Cardiology
Managing feline arterial thromboembolism

IN FOCUS Approaching cases of congestive heart failure in cats / EXOTICS Cardiac disease in small mammals / SMALL ANIMAL Exocrine pancreatic insufficiency in dogs / LARGE ANIMAL Antimicrobial use in agriculture / EQUINE Achieving high-quality care / OFFICIAL VET Do vets understand biosecurity?
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Happy holidays to those who celebrate and welcome to the December and January double issue of Veterinary Practice magazine. This month, the focus is on cardiology, with articles on the management of congestive heart failure and arterial thromboembolisms in cats. You can also read about cardiac disease in small mammals in the exotics column.

The small animal section has features ranging from an overview of the use of cryosurgery in ophthalmology to a report of a case of pemphigus foliaceus in the dermatology column. Part two of the feline medicine mini-series on early chronic kidney disease is an interesting read, focusing on nutritional management of the disease. Make sure to check out part one in last month’s issue.

Two interesting articles on the veterinary profession, past, present and future are also in this issue – from Gudrun Ravetz discussing shared challenges and solutions vets may share with other healthcare professionals and Bruce Vivash Jones delving into the history of the profession as we know it.

Reports from two insightful conferences form our large animal section this month – one outlining the proceedings at the BCVA annual congress 2019 and one reporting on the Responsible Use of Medicines in Agriculture (RUMA) conference held at the end of October.

The Official Vet section is back this month, with two pertinent articles. Nick Perkins highlights common certification problems in small animal practice and Alasdair MacNab discusses biosecurity within the veterinary world.

BEVA President Tim Mair reviews the implementation of “high-quality” care in equine practice. An in-depth overview of modern extraction techniques in equine dentistry is provided by Tim Barnett, in which he discusses the diagnosis of diseased teeth, the indications for extraction and the different extraction methods available.

The practice management section this month is full of useful information: from an overview of holiday entitlements and what to do when you’re “ghosted” by an employee to ideas of what vet practices can learn from tech start-ups. Sandeep Dattani provides insights of how you can start to prepare your practice for Brexit.
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Europe’s first oral vaccine for dogs launched by Zoetis

Zoetis announced on 31 October 2019 the launch of Versican Plus Bb Oral – the first oral vaccine for dogs in Europe. It will provide robust, long-lasting protection against *Bordetella bronchiseptica*, a primary component of the canine infectious respiratory disease complex (CIRDC), with new easy oral administration.

Versican Plus Bb Oral offers increased comfort for dogs and a smooth consultation room experience for both dog owners and veterinarians. The single-dose liquid vaccine is easily administered into the mouth and has a 12-month duration of immunity.

Eileen Ball, Global Veterinary Medical Lead for Companion Animal Infectious Diseases for Zoetis, said: “The new oral delivery brings a more positive experience for dogs, owners and vets. We expect this new option for vaccination will lead to an increase in recommendations for Bordetella prevention, better vaccination compliance and ultimately a healthier dog population.

“Nearly all dogs are at risk of CIRDC, and *Bordetella* is a common, but preventable, pathogen. Adding Versican Plus Bb Oral to vaccination protocols offers CIRDC protection for dogs. Vets can propose this new vaccination to pet owners at an annual wellness visit in the knowledge that they will be creating a less stressful experience for the pet and owner.”

Zoetis established the European Canine Infectious Respiratory Disease Advisory Board – made up of veterinary specialists from across Europe – to provide guidance and advice on the product’s launch.

Member of the board, Professor Emeritus Michael J Day, University of Bristol, spoke at the launch and said: “The CIRDC has a multifactorial pathogenesis, involving environmental and lifestyle factors and numerous potentially causative organisms. CIRDC is not just a cough picked up in kennels. It can be spread in any space occupied by multiple dogs, including grooming parlours, dog day care establishments or dog parks. The pathogens have not disappeared over time and CIRDC is prevalent throughout Europe, with *Bordetella bronchiseptica* remaining a commonly identified agent in infected dogs.

“I think it is exciting for European veterinarians now to have another option in the way they deliver non-core Bordetella protection. There will be different situations depending on circumstances in which either an oral, intranasal or injectable route of administration will be most appropriate.”

Versican Plus Bb Oral is being launched in Europe from November 2019 with rollout across the continent continuing until October 2020.

Programme for Vets South 2020 announced in association with lead sponsor, Bayer Animal Health

Tickets are selling fast for Vets South 2020, the only veterinary congress to take place in the south-west of the UK. It offers a comprehensive clinical programme for both vets and veterinary nurses and has become a popular fixture in the veterinary congress calendar.

During the two days, 16 world-class speakers will discuss best practice in small animal medicine, surgery and veterinary nursing under the over-arching theme of “treating patients on a limited budget”. Topics covered will include cardiology, oncology, ophthalmology, orthopaedics, emergency and critical care and infectious diseases. Vets South is organised by global veterinary CPD specialist Improve International and, for the first time, is held in association with lead sponsor Bayer Animal Health.

In total, Vets South will offer 27 hours of CPD for delegates to choose from through its two veterinary streams and a veterinary nursing stream. Speakers include Dr Kieran Borgeat, an American, European and RCVS Recognised Specialist in Veterinary Cardiology; Dr Ian Ramsey, Professor of Small Animal Medicine at the University of Glasgow; and Dr Owen Davies, an American Specialist in Veterinary Oncology.

Dr Andrew Carrington, an Official Veterinarian working in practice in Wiltshire, will chair the small animal medicine stream, while Dr Jon King, manager of the Wales Veterinary Science Centre in Aberystwyth, will chair the small animal surgery stream. Ms Wendy Nevins, RVN and Past President of the BVNA, will chair the nursing stream. A keynote panel discussion will take place at the end of the first day.

Early Bird rates start at £90.00 + VAT per day, available until 31 December 2019. Delegates can also sign up for a free six-month subscription to Improve’s Online Bitesize CPD, an online educational platform. It offers veterinary surgeons an additional 18 hours of free CPD and an additional nine to veterinary nurses.

Vets South will be taking place on 4 and 5 March 2020 in Sandy Park, Exeter. For more information about the event and the programme visit vetssouth.com or call 01793 20805
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The RCVS has produced a checklist poster for use in the practice setting to help veterinary surgeons remember the key things they need to consider when delegating work to veterinary nurses.

Schedule 3 to the Veterinary Surgeons Act provides that vets may delegate medical treatment and minor surgery (not involving entry into a body cavity) to registered veterinary nurses (RVNs) and student veterinary nurses (SVNs) under certain circumstances.

Following an RCVS survey to gauge how well both vets and vet nurses understood the provisions of Schedule 3, it was clear that both groups could benefit from some additional guidance and greater clarity around some of the terms and language in the Schedule.

After the publication of the survey report, the RCVS Veterinary Nursing Schedule 3 Working Party made a number of recommendations, including the production of a number of case studies and a reference poster to assist veterinary surgeons in making those everyday decisions on delegation in practice.

Ian Holloway, RCVS Director of Communications, who helped develop the poster with the Standards Committee and the College’s Standards and Advice Team, explains: “It was clear from the survey results that we could do more to help vets and vet nurses understand and remember the principles of delegation under Schedule 3, so hopefully our six-point checklist, using the memorable mnemonic ‘SUPERB’, will do just that.”

The mnemonic SUPERB stands for:

- **Specific procedure** – is the procedure medical treatment or minor surgery not involving entry into a body cavity?
- **Under care** – is the animal under your care?
- **Person** – can you delegate to this person?
- **Experience** – does the RVN/SVN feel capable and have sufficient competence and expertise?
- **Risks** – have you considered the risks specific to this case?
- **Be there** – are you available to direct or supervise as necessary?

Only if veterinary surgeons can answer all six questions in the affirmative, can they delegate accordingly.

The SUPERB checklist poster produced to assist vets when delegating tasks to vet nurses under Schedule 3

The poster is available to download from [rcvs.org.uk/schedule3](http://rcvs.org.uk/schedule3) where further resources about delegation are available, including links to the relevant chapter of the RCVS Code of Professional Conduct and the Schedule 3 case studies.

### Applications for joining the RCVS 2020 Fellowship are now open

The Fellowship is the learned society of the RCVS aimed at veterinary surgeons whose activities demonstrate excellence in veterinary endeavour and who have distinguished themselves on account of their ongoing commitment to using their experience and knowledge to enhance the profession further. There are three routes to entry, recognising meritorious contributions to: veterinary knowledge; clinical practice; and the profession.

The Fellowship has been given additional impetus with the development of a three-pronged strategy to help it reach its aim of becoming a learned society. The three key aims are: promoting scientific excellence; harnessing the expertise of Fellows to further professional skills and practice and to invigorate a curiosity for innovation; and undertaking activities that enrich public discourse about the impact of veterinary science to everyone.

The deadline for applying to join the 2020 tranche of the Fellowship is Monday 3 February 2020. All the details on how to apply can be found at [rcvs.org.uk/fellowship](http://rcvs.org.uk/fellowship).

### Shape the future of the veterinary professions as an RCVS or VN Councils candidate in 2020

Veterinary surgeons and veterinary nurses are being encouraged to help shape the future of their professions by standing as candidates for the RCVS Council and Veterinary Nurses (VN) Council, respectively, in their 2020 elections.

In next year’s RCVS Council election, there are three elected veterinary surgeon member places available with successful candidates serving four-year terms.

In the VN Council election, there are two elected veterinary nurse member places available with successful candidates serving three-year terms.

Nominations are open until 5pm on 31 January 2020.

Further information, including nomination forms, guidance notes and frequently asked questions for prospective RCVS Council candidates can be found at [rcvs.org.uk/rcvscouncil20](http://rcvs.org.uk/rcvscouncil20).

The equivalent documents for VN Council candidates are available at [rcvs.org.uk/vncouncil20](http://rcvs.org.uk/vncouncil20).
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Veterinary antibiotic sales halved over past four years

Sales of antibiotics for use in food-producing animals have reduced by 53 percent from 2014 to 2018, the Veterinary Medicines Directorate (VMD) confirmed on 29 October 2019.

This demonstrates the strong and committed approach taken by the UK’s food, farming and veterinary sectors to tackle antimicrobial resistance (AMR). The figure comes from the annual Veterinary Antibiotic Resistance Sales and Surveillance (UK-VARSS) report published in November 2019.

The UK’s Chief Veterinary Officer Christine Middlemiss said that this is a testament to the improvements industry and the veterinary profession have made in antibiotic stewardship, training and disease control. “This is a great example of how real change can be achieved when government and industry work together including through initiatives such as the Targets Task Force chaired by RUMA (Responsible Use of Medicines in Agriculture Alliance). The focus on infection prevention and control is key to reducing the need to treat with antibiotics and maintaining the UK’s world-leading standards in protecting animal health and biosecurity.”

This success in reducing antibiotic use in food-producing animals is also highlighted in the recently published Ninth European Surveillance of Veterinary Antimicrobial Consumption report which shows that the UK now has one of the lowest levels of veterinary antibiotic sales in Europe.

BEVA provides practical support to encourage further reduction in antibiotic use

BEVA is running a survey to find out more about antimicrobial use and antimicrobial resistance in practice and has added further elements to its PROTECT ME Toolkit online resources.

The survey, launched at BEVA Congress in September, aims to assess any changes in prescribing of antimicrobials in equine practice since the last survey in 2009. The results will also provide an insight on the current frequency and types of antimicrobial-resistant infections seen by clinicians and what infection control and audit practices are in place.

BEVA’s PROTECT ME toolkit is a free resource for BEVA members, to help facilitate compliance and educate horse owners about the importance of antimicrobial awareness. “While antimicrobials remain essential for the health and welfare of horses suffering from bacterial infection, it’s imperative for vets to protect their usage to maintain their effectiveness for the future,” said BEVA President Tim Mair.

“The equine veterinary sector is committed to responsible stewardship; sales surveillance data shows that sales of horse-only antibiotics has fallen by 4.3 tonnes (64 percent) since 2017 and 13.6 tonnes (85 percent) since 2014. We hope the results of the BEVA survey will provide further optimistic data.”

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Evidence-based veterinary medicine at forefront of new veterinary group

In a first for the profession, 15 of the major UK member organisations, vet schools and policy-making bodies have come together to affirm their commitment to veterinary medicine based on sound scientific principles, in a new landmark publication produced by RCVS Knowledge and the charity Sense about Science.

*Evidence-Based Veterinary Medicine Matters: Our Commitment to the Future* represents the first time this broad and influential group have formally united in support of a single issue. This unprecedented collaboration is testament to the importance that veterinary organisations across the profession place on the use of evidence to enhance all types of veterinary medicine.

The publication serves to demonstrate the profound and wide-ranging impact that evidence can have – and has had – on animal health and welfare. It also provides a convincing rationale for all veterinary professionals to contribute to the evidence base and put evidence into practice, to the benefit of animals, owners and veterinary teams themselves.

The commitment is set in the context of 14 case studies showcasing that different types of evidence have been vital to significant steps forward in veterinary medicine. Evidence has been at the heart of the eradication of the cattle disease rinderpest, successful strategies to prevent bird flu and the rapid and accurate diagnosis of colic – one of the most common causes of death in horses. Evidence has also been core to the development of new techniques to treat bulldogs with breathing problems, new methods to reduce seizures in dogs with epilepsy and faster means of detecting antimicrobial resistance, among many other valuable advances.

In their commitment, the signatories state: “When rigorous research underpins medical decisions, adverse events can be minimised, and patient outcomes can be improved. We believe evidence-based veterinary medicine reinforces the sound scientific principles of the profession and strengthens the commitment to put animal health and welfare at the forefront of all we do.”

Latest small animal neutering complication rates released by vetAUDIT

The latest small animal neutering complication rates were released in November 2019, alongside the first ever benchmarks for rabbit neutering, on RCVS Knowledge’s vetAUDIT website.

The baseline figures in dogs and cats are remarkably similar to last year’s benchmarks, indicating neither improvement nor deterioration in treatment quality across the practices included in the audit. Rabbit data was recorded for the first time, although the small sample size limits the inference that can be taken.

In total, just under 40,000 cases were included. Standout benchmarks include:

- Over 15 percent of animals suffered an abnormality related to the operation, with around half of these requiring medical treatment or surgical intervention
- 75 percent of neuters were complication-free
- In cats and dogs, spays suffered a higher incidence of complications than castrates. However, the reverse was seen in rabbits
- Spayed and castrated cats suffered fewer complications than dogs
- At least 25 percent of dog spays resulted in some form of complication
- More than 95 percent of castrated cats suffered no abnormality
- 35 animals died as a result of a neutering procedure, including one rabbit
- Over 3,000 cases were lost to follow-up

Pam Mosedale, Chair of the Quality Improvement Advisory Board at RCVS Knowledge, said:

“These benchmarks are of importance to all small animal practices and offer invaluable insight into the current levels of patient safety associated with routine neutering procedures... We are also heartened to see a 10 percent increase in data submitted to the audit in 2019, which not only makes the national benchmarks more accurate, but demonstrates the growing importance the professions are placing on quality improvement methods.”

Practices can anonymously submit their data to the audit and compare their figures to the national benchmarks on the vetAUDIT website: [vetaudit.rcvsk.org/nasan](http://vetaudit.rcvsk.org/nasan)
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What can we learn from medical professionals?

Veterinary and medical professions share parallel challenges, so can we benefit from parallel solutions?

As veterinary professionals, it’s a natural comparison to look at the working life of doctors and dentists. We often labour under the impression that the human medics benefit from higher salaries and more defined career options. There can be a hint of envy as we look at our medical colleagues if we find ourselves financially stretched or stagnating in our careers. However, a recent government review on remuneration of the medical professions reveals truisms remarkably similar to our own experiences and mirrored challenges to those facing the veterinary profession. Can we benefit from parallel solutions?

With guaranteed jobs on graduation and public perception of being valued and held in high regard, it’s still an attractive prospect to be a vet, doctor or dentist, although there has been a recent decline in the number of applicants across the three professions. With parallel challenges with recruitment and retention we need to focus on creating good workplaces to safeguard the future of these professional workforces.

Starting salaries for new graduates are certainly respectable and very comparable for the three professions. The 2018 Society of Practising Veterinary Surgeons Salary Survey showed the average salary for new graduate vets was £32,175. Foundation trainee salary for dentists is a comparable £31,192, while the foundation doctor year 1 (FY1) salary is lower at £27,146.

The small salary advantage vets see as new graduates soon reverses. The median annual salary for a full-time salaried general medical practitioner (GMP) was £63,493 in 2016. Compare this to the results of the SPVS Salary Survey 2018, with a median salary of £47,800 (excluding additional benefits) and the difference in salary progression is stark. The British Dental Association (BDA) stated that there had been a deterioration in dentists’ pay since 2008, from a median FTE net of £67,880 to £60,200 in 2016 for performer-only dentists (equivalent to a salaried assistant vet). An interesting comment is the idea that pay progression should be linked to performance and competence in the role. Performance related pay is a controversial area in the veterinary sector, beyond the scope of this article. We know that pay is an important hygiene factor, but the relationship is not linear and beyond a certain point higher pay does not continue to boost motivation. However, the knowledge that as a vet we’re paid on average 20 to 25 percent less than our doctor and dentist colleagues may be demotivating.

The move towards larger medical practices and corporatisation in the dental and veterinary professions is also increasing. In dentistry, large pan-European groups are forming, with the recent acquisition of one of the largest UK dental groups by a Swiss firm. NHS England stated that 85.7 percent of dentists in England were now performer-only (ie hold no share of NHS contracts or facilities), compared with 62.4 percent between 2006 and 2007, and similarly general practitioners are increasingly opting for salaried GMP roles. In the Doctors and Dentists Remuneration Report the reasons for the shift towards lower-paid performer-only or salaried roles are not clear, but were thought to relate to the desire for work–life balance, flexibility and fewer responsibilities. Work–life balance and flexibility are also common themes for the veterinary profession.

Interestingly, while dentists earned more on average as young graduates, career progression did not always materialise as expected. The BDA’s view was that dentists were almost at the tipping point where the balance between pay and workload would push them to leave. If a number left or retired and Brexit had an impact, there could be a crisis. Again, many similarities with the veterinary profession...

There are signs of a clear trend in the medical workforce towards salaried employment and away from the partnership model. All generations are showing an increased desire for flexibility and a better work–life balance, and this appears to be translating into salaried employment, locum work and part-time working patterns (sound familiar?). Interestingly, the RCVS Survey of the Profession in 2014 found that although women are more likely to work part-time than men (26 percent compared with 11 percent), the biggest growth in part-time working in the last four years was from men (5 percent in 2010 to 11 percent in 2014). Reports from all the professions have noted that employers and planners will need to react to the different work preferences in order to recruit and retain and ensure the effective delivery of healthcare/veterinary care.

This leads us on to the gender pay gap which is prevalent in all three professions. These are often accounted for by structural factors such as fewer working hours or more junior roles (which in themselves can often have a discriminatory basis), versus a more obvious discriminatory gap where...
equal work is not rewarded with equal pay. The independent report from the Review Body on Doctors and Dentists Remuneration noted that the prevalence of women as performer-only dentists (ie not partners) or salaried GMPs may entail a correspondingly lower income for these individuals. We have heard similar things in the veterinary profession.

Here’s where others may learn from vets. The BVA’s gender discrimination report based on an experimental study highlights obvious discrimination and indicates attitudes as key in addressing the issue. Maybe doctors and dentists can also learn from the BVA report to help them shape a thriving, motivated and sustainable workforce for the future.

In May 2016, the King’s Fund published research on the pressures in general medical practice, which found that increasing demands including a heavier workload and increasing complexity and intensity of work had led to a feeling of crisis. It added that the NHS was finding it difficult to recruit and retain GMPs who wanted full-time, patient-facing work. On the positive side, peer support was reportedly increasing. With the advent of similar veterinary peer support networks including veterinary social media groups focused on everything from career support, parenting and chronic illness, this is a clear, unmeasured trend for our profession.

Changes are afoot for doctors to increase retention of the groups where the pipeline has the biggest leaks. The NHS GP Retention Scheme is aimed at doctors who are seriously considering leaving or have left general practice due to personal reasons (caring responsibilities or personal illness), or requiring greater flexibility. It provides financial support for both the retained GP and the employing practice, providing working hours are limited. Crucially, it also demands CPD and educational support are provided. While the veterinary profession may lack a pot of funds, a similar scheme could reap long-term benefits.

Early retirees are the second key group, with a loss of skills and experience of doctors over 55 years of age – a similar phenomenon to the buy-out of independent vet practice partners by corporate groups, leading to career divergence or early retirement for vets. The NHS GP Career Plus pilot scheme encourages the retention of this experienced group through vaccine clinics, cover of practice holiday or sickness, mentoring and clinical coaching, and specialist clinics or home visit services to augment local practice offerings. In this modern era of innovative recruitment start-ups, a matching service for those in the twilight of their veterinary careers would be an interesting prospect.

In summary, the challenges around workforce retention and satisfaction which will impact the future shape of all three medical professions are similar. By comparing and contrasting proposed solutions we can learn from each other how best to adapt working practices to ensure continued provision of excellent care. The bottom line from the BVA study suggests that if the profession can facilitate its members feeling valued, fitting in and having role models, this is likely to have multiple benefits in terms of cultivating a cohort of vets who are strongly motivated in their careers and keen to stay within the profession.

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Who made our profession?

We should recognise the individuals who have carved the veterinary profession as we know it.

Ours Royal College is celebrating its 175th anniversary this year. Established by Charter on 8 March 1844, the objective was to create a professional body of those trained in veterinary medicine and to govern them with both educational and ethical standards to serve the needs of both animals and the public.

The question in the title echoes the succinct words of Ralph Waldo Emerson (1803–82): “There is properly no history; only biography.” Therefore, as a profession, we should recognise the individuals who have enabled the creation of our present working environment.

The story begins when Granville Penn, a member of the Odiham Agricultural Society, and philanthropist, saw the need for proper veterinary education. In 1789, he happened to meet Charles Vial de Saint Bel, a French veterinary graduate who wanted to open a school in England. Granville soon drafted a plan with the objectives of creating both “scientific veterinary education” and a “veterinary profession”.

It came to fruition in 1791 with the opening of the London College, but Charles Vial de Saint Bel died in 1793 and his successor had little interest in founding a profession. It took Thomas Mayer and Thomas Walton Mayer, a veterinary father and son, to determine the way forward. They overcame opposition, drafted a petition and obtained the Royal Charter in 1844.

This Charter enabled the RCVS to be established and was designed to “afford us the same privileges and exemptions which other professional bodies possess.” A president, officers and a system to oversee new entrants were created. But it did not confer legal powers to protect the title “veterinary surgeon”. A Bill had to be presented to Parliament to confirm the Charter and enforce legislation.

In 1875, the RCVS Council elected Sir Francis Wellington John Fitzwygram (later both a Major General and a baronet) as president. Because of his status he possessed influence – he could open doors and twist arms with elegance and grace. Almost single-handedly, he drew up a supplementary charter to protect the veterinary name, create a registrar and maintain a register of members from both the London and Edinburgh colleges. It was granted in 1876. Now, the Act of Parliament was needed. He passed the baton.

The baton was taken by his colleague George Fleming, elected RCVS President in 1880. At once he drafted a Bill to obtain protection of the veterinary surgeon title. By incredible persistence, and funded by his own money, he was able to get the Veterinary Surgeons Act 1881 entered on to the Statute Book. The profession was now legalised and the members listed in the RCVS Register.

These two men, Francis Wellington John Fitzwygram and George Fleming, had saved the profession. They were known as “Fitzwygram the Charter and Fleming the Act”.

Following the First World War, the profession fell to a low ebb: horses were being replaced by motor vehicles, farming was in a desperate situation and veterinary work was in little demand. The veterinary schools were underfunded and research was negligible.

In 1938, the Loveday Committee was tasked to report on veterinary education. Recalled in 1943 to look into wartime food shortages, the committee now included Reginald Wooldridge, who was able to ensure that the final report recommended veterinary schools to be in the university system and receive funding to encourage research. These recommendations were incorporated into the Veterinary Surgeons Act 1948, and veterinary colleges were also created at Bristol and Cambridge universities (adding to those in London, Edinburgh, Glasgow and Liverpool). This was almost solely due to Reginald Wooldridge, who also founded the Animal Health Trust.

There can be little doubt that without the initiative of the Mayers, Fitzwygram, Fleming and Wooldridge, we would not have the veterinary profession that we have today. The Mayers had the initiative and perseverance to start the process; Fitzwygram and Fleming were the key men who put into place the legislative structure and Wooldridge had the foresight and drive to bring veterinary medicine into a university and research-focused environment.

Two other people showed the direction veterinary medicine would take: Aleen Cust, who in the late 1800s was the first British woman veterinarian, and Brian Singleton, who was leader in the founding of the BSAVA in 1957.

At the time of both of these events, no one could foresee the consequences. Today, veterinary student intake borders on 80 percent female and small animal work dominates all other veterinary activity. Singleton also went on to lead the creation of the World Small Animal Veterinary Association in 1959 – now with more than 200,000 members in its 110 member associations.

Mayer, Fitzwygram, Fleming, Wooldridge, Cust and Singleton. Remember these six names; they made today’s profession. We can be sure of only one thing for the veterinary future: veterinary medicine changes as the needs of human society alter. Maybe the forerunners of the next change have already shown themselves. It will not always be as it is today.
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A dog suffering from acute diarrhoea (under 14 days) has been brought to your clinic and no cause is identified. The owners suggest the feeding of a probiotic to shorten the recovery time, based on their findings on the internet. You have no experience in recommending a probiotic supplement as diarrhoea management. What evidence exists to support this approach?

**The evidence**

Five placebo-controlled studies were identified that have assessed the clinical outcomes of administering a daily oral probiotic supplement in dogs that have acute diarrhoea with no identifiable cause.

Significant findings were reported for various outcome measures: the time to diarrhoea resolution; improvement in diarrhoea severity; change in the microbiota; and the percentage of dogs that required additional treatment.

Three studies presented a shorter time to diarrhoea resolution in the probiotic group, ranging from 15 hours to 2.7 days. However, detailed investigations of the underlying aetiology of the diarrhoea were either incomplete or patients with identified causes were included.

The studies may not be sufficiently strong to support a faster clinical recovery by the probiotic supplement, because baseline variations between the probiotic and placebo group were not evaluated, a standardised definition of abnormal stool was not given to owners and clinicians, there was an unexplained mismatch between the number of dogs that completed one study and the number of dogs included in the analysis of diarrhoea resolution and a validated stool scoring system was not used.

Two studies measured improvement in diarrhoea severity in the probiotic group. One reported a greater improvement in stool consistency score in the probiotic group than the placebo on day seven. However, the improvement differed from the placebo group by such a small degree that it was questionable whether there was an observable difference in stool quality, and whether the improvement in consistency score was clinically relevant. Also, this study did not evaluate baseline variations between the probiotic and placebo group.

The second study that measured improvement in diarrhoea severity reported that the probiotic group took one day less to achieve a statistically significant improvement in the "Canine Haemorrhagic Diarrhoea Severity Index". Given that clinicians and owners may have different standards when they evaluate the costs and benefits of a one day improvement, the clinical relevance of this study is unclear.

The probiotic group in the first of these two studies presented a greater decrease of faecal *C. perfringens* on day seven, while the probiotic group in the second study presented a lower abundance of faecal *C. perfringens*. The clinical relevance of these findings is affected by the undefined relationship between *C. perfringens* and acute diarrhoea.

It is unclear whether a reduction of *C. perfringens* in faecal samples can be regarded as a clinical benefit, given that one study reported an association between increased *C. perfringens* in faeces and acute diarrhoea, while another was unable to find an association between the two.

Two studies showed a lower percentage of dogs in the probiotic group received additional treatment than the placebo group, and a large sample size of 118 was included in one of these.

In conclusion, the participating dogs in all the studies presented a better clinical improvement in the probiotic group than the placebo. This suggests a daily supplement of oral probiotic may provide better clinical outcomes to dogs experiencing acute diarrhoea without an identifiable cause. One study offered fairly strong evidence for a reduced requirement of additional treatment in dogs administered a probiotic.

The clinical relevance of the reduction in faecal *C. perfringens* and improvement in diarrhoea severity was uncertain, and the strength of the studies supporting a shorter time to diarrhoea resolution was limited.

Additional studies would be beneficial to validate the better clinical outcomes brought by probiotic supplementation, given there were variations in several factors, which can lead to different clinical outcomes.

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**Does a daily probiotic supplement in the diet provide better clinical outcomes in cases of canine acute diarrhoea?**

Read the full Knowledge Summary:

[bit.ly/JacquelineOiPingTong](bit.ly/JacquelineOiPingTong)

The full Knowledge Summary was written by an undergraduate student, who was one of the winners of the 2019 RCVS Knowledge Veterinary Evidence Student Awards. The 2020 awards are now open. Find out more: [bit.ly/VEstudentawards](bit.ly/VEstudentawards)
Neutering in dogs: a health and behavioural debate

How can we help our clients make an informed decision?

Neutering is a complex topic for dog owners, made even more so by conflicting advice, advances in research and almost endless folklore of how it will affect dogs. To help owners to make an informed choice about what to do, we asked Carolyn Menteith, dog behaviourist and trainer, and Robin Hargreaves, director, veterinary surgeon and former BVA president, both members of the Agria Specialist Health Team, to discuss neutering and its impact on health and behaviour.

Dog health

Robin: When it comes to health, the two main reasons to neuter female dogs are the dramatic reduction in mammary cancer in animals neutered at a young enough age and the absolute prevention of the potentially fatal pyometra.

In male dogs, neutering can reduce the incidence of prostatic disease. While we see fewer cases of benign prostatic disease in neutered males, it isn’t so clear in prostatic cancer that neutering makes a difference. Compared with females, the health drivers for neutering males are not so strong.

Are there negatives for health in respect of neutering? Yes. Most insidiously across animals that have been neutered is the serious potential for weight gain – they simply find it easier to put weight on. And if this is not addressed it can complicate every other health problem as life goes on.

For females specifically, there is an increased incidence of urinary incontinence. While manageable in most cases, medication will probably be required forever. There also continues a debate on the timing of neutering and whether it is responsible for an increased rate of urinary incontinence in females. It appears that spaying after the first season can reduce this.

Neutering male dogs under the age of 12 months, or before the dog has reached skeletal maturity, is not advised. This is due to the increased length of time growth plates will take to fuse following a reduction in testosterone, creating a statistical increase in the incidence of injuries among animals that have been neutered at a younger age.

I suspect over the next five years we will see a lot more data and will have greater clarity over the ancillary risks and benefits. But at the moment with male dogs it’s a case-by-case decision, whereas for female dogs, with the health risks being so much more significant, I think we can be clear that a non-breeding female is better off spayed.

Dog behaviour

Carolyn: Looking at dog behaviour, thoughts are very much the same – it is a case-by-case decision. People used to think if you take testosterone away from male dogs they would be easier to live with, but that’s not always the case. Aggression can have its roots in fear or anxiety, so by taking away testosterone, which may be giving the dog some confidence, you could end up with a more fearful dog, that in turn becomes more aggressive. There is also evidence of similar results in female dogs. In the same way, there can be an increase in other phobia and touch sensitivities as well – so neutering to improve behaviour isn’t as clear cut as we previously thought.

It’s true that it will prevent or reduce most sexually driven behaviours, such as running off after a bitch in season or excessive territory marking, and it may prevent some dog-to-dog aggression and male competitiveness – but it isn’t the panacea that people always thought it was to calm dogs down; in fact, there are some studies that show increased excitability in neutered dogs. We’re simply finding out more and more all the time about how hormones affect our dogs and about what happens when you alter that hormone balance. Where population control is not an issue, owners should talk to their vets – and if they are hoping to improve behaviour, their behaviourist – and make their decision on a case-by-case basis based on what is right for them and their dog.

Conclusion

Robin: We wouldn’t just book male dogs in to be neutered these days, there’s always a discussion about why. In the significant minority of cases, we realise that client expectations are completely awry and we would be disappointing people enormously if we carried out the operation.

With females, we’re confident that it’s the right course of action but it’s still important that people realise what the downsides might be: the potential for weight gain, for example. The only certainty with neutering is that that animal will have no further part in the breeding process. Any other changes cannot be guaranteed, so it’s a risk–benefit analysis.

To find out more about how your practice could benefit from working with Agria and offering your clients five weeks of free insurance, get in touch with the Agria Vet Team by calling 03330 30 83 90
Non-judgement is accepting your thoughts and feelings

No one ever healed a blow to the head by hitting themselves there again

MENTAL HEALTH

LAURA WOODWARD
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 ADPNL and the ISPC. She runs laurawoodward.co.uk – a counselling service for vets and nurses.

Meditation sessions are a perfect time to allow our emotions to envelop us. It takes discipline and inner strength to allow the emotions which have previously been overwhelming to come to the forefront of our mind.

Self-awareness means being acutely alert and aware of what you’re feeling. This is not about burying emotions in a box and ignoring them. In mindful meditation, it is about being actively aware of your emotions, however distressing or otherwise they may be, and feeling them one by one, so that the full force of the emotion is there. Then, and only then, can we defuse it, if we wish.

Give one emotion a name, look it in the face, allow it to envelop you and accept that you are feeling what you are feeling. The more you accept and embrace that emotion, the more you defuse it and decrease its power over you.

Now the non-judgement... This begins with awareness of your own thoughts and stopping yourself from labelling any of them as good or bad. They just are.

Accept your thoughts and feelings as natural and allow them to come. Non-reacting is allowing your thoughts and feelings to be, without resorting to the need to behave reactively in the same way you have reacted before.

Pause for a moment to reflect on your inner experience. Don’t act hastily and emotionally. So now, you can make this space as large as you like. And you can literally choose to do in your morning meditation, you will do subconsciously later in the day.

For example, if I feel angry, I feel angry. Having the emotion not good nor bad. It is what it is. There may be many reasons I am angry and the causative effects of how I’m feeling right now are in the past. Maybe the causes will never stop. But the way I feel right now is a result of what has happened up to this point, and the past cannot be changed or undone.

Right now, while allowing the anger to envelop me, I have a choice to make. Would I like the internal reaction to be “to feel less angry”? Is it a sign of weakness that the same things or people which caused the anger will remain the same and I am changing to be less reactive?

Does that mean that I’m allowing them to win? Or, in choosing to suffer less, am I indeed being responsibly selfish enough to be the winner?

If your motivation is to feel less hate, less hypertension and less pain, then maybe you will choose to simply feel less angry when the stimulus occurs next time. It is genuinely a choice. Or maybe the cause of the anger is gone, in which case it’s even easier to simply feel less anger about the past from now on. No matter how justified your anger is, if you choose to let the feelings of rage go, then you may feel more empowered and more free than the perpetrator if you choose to defuse it.

Once the internal reaction has been chosen, what do I want my external reaction to be? Again that’s your choice. Maybe you want to send an eloquent email. Maybe you feel like throwing furniture. Maybe you want to try (dare I suggest it) showing compassion towards an adversary?

It may be that, once the internal rage has become so weak that it’s way down your list of priorities, your external reaction is naturally one of calmness and physical non-reactivity in the face of what would have previously enraged you.

Holding on to distressing and painful emotions disempowers you. Letting go of them, if that’s what you choose, relieves the stress and burden on you to feel responsible for everything, especially those things that you cannot change.

Anger is just one emotion which can be looked at in this way. Anxiety is a great emotion to work with in a similar step-by-step fashion. Fear, grief and regret may be on your list also. When embracing anxiety and feeling it to its full extent, it can be quite nauseating and stressful. You may find your stomach sinking, your pulse increasing, your breaths becoming gasps. “Letting go” of anxiety is simply too difficult and impractical for most people due to the biochemical aspects of it as well as the external causes.

Spending extended periods of time focusing on nothingness can help with anxiety, as can focusing on your breaths and nothing else for as long as possible (ideally 20 minutes at a time). It’s hard but it’s very effective.

However, probably the most powerful tool I have used with my clients, along with the above, is learning to accept that anxiety is not going to go away anytime soon. Acceptance of anxiety as a part of your life (if it is), which contrasts so profoundly with trying to make it go away or cure it, can feel like laying down passively and succumbing to the horrors of it all.

However, if fighting against anxiety hasn’t worked this far, and “letting go” of anxiety is simply too difficult, maybe allowing it to just be, to play along in the background and be accepted for what it is, will decrease its hold over you.

Hans Selye said “It’s not stress that kills us. It’s our reaction to it” and this is true of every emotion you feel.
Implementing the three Rs

We need to take responsibility for the waste we produce and where it ends up

There has never been a more crucial time for us to care about the environment. Rising temperatures, changes to wildlife populations and extreme weather events are being witnessed across the world. Climate change is not a myth, a hoax or a conspiracy. We must act now.

Waste disposal has a huge impact on the environment. In the UK, a great deal of waste is sent to landfills. Some of this waste will rot away and be reabsorbed into the earth. However, most is not biodegradable and never will. While this waste sits in landfill and begins the slow decomposition process, it will generate methane. According to Borunda (2019), the methane produced by American waste and landfills contributes to 14 percent of the country’s annual footprint.

This is why it is so important that we, as veterinary professionals, take responsibility for the waste we produce and where it ends up. The “waste hierarchy” ranks waste management according to what is best for the environment. It is essentially a guidance suggested for creating a sustainable life. It begins with prevention (most favourable) and ends with disposal (least favourable). This is where the three Rs come in: reduce, reuse, recycle.

Reduce

Reducing the amount of single-use plastics we use in practice may seem difficult when we are putting the needs of our patients first, but it is far from impossible. There are ways to get the best of both worlds. For example, a range of reusable options for medical waste disposal is available, eliminating the need for single-use sharps bins and pharmaceutical waste bins in your practice. It is estimated that “the overall ‘carbon footprint’ of a … reusable sharps container can be up to 76 percent less than that of disposable containers” (Sharpsmart, 2017).

Purchasing a water purifier instead of individual bottles of distilled water will also reduce the use of single-use plastics. Not only are these a cost-effective investment for your practice, but just imagine how many single-use plastic water bottles you will eliminate with this simple switch.

Although reducing your plastic usage in practice is critical, there are many other aspects of reducing to think about too. Other key areas to address include paper waste and waste generated from packaging. Reducing your paper waste is easy. By setting your printer’s default settings to double-sided printing, you will drastically reduce how much paper you are using with minimal effort. Emailing invoices, receipts, reminders and patient histories will further reduce your paper usage. It’s these small, simple changes that will add up in the long run. If you email 15 receipts a day instead of printing physical copies, your practice will save over 5,475 pieces of paper over the course of a year. For practices looking to go beyond this and become completely paperless, veterinary-specific cloud-based systems are available.

Reuse

Reusing is as simple as it sounds: reuse what you have instead of throwing it away! This may include simple things like changing to reusable surgical caps and having designated theatre shoes. But this can also include more complex ideas such as running a “deposit return scheme” for clients with repeat medications. And remember, reusing within the veterinary profession does not just have to be confined to your practice. Items which are not being used can be donated or sold. For example, excess blankets or expired prescription diets can be given to animal charities or out of date bandaging supplies can be donated to veterinary charities abroad. If you don’t want to give items away for free, try selling unused equipment or books to others within the profession.

Recycle

Recycling may sound idyllic but there is a good reason why it is at the bottom of the waste hierarchy and not the top. 91 percent of plastic does not get recycled (Parker, 2018). The concept of recycling is encouraging for materials such as metals and glass, where they can be recycled endlessly without altering the physical and chemical qualities of the material. The truth, however, is materials such as plastic and paper have a recycling limit. These materials are often “down-cycled” into something of a lesser quality. This is why it is so vital that we try to reduce and reuse first, but it doesn’t mean we should stop recycling altogether. Recycling has positives too, including conserving resources, saving energy and, of course, reducing the amount of waste sent to landfill.

Key areas to have recycling stations in your practice include your prep area (packaging) and reception/offices (paper). Your local council will be able to let you know exactly which materials they will accept for recycling but the basics will include paper, cardboard, metals, glass and certain types of plastics. Other materials to think about are batteries, bulbs, ink cartridges and electronics.

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Livestock health training workshop in Kenya

Tormential rain and a missing goat set the tone for the three-day workshop held at the Mpala Research Centre.

A training workshop entitled “Livestock Health” was held at Mpala Research Centre (MRC), Laikipia, Kenya, from Wednesday 11 to Friday 13 September 2019. It attracted 14 participants, from different backgrounds – veterinarians, livestock managers and wildlife researchers. There are a couple of mantras that are key to delivering a workshop in Africa: “it will (probably) be all right on the day” and “expect the unexpected.”

The workshop was opened by Dino Martins, Director of MRC. Dino welcomed participants to Laikipia and the centre, and emphasised the importance of a healthy environment if livestock were to be free of disease, wildlife populations were to remain healthy and viable and their shared habitat was to withstand environmental changes.

The course got underway with registration and the important East African formalities, including welcoming addresses, a personal statement and introduction by each participant and security/health and safety briefings.

The first lecture, “Health”, was given by John Cooper who discussed the principles of promoting health and diagnosing disease, with particular emphasis on livestock but some reference to wild animals. He outlined veterinary and medical methods of investigation and involved registrants in defining and discussing terms such as “health”, “disease”, “pathogen” and “zoonoses”. He drew distinctions between infectious and non-infectious diseases but stressed that there was often overlap. Insofar as infectious agents are concerned, particular attention was paid to the importance of the host–parasite relationship and how disturbances in this can influence health and productivity.

The second lecture was entitled “Common livestock diseases” and was presented by Maureen Kamau, a Kenyan veterinary surgeon, who is based at MRC. Maureen outlined the principles of herd health management, exclusion and prevention of infectious diseases (quarantine and biosecurity), clinical and subclinical disease monitoring, correct use of antibiotics and good husbandry. Infectious conditions discussed included those caused by bacteria (contagious bovine pleuropneumonia, anthrax, pneumonia), viruses (foot-and-mouth disease, peste des petits ruminants, sheep and goat pox) and protozoa (East Coast fever and anaemia). Some diseases affect both livestock and wild animals and are therefore important in the Laikipia area.

During a break for refreshments there was an opportunity to view an extensive display of literature, including publications donated by Universities Federation for Animal Welfare and the Humane Slaughter Association. Margaret Cooper then spoke about health and safety. She reminded her audience of the need to protect people against hazards. Even in countries such as Kenya, that have health and safety legislation, it is important that appropriate risk assessments are drawn up and applied.

Following lunch, the participants went by bus to the Mpala “campsite”, an idyllic spot overlooking the Ewaso Nyiro River, where most of the visitors were staying for the workshop. En route to and from the campsite there were sightings of wildlife, including impala, giraffe, buffalo and dik-dik, a reminder of the challenges of ranching livestock in a location that boasts a high density of wildlife.

The afternoon session covered clinical and post-mortem examination and the collection of samples under field conditions.
Clinical examination of live animals was to be demonstrated by the four veterinarians in the group (Figure 1) from three different countries (Maureen Kamau, Kenya; Nashipai Seketeti, Kenya; Christophe Ntakirutimana, Rwanda; John E Cooper, United Kingdom/Kenya) using chickens and a goat. In previous years we would set up tables under a canopy for protection from the sun, but this no longer existed as the large golden-barked acacia tree standing nearby had fallen and destroyed it. However, sunstroke proved to be the least of our problems since, at this point, gathering clouds approached and released their rain ensuring that the practical post-mortem session descended into organised chaos as the wind drove the water into our tent and made instruction inaudible (Figure 2). Once the rain cleared, examination of the dead chickens proceeded (Figures 3 and 4). Flushed with the success, we discovered that the promised goat had gone AWOL. An intensive search by all eventually discovered it in a small hut some hundred metres away in the bush (Figure 5). With time running out, a physical examination of the animal proceeded but it was reprieved from the planned post-mortem examination.

Day two started early with an ad hoc practical session. A local zebu cow had been reported sick and had to be slaughtered. The carcass was offered to the group for a post-mortem examination and arrived in the back of a trailer. Deposited in the shade of a convenient but thorny tree, this animal provided a superb opportunity, relished with gusto by the participants, for a thorough necropsy, proper record keeping and collection of diagnostic samples from external and internal organs (Figures 6 and 7).

The participants heard lectures by David Hewett, the farm manager of Mpala Ranch, who discussed the management of livestock alongside wildlife and cattle owned by local communities. Ellie Milnes came in from the neighbouring Ol Jogi Ranch but chose to speak about the problems of farming in New Zealand.

After a stimulating morning, a visit was made to a local, very poor, community where, using Swahili, registrants talked to village leaders and learnt about health problems in their cattle, sheep and poultry. Faeces and other samples were collected for laboratory investigation. We were then invited to visit the school and each one of us to address the pupils – who were exhorted to study hard and aim for a positive future. In return, they performed their school’s special thanks and farewell.

Day three started with an interactive laboratory session. Registrants worked in small groups examining material in MRC’s McCormack Laboratory and in improvised field locations (Figure 8). The latter provided an opportunity to use a range of portable field items such as a Newton microscope, other battery or solar-operated instruments and a plastic Coplin jar. A final lecture, on forensic sampling methods by Susan Underkoffler, was on the programme but no classroom was available. A resourceful Mpala-based Princeton Fellow, whose talents include charming the chef and IT manager into rigging-up the data projector and an old sheet in the dining room, took control and Susan was able to do her presentation.

The culmination of the workshop was the closing ceremony. Certificates were presented by Dino Martins, photos of new-found friends were taken and Margaret Cooper thanked the MRC administrators, especially Sheila Njoroge, Cosmas Nzomo and Fardosa Hassan, who had helped make the three days a success.
For more than three decades, my job as a scientist has included tracking and recording every stage of the wildlife trade – from the capture of animals through to captive breeding, handling, transport, stockpiling, selling and keeping. Relevant experience and objective scrutiny cannot fail to recognise the raft of problems inherent to that business: it is characteristically brutal, ugly, inhumane, destructive and masked by the façade of a pet shop window or plush website.

In a previous *Veterinary Practice* article (December 2015), I reported on the endemic harm associated with the pet trade where, for example, mortality rates are 70 percent industry-standard in just six weeks at exotic pet wholesalers. In UK homes, annual premature mortality rates for the 1.1 million reptiles reach 75 percent, and more than 90 percent for the 40 million pet fish – and that excludes potentially 80 to 90 percent mortality during their capture. It is worth reminding ourselves that these animals are legally or illegally swiped from nature or bred under intensive hydroponic-like conditions – all for profit and amusement and definitely not for need. Between 25 percent and 44 percent of the wildlife trade (including for pets) is also illegal, and much of what is often regarded as legal – such as captive breeding – is being increasingly exposed as yet another scam.

It is important to recognise the formal responsibility of a veterinarian as an impartial practitioner and advisor in much the same way as a human physician. A human physician would play no part in advocating the shanghaiing and trafficking of people into the slave trade, and logically a veterinarian should play no part in the wild capture, captive breeding, selling or keeping of exotic animals as pets. Both activities are overwhelmingly harmful, and both completely contradict the roles of the medical and veterinary professional.

I suspect that for almost all veterinarians, and certainly to all but a few convicted or struck-off doctors, non-advocacy of acceptable ethics. It’s one thing to deal with harm and quite another to cause it.

Guidance issued by the RCVS states: "A conflict of interest could therefore be anything that calls into question (or could be perceived as calling into question) the vet’s ability to provide independent and impartial advice." Also: "More generally, a conflict of interest may arise (or be perceived) where the vet has multiple interests in something that may affect his or her motivation." Essentially, where a vet has (to use RCVS terms) "multiple interests" and/or "motivation", he or she is capable of conflict of interest.

Yet, there are some vets in the UK and elsewhere who support the pet business in general, whether trading puppies or wild animals. Degrees of involvement for these vets vary from those who visit, manage and approve canines in establishments where holding pens are far too small, enrichment is non-existent or hygiene and preventative care is non-compliant, to those who annually commission vast numbers of animals into trade (and subsequently most to their suffering and death). Others are themselves more subtly embedded in the exotics-keeping community and simply do not want their hobby derailed. Harbouring a significant commercial or emotional investment in the selling and keeping of animals surely lands him or her under conflict of interest? Oddly enough, the RCVS seems to allow some such interventions on the basis of constituting "opinion" – although it remains unclear how vested interest opinion squares with the College’s issued guidance.

Do vets want animal welfare initiatives thwarted and their reputations spoken for by partial players and not the profession itself? One hopes not – vets, as well as their clientele, should expect better. Arguably, with every supportive step towards or within the domestic or exotic pet business, those vets become increasingly separated from the purposes and ethical trajectories of their profession – in disservice to animal welfare, their colleagues and themselves.
Distance learning in veterinary education

How do educators create engaging and informative CPD through online delivery?

The introduction of comprehensive online learning programmes in continuing professional development (CPD) has become more frequent in the last decade. With a rise in internet activity, the development of digitalised knowledge and the use of virtual learning environments and learning management systems (LMS), an innovative world of educational experience is now presented to learners and educators within the veterinary education system.

Today many learners are dubbed as “digital natives” and as a result, educators must find ways to educate through new technical advancements. However, concerns can arise with the development of these courses and whether programmes can be delivered successfully to promote learning and the development of fundamental skills. Educators must consider whether their current andragogy and/or pedagogy models are suited to online learning platforms. They must also take into consideration the work and life balances of their target audience. With vets and nurses working a variety of shift patterns, programmes must meet the needs of the audience, whilst maintaining their ability to deliver learning.

Three key priorities of a distance learning programme for these learners must be having content and a platform which is easy to engage with, comprehensive content for self-directed learning and opportunities to engage with content at any time of the day, any day of the week.

Many educators, such as Salmon (2000), Filcher and Miller (2000) and Beluce and Oliveria (2015), strongly agree that a structured approach to online learning with a strong emphasis on motivation and socialisation is key.

When considering the above with the use of an LMS, these systems can provide a great range of activities and support to learners, whilst maintaining key traditional aspects demonstrated within face-to-face programmes – be this through new or adapted forms.

It is worth noting that although LMS are seen as revolutionary, little research has been conducted into establishing if these systems are actually "learning" or "technology" driven. In my own current experience with distance learning as an educator and student, if carried out correctly then LMS systems can be extremely learner driven. The ability for online CPD to be "learning" driven is strongly based on its structured approach.

As mentioned previously, distance learning does not currently have its own model of learning but an enhancement of face-to-face models. One model in particular, "Five Stages" by Salmon (2000), has been fundamental in creating a structured approach and supportive framework to educators, to ensure a positive experience towards distance learning. The model consists of five key stages which provide educators with information on what to provide, through the use of scaffolding. The model uses e-tivities and paced learning to promote a learner’s self-awareness, increase current skills, become confident in social networking with peers and develop knowledge. When creating a distance learning programme, educators need to ensure that the learners’ basic skills needs are met, which will allow the higher order thinking skills to develop through the duration of the programme.

So how can educators ensure that learners are provided with meaningful learning through their distance learning programme?

There are key features of distance learning such as self-evaluation, a mini induction process and being able to socialise with peers through online forums and discussion boards. Content needs to be well structured and quick and easy to navigate, and needs to necessitate critical and practical thinking. Summaries and activities for learners to work through at their own pace enriches distance learning. The use of additional software can provide enhancement of learning and using a range of interactive activities to engage and promote learning can be beneficial – activities such as problem-based learning to replicate real-life scenarios are very popular with learners. Support from tutors and lecturing staff throughout is key.

It is important to be reminded that distance learning programmes must create the same environment for each learner: a challenging concept for educators to guarantee. Therefore, student monitoring is vital during the course to be able to identify those students who may require further support in achieving their programme of learning.

Distance learning can be a daunting concept for both learners and educators, but with the right planning and framework, educators can produce distance learning courses which still retain the powerful impact and motivation that face-to-face courses demonstrate.

A full reference list is available upon request.
Cardiac disease is a relatively common presentation in small exotic mammals; how should you approach these cases?

Due to their nature as prey species, most exotic mammals initially only show very subtle signs of cardiac disease and often do not present until late into the progression of the disease. Cardiac disease has been described in a number of species with a brief overview described below.

**Ferrets**

Cardiac disease in ferrets can range from asymptomatic to fulminant heart failure. Clinical signs can include lethargy, exercise intolerance, weight loss, pale mucous membranes with increased capillary refill time, dyspnoea and/or tachypnoea, hindlimb weakness or a "pot-bellied" appearance (Orcutt and Malakoff, 2006). Heart murmurs can be heard with valvular disease and dilated cardiomyopathy (Wagner, 2009).

If there is a clinical suspicion of cardiac disease, thoracic radiography is an excellent diagnostic starting point (Figure 1). Contralateral thoracic views under appropriate sedation can show evidence of cardiac disease such as an enlarged cardiac silhouette, tracheal elevation (Figure 2) and increased sternal contact on the lateral view (Morrisey and Kraus, 2012). Ferrets have a more globoid cardiac silhouette compared to dogs and cats (Figure 3); however, heart size can be evaluated with a modified vertebral heart score as described by Stepien et al. (1999).

Echocardiography is useful to assess the structure of the heart, diagnose pericardial effusion and evaluate for valvular disease (Figure 4). Multiple echocardiographic values for ferrets have been described (Stepien et al., 2000). Electrocardiography can be utilised to assess for conduction disturbances and rhythm abnormalities (Morrisey and Kraus, 2012).

Valvular disease is common in ferrets, usually affecting the aortic and mitral valves (Orcutt and Malakoff, 2006). Dilated cardiomyopathy and hypertrophic cardiomyopathy have also been described, with definitive diagnosis based on echocardiography findings (Morrisey and Kraus, 2012).

Although not endemic in the United Kingdom, heartworm disease with *Dirofilaria immitis* should be considered a differential for any ferret with travel history to endemic areas. Diagnostic work-up should be as for any other cardiac presentation with specific ELISA-based antigen snap tests or polymerase chain reaction (PCR) tests available for diagnosis (Wagner, 2009). Antigen tests are only positive five to six months after onset of infection and can produce false negative results in cases of low worm burdens; however, PCR testing is highly sensitive for *D. immitis* DNA (Wagner, 2009).

Treatment for cardiac disease and congestive heart failure in ferrets follows the same principles as companion animal medicine. Treatment of congestive heart failure involves providing oxygenation and reducing preload and afterload (Morrisey and Kraus, 2012). Diuretics, most commonly frusemide, are used to reduce preload by reducing blood volume, as well as reducing the volume of body cavity effusions (Orcutt and Malakoff, 2006). Angiotensin converting enzyme (ACE) inhibitors are used to reduce afterload by causing peripheral vasodilation. Ferrets are sensitive to the hypotensive side effects of these drugs (Orcutt and Malakoff, 2006) and so should be closely monitored for signs of lethargy when newly started on therapy or an existing dose is increased.

Pimobendan is useful with dilated cardiomyopathy or valvular disease due to its positive ionotropic effects (Wagner, 2009). Drugs described in treatment of arrhythmic cardiac disease in ferrets include beta-blockers, calcium channel blockers and digoxin (Orcutt and Malakoff, 2006).
Rabbits

Anecdotally, cardiac disease is more common in larger-breed rabbits compared to smaller breeds (Orcutt, 2012). Rabbits have a small thorax compared to the rest of the body, so cardiomegaly can lead to compromised respiration (Orcutt, 2014) (Figure 5). Cardiac disease in rabbits often presents with dyspnoea, tachypnoea, exercise intolerance, lethargy, anorexia and sometimes oedematous extremities (Vennen and Mitchell, 2009). Clinical signs in rabbits can be quite subtle, with changes in head and neck position to extend the neck or slight elbow abduction (Orcutt, 2014). Rabbits are obligate nasal breathers and so any rabbit showing signs of open-mouth breathing is in severe respiratory distress.

A full clinical examination should be performed, first with a distance examination of the breathing pattern and effort, followed by auscultation of the thorax before any other stressful examinations are performed (for example intra-oral exam). The mucous membranes, especially the tongue, should be assessed for evidence of cyanosis and peripheral pulses can be assessed using the femoral arteries, the medial metatarsal artery or the central ear artery (Orcutt, 2014). Rabbits are obligate nasal breathers and so any rabbit showing signs of open-mouth breathing is in severe respiratory distress.

Cardiac work-up is similar to that described above for ferrets, including with thoracic radiography under appropriate sedation to assess at least two contralateral views. Common radiographic findings can include cardiomegaly, tracheal elevation, pulmonary oedema characterised by a pulmonary interstitial pattern, enlarged pulmonary vessels or pleural effusion (Orcutt, 2012).

Rabbits have a large mediastinum which can make the cranial cardiac border difficult to distinguish on a lateral view (Pariaut, 2009), so obtaining at least two well-positioned views is essential. Anterior mediastinal masses or increased mediastinal fat can have a similar appearance to cardiomegaly (Orcutt, 2012) and in this case ultrasound can be used to determine the difference. Echocardiography can give a wealth of information, with a number of studies recording echocardiographic values in a range of rabbit breeds (Huston et al., 2012).

As rabbits are a prey species, patients may not present until they are in congestive heart failure. Presenting patients often have a severe cardiomegaly with pulmonary oedema caused by left-sided heart failure and pleural effusion caused by right-sided heart failure (Orcutt, 2012). Oxygen therapy (Figure 6) and minimal handling should be instituted, with any significant pleural effusion drained via thoracentesis (Huston et al., 2012). Similar to treatment of cardiac disease in ferrets, drugs and dosages are extrapolated from companion animal practice. The use of diuretics along with drug therapy appropriate to the underlying cause should be instituted, usually including the use of an ACE inhibitor for long-term therapy (Pariaut, 2009).

Hypertrophic cardiomyopathy and dilated cardiomyopathy have been reported in domestic rabbits (Huston et al., 2012); however, dilated cardiomyopathy appears to be more common (Orcutt, 2012). Pimobendan has been used in the treatment of dilated cardiomyopathy; however, no medication has been shown to improve patient outcomes before the onset of congestive heart failure (Pariaut, 2009).

Rodents

Little information is available for cardiac disease in other small mammal species, although anecdotally it has been seen in a range of different species. Cardiac disease has been described in chinchillas following the onset of syncope, collapse or what appears to the owner to be seizure-like episodes (Goodman, 2011). Atrial thrombosis is commonly reported in hamsters secondary to heart failure, with patients usually presenting with cyanosis, tachypnoea and cold extremities (Brown and Donnelly, 2012) (Figure 7). Diagnostic work-up for small rodents is similar to above, ideally with assessment with radiography and echocardiography. Treatment is symptomatic and usually involves a combination of diuretics, ACE inhibitors and, in the case of hamsters, can include prophylactic anticoagulants (Brown and Donnelly, 2012).

It is important to remember when treating cardiac disease in small exotic mammals that all drugs are off licence and most dosages have been extrapolated from companion animal medicine. Ensuring owners are fully informed of this and choosing appropriate dosing regimens is the responsibility of the clinician. Close monitoring should follow any dose alterations or the start of a new cardiac medication to assess for any inadvertent side effects.

A full reference list is available upon request.
Exocrine pancreatic insufficiency in dogs

What are the causes of canine exocrine pancreatic insufficiency and how is it best managed?

Lauren Hayes, BVetMed, MRCVS, qualified from the Royal Veterinary College and worked in small animal practice for several years before moving into industry. She joined Royal Canin in 2019 as scientific affairs manager, building collaborative working relationships with key opinion leaders and universities.

The pancreas of the dog is a V-shaped gland located in the cranial abdomen comprising the exocrine (acinar cells) and endocrine (islets of Langerhans) portions. The exocrine pancreas secretes digestive enzymes, fluid and bicarbonate in response to food ingestion (Singh et al., 2018). Canine exocrine pancreatic insufficiency (EPI) is a digestive disorder resulting from the insufficient secretion of enzymes from the pancreas. This condition is frequently attributed to pancreatic acinar atrophy (PAA) in the dog, in which the enzyme-producing acinar cells are believed to be destroyed by a hereditary autoimmune process (Evans et al., 2015). While EPI has been found to affect many breeds of dog (Batchelor et al., 2007b), EPI attributed to PAA has a documented higher prevalence in the German Shepherd Dog (GSD) population (Tsai et al., 2013); as a result GSDs comprise two thirds of cases of EPI due to pancreatic acinar atrophy in dogs (Hall et al., 2003).

EPI was historically thought to be a simple autosomal recessive disorder; however, a study recently demonstrated that EPI has a more complex mode of inheritance, in which multiple genes combined with environmental factors may contribute towards the variability in clinical presentation and disease progression (Clark and Cox, 2012). Current studies are focused on alleles of the canine major histo-compatibility complex and dog leukocyte antigen (DLA) (Tsai et al., 2013). EPI can occur in dogs of any age, but signs are usually first seen between six months and six years of age (Hall et al., 2003).

The exocrine pancreas has a large functional reserve resulting in clinical signs being frequently observed quite late into the disease process where circa 90 percent of the functional mass of the acinar cells have been destroyed (Watson, 2012). Dogs with EPI often present with mild to moderate weight loss, despite showing a good appetite or in some cases, dependent on the condition of the dog, extreme hunger (polyphagia). Other signs include large volumes of diarrhoea with varied consistency, which may be foul-smelling or have a greasy appearance (steatorrhoea), flatulence and intestinal borborygmi. Some cases may display vomiting and increased drinking (polydipsia) and coat condition may become poor and greasy (German, 2012) when presenting to their vet. This variability of clinical signs suggests that EPI is a heterogeneous disorder and that affected dogs can display a spectrum of clinical signs (Batchelor et al., 2007a).

In time, EPI can lead to severe malnutrition because affected dogs, while eating normally, may not be able to digest and absorb sufficient nutrients – namely vitamins B12 (cobalamin), folate (another B vitamin), E and K (Williams, 1996) – due to the role of the pancreatic duct cells in secretion of bicarbonate and intrinsic factor (IF). Bicarbonate regulates...
the pH of the intestinal lumen environment and IF, which is necessary for the absorption of cobalamin in the small intestine, functions at pH 7; therefore, in EPI the decreased or absent secretion of bicarbonate in this location results in decreased vitamin and cobalamin absorption (Simpson, 2005). It is therefore important to measure serum folate and cobalamin levels when investigating the dog with possible EPI.

In dogs, pancreatic exocrine function is reliably assessed by measuring blood trypsinogen levels using the serum trypsin-like immunoreactivity (T LI) test. A value below 2.5μg/L is highly suggestive of EPI (Suchodolski and Steiner, 2003); however, diagnosis is more difficult when EPI is subclinical (Mansfield, 2015). Any dog presenting with gastrointestinal signs should be considered worthwhile of investigation for EPI because of the varied presentation of these cases, which do not always follow the prescribed list of clinical signs (Batchelor et al., 2007a).

Management of EPI cases revolves largely around supplementation with pancreatic enzymes, which can be provided in numerous forms including tablets, capsules, granules, uncoated enzyme powder and raw pancreas. There has been considerable debate about efficacy of such products, with earlier work suggesting that dogs given uncoated enzymes had a better response to therapy as reported by Hall et al. (1991), but more recent work has not shown such a difference (Simpson, 2005). Due to the associated deficiencies in cobalamin with this condition, supplementation with vitamin B12 is required as part of ongoing management (Simpson et al., 1989) to ensure the dogs are receiving a complete balance of nutrients.

Studies have found significant and independent risk factors for decreased survival in EPI, particularly that hypocobalaminemia at diagnosis (P=0.04) and not receiving enzyme replacement therapy (P=0.003) were associated with a poorer prognosis. Conversely, hyperfolataemia was associated with improved prognosis (P=0.02) (Allenspach et al., 2007). These results confirm the importance of measuring serum cobalamin and folate concentrations at the time when EPI is diagnosed, as hypocobalaminemia is negatively associated with prognosis, particularly in the absence of a high serum folate concentration (Soetart et al., 2019).

Historically, dogs with EPI were fed a diet that was digestible with relatively low fibre and low-to-moderate fat levels (Hand et al., 2011), because fat is considered the most difficult nutrient for the intestine to assimilate and lipase activity is the limiting step in digestion of fat (Simpson, 2006). The rationale for lowering the fat content is that intestinal bacteria metabolise unabsorbed fat to hydrolysed fatty acids, which stimulate secretion of fluids in the distal small intestine and colon, potentially worsening the diarrhoea (Westermarck et al., 1995; Simpson, 2006). However, a canine EPI study found that feeding a moderate fat, low fibre, highly digestible food decreased flatulence, borborygmi, faecal volume and defecation frequency compared to feeding the original diets (Westermarck et al., 1995). In another study, a diet with up to 43 percent calories from fat, with a focus on the digestibility of the protein, fat and carbohydrates, yielded positive results in reduction of clinical signs (Suziki et al., 1999) compared to diets containing 18 and 27 percent of calories from fat. In a study of dogs with experimental EPI, a high-fat, high-protein diet in combination with enzyme replacement therapy optimised fat absorption (Suziki et al., 1999).

When considering the available literature, it seems that faecal fat output is more dependent on the digestibility of the fat rather than the total amount fed (Simpson, 2006). In addition, a diet with a high energy density fulfils increased energy requirements while reducing the amount of food given per meal and decreasing the digestive workload and stool volume. A high energy density diet may also support weight regain during convalescence if the dog has presented with marked weight loss as a result of EPI. Dogs suffering from digestive disorders often show a decreased appetite (Batchelor et al., 2007a) and weight loss; therefore, a diet with high palatability should be considered to encourage spontaneous consumption.

In conclusion, canine exocrine pancreatic insufficiency is a complex gastrointestinal condition that results in varied clinical signs and is associated with nutritional deficiencies. In addition to supplementation with replacement pancreatic enzymes and vitamin B12, feeding a highly digestible, high energy density, complete and balanced diet is recommended. High-fibre diets should be avoided, as fibre may interfere with the fat absorption including essential fatty acids and vitamins. [1]
As many as one in five adults worldwide suffer from sensitivities to cat allergens (Bousquet et al., 2007; Zahradnik and Raulf, 2017). The main recommendation for people with these sensitivities is to avoid cats (Davila et al., 2018). Purina scientists have discovered a new approach that can give people and cats a chance to stay closer together. This safe and proven approach uses an egg product ingredient coated on cat food to neutralise the major cat allergen, Fel d 1, at its source in cats’ saliva before it gets into the environment (Satyaraj et al., 2019a; Satyaraj et al., 2019b). This discovery can be a game-changer for people sensitised to cat allergens because the neutralised Fel d 1 no longer triggers an allergen response – bringing people and cats closer together.

“These allergens have created a huge barrier to cat ownership and may limit the loving interactions between cat lovers and cats,” says Ebenezer Satyaraj, Director of Molecular Nutrition at Purina and lead investigator on the research. “Our discovery has the potential to transform how people manage cat allergens.”

Cats also suffer consequences when people are sensitised to cat allergens because these allergens can limit people’s interactions with cats, are a common reason for relinquishing cats to shelters and may be a barrier to cat adoption or ownership (Svanes et al., 2006; Eriksson et al., 2009; American Humane Association, 2012; Coe et al., 2014; Weiss et al., 2015; Zito et al., 2016).

FEL D 1 IS UBQUITOUS

- The structure of Fel d 1 makes it “sticky” and it will attach to clothing and other surfaces, resulting in its easy dispersal into surrounding environments (Enberg et al., 1993; Egmar et al., 1998).
- The small size of Fel d 1 allows it to be airborne for long periods of time, making it one of the easiest allergens to be moved around the home (de Blay et al., 1991).
- Fel d 1 can be found in homes without cats. Studies have shown that Fel d 1 can be carried on clothing into schools, offices and many other public places (Enberg et al., 1993; Egmar et al., 1998).

**FACT VS FICTION**

There are no truly hypoallergenic cats.

- All cats produce Fel d 1 regardless of breed, age, hair length, hair colour, sex or weight (Butt et al., 2012; Bonnet et al., 2018; Kelly et al., 2018).
- Through grooming, cats spread Fel d 1 onto their hair and the allergen then enters the environment as hair and dander are shed.
- Up to 95 percent of reactions in cat allergen-sensitive people are caused by Fel d 1 (Bonnet et al., 2018; Dávila et al., 2018).

Cat allergens can be difficult to manage. Most methods are effort-intensive, costly and have limitations. They are all designed to manage the allergen after it gets into the environment (Dávila et al., 2018; Cosme-Blanco et al., 2018).

**A new approach to allergen management**

The benefit of Purina’s discovery is that it is safe for cats and does not impact a cat’s physiology. It could simply require the cat owner to feed a nutritious cat food coated with an innovative egg product ingredient containing anti-Fel d 1 antibodies. As the cat chews the kibble, this key ingredient neutralises active Fel d 1 in the cat’s saliva, which reduces the active allergen transferred to hair and dander during grooming and ultimately reduces the active Fel d 1 in the environment.

**Proven science**

Purina’s published studies demonstrate this novel approach significantly reduces active Fel d 1 in cats’ saliva and on their hair and dander. There was a 47 percent reduction, on average, of active Fel d 1 on cats’ hair beginning with the third week of feeding the diet (Satyaraj et al., 2019).

Reducing this active allergen in the environment can have very real and positive impacts on people, who may otherwise limit their interactions with cats (Wickman, 2005; Wedner et al., 2019).

To find out more about the science behind managing cat allergens, visit: purinainstitute.com

A full reference list is available upon request

*Reg. Trademark of Société des Produits Nestlé S.A.*
A 10-year-old castrated male domestic shorthair cat was presented with a short history of severe and acute crusting dermatitis, affecting the face, ears and feet. The cat had no previous history of skin disease, it had a normal appetite and was not pruritic.

The general physical parameters were within normal limits. A dermatological examination revealed:

- Symmetrical distribution of scaling, crusting, erosions and alopecia, both on the nose and above the eyes (Figure 1)
- Thick adherent crusts, papules, pustules, erythema and erosions present on the concave and convex aspects of the ear pinna (Figure 2)
- The nail beds of all four feet contained thick caseous purulent exudate

**Differential diagnosis**

- Pemphigus foliaceus
- Bacterial pyoderma
- Dermatophytosis
- Cutaneous adverse drug reaction
- Erythema multiforme

**Initial investigations**

- Skin scrapes failed to reveal any ectoparasites
- Hair plucks showed no evidence of arthrospores or infected hairs
- Wood’s lamp examination was negative for fluorescence
- An impression smear from the surface of the skin where the crust was lifted, stained with modified Wright’s stain (DiffQuik) revealed numerous non-degenerate neutrophils and acanthocytes (Figure 3)

These findings supported the diagnosis of pemphigus foliaceus.

**Further investigations**

Skin biopsies were harvested to confirm the diagnosis. The histopathological findings consisted of sub-corneal, intragranular, or follicular, pustules with acanthocytes and non-degenerate neutrophils with varying degree of epidermal acanthosis and surface crusts. These findings supported the diagnosis of pemphigus foliaceus.

**Diagnosis**

Pemphigus foliaceus.

**Prognosis**

The prognosis for pemphigus foliaceus varies between individuals and many cats require lifelong medication. Pemphigus foliaceus may occur spontaneously, or be triggered by drugs, infections and chronic skin diseases, which may have implications for the long-term prognosis. Some animals respond to treatment, but develop severe adverse effects to the treatment itself. It is therefore necessary to monitor all cases, both during the induction and the maintenance phases.

**Treatment**

Treatment is divided into induction and maintenance phases. The initial drug of choice is oral prednisolone at...
4mg/kg to 6mg/kg every 24 hours for 10 to 14 days. The duration of the induction phase varies between individuals with tapering to the eventual maintenance dose once there is clinical resolution of the crusting and erosions. The alopecia may persist at this stage, but provided there are no new lesions being formed, the induction dose can be tapered to the maintenance dose over the following four to six weeks.

The maintenance dose should be the lowest possible alternate day dose that keeps the disease in remission. Methylprednisolone, at similar dosages, is an alternative to prednisolone.

This cat was treated with prednisolone at 4mg/kg for 10 days, reduced to 3mg/kg for another seven days, and then reduced to 3mg/kg every other day for four weeks. Over the following six weeks, the dose was tapered to 5mg (1mg/kg) every other day; the cat remained in remission at this dose for two years (Figure 4). Attempts to lower the dose further led to relapse. After two years the cat was lost to follow-up.

Some cats may require more potent glucocorticoids, such as dexamethasone or triamcinolone, or other immunosuppressive drugs, such as chlorambucil, to achieve remission. However, the potential adverse effects of these drugs (Table 1) must be borne in mind and the patient monitored accordingly.

Monitoring
Haematological and biochemical profiles, with urinalysis and urine cultures, should be performed at least every six months, or more often as indicated in Table 1.

Discussion
Pemphigus foliaceus is a sterile pustular autoimmune disease, where the IgG autoantibodies target the desmosomal glycoproteins responsible for cell-to-cell adhesion of keratinocytes in the epidermis. Pemphigus foliaceus can be drug-induced or spontaneous. Methimazole, cimetidine, ampicillin,itraconazole and lime-sulphur have all been implicated in triggering the disease. It is suggested that these drugs may activate the proteolytic enzymes in the skin, resulting in acantholysis. In dogs, the autoantibodies target the cell-to-cell adhesion molecules desmoglein-1 and desmocollin-1. The role of desmosomal proteins in feline pemphigus foliaceus is yet to be determined.

The presence of acanthocytes on cytological examination, a simple in-house technique, supports the diagnosis and rules out other diseases that also cause papulocrustous dermatitis in cats.

Ideally, the best sites to biopsy are papules or intact pustules; however, because they tend to be very fragile and transient, they may not be present. In these cases, biopsies of recent lesions, including the crusts, should be taken for histology. In the absence of pustules, these samples may show rafts of acanthocytes among the surface crust. It is also worth bearing in mind that biopsies from cats suffering from pemphigus foliaceus often also show large numbers of eosinophils.

In a retrospective study, 97 percent of cats with pemphigus foliaceus achieved complete remission with a median induction dose of 2mg/kg prednisolone daily; 14 percent of these cats went on to recover eventually without the need for further medication, and the remainder remained in remission with alternate day dosing (Simpson and Burton, 2013). Many cats require long-term treatment and therefore monitoring for adverse effects is an essential component of the treatment regime.

A full reference list is available upon request.

### Table 1

<table>
<thead>
<tr>
<th>Drug</th>
<th>Induction Dose</th>
<th>Maintenance Dose</th>
<th>Adverse Effects</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone</td>
<td>4 to 6mg/kg PO q24h</td>
<td>1 to 2mg/kg q48h</td>
<td>Polyuria, polydipsia, polyphagia, diabetes mellitus, cystitis, obesity, hepatic and cardiac dysfunction</td>
<td>Every four to six months</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>4 to 6mg/kg PO q24h</td>
<td>1 to 2mg/kg q48h</td>
<td>As above</td>
<td>Every four to six months</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>0.2 to 0.4mg/kg PO q24h</td>
<td>0.01 to 0.05mg/kg q48 to 72h</td>
<td>As above</td>
<td>Every four to six months</td>
</tr>
<tr>
<td>Ciclosporin</td>
<td>5 to 7.5mg/kg PO q24h</td>
<td>5mg/kg q48 to 72h</td>
<td>Anorexia, Soft faeces, Gingival hyperplasia</td>
<td>Every four to six months</td>
</tr>
<tr>
<td>Chlorambucil</td>
<td>0.1 to 0.2mg/kg PO q24h</td>
<td>0.1 to 0.2mg/kg q24h to 48h</td>
<td>Bone marrow suppression</td>
<td>Every two weeks initially, then every three months</td>
</tr>
</tbody>
</table>
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Cryosurgery in veterinary ophthalmology

What role does cryotherapy play in ophthalmology cases seen on a regular basis?

A quick literature review on PubMed using the words in the title of this article gives 12 results ranging from “cryosurgical ablation of a conjunctival adenocarcinoma in an ostrich” to “the cryodestruction of multiple apocrine hidrocystomas in a cat”. Such a survey would suggest that cryotherapy has little part to play in treatment of eye disease regularly seen in dogs and cats but is that really the case? Putting the same words into Google Scholar gave 1,780 results in 0.07 seconds though it will take a little longer to scroll through them all and see which have any relevance to what I’m about to tell you.

Interestingly, even on the first page of that latter search there was a fascinating paper from the human literature in the Journal of Dermatologic Surgery and Oncology which I must admit isn’t on my regular reading list. Back in 1977, Frederick Fraunfelder, Harold Farris and Thomas Wallace published a paper on “the cryosurgical management of 1,200 ocular and periorbital squamous-cell carcinomas in cattle and 270 benign and malignant ocular and periorbital lesions in humans”. We like to think that One Health is a new and ground-breaking idea, don’t we, but here were two medics and a vet getting together to show the same technique working for cows and people back when I was still at secondary school.

Look at the numbers they were talking about. We are all into evidence-based veterinary medicine, aren’t we? And the key feature of EBVM is meta-analysis of copious data from the relevant papers. But looking at more recent papers we have ones involving 16 eyes of nine dogs, taking a paper on cryosurgery for pigmentary keratitis in pugs as an example. Or 46 palpebral masses from 31 dogs. The authors of that paper suggested that mixed adenoma/papilloma cases were more likely to recur after resection and cryotherapy than adenoma. But that was based on 17 adenomas and 6 adenoma-papillomas so whether one can really say that is unclear. What we need are the sort of numbers that 1977 paper involved – hundreds and thousands! And yet that paper has been buried and forgotten, it seems, but for the fantastic opportunity that Google Scholar gives us.
Changing cryosurgery to cryotherapy in PubMed did come up with four more papers with slightly higher numbers of cases so maybe it was my literature searching skills that were at fault. I should, for instance, have remembered Heidi Featherstone and colleagues’ paper back in 2009 detailing "14 dogs with unilateral canine limbal melanoma which were managed surgically by partial lamellar resection, cryotherapy (1,1,1,2-tetrafluoroethane)". Tetrafluoroethane is the agent better known as Freon, a refrigerant coolant now being phased out because of its climate change implications. To be fair, Heidi was writing about its use 10 years ago before climate change was so high on our agendas.

What coolants are available these days?
Cryogens include liquid nitrogen, an extremely cold agent which liquifies at -196°C, so acts very rapidly but is not easily stored or used without an expensive delivery system. Nitrous oxide is not as cold at -89°C while a carbon dioxide spray cools to -78°C. How cold do we need to get? The technique of cryodestruction is used for eyelid neoplasms, for the hair follicles of distichial lashes (Figures 1 to 5) or in a more specialised manner for the ciliary body in cyclocryotherapy for glaucoma. We’ll leave that latter use to one side as it is only relevant in specialist referral centres. Tumour cells, or the follicles of distichial lashes, die during freezing by the build-up of ice within the cell which then bursts the cell as it expands during melting. Each cell within a tumour or hair follicle thus needs to be kept at below -25°C for at least a minute before thawing. The problem is that tissue at -5°C looks just like it does at -25°C. How do we know what the temperature is? Early papers on cryosurgery in veterinary ophthalmology back in the 1980s recommended using thermocouples embedded in the tissue to determine the temperature of the tissue. These days infrared cameras are much more readily available which demonstrate the surface temperature of any lesion subject to cryosurgery. It is not quite what an embedded cryoprobe would show, but thermal cameras do allow evaluation of the temperatures one is achieving at the surface of a lesion for a very reasonable price.

As it is the thawing that really does the damage it doesn’t matter how quickly the tissue is frozen. What is important is that the thaw is slow. In a richly vascularised tissue like the eyelid any frozen area is rapidly thawed through blood flow. The answer is to use a clamp to prevent blood flow to the area while the lesion is being frozen. Generally, we use two freeze–thaw cycles for distichial lashes, though in some larger benign palpebral tumours three may be employed. Where though is the evidence that cryotherapy works in distichiasis? Others have suggested electroepilation or sharp knife resection of the hair follicles but those studies were back in the 1960s by Geoff Startup or the 1970s by Donald Lawson and involved small case reports. Publication of Chambers and Slatter’s paper in the Journal of Small Animal Practice in 1984 would not be allowed today from an ethics and welfare perspective. They took four “random source” dogs – from the pound, I guess, as they were writing from California – and froze their normal eyelids to -89°C. The non-steroidal anti-inflammatory flunixin was given intravenously but no anaesthetic as far as I can see. The dogs were then euthanised and their eyelids examined histopathologically at various times post-operatively. They found fibrin and inflammatory cells and karyorrhexis of epithelial cells immediately after surgery but the normal lid architecture had regenerated by 30 days. Eight clinical canine patients in the same paper were successfully treated with cryotherapy for distichiasis with depigmentation as the only side effect seen and no regrowth seen with follow-up for six months.

Human patients with distichiasis treated with cryotherapy
The success rate in distichiasis is more difficult to evaluate as quite often these hairs regrow in cases where electroepilation has been used without surgical resection and so is no longer with us to continue his work using this technique on dogs (Enache et al., 2015).

So, where does all of this leave us today? Recently, I’m pleased to say, an easily used cryosurgical appliance has been marketed to vets in the UK: a handheld device which readily allows a fine spray of nitrous oxide to be directed towards an eyelid lesion, be it a tumour or a distichial follicle in the Meibomian gland. Currently we have no published evidence of the efficacy of this device in veterinary patients and the relevant website gives only anecdotal reports. Having said that, use of cryotherapy in human cervical cancer patients has given a cure rate in cases with early detection of over 90 percent (Dolan et al., 2014) so one might expect a good response rate in benign periocular tumours. The success rate in distichiasis is more difficult to evaluate as quite often these hairs regrow in cases where electroepilation has been used without surgical resection.

Its handleability and ease of use are superb and I look forward to using it for distichia and lid masses in the future. With any luck, in another year or two I’ll be able to put a more qualitative account in the peer-reviewed literature and demonstrate that my first impressions have been confirmed.

A full reference list is available upon request.
Management of early feline chronic kidney disease

After the successful diagnosis of early chronic kidney disease, how should the disease be managed long term?

Nutritional management for IRIS Stage 2 CKD onwards

Dietary intervention is the cornerstone of management of CKD (Polzin and Churchill, 2016). A number of different commercially available renal diets exist in the UK, all with relatively similar nutrient adaptations to help slow progression of kidney disease, prolong survival time and maximise quality of life. The main characteristics of these different commercially available diets are similar, although the exact nutrient levels – particularly protein – can vary between brands. Most diets also tend to be high in their fat content to increase energy density and palatability, as appetite and maintenance of body condition score can be a challenge in cats with CKD. The common characteristics of these diets include phosphorus restriction, protein restriction, increased potassium, increased omega 3 fatty acids, increased B vitamins, antioxidants and reduced sodium.

The evidence base for recommendation of most of these diets centres on starting in IRIS Stage 2 of CKD: studies for clinical efficacy have historically focused on these patients since it is only recently that clinicians have started to identify cats with early, non-azotaemic CKD more often. Thus, optimal dietary management for IRIS Stage 1 is currently still unknown, and both identification of the best diet for a cat with IRIS Stage 1 disease and timing for implementation can be a challenge for clinicians.

What evidence do we have to inform nutritional management...

...From IRIS Stage 2 CKD onwards?

In a prospective study by Elliott et al. (2000), the effect of feeding a veterinary renal diet (restricted in phosphorus and protein and differing in other nutrients, including increased B vitamins and decreased sodium) to a group of 50 cats with stable azotaemic CKD in IRIS Stage 2 to 4 was examined. 29 cats and their owners accepted the diet, whilst compliance was not achieved in 21 cats which were subsequently fed a diet considered an appropriate adult maintenance diet (control group). Cats were matched for age, body weight and relevant blood and urine parameters. If and when the veterinary diet alone became inadequate to control blood phosphate concentrations, cats in this group had an intestinal phosphate binder added to their food. Attempts to control blood phosphate levels in the control group were not undertaken. In brief, key findings from this study were that cats fed the veterinary diet showed:

- reduced plasma phosphate and urea
- prevention of increase in plasma PTH levels, which was seen in cats not receiving the diet
- increased survival time (median survival times of 633 versus 264 days)

Other studies have also provided evidence for the benefits of protein- and phosphorus-restricted renal diets in azotaemic cats with IRIS Stage 2 or higher CKD. Ross et al. (2006) found azotaemic IRIS Stage 2 or 3 cats fed a renal diet had lower urea and phosphate levels, fewer uraemic crises and fewer renal-related deaths compared to cats on an adult maintenance diet (Figure 1). There were no significant differences in body weight, haematocrit or UPC, or in serum creatinine, potassium, calcium and PTH concentrations between the two groups. The authors concluded that a renal diet was superior to an adult maintenance diet to minimise uraemic episodes and renal-related deaths.

Numerous other studies have also supported the use of renal diets for cats with azotaemic CKD to help improve survival time, reduce the risk of uraemic crises, lower serum phosphate concentrations and prevent an increase in PTH concentrations. There is also a large evidence base to commence renal diets in azotaemic CKD cats. The benefit is thought to be as a result of multiple nutrient adjustments, rather than due to a single dietary element, although protein and phosphate restriction together are likely to be most influential. However, further studies are required to investigate the importance of different individual nutrient levels, and the impact of different levels of dietary protein on body weight, body condition score and muscle mass (Geddes, 2019).
For "early" IRIS Stage 1 CKD?

Whilst there is compelling evidence for the benefits of renal diets for azotaemic cats, would they be even more effective if started earlier, before azotaemia develops? This is becoming an increasingly important area of research. One study investigated whether dietary interventions in non-azotaemic cats with increased serum SDMA concentrations but normal creatinine levels (IRIS Stage 1 CKD) could improve renal function based on a decrease in serum SDMA. A test diet designed to promote healthy ageing was fed, containing functional lipids (fish oil), antioxidants (vitamins C and E), L-carnitine, botanicals (as vegetables), high-quality protein (wet meat chicken) and increased amino acids. Over a six-month period, cats fed the test food were more likely to have stable renal function, evidenced by stable serum SDMA concentrations, compared with cats fed owner’s-choice food which were more likely to have progressive renal insufficiency. The test diet was not phosphorus restricted, and the study did not assess serum phosphorus levels (Hall et al., 2016).

Another study investigated the effect of a test diet with moderate dietary protein and phosphate restriction on calcium phosphate homeostasis in healthy older cats. In this study, feeding the test diet was associated with lower fractional excretion of phosphate and more stable plasma PTH concentrations, but a slightly greater increase in ionised calcium compared to the control diet. There was no difference in the proportion of cats developing azotaemic CKD between groups, and plasma phosphate and FGF-23 concentrations remained stable for all cats. It was not possible to determine whether feeding the test diet benefited renal function and the authors concluded further investigations were needed (Geddes et al., 2016).

![Comparison of mortality in cats with CKD fed a renal food or maintenance food over a two-year period (adapted from Ross et al., 2006)](image1)

**FIGURE (1)** Comparison of mortality in cats with CKD fed a renal food or maintenance food over a two-year period (adapted from Ross et al., 2006)

**FIGURE (2)** Approach to the CKD patient. *For IRIS Stage 1 CKD “early renal diet dependent on case” refers to clinical scenarios where a diet specifically designed for early renal disease, rather than an age-appropriate diet, is warranted eg owner very keen to start such a diet
Diets are also sometimes less palatable than maintenance diet. Concern has been expressed about starting phosphate restriction too early and increasing the possibility of ionised hypercalcaemia developing in the early stages of disease (Geddes, 2019). Furthermore, protein restriction too early may also have adverse consequences. Protein restriction later in CKD can help to reduce nitrogenous waste (Polzin and Churchill, 2016; Witzel, 2018), and cats started on a protein-restricted renal diet from later in IRIS Stage 2 onwards are able to maintain body condition score until at least midpoint in their survival after diagnosis. However, restriction too early may cause a loss of lean muscle mass and reduce diet palatability (Witzel, 2018). Loss of muscle condition and/or body weight could impact upon long-term survival (Freeman et al., 2016).

Some components of a renal diet, such as increased omega 3 fatty acids, are likely to be of benefit in early CKD (Witzel, 2018), but at this stage much is still unknown, and more evidence is needed to confirm whether a renal diet is of benefit to non-azotaemic cats with early CKD. However, some of the studies discussed have helped to support development of some commercially available early kidney disease diets and senior diets. Early kidney diets tend to incorporate many of the principles of renal diets, but with higher protein levels and less phosphorus restriction (Witzel, 2018). These initial studies suggest potential benefits may justify use of such diets in some patients with early CKD, and they may also be helpful when, after diagnosis, clinicians or owners are keen to try to intervene and delay progression of disease, without transitioning to a more advanced renal diet (Geddes, 2019). However, patients should be evaluated individually, and advice should generally be to feed an age-appropriate diet. If already on one of these (usually a senior diet), further diet change to an early renal diet is unlikely to always be warranted at an early stage, particularly if there are financial concerns or the cat becomes stressed or resistant to diet change. In such cases, regular monitoring with transition to a therapeutic renal diet when azotaemia develops would be a reasonable course of action. If a cat is not on an age-appropriate diet then recommendations to move onto one should be made. A number of different options are available, including several from Royal Canin, Purina Pro Plan and Hills. A basic decision-making tree is detailed in Figure 2.

Advice on introduction of the new diet

There can be challenges with acceptance of any new diet in cats, and particularly in renal patients. If the diet is introduced later in disease, once azotaemia has developed, nausea or inappetence may contribute to difficulties with the transition – part of the reason dietary intervention earlier in Stage 2 of CKD is recommended where possible. Renal diets are also sometimes less palatable than maintenance diets due to their lower protein and sodium content, which can lead to poorer acceptance of these diets. Palatability enhancers may be helpful, but it could be worth considering renal diets from other brands as textures and flavours differ. Persistence when transitioning to the diet is key: cats may take one month or more to accept the new diet, and setting owner expectations is important. The environment the cat is in, and method for introduction, are also key considerations. Consider diet introduction in a new bowl (next to bowl with old food), or occasionally by mixing the new and old foods. The amount of old food should gradually be reduced and amount of new food increased over up to four weeks (rather than the standard one week recommended for most diet transitions).

In most renal patients, successful transition to the new diet is possible. However, maintaining caloric and nutrient intake is critical. Endogenous protein is utilised for energy if the body is placed in a negative energy balance (Witzel, 2018) with adverse consequences, and highlights the importance of adequate dietary intake to meet energy needs. If there is complete refusal of all renal diets tried, the recommended approach would be an age-appropriate senior, mildly phosphate-restricted diet, with the addition of an intestinal phosphate binder. This will not provide the other advantageous elements that renal diets offer, including protein restriction, increased omega 3 fatty acids and B vitamins, and reduced sodium content. Phosphate binders themselves can reduce food palatability. However, this approach is more preferable to ongoing inappetence and weight loss. As CKD progresses, serum phosphate tends to increase and may become refractory to control with dietary phosphate restriction alone, rising above IRIS’s therapeutic targets for blood phosphate levels. In this case, phosphate binders may also need to be added to the renal diet to control serum phosphate levels.

Conclusion

Whilst numerous studies demonstrate clear benefits to the use of renal diets in the management of cats with IRIS Stage 2 CKD onwards, the optimal nutritional plan for non-azotaemic cats with early CKD is still unknown. Commercially available early renal diets offer a further choice for clinicians or owners keen to intervene earlier; however, evidence for using this as a blanket approach for all IRIS Stage 1 patients is still lacking. Concerns exist around whether early protein restriction is harmful or beneficial to cats (Witzel, 2018) and to date there are no studies specifically evaluating the impact of phosphorus restriction in early feline CKD (Witzel, 2018). At this stage, the main nutritional approach in early CKD should be to ensure the patient is on an age-appropriate complete and balanced diet. Cases should, however, be assessed individually and in some instances, preference for an “early” renal diet may be warranted. All patients should be monitored regularly, and if and when disease progresses with development of azotaemia a renal diet should be started.

A full reference list is available upon request.
Exercise-induced collapse in dogs

The condition can only be diagnosed by close observation during exercise as animals are otherwise clinically healthy.

MARION MCCULLAGH

Marion McCullagh, MVB, MRCVS, worked in mixed practice, with intervals working for the Donkey Sanctuary and MAFF. She had her own practice for five years, did some acupuncture, has always written articles and now does small animal locums.

There is a saying that "Common things occur commonly" and most of the time it is right. The fun starts when the uncommon thing creeps in and you are met with a condition that you have never seen before or one that you last saw 20 years ago.

Rufus was a good example. He was a four-year-old castrated male Labrador X Curly Coated Retriever, apparently healthy on clinical examination but with a history of collapsing on exercise. His owners explained that when he was out for a walk all would be well, he would be chasing his ball and running through the woods but then he would collapse suddenly, losing control of his hindquarters. If he was allowed to rest for 10 to 20 minutes he would recover enough to walk home gently. Apart from these incidents he appeared to be normal. When they realised that Rufus was collapsing repeatedly his owners did their internet research and found that his signs fitted the description of exercise-induced collapse (EIC).

EIC has been studied in Canada and the United States for the last 10 years. Research has discovered that the lack of hindleg function is due to decreased transmission of nerve signals. Ned Patterson of the University of Minnesota explained that this is caused by a mutation of a gene. This is the first time that this mutation has been found in any mammal. It can be tested for so that dogs as young as five to six weeks old can be identified and not put forward for training. Breeders can avoid dogs which carry the gene so that the syndrome is not passed on.

EIC occurs in Retrievers, often in Retriever-cross dogs but also in purebreds such as Labradors, Curly Coated Retrievers and Chesapeake Bay Retrievers. Andrew Jagoe of Bath Referrals said that the dynamin-1 gene mutation which is associated with EIC has variable penetrance. The cases of EIC that he has seen have been in Labradors. Homozygous genes have been seen in Chesapeake Bay and Curly Coated Retrievers, Picardy Spaniels and Pembrokeshire Corgis.

Andrew also said that EIC can be confused with organic acidemias where hypocarnitaemia due to buffering leads to problems. Also, young animals can present with a pattern similar to EIC that is due to centronuclear myopathy. In Labradors, EIC is most common in dogs bred for field trials, which fits with the observation that it shows most frequently in lean, fit, intensely exercising and highly motivated individuals. About 50 percent of the Labrador population carry the gene, but both parents must be carriers to produce affected puppies. It usually shows from five months of age, in both sexes, most often when the young dog starts intensive training. The animal will be normal in all other respects, including full clinical work-up. Diagnosis is by close observation; a video is very useful as the pattern of collapse is characteristic.

EIC episodes occur when the dog is excited and exercising intensely. Observant owners will notice that the hindquarters begin to wobble until the hind end of the dog collapses. The dog feels no pain and the limbs are not stiff. They may keep trying to play and move forwards, but they need to be made to rest to regain the use of their hindquarters. A few dogs have died but stopping exercise once the dog collapses does lead to recovery without lasting consequences. However, it will all happen again. Affected individuals can have a normal life as pet dogs as long as their exercise is managed to avoid the intensity that triggers a collapse.

There is a similar collapsing syndrome in Border Collies but this does not show up on the DNA test which gives us the diagnosis of EIC. The Border Collie Collapse (BCC) has a slightly different pattern with gradually increasing fatigue followed by loss of mental and optical focus leading to collapse involving forelimbs as well as hindlimbs. Both conditions have an associated transient pyrexia, which is also found in normal dogs in intense activity. This has led to EIC and BCC being mistaken for heat stroke which is a very different condition. Heat stroke follows over-exertion at high ambient temperature. It needs a combination of obsessive behaviour by the dog and lack of perception by the owner as seen in repeated ball-throwing on a hot day.

He would be chasing his ball and running through the woods but then he would collapse suddenly, losing control of his hindquarters.

MARION MCCULLAGH
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Managing a patient with arterial thromboembolism

Current trends in the diagnosis and management of the condition

The term arterial thromboembolism (ATE) identifies the embolisation of a clot in an artery in the systemic circulation. In cats, the initial blood clot tends to form inside the cavities of the left heart, particularly in the left atrium and left auricle. The clot, or a fragment of it, can subsequently flow to an anatomical location in the systemic circulation, normally represented by a “saddle” location at the aortic trifurcation, and subsequently compromise the blood flow in both external iliac arteries. Occasionally, emboli may travel into more distal arteries, compromising the blood flow to a single limb. The compromise in blood flow results in ischaemic neuromyopathy. The majority of cats presenting with ATE have underlying severe heart disease, although neoplasia and thyroid disease can also be associated with ATE.

Clinical presentation

Most cats experiencing a significant episode of ATE display signs of acute pain and paresis/paralysis of the affected limbs. The paws of the affected limb can appear pale or cyanotic (Figure 1), depending on the severity of the local ischaemia, and the limb extremity feels generally colder than non-affected limbs. In most cases, the “saddle” thrombus obstructs the external iliac arteries and consequently femoral pulses are weak or absent. However, if the thrombus lodges across the internal iliac arteries, femoral pulses may still be palpable despite the presence of pain and hindlimb paralysis/paresis. Conversely, femoral pulsation may be difficult to be detected in some cats and the use of a Doppler transducer can facilitate the identification of arterial pulsation in the affected limb.

Diagnosis

Diagnosis can be challenging and is usually based on history and clinical signs. Free-roaming cats experiencing an episode of ATE can be found recumbent on the ground and in pain, leading their owners to think about a road traffic accident. Indeed, neurological disorders and musculoskeletal injuries should always be considered as differential diagnoses. The ischaemic damage to the skeletal muscles secondary to ATE causes marked elevations of aspartate aminotransferase (AST) and creatine kinase (CK), which should be considered important, albeit non-specific, biomarkers of ATE in cats. The CK values, in particular, are so significantly elevated in feline ATE that measured values are often “off-scale”, requiring serial dilutions to allow a correct measurement. It should be noted, however, that both AST and CK have short half-lives in cats and their values peak at 6 to 12 hours, returning to baseline concentrations within 24 to 48 hours after the acute ischaemic event. Therefore, it is vital to measure these enzymes shortly after the onset of paresis/paralysis in order to rule out or confirm feline ATE. Hyperglycaemia, azotaemia, hypocalcaemia, hyperphosphataemia, hyperkalaemia and hypernatraemia can also be observed in feline ATE as non-specific signs of stress, cardiovascular shock, dehydration, rhabdomyolysis and reperfusion injury.

Another simple test that can be used in support of a diagnosis of ATE is the measurement of blood glucose obtained from the paretic or paralytic limb using a pinprick on the patient’s paw. It has been demonstrated that this is significantly lower than glucose concentration from the jugular vein or a large vein in an unaffected limb, whereas no significant differences are observed in other non-ambulatory subjects whose clinical signs are due to non-ischaemic lesions. A similar finding can be observed when measuring
blood lactate from affected and unaffected limbs. Finally, elevated feline NT-proBNP can direct the attending clinician towards a diagnosis of underlying cardiac disease.

Thoracic radiographs may reveal cardiomegaly and signs of congestive heart failure (CHF). With sufficient training, clinicians can confirm the presence of concomitant heart disease, pleural effusion and pulmonary oedema via point-of-care ultrasonography. Sometimes, ultrasonography also allows identification of a thrombus (Figure 2) or spontaneous echo-contrast (“smoke”) within the heart chambers. More experienced ultrasonographers can visualise the point of obstruction using colour Doppler ultrasound examination of the abdominal aorta.

**Clinical management**

There is little scientific evidence and no consensus among clinicians regarding the ideal treatment of cats affected by ATE since any therapeutic approach aimed at relieving the vascular obstruction poses an increased risk of ischaemia-reperfusion (IR) injury. Indeed, rapid reperfusion can paradoxically induce and exacerbate tissue injury and necrosis. The mechanisms underlying IR injury are complex, multifactorial and involve generation of reactive oxygen species (ROS) that is fuelled by reintroduction of molecular oxygen when the blood flow is re-established, calcium overload, opening of the mitochondrial membrane (MPT) pores, endothelial dysfunction and pronounced inflammatory responses that can lead to cell death.

Surgical embolectomy appears the most logical approach; however, this is difficult due to the size of the affected vessels and the anaesthetic risks encountered in cardiac patients with cardiovascular shock. It is also an extremely unrewarding technique due to the high mortality associated with rapid reperfusion (IR injury). Physical thrombolytic therapy may also appear as a rational intervention. This can be performed with pressurised saline jets to physically dissolve the thrombus with clinical outcome comparable (if not inferior) to conservative management. Medical thrombolytic therapy (urokinase, streptokinase and tissue plasma activator) has shown mixed results, especially because of complications due to rapid reperfusion. In analogy with myocardial infarction in people, these expensive drugs are only effective if administered within hours of the occurrence of ischaemia, which is rarely possible in veterinary patients.

Conservative management is commonly recognised as an acceptable management for feline ATE cases, as long as pain is optimally controlled and patients undergoing treatment are properly selected. The rationale of this conservative approach is to support the patient until the development of collateral circulation to provide sufficient blood supply to the ischaemic areas. The time necessary for a satisfactory clinical improvement may range from days to months.

Euthanasia should be considered in cases of non-responsive patients (lack of clinical improvement after two to three days or unsatisfactory pain control) or for those exhibiting signs highly associated with a negative prognosis (severe hypothermia, multiple limbs affected with complete loss of motor function, concurrent CHF). The fact that feline ATE is a devastating clinical manifestation is undisputable. However, if euthanasia with no attempt to treat is excluded from survival analyses, the number of cats that can survive to discharge can increase up to approximately 70 percent.

Parameters that should be evaluated to select potential survivors include having a rectal temperature above 37.2°C (98.9°F), the presence of limb motor function as evidenced by voluntary movement of limbs or positive withdrawal reflex, the absence of congestive heart failure (CHF) (ie pulmonary oedema, pleural effusion), having just a single limb affected (rather than two or more) and the absence of hyperkalaemia (ie potassium below 5mmol/l).

Of all the above parameters, rectal temperature is the strongest survival predictor, indicating that hypothermia is most likely a reflection of compromised systemic haemodynamic status rather than just local hypoperfusion.

**Short-term, in-hospital, conservative management**

The goal of conservative treatment of ATE is to guarantee adequate rest, comfort and pain relief, reduce the risk of further thrombus formation, improve systemic perfusion and preserve the function of the affected limbs, control effusions in cardiac cases complicated by CHF and provide additional support where needed.

The ideal analgesic for cats affected by ATE probably depends on different patient responses, individual clinician’s experience and drug availability. However, a variety of successful analgesic drugs have been reported, including butorphanol, buprenorphine, morphine, methadone and fentanyl.

During the acute phase (hospitalisation period), anticoagulative therapy should be considered to inhibit the coagulation cascade by interfering with the formation of one or more active coagulation factors. Intravenous or subcutaneous unfractionated heparin (UFH, 250 IU/kg SC q8h) can represent a good choice due to the rapid onset of its anticoagulation properties. Conversely, intramuscular administration of heparin should be avoided due to the rapid onset of injection-site haematomas. Despite the popular use in veterinary practice, low-molecular weight heparin (LMWH; 80 to 150 IU/kg SC q8h) does not seem to offer any practical advantage over UFH for short-term treatment. Cats absorb and eliminate LMWH very rapidly and therefore require higher doses and more frequent injections of the LMWH to achieve the therapeutic effects observed in human patients. It is also considerably more expensive than UFH.

Correcting systemic perfusion is a challenging task, especially in cats with signs of CHF who should never receive aggressive fluid therapy. However, if patients are not in CHF and appear dehydrated, cautious fluid therapy would certainly be indicated. Acepromazine (ACP) has been advocated for
many years as a suitable drug to improve systemic perfusion in cats with ATE. However, its hypotensive effect can also exacerbate the signs of shock and many clinicians consider the use of ACP inappropriate for cats with ATE. Similarly, external physical warming should only be performed very cautiously to avoid the risk of peripheral vasodilation and reduction of core perfusion. Little is known about the benefits of physiotherapy. Deep tissue massage of the affected areas and gentle forced movements of the affected limbs may be beneficial, as long as the manoeuvre does not evoke pain or discomfort. Soft beds and gentle turning of the patient may also improve the cat’s discomfort. Management of congestion in CHF cases is mostly based on administration of loop diuretics (ie furosemide or torasemide).

Cats affected by ATE are usually inappetent and nutritional support can be achieved with appetite stimulants (eg mirtazapine), naso-oesophageal tubing or oesophagostomy.

Long-term, conservative management at home

When the patient appears sufficiently comfortable and is regaining appetite, discharge should be discussed. Owners should be informed of the guarded prognosis and be prepared to support their cat at home. Cats with underlying cardiac disease should receive appropriate diuretic treatment.

Prophylactic anticoagulation therapy has been debated for several years. However, at present, there is limited scientific evidence to support a specific medication or protocol. Heparin (UFH or LMWH) treatment requires frequent parenteral administrations to achieve consistent anticoagulation and is not generally suitable for home treatment. Therefore, oral antiplatelet aggregation treatment may represent a more practical option.

Aspirin has been used for decades in the management of feline ATE due to its analgesic and antiplatelet effects at the standard dose of 25mg/kg PO q48 to 72h which equates to one paediatric aspirin tablet (75mg tablets in the United Kingdom) for an average sized cat. However, a lower dose (5mg/cat/PO q48 to 72h) seems associated with fewer side effects and similar recurrence rates of ATE when compared to the traditional dose, although a compounding pharmacy is necessary to obtain accurate low dosing. Nevertheless, very little is known about pharmacokinetics and clinical efficacy of aspirin in preventing ATE.

Clopidogrel (18.75mg/cat [a quarter of a 75mg tablet] PO q24h) is another inhibitor of platelet aggregation that seems to have fewer adverse effects in cats. It is commonly used in veterinary practice as a daily medication to prevent recurrence of ATE, often in association with aspirin. The clinical efficacy of clopidogrel for ATE prevention has been reported in cats without previous history of ATE in a recent study (Hogan et al., 2015), which demonstrated that cats receiving clopidogrel after their first episode of ATE are significantly less likely to develop a recurrent event compared to aspirin and had a longer median time to recurrence (443 days vs 192 days, respectively). In the same study, clopidogrel was also associated with a significantly reduced likelihood of the composite endpoint of recurrent ATE or cardiac death, with a longer median time to event (346 days vs 128 days). Therefore, clopidogrel administration has been shown to significantly reduce the likelihood of recurrent ATE compared with aspirin in cats. Although clopidogrel is well tolerated, one of the challenges of this therapy can be difficulty in administration since the medication has a bitter taste, which some cats intensely dislike (even those who take other medications without protest).

Novel oral anticoagulants (NOACs), which are also referred to as “non-vitamin K oral anticoagulants” (unlike warfarin), currently represent an alternative therapeutic approach. These drugs inhibit factor Xa (rivaroxaban and apixaban) or thrombin formation (dabigatran), ultimately reducing thrombus formation with fewer side effects compared to warfarin. An ongoing study (SUPERCAT Study) at the University of Georgia (USA) comparing rivaroxaban to clopidogrel in cats may help in determining if a direct Xa inhibitor can be, or should be, used in place of clopidogrel for ATE prevention in cats.

Prognosis

Long-term survival is negatively affected by the concomitant presence of CHF or other significant concomitant disease (eg neoplasia, renal failure, etc). Many survivors can experience a full recovery. However, a degree of neurologic or muscular dysfunction of affected limbs may persist in some patients. Recurrence rate of ATE is relatively low (approximately 30 percent), although recurrent episodes are often fatal or require prompt euthanasia. Congestive heart failure represents the most common cause of death (or euthanasia) in cats surviving initial acute episodes of thromboembolism (median survival time of 77 days, compared to 223 days in cats with ATE without concurrent CHF, in one study). Clear and effective communication with the carers of a cat affected by ATE is pivotal in the clinical management of this severe condition since the delivery of correct information on the available evidence of therapeutic options, as well as prognostic indicators, represents invaluable support in allowing informed decisions to be reached.
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Approaching cases of congestive heart failure in cats

Teamwork, client communication and a good understanding of available treatments are key for optimal management of the disease.

Hypertrophic cardiomyopathy (HCM) is the most common cause of CHF in cats (Goutal et al., 2010). Some cats with HCM may also have systolic anterior motion of the mitral valve (SAM), which should be considered when planning therapy. Other causes of CHF include dilated cardiomyopathy, restrictive cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy, congenital heart disease, minoxidil toxicity and systemic diseases such as hyperthyroidism and anaemia. Some therapeutics have also been associated with CHF.

Recently, a new cause of CHF has been described in cats. This disease, called “transient myocardial thickening” (TMT), mimics HCM on echocardiography but is thought to be due to myocardial swelling associated with cate-cholamine toxicity (Novo Matos, 2018). Careful history taking may reveal a stressful event often within two weeks of development of CHF. Cats with TMT are usually critical on presentation and accompanied by cardiogenic shock, but following appropriate support are expected to have an excellent long-term outcome.

Stabilisation at home

Owners of cats with documented heart disease, particularly with an enlarged left atrium or previous episode of CHF, should be instructed to count sleeping respiratory rate at home. Similar to dogs, a normal count is below 30 breaths per minute (Ljungvall et al., 2013). It is normal to count more than 30 if a cat is purring. Sleeping respiratory rate of 30 to 40 breaths per minute is a grey zone, but should raise suspicion of pulmonary oedema.

If a cat shows signs of CHF at home and is able to be tableted, there is an option of stabilisation at home. An initial or extra dose of furosemide at 1 to 2mg/kg PO q12h may result in an improvement over one to two hours. If no improvement is seen, the owner can be instructed to repeat the dose or bring the cat to the clinic for assessment and stabilisation. If stabilisation at home is successful, cats with first onset of CHF should continue on furosemide at 1 to 2mg/kg PO q12h, and for those cats already receiving furosemide, an increased dose is indicated. These cats should ideally be invited for a routine recheck in one to two weeks for a renal profile including electrolytes and discussion of the ongoing plan.
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In contrast to pulmonary oedema, pleural effusion is more challenging to monitor at home. A small to moderate pleural effusion may only result in a mild increase in respiratory effort rather than rate. It is therefore common for these cats to suddenly deteriorate when a significant volume has already developed and require emergency admission and thoracentesis.

Other medications
Clopidogrel should be started in cats with CHF following stabilisation as the risk of aortic thromboembolism is probably high. If a cat has already developed a thrombus, analgesia and antiplatelet therapy such as clopidogrel and aspirin should be started promptly.

There is some evidence that pimobendan improves survival in cats with HCM and CHF (Gordon et al., 2012). While it is generally well tolerated, a prospective survival analysis showed that cats with SAM have worse outcomes when receiving pimobendan (Schober et al., 2019). This is likely due to the worsening of left ventricular outflow tract obstruction with the pimobendan-induced increase in systolic function. If pimobendan is started, ideally the cat should be referred for echocardiography to determine if it should be continued.

Oral torsemide is a potent diuretic with the same mechanism of action as furosemide. Torsemide also has the benefit of a long duration of effect and can be given once daily in early management of CHF. Torsemide is often reserved for refractory CHF, but can also be used as a first-line diuretic in cats that are difficult to pill to improve compliance. As with any diuretic therapy, regular renal monitoring is advised.

In contrast to dogs, a recent double-blinded placebo control trial showed no survival benefit when benazepril was used in cats with CHF (King et al., 2019). Although a similar study does not yet exist, no known survival benefit has been established for spironolactone.

Significant hypokalaemia (below 3.0mmol/L) may develop with diuretic therapy. Either oral potassium supplementation or spironolactone can be used to conserve potassium and as an adjunctive diuretic therapy.

Some cats may have significant arrhythmias (eg atrial fibrillation). Antiarrhythmic therapy should ideally be started after consulting with a cardiologist. However, urgent stabilisation may be needed. For atrial fibrillation or supraventricular tachycardia, diltiazem can be used. For ventricular tachycardia, lidocaine can be used although at a lower dose (0.5mg/kg IV) as cats are more sensitive to lidocaine than dogs.

Client communication
Due to the silent yet progressive nature of cardiomyopathies in cats, it is unfortunately common for cats to develop fulminant CHF without the owner being aware of the underlying heart disease. While difficult, full information should be provided regarding the prognosis, management and aim of therapy. Some owners may elect for euthanasia with the diagnosis of CHF.

As frequent client communication and medication adjustment may be needed, CHF management should ideally be overseen by one clinician (general practitioner or a cardiologist) to ensure continuity. Maintaining quality of life is the focus in management of CHF, not longevity. Cats with inappetence or that are challenging to medicate unfortunately have a poor prognosis. Various options such as pill pockets or treats can be tried, although in some cases it may be necessary to stop most medication and prioritise diuresis. Such cats are unlikely to live long, but would have a better chance of enjoying their time at home with the owner. Mirtazapine may be tried although the effect has not been consistent.

Azotaemia in CHF
Mild azotaemia can often be ignored in clinically stable cats. Diuretic dose reduction should only be done if the dose was inappropriately high. However, azotaemia should be addressed if the cat is sick, or if the furosemide dose needs to be increased. In cats with significant azotaemia and associated clinical signs, yet concurrent uncontrolled CHF, the prognosis is poor.

Refractory to therapy
Cats with CHF will likely become refractory to therapy over time despite higher doses of diuretics. A routine recheck may be needed to assess for causes of refractory CHF (eg arrhythmia or difficulty medicating at home). Adding additional diuretics may be needed to control clinical signs, although refractory CHF carries a poor prognosis.
A look through the latest literature

**Use of focused cardiac ultrasound to screen for occult heart disease in cats**
Kerry Loughran and others, Tufts University, North Grafton, Massachusetts

Heart disease is a common cause of morbidity and mortality in cats. While many patients show life-threatening clinical manifestations such as arrhythmias, syncope and congestive heart failure, others remain asymptomatic. Identifying cats with occult disease in general practice may be challenging because of the limitations of the diagnostic tools normally available to non-specialist practitioners. The authors investigated the use of focused cardiac ultrasound by specialist veterinary cardiologists and non-specialists who have received training in using this technology. They found that focused cardiac ultrasound performed by non-specialist practitioners increased the detection of occult heart disease, especially in cats with moderate to marked disease. The technique appears to be a feasible and accurate diagnostic tool for use in first opinion veterinary practices.

*Journal of Veterinary Internal Medicine, 33*, 1892-1901

**Arterial hypotension and bradycardia in dogs receiving two standard sedatives**
Manuel Martin-Flores and others, Cornell University, New York

Acepromazine and dexmedetomidine are perhaps the two most commonly used sedative agents for dogs undergoing ovariohysterectomies. Both may cause undesirable haemodynamic changes, but those effects generally work in opposite directions. The authors assess the incidence of arterial hypotension and bradycardia in bitches sedated using those two agents. In 341 procedures, the odds of developing hypotension were 2.161 times higher with acepromazine while the odds of developing bradycardia were higher in the dexmedetomidine group.

*Journal of the American Veterinary Medical Association, 255*, 193-199

**Complications during interventional procedures for congenital heart defects**
Marta Claretti and others, Gran Sasso Veterinary Clinic, Milan, Italy

Patent ductus arteriosus and pulmonary valve stenosis, the two most common canine congenital heart defects, are now routinely treated using interventional procedures. However, there is little published data on the incidence of complications when carrying out catheter-mediated patent ductus arteriosus closure and pulmonary balloon valvuloplasty in canine patients. The authors reviewed the clinical records on 524 procedures at a specialist cardiac centre. Seven procedures were interrupted, five subsequently underwent surgery and four dogs died during the procedure, giving a mortality rate of 0.76 percent.

*Journal of Small Animal Practice, 60*, 607-615

**Cardiotropic pathogens in the myocardium of dogs with unexplained heart conditions**
Roberto Santilli and others, Malpensa Veterinary Clinic, Varese, Italy

A wide range of viral nucleic acids have been detected using PCR assays in myocardial tissue from people with unexplained myocardial and rhythm disorders. The authors examined heart biopsy samples from canine patients with similar disorders for selected cardiotropic pathogens, including canine coronavirus, distemper virus, canine parvovirus 2 and *Bartonella* species. At least one pathogen was detected in 21 out of 37 samples.

*Journal of the American Veterinary Medical Association, 255*, 1150-1160

**Pilot study of cutting and high-pressure balloon valvuloplasty in dogs**
Lauren Markovic and Brian Scansen, Colorado State University, Fort Collins

Pulmonary valve stenosis is one of the most commonly recognised congenital heart defects in dogs. Cutting balloon dilation followed by high-pressure balloon pulmonary valvuloplasty is a method developed to treat human patients with a similar condition. The authors describe their early experience in using this technique in seven dogs. Their findings suggest that the procedure is a feasible treatment in canine patients and appears safe in this small cohort.

*Journal of Veterinary Cardiology, 25*, 61-73
Bird keepers urged to prepare for winter avian flu threat

The Chief Veterinary Officers across the UK are encouraging all poultry keepers to take action now to reduce the risk of disease in their birds over the winter. There are some simple measures that all poultry keepers should take to protect their birds against the threat of avian influenza (bird flu) in the coming winter months.

These include keeping the area where birds live clean and tidy, controlling rats and mice and regularly disinfecting any hard surfaces, cleaning footwear before and after visits, placing birds’ feed and water in fully enclosed areas that are protected from wild birds, and removing any spilled feed regularly, putting fencing around outdoor areas where birds are allowed and limiting their access to ponds or areas visited by wild waterfowl and, where possible, avoiding keeping ducks and geese with other poultry species.

A joint statement by the four Chief Veterinary Officers in the UK today, said: “Avian flu is a constant threat to all poultry, and with winter approaching there will be an increasing risk of disease incursion from migrating birds. It is therefore important that all keepers of poultry, including game birds and pet birds, act now to reduce the risk of transmission of avian flu to their flocks. Good robust biosecurity should be maintained at all times, including regularly cleaning and disinfecting the area where you keep birds and separating them from wild birds wherever possible.”

All bird keepers should also register their birds on the Great Britain Poultry Register (GBPR). If you have 50 or more birds, this is a legal requirement. Keepers with fewer than 50 birds are also strongly encouraged to register. In Northern Ireland there is a legal requirement for all bird keepers to register their birds on the DAERA Bird Register. Registering your birds means the government can contact you in case of any outbreaks and provide information on the steps to take to limit the chances of your birds contracting disease.

Whilst there have been no findings in wild birds in the UK since June 2018, the virus is still circulating around the world both in wild birds and domestic poultry. So, it is important to take action to improve biosecurity.

The government continues to monitor for incursions of avian flu and is working with the poultry and game bird industries, hen rehoming and pure and traditional poultry breeds stakeholders to help prevent incursions.

Avian influenza is a notifiable disease. If it is suspected, it must be reported immediately to the relevant officials.

OV briefings

30 AUGUST
New type of APHA-approved TB unit in England – Approved Finishing Unit (Enhanced) with grazing

As part of their bovine TB control strategy in the High Risk Area (HRA), Defra has worked closely with the National Farmers Union (NFU) to develop an alternative approved TB unit to replace AFUs with grazing in badger control areas, preserving outlets for TB-restricted cattle. Approved Finishing Units (Enhanced) with grazing (AFUE) are only approved in the HRA of England. Operators of these are able to source cattle from single or multiple TB-restricted and officially TB free (OTF) herds for rearing, fattening and finishing with grazing. AFUEs must source and rear/finish cattle in defined batches. The operator is responsible for deciding what constitutes a batch and must keep appropriate records, ensuring that batches of animals undergo the required TB testing before being allowed out to graze on the unit. It is important that OVs record the batch on the test chart so that TB testing requirements can be audited.

Operators of AFUEs will need to work with their private vet (PVS) or OV at their own cost to develop a written contingency plan in the event of a TB breakdown in the unit, and a written biosecurity protocol.

Template documents are available online and once completed will need to be approved by APHA as part of the application process and before approval for the unit can be issued. Further information is available on tbhub.co.uk and gov.uk.

29 OCTOBER
An update regarding the issuing of Animal Health Certificates

As the government has now reached an agreement with the EU on a three-month Brexit extension, the UK will leave the EU on 31 January 2020, with an option to leave earlier if a deal is ratified.

Until then, pets can travel to and from the EU under current pet travel rules using their EU pet passport. Therefore, OVs should halt issuing Animal health certificates (AHCs) until further notice.

If you have already issued AHCs to pet owners for travel on or after 1 November 2019, the AHC will still be valid for entry into the EU for up to 10 days after issue and for four months of onwards travel/re-entry to the UK. However, you may wish to advise affected pet owners that they can continue to use the current EU pet passport until the date the UK leaves the EU.

31 OCTOBER
An update regarding equine movements

During the Brexit extension period up to 31 January 2020, you should continue to move equines as you do now to the EU, using all the current processes and systems in place. There will be no additional checks taking place during this time either in the UK or the EU.

However, it is important that you continue to be aware of what it is that you need to do to get ready for all potential Brexit scenarios during this period.

Guidance will be updated on gov.uk to ensure you can stay up to date with what you need to know and actions that you will need to take.
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Ian Wright BVMS BSc MSc MRCVS

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Do vets understand biosecurity?

With the growing challenges we're facing, are our biosecurity standards as vets up to scratch?

This is the first of two articles challenging veterinary professional standards and our understanding of biosecurity. In the first article I explore the definition of biosecurity and why it is now of increasing concern. The second article will set out a series of ethical and professional challenges for the profession.

Over the last 40 years the development in disease therapies has been exponential. New antibiotics have allowed more and more people to survive infection and surgery. Anthelmintics have reduced the impact of parasites across the globe.

Today humanity faces major challenges from climate change, drug resistance, disease spread and the feeding of growing populations. Vets have a significant role to play in tackling three challenges – antibiotic resistance, anthelmintic resistance and disease control. Is our approach to dealing with these issues as a profession fit for today's purposes? Are we recognising and acting on weaknesses in our approach?

The very basics of a vet's daily routine, behaviours, practices and awareness of the world we work in poses serious threats to preventing and managing resistance to antibiotics and anthelmintics and controlling disease. There is very challenging evidence that, in relation to "biosecurity", veterinary training, standards, behaviours, morals and ethics need to be significantly re-evaluated.

It is my view that the veterinary profession's attitude to, and understanding of, whatever "biosecurity" means has to change and quickly. "Biosecurity" practices and advice to animal owners and keepers needs to become fit for purpose for today's world.

What is my authority to challenge veterinary standards?

I have had a lifelong interaction with the need for high levels of biosecurity. From childhood when my grandparents were one of the first dairy farms in GB to become brucellosis accredited, to a veterinary career in practice and the State Veterinary Service dealing with outbreaks of Salmonella, TB, classical swine fever and foot and mouth disease (FMD), I have lived my life being highly aware of how disease and drug resistance spreads.

I have a herd of pedigree Limousin cattle free from Johne's disease for over 17 years. The herd is accredited for BVD and leptospirosis.

Why raise questions about biosecurity standards now?

I had a visit from a young vet to do my annual cattle health scheme test some years ago. I stopped him before he took blood from the second cow as he had not changed his needle. His response shocked me: "Oh, you want biosecurity do you?"

Another young vet came one day to assist with a calving. She did not park in our designated area for vets, away from animals, and put on dirty leggings and boots. I stopped her and demanded that everything be cleaned off and disinfected. A row ensued about the priority: the calving or cleanliness. It turned out she had Virkon with her as a disinfectant. Another discussion ensued. She was not aware Virkon would not kill acid-fast bacteria. I provided some FAM30 and we got the calving done successfully.

When I started doing Tuberculin Testing (TT) assessments, I became concerned about the standards of biosecurity I was seeing, not just with those vets I was assessing but with the general cleanliness and hygiene of some of the practices I was visiting.

I raised questions about what we as Improve International assessors could do about this; in particular, the state of the inside of vet's vehicles. Some of them could be considered as disease risks in their own right.

The scoring for biosecurity standards recorded at 200 TT assessments was reviewed. TT assessment scoring is 1 = no advice or guidance needed; 2 = some advice and guidance needed; 3 = fail. 80 percent of vets assessed didn’t score a 1 for biosecurity.

This agrees with a survey done at Newcastle during FMD 2001 into the cleanliness of PPE returning from premises being visited by field staff. 82 percent were classed as unsatisfactory and had the potential to spread FMD. Is this an acceptable level of performance in the face of the challenges we face?
One of my assessor colleagues regaled us at a recent meeting with an incident on their own farm. A vet arrived to do a TB test and the vet’s PPE and testing equipment was far from clean. My colleague did not feel able to say anything to the vet. Why should my colleague feel unable to challenge the standards of veterinary colleagues?

At an assessment of two vets I asked them if they would challenge anything that did not comply with standards and regulations. Both said they did. I drew their attention to an opened bottle of antibiotic and two syringes on a wall beside the crush in full sunlight. I asked if that was OK. On further questioning they hadn’t noticed the bottle and were reluctant to challenge the farmer as he was a “big” client.

What is the priority here and why the barrier?

These points are a matter of grave concern for the profession which needs to address the issues behind these behaviours and conceptions.

A new concern is the increasing likelihood of African swine fever arriving in the UK. It will demand very high standards of biosecurity to control an outbreak. Are vets ready? Are vets capable? Are your clients ready? Have you made plans for dealing with it?

Does language matter with biosecurity?

The original definition of biosecurity started out as “a set of preventive measures designed to reduce the risk of transmission of infectious diseases in crops and livestock, quarantined pests, invasive alien species and living modified organisms” (Koblentz, 2010).

This definition has developed with changing priorities in disease control.

Australia takes a very robust approach defining biosecurity as “protecting the economy, environment and people’s health from pests and diseases. It includes trying to prevent new pests and diseases from arriving, and helping to control outbreaks when they do occur. While robust response arrangements are in place to combat outbreaks, preventing pest and disease incursions in the first place, remains a national priority.”

*Phytophthora ramorum* is devastating Scottish larch forests. It can only be controlled by felling trees. Scottish Forestry has provided guidance for the public using the forests:

“As the busy summer holidays period approaches, members of the public are being urged to take some simple precautions which could help, such as cleaning their boots before leaving.

“Keep coming, because we want people to keep coming and to enjoy the forest.” What sort of message is this? Keep coming, spread disease and enjoy it.

Does your advice to clients and staff use words like urge, consider, simple? Do you use words more in line with the Australian approach? Language matters.

How is vets’ biosecurity regarded by others?

Whilst preparing a talk on biosecurity I was visited by a salesman from an agricultural machinery company. He enquired what I was doing that day and I described the talk I was preparing about vets and biosecurity. His response was quick: “Good luck with that one.” How embarrassing that this is the view of our profession from someone else in farming. His main business is potato machinery. Biosecurity is a top priority in seed production meaning his vehicles must be spotless.

How easy is it to spread disease?

Disease is spread between premises by animals, vehicles, personnel or other things including wind, water and fomites.

Consider some basic disease facts.

- 1g of infected faeces can infect a calf with Johne’s disease
- Six organisms is the infective dose of bovine TB
- One fomite can carry enough BVD to infect many animals

Clearly it does not take much to spread disease.

Are the profession’s standards, behaviours and practices good enough?

A mare had a foal conceived by artificial insemination. They stayed on a holding with no horses for several miles around. A deal was done to export the foal to the EU. Pre-export nasopharyngeal swabs revealed both the mare and foal were positive for equine influenza. The owner disputed the results knowing there had been no contact with other equines for years. The laboratory resampled the mare and foal and both were found to be negative. On discussing this with the vet who took the first samples it transpired that two visits before sampling he had vaccinated four horses for equine flu. Tests confirmed the virus in the swabs was from the vaccine. Why were simple measures such as washing hands between animals not being routinely used?

In the light of this example and the incredibly small amount of infective material required to infect an animal, are the biosecurity, cleanliness and hygiene standards demonstrated by veterinary surgeons today sufficient to ensure vets are not spreading disease?

In the next issue, I shall present evidence that the veterinary profession urgently needs to review the standards it expects of colleagues, what training is given at university and what CPD is needed and understand what the livestock industry expects of the profession to ensure vets meet and maintain these standards, challenging colleagues when they fall short.

References

Pets, passports and problems

Top tips to avoid common certification pitfalls in small animal practice

W e are vets but also human and errors in veterinary practice usually occur when human factors collide with systems that don’t account for our limitations. We are particularly good at using our senses to absorb and process information, enabling us to problem solve in a way that even the cleverest of computers struggle to do. However, if we are asked to transcribe numbers, dates and digits or repeatedly make (even simple) mathematical calculations, we will soon start to make mistakes that, in contrast, the most basic of electronic devices can do all day long, error free. If we are then asked to perform these repetitive tasks in a busy practice environment where we are expected to multitask, the error rate inevitably increases.

Against this backdrop it is unsurprising that we see a significant number of claims and complaints against vets arising from errors in the administration of foreign pet travel, both inside and outside of the EU Pet Travel Scheme (PETS).

PETS was simplified in 2014 which might have been expected to result in a reduction in claims but as so often when there is a system change, the result was actually a spike in new cases reported, which has since settled back to a prevailing rising trend, most likely in line with an increase in the number of pets travelling abroad. Of course, we are still living under the cloud of Brexit uncertainty which keeps threatening to bring further change to the scheme and, worse still, at almost no notice. Whatever the political outcome, however, there can be little doubt that a sudden change in the rules is likely to bring a fresh set of opportunity for errors and another spike in claims.

Notwithstanding human fallibility, there is much which can be done to mitigate the risk of stressful and time-consuming complaints. As the majority of claims arise from basic clerical errors in certification, such as the transposition of microchip numbers, incorrect dates or simply missing information, most, if not all, could be avoided by members delegating to an eagle-eyed in-house proofreader, prior to issuing paperwork.

Where possible we will always attempt to defend export claims, on the basis the regulators consider the ultimate responsibility for possessing valid paperwork rests with the owner. Our efforts, however, are often thwarted by our good-natured, ever helpful members who, perhaps inadvertently, often bend over backwards to get involved in the whole process, even when professional shippers have been instructed by the owners. In turn, the shippers appear only too keen to direct additional costs associated with any errors back onto the veterinary profession.

To avoid the hassle, embarrassment and risk of expensive claims we reiterate that unless members are fully aware of the ever changing requirements, best practice is to act more as a technician than adviser, directing the owner to the various sources of information available online, or suggest they follow the advice of a professional shipping company.

To assist, we have links to all the relevant websites for members to provide to their clients which are freely available on the Society’s website as a download, together with a pet owner leaflet setting out their own responsibilities.

Forewarned is forearmed of course, so although this is undoubtedly not an exhaustive list of the difficulties members may come across, the following summary provides the typical background to PETS claims handled by the Society in more recent times.
Clerical errors

- Incorrect microchip numbers or dates
- Recording the chip reading or implant date after the rabies vaccine
- Issuing blank or incomplete passports
- Passport completed in black ink
- Failure to use the correct stamp (OV or practice)
- Failure to laminate section three or enter the vet’s details correctly
- Failure to strike out, initial or stamp alterations

Technical errors

- Failure to follow the 30-day blood sample rule for unlisted countries
- Failure to read the chip when issuing the passport or when the owner presents their pet for a final check
- Rabies vaccine administered to animals under 12 weeks of age
- Failure to keep rabies boosters up to date when other boosters are given
- Failure to follow the manufacturer’s rabies vaccine booster intervals
- Failure to wait 21 days after rabies vaccination
- Failure to note the presence of a second chip
- Failure to record both microchip numbers where a chip is intermittently failing and a new chip has to be inserted
- Failure to revaccinate a pet if the original microchip fails and a new one is needed
- Rabies vaccine “invalidated” by concurrent use of other vaccines/medicines contrary to data sheet recommendations
- Using unauthorised rabies vaccines

Communication errors

- Failure to make sure that the owner knows they need a valid pet passport
- Failure to make owners aware of the need for vet administered tapeworm treatment one to five days before re-entry to UK
- Failure to make the owner aware of their responsibility to ensure they have valid travel documentation

And what will Brexit bring? Who knows, but if there are changes to the current system, members would be well advised to spend time becoming familiar with any new regulations and allow extra time for certification, as well as ensuring a “double-check” system is put in place with the practice proofreader for spotting those simple clerical errors.

Relaxing when a shipper is involved
Leptospirosis vaccines given close to serology testing for dogs destined for Australia
Incorrect parasite product administered and/or given at the wrong time
Incorrect blood test requested or tested using unauthorised laboratory
Failure to inform an owner that for unlisted countries outside the EU they must wait three calendar months post-rabies serology test, prior to export
Failure to check if the importing country requires the original rabies vaccination batch number stickers to be applied to the paperwork
Failure to ensure all relevant paperwork for both importing and exporting countries has been seen and read prior to paperwork completion

And more specifically with export health certification claims outside of the EU Pet Travel Scheme

- Failure to make the owner aware that it is their responsibility to get it right and know the rules
Challenging limitation in large animal practice

What was discussed at the British Cattle Veterinary Association Congress 2019?

BCVA Congress 2019 took place in Southport between 17 and 19 October 2019. There were over 60 presentations, plus 15 workshops and 14 posters, the AGM, 39 commercial and other exhibitors and various social activities, including a fun run. The presentations were spread across four locations within the Southport conference centre. It was necessary to plan to attend the topics of most interest and delegates were often seen rushing from one talk to another, stopping to grab a coffee en route. The exhibition area was the central hub where everyone gathered for lunch, teas and coffee, general discussion and the opportunity to raise issues with speakers and members of the BCVA Board.

The keynote address by Chris Moon reflected the changing situations facing individuals. The speaker’s background is readily attributable as he stood before delegates. Clearly upright, clearly motivated and clearly relaxed with himself and others, he does not allow his history of clearing mines, losing an arm and a leg and running the London Marathon within a year of rising from the hospital bed define his approach to life. The explosion happened some 25 years ago, but with him pointing out that “getting my head in the right place” and recognising that he “never wanted to be a professional harpist anyway”, a deep sense of humour was evident from the start.

The first awareness challenges to the delegates were “what’s the point of life, find your reasons”, “what am I going to do to be more enthusiastic?” and “the price of negativity is too high to pay”. There was talk of enjoying the journey of life, not just surviving it. An interesting technical point was raised that “when we are truly grateful the body produces endorphins” and that “belief in yourself is extremely powerful.” The speaker also recognised the value of help to accept, adapt and act to the situations that arise. His view is that smiling a lot is one of the key life skills. It was intended that the passion demonstrated by Chris Moon would make members of the BCVA reflect on what is important in their

RICHARD GARD
LARGE ANIMAL CORRESPONDENT

Following a 16-year apprenticeship with Beecham, Richard established a project management and development consultancy and writes regular contributions for the veterinary press.

MSD Animal Health won the Veterinary Practice award for the Best Trade Stand. Robert Simpson, MSD (left) received the award from David Barrett, BCVA (right)
Antimicrobial Stewardship in the Food Chain

Created specifically for professionals working in the global food industry, the Antimicrobial Stewardship in the Food Chain online course will equip course participants with the knowledge and skills needed to make a meaningful contribution to the problem of antibiotic resistance – an issue described as one of ‘the greatest challenges facing humanity’.

“These are excellent resources that will help to elevate the level of understanding and appreciation of this complex topic within the food supply chain globally.”

Responsible Use of Medicines in Agriculture Alliance (RUMA)

Visit amr.bmk.global or email info@faifarms.com for further information.
own personal and professional lives and he certainly started Congress effectively.

**Use of medicines in agriculture**

There was much talk and discussion about medicines. Setting the scene, Catherine McLaughlin gave an update on the Responsible Use of Medicines in Agriculture (RUMA) task force performance, highlighting that the use of vaccines is increasing and the use of antibiotics falling. An important aspect is farmer training and Grace O’Gorman, from the National Office of Animal Health, detailed the Animal Medicine Best Practice Programme (AMBP). The Red Tractor Farm Assured Dairy Standards include farmer training, with online and workshop aspects and a certificate signed and dated by a veterinary surgeon. The Veterinary Resource Centre has materials available to veterinary practices to support their farmer clients. Other initiatives are also available, with MilkSure for dairy farmers and their vets well established and a series of workshops on the use of the prescribing cascade to stay safe and legal now ongoing.

Lisette Smeele reviewed the progress achieved by the Dutch dairy industry in the responsible use of antibiotics. Since the policy change in 2011, veterinary surgeons agree that their prescribing has improved and that third and fourth generation cephalosporins are not used now. The relationship between the vet and the farmer has changed and veterinary surgeons see animals more frequently. The vet develops a step-by-step prescribing formulary with the client and it is important to keep this formulary up to date.

However, farmers have a daily defined dose per animal per year as a benchmark indicator and some farmers delay treatment, hoping for self-cure, rather than treat and risk raising their benchmark. The point is emphasised that the responsible use of medicines is not just about antibiotic use reduction, but that animal health and welfare should be the primary goal.

**New technologies**

There is an increasing emphasis on technology to help the vet and the farmer achieve the details needed to fulfil all the requirements of medicine use. Phil Sketchley and Andy Biggs challenged veterinary practices to know how prescribed medicines are being used on-farm and then offered a Farm Medicine Tracker (FMT) application to solve any awareness gap. It was indicated that an audit trail is made available from wholesaler to veterinary practice to the farmer and the individual animal. The vet is able to scan in the medicine to have details of use with a Virtual Medicine Cabinet that provides a warning if the use is going into the cascade. Scanning the Global Trade Item Number (GTIN) for the product provides a cross reference to the Summary of Product Characteristics (SPC) within the NOAH Compendium. The farmer inputs into a mobile phone what is administered, the animal and an estimate of weight. The medicine use can be exported to a treatment calendar, a treatment reminder generated and the farm medicines book updated with indications when residues are safe for milk to the tank or meat after slaughter. Use of the FMT is expected to provide an audit for the farmer and also protect the farmer from cascade errors. The practice will receive more information and full stock control from practice to farm will be available, with no duplication of recording for the farmer.

**Antimicrobial-resistant E. coli study**

A study to identify on-farm risk factors for antimicrobial-resistant *E. coli* in the environment of pre-weaned dairy calves was described by David Barrett, on behalf of a team from Bristol Veterinary School. Analysis of faecally contaminated floor samples from the areas where pre-weaned calves were housed showed widespread occurrence of the CTX-M gene. This gene confers resistance to antibiotics and is transferable from one bacterium to another. The then antimicrobial-resistant organism is spread from animals to humans and humans to animals. Calves show a higher level of resistant genes than adult cows and more resistance is found in the summer than the winter. On farms where the water troughs were cleaned daily, they were half as likely to have CTX-M gene-containing *E. coli*. The use of dry cow therapy (cefotaxime) within the past six months yielded more resistant samples. The study indicates that minimising antibiotic use and limiting the opportunities for bacteria to proliferate and spread around the farm should reduce the level of resistance. Further work is planned to offer veterinary surgeons targeted interventions to reduce the potential for CTX-M transmission on-farm and from animals to humans.
Antimicrobials in agriculture

Antibiotic sales have seen a 53 percent reduction since 2013 - a great step in the fight against antimicrobial resistance

Britain’s livestock producers have made remarkable progress in reducing their dependence on antimicrobials to control infectious disease – but are current practices sustainable and is there still scope for further improvement?

Speakers at the Responsible Use of Medicines in Agriculture (RUMA) conference in London on 29 October 2019 welcomed the latest figures on antimicrobial usage on farms but expressed concern that social and economic factors might threaten the progress made by the industry to limit the spread of resistant bacterial strains.

The meeting coincided with the release of the 2018 Veterinary Antimicrobial Resistance and Sales Survey data which showed a 53 percent reduction in total antibiotic sales last year compared with 2014 figures. There was also a two-thirds reduction in use of three classes of antibiotics considered critically important in human medicine, fluoroquinolones, third and fourth generation cephalosporins and colistin.

This meant that UK agriculture now has the fifth lowest level of antibiotic use in the EU and the lowest among those five countries with the biggest livestock industries. More importantly, the survey produced the first evidence of a reduction in isolations of multidrug resistance strains in animals, said Kitty Healey, head of antimicrobial resistance with the Veterinary Medicines Directorate.

This downward trajectory in the usage curve can continue but not at the same rapid rate. Catherine McLaughlin, vice-chair of the RUMA steering committee, believed that the initiative has harvested all the “low-hanging fruit” and any further gains are likely to be hard won. So far, the fastest reductions have been made in the intensive pig and poultry sectors and the focus must now shift to the dairy, beef and lamb sectors where the production systems are more complex and less amenable to simple husbandry solutions.

Stuart Roberts, National Farmers Union vice-president, said that the strength of the RUMA initiative was its collaborative approach between farmers, vets, suppliers and food processors. He acknowledged that new legislation was an option to “sweep up” those remaining producers who were unwilling or unable to curtail their antibiotic usage. But he was sure that persuasion would offer more chance of success: “If you are doing something because someone tells you to, then you haven’t bought into the reasons why you should be doing it – you should realise that it is good for your business.”

However, developments in veterinary science that lead to new vaccine approaches to disease control can significantly reduce the need for traditional chemical treatments in controlling livestock diseases.

Julie Fitzpatrick, scientific director of the Moredun Research Institute, outlined developments by her colleagues that may reduce the risk of resistance arising against both antibiotic and anthelmintic drugs. A world-first vaccine against a nematode parasite has been developed by Scottish and Australian researchers for use against Haemonchus contortus in lambs. It is licensed for use in Australia and South Africa, countries where anthelmintic-resistant strains of the parasite had been endangering the future of the sheep industry.

The vaccine is produced by harvesting nematodes from the abomasum of lambs at slaughter and extracting a protein from the worm gut. When used to inoculate lambs, the vaccine significantly reduces egg output and with less pasture contamination the number of annual drench treatments can be cut from around eight to two – as regular treatment is still needed against other common gastrointestinal worms. However, the knowledge gained from this project is helping towards the development of further vaccines against parasites that are major problems in the northern hemisphere such as Teladorsagia (formerly Ostertagia) circumcincta, she said.

Perhaps the biggest barrier to reducing UK agriculture’s reliance on veterinary medicines is the threat of a no-deal Brexit, Mr Roberts warned. If reduced to working under World Trade Organization rules, the country’s farmers would be unable to compete against food imports from outside Europe produced using methods that would be illegal under British welfare and medicines legislation. He urged all stakeholders in the UK food industry to work together in persuading consumers of the need to buy produce reared in accordance with current welfare and environmental standards.

Several speakers stressed the importance of transparency in helping consumers to make appropriate choices. The notable success in containing antibiotic use on UK farms was a valuable tool to help retain the loyalty of UK consumers and develop new markets abroad. So, it was disappointing for the organisers that the meeting took place a few days after the news of an illegal consignment of amoxycillin being intercepted en route to a poultry unit in Northern Ireland. BVA senior vice president Simon Doherty felt the news undermined efforts to uphold the reputation of UK farming and was a “blow to the whole poultry sector”.

One audience member suggested that a way to ensure medicines are used responsibly would be to put all prescriptions under veterinary control. However, it was felt that this approach would be difficult under UK conditions and impossible in many countries abroad where there is a chronic shortage of veterinary manpower. A more realistic solution would be to provide training for non-veterinary support staff to give better guidance to producers in countries where there is massive overuse of antibiotics, suggested Shabbir Simjee of the RUMA independent scientific group.
Achieving high-quality care

How can “quality improvement” be applied to equine practice?

Quality care is desirable in all healthcare services, whether it be for people or animals; however, defining exactly what is meant by quality care is difficult. Terms such as “best practice”, “quality care” and “clinical excellence” are often used interchangeably although, strictly speaking, they are subtly different from each other. In veterinary practice, what constitutes quality care and best practice in individual cases is influenced by numerous factors in addition to the patient itself and its condition, including the wishes of the owner and financial constraints. Evidence-based medicine plays an important role, by enabling veterinary teams to deliver high-quality, thoroughly evaluated clinical care. However, in situations where there is a lack of high-quality evidence (not uncommon in equine medicine and surgery), then the use of weaker forms of evidence (including clinical experience and expert opinion) will be necessary.

Regardless of difficulties, providing the highest quality of clinical care to all of our patients is an objective that all veterinary surgeons and veterinary nurses aspire to. In order to achieve this, we must be prepared to critically appraise our clinical work, and look for ways that we can improve it.

Quality improvement can be defined as a systematic and formal evaluation of a programme or system of care, administration or experience that is carried out with the intention of improving the quality of the service provided to the client and/or patient. It’s all about working together, gathering real information from real teams and finding practical things that we can do to continuously improve as a whole.

Quality improvement aims to identify and address problems and deficiencies in the clinical care delivered to patients. In order to identify problems, data must be gathered to measure the quality of care currently being delivered. By identifying deficiencies, changes can be made to improve the quality of care and the process can subsequently be re-measured to assess efficacy. Some of the major objectives for practising quality improvement methods include the prevention of avoidable harm to patients, streamlining services, bringing your practice team together, establishing a learning culture, putting your patients first and improving staff satisfaction and retention.

Of course, many veterinary teams have been undertaking quality improvement initiatives for many years, but these have been largely unrecognised as such and not conducted formally. Members of the Royal College of Veterinary Surgeons are obliged to undertake clinical governance (defined as the continuing process of reflection, analysis and improvement in professional practice for the benefit of the animal patient and the client owner) as stated in the Guide to Professional Conduct; quality improvement is an essential component of this. Over the past five years, quality improvement methods have been officially recognised and further promoted through the Practice Standards Scheme. RCVS Knowledge has played a key role in promoting and supporting quality improvement in veterinary practice, and the RCVS Knowledge website contains useful information.

RCVS Knowledge, with support from BEVA, has also run two quality improvement roadshows in 2019 that have highlighted some quality improvement methods currently used in equine practice. National or international audits and benchmarking exercises, including audits of colic surgery, castration complications and antimicrobial resistance, are due to be launched imminently which will facilitate large-scale data collection that can be used by individual practices to compare and review their own data and implement changes to the way they work accordingly.

Whilst it is only common sense that practices will want to optimise clinical outcomes and provide high-quality veterinary care, there are barriers to incorporating quality improvement techniques into equine practices. Quality improvement is best practised as a team exercise, and this may be easier to introduce in equine hospitals than in ambulatory practices. The hurdles facing practices are currently being researched in a PhD project undertaken by Freya Rooke at the University of Nottingham. Initial results indicate that the biggest barriers perceived by veterinary teams to introduce quality improvement into their practices are lack of time and lack of knowledge. Lack of time in clinical practice is an issue that the profession and individual practices need to address – once the relevance and positive outcomes of implementing quality improvement become more widely recognised, hopefully dedicated time for undertaking such efforts will be made available. As far as gaining more knowledge and understanding of quality improvement methods relevant to equine practice is concerned, this will continue to be provided by organisations such as RCVS Knowledge and BEVA, and this will feature in the programme for BEVA Congress 2020.
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Modern equine cheek tooth extraction

Modern techniques allow the quick and efficient extraction of teeth, but thorough work-ups are still vital.

As with many other fields of modern equine surgery the use of sedative and local anaesthesia regimes has meant that almost all dental procedures in the equine are performed with the patient standing. The days of routinely repulsing teeth with a hammer and punch under general anaesthesia are long gone. Advances in dental equipment and surgical techniques allow most teeth, or fragments of teeth, to be extracted quickly and efficiently via the oral cavity, thus reducing collateral damage and complications. However, extraction of teeth should never be undertaken lightly and should only be attempted when confirmation of disease is made by thorough diagnosis and ideally when more conservative methods have proved ineffective. Endodontic treatment of equine cheek teeth is still embryonic in its development but, as in other species, may offer a useful alternative in the future.

Indication for extraction

Periapical infection is by far the most common indication for extraction of teeth, especially in younger horses. Periapical infections have a variety of aetiologies, including periodontal disease, fractures, infundibular caries of the maxillary cheek teeth, iatrogenic pulpar exposure and anachoretic infection of the pulp tissues. The clinical signs of a periapical infection depend on the affected tooth and its position in the head, and include facial and mandibular swellings, draining tracts, sinusitis with nasal discharge and quidding of food. Idiopathic cheek tooth fractures are relatively common and patients may present with clinical signs of quidding and halitosis, as well as biting and behavioural problems. A number of fracture configurations can be observed, but lateral slab fractures (Figure 1) and upper cheek teeth midline sagittal fractures (Figure 2) are seen more frequently, the latter of which invariably mandate extraction due to pain and inevitable periapical disease. Supernumerary, misaligned, dysplastic and impacted teeth can all cause clinical signs of disease and their removal may be indicated in many cases.

Diagnosis of diseased teeth

Using a light source and mirror or, ideally, an oral endoscope, the occlusal, buccal and palatal/lingual aspects of the teeth are carefully examined and will allow disease of most equine cheek teeth to be identified. Careful visual inspection of the secondary dentine overlying the pulp horns is essential, accompanied by probing of the pulp horn occlusal surfaces with a suitable instrument to allow identification of any secondary dentine defects (Figure 3), which may indicate endodontic disease of the tooth in question.

Diagnostic imaging is indicated in cases in which extraction is anticipated. It is not only used to confirm the presence of periapical and periodontal disease, but also helps surgical planning and helps determine the most suitable method of extraction. Radiography is the mainstay of dental imaging, and modern digital systems allow good radiographs of the dental apices and surrounding alveoli to be obtained in both the clinic or field setting. Rostral maxillary and mandibular cheek teeth with periapical infections may present with a bony swelling, which is often seen on radiographs as an area of sclerosis and periosteal new bone formation usually surrounding a distinct lucent zone.

**FIGURE (1)** A lateral slab fracture of a cheek tooth – passing through the lateral two pulp horns of the tooth (2) A sagittal fracture of cheek tooth (3) Secondary dentin defects on the occlusal surface of the cheek tooth (4) Radiographic changes associated with periapical infection – a region of sclerosis and periosteal new bone formation usually surrounding a distinct lucent zone.
(Figure 4). In some cases, cutaneous draining tracts may also be present, and placement of a radiodense metallic probe within the tract can pinpoint the source of the tract to a specific dental apex. Similarly, placement of a metallic ring around a bony swelling can be used (Figure 5). These changes may also be identified in disease associated with the caudal upper cheek teeth, and often observed as local densities (encapsulated abscesses and granulomas) in the otherwise lucent adjacent sinus. Obvious fluid lines may also be present in the sinuses (Figure 6) in cases of cheek teeth fractures that are involved in a secondary dental sinusitis.

When the oral examination and radiography are inconclusive then other imaging modalities may be indicated, of which computed tomography (CT) and scintigraphy are the most commonly used. CT uses X-ray beams and reconstructive computer software to allow tomographic slices of the area imaged to be created and displayed on a computer monitor (Figure 7). CT has higher contrast resolution when compared to conventional radiography allowing for a more accurate differentiation between soft tissues and fluids. CT imaging negates problems caused by superimposition, which is often encountered with radiography of complex anatomical locations such as the head and oral cavity.

Scintigraphy is unique among the imaging modalities because the images reflect active physiological processes rather than the structural features portrayed by other imaging modalities. It can, therefore, detect changes in bone that precede radiographic changes, and this makes it a very useful imaging modality for diagnosis of early periapical infection. Periapical infections of the cheek teeth typically result in focal and intense increased radionuclide uptake (IRU) located in the periapical region of the affected tooth. When partnered with radiography, a high sensitivity and specificity for detection of periapical infections is achievable.

**Extraction methods**

**Routine oral extraction**

The initial stage of the extraction involves elevation of the gingiva from the tooth on the lingual, palatal and buccal aspect, as far apically as possible. Interdental spreading of the tooth from its neighbouring teeth, using sequentially increasing size of spreaders (Figure 8), is particularly useful in breaking down the periodontal ligament and hastening the procedure. Care must be taken, however, to not damage the adjacent healthy teeth or disturb the ‘06 teeth when attempting an ‘07 extraction, and similarly the ‘11 tooth when attempting a ‘10 extraction. The next step is manipulation of the tooth in the alveolus using forceps. The choice of forceps is very much dependent upon the veterinary surgeon’s preference as well as the tooth in question. For example, serrated jaw forceps are adequate for most extractions, but three-pronged forceps can be useful for fractured teeth and finer tooth forceps for fracture fragments. Once gentle sustained rotational pressure within the alveolus and intermittent rocking of the tooth has loosened the tooth to a point that frothing blood and “squelching” is heard then extraction of the tooth from the alveolus can be attempted. This involves placing a fulcrum between the forceps and the adjacent rostral tooth, and applying gentle firm pressure to extract the tooth in an occlusal direction from the alveolus.

Once removed, the tooth and alveolus should be carefully inspected to ensure that the tooth has been extracted in its entirety.

Once removed, the tooth and alveolus should be carefully inspected to ensure that the tooth has been extracted in its entirety.
entirety. Curetting and extraction with finer forceps allow removal of loose fragments. Oblique radiography of the apical region is useful to determine the presence of any remnants and provide a record of complete extraction. Once empty, the alveolus is usually packed to provide haemostasis and prevent food contamination in the early stages of tissue healing. The choice of material is usually determined by the surgeon and clinic preference and often includes: gauze packing, cotton tampons, polysiloxane impression material or dental wax.

Variations on this technique allow the extraction of the majority of cheek teeth; however, in teeth that are fractured, become fractured during oral extraction attempts, have no clinical crown or have other malformations preventing routine extraction alternative methods will be needed.

Periodontal elevation extraction technique
Specially engineered periodontal elevators (Figure 9) have been developed to facilitate extraction of problematic and fractured teeth, and teeth that have no clinical crown remaining to allow forceps placement. The elevators are usually placed under endoscopic guidance, sometimes in pairs, with one on the buccal aspect and one on the lingual or palatal aspect of the tooth. It can then be manipulated disrupting any remaining periodontal tissues and using fine fragment forceps the fragments can be removed.

Minimally invasive transbuccal extraction (MTE)
This is a recently developed technique that utilises a direct approach to the tooth with a “key-hole” cannula placed through the tissues of the cheek (Figure 10). The correct positioning of the cannula is paramount to the success of this technique, and is usually assisted with a combination of oral endoscopy, ultrasonography and radiography. A good working knowledge of the neurovascular anatomy of the head is essential not only to ensure the cannula is placed in the best position to allow access to the alveolus, but also to prevent inadvertent neurovascular and ductal damage that may be catastrophic in some horses.

Once the cannula is placed then the tooth can be manipulated further, under endoscopic guidance, directly in the alveolus using specifically designed periodontal elevators inserted directly from the occlusal aspect of the tooth. Once the dental tissue appears adequately loose, it can be drilled and tapped using oral endoscopic and radiographic guidance. A screw extraction device is then inserted in the hole and tightened, and using a specially designed hammer, successive percussion on the end of the screw extractor will pull the dental tissue from the alveolus (Figure 11). Any small fragments can be removed using fine forceps passed through the cannula, and curettage of the alveolar bone can also be performed through the cannula.

Dental repulsion
A minimally invasive trephination and repulsion (MITR) technique using small diameter Steinmann pins has been described and provides a method of dental repulsion with fewer reported complications than traditional methods using large punches. This technique is often performed using sedation and local anaesthesia, with the horse standing. The pins are placed through carefully positioned drill holes in the bones of the face, or the mandible, under strict radiographic, and in some cases sinoscopic, guidance, and the dental remnants carefully repulsed often while observing via oral endoscopy.

Lateral buccotomy
This technique is a major surgical undertaking, mandating general anaesthesia, and is usually reserved for teeth with abnormal apical anatomy or changes preventing routine extraction from the alveolus. It is often associated with a number of peri- and post-operative complications, mainly resulting from the close proximity of a number of neurovascular structures.

In conclusion
Using accurate diagnosis, surgical planning and modern methods and equipment, most teeth requiring extraction can successfully be removed with the horse standing, and with complications being much less common than with traditional repulsion techniques.
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Getting ready for Brexit

With no clear picture of the impact of Brexit on businesses and individuals, how should practices prepare?

In preparation for Brexit, the Government developed the EU Settled Status scheme, open to EU nationals living in the UK to apply for either settled or pre-settled status depending on how long they have lived here.

These are as follows:

- Five years’ continuous residence at any time in the UK = settled status
- Less than five years = pre-settled status

If the UK leaves the EU with a deal, the scheme will remain open until 30 June 2021 and allows EU nationals currently living here (before the end of free movement) to apply for either status.

But if there is no deal, the scheme will close earlier, on 31 December 2020, so EU nationals should apply under the settlement scheme sooner rather than later to avoid issues affecting their ability to remain in the UK.

Once the UK leaves the EU, freedom of movement will end. Any rights once held by EU nationals under the EEA Regulations 2016 will cease, and a new immigration category known as Appendix EU will apply.

If EU nationals have not applied for either status before the scheme closes, they will be considered illegal residents in the UK, which could have an impact on any future application to remain in or enter the UK, so it is vital to apply in good time.

How will this affect veterinary practices?

EU nationals who apply for settled or pre-settled status can continue to benefit from the same rights as British citizens: being able to work, study, access benefits and seek employment in the UK. Those who have been granted pre-settled status must apply for settled status before their pre-settled status expires (usually granted as a five-year visa) or they face becoming an overstayer in the UK.

Veterinary practices need to consider how best to move forward in such uncertain times. One development is a new voluntary immigration scheme entitled the “European Temporary Leave to Remain” (Euro TLR) Scheme, which could come into effect if the UK leaves the EU without a deal.

Successful applicants to this scheme will be given three years’ leave to remain in the UK. This will give EU citizens who move to the UK after Brexit, and their employers, greater confidence and certainty during the transition period, and ensure that they have a secure legal status.

This will apply to those who enter before 31 December 2020, this being the scheme’s closing date. It is also possible that a new immigration system similar to the Australian points-based system will be introduced from January 2021.

Under this scheme, an EU citizen who spends time in the UK with a Euro TLR immigration status will be able to accrue that time towards the qualifying period for settled status.

It is still not clear how this will work in practice; for instance, more clarity is needed on whether applicants under the new Euro TLR can switch into the new visa system (scheduled for January 2021) from within the UK. If not, they would need to leave the country after their three-year visa expired.

In these circumstances, practices should consider applying for a Tier 2 Sponsorship licence as a long-term solution. This would mean they could recruit from overseas to fill positions that they cannot fill from within the UK.

Since there will be competition for the pool of qualified EU vets once we leave the EU, it is vital that UK practices look at solutions to attract this talent.

The fact that vets are now classed as a shortage occupation will make this process easier when widening – a job in a practice which has a Tier 2 licence no longer needs to be advertised in the UK for 28 days before it can be advertised abroad. The Tier 2 visa system is used for employing non-EU staff, so this widens the net further.

If your practice has not started considering its options, now is the time to do so.

For more information, contact Sandeep Dattani of Harrison Clark Rickerbys on sdattani@hcrlaw.com or 0121 726 7463
Being “ghosted” by an employee

What to do when faced with an employee who resigns with immediate effect

The recruitment crisis within the veterinary profession is well publicised. Most practices have first-hand experience of coping for months whilst being short-staffed, usually as a result of the struggle to recruit a suitable vet to fill a vacancy.

With the imbalance between demand and supply, competition for vets is fierce. Vets often hold the upper hand in the recruitment process, leaving practices in a weaker bargaining position to meet increasing salary demands or being let down by a candidate who accepts a more attractive offer late on in the recruitment process.

Against this landscape, a common oversight is the difficulty caused by inadequate protection against employees exiting the practice at short notice. With the exception of probationary periods enabling short notice of termination, many veterinary practices are reluctant to request longer notice periods from employees. Misconceptions around the length of notice employees can be asked to provide are frequent. One wrongly held view is that the notice period to be given by the employee has to reflect the frequency of pay (ie a one-month notice period for a monthly paid employee).

For a busy practice with a full appointment book, having short notice of being a vet down will cause significant difficulties. It does not leave much time to advertise, recruit and offer the vacancy. The replacement recruit will likely need more time than is available to find a suitable vet.

In view of this, many smaller independent practices are following the example set by corporate veterinary providers and other professional sectors to request employees to provide longer notice of resignation. For veterinary surgeons this is commonly three months, with senior clinical and practice staff (eg clinical director or practice manager) being six months. This enables a greater transitional period between the exiting employee leaving and the recruitment of a replacement. It also allows greater planning in the short-term coverage which may be needed from colleagues.

But what if the employee doesn’t provide notice at all and leaves the practice completely in the lurch? Being “ghosted” by an employee who fails to give any notice of their departure is a highly disruptive scenario for a practice. The most common short-term fix is locum cover, which in itself is fraught with unreliability, rocketing costs and sometimes clinical quality concerns.

Putting to one side causes of employment litigation associated with sudden terminations of employment (constructive dismissal claims, ill health leading to claims of work-related stress conditions), practices can feel powerless in their response to an employee resigning with immediate effect with no logical explanation. Whilst an employer cannot compel an employee to perform their duties for the notice period, the remedy available to a practice in this situation is to sue the employee for breach of contract.

In assessing the value of a claim the court will consider the actual losses suffered by the practice, commonly the aforementioned locum fees and recruitment costs. The first consideration is whether there is a suitably worded deductions clause in the employment contract, to enable a deduction for costs attributed to the employee’s breach of contract to be deducted from the departing employee’s final salary. If so, exercise it to recover some of the costs at an early stage.

In the absence of a deductions provision, or where the costs to the practice are in excess of the final salary payment, dispute resolution procedures and potentially litigation are the next course of action.

In determining the benefit of bringing a claim of this nature against an employee, it is important to assess the employee’s resources. Can they fund an award of damages? If not, there is little point of incurring the cost of legal action.

There is often value in pursuing a claim where the new employer of the departing employee is involved and can be cited as encouraging the employee to terminate their employment without adequate notice. They will likely have deeper pockets to fund any award. However, evidence will be required to demonstrate the new employer was complicit in inciting the employee to breach their contract in a bid to join the new practice more quickly. That may be difficult to come by, particularly if the new employer and the employee were mindful of a potential legal action and avoided creating a paper trail.

The overarching issue is to ensure the contracts of employment reflect the needs of the practice – in terms of length of notice required by employees and to enable practices to deduct the full or partial costs associated to the employee’s breach of contract from final salary payments. ✱

If you have any specific questions on this topic please contact Stephenie Malone by email at smalone@hcrlaw.com
Mistaking holiday entitlements can prove costly

Employers should be aware of employee holiday entitlements, from overtime and commissions to locum working

Practices, like any other employer, often suffer from holiday pay headaches, confused about what to include or what reference period to use when calculating what is due. The problem is that the law is complex and a number of cases have made navigating this very difficult.

Before we go into the detail, Andrew Rayment, a partner in the employment team at law firm Walker Morris LLP, says that it’s important to look at the key entitlements. “In essence,” he says, “workers are entitled to a minimum of 5.6 weeks paid annual leave (that’s 28 days for someone working five days a week); bank/public holidays can be included in this minimum entitlement. Of this 5.6-week entitlement, four weeks are granted by European law (known as Euroleave) and an additional 1.6 weeks are granted by the UK’s own Working Time Regulations 1998.”

He says that it shouldn’t be forgotten that part-timers are entitled to exactly the same level of holiday, but pro rata. For example, someone working four days a week gets 22.4 days leave. Further, workers start building up holiday entitlement as soon as they start work.

Employers can, within reason, control when workers take their holiday. But if a worker leaves their job, they should be paid for any holiday they’ve accrued but not taken.

But there is another consideration that Rayment points out here, and it’s one that trips up many employers. He says: “Employees continue to accrue paid holiday, as if they were at work, throughout maternity, paternity, adoption and shared parental leave (known as family leave). Employees may choose to take this holiday before or at the end of the family leave period or a mixture of both.”

He adds that employers may have to allow the employee to carry over (into the next leave year) more annual leave than is usually allowed to ensure that the employee does not lose any of the holiday accrued during the leave. He cautions practices that overtime, commission or bonus may need to be factored into the holiday pay accrued during family leave if it forms part of the employee’s normal pay.

Overtime, commission and holiday pay

For most, it’s a given that basic pay is used to work out holiday pay, but what about overtime? The answer to this question, says Rayment, is that “the calculation must use one’s ‘normal pay’. So, if an employee normally works overtime, it should be included in the calculation of holiday pay.”

Contractual overtime is what an employer is contractually obliged to offer and that which employees are required to work; it must always be included in holiday pay. But as Rayment points out, “the Employment Appeal Tribunal has made it clear that regular overtime that is not guaranteed, but that employees are expected to work if and when it is offered, must also be included”.

But what of voluntary overtime? On this Rayment notes a Court of Appeal decision which considered whether voluntary overtime must be included in the calculation of holiday pay. He says that “it was held that voluntary overtime must be included in holiday pay if it is ‘part of a pattern of work that is sufficiently regular and settled for payments made in respect of it to amount to normal remuneration’”. In simple terms, Rayment says that as a general rule of thumb, the more regular the voluntary overtime, the more likely it should be included in holiday pay.

Just as interesting, reckons Rayment, is the effect of commission on the calculation of holiday pay. In particular, he says that another Court of Appeal decision “made it clear that results-based commission should be taken into account when working out holiday pay”. Of course, the importance of this may be lesser in a veterinary environment compared to other sectors. Nevertheless, it needs noting.

Part-year workers – a new consideration

To this mix comes a recent case where those who only work part of a year are also entitled to the equivalent of a “week’s pay” for each week of leave. For workers who do not have normal working hours, a week’s pay is the worker’s average weekly pay in the 12 weeks before the first day of holiday, excluding any weeks in which no remuneration was payable.

As Rayment highlights, “the worker argued that there was nothing in the law that requires a different approach where, as in her case, a worker does not work a full year” – and the Court of Appeal agreed.

For those interested in this case, he says, “the Court of Appeal held that the Working Time Regulations require only the straightforward exercise of identifying a week’s pay in accordance with the Employment Rights Act and the multiplying of that figure by 5.6”.

ADAM BERNSTEIN

Adam Bernstein is a freelance writer and small business owner based in Oxfordshire. Adam writes on all matters of interest to small and medium-sized businesses.
As an aside, it should be noted that the 12-week reference period referred to in the case will be increased to 52 weeks with effect from 6 April 2020.

**Employees on long-term sick leave**

Practices shouldn’t lose sight of workers who have been unable to take their holiday because they’ve been on long-term sick leave. Rayment reminds that workers are entitled to “carry over four weeks’ unused holiday unless the employer allows more to be carried over”. He adds that this holiday must be used within 18 months from the date it’s carried over.

The fact that the employer may not have realised they were underpaying is not a defence

**Claims from “hidden workers”**

Another trap awaits employers who engage "self-employed" contractors; they should be aware of the potential risks of such individuals bringing holiday pay claims. The European Court of Justice held in a 2017 case that anyone with “worker” status must be able to carry over paid annual leave if they have not had the opportunity to take it or have not taken it because they have been regarded as self-employed and therefore didn’t think they could get paid for holidays.

As Rayment explains, “the Court made it clear that the employers’ ignorance of employment status was no defence for not paying holiday – it said that it was for the employer to seek all information regarding its obligations”.

Of course, the application here relates to the use of locums, an area of law which is firmly in the sights of HMRC as well as workers.

**Employers that breach the law**

With the complexities established, what penalties await those that break the law? Rayment says it’s simple – "workers who believe they have been underpaid holiday pay can bring Employment Tribunal claims for back-payment," adding: “where there has been a systemic failure to pay the correct amount for a whole workforce the potential exposure can be significant. The fact that the employer may not have realised they were underpaying is not a defence.”

Notice should be taken of the Deduction from Wages (Limitation) Regulations 2014 which impose a two-year back pay limit on deduction from wages claims. Even so, claims may be made without any real cost to the employer since the tribunal fees regime was struck down in the summer of 2017.

**In summary**

The law surrounding holiday entitlements is a quagmire for employer and employee alike. Practices ought to seek advice if in any doubt about their obligations and employees’ rights.

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How to make the most out of your practice’s website

Your website is the first impression you give to potential new clients, so it’s important to ensure it’s optimised for use

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It’s often said that first impressions count and your website is frequently the first impression that you give to potential customers. If a pet owner has found you through a web search or through a link shared by a friend, then your website will be your first point of contact with them.

Before they even see your practice or talk to your staff, these local pet owners will see your website. You want that first impression to be a good one. Make a bad impression and you lose a potential customer. Make a great impression and you have a potential customer to work with.

By helping customers get to know your veterinary business, you are working to establish trust, which is incredibly important in building long-lasting customer relationships, especially in a service industry like ours. A website helps you to build credibility by allowing customers to see what your brand is all about. In addition to showcasing your practice services, you can also tell potential new clients about your team and your mission to care for pets.

There has been a growing trend for some clinics to only use Facebook to establish an online presence and not bother much with a website – which does have some cost saving benefits – but what if Facebook changes their operating methods? It’s never a good idea to build your entire house on someone else’s land. A website is your own sovereign territory online and as such it’s safe from rapacious tech companies who want to get between you and your clients.

The importance of a website for marketing extends to every aspect of your digital marketing strategy. As the backbone of your online presence, nearly every type of communication, content or advertisement that you put online should drive the customer to your website. It’s important that your website gives customers a clear idea of what your brand values are and what types of services you offer.

Let’s start with your social media marketing. Though you use social media sites such as Facebook and Instagram to reach and engage with consumers, you have to have a place to send those customers back to when they want to learn more about your business. Likewise, you can display your social media feeds on your website to offer some fresh content on your home page.

Your website also plays an important role in your email marketing. If you are using email marketing to reach and engage your customers (which you should be, especially as part of your pet health plan), then you need somewhere to send them to convert a sale or further educate.

Your website is the perfect place to guide your pet health plan email subscribers to when you want them to learn more about a product or service that they receive as part of their health plan subscription. You can even guide them back to your website to a specially created hidden landing page with information to help them make a purchase of a specially discounted offer on a promotion.

A website is an intrinsic part of search engine optimisation. When customers use Google to research pet health questions or local clinics, the search engine delivers a list of the most relevant web pages. So, if you want to bring some of this local online traffic to your own business, you need a website to drive that traffic back to. The more optimised your site is for Google, the more chances you have to reach new customers before your competition does.

Google AdWords advertising also needs to link back to your site; this is especially important for referral clinics who rely on detailed search terms for pet owners looking for specific medical procedures.

You could build a new website yourself using one of the popular site builders such as Squarespace, but would you let a web designer do a bitch spay? Of course not! Sometimes in life it’s just better to use a proper professional to get things done right the first time. And your time could almost certainly be better spent doing other things, so it’s worth delegating the design and set up of your website to a professional.

A decent website should usually cost from around £1,000 to £2,000 upwards, possibly more if you have lots of sites or if you are using custom-designed functionality such as a booking system, but you should definitely get a good website for under £2,000 if you shop around.

For most small independent practices, you don’t need to go crazy with a website – a nice, clean and modern design featuring smiling staff photos, opening times, telephone numbers and maps are enough to make a decent website without over-complicating things. Just work with your web developer to design the site user experience to make things very slick and intuitive to use with very fast page load times.

A website is a valuable part of your brand that needs to be nurtured and looked after as much as any other part of your business, so ensure that you take the time to make it as good and as useful as it can be.
According to a survey undertaken by leading UK insurer Legal and General, 40 percent of businesses would cease trading in under a year if a key person or owner died or became critically ill. This suggests that many businesses aren’t adequately covered and should seriously consider reviewing their cover to ensure their business could continue to operate in the event of unforeseen circumstances.

Key person protection

What is it and how does it work?
Put simply, key person protection (also known as key man insurance or key person insurance) is a life assurance policy taken out to cover the life of a key person within your business. It insures a business against the financial loss it would suffer if a key person in their business died or were diagnosed with a specified critical illness, if chosen, during the length of the policy. It also pays out if the key person is terminally ill and meets the policy definition, except in the last 12 months of the policy. The policy is owned and paid for by the employer, so any pay-out is payable to the employer.

Why should I consider it?
Losing a key person in your business could have a severe impact. The business could suffer badly, with sales and profits falling and increased workloads for remaining staff.

Key person protection is designed to pay out a lump sum on the death of the insured key person, during the length of the policy. The lump sum could significantly help the business to recover as the proceeds can be used to help replace lost profit or with finding and hiring a replacement.

Shareholder protection

What is it and how does it work?
If a shareholder in your private limited company, member of your limited liability partnership or partner in your partnership were to die could you afford to purchase their share of the business? If not, there could be significant implications for the future of your business. Share protection can help you protect the ownership of your business in this situation.

Share protection allows the remaining partners, shareholding directors or members to remain in control of the business following the death of a business owner.

In the event of a business owner dying or being diagnosed with a terminal or specified critical illness, share protection can provide a lump sum to the remaining business owners. This means that in the event of a valid claim being made during the length of the policy, the lump sum could be used to help purchase the deceased partner’s/shareholding director’s/member’s interest in the business.

Why consider it?
If a business owner dies with no share protection in place their share in the business may be passed to their family. This means that the surviving business owners could lose control of a proportion or, in some circumstances, all of the business. The family may choose to become involved in the ongoing running of the business or could even sell their share to a competitor. A share protection policy can help avoid these issues.

Relevant life plan

What is it and who is it aimed at?
A relevant life plan is a term assurance plan available to employers to provide an individual death in service benefit for an employee. It’s designed to pay a lump sum if the person covered dies or is diagnosed with a terminal illness, whilst employed during the term. A relevant life plan is paid for by the employer. Relevant life plans are similar to most other types of life cover except they aim to provide a tax efficient benefit provided by an employer for an employee.

It is aimed at employers looking to provide death in service benefits, but with too few employees to set up a group scheme; directors wishing to provide their own individual death in service benefits without taking out a scheme on all employees; or high-earning individuals, such as directors, where death in service does not form part of their lifetime allowance.

Why choose a relevant life plan over traditional life cover?
In many cases a big saving can effectively be made on life cover, as relevant life plans can work out far cheaper and more tax efficient than a typical life policy.
Growing through innovation: what can vets learn from start-ups?

How can practices adopt a creative approach to business development to become more competitive?

Many may think tech companies don’t have much in common with veterinary practices. But there’s a lot that can be learned from the mindset of a fast-growth start-up. Start-ups typically operate in an incredibly fast-paced environment and are under pressure to secure funding, retain customers and bring their services to market quickly. Similarly, vets must run their practice as a business, as much as a vocation, to remain competitive. With that in mind, what can vets learn from start-ups?

Build your brand

Start-ups seek to build a strong brand identity to establish themselves in a busy marketplace, through bold marketing and publicity tactics.

Vets too should develop a clear and digitally focused marketing strategy to raise their profile and reach new clients. With the ongoing trend of practice consolidation, smaller practices especially may find this an effective way to compete with corporate-owned clinics. Get started by making your practice and services easily found by optimising your web presence through Google Ads, social media and search engine optimisation (SEO). Create video content to increase brand awareness with new clients – especially the growing millennial pet ownership demographic. Keep in touch with a monthly newsletter and create new content such as case studies to engender trust with new clients.

Start-ups are finely attuned to competitor brands and keenly monitor rivals to stay one step ahead. Vet practices too should pay attention to other clinics in their vicinity as it can be helpful to know their marketing approach or if they’ve made a new senior hire or changed their service offering.

Focus on client experience

Start-ups need to gain a loyal following to stay fit for purpose. Therefore, customer engagement and retention are at the heart of their business strategy.

As the nature of the job means that vets are in close contact with clients, building close relationships is critical to the longevity of a practice and clinical directors should keenly evaluate how customer engagement could be improved. From booking an appointment to aftercare, how can this process be easier and more satisfactory? Who is involved in the customer journey from the reception desk to the operating table? Is further client-communication training or CPD needed? Could any internal policies on best practice be created? Is the clinic as comfortable as it could be? Is enough advice and information provided?

Encourage long-standing customers to share good reviews on social media and Google. Issue regular customer satisfaction metrics and surveys to gauge how well your practice is faring and what could be improved.

Work more efficiently

Start-ups are experts in using digital software and solutions to work as productively as possible.

With busy days filled with client appointments, vets too can benefit from saving time and working more effectively. Cloud-based practice management software allows clinics of all sizes to set up online and SMS booking systems make it easier for clients to engage with their local clinic. These types of solutions often provide additional functionality such as automated invoicing and billing controls, inventory management, prescription data and patient record keeping, thereby simplifying administration and client communications.

And, with an increased appetite for digital services, pet owners too will continue to seek out more efficient ways to access advice: through AI-based chat apps, virtual appointments or online symptom checkers. This presents vets with an opportunity to streamline customer experience and engage with more digitally aware pet owners and
millennial clients using these types of technologies. Coupled with this, wearable devices such as health and activity monitors are becoming increasingly recommended to pet owners by vets due to their ability to help vets make faster and more accurate diagnoses. These devices work by monitoring a pet’s movements, and capturing information such as time slept, calories spent and intensity of daily activity. By compiling patterns in data over a certain timeframe, pet owners can spot when activity trends may indicate that pets aren’t feeling well and should visit a vet. They can share accurate data-driven reports on a pet’s daily activity via their mobile device. Critically, this removes ambiguity for vets, who can use this information to more precisely understand a pet’s recent behaviours and diagnose disease faster.

**Manage your talent**

Start-ups place a huge amount of emphasis on building a talented team that adheres to the firm’s culture and values. Vet practices too should focus on finding staff who not only excel in the technicality of the day job but who can work cohesively together. Practices should arrange team meetings at least once a month and use these as a forum to gather feedback on recent appointments and any other concerns. Encourage new ideas and suggestions from everyone. A strong team should work with the clinical director to help the practice to continually improve its service offering.

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**Building a practice of tomorrow**

Vets provide amazing support in everything that they do by safeguarding the pets we love. However, we can all learn from others and the approach taken by start-ups is a great example of how to become more effective every day. Technology continues to shape how we work and live, and vet practices, like start-ups, should leverage the opportunities digital innovation presents.

Just like start-ups, vet practices have a vision for their future and take tremendous pride in what they do. However, it will be those clinics who welcome change, have the right skills and who use technical innovation to their advantage who will gain the most, treat animals more effectively and remain competitive in the long term.
There have been many changes in the veterinary profession over the last few years. One thing has been the onus moved from vets to owners for being responsible for their pets’ medical care and transport out of hours.

A brief history lesson is worth reviewing here. The key turning point came in 2013, when the RCVS struck off a vet, in large part because he “unreasonably delayed” doing a home visit. Vets back then were under professional obligation to perform emergency home visits if the owner requested it. There were many stories of vets being called to dangerous parts of cities to attend pets. Young solo vets carrying a bag of drugs into an urban housing estate: what could go wrong?

We all went out because we knew that we faced the RCVS if we did not and the owner complained. The owners’ wishes were clearly placed higher than our safety and welfare. It was not acceptable to ask owners to arrange their own transport. It was a major cause of concern for vets and also for their other patients who could not be seen in emergencies whilst the vet was driving round on a home visit. I can remember being called out to very demanding clients who lived some way from the practice as their dog was ill and they had drunk too much to drive. Off I went, leaving the practice and its many other potential emergencies and inpatients behind. As more practices subcontracted their out of hours work, fewer vets were responsible for more clients (and inpatients) out of hours. Leaving the clinic to do a home visit became more impractical. This came to a head with the RCVS case outlined above.

After that had happened, there was much wailing and gnashing of teeth in the profession as we all realised “that could have been me”. A young veterinary journalist I know well did some undercover work. He rang the practices owned by the five vets that were on the disciplinary committee (DC) at the time of the case who struck off the vet. Out of these some had contracted out their out of hours work and some did their own. He posed as a client with an almost identical situation which led to the striking off. Out of those DC vets’ practices, only one practice vet offered to come straight out. Some refused point blank, one even laughed at the idea. So, vets of the RCVS DC who had just stripped a vet of his career for not doing an out of hours home visit owned practices that would have also refused to do a home visit in a similar situation to the case. This article (published in the Veterinary Review) caused a bit of a stir. Around the same time, Jo Dyer was running for RCVS council membership with the issue of home visits as a mainstay of her campaign and was elected.

So much for the history lesson – where are we now? Well, from being highly critical of the RCVS pre-2013, things have changed a lot. I am sure second only to Veterinary Practice magazine, all of your favourite veterinary reading will be improved for vets in terms of what is expected of us now. For those of us who worked under the fear of RCVS action if we did not schlep out to all and sundry who demanded it, the wording could not be imagined. The RCVS now supports vets’ welfare in this regard and clearly reminds the owners that these are their pets and their responsibility.

After all this, I still do plenty of out of hours home visits. But I know most of my clients and live in a very low crime rate area. For the vets working in large urban areas, or dedicated out of hours vets, the new wording in the code is a great step forward for the welfare of vets.

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