Wound management
Dealing with a range of wounds that may be encountered in chelonians

Plus

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“There was plenty of opportunity to get ahead with CPD requirements in June”

Welcome to the summer edition of Veterinary Practice magazine. What a busy month June was! With Vet Festival, Cx Congress and VetsNorth taking place on three consecutive weeks, there was plenty of opportunity to get ahead with CPD requirements in June. Those who weren’t lucky enough to attend the events can enjoy the reports in this issue, each of which looks at a totally different area of veterinary practice – from dealing with complaints to tortoises and teamwork.

The topic in focus this month is wound management – a section that contains two interesting and informative articles: one a guide to dealing with wounds in chelonians and a second considering the steps to managing thermal burn wounds in practice.

Outside the regular columns, there is a piece on complications in canine spinal surgery, written by three neurology specialists from Northwest Veterinary Specialists. There is an update on the methods used for antibiotic susceptibility testing, written by Jade Denham – Head of Microbiology at Dick White Referrals. And the second part of the short series on feline ureteral obstruction by Sheila Wills features in this issue, focusing on treatment of the condition.

Valerie Jonckheer-Sheehy has written the welfare piece this month, which looks at welfare issues from the perspective of behavioural medicine. Canine hookworm dermatitis is the focus in David Grant’s dermatology column and the nutrition column considers various approaches to tackling begging.

On the large animal side, Richard Gard asks whether farm animal welfare is a public good in his column, and in equine, there is an overview of drug testing in competition horses alongside an insight into the work of a horse rescue unit in Sussex. Last but not least, practice management contains articles on a variety of topics, including: making tax simpler, investing in cryptocurrencies and managing difficult relationships in the workplace.

There won’t be a separate August issue this year, so look out for the next issue of Veterinary Practice magazine in September, which will include previews for the upcoming BEVA Congress in Birmingham and the Official Veterinarian Conference in Swindon.

Jennifer
JENNIFER PARKER EDITOR

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Animal welfare

It is important that behavioural medicine is taken seriously in animal welfare, and animals are referred where necessary.

Dentistry

A complex odontoma case in a German Shepherd highlights the importance of a good diagnostic work-up.

Mental health

The first article in a short series explaining the process of learning to meditate.

Dermatology

David Grant considers the management of canine hookworm dermatitis and Remi Mandray asks how important ear cleaners are for otitis externa.

Nutrition

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RCVS to consult on new nursing qualifications framework

Next month, the RCVS is asking the veterinary professions for their views on a proposed new framework for post-registration veterinary nursing qualifications, which aim to enhance the structure of the veterinary nursing career and, ultimately, introduce an Advanced Veterinary Nurse status.

The proposed framework has grown out of the VN Futures research project, run jointly with the British Veterinary Nursing Association (BVNA), which identified developing a structured and rewarding career path for veterinary nurses as one of the key demands of the profession.

It has been developed by the VN Futures Post-Registration Development Group in conjunction with the RCVS Veterinary Nurses Education Committee and Veterinary Nurses Council.

The proposed framework serves to provide accessible, flexible and professionally relevant post-registration awards for veterinary nurses in order to provide an enhanced level of veterinary nursing practice, while also providing specific modules that veterinary nurses at all career levels can study independently for their continuing professional development.

The two new qualifications included in the framework are a Graduate Certificate in Advanced Veterinary Nursing and a Postgraduate Certificate in Advanced Veterinary Nursing.

Details of the course structures, candidate assessment criteria, accreditation standards, student support, candidate eligibility rules, the RCVS enrolment process and the procedures for certification will be set out in a framework document as part of the consultation process.

The document also includes a prospective list of designations for the two courses covering areas of advanced veterinary nursing knowledge such as wellness and preventative health; rehabilitation and physiotherapy; anaesthesia and analgesia; triage, critical care and emergency nursing; pharmacology; animal welfare; education and teaching; management and leadership; research; and dentistry.

BSAVA appoints new Head of Education

The BSAVA has appointed vet Lucie Goodwin as its new Head of Education, along with new Education Committee chair Kit Sturgess. Lucie brings a wealth of experience from working in first opinion and referral practice, academia and latterly in veterinary clinical pathology, and is looking forward to “supporting small animal practitioners through BSAVA and helping them develop their careers”.

She will develop and deliver an innovative programme of postgraduate education across the widest range of platforms and promote the BSAVA’s educational activities to the membership and wider profession. Lucie takes over from former BSAVA President Frances Barr, who has been involved with BSAVA since 1979 and joined as the inaugural Head of Education in 2010. Frances will now focus on coordinating online Postgraduate Certificates in a part-time role.

Resist the pester power, vets urge parents as Pug film hits screens

Vets fear that parents may soon be fielding more requests for pet Pugs as Disney’s latest film, featuring flat-faced “hero” Patrick, hits screens. The BVA is urging parents to resist any pester power prompted by the film because the dogs are prone to painful breed-related deformities.

In an effort to dissuade families from adding a Pug to their household, BVA has released new statistics showing that 98 percent of companion animal vets treated brachycephalic dogs for health issues last year.

Overall, 95 percent of practices treated at least one brachycephalic dog with eye problems, 93 percent treated breathing issues and 89 percent treated skin problems.

BVA President John Fishwick said: “We know from past films that when a dog takes a starring role their breed often experiences a surge in popularity for years afterwards. That’s why a film featuring a flat-faced Pug is unhelpful at a time when vets and other welfare organisations are desperately trying to discourage ownership of these breeds.

“Filmgoers, including young children, may well be charmed by the antics of Patrick but the reality is that thousands of Pugs and other flat-faced dogs such as French Bulldogs struggle with serious health problems, which often require invasive and costly surgery to correct.”

The Brachycephalic Working Group (BWG) has met with Disney to provide advice and information on how the company can manage this anticipated interest in the breed. The BWG has fed into and agreed on a number of actions with Disney, including the addition of a welfare message into the credits section of the film, leaflets describing the health issues of the Pug breed to be distributed at UK cinemas and a ban on merchandising of Patrick Pug memorabilia.
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Over 1,600 responses to second RCVS Brexit survey

A second survey by the RCVS on the implications of the UK’s decision to exit the European Union for UK veterinary professionals who qualified elsewhere in the EU has already had responses from over 1,600 EU-qualified veterinary professionals.

The original survey was sent last year to more than 5,000 UK-registered veterinary surgeons and veterinary nurses who gained their qualification from a non-UK EU institution, with a response rate of around 55 percent.

This year the Institute for Employment Studies (IES), on behalf of the RCVS, contacted over 6,000 veterinary surgeons and almost 50 veterinary nurses – including those previously surveyed as well as EU registrants who have joined since the last survey – to seek their views on the implications of Brexit for European veterinary professionals. This will help inform how the RCVS makes its representations to the government.

Chris Tufnell, RCVS Senior Vice-President and Chair of the College’s Brexit Taskforce, said: “The aim of this survey is to gain a greater understanding of the views and expectations of our EU colleagues now that certain elements of the UK’s withdrawal process from the EU, as well as the timing, have become clearer. The survey will also be looking for the views of colleagues on how the College has addressed the challenges of Brexit so far.

“It is particularly important that those who responded to last year’s survey do so this year because the aim is to get a sense of how their views and plans are shifting as the Brexit process moves forward.”

As with last year’s survey, the views collated will help the College understand the immediate and longer-term impact of the UK’s exit from the EU, gather evidence that could be used to make a case for special treatment of veterinary professionals with regard to future immigration policies and allow the College to provide informed advice to European veterinary professionals as they make decisions about their future careers.

The deadline for sending responses to the IES is 18 July 2018 and all data will be managed and analysed by IES on a confidential basis with no individual responses being seen by the RCVS. The RCVS is intending to conduct a third survey when the terms of the UK’s withdrawal from the EU, and the impact of this on non-UK EU nationals, are better defined.

Cavalor launches proven equine joint supplement

Nutraceutical brand Cavalor is launching ArtiTec, a scientifically proven anti-inflammatory joint supplement for competition horses or horses and ponies that have suffered joint trauma.

Synovitis is one of the main causes of lameness, especially among sport horses, and can lead to osteoarthritis and cartilage loss. Cavalor ArtiTec significantly reduced joint inflammation in a randomised, double blind study undertaken by Ghent University. A further field trial of the product by vets in Belgium showed that it improved lameness in 74 percent of cases.

Maarten Oosterlinck, one of the authors of the University of Ghent study, commented: “Nutraceuticals are often used in the management of osteoarthritis, which is a common cause of chronic lameness in horses, but their ‘curative’ efficacy remains controversial and the quality of the relevant studies is generally low. We set out to evaluate ArtiTec in a well-designed and controlled study. Our research shows that ArtiTec significantly decreased joint inflammation and could be useful in preventing the onset of arthritis.”

ArtiTec’s launch follows seven years of research and development. It contains joint health nutrients (glucosamine, MSM, chondroitin, hyaluronic acid and blackcurrant extract), pain relief ingredients (feverfew and pineapple) and a high concentration of anti-inflammatory agents (turmeric root and Boswellia serrata).
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UK sheep producers are being encouraged to join the march towards stamping out lameness in the national flock when the industry highlights how to take the first step towards better control during July.

Independent experts point out that the later summer months are a great time to start implementing the proven Five-Point Plan for sheep lameness reduction, so there will be plenty of advice available throughout this period to help farmers kick-start their own disease management programme.

“The sheep industry has made real progress with lameness over the last five years but must maintain momentum if it is to meet the Farm Animal Welfare Council (FAWC) target of 2 percent disease incidence in the national flock by 2021,” said Ruth Clements, head of veterinary programmes at farm-based research and development organisation FAI Farms, which developed the Five-Point Plan.

“Implemented correctly and given long term commitment, the Five-Point Plan gives sheep farmers a clear framework for managing lameness effectively because it builds natural disease resilience within the flock, reduces the disease challenge and spread on the farm and improves flock immunity through vaccination. More widespread adoption on farm will also help the sheep sector cut its use of antibiotics for foot infections and meet new industry targets; a sheep sector task force facilitated by RUMA has already signed up to a 10 percent reduction in antibiotic use by 2020,” Ruth added.

Ruth said sheep farmers are generally keen to get on top of any flock lameness issues, but sometimes feel helpless and often find it difficult to know how and where to start. "Now’s the time to start thinking about it seriously," she said. "Weaning is an ideal time to cull out any ewes with chronic feet, re-set the breeding flock for the new sheep year and build from there."

Farmers looking for practical advice on how to take the first step towards reducing sheep lameness in their own flock will be able to visit the MSD Animal Health stands at the NSA Sheep Event (18 July 2018) in Malvern and the Royal Welsh Show (22 to 26 July 2018) in Builth Wells.
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Defra announces “Stamp out BVD” funding for farmers

A £5.7 million funding package to help farmers tackle a damaging cattle disease has been announced by the farming minister George Eustice. The project is larger than any previous BVD project in England in terms of both funding and scope, and offers a comprehensive package to farmers.

Bovine viral diarrhoea (BVD) costs UK farmers an estimated £60 million per year. It impacts animal welfare within affected herds and reduces farm productivity and profitability. Available in England for three years through the Rural Development Programme for England (RDPE), the funding will enable farmers to apply for one-to-one farm advisory visits by a veterinary practitioner. The vets will work with keepers of breeding cattle to tackle BVD on their farms.

The programme will also pull together new “clusters” of cattle keepers to work together against BVD, by sharing best practice and tackling this disease as a group of individuals who share the goal of eradicating BVD from their herds.

Stunning absence of figures on exports of non-stun meat

The BVA has raised serious concerns over the lack of information on UK exports of meat from animals that have not been stunned before slaughter. Latest figures from the Food Standards Agency (FSA) indicate that 22 percent of sheep and goats (3 million) are not stunned before slaughter. This is an increase from 2013 when it was estimated 15 percent (2 million) of sheep and goats were slaughtered without stunning.

BVA believes all animals should be stunned before slaughter and has been calling for an end to non-stun slaughter in the UK for several years. If non-stun slaughter is permitted, BVA believes that non-stun meat should only be provided to meet domestic demand and not exported for consumption.

In a response to a parliamentary question from Kerry McCarthy MP (Bristol East), Defra admitted in April that it does not hold data on how much non-stunned meat is exported. This lack of information has been brought into sharp relief by the recent government announcement on a trade deal with Saudi Arabia that could greatly increase the exports of British lamb and other meat, some of which may be from non-stun slaughter.

Information on the lamb market indicates that exports in general (especially to non-EU countries) are already on the increase with total export volumes up 14 percent in 2017 and non-EU volumes growing to 5,400 tonnes – up two-thirds on the previous year.

BVA is calling for the timely provision of information on non-stun exports, firstly to ascertain the extent to which the UK is exporting meat from these sources and secondly to inform potential measures to ensure supply matches rather than exceeds domestic demand.

Other EU countries that allow non-stun slaughter have measures in place to limit the export of non-stun meat to help ensure that meat killed by this method is for the domestic market. For example, Germany requires that abattoirs apply for a licence by defining the number of animals to undergo non-stun slaughter to meet local demand only.

Novel sampling method can detect foot-and-mouth disease in absence of clinical infection

New simple techniques created by scientists at The Pirbright Institute can detect the presence of foot-and-mouth disease virus from samples in the farm environment, even when susceptible animals are not showing clinical signs.

The new methods, published in Applied and Environmental Microbiology, use a simple swabbing technique to gather samples from the environments that foot-and-mouth disease (FMD) susceptible animals such as cattle, sheep and pigs commonly make contact with, such as water troughs. The technique requires very little expertise, which makes the sampling method accessible, allowing a higher frequency of samples to be collected and processed during an outbreak.

FMD virus can survive long periods of time in the environment in the right conditions (up to three months depending on environmental factors such as pH, temperature and relative humidity), and so sampling areas where infected animals may have shed virus allows scientists to detect the presence of FMD even if the animals on the farm are no longer showing clinical signs.

This method will allow FMD surveillance to go beyond the investigation of clinical signs, meaning that cases which may have been missed can be detected using environmental sampling methods.

Novel surveillance techniques can support a robust response to outbreaks in FMD free countries, but can also be implemented in endemic countries as part of surveillance programs to supplement current information about the spread of FMD.
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Is your practice working well as a team?

At VetsNorth 2018, Carolyne Crowe took delegates through the steps to creating a happy, high-performing team.

The practice management stream at VetsNorth, held in Manchester on 20 and 21 June, covered a variety of topics, from social media to certification. Carolyne Crowe looked at the important elements that should be considered when developing a practice team.

What is a high-performing team? Of course, there is no simple answer, but there are characteristics common to effective teams. Carolyne listed, for example: honest communication, psychological safety, a clear vision and common goals, clear and flexible leadership and a respectful environment. The individuals in these teams know what they need to do and how to do it; they finish work feeling fulfilled. She delved into some of these in more detail, reminding delegates that small changes can make a big difference.

Self-awareness and awareness of other people

It is important to understand the behaviours that are demonstrated at work within yourself and others; recognising behaviour styles in people can influence how we communicate with them. Carolyne recommended using DISC behavioural profiling: "It enables teams to have a non-judgemental approach to understanding why you do what you do on a day-to-day basis and why other people behave in a certain ways," she explained. "We need to recognise, acknowledge and accept that everybody is different – and that’s a good thing." She briefly explained the four DISC styles: dominant, influential, steady and compliant.

Dominant style

Outgoing and task-oriented, people with this style like the big picture, are fast-paced and very much the “doers” of the team. They might come across as aggressive, so it is useful for them to be able to soften their style. Others should also take responsibility for how they react to comments from colleagues with this style; to avoid having an emotional reaction to something that was said, they must remember to ask themselves if the person meant to cause offence.

Influential style

Also fast-paced and interested in the big picture, people with this style are like the cheerleaders of the team. They make things fun and dynamic. They don’t like the detail and may be a little impulsive. They talk a lot, which can mean they listen a little.

Steady style

Reserved and people-oriented, those with a steady style prefer smaller groups and value the relationships they have. They are methodical and are strong completer finishers. Information about how they are really feeling needs to be drawn out of them to prevent them from becoming wound up over something without others realising.

Compliant style

Those with this style are reserved and task-oriented. They are cautious and calculating and like to know the details. You won’t get the best from those with a compliant style if you ask them to cut corners and rush a decision.

The clashes in a team are likely to be between opposite styles. “This doesn’t mean they can’t work together – they work together incredibly effectively because they have opposite strengths and challenge areas,” Carolyne explained.

Team vision and values

To ensure we get the right “fit” for the team when recruiting, it is important to be able to communicate the team values and vision. “Every practice is different. Some will be charity practices, some community practices, some all about profit. It doesn’t matter what your vision and values are, but it’s important that you know what they are and are communicating them,” Carolyne said.

A person’s values should be matched to the work they are doing as much as possible. It might seem obvious that the team will be respectful, but assumptions are dangerous, Carolyne warned. Each value will represent different behaviours for different people; to create autonomy, there should be dynamic conversations with the team about everyday behaviours that represent the practice values.

Strengths and weaknesses

“How as a team can we enhance our strengths and overcome our weaknesses?” Carolyne asked. People should know what they are doing, how to do it and why they are doing it. They should be able to go home feeling happy, feeling that they have a purpose and are learning and developing along the way, she explained.

Carolyne described several considerations in understanding somebody’s role: their purpose (make sure job descriptions are reviewed and tweaked to the individual), their degree of control (how much autonomy do they have to be self-directed?) and their options for learning and developing. Ask yourself now, do all members of your team know exactly what you expect of them and what they should expect of you?
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Anorexia in tortoises

Exotics expert Neil Forbes discussed the causes, diagnosis and management of anorexia in tortoises at the 2018 Vet Festival

Neil Forbes presented several interesting and unique talks in the exotics stream at the Vet Festival on 8 June 2018. In discussing the issue of anorexia in tortoises, he stated that an astonishing 75 percent of exotic animals presented to vets are suffering husbandry or management problems. This means that many owners are failing to provide the “good practice” that is necessary in husbandry as outlined in section 9 of the Animal Welfare Act. The problem may go unrecognised in tortoises, which can survive for years despite suboptimal conditions.

Before a tortoise is brought into the surgery, Neil recommended that receptionists ask specifically what species is coming in so the husbandry can be researched before the patient is seen.

It is not uncommon for tortoises to present with anorexia. The problem is often associated with dehydration, metabolic exhaustion, ongoing or chronic disease, runny-nose syndrome, post-predator attack, egg retention or parasitic disease. Anorexia will very often be associated with hibernation, but Neil advises taking an X-ray if the anorexic tortoise is female to check for eggs in the bladder – these patients would require a plastronectomy.

Hibernating a tortoise

Note that not all species of tortoise hibernate, and no tortoises weighing under 200g should be hibernated, Neil said. One of the key pieces of advice Neil said he could give was to record the contact details of those clients with hibernating species so they can be invited for a pre-hibernation check in late September.

Advice for the period before hibernation was to keep the temperature at less than 15°C with decreasing daylight. The tortoise should be starved for three to four weeks and bathed regularly to improve hydration; it is a myth that tortoises should not be disturbed when hibernating – in fact, they should be checked weekly.

The tortoise should be hibernated between 2 and 8°C (ideally at 5°C). Hibernating tortoises should be protected from temperature extremes, car fumes, predators (including rats) and ill health, Neil said. He advised that it is safe for the tortoise to lose 1 percent body weight per month, but not more than 8 to 10 percent body weight during the total hibernation period.

If left alone, a tortoise will come out of hibernation around April (after five or six months). This is far longer than in nature – hibernation should not exceed 20 weeks, or 15 for smaller tortoises. When ending hibernation, the temperature should be increased gradually over several hours to 15°C or more, which will start to prepare the metabolism. Neil advised that tortoises be placed in a bright, warm environment and bathed twice a day to encourage drinking, urination and defecation.

It was recommended that owners also be contacted for a post-hibernation examination. This should involve checking weight, doing a physical exam, blood tests if required, assessment of husbandry, re-evaluation of hibernation period and intervention as necessary.

Post-hibernation anorexia

It is key to note that if the tortoise hasn’t drunk within 48 hours of coming out of hibernation or hasn’t eaten within a week, it needs to be seen by the vet, Neil said. It will typically require an oesophagostomy tube. Failing to urinate more than once in six weeks has a grave prognosis, he warned: “We need to prevent tortoises getting to that stage.”

Causes of post-hibernation anorexia include:

- Excessive length of hibernation
- Low white cell count
- Failing to reach preferred optimum temperature zone after waking up
- Disease or trauma during hibernation
- Undetected chronic disease

Take a history of progress compared to last year, including signs of infectious disease, and talk to the owners about nutrition and routine health checks. If a tortoise is anorexic, perform a clinical examination and take an X-ray; also obtain faecal/urine samples and blood samples for haematology and biochemical analysis, Neil advised.

To treat anorexia, correct dehydration. Fluid therapy should be used (Neil’s preferred method is via the pre-femoral fossa) and urination achieved. He said that blood glucose should be increased and concurrent disease treated, ensuring there is an optimal environmental temperature and appropriate nutrition is provided.

Neil strongly recommended inserting an oesophagostomy tube – it allows for easy feeding and medicating, has minimal stress to the patient and is long-lasting, inexpensive and simple for the owner to use. Reptiles get sick slowly and recover slowly, he explained, highlighting that anorexic tortoises may not be self-feeding for one or two months.

The take-home message was that reptiles are often poorly understood and provided with suboptimal husbandry, so it is important that veterinary surgeons understand how to advise owners on looking after their pet tortoises. It will take a long time for a tortoise to get better, so treat it over a few months and advise the owners on best care to prevent issues in the future.
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Dealing with conflict

At the Cx Congress, Andy Roark explained six key tools to “keeping calm and carrying on” when faced with difficult situations in practice.

Using an organisational approach adapted from the hotel, restaurant and airline industries, Andy Roark offered delegates at the 2018 Cx Congress in Nottingham a guide to dealing with angry pet owners. He explained that there are three measurable outcomes that should be kept in mind throughout: word of mouth likelihood, word of mouth valence, and intention to re-purchase.

Timeliness
The first aspect of the model, Andy explained, is the perceived speed with which a response is given. Perceived response time is much more important than actual response time and impacts client satisfaction but not retention, he said.

The acceptable response time will depend on the context and the mode – how serious is the complaint and how are they complaining? You will have to respond much quicker to a client on the phone about an injury sustained in practice than to a letter from a client who doesn’t think their cat’s nails were clipped short enough, for example.

Andy emphasised the importance of controlling expectations. If it is Tuesday and you say you will call the client tomorrow, and you do ring them on Wednesday, they won’t be impressed. If you say you will call them by the end of the week and call them on Wednesday, they will be impressed. Remember that “I’ll call you right back” doesn’t mean the same thing to the client and to the vet!

It is beneficial to give the perception of immediate action. Call them immediately and say you’ll figure out what happened and set a clear timeframe for when you will get back to them with a plan, he advised.

Facilitation
This refers to the systems in place for allowing pet owners to give feedback and for dealing with angry clients. The first step, Andy said, is to get them out of the waiting room and into another room. “But don’t leave them there – get the right person in to talk to them. Tell them how long it will be.” The opportunity to vent feelings significantly increases satisfaction and decreases word of mouth.

“If somebody is mad at you, the best person they could express that anger to is you – because you won’t tell anybody else,” he said, highlighting that it’s “better to be blasted on the phone than over Facebook”.

Apology
The problem with apology is that practices don’t want to admit that a mistake was made. They worry about liability. If it’s a legitimate complaint, Andy strongly advised saying you’re sorry. Show understanding for the client’s dissatisfaction without admitting guilt: “I’m so sorry that you’re feeling this way”; “I’m so sorry for your frustration”. Always apologise for a communication failure, he said.

Redress
This is the benefit complaining clients get from the practice. Compensation has a positive effect on satisfaction and client retention. Higher compensation correlates with higher customer satisfaction up to a point. It’s not usually about the money though, Andy said – they want the issue to be corrected. “If you don’t appear to care, then giving them their money back doesn’t really matter. You have to be attentive,” he explained, noting that redress doesn’t have to be money – it could be a coffee for a long wait, free nail trims or a gift card. In some cases, it may make sense to give a free consultation and medication, but remember to give the client a receipt with the prices crossed out to show its value.

Credibility
This element is often missed and makes a significant difference. Redress without an explanation makes you look guilty. Andy advised that the practice acknowledge the complaint, investigate what happened and explain the problem, why it happened and how it will be prevented from happening again.

Attentiveness
Andy left the most importance factor until last – attentiveness. This is what is said and how it is said, and is the number one most important factor in satisfaction, retention and word of mouth. It is also the most difficult dimension to consistently control, he said. Make sure all members of staff show respect for the client and actively engage with them, ensuring they feel heard. Consider your body language, come out from behind barriers and take notes to show that you are treating them as an individual, even if you are using a system.
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XX-VCJCMS-01-17
Antibiotic susceptibility testing (AST) is one of the key elements of microbiology, and can have great consequences on the choice of antimicrobial used. After an isolate has been identified, AST should be performed to confirm susceptibility to the chosen empirical antimicrobial agent, and to detect acquired resistance in individual isolates. Once susceptibility patterns have been determined, a clear clinical treatment plan can be developed.

The most frequently used industry methods are Kirby-Bauer disc diffusion, automated instrument systems, such as the VITEK, or the antimicrobial gradient method using E-tests (Figure 1). All three methods are governed by international and/or European standards which are set by the Clinical Laboratory Standards Institute (CLSI) and the European Committee on Antimicrobial Susceptibility Testing (EUCAST), respectively. CLSI has veterinary guidelines (CLSI Vet), whereas EUCAST currently has a subcommittee, “VETCAST”, which has not yet published veterinary guidelines.

**Kirby-Bauer disc diffusion**
One of the most commonly used methods of AST in veterinary laboratories is Kirby-Bauer disc diffusion, which uses small discs impregnated with specific concentrations of antibiotic to determine sensitivity. Pure colonies are taken from a bacterial isolate and mixed with demineralised water to produce a standardised concentration, which is determined by using McFarland Turbidity Standard 0.5. The solution is then spread evenly over a Mueller Hinton agar plate. The antibiotic discs are then placed on the surface of the agar and the plate is incubated for 18 to 24 hours at 37°C.

The following day, zone diameters are read using either a ruler or callipers. The zone size is then determined as susceptible (also “sensitive”), intermediate or resistant, based on the clinical break point diameters provided by relevant guidelines. Zone sizes differ for each antibiotic and also vary depending on the organism, therefore identification of an isolate prior to AST is essential. While this is a qualitative method, it still provides useful information regarding appropriate use of antimicrobials for the veterinarian.
Automated instrument systems
Automated instrument systems have greatly improved the standardisation and turnaround time of identification and AST. Most systems utilise reagent cards that contain micro-litre quantities of antibiotics and test in a 64-96 well system to implement repetitive turbidimetric monitoring of bacterial growth. Growth is regularly monitored to produce data as quickly as possible. The turbidity of the solution indicates the sensitivity of the isolate based on the minimum inhibitory concentration (MIC). The instrument systems have advanced computer software used to interpret susceptibility patterns for each organism, including “expert systems” for analysing test results for atypical patterns and unusual resistance phenotypes.

Antimicrobial gradient method
The antimicrobial gradient method determines AST by establishing an antimicrobial concentration gradient in an agar medium; the point to which the isolate grows determines susceptibility. The isolate is taken from the original growth plate and mixed with saline to a McFarland Turbidity Standard that is determined by the E-test application guide, then spread evenly over a Mueller Hinton agar plate. Plastic E-test strips impregnated with antibiotic on the underside are placed onto the agar surface. The MIC value (as dictated by relevant standards) is determined by the point at which the growth intersects with the strip (at the bottom of the ellipse shaped inhibition area).

Intrinsic resistance
With all methods of susceptibility testing, each organism has its own reference breakpoints as advised by the EUCAST/CLSI standards. Each organism type must be assigned a target panel of antibiotics with individual reference zone sizes, because zone size diameters for the same antibiotic vary between organisms. With some organisms, reference breakpoints can vary within a genus. *Staphylococcus pseudintermedius* and *S. aureus* for example, have different breakpoints for assessing sensitivity to penicillins and cephalosporins.

Some organisms also have greater intrinsic resistance, and therefore have a more limited panel of target antibiotics. A prime example of this is *Pseudomonas aeruginosa*, which has developed intrinsic resistance to multiple first-line antibiotics, so only a limited panel of antibiotics can be tested (Figure 2). *Pseudomonas* frequently develops resistance to antibiotics during therapy so retesting the isolate is recommended when cases are slow to, or do not, resolve clinically.

Intrinsic resistance varies among species and within genera, and can greatly aid in decisions regarding initial drug choice. Intrinsic resistance is the innate ability of an organism to resist the action of a specific antimicrobial agent, as a result of its inherent characteristics. For example, enterococci are intrinsically resistant to all drugs in the cephalosporin class. This is because the drug action works by binding to a peptidoglycan binding protein, which enterococci do not possess. The EUCAST “Intrinsic Resistance and Exceptional Phenotypes” table can be found on the EUCAST website and contains the intrinsic resistance profile of a multitude of organisms.

Knowledge of intrinsic resistance is essential in initial treatment choice, and can be particularly useful in drug choice for treating topical infections. Gram staining ear cytology smears can greatly narrow down the choice of antibiotics that are available for use (Figure 3). For example, all gram-positive organisms are intrinsically resistant to polymyxin B, and all gram-negative organisms are resistant to fusidic acid. The reader is referred to the EUCAST website for more information on intrinsic resistance patterns.

Gram-positive bacteria are also intrinsically resistant to aztreonam, temocillin, polymyxin B/colistin and nalidixic acid.

Acquired resistance
Acquired resistance is the ability of an organism to resist the activity of a specific antimicrobial agent to which it was previously, or is expected to be, susceptible (and does not include the antibiotics to which it is intrinsically resistant). Common examples of acquired resistance include methicillin resistant staphylococci (MRSA) and extended spectrum beta lactamase producing organisms (ESBLs). MRSA are predicted using either molecular methods or inference from sensitivity patterns (penicillin and cefoxitin/oxacillin), combined with detection of beta-lactamase production. ESBL-producing organisms develop resistance to all penicillins and cephalosporins. This phenomenon is seen in gram-negative organisms including *E. coli, Enterobacter* and *Klebsiella*, and can be detected with disc detection kits. Monitoring trends in acquired resistance can greatly help identify patterns of resistance and incidence locally and internationally. At practice level, it can also aid in detection of any nosocomial (hospital acquired) infection patterns.
Laboratory information management systems can improve the lab process, enabling instant recall of results

Veterinary contract laboratory services can cover a wide range of disciplines, including: biochemistry, haematology, microbiology, endocrinology, immunology, molecular biology, histology, cytology, serology, semen analysis, post-mortem and allergy testing. Not only must laboratories provide a high quality comprehensive service with a fast turnaround, but pricing must also be competitive.

Efficient management of the laboratory process helps to keep costs down and improve service levels. This can be particularly important for organisations which have more than one laboratory, where the management of samples and collating of results is more difficult. Laboratory information management systems (LIMS) can improve management of the entire process.

### The benefits of using LIMS

Laboratory testing involves the registration of samples; receiving samples into the laboratory; allocation of resources; scheduling and performing tests; entering raw results; calculation of final values and comparing to expected values; and issuing of reports. Key to the efficiency of the laboratory is how the data associated with these processes are recorded and managed.

Laboratories can use a variety of approaches, ranging from recording everything on paper, through basic electronic means using standard programs such as Excel to sophisticated commercial systems. Paper-based systems can be time-consuming to manage, and every time data are copied from one piece of paper to another there is the potential for transcription errors. Basic electronic systems can help with this, but can be unwieldy in accessing information at different stages of the sample’s journey through the laboratory. Answering the question “How many tests have been completed so far on Sample X and what are the results?” may not be straightforward.

Commercially available LIMS, however, are specifically designed to provide functionality for controlling, managing, organising and documenting information within a dedicated database. This not only streamlines the process, reducing the likelihood of process error, but can also provide a complete audit trail so that it is possible to see when and by whom any action has been taken on a sample.

### Optimising the system

Although the basic laboratory testing process will be similar for all veterinary laboratories, no two laboratories will have identical workflows, even if they are carrying out the same tests. Outside the testing process, there are a multitude of ways in which the workflow of laboratories differs: the way samples are submitted for testing, the sample lifecycle, through to the point at which results are authorised and reported and the work charged or invoiced.

The LIMS must therefore be flexible enough to support these different needs and practices. Ideally, the LIMS needs to be “configured” to meet individual requirements, to avoid having to adapt the working practices to fit the structure of the LIMS.

### Practical usage

LIMS can have useful, easy-to-use configuration tools, providing the flexibility to meet the requirements of different laboratories. These tools allow the setup and modification of workflows, screen designs, menu designs, terminology, numbering schemes, report designs and much more without the need for programming or esoteric scripting languages. Features such as rapid barcode scanning, automated invoicing and the full integration of Microchip, Vet XML and VeNOM codes simplify and speed up laboratory processes.

For one contract laboratory, the audit trail capability of the Matrix Gemini LIMS from Autoscribe Informatics, which provides complete traceability of all actions by stamping them with time, date and user ID, was key to improving efficiency. It allowed the identification of bottlenecks within their laboratory. The workflow was then adapted to minimise these. They also interfaced some of their analysers directly to the LIMS, improving efficiency by saving technician time as well as removing data transcription errors.

Another contract service, operating laboratories in four different locations, utilised the LIMS to monitor the allocation of resources across different sites without the need for re-registration. The system manages sample testing at individual sites, sample testing at multiple sites and samples that are tested both internally and at third party laboratories if a test is required that is not available within the in-house portfolio. This includes the management of inter-site sample transfers.

There are many benefits to moving from a simple paper or Excel-based system to a more complex management solution. It is possible for any screen that has been configured for use on the desktop to be available to a user running a web browser. The web-based implementation also provides remote access for out-of-office specialists who may need to review a set of test results. A custom search screen allows the current status of any sample to be determined. When customers phone asking about the progress of a sample or samples, it is quick and easy to give them up-to-date information.
Reflux and regurgitation

Why is the issue so common in small animals during anaesthesia and how can it be prevented?

S

ometimes the best CPD is some that you hadn’t considered attending in the first place. I’d seen the Exhibitor Stream at BSAVA Congress and had noticed the Docsinnovent lecture, but hadn’t made concrete plans to attend until I’d stopped by their stand and had a chat with Chris Geddes, Dawn Sheppard and Muhammed Nasir.

Most people have probably heard about their v-gel product for rabbits, but I hadn’t seriously considered their cat product, nor their forthcoming dog product. Why? Probably for the same reason as everyone else – I’m not at all comfortable intubating rabbits, but intubating cats and dogs? No problem.

Well, maybe I was missing a trick. It turns out the reason Docsinnovent came up with the v-gel was not for ease of insertion at all, but to avoid some of the problems that can occur with ET tubes. In cats, not causing laryngeal spasm or tracheal rupture is a big bonus. In dogs, I was told, managing reflux and regurgitation will be a major benefit.

I’ll admit, I wasn’t initially convinced – after all, reflux is rare, isn’t it? Regurgitation’s even rarer, I thought – that’s why we starve our patients, and why we tube them, and that sorts things out nicely, doesn’t it? When was the last time you saw a patient regurgitate under anaesthesia?

Still, it sounded like there was more to learn. So, a few hours later I was listening to “Reflux and regurgitation: what can you do to protect your small animal patients during anaesthesia?” with Ivan Crotaz and Muhammed Nasir.

By the end of it, I felt like I had met Luke Skywalker, except he’d just finished telling me: “Incredible. Every word you just said was wrong.”

Full credit to Ivan and Muhammed: unlike Luke Skywalker, they spent the hour courteously, respectfully and effectively taking attendees on a tour of just how reflux and regurgitation works, and how often (and why!) it happens in the first place – and why it’s a bigger problem than I realised.

Muhammed discussed data from the human side, and I was impressed at just how extensive the research was – thousands of patients over decades, with anywhere from 10 to 80 percent of patients having some form of reflux- or regurgitation-related complication. Obviously this depends significantly on quite a few comorbidities and complicating

or emergency situations, but Ivan went through a review of the more limited veterinary data, which showed reflux in 13 to 55 percent of patients (33 percent in cats!). There was more going on than I thought.

It was pointed out that as a surgeon, I’m poking around inside the patient, and unless I happen to be looking down the throat in the middle of a bitch spay, I’m probably not actively looking for reflux. Neither is the veterinary nurse – they’re busy monitoring the anaesthetic, and unless they have a pressing reason to look down the throat, they’re taking the clinical parameters externally.

Many of the issues that increase the risk of reflux and regurgitation are connected directly to the upper and lower oesophageal sphincter. Ivan’s descriptions of the function and anatomy of the oesophagus were excellent. Essentially, a combination of anatomical and physiological factors ensures the “valves” don’t release acid or bile into the oesophagus.

Unfortunately, many things can interfere with this mechanism. There are breed predilections (deep or barrel-chested animals), and risks from obesity (one more reason not to like fat bitch spays!) – with interesting things having an effect. I was surprised to hear that right lateral recumbency increases the risk of reflux, for instance. And while “legs over” turning won’t cause a stomach twist, it can increase the risk of reflux significantly – as will leaving a patient’s head stretched out straight.

It will surprise no one that pushing up on the stomach or increasing pressure in the cranial abdomen may increase your risk of reflux, and with it oesophagitis, post-operative pain, oesophageal strictures, laryngospasm and aspiration pneumonia. Longer periods of fasting can increase risks – in fact, the American Animal Hospital Association now recommends five hours starving before anaesthesia.

Canine v-gel will have a small channel that directs reflux well out of the airway – it’s a clever design, and you can insert a small catheter and flush (and suction) the oesophagus with saline (and acid binders) to prevent mucosal injury. Until it’s available, an oesophageal tube can be used alongside an ET tube to direct reflux away from the vulnerable oropharynx. It’s worth noting that according to Ivan and Muhammed, while a mildly cuffed low pressure ET tube is helpful, it’s not an ironclad defence against aspiration.

I’m going to be actively looking for reflux now, and not just regurgitation. We’re likely to be getting some v-gels in for our high-risk patients, now that I know who they are. Fasting recommendations are going to be overhauled as well. Ivan’s recommendations for pre-anaesthetic medication in at-risk patients (proton pump inhibitors or H2 blockers) are also going to get a trial.
Does evidence support raw food diets?

Recommendations stating the nutritional and health benefits of raw food diets are based on very weak or even non-existent evidence

Feeding a complete or primarily raw food diet is an increasingly popular option being taken up by pet owners, but analyses of the evidence corroborate the reality that research is severely lacking. Feeding cats and dogs on raw diets should be approached with caution until adequate evidence is garnered, conclude two reports in Veterinary Evidence.

“The majority of scientific research on these diets focuses on food safety and zoonosis risks, whereas the effects of raw food diets on animal health remain mostly unknown,” said Nieky van Veggel, a companion animal health and nutrition expert and Senior Lecturer in Bioveterinary Science at Writtle University College.

“Vets and vet nurses should ensure owners are aware of the risks involved in feeding raw food diets so that owners can make an informed decision.”

The evidence (or lack of)

Much of the research into this area has focused on the risk factors for infectious disease – in humans and animals – associated with the possible existence of pathogens, particularly in raw meat, and subsequent contamination of the environment surrounding a pet and its owner.

As a result, there is a gaping hole in the evidence, and the wider health and nutritional benefits or risks of raw food diets remain relatively unknown. This has been demonstrated by two Knowledge Summaries in Veterinary Evidence.

In April 2018, a search of the available veterinary literature was conducted in an attempt to answer whether raw food increases the risk of kidney stones in dogs compared to feeding a dry kibble diet. The evidence in the report – entitled: “In adult dogs, does feeding a raw food diet increase the risk of urinary calculi formation compared to feeding a complete dry kibble diet?” – amounted to just one study that provided weak evidence that neither supported nor challenged the hypothesis.

Even more striking was the outcome of a literature search in 2017 targeted towards finding out whether a raw food diet was more effective than kibble at reducing periodontal disease – not a single piece of relevant research was identified. The authors of that Knowledge Summary – “In dogs with periodontal disease is feeding a complete raw meat diet more effective than a complete kibble ‘dental’ diet at reducing periodontal disease?” – highlighted this discovery as “representative of the lack of research on raw feeds and feeding”.

These examples are not exceptions. A 2011 article in The Canadian Veterinary Journal, entitled “Raw food diets in companion animals: A critical review”, stated that, at the time of its publication, not one study looking at the nutritional risks or benefits of raw meat feeding in dogs and cats existed in the top three levels of evidence. The only published information was of poor quality or not reliable.

As a result, and since the majority of current recommendations for the adoption of raw food diets come from anecdotal sources, Nieky said: “Vets should advise owners interested in raw food diets to follow strict food hygiene guidelines, and use their clinical experience to determine whether a raw food diet is right for individual patients.”

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The importance of behavioural medicine to animal welfare

Behaviour problems often lead to pets being relinquished or euthanised; it is important that behavioural medicine is taken seriously and animals are referred where necessary.

Veterinary behavioural medicine (VBM), otherwise known as clinical behavioural medicine of animals, is considered a relatively new discipline within the branch of veterinary internal medicine. The field of veterinary behavioural medicine occupies itself with the diagnosis, treatment and prevention of behaviour disorders in animals.

Animal behaviour problems are a major welfare concern as they are one of the primary reasons animals are relinquished and veterinarians are requested to euthanise animals. Welfare is further compromised if these animals are also subjected to inaccurate diagnoses or flawed treatment strategies – even if correctly diagnosed. As such, a significant welfare problem becomes apparent and the need for the development of VBM within the veterinary profession is serious.

Causes of behaviour problems

Behaviour problems may have various and sometimes multiple causes or predisposing factors. Obviously, genetics, the environment of the animal and the presence of non-behaviour disorder related disease processes could play a role. Let’s explore some other examples.

There are a number of reasons why dogs may bite people, for example:

1. They’ve been inadvertently rewarded for biting or nipping as a puppy (such as shooing the dog or trying to punish it but actually causing it more excitement, or petting or praising it at the wrong time);

2. They feel a need to defend themselves if they feel threatened, which sometimes occurs at the vets and in the presence of over-zealous children; or

3. They have an emotional regulation disorder such as impulse control aggression.

The latter cause, impulse control aggression, describes truly pathological behaviour. Dogs with this condition may develop it in spite of correct human handling, socialisation and the provision of an optimal environment and routine. Thus, it is often not the owner’s fault at all. This condition is commonly misdiagnosed and confused with dominance aggression (which is no longer considered a correct veterinary diagnosis) or American Cocker syndrome. Incorrect handling of any of the issues mentioned above can lead to the problem worsening and people being seriously bitten.

The veterinary practitioner must be aware that behaviour disorders can occur in animals and are a serious welfare concern. Like in people, they are caused by chemical imbalances in the brain. The literature on these mental health problems in animals deals mainly with dogs and cats, but there is more and more evidence of behaviour disorders in other species.

Diagnosing behaviour problems

Veterinary behaviour specialists (VBS) rely on measuring behaviour through direct and indirect observation, questionnaires and consultation for patient monitoring. This provides detailed phenotypic descriptions thought to reflect the emotional state of the animal, as well as other information. At a research level, brain scans are available in some countries to quantify chemical imbalances in the brain, which may be discrete enough to inform diagnoses of neuropathology.

Behaviour problems in horses

Horses are also often relinquished, euthanised or sent to slaughter as a result of apparently intractable behaviour problems. Most likely, as is the case in dogs and cats, these problems would not be that difficult for a VBS to diagnose and treat. Horses often present for aggression problems,
An incredible resource for gorilla vets and pathologists

Students spend innumerable hours studying cats and dogs in vet school; they see these animals every day during their placements in small animal practice and once graduated, are encouraged to follow an evidence-based approach to treating all their patients. For wildlife vets and pathologists, particularly those involved with conservation work, useful information is likely to be far sparser and divided between an array of books, papers and unpublished resources.

How would a veterinary surgeon know where to begin when tasked with understanding the pathology of a critically endangered ape? Well, John E Cooper and Gordon Hull’s Gorilla Pathology and Health would, without doubt, be the best place to start.

The book is difficult to put down – not least because of the plight of having to find a space large enough to occupy it on the bookshelf. Containing 631 pages, the A4 text certainly could not pass for “light reading“. Its size may make the book awkward to read in bed, but it has allowed the authors to cover topics in fantastic detail and has meant that the wealth of information could be enhanced with a great selection of beautiful photographs and illustrations.

The first section of the book, written primarily by John E Cooper, who is a specialist veterinary pathologist with vast experience in wildlife pathology, considers pathological changes and tissue responses in gorillas. It is written mostly with reference to animals in the wild, but does draw on information from those kept in captivity. The chapters cover the history of primate pathology, infectious and non-infectious disease, methods of investigation and detailed information on the pathology of various body systems.

His wife, Margaret E Cooper, a lawyer with a keen interest in wildlife law, has contributed an interesting chapter on legal considerations, particularly with reference to gorilla conservation.

The second part of the book, the reference catalogue, is an incredible feat. The immense collection of data (listed by locality and documenting useful information about each specimen, including accession numbers) has been gathered from materials held all over the world. This section was largely composed by Gordon Hull, an enthusiastic naturalist and member of the Gorilla Pathology Study Group. It provides a “one stop shop” for data on gorilla materials that might otherwise have been difficult to find, or even inaccessible. The information could have great implications for research projects and could surely aid the development of methods employed in conservation programmes.

An invaluable resource for any veterinary pathologist or surgeon who may encounter gorillas in their work, this book is also a fascinating read for anybody with an interest in wildlife. It covers everything from taxonomy to welfare and provides useful comparisons with other species, including our own. This book is a very high quality resource that contains an immense collection of logically organised, difficult to come by information.
Handling difficult dental cases

A complex odontoma case in a German Shepherd highlights the importance of a good diagnostic work-up

Nala, a healthy female neutered German Shepherd, was referred to North Coast Veterinary Specialists because of marked gingival swelling affecting the right caudal maxilla and right caudal mandible. The referring veterinarian identified the swellings on a routine examination. A comprehensive oral health assessment and treatment (COHAT) was performed for Nala.

Clinical findings
On the right side, there was marked gingival enlargement involving the caudal maxilla and mandible (Figure 1). In the right caudal maxilla, tooth 108 (right upper PM4) was missing and tooth 109 (right upper first molar) was partially erupted. In the right caudal mandible, tooth 409 (right lower first molar) was missing and tooth 408 (right lower PM4) was buccally rotated. There were also tooth-like projections piercing through the gingiva in the 104 (right upper canine), 108 and 409 sites.

It is important to offer intraoral radiographs when confronted with a missing tooth or teeth to see if the tooth is missing or impacted, or has associated pathology. In this case, a whole mouth series of radiographs were taken, utilising the iM3 CR7 and the large size 4 and 5 plate to reduce the number of exposures required for the series.

Radiographic findings
The caudal maxilla and caudal mandible showed several varying density structures and supernumerary teeth overlying the impacted (108/409) and partially erupted (109) teeth (Figure 2). Based on the clinical appearance, radiographic findings and age, a clinical diagnosis of multiple complex odontomas (considered benign odontogenic tumours) was made associated with the impacted/partially erupted teeth.

Treatment
Treatment consisted of enucleation of the odontomas and extraction of the impacted/partially erupted teeth as well as rotated tooth 408. Based on experience, block resection of these tumours is usually not required. The clinical diagnosis was confirmed on histopathology.

Pre-surgery nerve blocks were performed, and the odontomas were excised, followed by the extraction of the supernumeraries and careful sectioning and extraction of the multirooted teeth 108/109/408/409. The LED high-speed handpiece (iM3) proved very helpful in the extraction process due to the depth of impaction of teeth 108/409. No bone graft was required, and primary closure of wounds was performed.

Post-operative radiographs were taken to confirm the complete removal of the teeth (Figure 3). On recheck one week later, Nala was her normal self.

This case emphasises the importance of a good diagnostic work-up, which, in this case, included a full mouth series of intraoral radiographs with the larger size 4 and 5 plates (minimising the number of exposures required). The case also emphasises the importance of interpretation of these radiographs which assisted in coming to a quick clinical diagnosis. Management of this case was thus straightforward.

Remember that it is especially important when identifying a missing tooth (or teeth) in a young animal to always take intraoral radiographs to determine whether the tooth is truly missing or is impacted or has pathology associated with it.

ANTHONY CAIAFA
NORTH COAST VETERINARY SPECIALISTS
Anthony Caiafa, BVSc, BDSc, MANZCVS, is a veterinary dentist who is also qualified as a human dentist. He has owned and worked in small animal practice and currently accepts dentistry referral cases at North Coast Veterinary Specialists in Australia.
Meditation for beginners

The amount of time a person spends concentrating on “nothingness” in the morning can correlate with their level of happiness throughout the day.

So many people tell me “I don’t have time to meditate”. That is understandable in a world where we’re multi-tasking from the moment we wake to the moment we go back to sleep. Others say they get everything they need from playing tennis for an hour, or doing some other activity they enjoy. For that hour, they are so caught up in what they are doing that it feels as though they are hopping off the world for 60 minutes for a breather. And it feels good. It can be looked on as a form of mindfulness: focusing our minds on the present moment, on purpose.

Distraction from all that is going on in our heads and in our lives is nearly always welcomed as a break. And that is part of the reason we become hooked on tennis, soap operas, books or watching sport.

Some argue that if we took the time to meditate and to identify with (but not to over-identify with) all that’s going on in our heads, the activity would become even more enjoyable because it wouldn’t be under pressure to be the only means by which we grab an hour of sanity. In other words, if we could accept and observe our emotions during meditation, we would no longer feel the need to escape from them.

Mindful meditation
During mindful meditation, we get inside our own heads; we calm them down and create a safe, open space. In that space, we identify our emotions one at a time. It is important to not "become" an emotion but rather to observe it as an onlooker. Once identified, it can be much easier to choose our response to that emotion and when we have decided on a response, that becomes what happens next – simply because we have chosen it.

So mindful meditation can’t be a bad thing. It’s just a question of when to fit it in. It isn’t easy at all, but it is very simple. Mindful meditation takes practice. The first few times, you may be distracted after five seconds. With daily practice, you can achieve up to an hour or more of meaningful meditation, with instant results.

For very basic meditation, step by step you are aiming to:

- Gain control of your busy mind
- Observe an emotion
- Formulate a plan of internal reaction to the emotion
- Resolve to carry out that reaction
- Reaffirm that you have control of your mind
- Before returning to your day, decide your overriding mood (eg positive, upbeat, compassionate)
- Start the day

For the next two issues, we will focus on gaining control of our minds and emptying them of junk. Anyone can learn to meditate. I urge you to do this every morning so that it becomes a habit – a way of life.

With very little time, you will become masterful at this and be ready for next issue’s topic: considering how to observe and deal with one emotion at a time and formulating internal and external responses to those emotions.

A useful challenge, especially during the brighter months, would be to set aside half an hour each morning to practice. Having a coffee while you get settled makes it less torturous. So, coffee in hand, find a comfortable place to sit. Often on your bed. We aim to be alert, so sit upright, legs crossed or not.

Laura Woodward has been the surgeon at Village Vet Hampstead for over 10 years. Laura is also a qualified therapeutic counsellor and is affiliated with the ACPNL and the ISPC. She runs Laurawoodward.co.uk – a counselling service for vets and nurses.

Laura Woodward Counselling

Laura Woodward has been the surgeon at Village Vet Hampstead for over 10 years. Laura is also a qualified therapeutic counsellor and is affiliated with the ACPNL and the ISPC. She runs Laurawoodward.co.uk – a counselling service for vets and nurses.
Gain control of your mind
Gaining control of your mind is easier said than done. The mornings can be the time of day we are frantically triaging all that needs to be done. Remember you’ve got up early to do this. You have "made time". So, the day’s organising can wait until you are finished. If it helps, set a second alarm for the time you normally get up so that you don’t have to watch the clock while meditating. Most people can equate the number of minutes they spend concentrating on "nothingness" with their level of calmness, and often happiness, that same day.

Methods to gain control can include mindful drinking, mindful breathing and body scan exercises.

Mindful drinking
Look at the coffee in your hands and concentrate on it. Feel the heat of the cup on each hand. Smell the coffee. Feel the temperature as you take a drink. Taste it in every part of your mouth. Observe it being swallowed. Taste the aftertaste. See if you can feel a caffeine hit with each sip.

If you have concentrated on mindful drinking and nothing else for one minute, you are doing well. Over the month, a good aim would be to extend this time to five minutes.

Each time you find yourself going off on a tangent, don’t berate yourself; it’s not a mistake. Just gently come back to the present moment and the task in hand.

Mindful breathing
Next, try to just sit and observe your breathing. It doesn’t have to be active deep breaths, just notice the fact that you are breathing and focus on the tip of your nose.

If this is difficult, try counting your breaths. See if you can get to 60 without your mind wandering away. If it does, gently bring your focus back. Maybe for the first few sessions you can only get to five breaths before your mind wanders off. Remember that every time you extend your pinpoint concentration by one breath, you are becoming more masterful at meditation.

Mindful body scan
Now that you’re awake, you can try mindful body scan – another great way to be mindful. Focusing on "nothing" is extremely hard to do for lengthy periods of time. Beginners find it easier to focus on something.

Body scan involves total concentration on individual parts of our body one at a time from the top of your head to your toes, gradually moving down along your body. The slower you can do it without losing focus, the greater will be the benefits. If you are managing to concentrate well, slow it down further. By this point, you should feel a degree of control over your mind and be ready to use this space to your advantage.

In the next issue, we’ll talk about how to observe an emotion without over-identifying with it, and how to formulate a plan of action when faced with that emotion. In the meantime, I wish you good luck with your practice.
Canine hookworm dermatitis (Uncinariasis)

Diagnosing and treating the condition which, in the UK, is most commonly caused by the northern hookworm

There are three species of hookworm that are of significance in Europe. These are *Ancylostoma caninum*, *Ancylostoma tubaeforme* and *Uncinaria stenocephala*.

In the UK, *Uncinaria stenocephala*, also known as the northern hookworm, is the most common, and is consistently found at a low prevalence in dogs. This is surprising as the opposite is true in foxes, where there is a much higher prevalence. Wright and Wolfe (2007) found a prevalence in domestic dogs in a region of northern England of 3.75 percent. A higher prevalence may be seen in breeding, racing and hunt dogs, particularly those with poor husbandry.

*Ancylostoma caninum* is only sporadically seen in the UK, and it is considered a parasite of warm climates. The prevalence could increase due to inadequate worm control of dogs that have been in continental Europe and as a result of climate change, but this article focuses on *Uncinaria*, which is currently more common.

Life cycle of *Uncinaria stenocephala*

Adult *Uncinaria stenocephala* worms are small, measuring 10 to 20mm in length, and are located in the final quarter of the small intestine. Blood sucking is minimal with these worms compared to *Ancylostoma*. The life cycle is direct, with eggs (shown in Figure 1) passed in the faeces developing to third stage larvae (L3) in the environment. When these are ingested, they develop to adult worms in two to three weeks.

L3 larvae can penetrate the skin and cause cutaneous signs, but they do not establish an intestinal infection through this route (although this is possible with *Ancylostoma caninum*). There is no marked somatic migration and no transfer to pups via milk.

Clinical signs

Intestinal signs are uncommon but diarrhoea is possible with heavy infections. Signs are predominantly cutaneous and are caused by L3 larvae penetrating the pads, interdigital skin and skin in contact sites.

Early lesions are papules with cutaneous erythema. More chronic lesions are swollen and painful pads with intensely erythematous interdigital skin (Figure 2). Hyperkeratosis of the pads with fissures (Figure 3) is often marked in severe chronic cases. Having both interdigital and pad lesions is highly suggestive of hookworm dermatitis. Pedal lesions are possible in people if they walk barefoot on contaminated ground, causing a disease known as "creeping eruption".

Differential diagnosis

- Demodectic pododermatitis
- Irritant contact dermatitis
- *Pelodera* dermatitis
- Atopic dermatitis with secondary bacterial or *Malassezia* infection
- Necrolytic migratory erythema
- Pemphigus foliaceus
Rehydrate to help maintain healthy skin

Ermidrà® - shampoo, spray & foam

Rehydrating and moisturising shampoo, spray and foam for itchy, dry skin.

Veterinary Dermatology is our field. It’s what we do!
Diagnosis
The history is important in making the diagnosis, as most cases of hookworm dermatitis are associated with poor husbandry. The dogs are often housed on dirt runs or grass with others, and there will have been inadequate worm control. Many cases have been reported in greyhounds, although any breed of dog kept in poor conditions could be affected.

In suspected cases, rule out differential diagnoses and perform cytological examination of tape strips, hair plucks and skin scrapings. In severe cases, consider biopsy. Faecal flotation can be used to detect eggs.

Dermatopathology can be undertaken. Biopsy may be useful to rule out demodectic pododermatitis in chronic cases. Otherwise, histological examination is frequently non-specific, with perivascular dermatitis containing eosinophils and neutrophils. Note that larvae are rarely found in tracts. Monitoring the response to treatment can also help in making an accurate diagnosis.

Treatment
Affected dogs and in-contacts should be treated with a product that has a licence for treating Uncinaria. Regular anthelminthic treatment should be instigated based on risk assessments and consideration of an overall parasite control regime.

Disinfection of the environment and daily removal of faeces is essential. Provide dry bedding subsequently. In cases where dirt runs are unavoidable, treatment with sodium borate (0.5kg per square metre) has been suggested (Hnilica and Patterson, 2017). Note, however, that this treatment will kill vegetation.

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For general information on parasites with suggested guidelines for treatment, visit The European Scientific Counsel for Companion Animal Parasites (ESCCAP UK and Ireland): [esccap.org](http://esccap.org)

**Prognosis**
With regular anthelminthic treatment and attention to good husbandry measures, the prognosis for animals with this condition is good.

**References**

Cat: Tiggy
Breed: Domestic Short-Hair
Owner: Antony Ashford
Loves: Helping animals as a qualified Veterinary Nurse
Years using Seresto: 2

For Antony, Seresto means more quality time with Tiggy and less time worrying about forgotten flea treatments.

UP TO 8 MONTHS OF FREEDOM FROM FLEAS & TICKS.†
Using ear cleaners for otitis externa

REMİ MANDRAY
VETERINARY ADVISOR, VIRBAC

Otitis externa is a very common condition in dogs, but can be difficult to manage successfully in practice. Once the patient has been examined and a diagnosis established, the choice of treatment prescribed will be the key to success in treating otitis externa. A topical antibiotic, antifungal and anti-inflammatory preparation is commonly prescribed. Cleaning the ear appropriately, however, has proven to be very important in the overall management and will vastly affect the success rate.

The choice of manual cleaning with a cleaner versus retrograde flush under general anaesthesia will be dependent on multiple factors, including severity of the symptoms and temperament of the dog.

Were manual cleaning to be chosen, an adequate choice of product with the right properties is crucial. Alongside its physical action, the ceruminolytic agents (such as salicylic acid or lactic acid) and surfactant effect will contribute to breaking up and evacuating the debris, and therefore helping the action of the antibiotic.

The antimicrobial action of an ear cleaner should also be considered as it will help the action of the antibiotic drop in the short term and can reduce the overall need for antibiotics in the longer term.

Agents such as EDTA, parachlorometaxylenol (PCMX) and isopropyl alcohol are widely used and have proven benefits against bacteria like Pseudomonas aeruginosa. Chlorhexidine-based products can be beneficial for fungal infection with Malassezia pachydermatis. Some monosaccharides such as D-galactose, D-mannose or L-rhamnose prevent bacterial adhesion (Pseudomonas, Staphylococcus), significantly reducing the bacterial population. Some products also contain or stimulate the production of antimicrobial peptides (AMPs), which are small, cationic polypeptides that are part of the innate immune system and have clear benefits in the reduction of the antibiotic load required.

Once clinical control of the acute episode is achieved, an ear cleaner will play a large part in the long-term control and prevention of relapses, especially for patients with underlying conditions such as canine atopy or when the ear is damaged and the epithelial migration is poor. The need to demonstrate to clients how to use the ear cleaner cannot be stressed enough. Veterinary nurses can play a great role here, helping to build a strong relationship with the client as well as helping the patient.

The ear canal should be filled with product and the vertical canal gently massaged for 30 to 60 seconds. The material can then be wiped away gently. This should be repeated regularly at a frequency depending on the case; weekly cleaning is the typical recommendation once the ear canal is clean.

In summary, choosing the right ear cleaner according to its properties is vital in the successful management of otitis externa, alongside client education to ensure good compliance.

How important is an ear cleaner in the short- and long-term management of otitis externa in dogs?

The need to demonstrate to clients how to use the ear cleaner cannot be stressed enough.

A full reference list is available on request.
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Exact 1ml dose in 1 press, once a day for only 5 days

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Reaches the affected area using a gentle, atraumatic nozzle

AIRLESS BOTTLE
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POTENT STEROID
HCA is fast acting to reduce inflammation with minimal systemic absorption. The same steroid as Cortavance!

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THE RIGHT COMBINATION, RIGHT WHERE IT’S NEEDED

95% OWNER SATISFACTION WITH EASOTIC²

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  BVSc, DipVetClinStud, PhD, FACVSc, MRCVS, SFHEA, Professor of General Practice, The Royal Veterinary College

- **Professor Ian Ramsay**
  BVSc, PhD, DSAM, DipECVIM-CA, FHEA, FRCVS, Professor of Small Animal Medicine, University of Glasgow

- **Dr Ludovic Pelligand**
  Doc Med Vet, Cert V.A., Dip. ECVAA, Dip. ECVPT, PhD, MRCVS, Associate Professor in Clinical Pharmacology and Anaesthesia, The Royal Veterinary College

- **Dr Zoe Belshaw**
  MA, Vet MB, PhD, Cert Sam, Dip ECVIM-CA, AFHEA, MRCVS, Centre for Evidence-based Veterinary Medicine (CEVM), University of Nottingham

- **Professor David Maggs**
  BVSc (Hons), DACVO, Professor of Comparative Ophthalmology, University of California, Davis

- **Dr Stijn Niessen**
  DVM, PhD, DECVIM, PGCertVetEd, FHEA, MRCVS, Head and Senior Lecturer Medicine, The Royal Veterinary College

- **Professor Lynelle Johnson**
  BA, DVM, MS, PhD, Medicine & Epidemiology, University of California, Davis

- **Professor David Church**
  BVSc, PhD, MACVSc, MRCVS, Vice Principal (Learning and Student Experience), The Royal Veterinary College

...and many, many more!

No matter your background, specialist area or job title, the London Vet Show has you covered! **They will be there. Will you?**
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A considered approach to tackling begging

Begging is a central element of weight management, but is an issue that must be handled with sensitivity

**CAROLINE BURKE**
WEIGHT MANAGEMENT SPECIALIST, ROYAL CANIN

Caroline Burke, BSc, RVN, qualified in 2008 from the University of Bristol. She worked in practices across the UK and Australia before joining Royal Canin. Caroline began as Veterinary Business Manager in 2012 and moved to the Royal Canin Weight Management team in 2016.

Cats and dogs need to be given enough food to maintain a healthy weight and shape; however, overfeeding often plays a part in their weight gain. The PFMA Pet Obesity: Five Years On report established that 75 percent of pet owners understand that overfeeding and giving extras contributes to a pet’s weight gain.

**History taking**

Understanding the owners’ current feeding practices is an important step in implementing a weight management programme; the owners are often required to make fundamental changes to their pet’s lifestyle and their own behavioural relationship with their pet, as well as feeding practices. Use of a food diary can assist in building a full picture of what is currently being fed in terms of volume, any treats, extras and human food that may be given alongside the pet’s daily food allocation.

Owners’ motivations for feeding extras vary, and spending time understanding their reasons and motivations for giving treats or extras helps to create a tailored plan for the pet in question. The PDSA Animal Wellbeing Report (2012) concluded that owners giving treats to pets are often driven by human emotions rather than nutritional need. Almost half (48 percent) of owners provided pets with treats because they believed it made their pet happy, while 29 percent claimed that it made them happy and 14 percent expressed that it was due to their pet’s incessant begging.

Ensuring a non-judgemental approach to understanding this situation can be instrumental in building good client relationships.

**Begging behaviours are often misunderstood**

While the percentage of owners feeding extras as a result of begging may appear low to those in practice, unpublished data from Royal Canin’s Satiety Consumer Study showed that three out of five pet owners state that their pet begs all the time or often. These results indicate that owners may be misinterpreting their pets begging as a need for food/sign of hunger. The role of vets and nurses in practices is therefore to help the owners recognise what else their pet might be asking for, and what they can offer instead of food.

The Satiety Consumer Study found that 58 percent of dog owners believe their dog is begging for human food, while 51 percent believe their dog is begging for attention and only 37 percent felt that their dog was begging for pet treats (Figure 1). Whereas for cats, 60 percent of owners

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**WHAT OWNERS BELIEVE A DOG WANTS WHEN IT BEGS**

<table>
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<th>Human Food</th>
<th>Attention</th>
<th>Pet Treats</th>
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<tr>
<td>58%</td>
<td>51%</td>
<td>39%</td>
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**WHAT OWNERS BELIEVE A CAT WANTS WHEN IT BEGS**

<table>
<thead>
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<th>% Response</th>
<th>Attention</th>
<th>Pet Treats</th>
<th>Cat Food</th>
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<tr>
<td>60%</td>
<td>43%</td>
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A 97% LIKELIHOOD OF WEIGHT LOSS¹,²*

STARTS WITH A CONVERSATION ABOUT BEGGING BEHAVIOUR

Resisting a begging pet is difficult and may lead to overfeeding.³,⁴ Find common ground with pet owners with a new conversation around begging behaviour, and improve adherence to your weight loss recommendations.

believed their cat was begging for attention as opposed to 43 percent who believed it was for pet treats and 37 percent believed it was for cat food (Figure 2).

**Treats**
The role of vets and nurses is therefore to respectfully challenge the owners’ beliefs about their pet’s begging and start to make long-term, sustainable changes to their behaviour. Consider changing one of the treats to an additional walk or play session or grooming their pet when they get home from work instead of providing additional food. The ability to tailor the weight management approach to the individual will also help improve the outcome.

While discussing treats/extras with the owner, there may be occasions where including treats as part of a weight management programme is the best approach. There is no association between the prior feeding of treats and overall weight loss, but it is worth noting that dietary energy intake during weight loss will need to be even less in order to compensate for this, which will in turn impact the overall feeding volume.

Energy restriction is required for patients to lose weight, but this presents its own challenges. Increased hunger, increased begging behaviour and rapid consumption of food are concerns often expressed by owners (Serisier et al., 2014).

**Interactive feeders**
One way to slow down food consumption is to use interactive feeders, though this is not the only benefit of using them as part of a weight management programme. Interactive feeders were originally designed to provide enrichment for captive zoo and laboratory animals, but were also found to improve body condition score and increase exploratory behaviour (Dantas, 2016).

Most cats and dogs are fed ad libitum from a bowl. However, interactive feeders allow them to take advantage of their natural instinct to work for their food – known as contra-freeloading. This type of environmental enrichment has been shown to reduce stress-related symptoms, as well as contributing to weight loss (Dantas, 2016).

Dantas’s 2016 paper, “Food puzzles for cats: feeding for physical and emotional wellbeing”, provides an example of an eight-year-old cat that lost 20 percent of its body-weight in 12 months through use of an interactive feeder. It is worth bearing in mind though that while interactive feeders can be beneficial in helping pets lose weight, a calorie-restricted diet is also necessary, especially one that is designed to reduce begging behaviour.

**Weight management diets**
Many vets and nurses already recommend weight management diets that are specifically formulated to induce safe weight loss through restricted calories, while providing all the micronutrients a patient needs. However, formulation and kibble design can be further altered to match the needs of an owner and a patient on a weight management programme.

Evidence in human studies shows that some foods are more effective than others in reducing hunger: foods high in protein, fibre, carbohydrates or water are the most satiating (Weber et al., 2007). Results from the trial performed by Weber et al. indicated that a diet high in protein and fibre had a greater satiating effect than protein or fibre alone.

In a series of studies, Serisier et al. (2014) demonstrated that using air to increase the volume of dry dog food decreases energy intake and increases meal duration in ad libitum fed dogs. The exact reason for this was not fully understood, but the suggestion was that an increased meal volume resulted in a longer meal duration, allowing a greater time for release and effect of gastrointestinal hormones. The benefits of this approach for a weight management case is clear, and they also suggested that adding water may have a similar effect.

**Mixed feeding**
Practices sometimes avoid recommending wet food due to its effect on a pet’s oral health. However, it has been reported that dry food and canned food perform similarly in the degree of plaque and calculus accumulation in dogs.

Recent evidence has demonstrated the benefits of introducing a mixed feeding regime as part of a weight management programme. Most cat owners (86 percent) who usually fed dry food only found that a combination of wet and dry food made the weight loss programme more interesting, and 50 percent felt less guilty about the food restriction necessary (Flanagan et al., 2017).

**Conclusion**
While there are many challenges in weight management programmes, helping the owner to understand their pet’s begging behaviour and implementing a strategy to help them cope is vital. Slow-down bowls and interactive feeders may help to slow food consumption. A specifically formulated weight management diet, particularly a mixed feeding regime, will also help address the owners concerns about feeding volume and begging behaviours, ultimately increasing owner compliance and the success rate.

Consider changing one of the treats to an additional walk or play session or grooming their pet when they get home from work instead of providing additional food

A full reference list is available on request
When you know there must be a grass seed in there!

Raising awareness about the issues that grass seeds can cause could save owners hundreds of pounds

The start of the summer months, with the sunshine, long days and holiday atmosphere, brings with it the inevitable seasonal condition of the foreign body tract due to grass seeds.

As you will know, these little barbed seeds, with the ability to get into the ears, eyes, nose and skin of your clients’ pets, are usually straightforward to locate and remove. But, occasionally, there will be that one tract that just will not heal, and instead of an easy visit and a happy pet, it results in another abscess appearing several days after the end of the antibiotics.

Raising awareness of the problems that can arise with grass seeds is essential, and vet professionals are in the fantastic position of being able to educate clients through posters, text and email alerts and, best of all, nurse clinics. These are invaluable at this time of year to show owners what to look for, not only in respect of grass seeds, but also ticks, harvest mites and other issues connected with the summer including dehydration and overheating.

Agria saw many claims for grass seed foreign body in July and August last year, and those were just the claims where the foreign body was identified. Several of these resulted in serious complications when the seed had migrated from the skin, ears and nose to internal structures and organs.

Here are just a few typical claims we’ve handled connected to grass and grass seeds:

April

April, a three-year-old cat, was taken to her vet with a grass seed stuck under her upper eyelid. She required a local anaesthetic to remove the seed, leaving a shallow ulcer where the seed had been rubbing on the cornea. Fortunately, due to the rapid removal of the seed, the ulcer resolved rapidly with no scarring. The cost of her treatment came to £244.46.

Ludo

Ludo, a two-year-old Springer Spaniel, was seen with a two-week history of general lethargy. On physical examination, a mass on the costal arch was observed. Ultrasound revealed a fluid pocket and, when surgery commenced, it was discovered that damage had been done to the rib where the grass seed had lodged at the costophrenic junction. The cost of removing the grass seed on this occasion was £2,849.81.

Tayto

Tayto, a three-year-old Cockerpoo, was taken to his usual vet for pyrexia and lethargy. Antibiotics saw a slight improvement before he deteriorated. Clinical examination observed a soft swelling on the caudal thorax. CT revealed a foreign body caudomedial to the tenth rib at the costochondral junction. The grass seed had migrated from the nasal passages to the lung and had then lodged in the costochondral junction. Due to additional complications of pneumothorax the total veterinary treatment came to £6,216.97 for this young dog.

Fortunately, under their Agria lifetime policies, all of these owners were able to claim towards the cost of their unexpected treatment. However, had the owners had the opportunity to identify the presence of these grass seeds before they became problematic, they may have been able to remove it from the animal before it was able to migrate.

Find out how your practice can benefit from working with Agria by booking a meeting with your local Business Development Manager. You can get in touch with them directly or visit agriapet.co.uk/vet for more information and to find out how, as a veterinary professional, you can take advantage of a fantastic six months half price lifetime pet insurance.

For more information about Agria’s policies visit: agriapet.co.uk/VPC
Common complications in canine spinal surgery

What does the evidence say about the prevalence of complications associated with spinal surgery in dogs?

In a large prospective study on morbidity and mortality of major adult spinal surgery (Street et al., 2012), 87 percent of patients had at least one documented complication:

- Prolonged hospitalisation: 39 percent
- Post-operative complications: 73.5 percent
- Surgical complications: 10.5 percent
- Death: 1.5 percent

Gastrointestinal effects

In a study by Dowdle and colleagues (Dowdle et al., 2003), endoscopy was used to determine the prevalence of subclinical gastroduodenal ulceration in 30 Dachshunds undergoing decompressive surgery for acute intervertebral disc prolapse. An overall prevalence of 76 percent was calculated. Ulcerogenic medication administered prior to admission did not appear to influence the prevalence.

Urinary tract infection

Urinary tract infection (UTI) is a common complication in dogs with acute intervertebral disc extrusion (IVDE). The prevalence for development of UTI in 25 dogs treated surgically has been evaluated. In one study (Olby et al., 2010), presence of UTI over the three-month period was correlated to potential risk factors. Ten dogs (38 percent) developed 12 UTIs over the three-month period, with the majority occurring between the first and sixth week. Sixty percent of the UTIs were occult; haematuria in the absence of pyuria or UTI was a common finding in the perioperative period. Sex, breed and ambulatory status influenced the risk of developing a UTI. Females, Dachshunds and paraplegic dogs were at higher risk.

Surgical site infection

The surgical site infection (SSI) rate in dogs undergoing hemilaminectomies or laminectomies for thoracolumbar disc herniation or lumbosacral disease, without use of perioperative antibiotics, has been retrospectively evaluated during a two-year period (Dyall and Schmökel, 2018). All incisional complications within 30 days were recorded and divided into superficial, deep (Figure 1) or organ/space infections. This research study included 154 consecutive hemilaminectomy and laminectomy procedures. One superficial wound infection was recorded and treated with antimicrobials. Overall, the SSI rate was 0.6 percent, while the expected SSI rate in clean operative wounds in dogs and cats is 2.0 to 4.8 percent. The SSI rate in human spinal surgery is 0.7 to 4.3 percent.

MASSIMO MARISCOLI

Massimo Mariscoli, DVM, Dip ECVN, MRCVS, graduated from the University of Bologna in 1990. After completing a three-year residency programme in Veterinary Neurology and Neurosurgery at the University of Bern, Massimo passed the Diploma of the European College of Veterinary Neurology.

LUCA MOTTA

Luca Motta, DVM (Hons), Dip ECVN, MRCVS, graduated in 2007 from the University of Perugia. After moving to England, he completed an internship programme in Small Animal Medicine and Surgery, and began a European College of Veterinary Neurology (ECVN) approved residency. Luca was awarded the ECVN Diploma in 2012.

LORENZO GOLINI

Lorenzo Golini, DVM, MSc, Dip ECVN, MRCVS, is an RCVS specialist in Veterinary Neurology and has completed residency training in Neurology and Neurosurgery at the University of Zurich. He holds the European Diploma in Veterinary Neurology and has a masters degree in Behavioural Medicine.
Progressive myelomalacia (PMM; Figures 2 and 3) is a catastrophic disease associated with acute IVDE. The onset and progression of clinical signs of PMM has been examined retrospectively in 51 dogs, 18 with histopathologically confirmed PMM and 33 presumptively diagnosed based on clinical signs (Olby et al., 2017). Five dogs had two sites of disc extrusion, giving 56 extrusions in total. Data on nature and progression of signs were extracted. Twenty-four of 51 dogs were Dachshunds. T12–T13 was the most common site of disc extrusion (12 of 56), and 18 mid-to-caudal lumbar discs (between L3 and L6) were affected.

The onset of PMM signs ranged from present at first evaluation (17/51) to five days after presentation, with 25 of 51 cases developing signs within 48 hours. Progression of signs from onset of PMM to euthanasia or death, excluding seven cases euthanised at presentation, ranged from 1 to 13 days, with 23 being euthanised within three days. Non-specific systemic signs were documented in 30 of 51 dogs.

The majority of dogs developing myelomalacia do so within two days of presentation, with euthanasia commonly occurring within another three days. The onset can be delayed up to five days after presentation, with progression to euthanasia taking as long as two weeks. Mid-to-caudal lumbar discs might be associated with an increased risk of PMM.

Neurological deterioration

Early post-operative neurological deterioration is a well-known complication following dorsal cervical laminectomies and hemilaminectomies in dogs. Medical records of 100 dogs that had undergone a cervical dorsal laminectomy or hemilaminectomy were assessed retrospectively in one study to evaluate potential risk factors (Taylor-Brown et al., 2015). Multiple variables were evaluated and the outcome measures were neurological status immediately following surgery and duration of hospitalisation.

Diagnoses included osseous associated cervical spondylomyelopathy (OACSM), and acute intervertebral disc extrusion in 72 percent of the dogs. Overall, 54 percent were neurologically worse 48 hours post-operatively. Statistical analysis identified four factors significantly related to early post-operative neurological outcome. Diagnoses of OACSM or meningioma were considered the strongest variables to predict early deterioration, followed by higher neurological grade before surgery and longer surgery time.

This information can aid in the management of expectations of clinical colleagues and owners with dogs undergoing spinal surgical procedures. The use of prophylactic anti-ulcer medication in spinal surgery patients is suggested. Dogs with thoracolumbar IVDE should be routinely monitored for UTI with urine culture regardless of urinalysis results. The low incidence of SSI suggested reconsideration of routine perioperative antibiotic prophylaxis in dogs undergoing laminectomy procedures.
Most cases of feline ureteral obstructive disease (UO) will require referral to a specialist centre with the skills and expertise to deal with this challenging condition. This includes preoperative, intraoperative and post-operative care, all of which require an intensive care facility. The cat may remain hospitalised for approximately 5 to 10 days depending on the complexity of surgery, any pre-existing renal disease and complications encountered.

If referral is not considered an option due to financial reasons or the owner’s wishes, medical management may be considered for three to five days, providing the cat is not oliguric, anuric, hyperkalaemic or overhydrated. Clinical evidence suggests that resolution of ureteral obstruction occurs in approximately 8 to 13 percent of cats that are medically managed.

**Medical management**

Ureteral obstruction is incredibly painful, so effective analgesia (typically opioids) must be provided at all times until the obstruction has been relieved and the patient is more comfortable.

Medical management of UO involves judicious fluid therapy with or without diuretics (furosemide or mannitol with the aim that the diuretic increases glomerular filtration rate and raises the intraureteral luminal pressure, thus pushing the ureteroliths/dried solidified blood into the urinary bladder where it can be either more easily removed or voided). These patients are at a higher risk of volume overload and increased pressure on the renal pelvis if a total UO is present. In addition to fluid therapy to try to restore renal perfusion and correct dehydration, supportive care for uraemic consequences should be considered (antacids, antiemetics, etc).

Many specialists in this area consider that as soon as the cat is stabilised, surgery should be performed to minimise further nephron damage caused by the combination of the complete obstruction and excessive fluid therapy. As a general rule, cats that have shown no response to diuresis after 24 to 48 hours should undergo surgical intervention where possible. When referral for surgery is not an option and the cat is not hyperkalaemic, anuric or volume over-loaded (generally cats with unilateral obstruction or partial obstructions), then medical management can be trialled for three to five days.

Prazosin (α1-antagonist) is also a potent smooth muscle relaxant and α1-antagonists are considered the standard of care for inducing human ureteral dilation. Again, limited studies are available to assess the efficacy of this class of drug in treating feline ureteral spasm but it may be of benefit in those patients that can only be treated using medical management. The dose range varies from 0.25 to 0.5mg/cat q12 to 24 hours. Blood pressure must be assessed prior to starting the drug and closely monitored for the first few days after initiation of treatment to ensure there is no development of hypotension. Consideration should also be given to treatment of any UTI that is detected on urine culture.

If medical management fails to encourage stone passage...
(monitored by ultrasound and radiography), immediate resolution of the obstruction at a referral centre should be considered as detailed below. It is also important to note that 20 percent of feline UOs are caused by ureteral strictures (most of which are in the proximal ureter), for which medical management will not be effective. Consideration should also be given to the fact that a proportion of ureteric stones will be embedded in the ureteric mucosa, hence passage of the stone will be unlikely.

**Surgical management**

The three surgical options described below are complex procedures and require considerable experience and specialist equipment as well as a highly skilled team providing intensive care. They are described here for information only so that an informed discussion can be had with the owner regarding possible options and complications prior to considering referral (this will also be discussed at length by the specialist team at the referral appointment).

**Traditional techniques**

Surgery to directly remove the ureterolith(s) has traditionally been performed by coeliotomy; however, due to high rates of mortality (20 percent) and complication (33 percent) compared to the other more sophisticated procedures detailed below, this form of surgery is now rarely performed. A full examination of the urinary tract should be completed as multiple ureteroliths may be present (note also the bladder and kidneys should have been assessed with imaging for uroliths). A recent large study revealed that cats had a median of four ureteroliths and 86 percent of cats also had ipsilateral renoliths. If the ureterolith(s) is in the proximal ureter, it may be flushed back to the renal pelvis by performing a cystotomy and catheterising the ureter. The ureterolith is then removed via a pyelotomy, which is technically easier and less likely to result in ureteral inflammation/spasm/stenosis/stricture.

Distal ureteric obstructions can be managed by ureterectomy of the affected portion of ureter and re-implantation of the remaining ureter into the apex of the bladder (neoureterocystotomy). Ureteronephrectomy is not a viable treatment option in these cases as more than 75 percent of cats are azotaemic at the time of presentation, implying dysfunction of the contralateral kidney, hence renal function needs to be preserved as much as possible.

Mortality rates are approximately 20 percent for cats undergoing traditional surgical management of ureteroliths. It should be noted that survival rates for surgery are better than those receiving medical management alone (33 percent mortality rate), with 91 percent of cats who survived the first month following diagnosis alive after 12 months compared to 66 percent of cats who received medical management alone. Complications are seen in around a third of cats and include oedema/inflammation at the ureterovesical junction, ureteral stricture, uroabdomen and persistent obstruction. Urine leakage is the most common problem and occurs in approximately 16 percent of cases. Forty percent of cats have a further ureteral obstruction, most likely due to previously undetected nephroliths.

**Stents**

Stents are becoming less commonly performed in the UK. They are polyurethane tubes containing multiple fenestrations that are inserted into the ureter. The stent has a pigtail at either end with one end secured in the renal pelvis and the other secured at the ureteric opening into the bladder trigone. Stents provide passive ureteric dilatation and urine can flow either through or around it. Stents can be very challenging to place and surgical times can be prolonged. There may also be a high rate of dysuria because of the position of the pigtail in the bladder trigone area. Perioperative mortality rates after stent surgery are significantly lower (7.5 percent) than traditional surgical techniques (20 percent).

**Subcutaneous ureteral bypass system**

This is a tube that completely bypasses the obstructed ureter, effectively creating a false ureter. It is more commonly performed in the UK and is now considered the treatment of choice by highly experienced specialists at the Animal Medical Centre, New York. The subcutaneous ureteral bypass (SUB) was developed as an alternative to ureteral stents when either a stricture was present (which resulted in more than 50 percent stent occlusion) or when a stent could not be successfully placed due to excessive stones, a narrow ureteric lumen or patient stability.

A pigtail catheter is inserted into the renal pelvis and connected to a subcutaneous access port. A separate pigtail catheter is also inserted into the bladder and this tube is also connected to the subcutaneous access port. This procedure has been highly successful for the treatment of all causes of feline UO (strictures, stones, tumours, obstructive pyelonephritis). This surgical procedure is technically simpler with a shorter surgery time (45 to 60 minutes with experienced specialists). In terms of long-term patient comfort and complications, SUBs were found to be superior to stents in a recent study (less dysuria and stent occlusion).

Perioperative mortality rate after surgery was 6.2 percent in a recent study, which compares well to traditional
surgery (20 percent) and stenting (7.5 percent). Post-operative complications were rare and included urine leakage (4 percent), kinking of the catheter (5 percent) and blockage of the system with either blood clots (8 percent), debris, purulent material or mineralisation (24 percent). Dysuria is rarely seen with SUBs (6 percent) compared to ureteral stents (38 percent).

Appropriate post-operative management is essential for a good outcome. Post-obstructive diuresis is common in these patients, hence this needs to be appropriately managed with fluid therapy. Intensive monitoring is essential to avoid fluid overload, which can lead to congestive heart failure. This is one of the main post-operative complications associated with management of ureterolithiasis in cats (despite normal echocardiogram in most cats). Abdominal palpation should also be avoided for two weeks post-operatively and cystocentesis should not be performed in these patients. Urine culture should be performed on a urine sample obtained from the SUB port at the time of routine flushing (which is typically performed every three to six months at the referral centre).

Nephrostomy tube
A nephrostomy tube can be placed to immediately relieve the intra-ureteric/pelvic pressure with the aim of rapidly resolving azotaemia. This may be performed as an emergency procedure on arrival at the referral centre to minimise further nephron damage while stabilising the cat prior to surgery. A locking loop pigtail catheter is surgically placed with fluoroscopic guidance. The locking loop pigtail mechanism has resulted in a significant reduction in complications associated with this tube placement (previously due to premature removal/displacement of the tube, urine leakage and poor drainage).

Some specialists with considerable UO experience will now progress straight to SUB placement as the time taken for this procedure is similar to nephrostomy tube placement (approximately 45 to 60 minutes with experience) and also negates the need for two anaesthetics in a renally compromised patient.

Lithotripsy
This treatment has been used successfully in dogs but the feline kidney is more sensitive to shock wave-induced injury. Also note that the intraluminal diameter of the feline ureter is incredibly small, measuring only 0.4mm, and along with technical challenges due to the size of the ureter, structural damage can occur due to an inflammatory response being incited at the site of lithotripsy and subsequent ureteral stricture formation.

Prognosis
The main factor that affects the outcome of these cases is the severity of the kidney disease as a result of the obstruction. The earlier UO is detected (ideally prior to complete obstruction and secondary renal damage) the more likely a good outcome will be achieved. Cats with IRIS stage 1 or 2 CKD have a good long-term outcome.

The author hopes that this article series will highlight the likely higher incidence of this under-recognised condition. Any cat that has apparent rapidly advancing CKD (ie an increase in IRIS renal stage over a short time period) or “big kidney-little kidney syndrome” should be urgently investigated for UO. If both veterinary and owner awareness of this condition can be increased, earlier detection and intervention can be sought, resulting in a much more favourable outcome.

A full reference list is available on request
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IN FOCUS

Wound management in chelonians

A guide to assessing, treating and managing a range of wounds that may be encountered in chelonians

In small animal practice, it is not uncommon to be contacted by a client for advice on their pet reptile. This will include chelonians (tortoises, terrapins and turtles) that have received a traumatic injury and may be in pain and systemically compromised. It is important that you can offer first aid advice and are able to assess these injuries on presentation.

**Common injuries**

Common injuries seen in chelonians include bite wounds from a conspecific, attacks from wild or domestic predators (such as dogs and foxes) and strimmer or lawnmower injuries in tortoises that are free roaming in the garden. Injuries from falls and road traffic accidents may also be seen.

Injuries can be classified into mild (prognosis good, manageable in general practice; Figure 1), moderate (guarded, protracted healing time, experience would be beneficial; Figure 2) and severe (life threatening, specialist experience required; Figure 3).

Multi-modal analgesia should be at the forefront of clinical discussions around severe cases, as should the unavoidable fluid loss through wound exudation and the potential negative systemic effects that the loss of these fluids can have in uricotelic patients.

**Triage**

The initial point of contact with the owner is usually a telephone call; this is where vital information on the cause and extent of the injury should be attained, as well as information on the species. Knowing what species you will be dealing with and the type of injury it has sustained will enable you to quickly research the appropriate husbandry and issue before they arrive, potentially saving vital time. If necessary, first aid advice and information on how to safely transport the patient to the clinic can be given.

If the wound is haemorrhaging, the owner should be advised to apply pressure to the area to encourage bleeding to stop; this should be done with something absorbent and lint free (for example, a sanitary towel). If shell or limb fractures are suspected, immobilisation may be appropriate. This can be done by gently wrapping a towel around the body for support and to keep movement to the minimum. If the animal is not used to being handled, however, or if the owner does not feel confident doing this, it can cause extra stress and would cause more harm than good.

These patients should be brought to the clinic as soon as possible for assessment. They should be transported by placing them in a snug fitting polystyrene, cardboard or plastic box with a heat source – a water bottle wrapped in a towel can be useful to prevent excessive movement and maintain the body temperature. The box should also have high sides to prevent the patient trying to climb out.

**Initial assessment**

It is important to consider stress levels, which can be very challenging in reptiles that don’t give many outward signs. Stress can be severely detrimental to health and can have a negative effect on wound healing. To limit stress, it is ideal to first assess patients without any form of restraint. You can assess the extent of the injuries, patient demeanour, activity and respiration.

**History gathering**

Getting a full history is very important. Finding out when and how the injury occurred is helpful – reptiles can be slow to show clinical signs, and the injury may have occurred days or weeks before the owner noticed there was a problem. Finding out if they have adequate husbandry is also very important and will be crucial for wound healing. Any underlying illnesses, conditions or current medications should be identified at this stage.

**Examination**

A full physical examination should be performed. While handling, it is essential to be mindful of the mental demeanour
of the patient and always try to position the patient upright with the cranial end elevated to reduce pressure on the lungs and therefore minimise respiratory effort.

Structures

Reptilian skin is similar in general construction to mammalian skin, in that it is composed of an outer epidermis and an inner dermis, tightly adhered to underlying bony structures over the distal limbs and head. In chelonians, the shell is comprised of a dermal bone layer, which consists of about 60 bones formed from modified pectoral and pelvic limb girdles, trunk vertebrae, sacrum and ribs. Covering the dermal layer are the scutes, which are formed from the epidermis and are the equivalent to scales in other reptiles. The scutes, being epidermal in origin, are innervated and will bleed if damaged.

Dealing with a stable patient

If the patient is stable, wound lavage should be performed as soon as possible to reduce the chances of infection by removing contamination, debris and other foreign substances. A solution should be used that is not going to damage tissue. Using a warm isotonic solution is ideal (Hartmann’s/ saline); the amount of solution used should ensure the contamination and bacteria present are adequately diluted. The pressure at which it is delivered needs to be enough to dislodge bacteria but not enough to push it further into the wound. A guide is to use 100ml of fluid per cm of wound, delivered with a pressure of 8 to 15psi, which can be achieved using a 20ml syringe and 19-gauge needle.

In heavily contaminated wounds it may be necessary, and less stressful, to initially place the patient in a warm bath of water (an unused cat litter tray can be useful) to remove the heavy contamination before lavage. If the wound is heavily contaminated, the use of an antiseptic solution may be appropriate. If used, these should be made up to the correct dilutions: Betadine (povidone-iodine) can be used at a 0.1 percent dilution or Hibitane (chlorhexidine) at 0.025 to 0.05 percent dilution. Chlorhexidine has the longest residual effects and won’t be denatured by protein. Antiseptic solutions should not be used in healthy granulating tissue as this may inhibit wound healing by damaging important cells. In old wounds or those you suspect are infected, a swab should be taken for culture and sensitivity.

Dealing with unstable patients

Any haemorrhage should be controlled and the patient should be stabilised. If the animal is weak, stressed or in shock, wound lavage may need to be postponed until the patient has been stabilised. The wound can be covered with a sterile dressing to prevent further contamination until a management plan is made.

Radiography should be taken for shell injuries to determine the extent of the injury. This will identify if the bony portion of the shell has been affected or just the keratinised scutes. Other areas of potential damage include the spine, lung field or the coelomic cavity. Dorsoventral positioning with no restraint is possible. The radiography will also give information on the generalised bone mineralisation. For assessing the lung field, a lateral/cranio-caudal view will be necessary with a horizontal beam. This view can be carried out while conscious by immobilising the patient and raising them up.
Pain relief
Reptiles do not show classic signs of pain and may be difficult to assess. However, these traumatised patients will be painful – in some cases, extremely painful. A multimodal analgesia plan must be included in your care plan.

Open wound management
Reptile wounds should be managed as open wounds and allowed to heal by second intention due to the potential for infection and the solid non-draining pus associated with reptiles. Closing these wounds could seal in the infection and cause further complications.

Primary closure should not be used unless the wound is very clean and fresh, which is unlikely due to the main causes of these wounds. If they are considered to be clean enough, ample lavage should be performed before closure.

Healing
Wound healing can be very slow in reptiles compared to mammals and birds; it may take several years for shell damage to fully heal. As reptiles are ectotherms, the wound healing process is highly dependent on the environmental temperature.

Lower temperatures will delay cell migration and thus delay wound healing. Appropriate levels of UV light should be provided to try to improve homeostasis.

Even though the healing of reptile wounds can be slower, the healing process follows a similar pattern to mammals, going through the different stages – inflammation, proliferation and maturation – and the same considerations will apply. The aim is to offer the best environment for the wound healing and to consider and deal with any factors that may cause it to be delayed.

Inflammation
In the inflammatory phase there may be signs of redness, swelling and production of exudate. To promote the wound healing process at this phase, clean the wound by lavage to remove dirt/debris and to reduce potential pathogens. This should be carried out at initial presentation and between each dressing change.

Debridement to remove any necrotic tissue (Figure 4) may also be necessary. This can be done by surgical, enzymatic, autolytic or mechanical means. Surgical debridement may need to be performed due to the caseous nature of the reptile inflammatory response.

Dressing a wound will provide protection from contamination and abrasions and offer support and comfort. These can be difficult to apply so adhesive dressings prove helpful. Exudate can be managed using foam pads and regular dressing changes depending on the amount of exudate being produced.

Infection control may be necessary depending on clinical signs; blood tests to check for systemic infection and swabs for culture and sensitivity are useful. Topical antimicrobial treatments can also be used (eg manuka honey).

Considering the factors that may delay wound healing at each assessment is crucial. Note that movement is high on the list to cause problems for wounds around the head and leg areas.

Proliferation
Granulation tissue formation (Figure 5) only occurs when the inflammatory stage is complete. To encourage healthy granulation tissue to form, a moist wound environment should be provided with the use of hydrocolloid gels/dressings. Compeed dressings offer a moist environment and are useful for sticking to shells. Continue regular dressing changes and lavage in-between changes. With shell injuries, once there is a healthy wound bed, the shell can be repaired.

Maturation (remodelling phase)
Contraction and closure of the wound occurs in the remodelling phase (Figure 6). Extensive trauma to shells may never fully heal, so a resin patch might need to stay in place permanently in adults.

Husbandry
Any husbandry issues should be corrected for optimal wound healing and the patient should be removed from risk of repeat injury. The enclosure substrate should be removed and replaced with newspaper, and hygiene must be maintained at a high level. For aquatic species, it may be necessary for the water to be treated with an antibacterial preparation.
How to manage thermal burn wounds

THERMAL BURN INJURIES

Thermal burn injuries can be some of the most challenging wounds to treat in small animal practice. They commonly occur as a result of scalding, fire or iatrogenic injury from inappropriate patient warming. Successful management of these cases depends on treatment of the patient as a whole, not just the wound.

LOCAL AND SYSTEMIC EFFECTS

Profound hypovolaemia can occur within hours of a severe burn, due to systemic extravasation of fluid combined with local vascular leakage and evaporative fluid loss from the burn surface (Ravage et al., 1998). Intense pain stimulates a massive sympathetic response, which promotes the cardiovascular effects of shock.

The systemic inflammatory response to severe burns negatively impacts a number of organ systems, even affecting gastrointestinal barrier function with subsequent translocation of gut bacteria, endotoxin and cytokines, leading to septic shock (Gosain and Gamelli, 2005). Negative effects on leucocyte production and function are also seen, further increasing susceptibility to sepsis. Burn victims experience major changes in energy and protein metabolism, with basal energy expenditure increasing by more than 100 percent (Williams et al., 2009). These factors highlight the importance of stabilisation and supportive care for burn patients.

TREATMENT

Successful management requires intensive fluid resuscitation, surgical debridement and comprehensive supportive care. Burn severity can be described as a percentage of total body surface area (TBSA), with major burns affecting greater than 10 percent TBSA, and severe burns affecting greater than 20 percent TBSA, leading to life-threatening systemic complications (Pavletic and Trout, 2006). Burns may be partial-thickness (first and second degree) or full-thickness with loss of the dermis (third degree), muscle or bone (fourth or fifth degree respectively).

Immediate first aid should be provided through applying cool to cold running water (2 to 15°C) directly to the burn wound. Cooling is analgesic and improves long-term wound healing; these beneficial effects are seen as long as cooling is within three hours of injury (Cuttle et al., 2008). The burn should subsequently be covered with a sterile, occlusive, non-adherent dressing to reduce pain, limit contamination and prevent further trauma.

SMOKE INHALATION

Smoke inhalation significantly influences prognosis and the full effect of this injury may not be seen for 24 to 36 hours. Immediate clinical signs (hypoxia and respiratory crackles/wheeze) are usually only seen in severe cases. The majority of pulmonary damage and systemic pathophysiology is caused by inhalation of toxic chemicals, including carbon monoxide and hydrogen cyanide (Vaughn and Beckel, 2012).

Treatment protocols for inhalation injury must include bronchial hygiene therapy and oxygen supplementation. Success of treatment can be monitored with pulse oximetry, serial thoracic radiography or simply clinical response. Nebulisation of sterile saline can be combined with oxygen therapy (5 to 10l/min of 100 percent oxygen), to hydrate and loosen mucous prior to chest coupage (Bohling, 2017).

FLUID RESUSCITATION

Lactated Ringer’s solution remains the standard crystalloid for resuscitation. In practice, the easiest approach is to calculate an appropriate initial fluid rate, then make adjustments to achieve acceptable values for basic physiologic

A good understanding of the pathophysiology is important when managing burn injuries and associated systemic complications.

GEORGIA JENKINS

ANDERSON MOORES VETERINARY SPECIALISTS

Georgia Jenkins, BVSc, PGDipVCP, MRCVS, graduated from the University of Liverpool in 2013 and worked in mixed practice before completing internships at Northwest Veterinary Specialists and the University of Bristol. Georgia has been a resident in Small Animal Surgery at Anderson Moores since July 2017.

FIGURE 1

The eschar (thick, leathery necrotic tissue) is visible in this heat pad burn to the dorsal neck and thorax.
parameters. In particular, fluid administration should be sufficient to maintain a urine output of approximately 1ml/kg/hr and mean arterial pressure above 70mmHg (Vaughn et al., 2012). Administration of colloid or albumin should be delayed for 24 hours following injury, as increased vascular permeability can exacerbate oedema (Pham et al., 2008).

Analgesia
Neuroleptanalgesia with opioid and alpha-2 agonist combinations is particularly useful in managing the acute pain associated with burn treatment (Slingsby and Taylor, 2008). Local anesthetic agents may also be delivered topically before removal of the bandage contact layer; a solution of lidocaine (2 percent) and sodium bicarbonate in a 9:1 ratio has been described (Bohling, 2017). Non-steroidal anti-inflammatory drugs, opioids and other analgesics, such as ketamine, delivered as constant rate infusions, are then used for managing background pain. Chronic pain can occur due to wound contracture, particularly over high-motion areas, and surgical scar revision may be required.

Nutritional and metabolic management
Major burns cause a hypermetabolic state characterised by hyperglycemia and catabolism of body protein stores. A high-energy critical care diet is therefore recommended, with some evidence suggesting that additional vitamin E supplementation may improve clinical outcomes, particularly for smoke inhalation injury (Morita et al., 2006). Adequate analgesia, sedation and provision for sleep all reduce stress-associated catecholamine release and associated hypermetabolism (Herndon and Tompkins, 2004).

Wound management
Small partial-thickness burns often heal well by second intention because the dermis is partially intact. Small full-thickness burns can also be managed in this way, but healing will result in scar formation and contracture. Priorities for treatment are adequate analgesia, and protecting the wound from further trauma and infection. The bandage should include a moist (semi-occlusive or occlusive) contact layer to minimise pain, reduce fluid loss and promote autolytic debridement and re-epithelialisation. Topical antimicrobial (silver sulphadiazine) is advised and is preferable to systemic treatment unless this is specifically indicated (Pavletic and Trout, 2006).

Large burns (both deep partial-thickness and full-thickness) should be surgically debrided to remove the eschar (thick, leathery necrotic tissue) and other devitalised tissue (see Figures 1 to 4). Left untreated, infection and systemic inflammatory response syndrome may occur. Sharp surgical debridement of deep burns (excluding muscle and bone) is performed with tangential debridement, where affected tissue is sliced off in very thin layers until viable bleeding tissue is reached. Deeper burns extending to the muscle and bone require layered debridement, starting at the perimeter of the burn, where damage is more superficial, progressing inward to debride deeper layers (Bohling, 2017).

Subsequent autolytic debridement with moisture retentive dressings, enzymatic or chemical debridement agents, have all been reported for the removal of residual non-vital tissue (Campbell, 2006). Similarly, negative pressure wound therapy, in conjunction with nanocrystalline silver dressings, has been used, although patients may experience significant discomfort with this treatment (Mullally et al., 2010). Once a healthy granulation bed is established, definitive skin reconstruction with skin grafts or flaps can be performed.

While immediate surgical debridement is strongly recommended, some circumstances may preclude this. Cerium nitrate combined with silver sulphadiazine has been used for over 40 years to treat burn wounds, with results comparable to acute escharectomy and grafting (Vehmeyer-Heeman et al., 2006). Cerium binds to the eschar making it tough, impermeable and firmly adherent to the wound bed for several weeks, before delayed escharectomy and skin reconstruction is performed.

Summary
Burn injuries and associated systemic complications pose significant challenges for case management. An understanding of the pathophysiology involved is necessary to provide both effective emergency treatment and ongoing wound management.

A full reference list is available on request
A look through the latest literature

**Impact of postdischarge surveillance on surgical site infection diagnosis**

Danielle Stickney and Kelley Mankin, Texas A&M University, College Station

Surgical site infections have been identified as a post-operative complication in up to 18 percent of small animal procedures, depending largely on the type of surgery being undertaken. Such events may lead to prolonged wound management, revision surgery, higher costs and increased mortality. The authors evaluated the impact of active postdischarge surveillance on surgical site infection (SSI) diagnosis. Among a cohort of 1,271 canine and feline patients, there was a 2.8 percent incidence of SSIs, or 36 cases. Seven of these were diagnosed on re-presentation at the hospital, five at a scheduled recheck, 10 as a result of a questionnaire sent to owners, 10 through a combination of the questionnaire and re-presentation, and four through communications with the referring veterinarian. These SSIs were documented in the medical records in only 72.2 percent of cases. So, in 10 patients, the incident would not have been recorded without the introduction of an active surveillance system.

*The Veterinary Surgery, 47, 66-73.*

**Effect of a hydrocolloid dressing on second intention wound healing in cats**

Vassiliki Tsioli and others, University of Thessaly, Karditsa, Greece

Hydrocolloid dressings are used on wounds in an attempt to enhance epithelialisation and granulation tissue formation. However, these products may have disadvantages in terms of additional costs, allowing anaerobic bacterial wound infections and preventing daily inspections of the site. The authors compared the effects of a hydrocolloid dressing and a semi-occlusive pad on experimental wounds on each side of the dorsal line in 10 cats. There was greater oedema on the hydrocolloid-treated site after 10 days but there were no significant differences in other histological variables.

*Journal of the American Animal Hospital Association, 54, 125-131.*

**Wound closure technique used in treating cats with eyelid agenesis**

Zoe Reed and others, Eyeshine Veterinary, Phoenix, Arizona

Five cats were presented with a developmental abnormality causing them to lack more than 25 percent of the temporal upper eyelid, resulting in clinical signs attributable to chronic ocular exposure. Nine of the affected eyes were treated using a modified Roberts-Bistner procedure involving 2-octyl cyanoacrylate, while one eye was enucleated. Minor complications in the early post-operative period included eyelid swelling, poor cosmesis and persistent epiphora. However, by the time of the second recheck examination, the swelling had resolved and the cosmetic appearance was considered excellent.

*Journal of the American Veterinary Medical Association, 252, 215-221.*

**Photobiomodulation treatment used on full-thickness skin wounds in lizards**

Lara Cusack and others, University of Georgia, Athens

While the repair of skin wounds in reptiles occurs in the same general manner as in mammals, it proceeds at a slower rate, differs between reptile species and can be affected by various external factors. The authors investigated the effects of photobiomodulation using a therapeutic laser, along with silver sulfadiazine and a topical antimicrobial product on experimentally induced full-thickness wounds in green iguanas (*Iguana iguana*). Their results indicate that laser treatment was safe and well tolerated but did not produce substantial improvements in wound healing compared with the antimicrobial or silver sulfadiazine-treated wounds.


**Comparison of imaging methods for assessing bone healing in dogs**

Marije Risselada and others, University of Florida, Gainesville

Assessing the state of bone bridging is an important aspect of clinical orthopaedics following both fractures and osteotomy procedures. The authors used three different imaging methods, ultrasound, radiographs and computed tomography, to monitor changes following tibial tuberosity advancement procedures in dogs. Treatment involved filling the osteotomy gap with either a gelatinous matrix or demineralised bone matrix. Ultrasound identified osseous union significantly faster than CT or radiographs. They also found that bridging of the osteotomy gap occurred earlier in the gelatinous matrix-treated dogs.

*BMC Veterinary Research, 16, 164 (open access).*
Is farm animal welfare a public good?

It has been suggested that more clarity will be needed over farm animal welfare considerations going forward

The agricultural show season is in full flood and various Defra ministers have been invited to address breakfast meetings and answer questions. To add fuel to the debates, the House of Commons Environment, Food and Rural Affairs Committee published a report in early June, entitled "The future for food, farming and the environment". As expected, the content, derived from six panels of witnesses who took as a basis the Defra consultation paper "Health and harmony: the future for food, farming and the environment". has generated considerable reaction. Not least from Professor Ian Bateman, director of the Land, Environment, Economics and Policy Institute at the University of Exeter. The Institute has been considering the future and a paper ("Public funding for public goods: A post-Brexit perspective on principles for agricultural policy") is soon to be published.

There is considerable angst regarding the £3 billion that is paid out by the EU as farm subsidies. The general thrust is that the total payment will be maintained until 2022, although the allocation may be changed and a whole host of interested parties are looking to influence what happens next year and thereafter. The Institute paper highlights that three quarters of the fund is paid to one quarter of the farmers. An Agriculture Bill is due later this year and the House of Commons report refers to a new domestic settlement for England, which will help to deliver the government’s ambitions to “provide better support for farmers and land managers who maintain, restore, or create precious habitats for wildlife”.

Welfare considerations so far

There do not appear to be inputs from veterinary organisations within the House of Commons paper references. In January, the Secretary of State Michael Gove gave a speech at the National Farmers’ Union Conference and said that “investing in animal welfare is a clear public good”. He was quoted as saying that the government could support new industry-led initiatives to improve welfare standards.

John Fishwick (BVA President) responded that “it is essential that the UK’s post-Brexit agriculture policy recognises animal health and welfare as public goods". At the Oxford Farming Conference, Michael Gove did not include animal welfare as a public good within his vision for post-Brexit agriculture. It seems important for this whole issue of farm animal welfare as a public good to be agreed and clarified.

Ian Bateman clearly indicates that farm animal welfare is a public good. However, he considers that paying farmers to ensure animal welfare is identical to paying farmers to avoid methods which fail to provide welfare. He adds that “if we pay farmers to avoid, in effect, animal cruelty then this is using public money to stop people doing something repugnant”. A further dilemma is that if a farmer treats the animals well, should a neighbour who fails to do so receive funding?

The way forward, the Institute proposes, is to apply regulations mandating against poor animal welfare and at the same time apply trade sanctions which restrict the import of food from those producers who cannot demonstrate that they apply animal welfare to the same standard. It is intended that such sanctions would control the undercutting on price of UK farmers, which should raise farm incomes. The Institute paper indicates strongly that the direct delivery of environmental benefits is likely to be the major public good provided by farms and therefore should be the main focus of public subsidy. Support should be directed at
an improvement in public goods and not increasing the private production of food. The House of Commons report indicates that public health could be improved through an expansion of some sectors of agriculture, but Professor Bateman is quoted as saying that “this is well meaning but misguided”.

The Institute emphasises that ensuring the poorest consumers have access to high quality food by subsidising food producers is at best highly inefficient and likely to be a complete waste of tax payers’ money. It is an important point that supporting food production and farmer profit is not seen as a public good and this is indicated within the House of Commons report. Ensuring standards within trade deals is seen as the way forward to achieving farmer viability.

**Should farmers receive subsidy for good animal welfare?**

The House of Commons report recognises that many farmers are dependent on subsidy payments. It is stated that direct payments can distort land prices, rents and other aspects of the market, creating a reliance on these payments, which can limit farmers’ ability to improve the profitability of their businesses. Defra advises that 42 percent of farms would be unprofitable if their direct payments were removed. Sheep, beef, dairy and cereal farmers are specifically highlighted as being dependent on subsidy. Without an adequate replacement scheme, it is estimated that 25 percent of farms would be lost with a big impact on social cohesion, jobs, livelihoods, local food economy and ecosystem services. There are some 150,000 farms receiving subsidy.

The provision of public good is criticised as being too simplistic and it is easy to see how the potential benefit to the public from a particular level of support can be favourably manipulated. Reports, papers and commentators are calling for hard definitions rather than generalities. There is certainly some difference of opinion as to the benefit, or otherwise, of recognising animal welfare as a public good. If UK farmers receive subsidy for animal welfare it may be more difficult to insist on the same welfare standards being applied to imports. However, if high welfare standards attract better returns on a commercial basis alone, this will require increasing levels of support from the industry, including a greater involvement of veterinary surgeons in knowledge transfer.

**Setting the standards**

The difficulties of setting animal welfare standards have been raised at many veterinary meetings. The difference between animal neglect and cruelty and the relationship between welfare and profitability are well understood technically. For farm animal veterinary practices, the prevention of ill health is completely established, but defining the point of intervention can be problematic. The meat and milk buyers, with veterinary support, are directly influencing animal welfare by developing commercial and consumer awareness.

Many farmers need advice and education before welfare problems are ongoing that restrict profitability. It has been indicated that fewer cows with mobility issues and fewer coughing sheep enhance the livelihood of animals and give the public better confidence in ongoing animal care, but such outcomes may not satisfy “public good” as applied to replacement of EU subsidy.

It seems important at this time that the role of veterinary surgeons in maintaining and enhancing farm animal welfare is clearly understood by politicians, their advisors, economists and researchers.

**CORRECTION**

In discussing bovine TB and the “whoomph” effect last month, the indicated detection of disease, from pre-movement testing, was over-estimated. Some 500,000 cattle are pre-movement tested annually in England and from 500 to 600 are likely to be slaughtered. In Wales, over 250,000 pre-movement tests are expected to result in 120 animals being slaughtered. My thanks to Andrew Cobner for checking the database.
What is success? It’s an interesting question, isn’t it? Success can mean different things to different people. The dictionary definition says it’s the accomplishment of an aim or a purpose. But how many of us have a conscious “purpose”? Society often measures success by the size of someone’s house, car or bank balance, but surely there must be more to it than that?

For others, success is about “achievement” – whether that’s making a difference in other people’s lives or being recognised as “the best” at what you do. It’s often said that as vets, we are very good at delayed gratification and will put many things lower down our list of priorities to achieve the things we want to, such as performing an amazing act of surgery or being recognised as experts in our field. And that’s great, but the clue is in the word delayed – we don’t expect it to go on forever. At some point we would expect to reap some reward, whether that’s intrinsic or extrinsic.

Sometimes that reward can be very far away – does it happen when we graduate, when we start our first job, when we gain the next step on the career ladder or when we retire? What if we never feel good about what we know or never feel we know enough? What if that time when we start to reap the rewards feels like it will never come?

It’s one of the reasons why I think we need to look wider in our definitions of success and not just to define what success looks like for us as individuals but to stick to that definition no matter how society, peers or family might challenge it.

Success is something I have thought about quite carefully. The things that matter to me are family, intellectual freedom and the chance to pursue interesting work on an equal basis and making sure that these values are shared family values. So sometimes my doctor husband has been a stay-at-home dad so that I can enjoy working with the BVA, representing the profession and being involved in formulating veterinary policies, and other times he has progressed his career and I have stepped back.

Along the way, we’ve acquired law degrees at night school, played an equal part in bringing up our child and taken part in endurance sports events. We are tremendously privileged to be in a position to do that – and it’s not something that would work for everyone – but this is our definition of success and we have actively chosen to have a smaller house, only run one car and live a simpler lifestyle. For us, this means we don’t feel burnt out trying to reach a distant goal, but instead our goal is a work-life balance that allows us to pursue the work we want while spending time as a family and enjoying the outdoors.

At times, we’ve climbed the career ladder, at other times we’ve climbed back down to achieve better work-life balance and at other times we’ve taken on things for the joy of them, not with any career goal in mind. So far, it’s worked out pretty well. We’ve felt confident about our decisions because they were aligned with what we wanted to do and who we want to be.

Family happiness overall is probably the top contender of how I define success. Family happiness overall is probably the top contender of how I define success. A close second is whether I have had a positive impact. Have I done things that I think really matter? Have I worked with people who are honourable and want to do good things? Have I made a difference?

As a profession, we are not paid as much as equivalent professions and if we define our worth and success by monetary means, we may feel disappointed. If we also have to sacrifice our happiness, we will probably feel even worse. Trying to judge ourselves against society’s yardstick or being what someone else wants us to be can be limiting and can make us feel as if we have somehow failed at life.

Success comes in all shapes and sizes. The important thing to remember about success is that it’s not all about the future; it’s not a far-off dream or something we have to work slavishly forever to try to achieve – a successful life as we define it for ourselves is something we can and should live right now.
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Should we listen to evidence-based or anecdotal veterinary medicine?

A reminder that vets must do their best to stay away from anecdotes and move towards evidence-based advice.

In 2009 the University of Nottingham founded the Centre for Evidence-based Veterinary Medicine (CEVM). The definition of evidence-based veterinary medicine (EVM) used by the CEVM is:

- Evidence-based veterinary medicine is the use of best relevant evidence in conjunction with clinical expertise to make the best possible decision about a veterinary patient.
- The circumstances of each patient, and the circumstances and values of the owner/carer, must also be considered when making an evidence-based decision.

The CEVM goes on to say that "The basis of EVM is good clinicians using good science to make good decisions about their patients to benefit their health and welfare. To be able to do this the veterinary profession needs high quality, relevant science made readily available to them in clinical practice."

An anecdote has various definitions, but the two most common would likely be:

- A short amusing or interesting story about a real incident or person.
- An account regarded as unreliable or hearsay.

Now of course anecdotal stories can be usefully told in a lecture or demonstration. Indeed, it has been said that the author is fond of the occasional anecdote in his presentations. Such anecdotes are clearly identified as such and are usually involving the field of equine reproduction. Having spent over 30 years in this field, I would like to think my anecdotes come from some sort of knowledge base. However, any anecdotal stories must ultimately defer to EVM.

I firmly believe that if science is to progress then scientific journals must have freedom of speech and be able to challenge current thinking. With that privilege, however, comes the responsibility to be disciplined in checking that claims are not politically motivated and that they stand up to basic scrutiny.

On this basis, I was surprised and disappointed to read a letter recently in a veterinary publication. The letter was by an author apparently based in North America who claimed that "several horses [in the Royal Wedding procession] were tossing their heads, mouthing and chomping and drooling in obvious oral discomfort". He went on to write that the system puts "blind tradition" ahead of "animal welfare and respect".

I don't know the author personally nor do I know of his field of expertise. There were no affiliations published along with his name so readers are left not knowing anything about him, unless they already happen to.

He may well be an equine veterinary surgeon, equine behaviourist and/or horse rider of considerable experience. Indeed, he may have specific expertise in equine veterinary care, equine behaviour or the use of tack in riding or carriage driving. Although the content of his letter would lead one to presume not. And of course, he is perfectly entitled to his view as much as the next person. However, myself and fellow BEVA council members are concerned that his assumptions are an inaccurate reflection of the behaviour he has described, demonstrate a basic misunderstanding of equine ethology and are not evidence-based.

BEVA wishes to distance itself from the views expressed by the journal on this issue and hopes that no one is left with the impression that either the letter or the accompanying press release are supported by the association that represents equine vets.

As a trusted profession, it is unquestionably our responsibility to provide clear, accurate, evidence-based information and advice on equine veterinary matters in all circumstances – whether speaking with clients, with peers or to the general public. No matter the temptation, there is no excuse to slip into the easy tide of fashionable or sensationalist opinion, simply in the hope of garnering five minutes of fame.

Jonathan Pycock
BEVA President

Jonathan Pycock is an equine claims consultant for the Veterinary Defence Society and an equine reproduction expert. He is the current president of the British Equine Veterinary Association.
International drug testing

The ins and outs of competition drug testing at international equine events

COLIN ROBERTS

Colin Roberts is an Affiliated Lecturer in Veterinary Anatomy at the University of Cambridge, a Fellow of Sidney Sussex College, Cambridge, and a freelance equine veterinary consultant. He works extensively at international horse shows. His professional interests include equine sports medicine and welfare.

The use of drugs is tightly regulated in equestrian sport; this article will consider the testing of horses for prohibited substances at international level in those disciplines regulated by the Fédération Equestre Internationale (FEI). The FEI is the international governing body for a number of equestrian sports: show jumping, dressage, eventing, carriage driving, vaulting, reining, paraequestrianism and endurance riding.

International equestrian sport has been growing at a tremendous rate. During 2016, 4,206 international competitions were held worldwide, involving a total of 79,200 horses, representing an increase of just over 100 percent over the course of just 10 years. Equestrian sports made their Olympic debut in the 1900 Games in Paris, but the first time that drugs were prohibited for horses in the Olympics was in Munich in 1972, and it was not until 1976, in Montreal, that horses in Olympic events were tested.

Control of the use of drugs in equestrian sport is necessary for a number of reasons. It is obviously important that horses and riders should compete on their own merits, without gaining an unfair advantage through the use of pharmaceuticals. More importantly for equestrian sport, horses must be protected from being made to compete when ill or unfit to do so. Finally, the integrity of horse sports must be maintained if they are to remain viable in the modern age.

The Prohibited List

The FEI’s approach to drug control has been to maintain a “Prohibited List” of substances which must not be present in samples obtained from horses during competition. The list, which comprises around 1,200 substances, is divided into two categories.

The majority of drugs in the list are classified as “banned substances”, which the FEI considers to have no place in the normal treatment of competition horses. The presence of a banned substance in a sample is viewed seriously. Although the sentence can be modified depending on the circumstances of the offence, the default sanction is a two-year ban for the person responsible (PR) for the horse (the PR is normally the rider, driver or vaulter, although other
people associated with the horse, including veterinarians, can be considered PRs depending on the circumstances of the case), as well as a fine and disqualification from the competition at which the horse was sampled. Anabolic steroids and anti-psychotic drugs used in humans are examples of banned substances that have been found in samples from competition horses.

The remainder of the substances on the Prohibited List are known as “controlled medication substances”, which the FEI considers to be bona fide therapeutic agents, but ones that must be absent from the horse at the time of competition. Unlisted drugs that are very similar to those on the Prohibited List are also not allowed to be present during competition, but otherwise any substances not on the list are not prohibited. The list is updated yearly on the advice of the FEI’s “List Group”, which consists of veterinarians, pharmacologists and other interested parties.

In treating competition horses, it is worth noting that while commonly used antimicrobial agents are not on the Prohibited List, one preparation, procaine penicillin, does cause positive results due to its procaine content, for which horses may test positive for an extended period after administration. It is wise, therefore, not to use this preparation in competition horses.

**Testing at events**

Horses may be selected for sampling at equestrian events in a number of ways. It is now only at Olympic Games and World Equestrian Games that it is obligatory to test the winners of individual and team competitions, although winners are often sampled at other bigger equestrian competitions. The vast majority of tests, however, are genuinely random; randomisation is performed in a variety of ways, including the use of smartphone random number generators and the selection of the horse in a given placing in a competition, before the result of the event is known.

Targeted testing may occur at the request of the Ground Jury (the event’s judges) or the Veterinary Delegate (the FEI’s veterinary representative at international equestrian events) if there are grounds to warrant it, but the actual proportion of targeted tests is tiny. While some riders lead themselves to believe that they are personally targeted, this does not occur. People, being people, tend to try to look for reasons for being tested and they often find totally spurious ones; for example, I was once told by a horse’s connections that they knew that they would be tested because one of their grooms was a vet student!

The testing procedure is very regimented. Once selected for testing, the horse is chaperoned to the sampling unit and must be observed by a member of the testing team until being released after sampling. Although it is possible to test horses in their own loose boxes, it is better practice to test in the sampling unit unless there is a very good reason to do otherwise. The horse’s PR, or their designated representative, usually a groom, must also be present throughout the procedure and must sign that they have witnessed it.

At the testing unit, the horse’s identity is confirmed from their passport (usually by reading the microchip) and attempts are made to obtain a urine sample. Under normal circumstances, the horse is only held for half an hour for this and, perhaps surprisingly, the majority of horses do urinate during this interval if they are sampled immediately after competing. Whether or not urine is obtained, a venous blood sample is also drawn for testing.

The urine and blood are each divided into an “A” and a “B” sample. The “A” sample is analysed and the “B” sample is stored at the laboratory and only examined if requested by the PR should the “A” sample prove to be positive.

For more information, visit the FEI website (docs.fei.org/system/files/FINAL%202018%20proposed%20Veterinary%20Regulations.pdf) and read the Veterinary Regulations (articles 1060-1076 cover equine anti-doping and controlled medication).
A Horse Rescue Unit in action

A fascinating insight into the work of the West Sussex Fire and Rescue Horse Rescue Unit

West Sussex Fire and Rescue Service responds to a variety of emergencies, including fires, road traffic collisions, chemical spills and flooding. The service also has a Technical Rescue Unit (TRU), which was formed in 2006. This is a specialist crew that can be mobilised to incidents where the rescue method may be significantly more complex.

There are 12 members of staff in the team that provide a 24/7 response, 365 days a year, with a minimum of four personnel on duty at any time. The team is based at Horley Fire Station, but immediately responds to emergencies via a pager system at evenings and weekends. Each member of the TRU has an “on-call” vehicle to use when necessary. They attend many incidents where horses need to be rescued. Over the years, the team has responded to call-outs where horses have been stuck in ditches, rivers, cess-pits and swimming pools. During a rescue, the team works closely with the vets and the vast majority have a positive outcome, involving a safe rescue with minimal injuries.

Ed Lyall, who is a veterinary surgeon and Director of the Sussex Equine Hospital, has worked with the team several times. “They have always provided the most amazing response, and have a solution for dealing with the relevant problem encountered. My last incident with them was when a horse fell into a river. On arrival, there was a large number of officers, vehicles and animal lifting equipment. An inflatable raft worked in conjunction with their RIB [rigid inflatable boat] and in a short time the casualty was on dry land ready for me to examine. The owner was delighted and the horse fine.”

Each crew member has gained an Animal Rescue Level 3 qualification through Hampshire Fire and Rescue Service, working closely and training with BEVA vets, the RSPCA and Brinsbury College Equine Campus – they regularly attend the campus for large animal handling training.

Vehicles and specialist equipment

Currently, the unit has nine operational vehicles and a powered boat in their fleet. Four of these make up their everyday “on-call” vehicles and they each contain a different selection of equipment.

There are two Ford Rangers with four-by-four capability...
and winches. One is predominantly used as an animal rescue vehicle and carries a variety of equipment such as an electric winch, which is mounted on the vehicle. It also has a selection of strops to use when rescuing large animals.

One of these strops is designed to spread the weight of a horse and is used in conjunction with a spreader bar and quick release system to ensure the safety of the horse throughout the lift. It also includes a large selection of horse and cattle head collars, lead ropes and lunge lines for maintaining control and contact with an animal.

The other Ford Ranger is used as a water rescue vehicle and carries inflatable rescue paths that can be used on mud, ice and unstable ground, floating lines and rescue rafts.

There are also two Ford Transit vans. One of the vans is used for rope rescues and carries technical search equipment such as team rope kits (in addition to their personal rope rescue equipment), which contain items needed to set up safe anchors for rope systems. It also contains three different types of stretchers and apparatus that can be used to locate casualties.

The second van contains equipment for spate weather conditions and is therefore flexible with its additional stowage, but will always contain a minimum of two chainsaws and two 100m ropes.

A Mercedes Unimog with a 12-tonne capacity has a crane mounted onto it that is often used for any lifting that is required at an animal rescue. It is an extremely well-valued vehicle for many rescue roles within West Sussex. This vehicle also carries a set of animal rescue equipment very similar to the equipment in the Ford Ranger.

The TRU is an Urban Search and Rescue Team, so they also have a range of Prime Movers in their fleet. They contain over 2,700 items of equipment for use at collapsed structure and major transport network incidents.

Finally, a Land Rover Defender is used as a resilience vehicle and can replace any of the on-call vehicles if necessary, or provide an additional vehicle during spate conditions such as flooding or when incidents require more personnel or equipment. The wide range of fleet vehicles and equipment is vital for the team as their capabilities are endless.

Seven years ago, the TRU was called to an incident in Sidlesham, West Sussex, where a pregnant horse had fallen into a 10-foot-deep hole that was used to dispose of glass from a greenhouse. The pit had filled with water and the horse had been stuck there overnight before it was brought to the attention of a member of the public.

Once the team had arrived, they entered the pit wearing dry suits and used the Unimog, alongside specialist rescue equipment, to safely rescue the horse. Fortunately, the horse escaped with minor injuries and it went on to deliver a healthy foal.

This incident highlights the necessity of having a specialist team that can work in difficult conditions to perform involved rescues. With Sussex having such a large equine population it is nice to see that owners and veterinary surgeons have the support of such a dedicated team at their disposal!
“Maybe actively planning relaxation sessions is just the thing to keep us all going”

Last month we dealt with those annoying exams that spoil the start of summer for so many. But talking to undergraduates, there seems to be quite a variation between students. Many are stressed with the prospect of the upcoming tests and frustrated by revision. Going back over the work from the previous months, they bemoan, shows them more what they have forgotten or never understood than what they have fully grasped and subsequently remembered.

But there is a minority of students who have a very different outlook. They say that this is the term they really enjoy. One where they can pull together the information from the months of lectures, where it all eventually makes sense, where they can work to amalgamate apparently disparate strands of learning and join them into a coherent whole. Did exam term ever turn out like that for you? I’m not sure it did for me! Perhaps it’s all a question of attitude.

I interact with vet students all the time of course, but only get a proper chance to talk to others from different disciplines over breakfast after our chapel’s Sunday communion service. This chapel crew includes several who have quite a different attitude to work.

The college library is full throughout every day (and much of every night) during exam term, but many of the breakfast bunch consciously take Sunday off. Their Sabbath break calms them down, they say, and helps them work harder during the rest of the week. They can rest without feeling guilty for not working while everyone else is manically cramming.

I tell all our students that whether they have a faith or not, it is worth taking an hour off every so often and coming to evensong in chapel where our world-class choir take you away from your workload and just about to heaven and back for 30 minutes or so.

Sam, my eldest son, had rather an epiphany in his first term doing environmental geoscience at the University of Bristol. He came home strangely relieved having realised that there was no way he could remember everything he was being told in lectures or read every volume on the recommended books list.

For GSCE and A level it was possible to know everything that might come up in the exams if you set your mind to it. But university was a totally different world. And understanding that was the most important thing to learn in that first year. It lifted a weight from his shoulders that continually weighed down other students.

Sam had a great way of revising, too. He took a novel with him wherever he was working and gave himself a prize of reading a chapter in-between every block of revision. That way, he had something concrete to do in-between learning and relearning the geology, maths or physics for his exams and a good reason for powering through those revision sessions with an end in sight.

You might ask why I am telling you all this. Well, I wonder if we have something to learn from Sam in how we structure our days. Do you ever feel that you struggle through a morning’s consults just to collapse in a chair and crumple before your afternoon’s surgery list?

Maybe actively planning relaxation sessions is just the thing to keep us all going. You may already do just that, but I know for myself that after 30 years of vetting, my life is still a chaotic leap from one work deadline to another. Perhaps I need to practise what I preach!
Making tax simpler

A new review into business tax by a government body – the Office of Tax Simplification – is hoping to reveal how the tax regime is really working.

For many years, the UK tax system has been becoming more and more complex. The UK tax code is one of the longest in the world and it keeps growing. In part, this is to be expected as the UK has one of the largest economies in the world and is at the forefront of new ways of doing business and the digital economy. The government acted in 2010 to tackle this complexity by setting up the Office of Tax Simplification (OTS).

The OTS is the independent adviser to the Chancellor on ways of simplifying the tax system. Based in HM Treasury, and working closely with the Treasury and HMRC, the OTS carries out independent research and, based on the evidence, makes recommendations for simplification. The OTS is tasked only with offering recommendations. Decisions are ultimately made by ministers and implementation is for the Treasury and HMRC.

Previous reviews have focused on a particular tax or a particular issue. For example, the recently published report on VAT was the first review of this tax. Other areas covered over the years include employment taxes and the "gig economy", stamp duty, national insurance contributions, corporation tax and many others. Two examples of its successes are the introduction of the cash basis for small businesses (in place of the normal accruals accounting) and a reduction in administration in relation to benefits provided to employees where, for most people, the annual form has been abolished.

Your views count

The key area of interest at present is the “user experience” – how it feels for a member of the public when dealing with tax obligations. The aim is to make that user experience as simple as possible and the office is asking businesses for their comments.

There is value in looking, for the first time, at all taxes across the whole of the business life cycle so that the interactions between these taxes and the impact of the tax system are explored more clearly. This has proven to be a useful perspective and it has become clear that someone starting and growing a business sees sustained complexity throughout the life cycle.

Start-up and incorporation

The first question a new business owner faces is when they may need to register, and with whom. For those starting a small incorporated business, the administrative burden of having to register separately with Companies House and HMRC could be reduced by introducing a "one stop shop". This is work in progress, but it may become easier in the near future.

The OTS also noted, in passing, that while there are reliefs for those raising capital from third parties later in the business life cycle, there is no tax relief for those having to raise start-up capital on day one, particularly where that capital has to be raised from relatives, as is often the case. It is not clear, however, whether a relief is needed at this point or whether it would stimulate enough new business to be worth the cost. The OTS would like to hear views on this.

Financing

There are several areas where tax complexity adds to the challenges of raising finance. Firstly, to qualify for Entrepreneurs’ Relief (the 10 percent capital gains tax rate on disposal of qualifying business assets), it is necessary to hold a minimum of 5 percent of a company’s shares. We have heard that some business owners feel discouraged from bringing in external venture capital because there was a risk that their shareholding could be diluted below this level. The government launched a consultation at Spring Statement 2018 which the OTS fully supports; it will be interesting to see how much of a problem this is in practice.

The three main tax-favoured venture capital schemes are the Enterprise Investment Scheme (EIS), Seed Enterprise Investment Scheme (SEIS) and Venture Capital Trusts (VCTs). These have common features but also a number of differences, which means that they attract different types of investors who invest for different reasons. There are...
opportunities to remove some of the inconsistencies and to explore ways of simplifying some of the administrative procedures. These reliefs can be quite complicated for businesses to navigate.

**Succession**
When a business is disposed of by way of a gift, relief from capital gains tax may be available under either Entrepreneurs’ Relief or Gift Relief; these offer the option of paying 10 percent now (Entrepreneurs’ Relief), or potentially paying at the full rate at a later point in time (with the gain deferred under Gift Relief). These two reliefs are mutually exclusive but determining which is better to claim depends on the future plans of the recipient of the gift, which will often be uncertain at the time the choice needs to be made. Some simplification of the interaction of the reliefs would help to make the choice clearer and simpler for all parties, including HMRC.

Capital gains tax reliefs (Entrepreneurs’ Relief and Gift Relief) are available for transfers of shares in trading companies where the non-trading element of the business is not more than 20 percent of the whole. In contrast, Inheritance Tax Business Property Relief is available on transfers of a business, or shares in a business, where the non-trading element of the business (whether incorporated or not) is less than 50 percent. As well as the confusing effect that results from two different rules, this can lead to businesses adopting commercially unnecessary and complex structures to preserve their qualification for the reliefs.

**Disposal**
The cost of Entrepreneurs’ Relief is greater than that of any of the other reliefs considered by the OTS. While those other reliefs appear to be designed to encourage investment in young and growing businesses, or to preserve existing business from break-up in the event of succession, Entrepreneurs’ Relief does not seem to achieve either of those objectives. Its place in the range of reliefs, and its purpose, warrant a closer look (although for some, it is clearly very important).

When a business is sold there is a possibility of double taxation. Tax arises on the company on sale of its business and again on the shareholder on disposal of the shares (or receipt of a dividend). This is disadvantageous for the seller. In contrast, the purchaser of the business enjoys more favourable tax treatment and reduces their risks by buying assets from a company rather than buying the company. A conflict of interest is therefore created between vendors and purchasers, which must make successful business transactions more difficult to achieve. Aligning the tax treatments would help to reduce such difficulties.

**What next?**
The OTS warmly welcomes comments and views on all of these areas. How should this work be taken forward? There are some areas where the complexity is obvious, such as the venture capital reliefs. There are other areas, such as the possibility of relief for start-up capital, where the position is much less clear. Administrative aspects are known to be difficult for some businesses and the question, perhaps, is one of prioritisation.

The availability of tax reliefs at various stages in the life of a business has evidently played an important part in creating a business climate that encourages entrepreneurial activity in the UK. However, the overall picture is complex and clearly confusing. Some of the reliefs are not as well known or understood as they might be.

If, as the OTS has found, some eligible businesses are simply not aware of the availability of all of the reliefs, their advisers might be more proactive in drawing these facilities to their attention. There are examples of businesses which have started to investigate a tax relief but found the process too difficult and it should be possible to learn from these experiences.

The need to encourage innovation and support growing businesses, the economy and employment in the UK is more vital than ever. The business tax system must be fit for this purpose and support these aims.

The OTS believes that there is a pressing need to undertake a detailed review of the tax system as it operates on key events in the business lifecycle, helps the UK economy to maximise its opportunities and makes the system clear and simple for companies to understand and use.

Views on the Business Life Cycle Report and thoughts on where the work might most helpfully be taken forward are welcomed. The OTS also welcomes examples from practical experience and readers’ insights as to how some of the difficult areas might be approached. The office plans to undertake further work in this area and readers’ views will be very useful in setting priorities.
**Investing in diagnostic technology**

How investing in new diagnostic technology can help veterinary practices keep pets healthy and pet owners happy

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**SALLY-ANNE WHYBROW**

Sally-Anne Whybrow is Sales Manager for the Siemens Financial Services Healthcare team in the UK. Having started her career at Dun & Bradstreet, Sally-Anne has been in the finance sector for 16 years.

The veterinary sector is expanding and, with that growth, competition is increasing. According to the RCVS, there was a 12.3 percent increase in the number of veterinary premises between 2010 and 2014. In the same period, independent practice numbers grew by 9 percent while practices with corporate business models grew by 36 percent. Similarly, while statistics show that independent practices generate median profit levels of approximately 7 percent, corporate groups are achieving 18 percent and more.

As new veterinary practices open, particularly corporate-based groups, the installation of diagnostic imaging equipment is seen as an integral part of the business, including offering referral diagnostic work to other smaller local practices. State-of-the-art point of care ultrasound systems, MRI and CT scanners offer immediate benefits, allowing for faster, more accurate and non-invasive diagnoses as well as offering better identification and management of pet diseases previously difficult to diagnose and treat.

This, in turn, leads to improved animal care and therefore better outcomes – in terms of faster and sometimes less invasive treatment – for pets. This positively impacts pet owners, not only in terms of the potential reduced costs of treatment but also in terms of a lessened emotional impact of treatment.

There is an increasing expectation that new diagnostic technology, already benefiting people across the world, will also be made available to pets. Pet owners continue to spend more on their pets every year; £4.6 billion was spent in 2015 – a huge growth from £2.55 billion in 2005. They therefore expect practices to meet their needs and surgeons can improve their competitive standing by investing in new technology.

There have been major advances in veterinary diagnostic equipment over the last few years; for instance, CT scanners now boast improved rotation speed, resolution and computing power. Furthermore, parallel to advances in hardware, developments in imaging software are facilitating more efficient processing of radiographic images. Radiography, ultrasound and 3D printing technology are more advanced and accessible, meaning images can be shared more readily and be analysed using preset data, as well as professional acumen and insight.

The phenomenal growth of “big data” and the data science skills to use these huge datasets are helping to create far clearer pictures of animal diseases and the recovery pathways from injury, helping to make treatments not only more efficient, but also less invasive and stressful for both pets and their owners.

It can, however, be difficult for some practice owners to finance growth and investment in practice resources. Keeping pace with technological advancements requires considerable capital expenditure. Against this background, acquiring the latest veterinary technology may seem out of reach for many practices.

Some may be caught in a predicament where budget limitations are hampering the ability to make the investments which play a key role in increasing the productivity and efficiency of services. To this end, asset financing techniques such as leasing are emerging as an increasingly popular, cost-effective investment enabler.

Such financing techniques spread the cost of the equipment over an agreed financing period, with regular finance payments arranged to align with the expected efficiency gains and income stream enabled by the use of the latest technology. This removes the need for a large initial capital outlay and enables immediate access to up-to-date equipment despite tight budgets.

Veterinary practices can thereby deploy precious funds in other areas to improve service quality. Financing arrangements can potentially also cover other costs such as installation as well as introduce the flexibility of future technology upgrades in line with technology developments.

Tailored, all-encompassing financing packages tend to be offered by specialist financiers who have an in-depth understanding of production technology and its applications. They understand the profound impact up-to-date technology can bring to the daily business of a veterinary practice and can expertly evaluate any associated risks. They are therefore more capable of creating customised financing packages that fit the specific requirements of a veterinary establishment – for instance, flexing the financing period to suit the organisation’s cash flow. This contrasts with the standard financing terms usually available from generalist financiers, who can lack a thorough understanding of the veterinary sector as well as technical expertise.

As the veterinary sector grows, practices need to find new ways to stay competitive and meet the needs of their pet-loving customers by embracing all that new technology has to offer. Alternative financing is an increasingly popular way for practices to invest in diagnostic imaging equipment to grow their business and offer patients the quickest and most accurate care.
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How do cryptocurrencies work?

An introduction to cryptocurrencies as a potential investment solution

Cryptocurrencies (cryptos), such as Bitcoin, have grabbed a fair few headlines in recent months, with more and more new “currencies” being created all the time: there are now over 1,500 available. However, it is the price increases that have attracted most of the attention, with many comparing the recent rises to historic asset bubbles. For example, during the dot-com bubble around the turn of the last century, prices of technology stocks eventually fell by 80 percent. Another good example is the tulip bubble of the early seventeenth century, where speculation helped drive the value of tulip bulbs in the Netherlands to previously unheard of prices. Newly imported from Turkey, tulips were apparently a great novelty at the time, and perhaps cryptos are no different.

Bitcoin was the first crypto and was described as a purely peer-to-peer version of electronic cash that would allow online payments to be sent directly from one party to another without going through a financial institution. This description underscores one of the key ideas behind digital currency – that it bypasses the traditional banking systems. You may, however, also note that it is not a clear explanation of an investment – which fairly well sums up these assets in that they are complex instruments that are difficult for many investors to understand.

Unlike traditional finance, cryptos have no central monetary authority. Instead, banks are replaced by a peer-to-peer network made up of users’ computers, which time-stamp transactions by hashing them into an ongoing chain of work. This forms a chain of transaction history of every bitcoin, called the blockchain. If it is done properly, blockchain does have the potential to speed up transactions, allow for international transfers, cut costs and improve transparency across several industries.

It is important, though, to realise that cryptos are fundamentally different from traditional currencies like the Great British pound or the US dollar. Money, in the form of currencies (coins and banknotes) and electronic money (bank deposits), is commonly characterised by at least three functions: a medium of exchange (for buying), a unit of account (for pricing) and a store of value (for saving). This is quite clearly not the case for these cryptocurrencies.

The number of articles in the financial press that have tried to make a standard investment case for Bitcoin has been amazing. Most investment professionals have deliberately avoided covering the phenomenon, because the fundamentals simply do not support the rates of appreciation we have seen. Essentially, the market dynamic isn’t that far removed from a pyramid scheme; if you buy in, you are wholly reliant on market churn.

Finally, cryptocurrencies are still not very well regulated by the authorities, although this is changing gradually, and in most countries (with the notable exception of Japan) they are not accepted as legal tender. Until this changes, the case for investment is based on chance and speculation, neither of which, we would suggest, are the key drivers of a rational and suitable investment for most people.

NEW TAX YEAR ALLOWANCES

The current rates for England are set out below (note that rates in Scotland, Wales and Ireland may vary).

Income tax
The personal allowance has increased to £11,850. The higher rate tax threshold has also increased to £46,350. The dividend allowance, which was a useful additional allowance for tax planning, has been reduced from £5,000 to £2,000.

Capital gains tax
The CGT allowance has increased to £11,700 and the CGT rates are 10 percent for lower rate and 20 percent for higher rate taxpayers (these rates are 18 percent and 28 percent for gains made on sales of residential property that do not qualify for relief).

Inheritance tax
The IHT Nil Rate Band has remained level (again) at £325,000, but the Residence Nil Rate Band has increased to £125,000. In total, couples may be able to leave assets up to £900,000 to their descendants free of IHT (or £450,000 for an individual).

Pensions
The pension lifetime allowance has increased slightly to £1,030,000 (from £1 million). Pension tax relief rules remain unchanged, so the annual allowance for contributions is £40,000 and will not be tapered until “adjusted income” exceeds £150,000.

ISAs
The standard annual ISA limit stays at £20,000 – and this should not be wasted, given the restriction on investment levels in other tax preferred plans.
Managing difficult employment relationships

What are the alternatives to grievance and disciplinary processes?

Workplace conflict is a drain on a business. It leads to lost revenue, reduced productivity and increases in staff absence and turnover.

Can you afford to leave staff who work unhappily alongside each other in conflict to fester? Doing so often ends in complex grievances arising out of differences in personality or working style, or disciplinary sanctions being issued if one party perceives the conflict to amount to bullying and harassment.

The size of the business doesn’t matter. Differences between colleagues in a smaller business can have just as much of a detrimental impact as in a larger organisation. Left unaddressed, relatively minor disagreements can escalate and cause fundamental damage to your business.

What is workplace mediation?

Workplace mediation is a confidential, impartial, non-judgemental and voluntary process to address workplace disputes quickly, where a neutral third party assists colleagues to understand their differences and find their own solutions.

What is the role of the mediator?

A key concept of mediation is that the mediator will handle the process confidentially.

The mediator will not take sides or impose any of their own (or the employer’s) views or solutions on the parties. They are present to get the parties talking and working together to make inroads in how to address their differences.

If a party wishes to withdraw from mediation they are free to do so, but the mediator will encourage them to think through the implications of doing so before they walk away.

What are the benefits?

Mediation will save your practice time and money!

- It addresses issues before they become protracted grievance or disciplinary matters – practice managers can focus on their day job, so productivity is not adversely affected.
- Early intervention means that your practice is less likely to experience staff absence and staff turnover, with the resultant exit/recruitment costs.
- There are fewer layers of formality, and because mediation is participant-led, they should feel a greater sense of ownership and satisfaction compared to a management imposed outcome decision.
- Empowering employees to make their own decisions in this way leads to a reduction in litigation and encourages cooperation in future, between participants and among the workforce in general.

When to use mediation

Mediation works for conflict in relationships between two colleagues, either peer to peer or supervisor to supervisee.

It is not appropriate for team issues, which may benefit from facilitated sessions to air and address conflict between several colleagues and/or managers. It is not suitable for serious disciplinary matters, such as potential gross misconduct situations or serious allegations of discrimination. It is also not applicable to disputes over employment contract terms and conditions (either individual or collective).

If you have any specific questions on this topic, please contact Stephenie Malone by email at: smalone@hcrlaw.com
Writing this month’s column, I am not my usual up-beat veterinary self. A succession of client issues and generally being over-stretched at work has, for the first time I can remember, made me start to wonder why on earth I put myself through it. The answer for me (like a lot of vets mid-career I imagine) probably boils down to, if nothing else, to pay the mortgage and fund the kids. However, for younger vets still able to cut and run to a less demanding (and at that stage better paid) working life, I can understand their motives.

Losing vets for this reason is one factor in the current recruitment crisis. I contacted both the RCVS and the BVA for comment on the problem and was pleased to hear that it is being worked on by both organisations.

The RCVS responded:

“Hard figures on the recruitment crisis are hard to come by ... the 11 percent figure is an estimate given to us by the Major Employers Group.

“Alongside BVA, we are in close dialogue with Defra through the Veterinary Capacity and Capability Project (VCCP) ... [and] have subsequently had meetings with the Migration Advisory Committee (MAC) who oversee the shortage occupation list; we have also met directly with Home Office representatives to discuss the matter.

“We continue to press the case ... [and are] exploring how domestic graduate numbers can be boosted ... it is, as yet, far from clear what post-Brexit immigration policy will look like, or what the role of the shortage occupation list or its future equivalent will be.

“However, the government has indicated that overall immigration numbers should be reduced to below 100,000, and this may have an impact on the future migration of veterinarians to the UK. Ensuring that the government is aware of the existing shortage of vets and the current reliance on overseas graduates remains a priority in the hope of mitigating this as much as possible.”

The BVA responded similarly:

“Yes, we are lobbying for vets to be added to the SOL as a means to ease the shortfall ... to safeguard animal health and welfare and public health. The List allows the profession to recruit internationally beyond Europe by prioritising work visas for veterinary roles and anticipates shortages in particular areas, such as veterinary education, where the crucial skills of overseas staff are in danger of being lost.

“We’re not aware of any hard figures around the numbers of vets leaving the profession apart from those held by the RCVS in terms of numbers coming off the register. There isn’t really a straightforward answer to ‘Where are all the vets?’ and there are probably many contributing factors.

RCVS research suggests that one in five non-UK EU vets are actively looking for work in other countries, while 44 percent say they are ‘fearful for their future’. In a recent survey with BVA members (autumn 2016), nearly one fifth (18 percent) of our members reported that since the referendum, recruitment has become harder.

“There was a recent article discussing pay in Vet Record which suggests that pay is stagnating ... but there are some upward trends, for example in those that work part-time.”

It is good to hear that the RCVS is working on our behalf and with the BVA. Vets often see the RCVS as just a regulator when it clearly does much more.

Recruiting from overseas is not the only thing we need to address. There is nothing to stop us doing that anyway, providing the employer can satisfy visa criteria. The profession needs to stop losing vets from its ranks of two-years-plus qualified vets.

Ten years ago, a big veterinary concern was budget clinics and the race to the bottom for prices. This has driven down salaries in general practice. The explosion in referral practices and out-of-hours practices over a similar time-frame has led to an increased expectation in quality of medicine and surgery in small animal practice 24 hours a day.

These separate changes have led to clients expecting supervet standards at vaccination clinic prices, at all hours. For those of us clinging on to life at the veterinary coalface in general practice, this has led to us being expected to provide an almost impossible level of service at a low price (leading to low salaries). This is why vets leave.

I will end this cheery piece with an email just received from a vet and practice owner in Australia, a traditional source of vets for the UK:

“It’s not Brexit. We are in New South Wales and are two vets down. The recruitment is critical here. The employment agencies have nobody at all for us. I have employed vets in the UK and Australia for 25 years and never seen anything like this.

“We suspect they’re going to corporates, not liking it and leaving the profession, but we can’t even find any to ask them what they want!”

Yours in depressed desperation, Mary.”

Gareth Cross

VP
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