Travel Scheme which is a consistent item in MPs' post bags.

The National Audit Office report into Defra's progress in exiting the EU backs up the vital role of vets: '...Without a significant increase in the UK's veterinary capacity, Defra will be unable to process the increased volume of export health certificates it expects if there is no deal ... If there are not enough vets, consignments of food could be delayed at the border or prevented from leaving the UK'.[1]

Workforce

One of the most pressing concerns for the profession has been around workforce. Currently around 50 per cent of the yearly registrants to the Royal College of Veterinary Surgeons (RCVS) are non-UK EU national veterinary surgeons who play an essential role in every aspect of the profession. In the meat hygiene sector alone, industry estimates show around 95 per cent of the veterinary workforce graduated outside of the UK – with the vast majority graduating from non-UK EU veterinary institutions.

In veterinary practice, the figure for non-UK EU nationals is between 20 and 30 per cent; in academia it is around a fifth; and it is even higher in government positions. Any risk that may lead to the departure of our EU colleagues who are currently in the UK, or deter EU vets from working in the UK in future, will exacerbate a real and serious workforce crisis in the profession. In a survey by the RCVS, 88 per cent of respondents believed that there would be a shortage of veterinary surgeons if non-UK EU vets are no longer able to practise.[2]

Add into this the potential for an increase in veterinary certification required for trade and other animal movements and there are some big questions hanging over veterinary workforce capability. Is the current shortage of vets likely to increase as demand for their services potentially increases and what can we do about it? These are big questions; and, like so much around EU exit, it is difficult to be certain. Yet these are questions that the British Veterinary Association (BVA) and RCVS have been trying to answer by lobbying government sources in order to flush out some facts and gain some certainty.

The Government's EU 'settled status scheme'[3] does give a degree of certainty and will allow non-UK nationals to apply for settled status if they fulfil the necessary criteria. While this is welcome,

"There is no doubt that EU exit will affect the profession – although it is a real crystal ball-gazing exercise to see how that may be"

the RCVS registration data[2] suggested that 49 per cent of UK-practising non-UK vets would not have been registered for five years by March 2019 and this may indicate that many would have to apply for pre-settled status first. Anyone wanting more information on this should look at the BVA's website[4].

While we can discuss much of this in terms of facts and figures we must also not forget the emotional strain that uncertainty can put on our profession – particularly non-UK EU nationals. According to the RCVS survey, 67 per cent of non-UK EU national vets are "finding the uncertainty about their future difficult" and, sadly, 64 per cent "feel less welcome." Interestingly, 79 per cent were awaiting the outcome of the Brexit negotiations before deciding what to do. Given that this survey was last carried out in June 2018, it would be interesting to see what this 79 per cent are thinking now as the negotiations are extended.

While the workforce crisis has not been caused by EU exit, it has brought it into sharp focus. The profession is beginning to understand – and tackle – some of the issues; and, in this respect, the recent report on Motivation, Satisfaction and Retention[5] and another on Gender Discrimination[6] from the BVA and University of Exeter, are well worth reading.

The profession is looking to the future and actioning many of the suggestions laid out in the BVA/RCVS Vet Futures and Vet Futures action reports. It is also calling on the Government to reinstate vets on the Shortage Occupation List and has actively engaged with the Migration Advisory Committee to this end – watch out for its report due for publication soon. But as with anything, these actions will take time, which is why there needs to be clarity for the veterinary workforce in terms of EU exit.

Many suggestions are often more complex than would appear on the surface. For instance there have been calls for an expansion of the number of UK student places to study veterinary science, with a view that this would increase the number of UK national veterinary surgeons – a similar pledge was made by Jeremy Hunt in October 2016 to increase the number of UK doctors.

While this may be one part of the workforce solution, we need to be aware that 22 per cent of veterinary academic staff are non-UK EU nationals and there would need to be a significant monetary investment, because it is estimated that the cost of educating one veterinary student is around £20,000 per academic. I would recommend reading the BVA's brand new position on UK veterinary education to really understand the challenges and opportunities here; so keep an eye on the BVA website for this position statement coming live.

Certainty has been brought to the registration of veterinary degrees in the event of a no-deal. Currently, under the existing Mutual Recognition of Professional Qualifications Directive, applicants from the EEA and Swiss nationals can automatically join the RCVS Register. In the event of a no-deal scenario – which could mean that MRPQ no longer applies – the recently passed Statutory Instrument (The Veterinary Surgeons and Animal Welfare (Amendment) (EU Exit) Regulations 2019) will allow the RCVS to continue to register degrees obtained at EEA institutions, provided the degree meets the RCVS educational requirements and standards. If these standards are not met, then the Statutory Examination will need to be passed to obtain membership of the RCVS. However, the right to register a degree is not the same as the right to work, which will depend on any future immigration policy.

"...animal welfare must be prioritised in any trade deals and if we end up trading under World Trade Organisation rules, we must protect animal welfare as a public moral imperative"

Animal health and welfare

Obviously diseases do not respect borders, which is why as a member of the EU, the UK has been part of EU surveillance schemes for animal health. As highlighted by the BVA in their Brexit and the Veterinary Profession report, 'A high proportion of UK Government animal health policy is enacted via EU legislation'.[7]

While there are a myriad of important Regulations and Directives that we could talk about, the important point is that the protections currently in place for animal health must not be diluted after EU exit and, where possible, the opportunity to enhance them in a proportionate and reasonable manner should be seized.

Animal welfare is at the heart of what we do as vets and it also captures the attention of the general public. Welfare is legislated for through several avenues including national legislation and international treaties. However, around 80 per cent of the welfare legislation is from the EU. One area that captivated the media was that of sentience. Article 13 of Title II of the Lisbon Treaty puts a duty on Member States to have regard for animal welfare when formulating and implementing policy (with caveats) and states that animals are sentient beings. Unlike EU Regulations – which are, where appropriate, transferred in to UK law via the EU Withdrawal Act) – a treaty will not automatically become UK law on leaving the EU.

While we have good animal welfare law in the UK, none of it states that all animals are sentient and there is no explicit duty put on the state to consider animal welfare when developing and implementing policy. The Government has made commitments to embed the principle in Article 13 within UK law. This is partly thanks to the lobbying of the veterinary professions – but it is not there yet.

This one point on animal welfare shows the need to make sure that at no point do we dilute the current animal welfare standards. Indeed, we have the opportunity to enhance them and make Brand UK a high welfare one. Of course, this means that animal welfare must be prioritised in any trade deals and if we end up trading under World Trade Organisation rules, we must protect animal welfare as a public moral imperative.

And the rest

There is so much that can be said about EU exit and the reach of the veterinary profession, but word count just won't allow it. While I have focussed on the people in our profession and the health and welfare of animals, it is not intended to diminish the importance of any others and the opportunities and threats that each of them faces. The BVA Brexit and the Veterinary Profession is a great place in which to delve and learn more.

So where are we now? As of the 23 April (always good to date things as they can move in any direction rapidly) a no-deal EU exit is looking less likely – although technically still possible. But would this have been so bad for the veterinary profession?

The BVA set out its concerns around a 'no-deal' Brexit and the veterinary profession[8] in the 8-point Plan for surviving no-deal Brexit[9]. The RCVS also called on the Government not to accept a no-deal Brexit. Both organisations highlighted the very real risks to the profession and, particularly, to the veterinary workforce and animal health and welfare.

Even though there is still uncertainty in many areas, the Government is working hard to try and plan for future scenarios, especially a no-deal Brexit. Many of the technical notices[10] produced as a result of no-deal planning apply to areas affecting the veterinary profession.

One area of uncertainty that had been causing concern was the ability to export animals and products of animal origin to the EU in the event of a no-deal. This uncertainty has been lifted with the agreement of the EU Member States of the UK's 'listed status' application. While this is to be welcomed, it is important to note that in the event of a no-deal, third country veterinary certification will be needed for all imports and exports of animals and products of animal origin.

Where the uncertainty still prevails is around the movement of pets, as the third country status does not include the Pet Travel Scheme. In the event of a no-deal, pet owners will need to meet the additional testing and certification requirement as laid out by Defra[11]. This area of uncertainty around the future relationship is causing problems for pet owners and the profession.

The BVA's February 2019 Voice of the Veterinary Profession Survey showed that 74 per cent of vets reported an increase in pet owners seeking guidance on what to do if they wish to travel with their pets to the EU. The concern around the uncertainty is summed up well by one vet who writes, 'We are advising clients of the Defra guidelines and advising rabies blood testing again in plenty of time. Many clients are angry with us (!!) for telling them this information, and for being uncertain – especially those who travel back and forth regularly'.

Looking to the future, it is still uncertain regarding the terms of the UK's exit from the EU and what any transition period will look like. While this is proving to be tricky, the next stage regarding the future relationship and future trading relationships with other countries could also have a major impact on the veterinary profession – but this is all to come. While there will undoubtedly be bumps in the road, there are also opportunities.

Leaving the Common Agricultural Policy gives us the opportunity to reform our agriculture system. The Agriculture Bill that is making its way through parliament covers both reserved and devolved policy matters; but mainly contains provisions for the future agriculture policy for England with one of these being 'public goods' for public money with animal health and welfare considered a 'public good'. As the veterinary profession is the guardian of animal health and welfare, we have the opportunity to further strengthen our relationship with other stakeholders in this sphere and be an essential part of reform.

There is also an opportunity to strengthen the Pet Travel Scheme to reduce the risk of importing disease, particularly via non-native tick species.

Summary

Vets are at the forefront of changing and shaping the landscape for the future and EU exit has transformed Defra with thousands of new people working in the department. Many of them are looking at issues for 'Day 1' post-EU exit and the future of farming. This presents an opportunity to address issues that the Common Agricultural Policy has failed to allow us to reform previously and there is also the 'Brexit Bonus' money to assist in addressing these issues.

There is no doubt that EU exit will affect the profession – although it is a real crystal ball-gazing exercise to see how that may be. The industries with which we work are likely to go through significant changes. It is imperative that vets remain the essential ingredient and that our value is recognised and rewarded.

Importantly, whatever we might think of EU exit, the veterinary voice is powerful and needs to be heard. Thankfully it is being heard loud and clear in government as a result of the work of the BVA and the RCVS – not forgetting the tremendous work of government vets who are working in overdrive to achieve the best outcomes for animal health and welfare. ■

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Behaviour consultations. Home visit or clinic-based?

Behavioural services have become an established part of practice referral systems. Whether providing prophylactic advice in early pet ownership, behavioural tips alongside regular pet care – such as vaccinations and weigh-ins, or specific instructions on managing problem behaviours – it is clear that the veterinary environment is a hub for owners seeking help.

However, are we properly able to assess behaviours, counsel owners and modify an animal's behavioural choices within a veterinary clinic setting? Or is it better to take the time and expense involved with a home visit?

Karen Wild
Dip App Psych CCAB

Karen is an ASAB-Certificated Clinical Animal Behaviourist with 20 years of experience in the field and runs a full-time behaviour practice, 'Pawprint', near Peterborough, working with family pets on a veterinary referral basis. She is a full member of the Association of Pet Behaviour Counsellors (APBC) and an Animal Behaviour and Training Council (ABTC) Registered Clinical Animal Behaviourist and Animal Training Instructor.

Karen has written three books: What your Dog Wants, 21 Days to the Perfect Dog *and* Being a Dog – *all aimed at communicating welfare and training issues to the wider dog-owning public. She is resident behaviour and training feature writer for* Dogs Today *magazine as well as other UK and international pet titles.*

In theory, a client reports a problem and is given advice on resolving it to improve the animal's welfare and safety and that of those around it. In practice, the basis on which that advice can be issued is far more complex and individualistic than a simple 'recipe for improvement' could perhaps offer. As behaviour is very much the product of its environment, should it be that the consultation is more effective within that same environment in which it has become a problem?

What kinds of problems are reported?

In the recent PDSA *'Paw' Report 2018*, of 4,639 owners and 549 veterinary professionals surveyed, 51 per cent of veterinary surgeons and nurses say that they have seen an increase in dog behavioural issues during the last two years.

The Association of Pet Behaviour Counsellors reports that the highest number of referrals as a primary presenting problem for dogs involves aggressive behaviours towards other dogs and people – both external and within households (member data, as yet unpublished) – compared to issues relating to fears or owner-absent issues (**Figure 1**).

For cats, inter-cat aggression within a household, and elimination issues, form the majority. Clearly, the service provided for behaviour modification can reflect a wide range of issues, but the style in which it is offered must be pertinent to the highest demand for relevant help.

Figure 1. *Behaviour is very much the product of its environment, so the consultation may well be more effective within the same environment in which it has become a problem.*

Do we need to 'see' a behaviour to trust what the owner is telling us?

Of course, some situations would be too high a risk for re-enactment, and the ethical expectation is that the more an animal gets practice at an unwanted behaviour, the more it is likely to suffer, repeat or at least maintain it if the results are successful for their strategy. Thus, we most likely need to avoid triggering situations that create the behavioural issue. Put simply, if a dog is afraid of noises, we do not need to repeat those noises in order to 'prove' that there is an issue. Instead, we assess the client's spoken evidence.

Since history-taking within pet behaviour relies upon the owners and carers relating events, such reporting is likely to take on natural bias towards their emotional experiences and existing preconceptions. Thus anyone giving advice is reliant on a wide variety of interview techniques and other tactics to develop an understanding of the actual behaviours previously witnessed.

**Suggested Personal & Professional Development (PPD)*

BEHAVIOUR

Figure 2. *Home visits enable counsellors to see an animal's living situation and client background.*

For any form of therapeutic relationship, recognising the applied nature of the advice is important. 'Counselling psychologists … need ways of encapsulating human experience that can be called on in the midst of practice' (Sugarman, 2010). An adviser, rather than simply working to the recipe of theory, is called upon to recognise that the individuals involved are 'moving through an influential and modifiable physical, cultural and interpersonal environment'.

Care must be taken to offer a realistic service that meets client expectations and, more so, needs.

The clinic setting

There are a number of advantages to running behavioural consultations in a veterinary clinic.

Time and travel

As with all home visits, there are attendant costs in terms of travelling, fuel and 'down time'. Clearly, the time between appointments is reduced if owners are given the onus of travel to the clinic and more clients can be seen per day.

Client compliance

Clients may be more likely to follow advice if they have committed to travelling to see an expert, and the clinic setting may indicate a more serious, detached setting with more authority.

Reduced stress

It can be daunting for a practitioner to visit someone's home, especially if they have not previously met. Travelling, traffic, attempting to find an address can all add to this negative emotional impact. Stressful encounters at a home may leave a practitioner without team support that a clinic might otherwise provide.

'Clinic team' approach

A clinic can often provide more attendant advantages, such as shared reception, booking system, notes systems and medical history availability. This can also help with follow-up and ongoing client support.

Cost savings

It may be possible to reduce client costs for consultations as a result of the above savings.

Behaviours not specific to home situation

At times, the home situation is not as important to the behaviour – for example with dogs that react to other dogs when outdoors.

Client reporting using sketches and video

Locational information is highly important, especially for cats; but modern media allow data to be collected and issued to the therapist without them needing to be present.

Safety

Dogs that are aggressive towards visitors should not be seen in a home environment, owing to the high risk to the behaviour counsellor's personal safety. The clinic provides additional control over such risk factors. Practitioners may also be vulnerable if travelling/visiting alone, and thorough veterinary records and prior contact, as well as an accessible diary of visits, must be established to ensure self-protection.

Wider client base

Clients from a much wider area can be seen if they are prepared to travel.

Home visits

There are numerous factors to consider when considering home visits for behaviour consultations.

History-taking

This includes important environmental data gathering (**Figure 2**). It is easy to see an animal's living situation and client background, including socio-economic status, cultural information, day-to-day living environment and family setting, which all impact upon the pet(s).

Client reporting in context

It can be much easier to see if a client's emotional response is that which is being measured – compared to a factual issue – if the behaviours are seen in the context of the environment in which they occur; *or* when the client can indicate specifically *where* and *how* they occur.

Owner more relaxed

In their own home, the owner and family may feel more ready to share and develop a therapeutic bond as a result of a less formal setting.

Confidentiality

An owner may not wish to display that there is a problem by visiting a clinic.

"As behaviour is very much the product of its environment, should it be that the consultation is more effective within that same environment in which it has become a problem?"

Figure 3. *Some dogs may react when recognising specific walk routes, or owners may need support on those routes in order to understand exactly what they need to do and when.*

Convenience
Some owners may not be able to travel for physical or mental health reasons. They may have young children or no transport, or may have other additional needs that only their home can provide. It could be that the whole family are more likely to attend, which is important given the pet's situation in the home environment and the additional evidence other people can provide.

Increased cost for owners
Taking into account additional overheads, such as vehicle expenses, travel cost and travel time, as well as the owner convenience factor, there is a 'downside' that a home visit is usually more costly.

Reduced stress for pets
This applies especially for cats, when the need for travel is negated. Some dogs may not appreciate the unfamiliar and formal clinic environment either and inherent behaviours may be masked or overridden.

Multiple pet homes
If more than one pet is involved – for example, when there is competition between pets, dogs are chasing cats or intercat aggression within the family is based on competition for location.

External issues affecting the pet
This applies particularly in the case of cats external to the home that the owner may not have noticed have easy visual access from trees and fences. Neighbouring dogs creating noise or, in some cases, noise nuisance reports can all be accurately assessed from within the client's home.

Implementation
It can be very easy for a practitioner to assess, demonstrate and illustrate the exact changes that can be made whilst they are in the animal's living environment. Confident decisions can be made about locations, other pets, family involvement and direct changes for safety.

Compliance
In a home setting, the practitioner is able to give personalised advice based on the client's immediate situational needs. This may help with accuracy and empower the client to do the same things as have been demonstrated in that environment.

Training in the home
The animal may need to learn specific behaviours related to their environment – for example, teaching a 'settle down' in a chosen room, or not jumping up at the front door, or not stealing from work tops in the kitchen, and so on.

Training on familiar walks
Some dogs may react when recognising specific walk routes, or owners may need support on those routes in order to understand exactly what they need to do and when (**Figure 3**).

Specific case requirements
Certain cases are wholly relevant to the home environment – for example, location guarding or inter-pet aggression. Should it be safe to do so, a home visit is the best way to examine such situations and implement change.

Of course, the lists above are not exhaustive but are intended for consideration and comparison. The offer of video consultations using online methods are also affected by the above and even provide a crossover of being able to see the client's home situation whilst allowing sufficient time and discussion to enable some forms of treatment.

However, relevant criticisms arise from not actually 'seeing' the animals in person. Are we able to thoroughly assess their responses? In a veterinary setting, the answer would be a firm "No"; but in behavioural work where veterinary checks must always preclude any consultation, the ethics are a little more sketchy.

New practitioners

In the early days of new practitioner training – and whilst developing counselling skills and learning about one's own behavioural treatment education – seeing a pet in its home environment is advisable. This can allow an apprentice practitioner to gain a genuine feel for the experience of owners with behavioural problems in the setting in which they occur. That empathy can be hard to replicate in a clinic. It may be that it is more practical for a new behaviour counsellor to begin with home visits and then move to more clinic-based settings.

Which factors are more important?

When the list above is under debate, it is also essential to decide which are the overriding factors. This can be personal to the practitioner; but must always start with safety and welfare. For example, a client may not be able to travel, but their dog is perhaps very large and aggressive towards visitors. Since the owner does not yet know what to do to control the dog – and may not comply with instructions (as multiple behaviourists will attest) – it is my personal view that a practitioner should not enter into such a situation of risk by visiting that home. Another solution must be found that places safety firmly to the fore.

Summary

So, home visit or clinic-based? Could it be possible to split the two so that the most economical features and risks are taken into account?

Whilst our ideal would be to maximise the results and tailor each case to the needs of the animals and humans, we also have to take into account the work-life balance and practitioner's economic needs, too. Most of all, providing owners with the most suitable treatment options may result in a series of different referral practitioners for behaviour – some that provide clinic facilities, some that do not, thereby allowing clients the right to choose. ■

Acknowledgements

My thanks to Association of Pet Behaviour Counsellors (APBC) colleagues: David Appleby, Erica Peachey, Caroline Clark (PET UK), Lyndsey Hooper, Jane Williams and Tom Candy for their considered and valuable input.

PPD Questions

1. Why might a cat owner need a home visit, when the problem involves other cats?
2. Why might a new practitioner be advised to make home visits as their educational priority?
3. When might a clinic visit be the only option?

Answers

1. the owner may not be aware of the environmental needs of the cat, including overlooking fences and trees, or the location competition within the home
2. assessing owners and how they live with their pets gives invaluable information about their needs and expectations, which can then be understood better in later clinic settings
3. safety and risk to the practitioner if visiting the home – either from the animal, or perhaps, from the owner themselves.

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Corneal ulcers in dogs and cats. Simple or complicated?

Corneal ulceration is a common ophthalmic presentation in dogs and cats, in both general and referral practice. When inappropriately managed, a corneal ulcer can lead to persistent pain, blindness (through excessive scarring, pigmentation, vascularisation or perforation) or even loss of the eye (enucleation). Several diagnostic tools (Schirmer tear test, fluorescein dye, cytology, culture and sensitivity) are available to the clinician to help identify the type of corneal ulceration and assist with the selection of optimal treatment.

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After graduating with a Masters Degree from the Faculty of Veterinary Medicine, Bucharest, Andra spent a short time in general practice before relocating to the UK. Here, she enjoyed working in general practice for four years before completing an ophthalmology internship at the Animal Health Trust, Newmarket.

Andra began her studies toward a European College of Veterinary Ophthalmology Diploma at the Royal Veterinary College in July 2017.

Outside of work, she enjoys travelling and spending time with her husband and their cat.

**Suggested Personal & Professional Development (PPD)*

OPHTHALMOLOGY

The cornea is one of the outermost fibrous layers of the eye which maintains its transparency through a complete lack of corneal vascularisation and pigmentation, the presence of non-myelinated nerves, a unique parallel arrangement of the corneal lamellae and the presence of endothelial water pumps (Na+-K+-ATP-ase pumps) that keep the cornea in a relatively dehydrated state (Samuelson, 2013). Loss of corneal transparency can lead to visual impairment – and even blindness – through fibrosis, pigmentation and vascularisation.

Anatomical considerations

The cornea comprises several layers – the corneal epithelium with its basement membrane, corneal stroma, Descemet's membrane (the endothelium's basement membrane) and corneal endothelium. The entire cornea is approximately 500µm or 0.5mm thick.

The corneal epithelium (25-40µm thick) is a non-keratinised surface epithelium with squamous cells in tight contact with the pre-corneal tear film, wing cells (middle layer) and basal cells (which migrate to the surface to become wing cells and squamous cells). The epithelium is shed continuously every seven to 10 days, when new epithelial cells are formed by migration of specialised stem cells present at the limbus (**Figure 1**). Without this specialised population of stem cells – following chemical destruction, for example – corneal wound healing would not be possible.

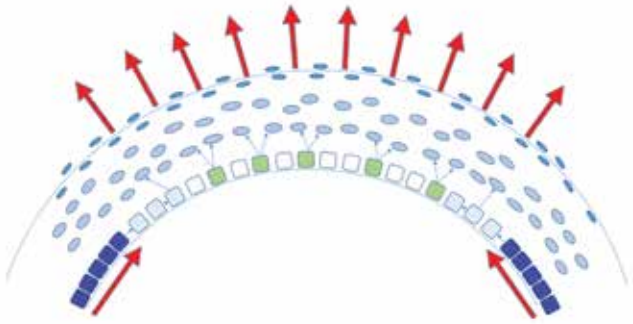

Figure 1. *Corneal epithelium renewal and corneal wound healing. Epithelial limbal cells migrate and proliferate into basal epithelial cells which migrate to the surface and are shed.*

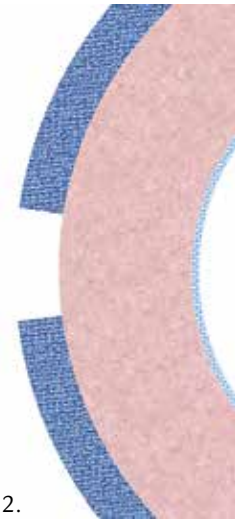

Figure 2.

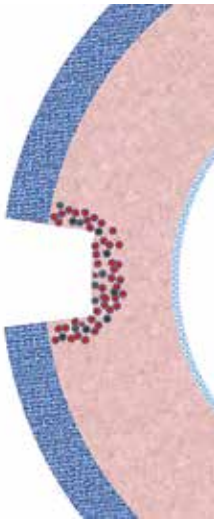

Figure 3.

Figure 2. *Diagram of superficial corneal ulcer.*
Figure 3. *Mid-stromal corneal ulcer – a progressive ulcer owing to the presence of neutrophils (red) and microorganisms (blue).*

The corneal stroma makes up approximately 90 per cent of the entire cornea and is comprised of stacks of parallel lamellae made up of collagen fibrils and keratocytes.

The endothelium is a monolayer of flattened cells that lines the inner surface

of the cornea. The number of cells reduces with age and abnormalities can lead to dysfunction of the water pumps and development of corneal oedema, with water accumulation in the cornea. The basement membrane of the endothelium is Descemet's membrane.

Corneal wound healing occurs via sliding, mitosis and renewal of epithelial basal cells. This occurs by centripetal migration of specialised stem cells present at the limbus (**Figure 1**). Stromal healing requires an intact epithelium that stimulates stromal remodelling (Yoon et al, 2014). During healing, proteinases and proteinase inhibitors are released physiologically; however, an imbalance between the two occurs when there is a large number of microorganisms or inflammatory cells present, which leads to keratomalacia (melting ulcers).

A corneal ulcer is defined as tissue loss of one or more corneal layers (**Figures 2** & **3**) – either superficial ulcer (loss of epithelium), anterior, mid- or deep stromal ulcer (stromal loss), descemetocoele (loss of all corneal layers with only Descemet membrane present) or perforated corneal ulcer (with loss of aqueous humour +/- iris prolapse) (**Figures 4**-**6**).

Clinical signs

There is a series of possible clinical signs of corneal ulceration, including:

- subtle, moderate or severe blepharospasm
- conjunctival hyperaemia
- clear, mucoid or mucopurulent ocular discharge
- diffuse and/or focal corneal oedema
- superficial (branching vessels) or deep (short and straight) corneal vascularisation arising from the limbus
- fibrosis (scarring), pigmentation
- yellow, white or grey corneal infiltrate (which represent either inflammatory, bacterial, fungal, lipid or calcium deposits) (**Figure 7**).
- reflex miosis (**Figure 4**), aqueous flare, hypopion, hyphaema (**Figure 8**)
- loss of aqueous humour and iris prolapse (**Figures 8**-**9**) (positive Seidel test, shallow anterior chamber, and the pupil may no longer be visualised).

Corneal ulceration can occur as a consequence of trauma but, more commonly, it is secondary to other ocular diseases – keratoconjunctivitis sicca, entropion, trichiasis, eyelid or conjunctival dermoid, corneal degeneration, immune-mediated keratitis, corneal sequestrum, herpes virus keratitis, facial nerve paralysis and trigeminal neuropathy, for instance.

Diagnosis

A full ophthalmic examination should always be performed, even if the diagnosis is obvious. Absent dazzle reflexes and absent consensual pupillary light reflexes may direct the client's decision regarding the treatment option away from corneal repair surgery towards enucleation. Also, menace responses, corneal, pupillary and palpebral reflexes should be assessed in order to rule out other cranial nerve dysfunction (II, III, V and VII).

Eyelid and cilial abnormalities – such as distichiasis, trichiasis, ectopic cilia, dermoid, entropion, euryblepharon, and keratoconjunctivitis sicca, foreign bodies, lack of corneal sensation, corneal degeneration – should also be identified prior to treating the corneal ulcer.

The Schirmer tear test-I (STT-I) is a measure of basal and reflex tear production. It can help to diagnose an underlying quantitative tear film disease ('dry eye').

Figure 4. *Reflex miosis secondary to a punctate superficial corneal ulceration in an elderly Cavalier King Charles spaniel.*

Figure 5. *Mid-stromal corneal ulcer with surrounding corneal oedema and perilimbal deep corneal vascularisation in a five-year-old shih tzu.*

Figure 6. *Large stromal corneal ulceration with an axial descemetocoele (dark mushroom-like lesion), diffuse corneal oedema in a two-year-old French bulldog.*

Figure 7. *Linear mid-stromal corneal ulceration dorsal to a white corneal infiltration (lipid and bacteria) in a five-year-old shih tzu.*

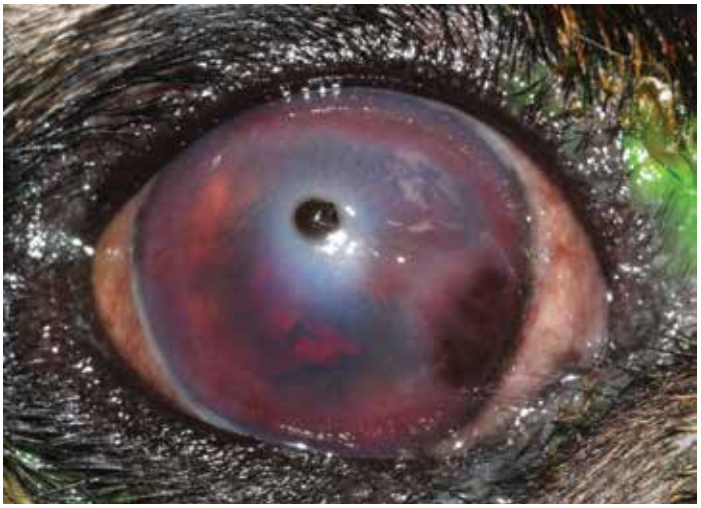

Figure 8. *Axial pinpoint corneal perforation and hyphaema. There is medial corneal pigmentation and medial canthal entropion and trichiasis in a three-year-old pug.*

Figure 9. *Large axial corneal perforation with iris prolapse – the superficial corneal vascularisation reaching the corneal defect is an indication of chronicity of the corneal ulceration in a 12-year-old Cavalier King Charles spaniel.*

Figure 10*. Fluorescein strip touching the conjunctiva.*

Figure 11. *Flushing the eye with saline after fluorescein staining.*

Always test the contralateral, unaffected eye; because the eye with the corneal ulcer may have increased tearing owing to ocular discomfort, therefore STT-I can be 'normal' or increased.

It is important to take STT-I readings in light of the clinical signs – for example, if there is a corneal ulcer and the STT-I reading is 15mm/min, despite this being a 'normal' reading it should be increased in a painful eye. The pre-corneal tear film and cornea constitute an effective anatomical barrier against surrounding pathogens; therefore, qualitative and quantitative tear film deficiencies can contribute to recurrent corneal ulcerations and significant delay in corneal wound healing.

Fluorescein staining is very important in diagnosing corneal ulcers, especially when these are not readily visible to the naked eye – such as in cases of dendritic ulcers in cats or punctate ulcers (**Figure 4**). It should always be performed when conjunctival hyperaemia is present. This test is also useful for monitoring the response to treatment and serial photographs may be taken to assess the progression of the ulceration.

Fluorescein dye should always be flushed away with saline and when a fluorescein strip is used this should not contact the corneal surface in order to avoid false positive results and damage to the corneal epithelium (it is epitheliotoxic) (**Figures 10**-**11**). If the dye is not readily flushed, it will diffuse through the inflamed cornea into the anterior chamber (fluorescein flare).

A Seidel test can also be performed to identify leaking corneal wounds or ulcers. The corneal stroma is the only corneal tissue to take up fluorescein dye – if a corneal defect is present with no fluorescein uptake (most commonly in the centre) the presence of a descemetocoele should be considered.

Corneal cytology should be performed:

- in cases of infiltrated superficial corneal ulcers that have yellow edges or deposits
- when there are stromal and melting ulcers (**Figure 12**)
- where there is mucopurulent discharge
- if the corneal ulcer has progressed despite treatment
- to aid antibiotic treatment choice.

Cytology should *not* be performed in fragile eyes, with descemetocoeles or in perforated corneal ulcers (positive Seidel test).

Corneal samples for in-house cytology can be collected using a cervical cytobrush (**Figure 13**) if available, or the blunt end of a scalpel blade – although care should be taken with this method

Figure 12. *Diffuse melting ulcer with paraxial ventral area of descemetocoele in a 14-year-old West Highland white terrier.*

Figure 13. *Use of cytobrush for corneal cytology.*

not to perforate the eye. The cytobrush should be used to gently scrape the corneal surface at the periphery of the ulcer or an infiltrated area.

Local anaesthetic should be applied before sampling – one drop of proxymethacaine 0.5% will provide a maximum analgesic effect at 15 minutes and lasting 45 minutes – an additional drop prolongs the effect to 55 minutes in dogs and cats (Herring et al, 2005; Binder and Herring, 2006).

Cytology is useful to identify the presence and number of inflammatory cells (numerous neutrophils in melting ulcers), bacteria (cocci or rods) and fungal elements such as hyphae (**Figures 14-15**). A DiffQuik or Romanowksy stain can be used in practice because Gram stain is not always available.

Several studies on microbial isolates in ulcerative keratitis have identified *Staphylococcus* spp., *Streptococcus* spp. and *Pseudomonas aeruginosa* as the most common isolates in dogs and cats (Hindley et al, 2016, Suter et al, 2018). Furthermore, almost two thirds of the conjunctival sac flora of healthy dogs and cats are Gram-positive bacteria (Prado et al, 2005).

Most Gram-positive bacteria are cocci and most Gram-negative bacteria are rods, with some exceptions – *Bacillus* spp. are Gram-positive rods, *Neisseria* spp. are Gram-negative cocci. This helps the clinician to target the topical antimicrobial treatment, depending on whether cocci or rods are identified on cytology. It is important to bear in mind the discipline of using first-line antibiotics, followed by second and third-line (as with systemic use of antibiotics).

If cocci have been identified on cytology, then antibiotics targeting mainly Gram-positive bacteria – with less emphasis on Gram-negative activity (e.g. chloramphenicol) – should be used. Note that some large diplococci and chained cocci may represent *Streptococcus canis,* with isolates reported to be resistant to chloramphenicol but sensitive to ofloxacin.

If rods have been identified on cytology, then an infection with Gram-negative bacteria is likely, so selection of antimicrobials with a broader spectrum for Gram-negative bacteria and a less Gram-positive spectrum, (e.g. ofloxacin) are indicated.

If hyphae have been identified on cytology, intensive and aggressive medical treatment – including topical voriconazole 1% (prescribed under the Cascade) applied every two to four hours, topical broad spectrum bacteriostatic antibiosis (e.g. chloramphenicol), as well as hourly or two-hourly applications of serum eye drops – can help to stabilise the eye. Unfortunately, fungal keratitis often requires superficial keratectomy and corneal grafting surgery. It is very painful and progresses very quickly to deeper layers and potentially endophthalmitis.

A microbiology sample, saved in charcoal media, should be submitted for culture and sensitivity. The swab is gently rolled over the infiltrated area at the periphery of the ulcer, avoiding contact with the eyelids, third eyelid or conjunctival sacs and without debriding the ulcer. Since the sample usually takes at least 24 hours to be processed, cytology is used to select antimicrobial treatment pending these results.

Antimicrobial treatment of corneal ulcers should follow the same principles as for systemic antibiotics in order to prevent antibiotic resistance. There are an increasing number of reports of bacterial isolates resistant to fluoroquinolones and bacteria that have cross-contaminated host species with human bacteria cultured from dogs and vice versa (Prado et al, 2005; Hindley et al, 2016; Suter et al, 2018).

When bacterial infection is suspected, general rules of hygiene should be used including barrier nursing – wearing apron and gloves – to avoid contamination and spread of infection to other in-patients. Additionally, eye flushes with diluted aqueous solution of povidone iodine (1/50, 1ml in 50ml of saline) can be used once or twice daily to reduce microbial load and flush away debris and purulent discharge (antibacterial, antifungal and mucolytic effects).

Treatment

Medical versus surgical treatment usually depends on the type of corneal ulcer (simple or complicated), the depth of the ulcer and its underlying cause.

A corneal ulcer is considered simple or uncomplicated if it is superficial, not infiltrated and has healed within a week.

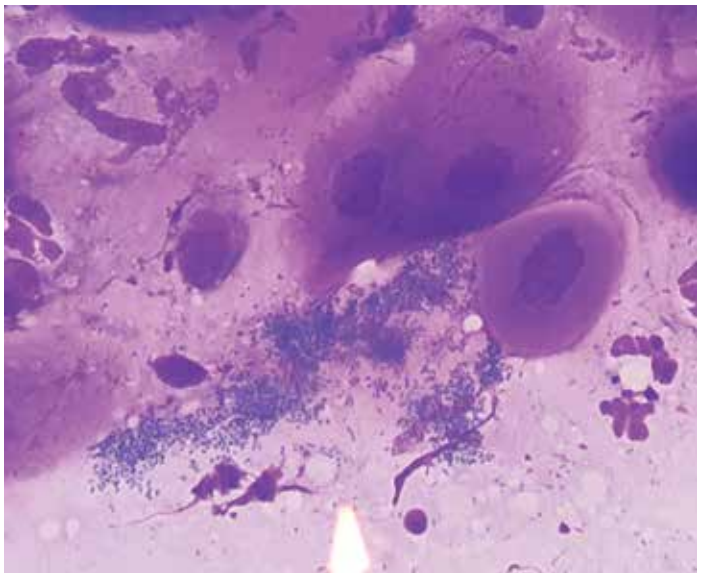

Figure 14. *Corneal cytology showing a clump of cocci.*

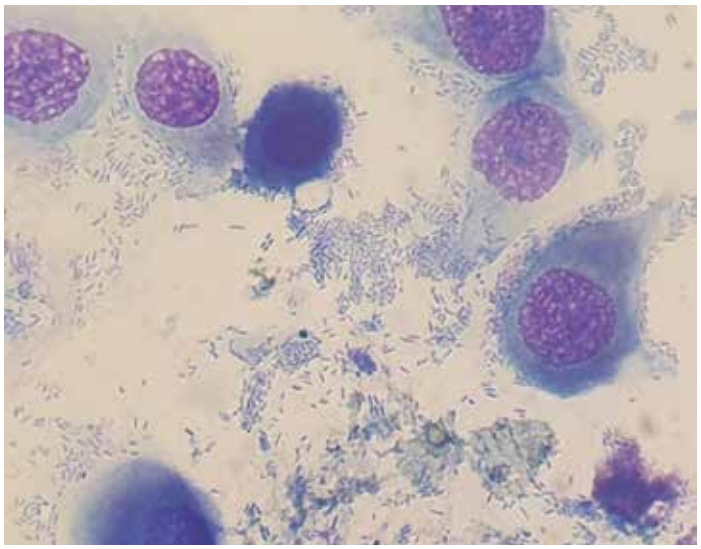

Figure 15. *Corneal cytology showing numerous rods, which cultured Gram-negative,* Serratia *spp..*

A corneal ulcer is considered complicated if:

- it hasn't healed in seven to 10 days with topical prophylactic first-line of antibiotics
- corneal infiltrate is present – grey, yellow, white edges or deposits around or within the ulcer
- there is mucopurulent discharge – build-up of neutrophilic infiltrate
- the surface of the ulcer looks soft or is melting (**Figure 12**)
- there is progression despite treatment
- there is hypopion or hyphaema.

Treatment of simple superficial corneal ulcers

First identify and remove the cause – such as a foreign body, entropion or ectopic cilia. Apply atropine, starting as a one-off on the first day and monitoring pupil size. This is to relax the ciliary muscle spasm. It is also good practice to apply lubricating drops to protect the corneal epithelium during healing and counteract the effect of dryness from the atropine (Hollingsworth et al, 1992).

Bacteriostatic broad spectrum antibiotics may be applied topically to prevent colonisation by opportunistic bacteria within the ulcer – fusidic acid is a bacteriostatic antibiotic, with only Gram-positive spectrum, licensed for conjunctivitis in dogs, cats and rabbits, and it may be appropriate in cases of non-infected superficial corneal ulcers that have developed after a general anaesthetic, for example. It has a lubricating effect as well. Analgesia, if required, may be provided using systemic non-steroidal anti-inflammatory medication.

Treatment of complicated corneal ulcers

First identify and remove or treat the cause – eyelid and cilial abnormalities, dry eye, and so on. Apply atropine to effect; together with anti-collagenase agents if neutrophils and microorganisms are found on cytology (collagenases are proteolytic enzymes released by the neutrophils, microorganisms and damaged keratocyte):

- serum drops – effective against both types of collagenases (serine and matrix metallo-proteinases, MMPs), hourly or two-hourly application in the first 24 to 48 hours. The protocol for collection and use is described by Sanchez et al (Sanchez, 2014).
- doxycycline – a bacteriostatic antibiotic but also effective against MMPs and reaches the tear film
- others – N-acetylcysteine and EDTA both effective against MMPs only and are difficult and can be expensive to obtain.

Bacteriostatic or bactericidal antibiotics may be considered including:

- chloramphenicol – bacteriostatic, broad spectrum, effective against Gram-positive, Gram-negative bacteria (except *Pseudomonas aeruginosa*, *Chlamydophila* and *Mycoplasma* spp.. It has good corneal penetration
- ofloxacin – a bactericidal fluoroquinolone, with a wider Gram-negative spectrum and less Gram-positive activity. It can be epitheliotoxic
- ciprofloxacin – similar to ofloxacin, but has poorer corneal penetration and is more epitheliotoxic ('stings' upon application)
- fusidic acid – bacteriostatic with only a Gram-positive spectrum, which is not usually sufficient for the treatment of complicated corneal ulcers
- gentamycin – only Gram-negative spectrum, especially against *P. aeruginosa*. It is very epitheliotoxic and reserved only for use based on susceptibility results.

The number and type of bacteria present on cytology can help decide whether a bacteriostatic or bactericidal antibiotic is needed.

Intensive medical treatment is recommended for all but superficial ulcers, especially progressive melting ulcers where deepening of the ulcer can progress to perforation in less than 12 hours, especially in brachycephalic breeds of dog. The patient should be assessed frequently whilst hospitalised in cases of melting ulcers or deep corneal ulcers to ensure there is no deterioration.

Analgesia can be supplied via systemic anti-inflammatory medication and lubrication; and underlying conditions, such as dry eye may be treated with ciclosporin. Other 'adjuvant' options include corneal collagen cross-linking which uses riboflavin that acts as a photosensitiser when exposed to UV-A light to help increase the stability of the cornea (Pot et al, 2014).

Corneal repair surgery may involve superficial keratectomy, corneo-

conjunctival transposition, conjunctival pedicle grafts, corneal grafts, or the use of synthetic biomaterials (A-Cell, amnion grafts).

Spontaneous chronic corneal epithelial defects (SCCEDs)

This condition is always superficial, with non-infected corneal ulcers that don't heal routinely. There is no apparent cause, after ruling out underlying eyelid/cilia/tear film abnormalities; and it develops as a consequence of an abnormal hyaline acellular zone underlying the corneal epithelium which prevents it from sticking down during healing.

SCCED is frequently seen in middle-aged dogs; and there is a breed predilection in boxers, but also French bulldogs, Jack Russell terriers, Staffordshire bull terriers.

This is the only type of ulcer that requires debridement. However, it is very rare in pugs; and this breed has medial canthal entropion and trichiasis and an abnormal tear film owing to euryblepharon and lagophthalmos. Corneal ulcers in pugs should, therefore, not be debrided.

Loose lips and edges can be identified with underrun fluorescein stain. SCCED usually requires more than one treatment – sterile cotton bud debridement under local anaesthesia has a reported success rate of 50 per cent.

Punctate or grid keratotomy (needle punctures/lines in the anterior stroma, with care not to perforate the cornea, the grid lines should not be visible after treatment) has an 85 per cent success rate; but this has now largely been replaced by motorised diamond burr debridement with a reported success rate of 90 per cent (Gosling et al, 2013).

Superficial keratectomy may be used to remove the abnormal superficial stroma under general anaesthesia; and a bandage contact lens can also be placed, or a temporary tarsorrhaphy may be performed. ■

The author wishes to thank Charlotte Dawson Dipl ECVO for reviewing this article.

PPD Questions

1. Commensal ocular flora in dogs and cats are represented by...
   A. over two thirds of Gram-positive bacteria
   B. mainly Gram-negative bacteria
   C. only *Staphylococcus* and *Streptococcus* spp. and *Pseudomonas aeruginosa* in cats
   D. less than two thirds of Gram-positive bacteria.

2. Fusidic acid and chloramphenicol are...
   A. both bacteriostatic and licensed for corneal ulceration in dogs and cats
   B. bactericidal and bacteriostatic, respectively and licensed only for use in conjunctivitis in cats and dogs
   C. both bacteriostatic topical antibiotics effective against Gram-positive for fusidic acid and both Gram-positive and negative except *P. aeruginosa* for chloramphenicol
   D. both bactericidal against Gram-positive and Gram-negative bacteria.

3. Melting ulcers in dogs and cats...
   A. are secondary to ocular surface infection and have a poor prognosis
   B. occur owing to increased number of collagenases released by the neutrophils and microorganisms which lead to corneal degradation and keratomalacia
   C. should be treated with a combination of bacteriostatic and bactericidal antibiotics
   D. resolve with bactericidal antibiotics in two weeks.

Answers 1.A 2.C 3.B

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A month in the life of a locum RVN

Samantha Flavell
CertVN ECC CertVNES RVN

Samantha gained her veterinary nursing qualification in 2005 and has, subsequently, gained the Veterinary Nursing Certificate of Emergency and Critical Care in 2013 and the Veterinary Nursing Certificate of Exotic Species in 2015. Samantha is a West Midlands-based locum nurse; but she has, however, travelled the country providing cover for first-opinion, charity and referral practices.

As a locum registered veterinary nurse (RVN), I am often asked what it is like to do my job. The following short, four-week diary hopefully provides the answer by presenting an overview, together with the positives and negatives of this type of work.

Week 1

This week actually starts on the Sunday before, because the practice I am working for this week is a few hours away from home. So I spend Sunday getting my rucksack together with everything I will need for the week's work, plus a couple of home comforts, and my ice box filled with my grocery essentials.

The practice has organised for me to stay in a shared flat. Locum accommodation can vary from a hotel or B&B to a shared flat or rented room in someone's house. Often I do not know what facilities I will have prior to my arrival; however, I have been here before, so I know what to expect this time. It is a referral centre.

I enjoy coming here and have the opportunity to utilise my nursing skills, whilst still learning a great deal from the complex caseload. My duties this week are to provide in-patient care, make sure medications are given in a timely manner and to update the senior clinicians on the progress of their patients. I really enjoy in-patient care, so this is an excellent week's placement for me.

My shift pattern is seven, 12-hour shifts in a row, so there will be little opportunity to become homesick. When I am away from home, I prefer to be at work as much as I can. Contacting home, and checking my work emails, is difficult; but I make sure I get to telephone home for 10 minutes each day before work. The flat I am staying in is a flat share with three other people, which I know would not be to everyone's liking. I try to be as considerate as I can to my flatmates by keeping all my possessions in my room, but with so many people, the flat can quickly get cluttered or messy.

Week 2

I get up early – 5am to be exact – on the Monday morning, so I can miss the worst of the traffic and make the long drive home. Today is a recovery day after my 77-hour week, so I have nothing else planned. This week I am working Tuesday and Wednesday only at a practice local to home. I have done some work for them recently, so it will be familiar territory.

The Tuesday is spent at their branch surgery. It is lovely to catch up with the other nurses there and it is a relaxed day with a couple of surgeries and cleaning afterwards. This is a big change from the work I was doing the previous week. I spend my shift on Wednesday at their main hospital. I am on theatre duties today and help with some routine surgeries, followed by performing some radiography and, finally, assisting with an endoscopy case. In the afternoon, I am asked to help the student nurses with some revision for their upcoming anatomy and physiology exams.

I now have a long weekend ahead of me. Up until now I have been working away from home a great deal, so I allocated this time to see friends and family. Unfortunately, as a locum, I am not paid for time off, so it can be a difficult balancing act – between work and holidays.

I make use of the Thursday morning for sorting out my expenses and invoices for my accountant. Recently, I have made the change from using an 'umbrella' company to setting up my own limited company. So far it is going OK, but even with an accountant's help, it takes a little time each week to make sure I have everything up to date and correct.

I also use Thursday as an opportunity to contact my recruitment agencies to inform them of my next availability. Although, I have a few practices that like to book me for work directly, I still use agencies for the majority of my engagements.

Week 3

After a long weekend, it is back to work on Monday and to another different practice. It has been many years since I last worked at this hospital and much has changed. Now, as part of a corporate organisation, there have been significant equipment changes and many new faces. My first

> "Locum accommodation can vary from a hotel or B&B to a shared flat or rented room in someone's house"

**Suggested Personal & Professional Development (PPD)*

NURSING

day is spent re-learning where everything 'lives' and updating myself on their policies and procedures. The majority of my shifts are theatre shifts, although I will also be involved with plenty of diagnostic imaging – such as radiography, ultrasonography, endoscopy and CT scanning. The team have been really welcoming and I quickly feel that I am able to help and become involved.

On my first day, I am also given my shift pattern for the next few weeks. As a locum, it can be commonplace not to know the true shift pattern until you start working at a practice, which can be tricky when trying to plan anything in advance. The shifts here are really good, so I shall achieve a good work/life balance for a few weeks.

The Saturday is slightly different, as I am helping one of my regular bookings with some Saturday morning cover. This is a small independent practice and the team really feels like a family. My duties are mainly reception cover with some nurse consultations as well. The morning soon flies by with many appointments seen, but because the practice is so organised it is a calm and productive morning. We even manage to fit in an operation at the end of the consulting period, which goes well and the patient recovers quickly. By lunch time my shift is over and I can enjoy the rest of the weekend.

Week 4

I am back at the same practices again this week. I feel I have started to settle back in and know everyone at the hospital practice again. On a quieter day this week, I hear about the changes for the Nursing Progress Log (NPL) and discuss clinical coaching techniques with one of the other nurses. I have been a clinical coach in the past and like to try to keep up to date with any alterations to the NPL. This discussion counts towards our CPD allowance, which is important because, as a locum, CPD can be difficult to organise.

Although there are many free webinars available, they may not always be the most relevant to what you are hoping to learn or refresh your knowledge of. Courses and CPD days can be expensive – some are several hundred pounds each – and I would also lose a day's pay to attend a course or exam. I try to, where possible, learn from and record professional conversations and also look into cost-effective – but job relevant – online CPD.

During the week, I am also trying to organise when I want to work and what days I would like to have off in the coming months. I have worked a significant number of weekends recently and feel that a break may be in order in the next few months. I also have the administration task of chasing unpaid invoices and keeping my financial records up to date. I work the Saturday morning again this week and then get to enjoy the remainder of the weekend.

"As a locum, it can be commonplace not to know the true shift pattern until you start working at a practice..."

Summary

Being a locum nurse has permitted me the opportunity to work in a number of different types of veterinary practice, which has, in turn, allowed me to use and develop a number of different nursing skills. Each week can be very varied, and it is wonderful to meet so many different people.

Locum work, however, can be lonely at times, especially when working away from home. You also need to have a determination and passion for the profession because, ultimately, the focus of the practices in which you work is not invested in your career and progression, only in having a reliable nurse to fill the gap in their staffing levels. ■

Use of technology in nursing

Helen Ballantyne
BSc(Hons) PGDip RN RVN

After graduating with a Degree in Pharmacology in 2002, Helen qualified as a RVN in 2005 and has worked in a variety of settings nationally and internationally. She has been on the BVNA Council for three years and is currently editor-in-chief for the Veterinary Nursing Journal.

In September 2013, she qualified as a 'human' nurse from Sheffield Hallam University and currently works in the Critical Care Unit at Papworth Hospital, the UK's largest specialist cardiothoracic centre.

Helen remains a registered veterinary nurse, working shifts in emergency and critical care to keep her skills and knowledge up to date. She has developed a strong interest in the idea of sharing medicine, applying concepts used by medical staff to the veterinary profession and vice versa. Her friends and family take great delight in asking her, as she goes to work, "Is it humans or animals today?'

**Suggested Personal & Professional Development (PPD)*

NURSING

After five years of working in the NHS, primarily within the specialist areas of intensive care and transplant medicine, I have experienced my fair share of technological innovation. Of course, at the time, I was just doing my job, operating the machine in front of me. It is only on reflection that I can grasp the magnitude of the technology behind the health care.

I recall a 'burns' patient, admitted to a relatively small accident and emergency unit, while I was a student in the north of England. The A&E consultant on that day wanted support to develop a care plan for this patient who was not only suffering from severe burns, but crucially was suffering from severe burns around his neck. The specialist trauma centre, just 30 miles away, had surgeons, nurses, psychologists, all with the clinical skills to support severely burnt patients.

A video consultation was set up and I sat in watching and listening as the burns team 'examined' this patient virtually, asking him to turn and bend so they could see each angle of the injury. They discussed a plan for his care that involved elective intubation and transfer. I was struck by one of the comments of the doctors as he explained that the intubation was an urgent and potentially life-saving intervention. He had noticed that the patient was becoming increasingly hoarse throughout the consultation. This was a symptom, he explained, of increased swelling in response to his burns injuries, a symptom that would, without treatment, kill this patient quickly and efficiently.

I have always felt strongly that that video consultation saved the patient's life. Having access to those skills, that doctor being able to hear the subtle, progressive alterations in his voice, was surely essential to his survival.

Heart-stopping recollections

In my first role on a cardiothoracic intensive care unit, I cared for patients receiving ECMO (extracorporeal membrane oxygenation). Throughout my shift I was charged with caring for a patient who, while conscious and mobile, was having their blood volume shifted around by a machine whilst their heart lay lifeless – or, if not lifeless, barely functioning. Hosepipe-sized tubing was removing the blood, passing it through an oxygenator and returning it to the body, nourishing cells and sustaining life.

In continental Europe, they take this process one step further – with mobile ECMO machines, responding to cardiorespiratory emergencies and using ECMO in the community. I recall a German doctor showing me photos of ECMO being initiated on a patient in the aisles of a supermarket.

During my time with the cardiothoracic transplant team, I participated in the retrieval of organs from deceased donors. The use of hearts donated after circulatory death has provided more donor hearts, enabling transplant teams to meet the unmet needs for patients with heart failure waiting for a heart transplant. Put basically, this is using hearts from donors who have suffered devastating and irreversible brain injury, but do not meet formal brain death criteria, further treatment is deemed futile and the family have decided to withdraw care.

When the patient's heart stops beating, the organs are recovered in the operating theatre. The heart is then put onto an Organ Care System, where it is supported to begin beating again. Nutrients are delivered, their effect and levels monitored by me and my colleagues through the use of a hand-held blood gas analyser.

Put even more simply – we would remove a still and lifeless heart from a donor, transport it, living and beating back to the implanting hospital, stop and freeze its function once again and restart it in the recipient. Even as I write that – and recall the many visions of just that process in my mind – I am in awe of the technology involved. When I think really hard about it, I develop 'goosebumps'.

Mainstream applications

Yes, these are specialist applications of technology, highly researched and highly expensive. However, there are many more mainstream applications assisting the nursing of patients. There are pressure sore detectors being tested that could potentially revolutionise pressure area care – essentially eliminating

> "It is from this paradox that veterinary medicine can learn"

ulceration as damage is detected far earlier than the eye can see.

Electronic observation charts that automatically escalate to senior nurses or medical staff when data collected indicates a deterioration – allowing rapid escalation of their care, as required. Online booking, development of the e-Redbook for the under-fives, remote monitoring, telemedicine for mental and physical health consultations, the list is endless.

Anomalous situation

And yet, there is a paradox about the NHS that is incomprehensible to me as someone who has worked in smaller, private health care.

Yes, with animals, in veterinary practice. But the lessons are sound and my experience relevant. When I began my nursing studies in the human setting, it never once occurred to me that the NHS wouldn't have robust electronic records. I was flabbergasted on my first day to be using illegible handwritten notes to learn about the allergies my patients had, the confirmation of their DNAR status, as well as confidential instructions concerning which family members could be informed about a prognosis.

After 15 years of small animal practice, where records were computerised, I was expert at typing as I worked, a neat and tidy format, succinct and detailed. Filling in blanks and prompts, sending instant messages, receiving direct replies and online instructions. As a student nurse, to be handed a pen, with an instruction to write an open-ended narrative on 12 patients at the end of a 12-hour shift was incomprehensible to me, and certainly an incredibly steep learning curve.

> "The technology is there, it's coming, but nurses must embrace it and contribute to it"

Working in intensive care restored my faith – the system demanded up-to-date digital data input in real time. These patients were too sick, three pages of observations recorded every hour, screens of prescriptions, individual instructions delivered from specialists popping up on the patient's screen. This was back to what I knew and it worked well.

However, often intensive care systems are the exception, not the norm. Despite efforts across the UK to digitalise hospitals and patient records, nurses report hospitals where there is one IT system for blood test results, another for pathology and imaging reports, a third for in-patient notes – with none of those systems talking to one another. Each system can require a different password, leading to 'password fatigue' – a phrase recently utilised by a colleague to illustrate the exasperation at multiple password entries.

I always use a combination of numbers with names of cities for passwords and this has resulted in a 'round-the-world' trip every time I wanted to gather blood test results and chest X-ray reports on a patient. A bigger muddle I could not imagine. And that's before you throw in the use of the fax machine, a commonly used tool on many a hospital ward that has most nursing students headed to YouTube

videos to figure out how to work them!

The paradox of solutions

It is this paradox, the parallel running of some of the most advanced and astounding technology in the world, alongside some of the most outdated, that led to widespread scorn and criticism when the most recent health secretary announced that technology would be his priority for the NHS.

It is from this paradox that veterinary medicine can learn. There is widespread commentary that those members of the front-line clinical teams have not had enough involvement in the development of technologies used in the health service. Those who will be using the systems are not being consulted on the application, but having them foisted onto them and needing to adapt to them, rather than the technology being adapted to the needs of the staff and – most importantly – the patients. Designing systems to cope with both the scale and the complexity of the NHS is a task of awesome proportions, but attempting it without clinical input, must surely make it harder?

It is a problem that is now being addressed through national involvement of nursing staff, leading to specialist roles and responsibilities, full diversification of nursing. 'Digital Matrons' lead IT systems in hospitals, combining their clinical expertise with IT skills to support effective IT solutions. Health charities recognise the importance of the internet for their patients and hire dedicated Digital Nurse Specialists who, using only the medium of the worldwide web, support patients and try to address inaccuracies related to their specialist area on social media and other websites.

NHS Digital, the national information and technology partner to the health and care system has recently announced clinical informatics fellowships, to ensure that the clinical and front-line point of view is taken into account as money is poured into technology.

Seize the moment

Veterinary medicine must do the same. I recall an excellent presentation by Liz Cox, then chair of VN Council, in relation to the recent VN Futures project. She described a day in the life of a RVN in 2025; full of automatic functions, data collection, online processing – from litter trays that automatically tested cat urine to activity monitors on dogs. The technology is there, it's coming, but nurses must embrace it and contribute to it.

Most importantly, nurses should grab the opportunity to *lead* on it. Try it out, feed back and learn. It's the future and only by being part of its development will it be truly useful to you and your patients.

Plus you might be able to avoid having to input seven different passwords in the space of 28 minutes to do your job. ■

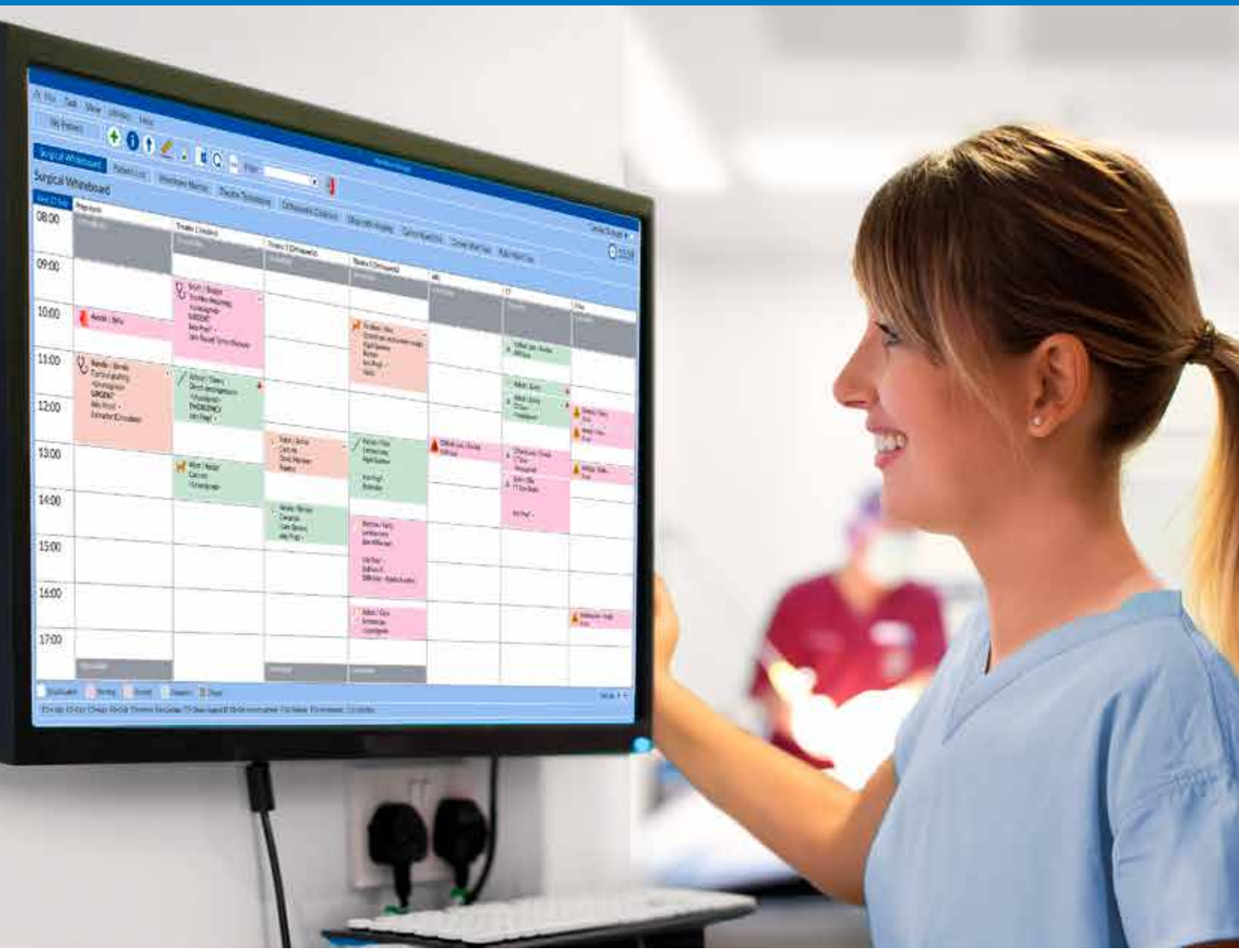
Further reading

Organ Care Systems
www.transmedics.com/wt/home/index.html

Every Nurse an e-nurse, Royal College of Nursing
www.rcn.org.uk/clinical-topics/ehealth/every-nurse-an-e-nurse

NHS Digital
https://digital.nhs.uk/

Topol Review: Exploring how to prepare the healthcare workforce, through education and training, to deliver the digital future
www.hee.nhs.uk/our-work/topol-review



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Joanna Potter
BS BVMS BMus MANZCVS MRCVS Dip ECVAA

Joei graduated from Murdoch University in 2005 and spent some time in mixed and small animal practice in Western Australia, before moving to Bristol to complete a residency in anaesthesia. She qualified as a specialist in 2016 and has moved to University College, Dublin, where she is now able to expand one of her main interest areas which is pain management in veterinary practice.

**Suggested Personal & Professional Development (PPD)*

PAIN

Chronic pain in dogs and cats (1)

Chronic pain, maladaptive pain and neuropathic pain are terms that have only recently arrived in the common parlance of veterinary medicine. Bell and colleagues (2014) identified that increasing focus on diagnosis and management of chronic pain is relatively new and has been signalled by the development of pain measurement tools and an ability to track the effect of pain on quality of life in veterinary patients.

It is difficult to determine the prevalence of chronic pain in cats and dogs, but it is known that neoplastic and degenerative disease are the leading causes of death in dogs and it is likely that these processes are associated with pain (Fleming et al, 2011; Bell et al, 2014). Previously, it has been stated that a veterinary surgeon's likelihood of treating chronic pain is influenced by the difficulty of pain assessment in dogs and cats, the expense of drugs and the compliance of the owners (Bell et al, 2014).

In an effort to improve the understanding of chronic pain in veterinary species – and thus aide in the management of it – this three-part series of articles aims to clarify the pain pathway processes involved in the development of chronic/maladaptive pain (Part 1) and provide some evidence for the use of conventional and non-mainstream therapies (Parts 2 and 3) that may assist the general practitioner in managing these often difficult cases.

Some definitions

Pain, as defined by the International Association for the Study of Pain (IASP), is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. According to the IASP, 'chronic' pain is simply that which has persisted for longer than expected given the insult or trauma that was sustained, or where there is apparent resolution of the original injury (Bettini and Moore, 2016).

Specifically, chronic pain lasts beyond the normal healing time and, as such, no longer serves to act as a warning of physiological nociception; however, the shorter life span of veterinary patients compared to humans should be considered (Lavand'homme and Schug, 2016; Adrian et al, 2017). This definition includes a time line of pain lasting in excess of three to six months (in humans) and identifies that the pain itself does not confer any biological value to the subject (Merskey and Bogduk, 1986; Lavand'homme and Schug, 2016).

There has been difficulty in clearly delineating acute from chronic pain; and some research now concludes that the two are part of a continuum and can coexist in the same patient – with certain chronic conditions giving rise to acute pain phenomena, as well as an acute stimulus leading to the neuroplastic changes that may predispose to chronic pain (Woolf, 2010; Groh et al, 2018). Adaptive pain has been adopted as a definition that encompasses both nociceptive pain (high-threshold receptors activated by a noxious stimulus) and inflammatory pain (pain arising from tissue damage associated with a normal inflammatory response to the insult).

These are types of pain that allow the subject to sense and avoid tissue damage; whereas maladaptive pain serves no protective function and is the consequence of neuroplasticity changes in the pain pathways (Adrian et al, 2017). Maladaptive pain is thus divided into neuropathic pain, where there is a lesion or direct damage to neural structures; and functional pain, where there is no lesion in the neural structures and the pain arises from a dysfunction of the pain pathways (Adrian et al, 2017). One of the best examples of maladaptive pain is that which is perceived to occur in a limb despite the limb having been amputated previously. However, it is becoming increasingly obvious that many conditions exhibit features of functional pain – that is, changes in the processing of pain signals result in heightened sensitivity of the subject to non-noxious stimuli or the subject experiences episodes of spontaneous pain (Adrian et al, 2017; Groh et al, 2018).

> "... it is known that neoplastic and degenerative disease are the leading cause of death in dogs and it is likely that these processes are associated with pain"

Pain pathways

The pain pathways are depicted in **Figures 1-3**. A comprehensive caption with each figure explains the processes involved.

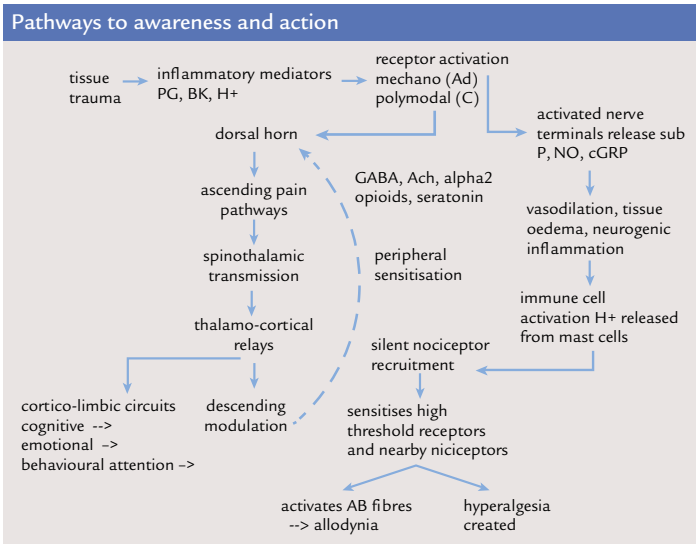


Figure 1. *Initial insult leading to awareness and action. Under normal conditions, a noxious insult causes the release of inflammatory mediators at the tissue level. These mediators include prostaglandins (PG), bradykinin (BK) and histamine (H+). However, there are numerous mediators identified. These mediators activate mechano-receptors and polymodal receptors on Aδ and C fibres respectively. These fibres send an impulse via the opening and closing of sodium channels to the dorsal horn of the spinal cord. From the dorsal horn, ascending pain pathways transmit the impulse to the thalamus; and from here, thalamocortical relays alert the corticolimbic circuits to the painful stimulus, thus creating cognitive, emotional and behavioural conscious awareness of the event. Additionally, from the thalamocortical relays, there is activation of descending pathways to modulate the severity of the incoming message, thus allowing the subject to adapt and manage the pain. This descending modulation is mediated by a variety of neurotransmitters, including γ-amino-butyric-acid (GABA) and acetylcholine (ACh) and serotonin. Drugs that can aid in this descending modulation include opioids and alpha-2 adrenoceptor agonists.*

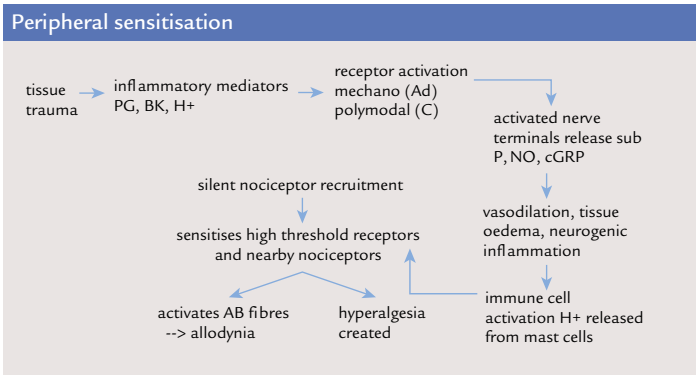
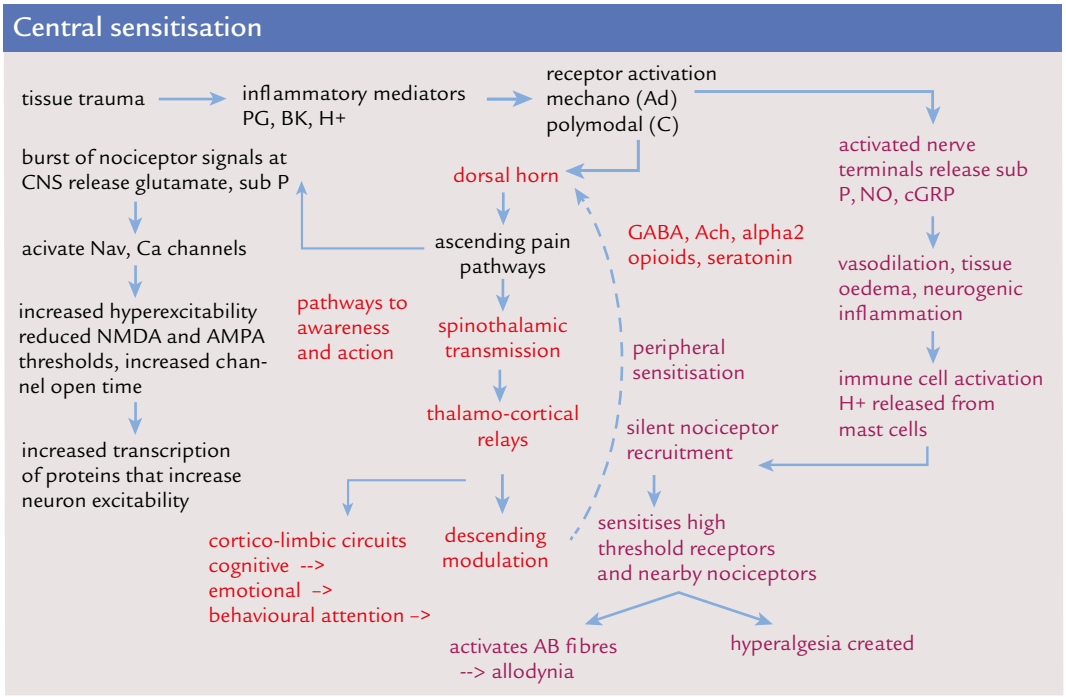


Figure 2. *The development of peripheral sensitisation. Concurrently, the activated nerve terminals release substance P (sub P), nitric oxide (NO) and calcitonin gene-related peptide (cGRP) at the tissue level. Here in the traumatised tissues, these cause vasodilation, tissue oedema and neurogenic inflammation. This causes immune cell activation and the release of histamine from mast cells. This immune component of the pathway allows the recruitment of previously silent nociceptors.*

Once these become activated, there is sensitisation of high-threshold receptors and nearby nociceptors. This results in the activation of Aß fibres. Once these high-threshold receptors are recruited and sensitised, there is a zone of hyperalgesia around the original insult; and once the Aß fibres are activated, the observed response to stimuli becomes allodynia. This is the process that leads to peripheral sensitisation.

Figure 3. *The development of central sensitisation and neuroplasticity. In order to create central sensitisation (or central plasticity), once the pain impulse reaches the dorsal horn of the spine, there is a burst of nociceptor signals causing release of glutamate and substance P. This causes activation of voltage-gated sodium channels and calcium channels and leads to increased hyperexcitability of the neurons involved. There are reduced thresholds of N-methyl-D-aspartate (NMDA) and alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptors and increased channel open time of these receptors; which allows more signals to be transmitted with higher frequency and intensity. There is greater transcription of proteins that increase neuron excitability and a centrally sensitised state is created. It is the transcription of new proteins and genetic information that causes the pain pathways in the central nervous system to change and become sensitised, thus the term central sensitisation, or central plasticity. This means that a patient is able to perceive more pain with less stimulation. Thus, it can be seen that an acute insult can create central sensitisation and that neuronal plasticity is not preserved for chronic pain conditions alone.*



It is suggested that for pain to have become chronic, and persist after the original injury has healed, the pain pathways must have been 're-wired', such that neurons and receptors that would usually return to a resting, less excitable state remain hyperexcitable. From **Figures 1-3**, it can be seen that the NMDA and AMPA receptors have a key role in this. Thus chronic pain can be thought of as a pathology of the central nervous system.

This is distinct from neuropathic pain, which is pain caused by a lesion to the nerves themselves; although neuropathic pain, like any other pain, can be a type of chronic pain if left unmanaged and untreated. It is also recognised that chronic conditions, such as osteoarthritis and cancer, can cause a peripheral neuropathy and hence this explains some of the pain symptoms expressed by people and animals with such conditions (Im et al, 2010; Bennett et al, 2012).

Furthermore, owing to the process described, once a hyperexcitable state is reached, stimuli that would not normally be considered painful are now able to elicit a pain response in the affected individual. The ability of the central nervous system to adapt in this way has been termed neuroplasticity.

Pain expression and assessment in dogs and cats

In order for clinicians to be able to treat pain, they must first be able to identify it in their patients and to do this, they must have an understanding of pain expression in these species. Recent articles have covered these in detail (Epstein, 2013; Wiese, 2015; Walsh, 2016; Adrian et al, 2017; Goldberg, 2017; Reid et al, 2017). It is important to note the species differences in response to pain, and recognise that pain expression is a very individual response – such that, in many instances, familiarity with the species is not enough, and familiarity with the subject is necessary.

This is especially true of chronic pain, where changes in the subject's response to daily life are subtle and need long-term assessment. Therefore, the importance and necessity of the development of health-related quality-of-life assessment tools cannot be overstated. In the human medical sphere, these quality-of-life surveys are reported by the patient. Where a human is non-verbal for any reason, then an observer may answer these reports, but only if the report includes behaviours that can be watched and monitored (Reid et al, 2017).

Clearly, animals cannot 'self-report' and, therefore, the development of owner/carer reports on health-related quality of life, using questionnaires to identify specific behavioural patterns and changes, is the next best thing. There is one validated instrument available for use in veterinary medicine (VetMetrica HRQL for dogs and cats) that uses these sorts of owner questionnaires (Reid et al, 2013; Noble et al, 2018).

Conclusion

The discussion of how to identify when an animal is in pain has been covered elsewhere. The measurement of an animal's pain has also been covered at considerable length and readers are directed to refer to these sources for more information. This series of articles on chronic pain is targeted at explaining the pain pathways – such as our understanding of these is to date – and then in subsequent articles, discuss the evidence available supporting conventional and less mainstream methods of analgesia and pain management. ■

PPD Questions

1. The definition of chronic pain is...
   A. pain that has lasted beyond one year
   B. very severe pain
   C. pain that has lasted beyond the expected healing time for that injury
   D. pain that is caused by inflammatory processes only.

2. Peripheral sensitisation...
   A. can be described in terms of allodynia and hyperalgesia
   B. does not involve immune cell activation
   C. always occurs in the absence of a primary tissue trauma event
   D. is considered maladaptive and not for the benefit of the patient.

3. Treatment of chronic pain in veterinary species...
   A. is difficult owing to historical inadequate pain assessment in veterinary species
   B. owner compliance
   C. drug expense and availability
   D. all of the above.

4. The only validated tool for assessing an animal's quality of life is...
   A. the vet's own system in their clinic
   B. the VetMetrica health-related quality of life questionnaire for dogs and cats
   C. the Musculoskeletal Pain Index
   D. force-plate gait analysis.

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

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Jane Ellison
BSc(Hons)

Jane is one of the senior information scientists at the Veterinary Poisons Information Service, having started her career in human toxicology at the National Poisons Information Service at Guy's Hospital. In addition to working on the 24-hour team, she provides CPD courses on small animal poisonings, lectures at conferences and to veterinary practices and their clients, and writes for a number of publications.

**Suggested Personal & Professional Development (PPD)*

POISONS

Beware of 'bin raiders'

Whilst all of us are becoming more aware of – and accustomed to – the pressing need for reducing waste and increasing recycling, there are always going to be areas in our homes and workplaces that are repositories for rubbish. And, as we all know, pets will not let a lid or top deter them from their quest to find something that might be edible.

Some of the many things we discard will represent an obstructive risk only, whereas other materials may cause issues even after they have been thrown away. It is paramount to emphasise to pet owners the importance of keeping any rubbish containers securely fastened or in a separate area from their animals.

Food waste

Owners and vets alike are all too familiar with the recidivist 'bin raider', for whom no rotten, discarded or decaying food is too disgusting. The prevalence of work-top organic recycling bins may prove an overwhelming temptation, and the dangers of mouldy foods being a source of tremorgenic mycotoxins are well understood.

Ingestion is likely to cause vomiting, high temperature and tremors, which may be difficult to control. The exposure often occurs when the owner is out of the house, making it difficult to know exactly how long the animal has been experiencing clinical effects. In cases where exposure is thought to have been significant, the animal has significant neurological signs or the animal is failing to respond to other therapies, lipid infusion should be considered.

In addition to food that is already – or may become – mouldy, food waste may include onions (cooked or raw) which if eaten in sufficient quantities (approximately 5g/kg bodyweight) may cause Heinz body anaemia. Always ask the owner if the leftovers contained the remnants of dishes such as lasagne, spaghetti Bolognese or take-away food.

Coffee grounds and used tea bags

These represent a source of caffeine that may be problematic depending on the amount ingested. The Veterinary Poisons Information Service (VPIS) has many cases on file in which dogs have remained asymptomatic after the ingestion of only one to three used tea bags. Larger quantities have resulted in the animals developing – or presenting with – hyperactivity, excitability and, in some cases, tachycardia and hypokalaemia.

Coffee grounds and the pods especially designed for machines, also end up in the rubbish and contain a higher level of caffeine than tea products. The clinical effects of caffeine correspond to that other familiar methylxanthine, theobromine, or chocolate, and would include central nervous system effects such as hyperactivity, ataxia and tremor, and cardiac effects including tachycardia, hypertension and arrhythmia. Any animal ingesting used

"It is paramount to emphasise to pet owners the importance of keeping any rubbish containers securely fastened or in a separate area from their animals"

coffee grounds or tea bags should receive an emetic, assuming it is safe to do so, repeat dose activated charcoal, diazepam if required, and a beta blocker if ECG monitoring shows the presence of arrhythmias.

Chewed chewing gum

It is unclear what the remaining xylitol content would be of chewing gum that has been discarded, with factors such as the amount of chewing prior to discarding and, of course, the initial content of xylitol all playing a part. With dogs, it seems sensible not to take any unnecessary risks with pre-chewed, discarded gum, and to treat as if it were pre-chewed gum.

Treatment would be required for any ingestion above 50mg/kg and, given that many sugar-free gums contain upwards of 400mg per piece, caution should be the watchword in these cases. As xylitol is a potent stimulator of insulin release in dogs and causes a decrease in blood glucose, blood glucose levels should be monitored every one to two hours for at least 12 hours. Phosphorus and potassium levels should also be monitored every four to six hours and, additionally, total bilirubin and liver enzymes should be noted on admission and at 12, 24, 48 and 72 hours post-ingestion.

Discarded medication

Old or out-of-date medicines should be disposed of carefully, or returned to a pharmacy rather than being thrown in the bin; however there are some medications that owners, post-use, might well feel it is safe to put in the waste.

Transdermal patches

Transdermal patches for the treatment of nicotine addiction are more likely to pose an obstructive risk than an issue with nicotine toxicity. This is partly because the oral bioavailability of nicotine is low, and it is poorly absorbed from the stomach. Also discarded patches would contain only a fraction of the pre-use, intended dose.

Clinical effects would generally be seen within 15 minutes to four hours and would typically consist of hypersalivation, vomiting, ataxia, lethargy, tremor, diarrhoea and tachycardia or bradycardia. Treatment would essentially be symptomatic and supportive, but it ought to be noted that any use of antacids should be avoided as this would enhance absorption.

Hormone-replacement therapy patches

These are considered to be of very low acute toxicity and again, apart from being aware of a potential obstruction risk, no treatment would be required.

By contrast, pain relief patches containing buprenorphine or fentanyl, may be discarded before all the drug has been discharged and may represent a significant risk to an animal that chews or swallows them.

Fentanyl patches

Fentanyl patches are designed to be worn for 72 hours and then replaced, but analysis of used patches showed that 28 to 84 per cent of the drug was still present after 72 hours of use (Marquardt et al, 1995).

After ingestion or chewing of a patch, clinical effects such as hypersalivation, ataxia, collapse, drowsiness, diarrhoea, bradycardia, hypothermia, constricted pupils (dilated pupils in cats), pale mucous membranes and respiratory depression would be expected within an hour. Fentanyl has an antiemetic effect in cats and dogs (Lefebvre et al, 1981; Blancquaert et al, 1986; Costello and Borison, 1977), so vomiting would not be anticipated. Recovery usually occurs within two to eight hours after ingestion, or within a few hours if the patch has just been chewed.

Emesis is *not* recommended – owing not only to the antiemetic effect of fentanyl, but also because it would not be wise to introduce a further source of opioid, apomorphine, into the body. Repeat doses of activated charcoal are useful in this situation, as the patch will be acting as a slow-release form of the drug.

Atropine can be used for the treatment of fentanyl-induced bradycardia, and naloxone, the opiate antagonist, should be used in animals with CNS or respiratory depression.

All symptomatic animals should be observed until signs resolve and for at least two hours after administration of naloxone (if given). Asymptomatic animals should be observed for at least two hours after ingestion.

Buprenorphine

Buprenorphine is a potent, semisynthetic opioid with mixed agonist/antagonist properties. The clinical effects associated with a similar ingestion or chewing of a pain relief patch would be drowsiness, depression, vocalisation, hallucinations, tremor and hypersalivation. Aggression, excitability, bradycardia, hypothermia, ataxia and disorientation have also been reported. Gastrointestinal effects appear to be minimal, although vomiting and diarrhoea may be seen occasionally.

Treatment would be the same as for fentanyl, with avoidance of apomorphine and the administration of repeat-dose activated charcoal.

Salbutamol or beclomethasone inhalers

These items are generally thrown away because the user knows they are empty and so the risk of toxicity is

reduced. Dogs chewing on beclomethasone inhalers, even when the device still contains some medication, generally experience little more than a mild tachycardia or tachypnoea, which will require supportive treatment only.

Salbutamol inhalers, depending on how much is left in the device, should be treated with more caution if chewed by a dog. Puncturing the canister results in exposure to the released compressed gas, which is at a very low temperature and oral thermal injury may take 24 hours to fully develop.

In addition, salbutamol may cause tachycardia, tachypnoea, vomiting, lethargy, panting, hypokalaemia and tremor. Asymptomatic animals should be observed for at least four hours post-exposure with monitoring of heart rate, blood pressure and ECG (Stiles and Plumb, 1993).

If clinical effects do develop, then electrolytes, especially potassium, should be checked and corrected where possible. A beta-blocker, preferably propranolol, is a more specific treatment for salbutamol-induced hypokalaemia than potassium supplementation (Vite and Gfeller, 1994).

Household items

These include batteries, heat pads and hand-warmer sachets.

Theoretically, used batteries pose less of a hazard than new ones since they are less likely to leak or cause electrical damage. It is important to remember, however, that even batteries that do not have sufficient power to drive their intended appliances may still retain a residual charge and a foraging dog will look upon a battery, irrespective of its status, as a real treat.

Most animals remain well or develop only mild signs of local irritation. Chewing batteries may cause hypersalivation or vomiting – oral or tongue inflammation, ulceration and burns occur in a small number of cases (7.4% of VPIS battery cases). Batteries which open or leak may cause abdominal discomfort and melaena; but will usually pass uneventfully through the gastrointestinal tract in one to seven days; although any suspicion of non-movement or lodging should be investigated.

If the battery is shown by radiography to be in the stomach or the animal is exhibiting significant clinical signs, it should be removed via endoscopy or surgery. Emesis is contraindicated and there is no benefit in giving activated charcoal. If signs of irritation develop, such as redness, swelling, oral ulceration or hypersalivation, treatment would be supportive with analgesics and gastro-protectants as required.

Heat pads and hand-warmers are usually discarded when they have been used and have, therefore, completed their heat-generating exothermic reaction, with the metallic iron or ferrous carbonate being oxidised to iron oxide. If more than one used heat pad or hand-warmer has been ingested, an emetic should be given, and the animal observed subsequently for signs of vomiting, diarrhoea, lethargy or weakness.

Treatment would again be supportive, with the emphasis on rehydration, antiemetics, gastroprotectants and, in severe cases, serum iron levels should be assessed and chelation therapy with desferrioxamine should be considered.

Dead houseplants

Most of these are unlikely to cause any clinical effects more troublesome than mild and self-limiting gastrointestinal signs. However, it must always be remembered that discarded lilies are still a danger to cats – so wrap the plants in newspaper and keep away from any cats in the household, ideally transferring them immediately to a secure dustbin or organic recycling container.

Dogs will eat clean or used nappies, but even soiled nappies are of low toxicity being only mildly irritant to the gastrointestinal tract – although they may present an obstructive risk. Gastric decontamination is not required, and the animal can eat and drink as normal; if signs of vomiting or diarrhoea persist, assess the animal for signs of obstruction.

Tin foil, cling film food packaging, wipes and cosmetics will not represent a toxic hazard but again may present an obstructive risk.

Conclusion

As always, encourage and remind owners to keep those inquisitive paws and noses of their pets away from discarded materials – because as sure as eggs are eggs, (a particular treat!) it will all be viewed with excitement and focused determination by the animals of any household. ■

> ... encourage and remind owners to keep those inquisitive paws and noses of their pets away from discarded materials – because as sure as eggs are eggs, (a particular treat!) it will all be viewed with excitement and focused determination..."

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The future of pet insurance

The basic concept is simple – you pay a monthly sum to an insurance company and if your pet is unfortunate enough to fall seriously ill or have an accident, the insurance covers the costs of the veterinary bills. The client has their bills paid, the vet earns his or her salary, the pet makes a recovery and the insurer should, in an ideal world, still be in profit. If only it were so simple.

Pet insurance has made a huge difference to animal health and welfare and the ability of owners to care for their pets; however, the challenges and issues now facing pet insurance are causing worry to owners, veterinary surgeons and insurers alike and pet insurance is becoming a victim of its own success.

Strained system

The principle of insurance is that the premiums of the many pay for the claims of the few. This principle is being strained in the pet insurance market to the point where it is beginning not to work effectively – with over 30 per cent of pet insurance policy holders submitting claims compared with the 15 per cent of household policies and the 22 per cent of motor policies upon which claims are made.

Add to this the strides made in animal medicine and surgery, such as diagnostic imaging, specialist surgical procedures, joint replacement surgery, prosthetic limbs, specialist drugs – the list goes on and they are never cheap. The advances in veterinary medicine come at a very high price for the client and, by default, the insurer.

Owner expectations continue to rise – fuelled to no small extent by TV programmes of the 'supervet' genre – and they will understandably demand the best treatment for their pet, often unaware of the real cost, and in the process run up high veterinary bills which inevitably have the knock-on effect of increasing insurance premiums.

Diagnostic work-up is far more prevalent in today's veterinary world, where litigation sits on every vet's shoulder and clients demand investigative action even when a 'wait and see' policy might be more appropriate. This also pushes up veterinary costs. And a new issue has begun to emerge whereby some members of the veterinary profession – and some owners – see euthanasia as a failure and consider that life should be preserved at all costs. This can lead not only to vastly increased veterinary fees but also to animal welfare issues.

All these factors combine to lead to an increase in the cost of pet insurance that will soon be unsustainable. We have reached a point where a significant number of clients feel unable to afford pet insurance and just 'hope for the best' or consider 'self-insurance' – putting money aside each month to cover veterinary fees and any emergencies.

Moral dilemma

The Association of British Insurers has reported that over the last 10 years, the average pet insurance claim has increased by 96 per cent – from £386 in 2007 to £757 in 2017. Even taking inflation into account, this is still a rise of 50 per cent. Overall, the industry premiums were £1.1 billion in 2017, with indicative loss ratios of around 70 per cent, meaning that the claims settlements to pet owners are highly significant.

We would seem to have something of a moral dilemma. Do we have a highly priced product available to the few, which enables treatment that is superior to that available to most pets; or do we have an affordable insurance product that offers the majority of pets good cover for most conditions, but not for those requiring 'supervet' treatment? It is fair to suggest that it is these 'super' and advanced medical treatments that are responsible to a large extent in pushing up premiums to all, even though they are used by only a few.

Insurance providers have been discussing the viability of their industry for a number of years as they have watched veterinary fees rise and, at the beginning of this year, Agria Pet Insurance invited guests from across the veterinary profession to discuss the issues facing the industry. It was suggested by Robin Hargreaves – who chaired the discussion and is a veterinary consultant for the firm – that there may well be a future where clients would reach the limit on what they would be prepared to pay to insure their pet which, by default, would then limit the treatment options and cover that insurers could provide.

Many veterinary practices – in particular referral practices – rely quite heavily on income from insured pets, but escalating treatment costs are threatening this income source. One of the reasons for rising vet bills is centred on 'defensive medicine', which can result in massive bills for relatively healthy animals, with cases being 'worked up' unnecessarily – arguably amounting to overtreatment.

It was acknowledged that most vets who overtreated genuinely believed that they were doing the right thing for the animal and were not just finding a way to generate more income; however, there was also general agreement that overtreatment was now commonplace and the biggest reason for escalating insurance claims.

Crunch time

We seem to have reached an impasse. The many reasons why vets overtreat can all be justified if necessary, and the likelihood of reducing this practice significantly – at least in the short term – is small. The problem is that, during this time, the final crunch may come, and the sustainability of pet insurance could flounder.

Clients and insurers are currently in a vicious circle of escalating vets bills that, in turn, generate escalating insurance premiums – although we should not place all the blame at the door of veterinary practices. Maybe insurance companies should not be willing to insure animals for the very expensive treatments? Maybe paying out for operations costing many thousands of pounds is not something insurance companies should be considering – no matter how hard and contentious this option might be?

Perhaps the health and well-being of the majority of pets is more important than fulfilling the unrealistic expectations of the owners of a pampered few? ■

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Marie obtained a first class honours degree in Equine Sports Science in 2005. She has worked in equine clinical practice since 2003, and qualified as an REVN with merit in 2007. In 2012, Marie completed the Diploma in Higher Education Clinical Veterinary Nursing (Dip HE CVN) and obtained the RCVS Diploma in Advanced Veterinary Nursing (Dip AVN) in equine context, with distinction. She has been lecturing on the Veterinary Nursing Diploma course since 2010 at Bottle Green Training in Melbourne. Marie has a keen interest in the welfare of working equids, having travelled to Africa to volunteer at The Gambia Horse and Donkey Trust (GHDT) in both 2015 and 2017. Marie's special interests include bandaging and wound care, foal nursing, radiography, anaesthesia and intravenous catheter care.

**Suggested Personal & Professional Development (PPD)*

PAIN SCORING

Pain scoring in horses

Pain management is important for optimal recovery and good welfare in equine veterinary practice. Horses are prey animals and are notorious for trying to hide signs of pain. Therefore, the accurate and careful assessment of the clinical signs of pain is essential for equine welfare. This article will discuss the development and use of pain scoring in equine veterinary practice.

Pain scoring

The recognition and alleviation of pain is critical for the welfare of horses. Although considerable progress has been made in understanding the physiology and treatment of pain in animals over the past 20 years, the assessment of pain in horses undergoing management procedures remains difficult to assess; as in other animal species, this is owing to their inability to communicate with humans. This could be further compounded by the horse potentially suppressing the exhibition of obvious signs of pain in the presence of possible predators – such as humans – as is suggested with other prey species (Dalla Costa et al, 2014).

Several behaviour-based assessments of pain in horses have been devised, such as the 'Post Abdominal Surgery Pain Assessment Scale' (PASPAS) – a multidimensional scale that can be used to quantify pain after laparotomy – and the 'Composite Pain Scale' (CPS), which focuses on the presence of pain-related behaviours, the change in the frequency of normal behaviour patterns, and physiological parameters. However, behaviour-based assessments of pain are not without limitations that constrain their routine application. There is a need for trained and experienced observers, prolonged observation periods (particularly in conditions inducing only mild pain) and the palpation of the painful area in some cases (Dalla Costa et al, 2014).

Recently, a new approach to pain assessment – utilising the assessment of facial expressions – has been developed in rodents and rabbits. Facial expressions are commonly used to assess pain and other emotional states in humans; particularly in those who are unable to communicate with their clinicians. In humans, facial expressions are routinely scored both manually and automatically using the 'Facial Action Coding System' (FACS), which is considered an accurate and reliable method that describes the changes to the surface appearance of the face, resulting from individual or a combination of muscle actions referred to as 'action units'. Action units relating to pain in rodents and rabbits has been incorporated into species-specific 'grimace scales'. A grimace scale offers a number of advantages over other routinely used methods of assessing pain in animals, such as:

- it is less time consuming to carry out
- observers can easily and rapidly be trained to use them
- it may utilise the human tendency to focus on the face when scoring pain
- it can be used to effectively assess a range of painful conditions from mild to severe pain
- the safety of the observer can be increased when assessing pain in horses, as grimace scales do not require the observer to approach the subject and palpate the painful area for the assessment (Dalla Costa et al, 2014).

"Horses are prey animals and are notorious for trying to hide signs of pain"

Typical facial expresssions associated with pain

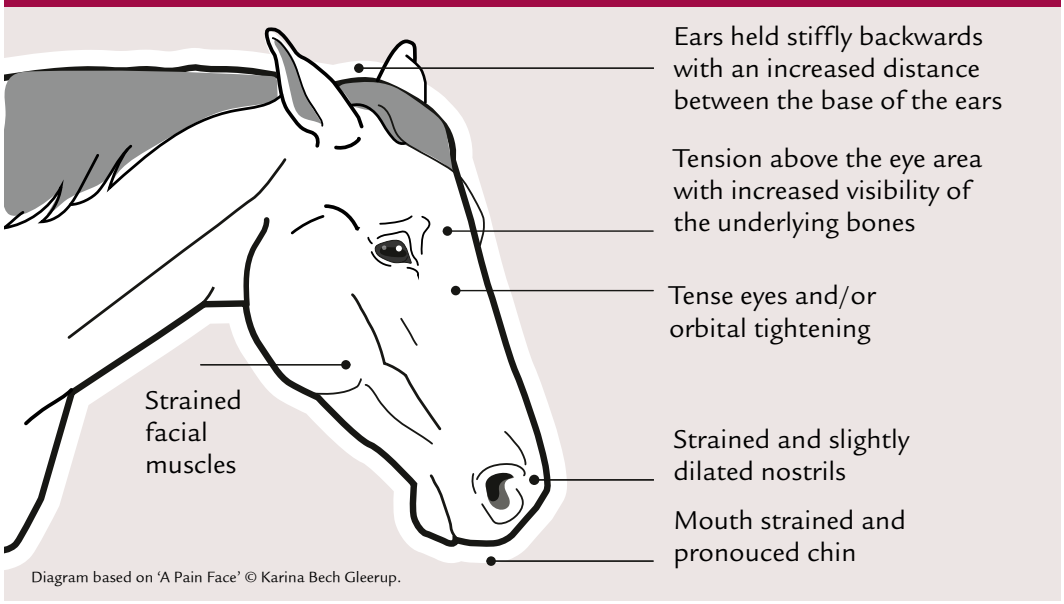

Figure 1. *Diagram demonstrating typical facial expressions associated with pain.*

The 'Horse Grimace Scale' (HGS) may offer an effective and practical method of identifying painful conditions. Furthermore, it could be applied in association with other behaviour-based methods to enhance the assessment of pain in horses. The HGS could be implemented in practice by owners and stable managers as an effective 'on yard' early warning system. The HGS incorporates six 'Facial Action Units' (FAUs) that are independently scored:

- ears held stiffly backwards
- orbital tightening
- tension above the eye area
- prominent strained chewing muscles
- mouth strained and pronounced chin
- strained nostrils and flattening of the profile (Dalla Costa et al, 2014).

Each FAU is scored from images on a three -point scale:

- zero indicates that the assessor is confident that the action unit is not present
- one indicates that the assessor is confident that the action unit is only moderately present
- two indicates that the assessor is confident that the action unit is obviously present.

The HGS has been shown to be a potentially valid measure of pain following routine castration surgery.

Gleerup et al (2015) also studied facial expressions in horses that had experimental pain induced. The result was the publication of the 'Equine Pain Face' which included:

- asymmetrical/low ears
- angled eye
- square-like nostrils
- tension of the muzzle
- tension of the mimic muscles.

Although both Dalla Costa et al (2014) and Gleerup et al (2015) found similar expressions of pain in the horses that they studied, the contents of the HGS and the equine pain face are not identical. This could be explained by the different circumstances that the horses were subjected to during the different studies. Dalla Costa et al (2014) studied pain in horses after a routine castration, and Gleerup et al (2015) experimentally induced acute pain in otherwise healthy horses. **Figure 1** shows a horse demonstrating typical facial expressions associated with pain.

Factors affecting pain scoring and assessment

In existing pain scales, little attention has been paid to the influence of personality, stress, or individual pain-coping strategies in horses (van Loon and Dierendonck, 2018). Ijichi et al (2013) showed that determining personality and/or individual coping strategies may have major implications for the accurate assessment of pain in horses.

It may be reasonable to suggest that different breeds may require individual grimace scales. For example, thoroughbred horses are generally more expressive when it comes to pain in comparison to more 'stoic' breeds such as a cob. However, there will be individual variations within breeds, and this is where an assessment of patient personality is important. RVNs are an important asset when it comes to objective pain scoring as they may spend increased amounts of time with patients; whether that be making a clinical assessment, grooming, or observation in the hospital environment. Furthermore, this also highlights the importance of asking owners about their horse's personality and behaviour. Again, RVNs are in a good position to gain this information during the hospital admission process. This attention to detail will also reassure the owner that their horse will receive individualised care and treatment while at the practice.

Considerations for different types of equids is also important. For example, donkeys have long been regarded as less likely to show signs of pain in comparison to horses. There is evidence to suggest that donkeys should have their own grimace scale, as researched by Van Dierendonck et al (2018). This study described scale construction and clinical applicability of a 'Composite Pain Scale' (do-CPS) and a 'Facial Assessment of Pain scale' (do-FAP) for acute pain in donkeys. Van Dierendonck et al (2018) concluded that objective pain assessment in donkeys is possible, and may support objective evaluation for treatment of donkeys with acute pain. A separate grimace scale is something that should also be considered for ponies, foals, mules and zebras.

Coat colour can also have an effect on pain scoring. Dalla Costa et al (2014) found that dark horses were often more difficult to score than those with lighter coats, especially if the background of the photograph used in the study was dark. In practice, the

"Pain scales based on facial expressions seem to be favourable for valid and quick pain assessment in box-rested horses"

"RVNs are an important asset when it comes to objective pain scoring as they may spend increased amounts of time with patients"

pain score would more likely be assessed by observing the patient directly rather than via an image – however, the effect of coat colour should still be considered by veterinary surgeons and RVNs when carrying out pain scoring.

Using pain scoring in practice

Pain scales based on facial expressions seem to be preferable for valid and quick pain assessment in box-rested horses with acute pain from various origins. These pain scales can be implemented into daily clinical practice, based on the minimal time that is required to score horses and their valid and reproducible outcomes. Composite pain scales require more time, but can be useful for the assessment of acute pain and to assess the effect of intervention and treatment of pain (van Loon & Dierendonck, 2018).

It is clear that there are many different methods available in practice to score pain in equine patients – however, implementing pain scoring can be challenging. Initial introduction of the new ideas can be met with scepticism and resistance. One way to address this is to introduce the idea at a staff meeting and to allow discussion from the whole team. Different pain scoring methods can be presented at the meeting, but it should be up to the veterinary team present to select an accurate method that will work for the practice. If every team member has the opportunity to put ideas forward they will feel more invested in the process. This, in turn, will increase compliance and contribute to the welfare of the equine patients at the practice.

The future of pain scoring

Further innovative techniques are being developed to enable objective pain recognition in animals. In sheep, computerised technology has already been shown to enhance pattern recognition in facial expressions when the animal is experiencing acute pain. This technology is also being applied to other species. As in various other fields, technology used in veterinary medicine will follow developments made in human medicine where digital patient recognition and determination of pain states – based on speech and facial expressions – is already in use (van Loon & Dierendonck, 2018).

Conclusion

There are many different methods available to assist veterinary professionals in pain scoring horses in practice. The method selected should be one that is accurate and easy to use. Veterinary surgeons and RVNs should both be involved in pain scoring patients; taking into account different factors such as species, breed, personality and the coat colour of the patient. With inter-team collaboration, pain scoring can be assessed and developed in order to increase the welfare and recovery of equine patients being treated in veterinary practice. ■

PPD questions

1. What does FAUs stand for?
2. How many FAUs are included in the Horse Grimace Scale developed by Dalla Costa et al. (2014)?
3. Name the FAUs included the Horse Grimace Scale.
4. Name three factors that can effect the expression and assessment of pain in horses.
5. Other than horses, a separate pain scoring system is currently being developed for which other type of equid?

Answers

1. Facial Action Units
2. Six
3. Ears held stiffly backwards, orbital tightening, tension above the eye area, prominent strained chewing muscles, mouth strained and pronounced chin, strained nostrils and flattening of the profile
4. Patient personality, breed, species, and coat colour
5. Donkeys.

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Sleep deprivation in horses

Sleep is a vital aspect of overall health; but, unfortunately, equine sleep disorders are poorly understood. There are few peer-reviewed publications on the subject and many veterinary professionals and owners are left to manage situations based upon their personal experience, rather than evidence-based medicine.

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Jo is a graduate of the Royal Veterinary College, London. She has a Masters Degree in Tropical Animal Health, and has spent most of her career working in mixed veterinary practice. Recently, she has become involved in one of the UK's fasted growing veterinary telemedicine services.

Jo is a published author of two books, and enjoys working as a freelance veterinary content writer around her clinical work. She has a strong interest in equine pain management and rehabilitation, as well as global veterinary medicine and welfare.

In her spare time, Jo enjoys spending time with her horse and her family.

**Suggested Personal & Professional Development (PPD)*

BEHAVIOUR AND WELLBEING

Sleep deprivation is a noticeable ailment which suggests there are underlying factors in the horse's health or environment that need to be addressed. Equine sleep patterns are adaptable – because, in the wild, horses may have periods of time when they must be more alert for predators. Therefore, a horse can go for up to three days with inadequate sleep before sleep deprivation sets in, and in exceptional circumstances, up to three months before collapse caused by sleep deprivation is apparent (Houpt et al, 2001).

Sleep cycles

As is the case with humans, horses go through a series of sleep cycles during their sleep time. These cycles have several different stages, all of which are characterised very differently. The time spent in each of these stages will vary from individual to individual, based on their circumstances (Belling, 1990) including:

- type of housing
- age
- social dynamics
- feeding routine
- daily monotony
- unfamiliar surroundings
- wild temperament
- time
- outside weather.

Horses usually begin to fall asleep in a standing position. The head begins to hang at a medium level, the eyes are semi-open and the bottom lip is loose. When the horse slips into a slow wave sleep (SWS), the head will hang lower, and if the horse is content in its environment, it will lie down in either sternal or lateral recumbency.

This is not essential though, because through the mechanism of the 'stay apparatus', a horse can sleep in the SWS phase of the cycle with relatively little effort. The SWS is a shallow sleep where the muscles are inactive, and there is little to no eye movement. The eyelids, however, may stay partially open.

Following SWS, the horse will lie down into lateral recumbency and slip into rapid eye movement (REM) sleep, which is sometimes also known as 'paradoxical' sleep. During REM sleep, the muscles are totally relaxed and the eyelids are completely closed – although the eyes may move about under the lids. The total sleep cycle in the horse is short in nature – sometimes as little as 15 minutes – with SWS followed by REM sleep, followed again by SWS (Belling, 1990).

Horses are known as 'polyphasic' sleepers, and have multiple short periods – some throughout the day, and most at night. Horses will mainly sleep from 8pm to 5am, with the majority of the SWS and REM sleep occurring between 12am to 4am (Keiper and Keenan, 1980). They will also sleep during daylight hours if possible – being a prey animal, this is not in their survival nature. Horses need a minimum of approximately three to five hours sleep per 24-hour period. This time must include both SWS and REM sleep.

"As is the case with humans, horses go through a series of sleep cycles during their sleep time"

Foals, on the other hand, require much more sleep than an adult horse. Foals spend 15 to 33 per cent of their time resting in lateral recumbency when they are newborn, which gradually decreases to two per cent after weaning (Boy and Duncan, 1979). Therefore, foals are less able to compensate for lack of sleep and may display signs of sleep deprivation sooner than adult horses.

Sleep deprivation vs narcolepsy

Both sleep deprivation and narcolepsy can cause episodic collapse in an apparently healthy horse. This is when there is a loss of postural tone that may lead to recumbency. This can be alarming to the observer. The actual collapse or partial collapse looks identical with both sleep deprivation and narcolepsy, so they are commonly confused. Sleep deprivation, however, is caused primarily by insufficient sleep and increased drowsiness; whereas narcolepsy is a triggered neurological disorder caused by certain activities or emotions.

Signs

Signs vary between different horses, depending on the extremity of the sleep deprivation. Some – or all – of the following may be observed:

- complete collapse
- collapse of the front end into a bowing position

Figure 1. *Indications vary between different horses, depending on the extremity of the sleep deprivation. Collapse of the front end into a bowing position is one such sign.*

(**Figure 1**), praying position or onto the knees
- lack of evidence of lying down in the stable
- increased drowsiness during the day
- poor performance
- fetlock or carpal abrasions from falling.

Types of sleep deprivation

There are four recognised types of sleep deprivation.

Pain-associated

Pain-associated sleep deprivation is probably the most common type of sleep deprivation in horses. It is seen in horses that have been diagnosed with painful conditions, such as advanced joint disease, gastric ulcers, late pregnancy, polysaccharide storage myopathy, and other musculoskeletal disorders. As a consequence of the pain, the horse is unable to lie down comfortably in lateral recumbency in order to gain sufficient REM sleep.

Monotony-induced

Monotony-induced sleep deprivation is most often seen in horses that are tied up with 'cross-ties' for long periods of time. It is also occasionally seen in horses where, for a prolonged period of time, they must stand quietly. Examples are police horses, show horses standing to be plaited and riding school ponies saddled and waiting for their lessons.

Environmental insecurity

Sleep deprivation caused by environmental insecurity will require some investigative work in order to determine the root cause. Issues may include stable relocation, stable size changes, loss of field-mates, rugging issues and inclement weather. These lead to the horse being too psychologically uncomfortable to lie down.

Dominance displacement

If a horse is constantly excessively dominant in a herd, it is most likely to be suffering from dominance displacement sleep deprivation. All its energy goes into dominance and they do not relax. This is most common in geldings. It leads to anxiety and insecurities, and is often resolved with the introduction of a dominant mare.

Diagnosis

The underlying problems in cases of sleep deprivation are often easily diagnosed through a process of elimination.

The horse should initially have a thorough clinical examination to rule out any cardiac or neurological forms of collapse. Once these are eliminated, sources of pain should be investigated. This may include a lameness work-up, radiographs, blood work for acute phase proteins (APP) such as serum amyloid A (SAA) and fibrinogen (Jacobsen, 2007) and gastroscopy.

If, after a thorough clinical investigation, the horse is shown to be in prime health, the owner should then consider some of the following questions to address any changes in the horse's lifestyle:

- has the horse been transported recently – such as to a new yard or to a show?
- have the horse's normal living conditions changed recently – such as a new stable or field?
- are there any new horses in the same field that are challenging the hierarchy?
- has anyone witnessed the horse lie down or roll recently?
- what is the normal routine of the horse? Is it required to stand still for long periods of time?
- has the weather changed recently and is the rug being worn appropriate for the temperature?

Treatment

If the sleep deprivation is caused by an underlying medical issue – such as one of the ones previously mentioned – that issue should be dealt with in the first instance. In the case of musculoskeletal disease, treatment modalities may include non-steroidal anti-inflammatories, corticosteroid joint injections and nutraceuticals. Gastric ulcers may require treatment with omeprazole; and other internal causes of inflammation must be addressed directly and specifically.

Discomfort resulting from late pregnancy usually resolves instantaneously with giving birth. Until then, providing the mare with a comfortable deep straw bed will encourage her to lay down and rest.

Sleep deprivation resulting from environmental or dominance factors, and monotony-induced sleep deprivation, can all only be treated by pinpointing and addressing the root cause. Considerable hours of observation may be needed to understand what must be tackled. For example, observe where the horse appears most relaxed – is it the stable or the field? A field-kept horse may not be suited to this routine and may require a period of stabling each day/night to relax properly; or a stabled

"There are four recognised types of sleep deprivation"

horse may actually suffer from claustrophobia and be more relaxed living out?

A horse suffering from arthritis may need to live out in order to stay on the move and may seize up in the stable. Also, if the horse is unable to relax in the field because it has taken on the responsibility of dominance, it may be better suited to living in a bigger herd where it feels protected enough to sleep.

Ensure there is adequate shelter in the field, both from wind and rain, and from the sun, and that ground conditions are suited to lying down. If the field is poorly drained, this may need to be addressed, and maybe hard standing and a field shelter installed. Also check for any other potential stress factors, such as neighbouring horses or livestock.

Conclusion

Once the cause has been removed, the prognosis for these horses is very good. ■

PPD Questions

1. How much sleep do horses require in a 24-hour period?
   A. one to two hours
   B. three to five hours
   C. five to seven hours
   D. seven to nine hours
   E. 10-12 hours.

2. What is not a type of sleep deprivation?
   A. pain-associated
   B. boredom-associated
   C. monotony-associated
   D. dominance displacement
   E. environmental insecurity.

3. Sleep deprivation and narcolepsy are caused by a similar pathogenesis. True or false?
   A. true
   B. false.

4. The following is an acute phase protein and, therefore, a biochemical indicator of inflammation...
   A. ALT
   B. HGB
   C. MCHC
   D. SAA
   E. CKK.

5. Horses can be in slow wave sleep in standing, sternal recumbency and lateral recumbency; however, REM sleep can only happen in lateral recumbency. True or false?
   A. true
   B. false.

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

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Gut feelings on equine ageing and obesity

A study of bacteria in ponies' guts has shed some light on the subject.

The study*, published in *Frontiers in Microbiology* and entitled 'The Equine Gastrointestinal Microbiome: Impacts of Age and Obesity', was led by Dr Philippa Morrison from Scotland's Rural College, Aberdeen, in collaboration with other UK equine centres, including the Waltham Equine Studies Group. Thirty-five Welsh mountain pony mares were studied across two years.

According to the researchers involved, the complex microbial community living in the equine gut may provide valuable information about ageing and obesity. Their initial findings suggest that obesity in ponies may have a greater effect on gut microbes than age in healthy ponies; and they claim this could help to better guide ways to feed older and/or obese horses and ponies.

The horse's large intestine is home to trillions of microbial organisms, including the bacteria, viruses and fungi that are essential for fibre digestion and regulation of the immune system. In humans, differences in the 'community' of gut microbes (the microbiota) and their genetic make-up (the microbiome) have been linked to various aspects of health and disease, raising the question of whether the same might be true for horses.

'Diversity' is a measure of the number of different species of gut microbe, the abundance of each species and the distribution or 'evenness' of species within the community. In humans, a reduction in diversity has been linked to both ageing and obesity; and previously published work had shown a similar reduction in diversity in elderly horses, regardless of diet.

Obese ponies, aged ponies and healthy controls (ponies that were considered neither obese nor aged) were fed the same hay-based diet and their faecal samples analysed to assess differences in their gut microbes.

Surprisingly, diversity increased significantly in obese ponies – the opposite of what has been seen in obese people; and also tended to increase in aged ponies – again, the opposite of what has been seen in humans, as well as similarly aged horses. The researchers postulate that these observations could mean age-associated changes in the microbiome occur at a later actual (chronological) age in ponies than horses.

Although each group of aged, obese and normal animals could be differentiated from each other, across the whole study it was not possible to predict consistently whether ponies belonged to the aged, obese or control group by looking at differences in the faecal microbes alone. This could be because microbes in the droppings only show what is happening in one part of the digestive system.

Reflecting on these findings in the 'Discussion' section of their paper, the authors observe: 'A relationship between the fecal metabolome (determined both by targeted and non-targeted analysis); the fecal microbiome and host phenotype was not established in the current study. These data contrast with human and murine studies in which host phenotype has been shown to influence both the microbiome and metabolome.

'It is likely that differences in digestive anatomy are responsible for this anomaly. Unlike the monogastric condition of mouse and man, in the hind gut-fermenting horse, digesta rapidly pass through the foregut and enter the caecum (52-60L) within two to three hours of ingestion. Caecal digesta are retained for 1.5 to five hours (dependant on the physical consistency of the diet) to allow initial microbial fermentation. From the caecum, digesta pass into the right ventral colon (retention time of three hours, 29-32L), where the largest proportion of fiber fermentation takes place and continues during passage through the remainder of the large intestine.

'The gastrointestinal tracts of man and mouse are markedly less complex, with significantly more rapid digesta passage through the small and large intestine.

Image: Courtesy of Spillers.

Thus, as discussed above, the fecal microbiome, and by implication the fecal metabolome, are not indicative of the complete digestive tract in the horse which might help to explain the apparent disconnect between the faecal metabolome and host phenotype. Alternatively, it could be conjectured that the microbiome of the equine hind-gut has the resilience to endure marked alterations in composition with minimal perturbation of fermentation patterns.'

Another possible explanation is that some species of microbes are capable of performing more than one 'job', and, therefore, different profiles may lead to the same functional/metabolic end result. This could mean that there are several potential faecal microbial profiles that can be associated with obesity or age in ponies.

The research group hopes that further work will provide a clearer understanding of how analysis of equine gut microflora can be used to influence positively the health and welfare of aged and obese horses and ponies. ■

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Sheep dogs from the perspective of a farm animal vet

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**Suggested Personal & Professional Development (PPD)*

HUSBANDRY

'Dog and stick' farming methods remain a cornerstone of sheep husbandry in the United Kingdom. Sheep dogs occupy a unique position – simultaneously work mates, companions and breeding stock. Good health is imperative not only for the welfare of these animals but also their working ability.

As the profession becomes increasingly specialised and practices become 'departmentalised', it becomes more likely that farm animal practitioners have a smaller canine case-load. Farmers may even use separate practices for livestock and for sheep dogs. Despite this, the farm vet is often consulted on a 'while-you're-here' basis for advice on routine and emergency health issues.

Sheep dogs in the UK are almost exclusively used for herding (**Figure 1**). Border collies predominate, although smooth collies, rough collies, bearded collies, Welsh sheepdogs, Old English sheepdogs, kelpies, huntaways and others (plus crosses thereof) are also to be found. In addition, farms are frequently home to other classes of dogs, such as gun dogs.

Figure 1. *Sheep dogs in the UK are almost exclusively used for herding.*

Traditional perceptions of farm dogs may indicate little appetite for clinical investigation or treatment of health issues. However, farm vets should not make assumptions with respect to the human-animal bond. Stanley (2018) gives an insight on the expectations of one farmer regarding the treatment of his farm dogs.

Though a thorough history and physical examination can achieve much, vets should be clear with owners on the limitations of clinical assessment in a farm environment. A full clinical history should be obtained from any other practice with which the dog is registered, before dispensing advice or products.

Routine health management

Farm dogs often live as groups. A rural farm setting is also rich with opportunities for contact with wildlife. Consequently, routine vaccination against infectious disease should be strongly advised. Shepherds may have their own working dogs, and these should be included in routine treatments (**Figure 2**).

Working dogs are recognised as being high-risk for contracting leptospirosis (Ward et al, 2002), especially males, so protection against this disease should be provided. Farmers should be made aware of how the disease presents – often non-specifically with lethargy, inappetence and depression (Greene et al, 2012). No vaccine covers all strains and the duration of effective cover may be less than 12 months (Adler and Klaasen, 2015).

For the same reasons – e.g. living in close contact with pack mates, contact with

"Though a thorough history and physical examination can achieve much, vets should be clear with owners on the limitations of clinical assessment in a farm environment"

gun dogs and so on – the benefits of kennel cough vaccination should also be discussed. If the pack is large, then vaccinations can be synchronised to simplify the annual routine and aid compliance.

Parasite treatment is a common query. As well as being important for the welfare of the dog, effective parasite control benefits livestock and is a requirement of some assurance schemes – Red Tractor, for example. Worming treatments for farm dogs – working or otherwise – should be recorded in the farm medicines book. Collies have an elevated risk of ivermectin neurotoxicosis owing to a mutation of the MDR-1 transport protein; although prevalence varies between different breeds (Tappin et al, 2012). As such, ivermectin-containing products should be avoided.

Where ticks are known to be present, routine treatment should include an acaricidal component. Tick activity is increasing outside typical locations and seasons (Tulloch, 2018), so beware omission of tick treatment on these bases.

The legal requirement for microchip identification by eight weeks of age should be reiterated regularly. Possession, or the sale, of dogs without microchips can lead to criminal prosecution and a £500 fine in England. These details also need to be kept up to date in case of change of ownership.

Figure 2. *Shepherds may have their own working dogs, and these should be included in routine treatments.*

Common conditions

Traumatic and orthopaedic injury are common complaints. Wounds may be suitable for treatment on farm, if appropriate materials for cleaning and repair are available. These wounds are invariably contaminated, and antibiosis is often prudent – few large animal vets carry licensed oral antibiotics for dogs, so strict instruction should be given to collect a course at the practice.

Pain relief is also paramount. Orthopaedic injury can be difficult to assess in the absence of radiographs, and the stoic nature of working dogs may mask severe pain. If there is any doubt regarding the nature or severity of the injury, the case is best referred without delay.

Farm dogs often have free access to a range of substances, including agricultural chemicals, rodenticides and livestock medicines. In cases of known ingestion, the farm vet may wish to treat metaphylactically, assuming they have access to emetics and activated

Table 1. Screening for inherited conditions in Border collies

Condition	Means of testing	Kennel Club position
Hip dysplasia	radiography	mandatory for KC breeders
Eye testing	ophthalmoscopy	mandatory for KC breeders
'Collie eye' anomaly (CEA)	DNA	strongly recommended
Ceroid lipofuscinosis (CL)	DNA	strongly recommended
Trapped neutrophil syndrome (TNS)	DNA	strongly recommended
Glaucoma	gonioscopy	strongly recommended
Glaucoma	DNA	should be considered

Figure 3. *The close relationship between working dogs and sheep increases the risk of shared tapeworm infections.*

charcoal. Treatment of overt cases of toxicity requires hospitalisation and so is frequently beyond the scope of many large animal practices.

Sheep dogs may scavenge objects that can obstruct the gastrointestinal tract, including bones, stones and ear tags. Intravaginal progesterone-releasing devices used for the synchronisation of oestrus in sheep (CIDR OVIS 0.35g Vaginal Delivery System for Sheep, Zoetis; Chronogest CR 20mg controlled-release vaginal sponge for sheep, MSD Animal Health, for example) can also be problematic. They are radiolucent, often present in significant numbers, are easy to swallow and attractive to curious dogs. As such, persistent vomiting and malaise should be taken seriously in a farm dog. On a seasonal basis – late summer to autumn – progesterone-releasing products should be a differential for a foreign body.

The farm vet should be familiar with the presentation of these conditions to ensure prompt referral in suspect cases. He or she should also take every opportunity to discuss medicine stewardship on farm, including the risks of poor storage and disposal.

Veterinary input into breeding

If pregnancy is accidental and unwanted, up to 45 days post-service it can be terminated with the use of aglepristone (Alizin 30mg/ml, Virbac) at a dose rate of 10mg/kg, administered subcutaneously and repeated 24 hours later. For best efficacy, this should be administered after the end of the current oestrus. This treatment is contraindicated if the bitch is diabetic, Addisonian, or has impaired renal or hepatic function. If the pregnancy is maintained, serious consideration should be given to screening the parents and/or offspring for major hereditary conditions. The relevant conditions for Border collies, and the means of testing, are covered in **Table 1**.

These conditions all impinge on both animal welfare and the dog's working ability. Treatment options are either limited or non-existent. Farmers may invest significantly in a working puppy and screening is prudent to protect that investment.

An in-depth knowledge of canine parturition may be beyond the scope of large animal practitioners, so they should be familiar with the indications for intervention. These indications include (Hill et al, 2011):

- extended gestation (>67 days)
- failure to proceed from Stage 1 labour after 36 hours
- failure to produce a pup after purposeful straining for more than 20 minutes
- failure to complete Stage 2 labour.

"Orthopaedic injury can be difficult to assess in the absence of radiographs, and the stoic nature of working dogs may mask severe pain"

Euthanasia of working dogs

Another common reason for attending a farm dog is euthanasia. Practitioners should be willing to offer advice on quality of life in these animals, because some conditions common to older working dogs are eminently treatable – osteoarthritis, for example – and some owners can be prone to fatalism. Options for investigation and treatment should be discussed to allow the client to make an informed decision.

Consent for euthanasia should be obtained – blank forms can be stored in the practice car. Vets in the field may also find themselves without many of the materials used to facilitate euthanasia – including narrow gauge needles and catheters, appropriate sedatives and muzzles. The practice should consider keeping a small supply of these consumables to ensure euthanasia is carried out in a humane and professional manner.

Risks to livestock

Tapeworms are commonly transmitted between sheep and dogs (**Figure 3**). When sheep are the definitive host – with *Moniezia* spp., for

instance – tapeworms are non-pathogenic. However, when the sheep are the intermediate host, overt disease or production losses can be seen (Scott, 2015).

'Gid' or coenurosis, presents with neurological signs following cyst formation within the central nervous system by the larval stage of *Taenia multiceps* (*Coenurus cerebralis*). *Taenia ovis* and *Taenia hydatigena* (larval stages *Cysticercus ovis* and *Cysticercus tenuicollis* respectively) lead to cyst formation, which is a common cause of liver and heart condemnation. In severe cases, the entire carcass may be condemned (Scott, 2015).

Sarcocystosis, a protozoan infection involving *Sarcocystis* spp. such as *S. arieticanis* and *S. tenella*, also cycles through dogs and livestock. Although infected sheep are often asymptomatic, sarcocystosis can sporadically cause abortion and neurological signs typical of compressive spinal cord lesions. Some authors regard it as an underdiagnosed condition, or commonly misdiagnosed as vertebral empyema (Scott, 2015). Definitive diagnosis is histological as most sheep are antibody positive and there are few gross pathological signs. Treatment is unlikely to be effective (Scott, 2015).

Many sheep farms also share grazing with cattle. Neosporosis is a protozoan condition caused by *Neospora caninum* that relies on a dog-cattle life cycle. It is also one of the most commonly diagnosed infectious causes of abortion in cattle (Animal and Plant Health Agency, 2018). Dogs become infected after consuming placental material or calving discharge of an infected cow. They then shed eggs in their faeces for approximately two weeks, although these eggs are infectious for six months. If a pregnant bitch is infected, neosporosis can cause severe neurological disease and death in puppies.

Each of these conditions relies on the dog-sheep, or dog-cattle, cycle. Control, therefore, requires breaking this cycle. Access to carcasses, placentae or contaminated bedding should be prevented. Dogs should not be fed raw sheep offal. Opportunity for faecal contamination of pasture and feed should be minimised; although public rights of way can be a hindrance to this. For tapeworms, each dog on the farm should receive regular cestodocidal treatment.

Summary

Although farm vets may not consider themselves 'experts' on the care of companion animals, there are numerous ways in which they may positively influence the health, welfare and working ability of sheep dogs. Proper management also benefits livestock. If a practitioner is in any doubt over the most appropriate course of action, advice should be sought from colleagues or reference material, or referral for care as an in-patient should be made without delay. ■

PPD Questions

1. Dog breeders in England must have puppies microchipped by the age of:
   A. two weeks
   B. four weeks
   C. eight weeks
   D. 16 weeks.

2. The following is *not* a recognised risk factor for leptospirosis in dogs:
   A. male
   B. herding breed
   C. raw diet.

3. Neurological disease caused by sarcocystosis often resembles:
   A. 'gid'/coenurosis
   B. vertebral empyema
   C. *Listeria*
   D. cerebrocortical necrosis.

4. Which of the following does not apply to neosporosis:
   A. it is caused by a protozoan parasite
   B. Neosporosis cannot cause disease in dogs
   C. *N. caninum* is shed in placenta and calving discharges
   D. *N. caninum* eggs are infectious for six months.

Answers
1.C 2.C 3.B 4.B

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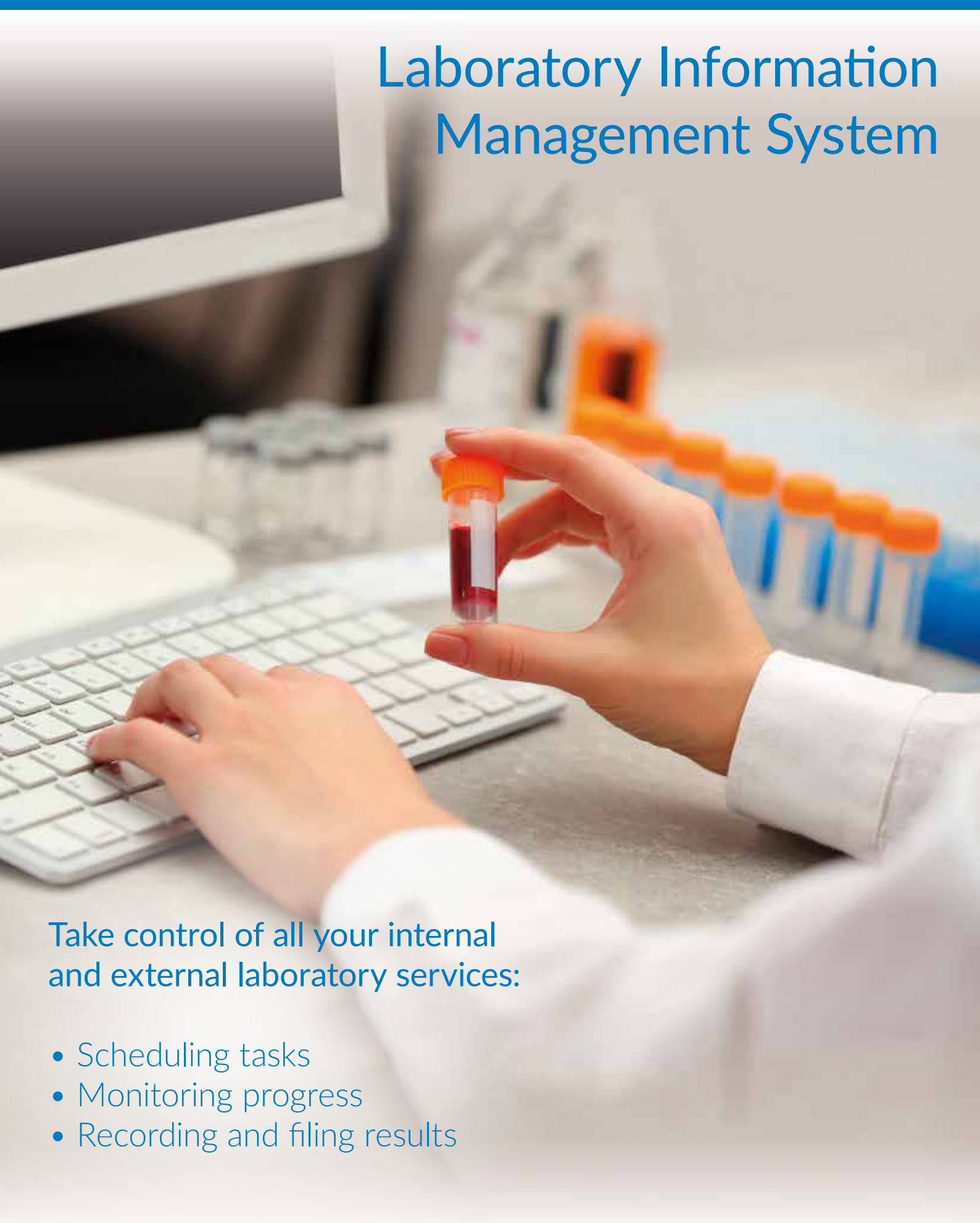
Laboratory Information Management System



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Integrated technology – essential for a well-run veterinary practice

The traditional practice management system (PMS) was revolutionary in its day by saving time and making systems much more efficient. In today's fast-moving digital age, new facilities and services are being constantly developed to enhance the basic practice management system.

Adding new facilities to an existing PMS is best done as a fully integrated solution and practices that are able to do this will see huge benefits and greater efficiencies.

The ability to create and view staff rotas, record and integrate lab results, add digital images to the client record or have a seamless integration of a pet health scheme are becoming an essential part of a good PMS; but for many practices, achieving this often involves using different suppliers for the services that are on offer. The dependence on such multiple support services and the issues this can cause is inconvenient and often frustrating for the busy practice manager.

Preferable to 'bolting on' these much-needed extras, a fully integrated system interconnects IT facilities and services, and ensures it is all working together seamlessly to provide an efficient and effective management tool for both vets and practice managers. This, in turn, significantly improves the service a client can receive from the practice.

Integrated technology solutions are now becoming essential for the modern practice and AT Veterinary Systems – with its fully integrated flagship Spectrum management software – provides its practices with unrivalled reliability and functionality and boasts the latest Distributed Database System (DDS) architecture, enabling secure, real-time data exchanges.

The development of new services to complement and enhance practice management systems is ever-expanding and this serves to highlight the importance of using a provider who can smoothly integrate new service options into your existing PMS.

AT Veterinary Systems has continually developed Spectrum – working with veterinary surgeons, veterinary nurses, receptionists and practice managers to produce an amazing variety of services that can be integrated into the core Spectrum PMS.

"Each of Spectrum's modules is designed with the key questions in mind: 'How can we improve standards of care, efficiency, practice profitability and client service?"

In addition to invoicing, stock control, client records, appointments and reminder facilities incorporated into Spectrum, additional modules that can be integrated into the system include:

Practice Health Plans (PHP): this module allows the creation of bespoke product and services packages for clients. Each plan has a customisable quota of available goods and services; and with the payment collection service offered by AT Veterinary Systems, the direct debit collections are available in a single, convenient tool.

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National Veterinary Database (NVD): an integrated microchip database that allows automatic registration and updating of client contact details.

Workflow Management: a resource management tool with interactive whiteboards for scheduling all practice activities, including surgical procedures, equipment maintenance, kennel stays and more.

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Rota Manager: an easy-to-use solution for planning, designing and managing customised staff rotas.

VetStation Mobile: offers full practice management, providing complete and secure access to the practice database from wherever you need to work – in the practice, in the field or at home – and is ideally suited to large animal and equine vets on the move.

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Spectrum's modules are designed with the key question in mind: 'How can we improve standards of care, efficiency, practice profitability and client service?' This has culminated in a robust, secure system that provides a wealth of tools to manage, operate and grow your business.

The flexibility provided by DDS cluster technology also allows for easy expansion from single-site to large multi-site and mobile systems; so, however a practice is structured, the versatile range of installation types ensures it is able to provide a complete service to meet both practice and client needs.

In this busy world, we no longer have time to spend chasing up multiple service providers and it makes so much more sense – on both a management and financial level – to have one fully integrated system; versatile and flexible enough to be configured to cater for all types and sizes of practice.

The flexibility and versatility, choice of modules and active pipeline of new and innovative products, makes AT Veterinary Systems the ideal IT partner – allowing a practice to achieve a fully integrated system that keeps evolving to meet the growing needs of a veterinary practice. ■

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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)*

PHARMACOVIGILANCE

Medicine stewardship on dairy farms

Medicine stewardship is a buzz phrase presently. There are many changes afoot on dairy farms to ensure medicines are stored, used and recorded more appropriately. This article takes a look at how medicine use has changed, where the current problems lie, and what can be done to improve things.

The past

Many things have changed in the way medicines are used on dairy farms. Even 25 years ago, when I first qualified, things were very different. Farmers used to order small quantities of medicines, and seemed to keep fewer stocks on farm. In my first practice, we frequently used to dispense a course of mastitis tubes for single cases of mastitis, or single syringes of antibiotic to treat one calf with pneumonia. I even remember visiting farms to treat simple cases of mastitis myself. My goodness, those were the days!

Later, in another practice, one of my bosses chastised me for dispensing flunixin for a dairy farmer to administer. "If we let 'em have the best drugs in our boot, what the hell are we supposed to use when we turn up to treat a sick cow?" he said. All the 'best' drugs were kept back for vet-only administration so we could maintain our mystique and magic.

Now, it isn't unusual for dairy farmers to have more than 30 different prescription medicines on farm. Farmers often place drug orders with their vets worth hundreds of pounds at a time – sometimes bulk-buying for convenience or to attract a better discount. There aren't many medicines that are now kept back for 'best' by veterinary professionals (**Figure 1**).

Figure 1. *A medicine cupboard on a medium-sized dairy farm. There is frequently a wide range of prescription veterinary medicines stored on farms.*

The present

So, things are a little different now. There is a scenario with which I am familiar and that I believe is all too common. It goes like this. A milker, perhaps a young lad barely out of school, or an overseas worker with a poor grasp of English, is faced with an obviously sick cow during milking. The cow is depressed, perhaps a little droopy-eared or sunken-eyed, and breathing fast (she is possibly pyrexic).

The choices faced by the lone worker are to call his boss (but it is his afternoon off/weekend away and maybe he'll get into trouble); to risk calling the vet (expensive and maybe he'll get into trouble, again); to do nothing (the cow might die and he would definitely get into trouble); or to have a go at treating her (well, at least he can say that he tried!).

He will go to the medicine cupboard ... or shelf, or table, or box, or windowsill. Some drugs will look familiar because he has seen other people on the farm use them. Some, he may remember the vet giving to other sick cows. Others will simply be pure gobbledegook.

The cow is breathing fast, a little bit like the calves that were treated for pneumonia recently, so the worker reaches for a big syringe of the familiar pneumonia drug. And then perhaps a few mastitis tubes in each quarter, "just in case". And a big syringe of the white stuff, because that's harmless enough and he sees his boss give that regularly as a cheap "catch-all".

I have described this scenario as involving a young or inexperienced worker. In actual fact, it could be any farmer, any day of the week on almost any farm. It is shocking, and it is wrong.

The problems

I am not necessarily entirely critical of the changes to medicine availability, but

they do need managing. It is right, I believe, that cows can be treated by the most appropriate medicines, and without undue delay. Pure economics mean that it is not feasible for vets to treat every sick individual themselves. It is right that farmers are trained to give intravenous injections of NSAIDs to sick cows where that is warranted; or that they have access to antibiotics for acute calf pneumonia cases out-of-hours. But it is wrong when farmers buy drugs as a quick fix, use them without due diligence, or use them according to their own lore.

There are potential problems with ready access to a large quantity of medicines, particularly if they are perceived to be cheap. Or even "cheaper than a dead cow". The reality is all too often that farmers and their staff – usually untrained – make up treatments as they go along. Vets, who are perceived as expensive, are discouraged from visiting farms unless absolutely necessary.

During a recent mastitis experts meeting that I attended, it was estimated amongst practitioners present that between 60 and 95 per cent of all mastitis treatments administered today are off-label. The vast majority of those would be without specific veterinary authorisation. This is illegal. The cascade route is the only legal off-label use of medicines, and that requires veterinary authorisation on a case-by-case basis.

The perspectives of others

Through my work consulting and training within the wider dairy industry, I find myself defending vets a lot. The scenario I previously described is classic poor medicine stewardship. Many people in the industry are aware of it and they cannot understand why vets allow it to happen. Or they think that they do know why vets allow it to happen, and indeed might possibly encourage it, because that is where we make all of our filthy money – selling drugs. The more the better.

Of course, I don't see it as being as simple as this. Most vets, I believe, want to do the right thing. Most are frustrated with the status quo. Most would love to have greater control over medicine use, and most would love to be able to be paid for more preventive work than be used as a fixer of broken things and a saint of lost causes. But we should remain aware of the fact that we are under scrutiny as a profession, and that there are many people who believe we abuse our right to dispense.

The reasons

Good medicine stewardship encompasses many things (**Figure 2**). We find ourselves where we are – a long way from perfect. The reasons for this are complex, and to apportion blame is probably not productive. Many of our farmers have faced years of relentless financial hardship and poor profitability. That has contributed to a desire to reduce vets' bills. The simplistic way to try and achieve this has often been seen as accessing cheaper drugs and reducing the amount of time the vet is on farm.

Vet practices, meanwhile, have struggled with their own changes and business models. Adequately resourcing vet cover is a challenge, especially at the prices that the market seems able to afford. There has been steep competition from sources of cheaper medicines – sometimes illegal sources (imports and illegal internet sales). We have struggled to market ourselves as professionals who can add value to businesses, except in limited areas such as routine fertility work.

There have also been clear indicators that we should make medicines cheaper and more readily available. I am thinking here in particular of the 2002 recommendations from the Competition Commission report on the supply of prescription-only veterinary medicines, and the 2001 Marsh Report (Report of the Independent Review of Dispensing by Veterinary Surgeons of Prescription Only Medicines, commissioned by the Ministry of Agriculture, Fisheries and Food).

Those who remember those awful post-BSE and 2001 FMD years will recall that times then in the dairy and beef sectors were incredibly tough. It was an olive branch thrown by the Government of the time to hard-pressed farmers by paving the way for them to access cheaper veterinary medicines more easily. And it still remains policy to take a 'light-touch' approach to regulation – by reducing the red-tape burden on farmers and a softening of the national dairy inspectorate. This continues to facilitate some of the poor practices which have evolved.

The alternatives

Several years ago, I undertook a Nuffield Travel Scholarship. Through this, I was able to travel around the world a bit and look at the evolving role of the dairy vet. Since the late 1990s, I had felt there had

- purchasing only under veterinary prescription, from legal sources
- correct storage – secure; correct conditions; hygienic
- correct labelling
- correct recording – of purchase; use and disposal
- stock control – not stock-piling
- disposal of unused and out-of-date medicines, and as clinical waste
- staff training, preferably with recognised qualifications
- correct administration – as per summaries of product characteristics (SPCs), or under cascade by specific veterinary authorisation on a case-by-case basis
- appropriate choice of product – antibiotics only when necessary; following veterinary written protocols and herd health plans
- following a full course; accurate dose calculation (e.g. weight of animal)
- avoiding high priority, critically important antibiotics
- avoiding polypharmacy (the mixing of multiple treatments without justification)
- choosing narrow spectrum antibiotics wherever possible
- avoiding prophylactic use of antibiotics
- following the correct withdrawal periods
- periodic risk analysis and action planning to reduce residues
- periodic auditing of antibiotic use
- correct disposal of waste milk containing antibiotics (e.g. not feeding to calves)
- operator safety – including secure animal handling; correct personal safety equipment as necessary; awareness of risks of accidental self-injection; clear health and safety procedures in the event of accident or accidental self-injection; avoidance of direct contact with harmful and potentially harmful medicines.

Figure 2. *Considerations for medicine stewardship on a dairy farm.*

been considerable clamour by dairy farmers to have more ready access to veterinary medicines – and for less money. It seems this problem was not confined to the UK.

In the USA, I witnessed a decline in local farm practices such that many large dairy farms had very poor access to independent veterinary advice. For sure, vets prescribed medicines for them and developed treatment protocols; but these were vets who worked for medicine wholesalers or pharmaceutical companies, and who visited the farms infrequently and to take their next monthly drug order. I saw a dependency on over-treatment which was both very expensive and not conducive to preventive health strategies that would have been better for efficiency and animal welfare.

I commented, in my report at the time, that farmers in the UK should be careful what they wished for. The model was the opposite of so-called 'decoupling' (of medicine sales from professional services) because, in these instances, all of the vet professional time was paid for by medicine sales. I did not see this as a good thing for farmers or their cows.

It wasn't all bad in America though. I also came across the concept of 'medicine budgeting' for the first time. Simply, this is forward planning for the year ahead and calculating what the expected medicine use should be. It works for preventive medicines as well as treatments. So, for a 200-cow herd, one might budget for enough IBR, BVD and leptospirosis vaccine doses to ensure that all primary and booster courses were done correctly; and enough mastitis tubes for a reasonable clinical mastitis rate of, say, 30 cases per year.

In a similar way to financial budgeting, wherever the actual use departed from the budgeted use, the reasons could be investigated and effective actions taken. This helped vets ensure that vaccination regimens were being adhered to, and that disease rates were not creeping up.

Medicine budgeting can be a win-win-win. Primarily driven by the sellers of the medicines, it ensures farmers are buying plenty from you. If that is preventive medicines, then it can be a good thing. For farmers, they can plan their stock control (and financial outlay) and they have an external eye checking that things are as they should be. For cow health, better compliance with vaccination schedules and other preventive medicine protocols can clearly help with infectious disease control.

In the UK, two recent studies have highlighted just how poor we are at ensuring proper compliance with vaccination protocols and storage on dairy farms (Cresswell et al, 2014; Williams and Paixão, 2018). This is a lose-lose-lose situation – low vaccine sales for vets, a costly waste for farmers, and poor disease control for the herd.

The future

We are in a much better place than we have been for a long time. There is a greater recognition that we have a problem on our hands. Research, such as that carried out by Rees et al (2018), is highlighting specific areas of weakness in medicine storage, stock control and record keeping. The widespread focus on antibiotic resistance is further raising awareness. Industry initiatives, such as MilkSure and NOAH's Animal Medicines Best Practice farmer-training materials, are providing valuable resources and tools for vets to work with their farmers to improve medicine stewardship.

Figure 3. *A medicine cupboard 'health check' can soon identify areas for attention, including poor security, poor hygiene, out-of-date medicines and the storage of inappropriate medicines – examples of which are demonstrated here.*

But, greater than this, dairy farms have largely been turning a corner in the way they operate. There is generally a more business-like approach and this is being rewarded by better profitability on many farms. Farm vet practices have consolidated and have a clearer offering in preventive health and value-added services. A younger generation of farm vets is better equipped for a herd health approach – and less of a fire-brigade service.

Pharmaceutical companies, too, have changed. There is less direct advertising of antibiotics to farmers, and there is a definite sense that companies are diversifying away from simply marketing the latest 'super drug' antibiotic. This is helping change the perception of medicines. Farmers are probably less inclined to think that their mastitis problem is because they haven't found the right drug yet.

All of these things combine to make the time ripe for vets to regain much of the lost control over how medicines are used on dairy farms, in what quantities, and by whom.

A possible blueprint

I suggest five areas for vets to work on with their clients.

1. Medicine budgets

New Red Tractor Dairy Farm Assurance guidelines have brought the dairy sector in line with the pig and poultry sectors by insisting that all farms have an annual review of antibiotic use with their vets. This allows farms to be bench-marked, targets to be set, and areas for improvement to be identified. It is a good starting point.

From here, it is a logical step to plan for the coming year and to set medicine budgets. It makes sense to include vaccines and other preventives too – not just concentrate on the antibiotics and treatment medicines. As the barest minimum, all farms should

have a list of 'vet-approved' medicines that they can access, and trigger points for intervention if using more than certain pre-set amounts.

2. Treatment protocols

Farmers do not have time to be as expert in medicines as vets; and vets do not have time to visit farms for every treatment eventuality. Therefore, clear, written protocols need to be provided by the vet so the farmer knows what to do.

They should be laminated and displayed where they will be used. They need to be reviewed regularly; they should follow summaries of product characteristics (SPCs) treatment recommendations – be 'on-label' – and they must be discussed so that they are adhered to, and trusted. Records must be kept, and used, to inform decision making for future changes and to build farmer confidence in the protocols.

Trust in treatment protocols is a big issue. Farms need to know what they should do; what works and what doesn't; and what is legal and what is illegal.

3. Medicine cupboard 'health checks'

At least once a year, the vet should go through all the medicine storage areas with the farmer (**Figure 3**). Out-of-date medicines should be disposed of and provision should be made that reasonable stock control can be practised – for example, farms provided with pre-paid clinical waste containers for empty bottles and expired medicines.

The vet should ask how every veterinary medicine is being used, and check that the medicines are always administered appropriately – including the correct withdrawal periods. It is easy for protocols to slip, bad habits to creep in, and bizarre practices to become the norm. The medicine cupboard 'health check' is the time to look out for these and correct them. Farmers will thank you for it.

Other aspects of storage should also be reviewed – security of storage and the correct temperature conditions for vaccines, for instance.

4. Staff training and development

Farmers and their staff don't need to be pharmacological experts, but they need to know enough. Training is a skill and devising a suitable course content is another skill. Vets are the most likely people to provide training for farm staff on medicine stewardship – but following a recognised course structure with clear learning objectives is better than laying on a 'home-made' medicine course. Better still, if the training can lead to a qualification – or at least a recognised level of achievement and understanding – everyone will benefit.

5. Annual MilkSure accreditation

Avoiding medicine residues is an important factor in medicine stewardship. MilkSure training and accreditation has been developed with this objective in mind. It includes structured training that is assessed by an online test, followed by a farm HACCP exercise to identify areas of risk (of medicine residues) and to devise effective actions to reduce these risks. It includes a medicine cupboard 'health check'.

A similar process, renewed annually by the farm's nominated vet, has been credited with reducing the bulk tank failure rates in the USA to a fraction of our own. Accreditation is important to show that medicine stewardship is being taken seriously and to send a message to consumers that farmers and their vets are behaving with appropriate professionalism in how they use veterinary medicines.

Conclusion

Medicine stewardship should be at the heart of veterinary service provision on dairy farms. It can be viewed as an opportunity for vets and, done well, farmers value this input. The alternative is to bury one's head in the sand and accept the status quo. I believe that is letting down our clients, the animals under our care and society at large.

It is not easy being a farm vet. We take a great deal of 'stick' from many directions. Farmers, in particular, can be a difficult bunch to please. However, my experience is that most farmers want to do the right thing too. By showing some leadership over medicine stewardship, we can earn the respect of farmers, the wider dairy industry and consumers. ■

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Further reading and resources

Red Tractor Assurance: Responsible use of antibiotics on Red Tractor farms: guidance for vets. In: Assurance RT, editor. https://assuranceredtractororguk/contentfiles/ Farmers-6910pdf?_=636585120315070190 2018.

MilkSure training: reducing the risk of illegal medicine residues in milk, available at www.MilkSure.co.uk

VMD Code of Practice on the responsible use of animal medicines on the farm (Updated December 2014), accessed 2/3/19 online at https://www.gov.uk/government/publications/responsible-use-of-animal-medicines-on-the-farm

NOAH Animal Medicines Best Practice, available at www.noah.co.uk

Tiny bird points the way to sustainability

The cirl bunting is one of Britain's most threatened farmland birds. Under the Cirl Bunting Recovery Programme, led by the RSPB, advisers have worked with farmers for 25 years to help them take up Countryside Stewardship Schemes to manage their land for cirl buntings. The options include growing spring barley that after harvest is left as weedy stubble to provide seed food during the colder months and planting margins of grassland at the edge of their arable fields, which provides insects and spiders for summer food.

The initiative has led to an eight-fold increase in the number of cirl buntings in the UK – from being on the brink of extinction in 1991 to a more stable population of 1,078 pairs by 2016. It is hoped numbers will continue to climb and colonies will spread into other parts of southern England, where they were once common and widespread before suffering huge declines as a result of the loss of their food sources and nesting sites.

In the big scheme of things, this may appear to be a tiny development – unless you are a cirl bunting, maybe – but it is a microcosm of what can be achieved given the application of science to agriculture, alongside appropriate funding. This work was discussed at a recent British Trust for Ornithology conference in Cornwall, where fears were expressed that the success might be jeopardised if government-sponsored stewardship funding dried up or its access became veiled in excessive bureaucracy.

Either or

In all these schemes there is always a tension between conservation of wildlife habitat and the 'traditional landscape', and retaining the 'productivity' of the land. And, although many farmers and landowners are sympathetic to the ideals expressed by conservationists, they are often frustrated by the apparent lack of respect for their right to earn a living from their land, coupled with a lack of clarity/unfettered accessibility to funding to support them in their endeavours.

The waters have been further muddied by Defra and Environment Secretary, Michael Gove's, recent initiatives to delineate projects falling under the nefarious term of 'public goods'. This has been further exacerbated by all the uncertainties surrounding Brexit and, if anything, has led to a firming up of the battle lines. Many farmers are fed up with the delays and impairment of their agricultural activities and are turning their backs on schemes to integrate additional conservation measures into their farming routines – preferring the binary option of not bothering at all.

Enter Scotland's Rural College researchers, who teamed up with Edinburgh Napier University and the Royal Botanic Gardens, Kew, to carry out a new study illustrating how British dairy farms could produce more food, while also supporting wildlife – a 'win-win-win' for farmers, consumers and conservationists.

Sustainable intensification

Dairy cows don't just eat grass, but must eat several different crops to meet their dietary requirements, including wheat, oil seed rape, sugar beet and silage. As detailed in the new study*, published in the *Journal of Applied Ecology*, the researchers designed different feed rations for a model dairy herd. They then worked out how much land was required and how different mixtures of crops influenced farmland wildlife, specifically spiders and plants.

Through complex statistical models, they found they could increase the land-efficiency of the system by manipulating the crops needed to meet the dietary requirements of the herd. This meant that land would be freed up which then could be used for either additional production or promoting biodiversity. Biodiversity was greatest when the efficiency of the system was increased and the spare land was devoted to species-rich grassland.

Intriguingly, there were also biodiversity gains when the spare land generated in these efficient systems was used for additional crop production. The greatest gains were achieved when these additional crops supported different species of wildlife, reversing typical trends seen as farms have been intensified around the world.

Summarising their work, the researchers wrote, 'Sustainable intensification (SI) is a global challenge, aiming to increase food production whilst conserving biodiversity and ecosystem services. This is contrary to the observed trend of agricultural intensification degrading environmental quality. We developed a framework integrating animal nutrition, crop yields and biodiversity modelling to explore SI potential in multiple model dairy farming systems through varying crop composition to provide cattle feed rations. We then identified key drivers of biodiversity gain that may be applicable at a wider scale.'

A cirl bunting (Photo: Dawn Balmer, British Trust for Ornithology)

A 'win-win'

As Dr Patrick White, lecturer in conservation biology at Edinburgh Napier, said, "Optimum farmland composition typically depends on whether to maximise production or biodiversity. But we have shown this doesn't have to be the case. Our study provides a framework that integrates agricultural production efficiency and biodiversity modelling to explore potential routes to achieve sustainable intensification goals, which should be a political target."

Like the canary in the coal mines, the cirl bunting is an indicator of the health of its environment. We should wish it well – for all our sakes. ■

* White PJC et al (2019). 'Routes to achieving sustainable intensification in simulated dairy farms: The importance of production efficiency and complimentary land uses' *Journal of Applied Ecology*, First published: 19 February 2019, https://doi.org/10.1111/1365-2664.13347.

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Sonya qualified from Bristol University in 2013. In early 2015 she started work as an exotic species veterinary surgeon at Highcroft Veterinary Referrals, completing her Zoological Medicine Certificate in early 2018.

She has a special interest in reptile medicine and surgery, but enjoys all aspects of caring for exotic species.

**Suggested Personal & Professional Development (PPD)*

GERBILS AND HAMSTERS

Husbandry and common illnesses of gerbils and hamsters

Mongolian gerbils and hamsters are popular 'first pets' and share many positive characteristics. There are, however, some significant differences in their management and behavioural needs and veterinary professionals should be aware of these, and familiar with the diagnosis and treatment of their common illnesses.

Gerbils

The Mongolian gerbil (*Meriones unguiculatu*) is the most common pet species of gerbil owned in the UK, originating from desert regions of Mongolia and north-eastern China (Leck and Johnson-Delaney, 2004). They display various colourations, are a highly social species – being active during the night – and create elaborate underground burrowing systems. They are best housed as same-sex pairs that should be bonded before eight weeks of age to prevent unnecessary population increases and minimise the risk of fighting (Leck and Johnson-Delaney, 2004).

Gerbils make particularly good beginners' pets. With an average life span of between three and five years, they are interactive and easily handled, preferably being held in the palm of the hand and grasped gently by the base of the tail to avoid degloving injuries (Capello, 2011). They rarely bite and, if maintained correctly, will produce minimal odour owing to the fact that they drink small quantities of water and, therefore, urinate very little (Fisher and Llewellyn, 1978).

There are various bedding materials that are suitable for gerbils (Hoppmann and Barron, 2007). Whatever the type of bedding used, it should be deep enough to allow them to dig burrows. They will benefit from a 12-hour cycle of natural light, together with enrichment such as the provision of various items to crawl through, chew and with which to nest (Hoppmann and Barron, 2007).

> "Gerbils should have fresh water provided at all times, regardless of the fact that they obtain a large proportion of their fluids from their diet"

They do not require excessively large set-ups, with the recommended size being 36 square inches per gerbil. All enclosures should be well-ventilated and escape-proof (Leck and Johnson-Delaney, 2004). This being said, in this author's opinion, the larger the space the better.

Gerbils should have fresh water provided at all times, regardless of the fact that they obtain a large proportion of their fluids from their diet (Leck and Johnson-Delaney, 2004). They should be fed a diet consisting of a high-quality commercial pellet with a small amount of vegetables and soaked seeds (Leck and Johnson-Delaney, 2004).

Gerbils are a robust species; but regardless of this fact, they can develop a variety of conditions. Before discussing the common conditions

Figure 1. *Severe bilateral nasal discharge in a gerbil with pneumonia.*

Condition	Description	Clinical signs	Diagnosis	Treatment
Ectoparasites	▪ multiple species known to infect ▪ species of most concern is *Demodex merioni* ▪ often seen with an underlying immunosuppression	▪ alopecia, pruritus, dermatitis, hyperpigmentation	▪ microscopy of deep skin scrapes	▪ treat underlying immunosuppression and prevent stress ▪ ivermectin at 0.2mg/kg SC or topically every seven days for three doses ▪ extended until skin scrapes are negative ▪ treat in-contact animals
Dermatomycosis	▪ typically caused by *Trichophyton microsporum*; however, infections with *Microsporum gypseum* are possible ▪ subclinical carriers possible ▪ immunosuppression or stress predisposes ▪ zoonotic and highly contagious.	▪ pruritic circular lesions; but can also be irregular or diffuse ▪ alopecia, scaling, crusting of head, ears, back and limbs ▪ hairs may appear broken	▪ dermatophyte cultures of hair plucks ▪ microscopy of hair plucks	▪ topical antifungals, such as miconazole, if there are single lesions. However, there rarely are, so systemic antifungals such as itraconazole should be used at 2.5-10 mg/kg p.o. q24 for two weeks post resolution of clinical signs ▪ in-contact animals should be treated ▪ causes of immunosuppression investigated ▪ thoroughly clean environment
Nasal dermatitis	▪ seen mostly in grouped and stressed animals, or if the humidity >50% (Hoppmann and Barron, 2007) ▪ porphyrin secretion and subsequent *Staphylococcus* and *Streptococcus* infections are possible causes (Hoppmann and Barron, 2007)	▪ erythematous and crusting lesions around the nares and upper labial region ▪ can progress to severe moist dermatitis, ulceration and sinusitis	▪ culture and sensitivity ▪ husbandry, clinical signs and history	▪ husbandry review/remove sources of stress ▪ clean with antiseptic solution ▪ topical and systemic antibiotics based on culture and sensitivity results ▪ Elizabethan collar to stop the scratching
Diarrhoea	▪ multiple causes from environmental stressors, to dietary issues (too many vegetables) to bacterial infections such as *Clostridium piloforme* (Tyzzer's disease)	▪ loose, discoloured faeces ▪ dehydration ▪ collapse	▪ faecal cultures ▪ clinical signs and history	▪ environmental disinfection improve diet, rehydrate ▪ antibiotics based on cultures ▪ probiotics ▪ quarantine sick individuals ▪ some causes can be zoonotic
Respiratory disease (Figure 1)	▪ large number of possible causes – viral, bacterial, mycoplasmal, fungal and allergic disease (Kling, 2011)	▪ increased respiratory rate, effort and/or noise ▪ nasal discharge ▪ can progress to ear disease and subsequent circling	▪ clinical signs ▪ imaging ▪ nasal flushing, culture and sensitivity, PCR testing	▪ broad spectrum antibiotics, ideally based on culture results ▪ F10 nebulisation ▪ anti-inflammatories ▪ husbandry review
Tail slip/ autoamputation	▪ caused by incorrect handling – the skin can tear resulting in a degloving injury. This causes necrosis of underlying tissues and eventual loss of the tail	▪ traumatic lesions to the tail	▪ clinical signs and history	▪ amputation ▪ analgesia ▪ antibiosis

Table 1. Common infectious conditions seen in gerbils – a short description, the clinical signs observed, diagnosis and treatment >>

Condition	Description	Clinical signs	Diagnosis	Treatment
'Barbering'	■ occurs in grouped animals – the dominant gerbil over-grooms the others	■ alopecia anywhere on the body	■ gross and microscopic examination reveals broken hair shafts. The skin is not inflamed ■ seeing the gerbils barbering each other	■ rule out other differentials ■ separate the gerbils
Seizures	■ common in certain in-bred genetic lines; occurs from two to three months of age, being outgrown by six months of age ■ can be exacerbated by changes to the environment ■ other causes include Tyzzer's disease and neoplasia	■ twitching, drooling ■ mild hypnotic episodes ■ generalised 'grand mal' seizures	■ clinical signs and history	■ minimise stress ■ keep environment the same ■ rarely any call for medication
Neoplasia (**Figure 2**)	■ common in gerbils over two years of age ■ reproductive neoplasia and scent gland neoplasia are most common ■ various tumour types occur	■ depends on the tumour type ■ scent gland neoplasia can present as a thickening, ulceration or nodular change to the gland	■ histopathology ■ cytology	■ swift surgical intervention
Dental disease (**Figure 3**)	■ mainly caused by trauma ('bar chewing')	■ weight loss, inability to eat/chew correctly ■ gross dental changes	■ clinical examination (conscious and under general anaesthesia) ■ history	■ move into enclosure with no bars ■ regular trimming with straight cutting disc ■ never clip the teeth
Ovarian cysts (**Figure 4**)	■ common in gerbils over two years of age ■ can often have ovarian neoplasia at the same time (Martorell, 2017)	■ symmetrical alopecia ■ abdominal distention ■ dyspnoea	■ clinical examination ■ ultrasonography ■ exploratory surgery ■ histopathology	■ surgery to spay
Obesity	■ caused by inappropriate diet ■ can result in diabetes mellitus as a result of persistent hyperglycaemia and insulin intolerance (Collins, 2008)	■ excessive BCS ■ glucosuria ■ PU/PD	■ urinalysis ■ blood glucose ■ clinical signs	■ improve diet to achieve weight loss

Table 1. Common infectious conditions seen in gerbils

seen in this species, however, it is prudent to touch on drug contraindications for the species. The antibiotics penicillin, amoxicillin, amoxicillin/clavulanic acid, ampicillin, clindamycin, cephalosporin, streptomycin, lincomycin and erythromycin should never be used in these species (Hoppmann and Barron, 2007).

Tables 1 & 2 list the most common conditions seen in the species.

"Hamsters are solitary species – consequently they will fight and cause significant wounds to each other, if housed together"

Condition	Description	Clinical signs	Diagnosis	Treatment/prognosis
Ectoparasites	▪ many species that can cause disease – *Demodex* is the most common ▪ immunosuppression can predispose	▪ alopecia, hyperkeratinisation, erythema, pruritus	▪ deep skin scrape microscopy	▪ treat underlying immunosuppression and prevent stress ▪ ivermectin at 0.2mg/kg SC or topically every seven days for three doses ▪ extended until skin scrapes are negative ▪ amitraz can be used, but care with ingestion ▪ treat in contact animals
Dermatomycosis (**Figure 5**)	▪ common ▪ *Microsporum* spp. & *Trichophyton mentagrophytes* ▪ potentially zoonotic	▪ pruritic circular lesions, but can also be irregular or diffuse ▪ alopecia, scaling, crusting of head, ears, back and limbs ▪ hairs may appear broken	▪ Dermatophyte cultures of hair plucks ▪ microscopy of hair plucks	▪ topical antifungals, such as miconazole if there are single lesions (rare) ▪ therefore, systemic antifungals such as itraconazole should be used at 2.5–10 mg/kg p.o. q24 for two weeks post resolution of clinical signs ▪ in-contact animals should be treated ▪ causes of immunosuppression investigated ▪ thoroughly clean environment
Proliferative ileitis	▪ AKA. 'wet tail' ▪ overcrowding predisposes ▪ multifactorial with many bacterial and environmental causes	▪ diarrhoea (+/- blood), weakness, anorexia, dehydration, coma, death	▪ clinical signs, faecal cultures	▪ fluid therapy, antibiotics, ▪ support feeding, probiotics, ▪ keep away from other hamsters
Pasteurellosis	▪ very common and contagious	▪ acute pneumonia, dyspnoea, sneezing, ocular discharge, anorexia, weakness ▪ abscessation	▪ clinical signs ▪ culture and sensitivity	▪ lance & flush abscesses ▪ surgical debridement ▪ antibiotics based on culture and sensitivity results

Table 2. Common non-infectious conditions seen in gerbils

Figure 2. *A squamous cell carcinoma of the ventral scent gland of a gerbil.*

Figure 3. *Upper incisor fractures as a result of chronic bar chewing.*

"The antibiotics penicillin, amoxicillin, amoxicillin/clavulanic acid, ampicillin, clindamycin, cephalosporin, streptomycin, lincomycin and erythromycin should never be used in these species"

Hamsters

There are various species of hamster that can be owned as pets – the most common species being the golden/Syrian hamster (*Mesocricetus auratus*). Others include the Russian hamster (*Phodopus sungorus*), Roborowskii Russian hamster (*Phodopus roborowskii*) and the Chinese hamster (*Cricetulus griseus*). They come in various colourations, live for 1.5 to two years and, generally speaking, unless poorly handled or scared, they will rarely bite. Hamsters are solitary species – consequently they will fight and cause

Condition	Description	Clinical signs	Diagnosis	Treatment/prognosis
Hyperadrenocorticism (Cushing's disease)	▪ caused by adrenocortical hyperplasia or adenoma ▪ more similar to canine than ferret hyperadrenocorticism	▪ PU/PD, polyphagia, alopecia ▪ hyperpigmentation	▪ elevated ALP ▪ elevated plasma cortisol levels ▪ enlarged adrenals on US/ exploratory surgery	▪ mitotane at 5mg PO every 24 hours for 30 days – treatment, however, is often not effective
Cutaneous lymphoma	▪ very common neoplasia of hamsters ▪ predominantly presents in adults	▪ anorexia, weight loss, alopecia, scabs, exfoliative erythroderma	▪ cytology or histopathology	▪ no recognised treatment ▪ euthanasia when quality of life is questionable
Pyometra	▪ common and fatal if not treated promptly ▪ shouldn't be confused with normal oestrous discharge	▪ vaginal discharge	▪ cytology to confirm ▪ clinical signs	▪ swift surgical intervention – ovariohysterectomy ▪ limited information available on medical treatment effectiveness
Polycystic disease	▪ different organs can be affected, mainly the liver	▪ abdominal distention ▪ dyspnoea	▪ ultrasonography ▪ radiography	▪ therapy is mostly palliative ▪ drainage of the cysts, performed under general anaesthesia for safety ▪ will reoccur again in two to four weeks.

Table 3. Common infectious conditions seen in hamsters

Figure 4. *Abdominal distention in a gerbil as a result of bilateral ovarian cysts – on post-mortem, neoplasia was also implicated.*

Figure 5. *A hamster with a Trichophyton mentagrophytes infection. The lesions started on the ears and progressed to the face, scrotum and feet.*

significant wounds to each other, if housed together.

Hamsters should be housed in easy-to-clean, well-ventilated and escape-proof enclosures (Hoppmann and Barron, 2007). There are various substrates that can be used, all of which should be absorbable. Hamsters will urinate regularly in comparison to gerbils and should be spot-cleaned daily. They should be provided with the ability to exercise – often using some form of wheel – as well as with hides, tunnels, items to chew and material with which to nest (Hoppmann and Barron, 2007). If the ambient temperatures drop below 5°C, hamsters will try to hibernate. This should be prevented (Hoppmann and Barron, 2007).

In this author's opinion, the ideal diet for a hamster should consist predominantly of a pellet-based food, small amounts of vegetables, and the occasional insect as a treat. Hamsters will use their large cheeks for food storage, and fresh water should be provided at all times, ideally in the form of a 'sipper' bottle. Hamsters are coprophagic (Hoppmann and Barron, 2007).

Common infectious conditions seen in hamsters are listed in **Table 3**.

As with gerbils, there are drug contraindications for hamsters – penicillin, amoxicillin, amoxicillin/clavulanic acid, ampicillin, clindamycin, cephalosporin, streptomycin, lincomycin or erythromycin antibiotics should never be used in these species (Hoppmann and Barron, 2007). ■

PPD Questions

1. How are gerbils best housed?
   A. on their own
   B. same-sex pairings
   C. opposite sex pairings.

2. What level of humidity should be obtained in gerbil care?
   A. >50%
   B. <50%.

3. Where do gerbils get the majority of water from?
   A. their diet
   B. they do not need water
   C. water bowl/bottle.

4. Below what temperature will hamsters attempt to hibernate?
   A. below 1°C
   B. below 5°C
   C. below 10°C.

5. What organ is most commonly affected in polycystic disease in hamsters?
   A. kidney
   B. heart
   C. intestine
   D. liver.

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

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Periodontitis in lizards

Periodontitis has long been recognised as a syndrome in mammalian vertebrates. However, it is now being seen increasingly in agamid lizards – commonly kept as pets. The disease is multifactorial and generally relates to bacterial infection as a result of their acrodont dentition combined with dietary and husbandry factors. Therapy involves descaling of periodontal regions and debridement of deeper lesions, combined with antibacterial and supportive therapies. Preventive measures include dietary modifications and regular cleaning of periodontal regions.

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BVetMed CertZooMed MRCVS RCVS Advanced Practitioner in Zoological Medicine

John qualified from the Royal Veterinary College in 1990 and gained the RCVS Certificate in Zoological Medicine in 2000. He is the co-director of a small animal/exotics practice in Andover, with a 100 per cent avian/exotics/small mammal caseload – referral and first opinion. He is the co-editor of three texts on avian medicine and one on rabbit surgery, as well as co-authoring a textbook on tortoise medicine. He is also the author of various book chapters and papers on a range of species.

He was president of the European Association of Avian Veterinarians 2015-17 and president of the British Small Animal Veterinary Association 2017-18.

*Suggested Personal & Professional Development (PPD)

REPTILES

Periodontitis was initially described in agamid lizards and chameleons by McCracken and Birch (1994) and is now commonly recognised in clinical practice. As with many reptilian diseases, the aetiology is multi-factorial and involves dietary and husbandry factors, as well as issues with the underlying dental anatomy in these species. Accordingly, the clinician needs not only to recognise this syndrome, but also to distinguish it from stomatitis (**Figures 5a** and **6b**) – which is unusual in lizards; and then address relevant underlying factors in the management of this syndrome.

Agamid lizards include bearded dragons (*Pogona* spp.) and water dragons (*Physignathus* spp.) that are commonly kept in captivity, and in which this syndrome is frequently found. As stated, the underlying factor in the development of this disease is the dental anatomy found in these species.

Dental anatomy in different species

For a full and excellent description of reptilian dental anatomy, see Berkovitz and Shellis (2017).

Lizards have two basic forms of dentition – pleurodont and acrodont (**Figures 1a** & **1b**).

As can be seen, the acrodont dentition results in a region of bone between the dental attachments and gingival attachments where the periodontal membrane covering this bone is exposed, and thus more vulnerable to damage and infection.

Pleurodont teeth tend to be shed on a regular basis; whereas acrodont tooth replacement may be partially suppressed (agamids) or completely suppressed (chameleons). This further predisposes to periodontitis as damaged or infected tissue is not shed, but retained.

Some species will have both forms – water dragons have acrodont dentition laterally; whereas the rostral teeth (roughly equivalent to the position of incisors in mammals) are pleurodont. This is important in distinguishing disease (**Figure 3b**).

Underlying causes

Aside from dental anatomy, various factors may be associated with the development of periodontal disease.

Diet

'Squashy' foods – soft-bodied invertebrates, waxworms, mealworms, for instance – may be implicated in peridontitis because biting into these may result in food material being deposited over the periodontal region with consequential plaque development. Just as in mammals, this can allow tartar deposition and encourage gingival recession and hence, greater bone exposure. Metabolic bone disease (MBD) may also be a factor in some cases.

Husbandry

As ever in reptile medicine, husbandry can play a major role in influencing levels of bacteria in the environment (especially humidity levels) and immunosuppression in the reptile. Environmental temperatures are particularly important and should be looked at across the range in

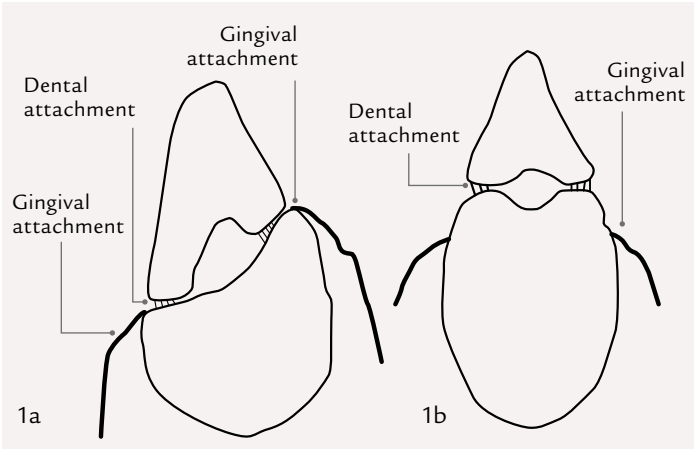


Figure 1. *Lizards have two basic forms of dentition – (**a**) pleurodont and (**b**) acrodont.*

"... the aetiology is multi-factorial and involves dietary and husbandry factors, as well as issues with the underlying dental anatomy in these species"

the vivarium and over a full 24-hour cycle – not just 'spot' temperatures under a basking area. Hygiene too can play a part, with *Pseudomonas* spp. often entering via contaminated water bowls/baths.

Bacterial pathogenicity/ invasiveness

Different bacteria show different levels of invasiveness and thereby influence not only the occurrence of disease, but also the grade of disease (Chitty and Marschang, 2019).

Clinical signs

Clinical signs are similar to those in mammals with periodontal disease, including:

- plaque formation
- tartar formation
- loss of teeth
- gingival regression.

Deeper infection can lead to osteomyelitis and associated cellulitis with loss of bone in this region. Cellulitis will often present as soft tissue swelling with closed eyes and inflamed eyelids (**Figure 6**).

In the immunosuppressed individual, bacterial infection can become systemic and thus life-threatening, especially with dissemination to cause nephritis or endocarditis. These animals present as quiet, inappetent and, sometimes, with loss of weight/condition. Simpson (2014) has proposed a grading system.

Grade 0 – no disease
Grade 1 – teeth staining (**Figure 2**)
Grade 2 – progression to mild tartar deposition and gingival erythema with no gingival regression (**Figure 3a** & **3b**)
Grade 3 – increased tartar deposition and increased gingival erythema with some gingival regression (**Figure 4**).
Grade 4 – severe tartar deposition; severe gingival erythema and regression with formation of pockets. Osteomyelitis will be present (**Figures 5a** & **5b**).
Grade 5 – further progression to deeper infection with bone loss and pathological fractures (**Figures 6a** & **6b**).

Note in both **Figures 4** and **5** that the lesions are restricted to the periodontal regions and that the mouth is unaffected. This is *not* stomatitis.

Changes in Grades 1 to 2 are generally regarded as reversible; whereas deeper infection in Grades 3 to 5 induces irreversible changes.

Diagnosis is based on clinical examination. However, where Grade 4 to 5 disease is seen, further imaging – radiography or CT – is advised in order to assess the full extent of infection and allow surgical planning. **Figures 7a** and **7b** show CT images of deep infection and osteomyelitis in a bearded dragon. The use of this imaging helps clinicians plan the extent of surgical debridement that is required.

Where the reptile appears systemically unwell, blood profiles and/or a full body radiographic assessment may be indicated.

Therapy

It is always easy to focus on the affected part of the body and forget to take a holistic view of the whole patient. This is especially true when dealing with the latter stages of disease when there has been septicaemic spread; although is also true in earlier stages where, as ever with reptiles, underlying factors are important in the

Figure 2. *Grade 0-1 disease with mild staining only.*

Figure 3. ***(a)*** *Grade 2 disease in a bearded dragon;* ***(b)*** *Grade 1-2 disease around the lateral acrodont dentition. Note the more advanced lesions around the rostral dentition. This is not periodontitis (as these are pleurodont attachments) but caused by nose rubbing – a common behavioural disease in Water dragons.*

Figure 4. *Grade 3 disease in a bearded dragon.*

disease aetiology and need to be addressed.

Often the more obvious signs are actually secondary and tertiary factors and, while they do need addressing, are not the most vital.

Tertiary factors

Bacterial infection

When bacterial infection has been identified, systemic antibiosis should be used. It is worth taking deep biopsies of infected bone for culture when operating which means a 'first guess' antibiotic is needed pre-operatively. Typically this author will use trimethoprim-sulphonamide (20mg/kg PO or SC q24h).

Supportive care

Many of these animals will be anorexic or have a reduced appetite. A few days of supportive feeding (always base this on the natural diet, using carnivore or omnivore diets as appropriate) and systemic fluids can be helpful in improving surgical outcomes.

Secondary factors

Environmental assessment

Environmental support in terms of ensuring correct temperature zones, humidity, and ultra-violet provision will help improve overall reptile health and boost immunity.

Diet

Linked to the ultra-violet provision mentioned above is the need to ensure adequate calcium and vitamin D_3 levels in the diet in order to reduce/correct any MBD. Make sure there is sufficient 'crunch' in the diet that the animal eats to assist in cleaning periodontal areas (see next page).

Reduce trauma to periodontal areas

In the case of nose-rubbing water dragons, consider covering the glass tank front so there is increased barrier perception and less rubbing. It is also useful to correct environmental stressors – temperature, light levels, lack of cover, social pressure – that may encourage a desire to escape.

Primary factors

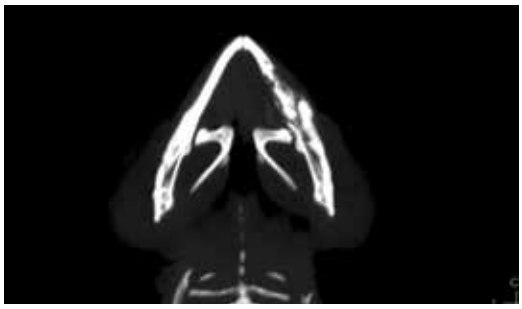
Dental correction

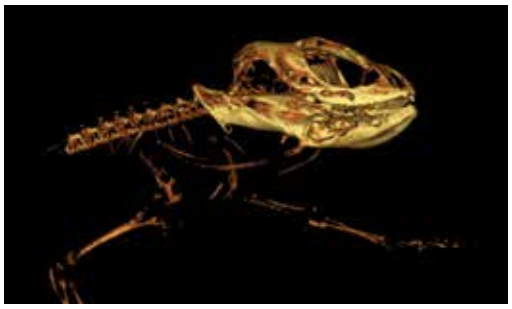
The periodontal areas will require cleaning. For Grade 1 to 2 disease, it may be possible to do this in the conscious patient – a cotton bud dipped in dilute chlorhexidine can

"Water dragons have acrodont dentition laterally; whereas the rostral teeth (roughly equivalent to the position of incisors in mammals) are pleurodont"

Figures 5a *&* ***b.*** *Grade 5 disease in a bearded dragon with pathological jaw fractures resulting from bone erosion rostrally.*

Figures 6a *and* ***b.*** *Grade 5 disease in a Water dragon. Note the closed eyes – a frequent presentation in Water dragons is of a facial cellulitis with soft tissue swelling and eye closure. Rostral lesions represent such spread.*





***Figures 7a** and **7b**. CT images of deep infection and osteomyelitis in a bearded dragon.*

be used to gently rub the periodontal regions. More advanced disease, however, requires anaesthesia and descaling/polishing of the periodontal areas.

Underlying infected bone will require debridement and, in some cases, sections of maxilla/mandible may need to be removed. Large defects can then be filled with antibiotic-containing beads or gels (minocycline dental gel, for example) or left open for daily cleaning and packing with manuka honey.

Prevention/long-term treatment

Prevention is better than cure! Ideally the following can either be put in place at an annual health check before problems start or instigated early in disease, when changes are reversible. If already advanced, these measures may slow down progression so it may still be of use.

Diet

Avoid a 100 per cent 'squashy' diet – invertebrate feeders can have hard-bodied chitinous insects (such as crickets and locusts) as well as waxworms and mealworms. Those reptiles that are more omnivorous – mature bearded dragons or juvenile water dragons – should have some fibrous vegetable matter in the diet; in the case of older bearded dragons they can be almost entirely vegetarian. Some may be reluctant to change from invertebrate to vegetable food and suitable advice should be given to struggling owners who are likely to simply give more live food.

Cleaning

Cleaning of the periodontal areas with dilute chlorhexidine or povidone-iodine may be performed carefully at home by owners. The author generally advises doing this on a weekly basis. It is important that suitable training is given in the clinic and that this is 'refreshed' at subsequent health checks.

When advising on cleaning, it is important to stress that the mouth does not need to be opened – it's actually easier with the mouth held closed – and all the owner has to do is turn up the lips and clean the periodontal regions. Opening the mouth simply increases the chances of the client being bitten and of an ingested foreign body, such as a cotton bud, being chewed and swallowed.

Conclusion

Periodontitis is a common condition in some reptiles and a regular oral examination in healthy lizards enables early detection before irreversible changes have occurred. ■

PPD Questions

1. Which of the following are agamids?
   A. crocodiles
   B. iguanas
   C. bearded dragons
   D. leopard geckos.

2. Water dragons have which sort of dentition?
   A. pleurodont
   B. acrodont
   C. neither
   D. both.

3. Which stages of disease can be considered reversible?
   A. stage 1
   B. stage 1 and 2
   C. all stages are irreversible
   D. disease can be reversed at all stages.

4. The correct diet for a mature bearded dragon is...
   A. mainly plant-based with some invertebrate food
   B. entirely herbivorous
   C. entirely invertebrate based
   D. mainly invertebrate with some plant material.

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

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CX Congress 2019

Back for the fifth year in a row, CX Congress is a must for anyone involved in customer experience, whether they be reception teams, nurses, managers or vets.

Day one of the 2019 conference will be led by **Dr Mary Gardner**, who runs Lap of Love, USA and writes and speaks on all aspects of end-of-life care. Lectures on the day will explore how to manage our senior patients in their final few weeks and months of life, and how to support clients during the euthanasia experience.

Linda Moir, head of the 'dream team' at London Olympics and Paralympic Games, will open the second day of the event. An expert in HR and customer service, she headed up the team of 15,000 volunteers that delivered outstanding front-of-house service to nine million spectators at the 2012 Games. Previously, she was Virgin Atlantic's director of in-flight services, where she was responsible for the airline's award-winning service and 'making flying fun'.

Saturday will be packed with practical tips and key insights to help delegates deliver an excellent customer experience to every client, every time. As well as workshops on farm and equine customer service skills, there will be three lecture streams looking at topics including: putting customer experience into everyday practice, creating a memorable consult, doing things differently and key learnings from the vet mediation service.

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Beavering away

The Scottish Government is set to add beavers to the list of European Protected Species of Animals protected under Scottish law. From 1 May 2019, it will be an offence to kill or injure any beaver or deliberately disturb it during breeding or rearing periods, and shooting will only be allowed under licence managed by Scottish Natural Heritage.

Its new status as a protected species has fuelled already existing concerns between environmentalists/'rewilders' and farmers and others in the community regarding the good and the not-so-good aspects of beavers in the countryside.

Until the first decade of this century, when a small number of beavers were released illegally on Tayside, they had been extinct in Scotland for 400 years. The Eurasian beaver (*Castor fiber*) was formerly native to these shores and played an important part in our landscape, until it was hunted to extinction in the 16th century for its waterproof fur which was used to make hats, its meat, and the oil known as 'castoreum' that is secreted by glands beneath its tail. Since their illegal release, they have been remarkably successful in establishing colonies.

Beavers are known for their natural trait of building dams on rivers and streams, and constructing their homes – known as 'lodges' – in the resulting pond. They also build canals to float building materials that are difficult to haul over land and use their powerful front teeth to cut down trees and other plants that they use both for building and for food. Beavers can live up to 24 years and continue to grow throughout their lives – adult specimens can weigh over 25kg.

Conflicting opinions

Conservationists say that beaver dams improve a river's water quality and flow, as well as providing a habitat for a range of wildlife, such as woodpeckers, frogs, toads, water voles, dragonflies and otters. Beavers are generally considered beneficial for fish such as trout, creating braided meandering rivers, with clean and extensive spawning gravels for fish. The evidence suggests that young fish grow faster and return to sea healthier if they live in beaver ponds.

However, many anglers fear the dams they create will impede migrating fish – and there is an argument that beavers increase the already large number of obstacles to salmon and trout migration and their life cycle. Landowners and riverside homeowners are also concerned about potential flooding caused by the dams, as well as loss of trees and crops.

Over time our rivers have been drained and over-engineered to get the water off the land and out to sea as quickly as possible. We suffer floods when it rains and dry rivers during droughts, and our wetland wildlife has been massively depleted. Beavers reinvigorate these wetlands, and hold water back in the headwaters, thereby reducing the risk of flooding and ensuring a more constant flow of water during drier periods – while rivers are cleaner as the dams filter out the sediment and other pollutants.

The modifications made to the streams can, however, raise the water table locally, with the potential to cause the flooding of prime agricultural land – as has been the case in areas of Scotland where beavers have been released. This is why the Scottish Government has been working closely with farmers and partner agencies to establish management plans, as well as a licensing system for culling, when there is no other alternative.

The spread of disease is also an important consideration. Britain is currently free of the tapeworm parasite, *Echinococcus multilocularis,* which can spread to dogs and humans, for whom it can be fatal. Beavers imported from abroad have the potential to spread the parasite and it is, therefore, vital that sourcing of individuals to release must be from populations that are free of this parasite.

Scientists from Stirling University have looked at the effects a group of beavers had on a wetland in Tayside originally drained for farming. Their 12-year study found plant richness rose by 46 per cent and the number of different plants recorded more than doubled. The beavers constructed 195 metres of dams, 500 metres of canals and an acre of ponds at the site on a private estate in Blairgowrie, Perthshire.

A similar research scheme, the Devon Beaver Project, started in 2011. This studied the effect a pair of juvenile Eurasian beavers had on a three-hectare, fenced wetland and also demonstrated that the presence of beavers had a profound impact of the ability of the land to hold water, reduced the sediment load in the surface water, and increased the biodiversity of the area.

Balanced approach

There can be no doubt that beavers are good for biodiversity, that they are fascinating creatures, and that to be able to observe them in the wild in Britain is a privilege. However, as with all reintroductions and 'rewildings', it is important not to forget the very real negative impacts that creatures can have when introduced into an environment where they have been absent for a long period of time.

We have to rise to the challenge and balance all interests. While it is laudable to improve the natural environment, the human species is dependant upon agriculture for survival – as is a significant percentage of the population dependent upon it for a living. It is important to consider both sides in a rational and reasonable manner and, as is the way in so many things, endeavour to reach an amicable compromise. ■

Figureheads for the future

The head veterinary nurse (HVN) can be one of the most influential roles within the practice; they can be the glue that holds a team together through the challenging days that we experience in our industry. An HVN should be a figurehead setting the standards for staff to aspire to. However, this pivotal role may encounter conflicts and issues that have to be managed professionally and with a sure standard of maturity.

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.

Sarah Want
RVN Cert. Ed Cert. Exotic Nursing

Sarah has worked in the veterinary industry since 1998. She has previously worked as a head veterinary nurse in a medium-sized practice, and is now industry placement coordinator for the WCG Animal Welfare and Veterinary Nursing course.

**Suggested Personal & Professional Development (PPD)*

VETERINARY NURSING

The ideal candidate

Until recently, it was commonplace that when an HVN left their role, the position was handed to the next senior veterinary nurse within the practice. That person could have been with the practice for many years or possibly could be a newly qualified – there seemed to be a never-ending line of staff to be promoted; meaning that many veterinary nurses moved to other practices rather than wait for the position to become available within their clinic.

The ideal HVN should be a registered veterinary nurse (RVN) and up-to-date with relevant and clinical continuous professional development (CPD). They should be committed to their line of work and consider the future of the profession; one may look for involvement in a relevant committee.

However, a prospective HVN must consider the decision to move into management carefully as it is likely that clinical exposure may be reduced owing to the nature of the role. A typical working day may take the HVN away from nursing duties – such as client clinics, surgery and hospital wards – to a seemingly never-ending list of managerial tasks including staff rotas, stock control and accounting.

Promotion within the clinic

It is common for a newly qualified RVN to find the promotion to HVN stressful. Keen to 'rise to the challenge', fears or concerns may be kept to oneself so as not to look weak or 'not up to the job'. It could be argued that a newly qualified nurse should not be offered a position so close to qualification, however, every candidate who is wanting to be considered for a position should have a fair and open interview process. Sometimes looking 'outside the box' for a fresh look on the practice can wield exciting advancements.

For the vast majority of newly installed HVNs, the new position is an exciting career progression opportunity and a welcome pay increase. However, it can be common that very little training is given, with some HVNs experiencing little or no support from senior practice members.

It can be said that when a new position is taken within any management team – particularly those involving staff and monitoring standards – that conflict may arise. For those promoted 'in house', a change in status could impact relationships; staff may be wary about talking openly and they may feel that the previous friendship can no longer exist. Likewise, the newly appointed HVN may feel that they cannot participate in social situations with fellow nurses and may feel awkward about issuing requests and instructions.

Nonetheless, a manager cannot always be everyone's best friend – targets need to be met and procedures and processes need to be maintained. New work relationships may need time to evolve, and the new manager may need to change some personal behaviours to set a better example.

In order to minimise any conflict, an open culture

- regular training for leadership and management
- regular team meetings – inclusive of all staff
- fair systems in place for rotas, late cover, and out-of-hours
- rotation of tasks so that no-one is left with the same task every time
- team targets: this author suggests using 'Onswitch' to help the business to grow and to empower staff with the confidence and tools to work efficiently
- positive mental health: consider workshops to promote wellbeing and ensure staff are supported with 'bereavement fatigue'. Mental health charities such as Vetlife can provide support and advice
- delegate tasks and give ownership to other members of the team – a small delegation can give another team member the confidence to flourish
- embrace and acknowledge your team's strengths and weaknesses
- encourage CPD and clinical specialism
- team teach: after a CPD course, have the staff member 'forward' newly acquired knowledge to the whole team
- upskill your staff as much as possible
- time out: ensure staff use their holiday entitlement
- be open to suggestions and approachable – even if you are having a tough day.

Figure 1. *Suggestions to promote a positive team environment.*

should be adopted and all managers should discuss any amendments to rotas or roles with the team. Steps should be taken to maintain a positive working environment within the practice (**Figure 1**).

The HVN will need to be confident in saying "no" and addressing staff when issues arise. It can be particularly challenging if a staff member has broken practice rules or conduct and the responsibility lies with the new HVN to manage the issue. This scenario can be best prevented by having open staff meetings to try to ensure that the team are working cohesively.

The workplace should be considered paramount; standards should be maintained and previous conflicts with fellow colleagues removed. The adage 'leaving your personal issues at the door' is important so that we can enter the workplace as true professionals – our best representation of the veterinary nurse. It can be helpful for the HVN – and other senior managers – to regularly consider if they would be happy to leave their own beloved pet in the practice.

Recruiting externally

An HVN externally recruited has the advantage of starting the role with no existing relationships and therefore established friendships are not at risk. They may be able to implement their own agenda more freely. The disadvantage of this is that the HVN will not be aware yet of individual strengths and weaknesses within their new team, and may lack knowledge of the practice's protocols.

Initially, the HVN will need to be trained by the existing members of staff, and this can be approached negatively by the staff – especially by those who may have been in competition for the position.

People management and communication skills will be essential for an HVN in this position in order to reduce tension and to make the practice a more positive environment.

It is important that the practice staff – and especially the management team – fully support the HVN when they begin their new position. The HVN may want to initiate areas of change, and this is best supported by the practice principal. The practice will need to offer adequate training and support, and external management courses can provide the skills needed for a refreshing outlook. An HVN is only as good as the guidance and support that is provided by their veterinary practice.

Looking to the future

Regardless of how an RVN progresses to the position of HVN, they will need ongoing support and training. Everyone has strengths and weaknesses, and senior leadership are no different. Fortunately, notable change within our industry is evident and effective support is now more commonplace. BVNA and BSAVA congress also offer HVN streams which provide support, tools and skills for nurses in this role. Initiatives such as these enable the HVN to take on their position with confidence and are better equipped to support their team.

The HVN is a figurehead for veterinary nursing – setting standards, guiding the profession and representing the future. ■

"The ideal head veterinary nurse should consider the future of the profession; one may look for involvement in a relevant committee."

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Is your data safe?

Backing up your computer system to protect your practice's data is one of those processes which is frequently overlooked, until the day comes when you experience a system failure. Don't put your practice at risk – read on to discover how to protect your clinic's most valuable resource.

Data is the single most important aspect of any practice's computer system; operating systems and applications can be easily restored, but data cannot! There is a particular heart-stopping, stomach churning panic reserved for that specific moment when you realise you have lost digital data.

While a single piece of work can be restored with a rather frustrating exercise of re-typing, it is worth asking yourself how your practice would cope if all your documents, patient files and client details disappeared.

System failures can and do still occur even when the highest standards are maintained as carefully as possible. Disasters such as flood and fire can destroy hardware, and data can be lost or corrupted maliciously by computer theft or damage.

However, according to a report by the Graziadio School of Business and Management, human error accounts for 30 per cent of all data loss incidents. This includes users accidentally deleting files and damaging hardware by mistake, such as dropping a laptop.

A simple and effective solution

Whatever the cause, there is a significant chance that an organisation will experience data loss at some point. A study by business internet provider, Beaming, concluded that almost 50 per cent of UK businesses fail to follow an adequate backup process, and 17 per cent of those surveyed failed to back up their business data at all.

Fortunately, with AT Veterinary Systems' backup processes, you can rely on your backup copy and restore all your files and data. Backing up your practice's data is such a simple task that only minimal effort is required to safeguard against permanent data loss.

Automated backups

The days of relying on cassette-style tapes are over, and data is now saved onto a small external storage device such as a USB hard drive or USB flash drive.

What sets AT Veterinary Systems apart are the multiple mechanisms available to ensure data is protected and can easily be restored. Incremental backups are automated and are performed hourly, daily, and weekly on all files; and allow for an entire system or specific files to be restored from the recovery media. Additionally, automated in-house backups are performed daily onto external media for off-site storage. If backup media is not removed from the practice, they should be stored securely in a fireproof and heatproof safe.

For further peace of mind, or for multi-site practices, the use of Distributed Database System (DDS) Cluster Technology offers real-time data exchange between nodes – whether this be cross-surgery or housed within one of our data centres.

This real-time data exchange between DDS nodes greatly reduces the possibility of data loss. In the event of hardware failure or software related issues, user connectivity can be diverted to another node, which has a LIVE copy of the practice database. Disruption to the business through downtime is minimised and normal services continue. The live copies on the DDS nodes also act as a redundant backup of the practice data.

DDS Cluster Technology provides a final fail-safe mechanism in that a node can be placed in the cloud for off-site storage. This node is located in one of our secure data centres and updates in real time.

Performance verification

In order to ensure that data is being correctly saved, the external storage devices can be sent to AT Veterinary Systems once a month. The customer service team will then check the external storage device to verify that it does indeed contain complete data from a full backup and that your practice's backup process is running smoothly. This data also acts as a disaster recovery off-site backup for additional peace of mind.

The true cost of lost data

A study by research platform The Diffusion Group surveyed small businesses and found that 60 per cent of companies that lose their data shut down within six months of the incident and a shocking 72 per cent of businesses that suffer major data loss close within 24 months. Our customers are fortunate that they can avoid this risk!

Of course, in addition to the long-term financial risks that would arise with permanent data loss, veterinary practices would have to face welfare concerns for the patients under their care if clinical records were erased, along with a fall in client expectation.

Easy to arrange

AT Veterinary Systems has over 30 years of experience keeping veterinary practice data secure and their clinics one step ahead. ■

Simply email enquiries@vetsystems.com or telephone 01359 243 400 for a friendly consultation or to arrange a demonstration in your practice.

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Jason Sidney

Jason is a solicitor within the healthcare department at Rudlings Wakelam, a law firm specialising in advising healthcare professionals. He is able to offer a range of advice for practices from sole traders to multi-site corporates, as well as working closely with industry organisations. His veterinary clients include general veterinary surgeries, small animal practices and equine clinics.

**Suggested Personal & Professional Development (PPD)*

PRACTICE PROCEDURE

The practice handbook. Inconvenience or essential resource?

A practice handbook is all too often seen as a series of template documents – sometimes found mass produced online, sometimes borrowed from other businesses. It is rolled out to employees without a huge deal of consideration given to its contents. In contrast to this, a well-written handbook contains crucial policies that overarch the values of your business and can prove to be an important resource – not just when handling employee issues, but also to communicate the true principles of your business to your employees.

What should be included in the handbook will vary from practice to practice. Generally the policies that are chosen will not form part of the employee's contract of employment, but rather set out rules, procedures and guidelines for the practice's employees to follow as a result of their implied duty to follow lawful orders.

The distinction is important; because where the contents do not form part of the employment contract, changes can be made in line with current business practices without seeking agreement from the staff. Practice owners should, however, be aware of the potential for such policies to become contractual, particularly through implied incorporation – usually as a result of custom and practice. A properly drafted handbook will take such risks into account.

Employers in the UK have very little in the way of legal requirements to provide a handbook to employees. Perhaps this is why it is not given as much thought as other practice options. However, there is certain information that must be provided to employees as a minimum. Much of this will be set out in a statement of engagement or the employment contract, and these documents may sometimes refer to the handbook.

This is a practical and common way of dealing with that secondary information that must be supplied to employees. Examples of this would be disciplinary and grievance procedures, absence policy, health and safety statement and pensions information. These, among other matters, are considered below.

Disciplinary procedures

Unless defined in the statement of engagement, the handbook must set out any disciplinary rules and any procedures for submitting a grievance. A thorough policy here will provide a comprehensive framework within which owners can work with employees to maintain acceptable standards of conduct and encourage improvement, when necessary. Where practice owners are not taking on responsibility for disciplinary procedures, it will allow practice managers the confidence to make the right business decision in the knowledge that they are following the correct steps.

The policy should set out accurately the procedures for disciplinary decision making and outline the appeals process. Generally these processes will be in line with the ACAS Code recommendations and best practice for handling discipline. Practice owners may then wish to include additional detail to ensure that specific matters relevant to the practice are taken into account.

Grievance procedures

As with the disciplinary procedure, the steps that the practice will take on submission of a grievance should be set out in the handbook, if not fully dealt with in the statement of engagement. Owners are under an implied duty to afford a reasonable opportunity for its employees to obtain redress of any grievance.

An employer will usually want to build in a certain amount of flexibility in dealing with grievances, so as to allow the procedure to fit the many different situations in which a grievance may arise. It is, therefore, important that the written procedure is expressed in terms that allow flexibility while staying within the requirements of the ACAS Code, unless there is good reason to depart from it.

The ACAS Code provides assistance by setting out minimum standards that will

"Employers in the UK have very little in the way of legal requirements to provide a handbook to employees"

be required to demonstrate good practice. The minimum that must legally be set out in a written grievance procedure is:

- the person to whom the grievance should be submitted
- the manner of submitting the grievance
- further steps that will then be taken.

Consideration of the ACAS Code is an important factor for both the disciplinary and the grievance procedures in particular – because an unreasonable failure by the employer to follow the recommendations of the ACAS Code may, in some cases, result in additional compensation being awarded to an employee in an unfair dismissal claim or certain other types of tribunal claim.

Pensions information

Generally this will now follow the auto-enrolment provisions. Regardless of this, full details of the pension scheme should be given to employees whether or not the practice operates standard auto-enrolment pensions or additional pension schemes. In addition to this, practice owners may need to deal with what happens to pension payments in other situations, such as maternity/paternity leave or whilst employees are absent owing to sickness.

Health and safety

Where an employer has five or more employees, it is a requirement of the Health and Safety at Work Act to have a written statement of the company's health and safety policy. Such a statement is often incorporated within the practice handbook. The policy should reflect the nature of the workplace and the outcome of the employer's risk assessment. Owing to the significant regulation around veterinary practices, this forms a key part of the handbook.

A written policy ensures that both the employer and its workforce are clear about their respective responsibilities and will assist with the practice ensuring it is compliant with health and safety laws. Ultimately, making these responsibilities clear will create a safer working environment, which can only be conducive to productivity.

"Where an employer has five or more employees, it is a requirement of the Health and Safety at Work Act to have a written statement of the company's health and safety policy"

Absence and sickness

A sickness absence policy can fulfil a number of purposes. It sets out sick pay arrangements and the requirements for notifying and providing evidence of incapacity. It is a legal requirement that terms and conditions relating to incapacity owing to sickness or injury are given to the employee in writing. The policy should also provide a procedure for managing longer-term incapacity – including obtaining medical evidence, considering alternatives for rehabilitating the employee into work and, ultimately, providing a fair procedure for dismissal where this is the appropriate course of action.

Recommended policies

Whilst not required by law, these additional policies will serve to either assist in showing compliance with more general laws affecting the business, or ensure that staff members are clear on what is expected of them whilst they are working.

Matters such as equal opportunities and anti-bullying statements will go some way to demonstrating what is – and is not – acceptable behaviour within the working environment. Should formal action be taken against you, this will act as an indicator of compliant behaviour in taking a proactive approach to such matters. This should, however, not be considered an alternative to thorough and adequate training on issues such as discrimination, harassment and victimisation.

Of particular concern in the current climate will be setting out rules surrounding the use of electronic devices and, in a wider sense, the use of social media by employees. Clearly, staff need the ability to utilise a variety of IT resources, but with this comes significant business risk.

A successful policy should consider the following risks:

- potential unauthorised disclosure of confidential information
- infringement of third-party intellectual property rights
- unlawful harassment of employees, especially where explicit material is downloaded or sent by email
- reputational damage from inappropriate emails
- time-wasting and loss of productivity.

It is highly likely that the majority of staff in the workplace will use some form of social media. Improper use of such platforms will reflect poorly on the practice and could impact profitability. Conversely, this can prove to be a useful driver of business by marketing to a much wider audience than may otherwise be achieved. A well-drafted social media policy should consider the attitudes of the practice and, particularly, where its use is to be encouraged. Detailed guidelines for this use should be put in place, in addition to the generalised policy.

Data protection is at the forefront of the minds of many practice owners (and employees for that matter) following the implementation of the General Data Protection Regulations (GDPR) last May. Processing personal data will be lawful only if – and to the extent that – at least one of the conditions in article 6 of the GDPR is met. In addition, employers can only process personal data for employment purposes if it is necessary and, when the processing is carried out, the employer has an appropriate policy in place.

The data protection policy is also a suitable place to provide a privacy statement to staff members, notifying them about how their personal data is handled. This policy should be carefully drafted and tailored to the actual or anticipated data collected, privacy and security procedures of the practice.

"Improper use of such platforms will reflect poorly on the practice and could impact profitability"

An essential resource

The practice handbook should be considered a vital document because it:

- sets out what is expected of employees and deals with the consequences of not meeting these expectations
- helps to reduce workplace disputes – whether between staff or against the practice – by ensuring everyone is 'singing from the same hymn sheet'. However, always ensure you avoid policies and procedures to which you do not adhere
- reduces the time practice owners or practice managers spend on dealing with staffing issues, such as disputes and explaining standards to 'new starters'
- provides an effective method of communicating to new staff members their working conditions, benefits, annual leave, dress code, pay rises or reviews, training
- is required for – or assists with – complying with employment laws and can be a beneficial legal defence against an employee claim.

Whilst the above is by no means an exhaustive list of the policies, it provides an overview of some of the issues that should be considered when thinking about implementing or updating a practice handbook. ■

PPD Questions

1. Which of the following policies must legally be supplied to employees?
   A. Grievance and Social Media
   B. Equal Opportunities and Absence
   C. Disciplinary and Grievance
   D. Electronic Devices and Pensions.

2. What is the minimum number of employees a practice can have before it needs a Health and Safety policy?
   A. 10
   B. five
   C. a practice always needs a Health and Safety policy
   D. 20.

3. A practice handbook is a valuable resource as it:
   A. communicates rules and procedures effectively to employees
   B. is required by law
   C. prevents employees from submitting an employment claim
   D. assists with workplace disputes.

Answers
1. C 2. B 3. A & D

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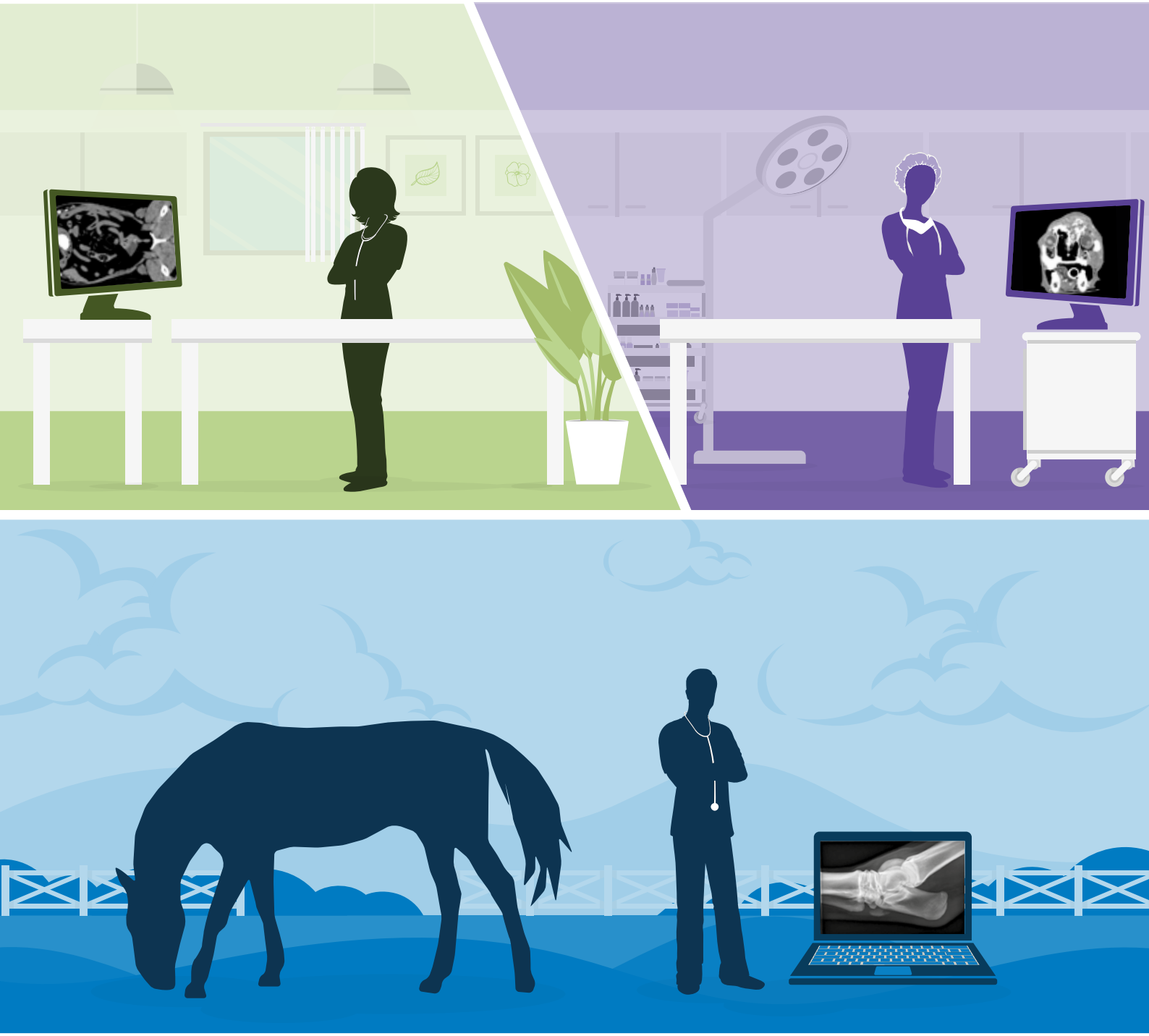

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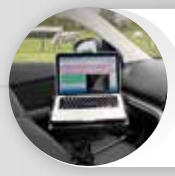

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The benefits of giving back to the community

What better way to enhance your practice's exposure and strengthen relationships with existing clients than by giving back to the community? Getting involved in the local area can also present a wealth of exciting marketing opportunities and attract new clients. This article takes a look at the many ways veterinary practices can serve their local communities and the considerable benefits that come from giving something back.

Clara Ashcroft
BA(Hons)

Clara writes for Vision Media – a media agency specialising in marketing, communications and design services for the veterinary industry, and a publisher of veterinary websites, news websites and consumer magazines.

Share your knowledge

Giving talks about responsible pet ownership in the community can enhance your reputation as an authority on pet care and raise awareness of the work you do. Community partners – such as libraries, businesses, churches and museums – are some of the many groups that might like to work with your practice. Guiding and scouting groups, local primary schools and the Women's Institute (WI) may also welcome an informative talk or workshop.

The topic you choose to present should be based on the themes of responsible pet ownership and animal welfare. The subject may change depending on who you are talking to, or who is delivering the talk, but some ideas might be:

- what pets need to be happy and healthy
- general obedience
- looking after pets in the summer/winter
- the history of animals in war
- how to choose the right pet for your lifestyle
- animal body language
- careers in veterinary medicine
- a day in the life of your practice.

If you don't have the time or the availability of a staff member to deliver a talk, then why not share your knowledge through local newspapers and community newsletters? Many publications are likely to welcome content from local businesses – especially if it's relevant to the specific issue or the time of year it is being published. Topics you might choose to write about include spotting the signs of dehydration in summer or keeping pets safe at Christmas. Remember to include your practice name and phone number at the end of the copy!

Donate to local charities

Donating is a brilliant way to benefit the area in which you are based, boost your practice's reputation and improve engagement amongst your employees.

In a recent study by Cone Communications, 74 per cent of respondents said they were more fulfilled when they were given opportunities to make a positive impact at work.

When deciding which charity to support, begin by selecting one that aligns with your practice values. This could be a local adoption centre, wildlife rescue organisation or a charity that trains assistance dogs – speak to your team and clients to find out which organisations they would like to support and why.

"Giving talks about responsible pet ownership in the community can enhance your reputation as an authority on pet care"

*Suggested Personal & Professional Development (PPD)

COMMUNITY

Once you have decided which charity you are going to support, use it as an opportunity to connect with your existing clients. Keep everybody informed about the cause, why you have chosen it and what activities you are planning to help within the organisation. This could include donating to a pet food bank, placing donation boxes in your reception area or selling tickets for a charity event.

Use multiple platforms – including social media, text messaging and email – to tell clients about your involvement with the charity and encourage them to support you. When the campaign finishes or reaches a significant milestone, send another message to let them know how much has been raised.

A perk that gives back

If time and budget allow, giving staff paid time off to volunteer during working hours is a great way to help out local animal charities. Whether it's cleaning out kennels at a local dog shelter or helping to run a neutering campaign, volunteering gives people a chance to develop new skills and learn from other organisations. It's also a great way to show your team that you care about them and the community in which they work.

Working with your chosen charity, encourage your team to volunteer their skills for particular shifts. You could pass around a 'sign-up' sheet during team meetings, pin one to a noticeboard or send an all-users email. When planning volunteer opportunities, include a mix of daytime, evening and weekend activities to allow for different schedules. Offering a variety of short (one day) and long-term projects will ensure that everybody stays engaged.

Sponsor events

Sponsoring local events – such as fun runs, dog walks or agility events – can set you apart from the competition and strengthen your name in the community. They also have the added benefits of giving you direct access to your target market and help to strengthen existing client relationships.

As with choosing a charity to support, pick an event that fits with your practice ethos and find out as much as you can about it. For example, who sponsored the event in the past and how successful was it? It's also important to understand what you will receive in return for your support – a stand at the event or your logo on promotional material, for instance.

Sponsorship doesn't have to be financial – it could be a case of simply 'lending a hand' or donating prizes for raffles and auctions. Remember to promote the fact that you are sponsoring the event on your social media channels, practice newsletter or through an email and keep everybody updated on its success.

Participate in careers events

Besides the obvious benefits of minimising recruitment costs and attracting new staff, school and college careers fairs are a great way to spread the word about your practice. By attending these events, there is also a good chance that you will have your practice name, logo and website printed on the promotional materials.

To make the most of your time at careers events, set up attention-grabbing displays that make people more likely to stop by. Take along useful and original materials that students can't find online and set up a slideshow or video to give visitors a virtual tour of your practice. This helps to build client trust and increases the chance of their visiting your practice.

Another benefit of participating in careers events is that they allow you to meet potential employees before they even apply for a position – saving you both time and money. You could even conduct short, informal interviews on the stand that allow you to rule out unqualified applicants before they apply for a role. If you are advertising for specific job vacancies, make them identifiable by creating a sign that reads 'Now hiring for...' and list the available opportunities.

Host educational events

Delivering an educational event at your practice is

"Use multiple platforms to tell clients about your involvement with the charity and encourage them to support you."

another excellent way to strengthen relationships with existing clients. Dental care, parasite control, diet and how to care for elderly pets are just a few of the many subjects that your practice could cover. Depending on the topic, you may also be able to get funding or 'giveaways' for the event from other animal organisations, such as pharmaceutical and pet food companies.

Educational events are also the perfect way to introduce your practice to new clients because they open up opportunities for media coverage. Promote the event by sending out a press release to the editors of local newspapers – making sure to keep it interesting and positive. In the press release, explain how your practice contributes to pet health care in the local community and the benefits of registering with your practice.

Organise an open day

Open days give people an exciting chance to explore your surgery, speak to your team and ask lots of questions. They also give your practice the opportunity to raise funds for your chosen charity or put back into the local area. When planning for your event, set a date that doesn't clash with any local, national or sporting events – weekends and evenings are a good time for many people.

Your open day should include a range of enticing activities that will keep your visitors entertained. Try to include aspects geared towards children using a 'fun for the whole family' theme and invite as many charities or stall holders as you can to keep the event looking busy. Ideas might include a children's round-the-bases quiz, equipment demonstrations and first aid for pets workshops.

On the day itself, keep yourself free to speak to clients as they arrive and be on hand to sort out any problems that might emerge. Most importantly, don't forget to smile! This is a fantastic opportunity to sell your practice and get to know the people that live in your local area.

"Sponsorship doesn't have to be financial – it could be a case of simply 'lending a hand' or donating prizes for raffles and auctions."

A lasting effect

Giving back to the community through volunteering, sponsorship, charity or other means can be incredibly rewarding. It supports the organisations and individuals that already do so much for the local area and gives your team the opportunity to share its expertise.

Why not research upcoming events and organisations in your area and plan your own unique way of giving something back? In return, this will have a positive effect on team morale and a lasting impact on animal welfare. ■

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The veterinary receptionist: are we asking the right questions?

The reception team can be the determining factor in how your client interprets your practice. They are thoroughly deserving of a more distinguished, professional title and are critical to the business; the attention to detail required to do the role well should never be overlooked. It can be a struggle to fill a receptionist vacancy successfully – but are we asking the right questions? Do we really know what skills we are looking for?

It is particularly frustrating that, out of all the positions available within a veterinary practice, an advertisement for a receptionist may attract the largest number of applicants yet is one of the most difficult positions to successfully fill. We are hoping to find that rare embodiment of industry knowledge, excellent administrative skills, a professional telephone manner, accounting ability, diplomacy and an enormous amount of cognitive empathy. With no formal qualification currently necessary to demonstrate these skills (and many would argue that there should be), it can be difficult to know how to attract the best candidates.

An advertisement on a free, employment search engine can seem like a great idea – it will reach a large audience – but it will quickly inundate your inbox with dozens of applicants; many of whom may be unsuitable. While this is certainly not a worthless exercise, self-discipline is required in order to not reject an applicant too hastily when reviewing a long list at the end of a busy day.

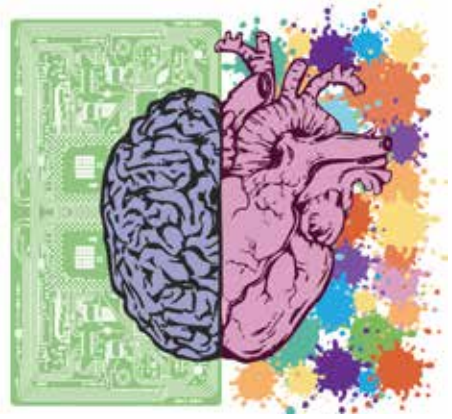
There are, of course, specialist veterinary recruitment agencies, yet most are still focused on serving the clinical roles, and many employers may be put off by the agency fees; especially for a non-qualified position.

However, finding the 'right' receptionist is one of the most important business decisions you will make. Get it wrong and prepare for client complaints. For that reason, maybe we shouldn't be concentrating so much on *where* to look, but more on the questions we ask in the interview. After all, the 'hard' skills can generally be taught, but the 'soft' skills – the behaviours your clients will react to – are far subtler and difficult to detect in a written application.

Common interview questions generally assess the administrative capabilities of the receptionist candidate. There is certainly a place for asking about IT and accounting competence, but what we really need to discover is how this person will behave in the many client-facing, often demanding situations involved in veterinary practice. The person across from you at the interview table may boast 10 years in book-keeping and customer service, but how would they react to a client who has arrived to have their dog euthanised? Would they tell them to take a seat alongside everyone else, or would they have the sensitivity to find a quiet consultation room to wait in, especially if there was another dog of the same breed in the waiting area, too?

It is always difficult to assess genuine 'soft' skills in an interview situation, particularly as nerves can hinder one's ability to accurately express emotions. However, there are still ways of doing this. As a first point of action, always conduct a telephone interview. Not only will this save time in the event of the candidate not being suitable, but, more importantly, you will be able to gauge how a client may interpret their telephone manner. How is their vocal tone? Do you get the impression that they are smiling and actively listening, or are they 'closed' and uncommunicative?

It is important to use open-ended questions so that it prompts a conversation with the candidate. For example, ask the candidate how they would respond to a client who had become angry upon receiving their invoice and was starting to raise their voice. What is their gut instinct to this situation? It is understandable if the candidate suggests that they would try to explain what was itemised on the account, or ask for the assistance of the manager, but, it is even better if they initially state that they would move the client to a private area away from other clients, and first attempt to understand the person's concerns by listening.



It is also beneficial to ask why the candidate is interested in the position. The most likely response is that they "love animals", but going on to ask the client what impact animals have had on their life may reveal the level of empathy and understanding they may have for someone who would do anything for their pet.

Finally, always have your final round of candidates attend a 'trial' shift before making your decision. While it would not be fair to expect a flawless display of the more mechanical aspects of the job on a trial shift, it can be useful to observe their general interactions with clients and the rest of the team.

Recruiting for a receptionist can be a frustrating challenge, but don't be tempted to settle for the first person who can competently work the practice management software. Devise your interview questions to assess behaviour, and reap the rewards with an impressed client base who will be happy to return and recommend your business. ■

Industry Profile

Your name: Ed Bracher
Position: Chief executive officer
Company: Riding for the Disabled (RDA)

Please would you give a brief account of your role within the organisation, your responsibilities and your involvement?

I lead the team at the RDA UK, which supports a federation of almost 500 member groups, delivering therapy and opportunities for achievement to 26,000 disabled children and adults across the UK.

My role is principally about setting out our strategy and plans and ensuring that we are providing enough support to our centres and volunteers to make sure that the riders and carriage drivers we support, receive what they need from the RDA.

The RDA celebrates its 50th anniversary this year, how did it all begin and how were the benefits of riding for disabled people discovered?

In the post-war years, there was increased interest in the ability of sport to have a positive impact on disabled people – spurred on by the nascent Paralympic movement. In 1952, the Danish rider, Lis Hartel, who had had polio, won a silver medal in dressage and it began to highlight what disabled people could achieve.

During the next 10 to 15 years in the UK, increasing numbers of energetic volunteers teamed up with physiotherapists and started to create specialist riding clubs and facilities. Initially this was supported by the British Horse Society, but in 1969 the RDA was created to provide support, direction and to share knowledge and training to the growing network. Today we work through 500 centres and 18,000 volunteers, supporting 26,000 disabled people.

How will you be celebrating the anniversary?

Most significantly, we shall be opening our new National Training Centre – the first of its kind. We have bought a small equestrian centre in Warwickshire, where we have developed the existing school so we can expand and work with more riders, as well as run more consistent training for our county and regional level volunteers – who provide so much of the support to our network.

We have a number of other celebrations planned, but most significantly, we are asking all our participants, volunteers and groups to get involved in our 'week of celebration' during the first week of October. Our brilliant and creative volunteers will, I am sure, devise lots of interesting and engaging ways to work our 50th anniversary into what they do in that week.

> "The physical therapy delivered by our activities improves fitness, muscle strength, balance and co-ordination – benefiting core strength and mobility"

Please will you explain a little about the therapeutic benefits of riding for people with disabilities?

The physical therapy delivered by our activities improves fitness, muscle strength, balance and co-ordination – benefiting core strength and mobility. Beyond the physical, RDA activities help communication, confidence, wellbeing and relationship building.

What are the practicalities for disabled people when they come to ride at your centres and do you have to take a different approach depending upon whether you are helping adults or children?

Our coaches are trained to support riders based on their individual needs and goals. The approach will depend more on what the rider wants to gain from the experience than their age. There may be practical considerations – such as mounting the rider safely, or ensuring the right rider/horse combination. Our coaches and volunteers are great at working with their riders to overcome any barriers and create the best possible experience.

How many people – adults and children – have you helped over the years and how many people would you expect to be helping in a typical year?

We haven't ever counted the total number who have benefited, but it must be close to half a million. We do know that today we work with about 26,000 people of all ages, abilities and across most types of impairment.

How does the volunteer system work and how have you have managed to gather so many volunteers?

We are incredibly fortunate that so many people want to support what we set out to do and we have incredibly loyal volunteers – many of whom have volunteered for almost as long as we have existed – and some for even longer!

Volunteers usually start with their local RDA group and we provide extensive support and training to help them feel

"Beyond the physical, RDA activities help communication, confidence, well-being and relationship building"

confident and comfortable with their role. They don't necessarily need to bring a lot of equestrian experience with them, and many volunteers have little experience with horses.

We have a world-class training system that can help them with the basics and support their work with riders; as well as developing coaches – for those who want to follow that route. About 3,000 volunteers are on our coaching pathway.

Please will you talk a little about your riding coaches.
They are brilliant. As mentioned above, most are volunteers and they are the people who deliver sessions and bring things to life for our participants. Within the RDA system, it is the coach who is agreeing goals with riders and working out how we can help them achieve what it is they came to RDA for – be that to improve their balance, to win a competition or simply to learn more about horses.

The beauty of our system, is that our training and support give our coaches the skill and confidence to be able to deliver the service to an incredibly wide range of people and ensure they gain whatever they need from the experience.

Where do your horses come from, what qualities must they show and how do you choose them?
We collect horses from as many sources as possible – currently we work with around 3,500 that are a mixture of owned, loaned and borrowed. While our horses need to have the right temperament, it is a common misconception that we want older, slower horses. In many cases we want fit, forward-going horses that can challenge riders and deliver the physical therapy most effectively.

How are member groups set up?
Each group is a separately registered charity, with its own trustees. We provide as much support as possible to make sure those trustees have the skills and confidence they need to run a successful charity. Most people don't become involved with RDA to become a trustee and worry about their liability, so we try to make sure that we do all we can to take that away from them and allow them to concentrate on delivering the service.

You are a registered charity. How do you manage to obtain all the money required for running the association?
Yes, we are. We are fortunate to have some incredibly supportive donors – both individuals and organisations that support our work. Our groups, too, are very well supported and benefit from being able to show that the money that is donated to them will support local volunteers to deliver our service to local people.

Please tell our readers about the research you do on the benefits of riding for the disabled.
We created a tool called the RDA 'Outcomes Tracker', which follows progress for our participants over time. This helps our groups to understand their impact on individual riders and, combined across the UK, we can use the insight to see the difference we make at a national level.

The most recent set of results showed that after just 12 weeks, 74 per cent of participants demonstrated physical improvement, 77 per cent experienced greater confidence, and 75 per cent more enjoyment. Almost two thirds (65%) showed a greater willingness and ability to communicate, 72 per cent showed improved relationship building skills and 78 per cent demonstrated clear advances in horsemanship.

How do you see the future for the RDA?
Optimistically!

As the interest and understanding in the benefits of human/animal interaction increases, the future is bright for an organisation such as the RDA. We have ambitious plans to grow the network and work with more people and I am encouraged and excited by the increasing level of acceptance and understanding of disability generally.

When we were founded in 1969, it was unusual to see a disabled person on a horse. In 2012, 10,000 people turned up for each day of the Paralympics to watch the Para Dressage. I hope this trend continues and I'm proud of the part that the RDA has played in making it so. ■

"As the interest and understanding in the benefits of human/animal interaction increases, the future is bright for an organisation such as the RDA"