VOLUME TWO | ISSUE ONE | SPRING 2014

Veterinary PracticeToday

Veterinary nursing: At the heart of veterinary practice

The changing role of the veterinary nurse and a bright future for the profession

Emergency eye trauma
A hands-on approach for veterinary nurses

Fines set to double
Essential advice for hiring staff

Poor rumen health in cattle
Spotting the signs by measuring pH

Time-saving cytologic sampling
Techniques for effective specimen handling

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Welcome

Growth and continuing professional development are the core values of your *Veterinary Practice Today* journal.

With that in mind, this issue of *Practice Today* features an array of CPD articles from new authors. We are also happy to announce two additions to our expanding editorial team. Journalist Mark Beaumont has taken over as editor of *Practice Today* while former VPMA president Maggie Shilcock has also joined our team. She brings twenty years of experience in practice management, has written three books, and spoken at international and UK veterinary management conferences. We wish to thank Emma Dahm, who helped launch the first edition of *Practice Today* and who has since left for pastures new.

This issue meanwhile contains articles for all fields of veterinary expertise. For small animal practices, featured CPD articles include emergency treatment of eye traumas and effective techniques for cytological sampling, while critical care advice for abnormal behaviour in neonatal foals is covered in our equine section.

Owen Atkinson's series on ruminal acidosis continues in our large animal section. Similarly, Tom Dutton and Neil Forbes continue to explore euthanasia of exotics, turning their attention to fish, amphibians and invertebrates.

In our cover article, we explore the significant changes to the role of the veterinary nurse in modern veterinary practice; in particular with the introduction of dual post-nominal letters by Central Qualifications. Here, we look in more detail at what this means for the profession and why it has been introduced.

The legal issues behind hiring new staff are explored in our management section, as well as the complexities of Automatic Enrolment for pensions, what to look for when buying a Picture Archiving and Communication System (PACS), and plenty more. We have also introduced the inclusion of author statements for each article, so you, the reader, are clear whether they have a commercial interest in the subject. There is much more inside and remember, you can log your reading and answered questions as CPD time.

Our circulation continues to grow, and a subscription to *Practice Today* is free to MRCVSonline and VNonline members – simply visit either MRCVS.co.uk or VNonline.co.uk to register your details. If you are already a registered member, please use either of the websites to check your details are correct.

So, welcome to the spring issue of your CPD journal. If you enjoy reading *Practice Today* please spread the word to your colleagues. Suggestions for subjects you would like covered in future issues are very welcome. Similarly, if you would like to contribute to our journal by sharing your own expertise and knowledge in an article, please email editor@veterinarypracticetoday.com

From all the team at *Veterinary Practice Today*

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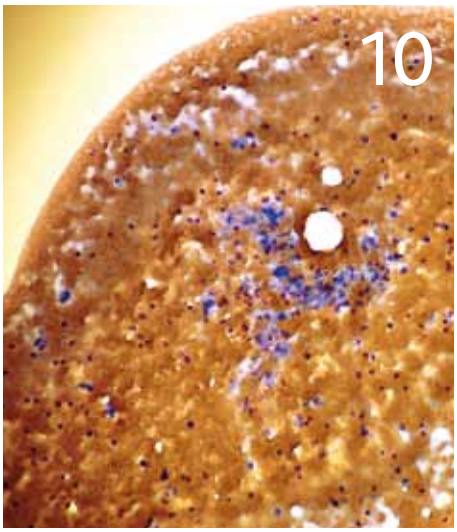

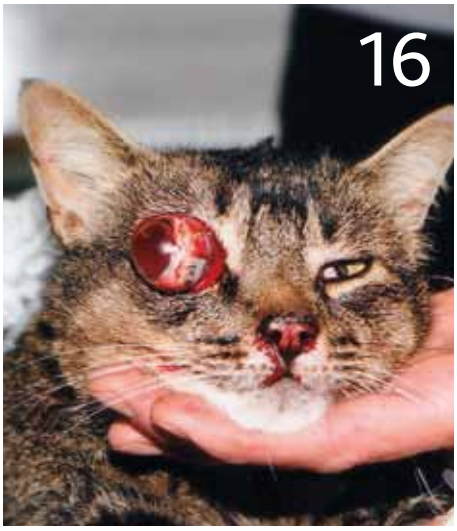

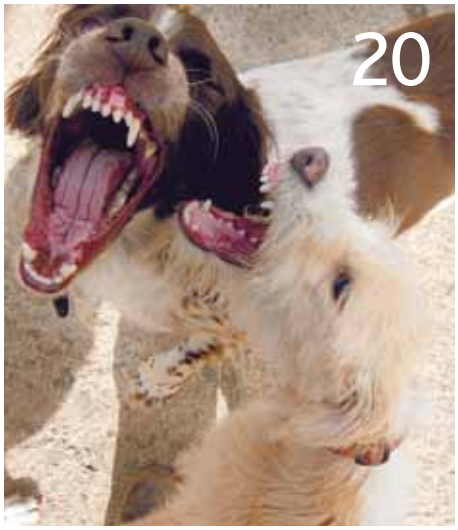

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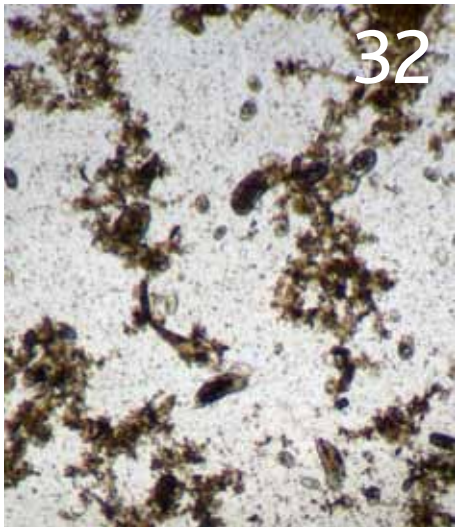

Management

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Veterinary nursing: At the heart of veterinary practice

The fiftieth anniversary of veterinary nursing heralded the beginning of one of the most significant periods of change for both the veterinary and veterinary nursing professions. While restructuring of the Royal College of Veterinary Surgeons was taking place (that is, the First Rate Regulator initiative), veterinary nursing was also undergoing change under the Central Qualifications New Era for Veterinary Nursing initiative. These and other changes brought a host of new and exciting opportunities to the veterinary nursing profession. This article explores the drivers of change in veterinary nursing and the future direction of the profession, as well as how veterinary practices can become more involved.

New awarding organisation and regulatory changes

Following recognition of the potential conflict of interest that existed by being both a regulator of the profession and a provider of veterinary qualifications, the RCVS decided to close its awarding body. As a result, RCVS Awards is in the process of winding down. To provide a legal footing for its role as regulator of veterinary nurses, as well as other functions, the RCVS is currently seeking approval for a new Royal Charter.

For the first time, there are now two awarding bodies that administer and quality assure vocational veterinary nursing qualifications, Central Qualifications (CQ) and City & Guilds. The former specialises in qualifications for the veterinary and veterinary nursing profession exclusively, while the latter offers qualifications to a number of industries.

Impact of government funding on veterinary nurse training

Over the past few years, the upheaval in the UK and worldwide economies has resulted in dramatic changes to how training is funded from Government coffers. The changes to funding of universities have resulted in significant increases in student debt. As a result, potential students are asking more questions about their education and seeking alternatives before making a decision about future training.

Cuts to training budgets for further education colleges has resulted in over-twenty-four-year-olds having to fund their own education through advanced learning loans or seeking assistance from their employer. As this publication goes to press, further announcements suggest that this is being reviewed. The general advice is to speak to your training provider.

A three-year university degree can result in a student debt in excess of £40,000 when accommodation and living expenses are taken into consideration. Training through a local further education college and living at home, while more affordable, can affect the recruitment of suitable staff.

Apprenticeships remain the Government's top priority. The aim is to ensure that becoming an apprentice or getting a place in higher education is seen as the normal progression route from secondary education.

Other drivers of change in the veterinary profession include the shortage of trained nursing staff, the drive for greater involvement of veterinary practices, the expanding role of veterinary nurses and new qualifications being made available.

Qualifications, titles and registration

The journey of a new recruit from enrolment on a veterinary nursing programme though the various stages of assessment and skills recording (on the Central Skills Log or Nursing Progress Log, for example) can be quite confusing and especially so for those not directly involved.

Nevertheless, the clear separation of the examination of skills and knowledge by the awarding institution (CQ, City & Guilds or university) leading to the award of a qualification and the subsequent process of registration with the RCVS has been a significant step forward. For example, nurses qualifying with CQ are now awarded the post-nominal letters DipVN, which can be used to signify their achievement and qualified status. Upon registering with the RCVS, candidates receive the title of RVN and acquire registered status.

"The future for veterinary nursing is bright. As practices adapt to meet the need of today's pet owners, nursing teams have risen to the challenge and are embracing their new roles and responsibilities"

The title "veterinary nurse" is currently not a protected one, but it is increasingly being used to refer only to nursing staff that have a recognised qualification.

A team approach to providing veterinary nursing care

In its most simplistic form, veterinary practice staff fall into four groups: veterinary, nursing, reception and management.

The veterinary nursing team (as the focus of this article) plays a central and increasingly important role in the delivery of a high quality service to animals and clients. Indeed, the role of the veterinary nurse is being expanded to cover primary consultation (see *Veterinary Practice Today*, Issue one, article on nurse clinics) and a range of specialised tasks.

A modern, large veterinary practice has at least four tiers of responsibilities that are met primarily by the nursing team. An example of this tiered structure is shown below:

Tier one – Staff who provide the everyday care in kennels and support other members of the nursing team by maintaining standards of hygiene, sterility and cleanliness and other essential tasks.

Tier two – Staff who provide assistance in tasks such as stock control, laboratory equipment maintenance, operating theatre assistance and other roles of similar responsibility.

Tier three – Staff that assist in monitoring anaesthetics, working in the dispensary, administering medicines and performing schedule three procedures, as well as general surgical and medical nursing.

Tier four – Staff that perform specialist nursing and client care roles. These can include running client education classes, behavioural advice, specialist surgical and medical nursing, radiography, exotics, rehabilitation, etc. Theatre management and team management are usually included in this category.

These responsibilities are not discreet and members of the nursing team will be allocated roles based on the level of care, skills and qualifications they possess.

An education system that supports practices

Underpinning the above tiers of veterinary nursing is a range of qualifications and training programmes designed to ensure that the nursing team have the necessary skills and knowledge to perform their duties effectively.

CQ and City & Guilds awarding bodies have qualifications for veterinary nursing assistants working at tier one – Veterinary Nursing Assistants and Veterinary Care Assistants respectively.

Tier two requires a higher degree of training and experience. The CQ Diploma in Animal Nursing is designed to bridge the gap and provide progression to tier three, the level of qualified veterinary nurses. The level three Diploma in Veterinary Nursing by CQ, City & Guilds and nursing degree programmes provide a solid educational base for nurses working at a tier three level.

Suitable veterinary nursing qualifications for tier four are available from the RCVS, CQ and certain universities.

Every practice can participate

It hardly needs saying that training practices are a vital part of the education of the veterinary nursing team. Every practice that employs veterinary nursing staff can play a part in training the next generation.

For tier one and two the situation is similar to that of veterinary students and every veterinary practice can participate in the practical training. For tier three and four, veterinary practices need to meet a list of requirements and be approved by their college (see page 48 and 49 of this issue of *Veterinary Practice Today* for an article on becoming a training practice).

The benefits of being a training practice

Improving the welfare of animals requires skills and knowledge that can be best acquired through programmes of training and mentoring. Practices that actively participate fulfil their professional responsibilities, experience greater satisfaction through improved service to clients and their pets, enjoy the rewards of a job well done, and benefit from the increased loyalty of clients. ■

Useful veterinary nursing links:
www.cityandguilds.com
www.cqual.org
www.rcvs.org.uk

Gene mutation link to dog neurodegenerative disease

A link between a mutation in a gene called RAB 24 and an inherited neurodegenerative disease in old English sheepdogs and Gordon setters has been established by researchers at North Carolina State University.

Scientists say the findings could help the understanding of neurodegenerative diseases and identify new treatments for both canine and human sufferers.

Hereditary ataxias are the third most common neurodegenerative movement disorder after Parkinson's and Huntington's diseases. Neurons in the cerebellum that control movement begin to die, causing a gradual loss of co-ordination.

Researchers say hereditary ataxias are also recognised in certain breeds of dog, including the old English sheepdog and the Gordon setter.

They genetically mapped the ataxias in the families of 630 old English sheepdogs. A mutation in gene RAB 24 was closely associated with development of the disease, and the identical mutation was also found in Gordon setters.

The study was published online in *PLOS Genetics*.

"RAB 24 is a protein that is believed to be important to the process of autophagy – which is how cells cleanse themselves of waste," said Dr Natasha Olby, a North Carolina State Univeristy neurologist, who was part of the research team.

"We know that autophagy and neurodegeneration are connected, so pinpointing this protein is important to our understanding of the disease process.

"We have not yet proven that this mutation causes neurodegeneration; it could simply be a very good marker for the disease.

"Our next step will be to determine exactly how the mutation affects the protein Rab 24 and its function and to determine whether this results in neuron death. This gene will also be investigated in humans with hereditary ataxia."

Scientists found the gene mutation linked to neurodegenerative diseases during a study of old English sheepdogs

One in three hand cat bites lead to hospital treatment

Nearly one in three people who sought medical attention after being bitten on the hand by a cat needed hospital treatment, a three year study in America has found.

Researchers from the Mayo Medical School in Minnesota looked at 193 bite cases between 2009 and 2011; of which thirty per cent ended up in hospital, with the average length of stay just over three days.

The study found that 67 per cent of those admitted to hospital underwent irrigation and debridement. Eight of the patients required more than one operation.

"Complications were common among these patients," said lead author Dr Brian Carlsen in the study published in *The Journal of Hand Surgery*.

Sharp teeth on cats meant bites often penetrated soft tissue and resulted in bacteria in tendon sheaths, joints and bone, the study revealed.

"It can be just a pinpoint bite mark that can cause a real problem," said Dr Carlsen, a Mayo Clinic plastic surgeon and orthopaedic hand surgeon.

Treatment often involved prolonged use of antibiotics and multiple operations.

Dr Carlsen also commented that people tended to be more dismissive of cat bites as dog bites appear much worse: "Cat bites look very benign, but as we know and as the study shows, they are not. They can be very serious."

Two patients, who had their wounds closed and treated with antibiotics, returned a day later with a worsening infection, and were subsequently hospitalised. "We caution strongly against closure of any cat bite wound. An exception is after incision and drainage with debridement when deeper structures are exposed, such as tendon, bone joint, or neuromuscular structures," Dr Carlsen said.

In brief

Nearly a fifth of dogs fear people with facial hair, and around half of dog walkers are embarrassed by their pet's behaviour while out in public, a survey has found.

The joint Dogs Trust and Kennel Club survey also found one in five dog walkers admitted they rarely felt in control of their animal.

Poor socialisation in the early months of a puppy's life may be to blame, researchers said.

The survey results came as the two organisations launch a puppy socialisation plan.

New research may lead to better screening of Chiari malformation

Scientists from the University of Surrey have studied the effects of Chiari malformation on the shape of dogs' skulls and brains.

Selective breeding has resulted in the condition becoming widespread, with many toy dog breeds made to look more doll-like. Brain and vertebrae measurements were taken from 155 griffon Bruxellois, with comparisons made between those with Chiari malformation and unaffected dogs.

According to the research published in *PLOS One*, dogs with the condition had taller foreheads and differences in the shape of the brain. In severe cases, the cerebellum had been pushed underneath the main part of the brain. While the condition can be asymptomatic, experts say many dogs can suffer from headaches, difficulty walking and even paralysis.

Lead author Dr Clare Rusbridge, from the university's new School of Veterinary Sciences, said: "Chiari malformation can be described as trying to fit a big foot into a small shoe. It can be very painful, causing headaches and pressure on the brain and can result in fluid–filled cavities in the spinal cord."

Chiari malformation affects a number of toy breeds as well as griffons, including cavalier King Charles spaniels, chihuahuas and their crosses.

"We want to engage breeders and give them practical advice about the condition," Dr Rusbridge said. "It is also important the public recognises that breeding dogs in a certain way to influence how they look might not be in the animal's best interest.

"There are responsible breeders out there, who have invested in screening and who are breeding for health as well as producing attractive puppies, and it is vital that people only look to buy from them."

Chiari malformation also affects 1 in 1280 humans. When certain skull bones are fused too early, parts of the brain are pushed through an opening in the base of the skull.

Research being carried out by Surrey scientists and human geneticists from the University of Montreal hopes to improve understanding of the condition, leading to better treatments for both dogs and humans.

Dr Rusbridge concluded: "Our latest discoveries will be significant in driving this research forward and will hopefully allow us to identify which genes may be associated with the condition.

"Our next steps will be to apply our technique to other breeds with Chiari malformation and investigate more sophisticated ways of screening, so that risk of disease can be detected more easily, at an earlier age and with a single MRI scan."

Longest-living cancer originated in dogs

The longest–living cancer in the world has been traced back 11,000 years to a dog.

Research published in the journal *Science* reveals the transmissible genital cancer was sexually transmitted to others.

The dog is thought to have resembled an Alaskan malamute or husky and is believed to have been relatively inbred.

"We do not know why this particular individual gave rise to a transmissible cancer but it is fascinating to look back in time and reconstruct the identity of this ancient dog whose genome is still alive today in the cells of the cancer that it spawned," said lead author Dr Elizabeth Murchison, from the Wellcome Trust Sanger Institute and the University of Cambridge.

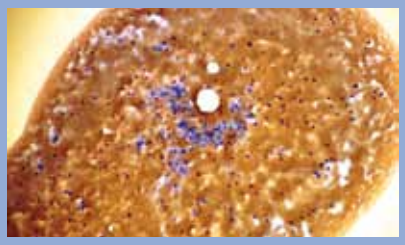
It is rare for cancer cells to spread from their original host to another. An aggressive transmissible facial cancer spread by biting in Tasmanian devils is the only other known example.

Researchers say the genome of this cancer carries about 2 million mutations, compared to human cancers which have between 1,000 and 5,000 mutations.

Professor Sir Mike Stratton, senior author and director of the Sanger Institute, added: "The genome of the transmissible dog cancer will help us to understand the processes that allow cancers to become transmissible.

"Although transmissible cancers are very rare, we should be prepared in case such a disease emerged in humans or other animals. Furthermore, studying the evolution of this ancient cancer can help us to understand factors driving cancer evolution more generally."

In this section



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Declaration of interests: Kathy Freeman and Alison Farr are employees of IDEXX Laboratories. Dr Freeman is also a consultant for Veterinary Information Network.

CLINICAL CPD

Collection, handling and staining of veterinary cytologic specimens

Cytological examination is a simple, rapid, informative and cost-effective tool in the veterinary diagnostic armoury. Collecting and preparing a high quality sample takes practice and is vital to maximise the information available to the clinician or clinical pathologist. A good quality specimen can make the difference between receiving a frustrating non-diagnostic result, and an accurate, confident interpretation.

Uses of cytology

Cytology is used to evaluate the cellular and non-cellular components of a lesion. It helps to determine whether a lesion is inflammatory, infectious or neoplastic, and is often used as an adjunct to other investigations – such as histopathology, microbiological culture and urinalysis. Cytology is usually well tolerated and minimally invasive for the patient and can provide a very rapid result. Histopathological examination of a biopsy sample may be necessary to evaluate tissue architecture as this is not well represented on cytological examination.

Collecting cytology samples

It is useful to assemble a cytology kit containing:

- Skin preparation equipment
- Syringes: 5ml and 10ml
- Needles: 22 to 25 gauge, various lengths
- Sample pots: EDTA and plain
- Clean slides with a frosted end (these are much easier to label)
- Scalpel blades
- File containing lab submission forms
- Labels, pens and pencils
- Small hairdryer with a "cool" setting

Collection techniques

Fresh equipment should be used for each lesion, and slides should be handled as little as possible to avoid contamination. Careful labelling is needed if more than one lesion is to be sampled. The lesion site should be prepared as for venipuncture in most cases, but surgical preparation is necessary if a body cavity fluid (peritoneal, thoracic, synovial, cerebrospinal fluid [CSF] etc) is to be sampled. Care must be taken to avoid contamination with gel if ultrasound guidance is being employed, as even small amounts of gel may obscure the cellular material (**Figure 1**).

If a fluid-filled lesion is sampled, aspiration from the edges of the lesion or solid areas usually provides more rewarding samples. Aspirating several different areas of a lesion may improve the chances of obtaining representative material.

Aspiration technique

Narrow gauge needles are selected for "softer tissues" that exfoliate well. Less negative pressure is required to exfoliate cells from soft lesions and a 2.5ml to 5ml syringe is adequate.

Larger needles, such as a 10ml to 20ml syringe, are more likely to produce thick tissue cores rather than free cells, and are more likely to be blood contaminated. These may, however, be necessary to obtain sufficient cells from a poorly exfoliating, firm, fibrous lesion.

The lesion is immobilised with one hand while the needle is introduced with the syringe attached. Negative pressure is applied by withdrawing the plunger. The needle can be partially withdrawn and redirected while maintaining the negative pressure. The negative pressure is released before withdrawing the

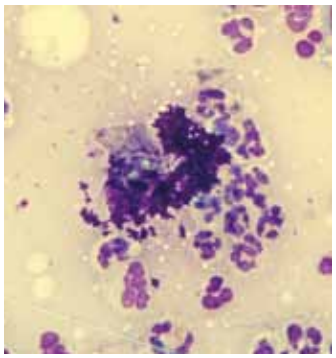

Figure 1. Ultrasound gel contamination.

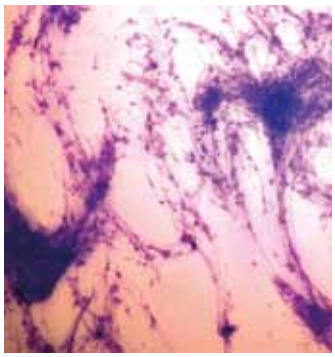

Figure 2. Excessive cell rupturing.

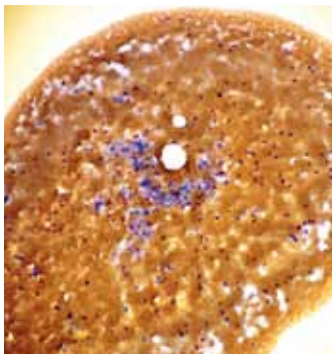

Figure 3. A poorly smeared sample.

needle. The needle is removed, air is aspirated into the syringe and it is reattached. The cellular material is expelled onto one or more slides and smears made.

Non-aspiration technique

This technique employs minimal suction pressure and can be used on any superficial lesion, but is particularly useful for fragile tissue, such as lymph nodes, where cell rupturing is a common complication, or vascular lesions, where blood contamination is likely. Preparation is as for the aspiration technique. A small gauge needle is selected and the syringe is pre-filled with air. No negative pressure is applied as the needle is moved up and down the same needle track several times (without fully withdrawing). The collected material is then expelled onto the slides using the air in the syringe and smears are made.

Slide preparation

Ideally, several slides should be prepared to increase the chance of a representative specimen. Spraying droplets onto the slide without smearing is discouraged as this often produces specimens that are too thick to allow cytological examination of individual cells. It is important not to allow samples to clot and collecting fluid samples into an EDTA tube may be necessary if blood-stained fluid is collected. The goal of slide preparation is to obtain a thin film of intact cells arranged in a monolayer so that individual cell features can be evaluated. Slides should be dried quickly to prevent cell distortion. A gentle spreading technique is critical to avoid excessive cell rupturing (**Figure 2**).

Table 1. Types of slide preparations and their use

Type of smear preparation	Preparation details	Miscellaneous comments
■ Squash preparation	■ Specimen allowed to spread between two slides placed perpendicular to each other. As material spreads between the slides, these are pulled across each other to make a smear	■ Simplest and often most rewarding technique ■ If specimen is fluid, care should be taken to make smear before material has run complete to or over the edges of the slides
■ Blood smear preparation	■ Push smear made as for a blood smear, with feather edge. Place material near one end of the sample slide, and advance a second spreader slide at a 45 degree angle towards the sample. Allow capillary action to spread the liquid along the edge of the spreader slide	■ May be useful for fluid specimens or fragile specimens, such as lymph node aspirates ■ Care should be taken to be sure that a feather edge is present one-half to three-quarters of the way down the slide
■ Starfish preparation	■ Sample material is expelled into the centre of the slide and a needle tip is used to drag the sample material out in several directions creating a starfish shape	■ This type of preparation tends to have thicker central areas with distorted cells in peripheral areas from needle trauma ■ Although there may be some areas with intact cells this type of preparation is often unsatisfactory for evaluation
■ Impression smear preparation	■ Slide is gently pressed to the lesion or to a cut surface of a biopsy specimen ■ Multiple impressions can be extended along the length of the slide	■ Useful for exudative dermal lesions or to examine cells from the cut surface of biopsy specimens ■ A fine needle aspirate of deeper areas of the lesion is also usually collected ■ An impression smear from an ulcerated area should be collected before and after cleaning ■ Often only superficial cells are obtained but this technique can provide a rapid diagnosis for some lesions – for example, mast cell tumours – and can be useful for identifying pathogens
■ Skin scrapes	■ Lesion is isolated between your fingers and immobilised, while a scalpel blade perpendicular to the skin is used to scrape the surface layers away until there is slight capillary oozing ■ The material is transferred from the blade onto a slide and smeared out using the scalpel blade or squash technique	■ This technique is used for detection of ectoparasites or dermatophytes or occasionally for very superficial lesions that are difficult to aspirate (for example, eosinophilic plaques in cats) ■ This type of preparation is usually heavily contaminated with surface debris
■ Swabs	■ Swab is moistened with sterile saline to prevent cell dehydration and the sample collected ■ The swab tip is rolled (rather than wiped) across the surface of the slide	■ These are occasionally useful for inaccessible anatomic locations, such as vaginal smears

Increased cellular fragility may be associated with underlying pathology, so even good technique may produce poor smears (**Figure 3** previous page).

The types of slide preparations and details regarding their preparation are summarised in **Table 1** (previous page).

Preparation of fluid samples

Fluid samples from body cavity fluids (for example, pleural, pericardial, peritoneal, CSF, synovial fluids, urine) or from washing techniques (for example, bronchoalveolar lavage) require careful handling. The cellularity of fluid samples is highly variable.

Fluid samples should be collected into an EDTA tube to prevent clotting. A fresh direct smear should also be made of the fluid to preserve cell morphology, usually using the blood smear technique. Do not submit fluid in a syringe with a needle still attached because of risk of injury.

Rapid air drying is important for mucinous samples, such as synovial fluid, and some respiratory samples. This is because the mucinous fluid can retard drying, which condenses and distorts the cells. A hairdryer on a cool setting is useful for this purpose. The addition of a drop of the patient's own serum or plasma can aid in spreading and staining of a particularly thick fluid sample.

Conversely, some fluid samples are of very low cellularity and need to be concentrated in order for the cytologist to evaluate sufficient numbers of cells.

Sediment preparations are usually necessary for samples that appear very clear on gross examination (many CSF and urine samples, bronchoalveolar washes, transudates). In the practice setting, concentration can be achieved by centrifuging the fluid sample for five minutes at settings suitable for separation of serum from clotted blood. All but the last drop of the supernatant is removed and the cells are then re-suspended and mixed, and a fresh smear is made from this concentrated sample.

In the laboratory setting, samples of very low cellularity can be concentrated further using a cytocentrifuge system that concentrates any cells in a sample into a small area on the slide surface. This technique is usually necessary for CSF samples and other poor cellular samples.

Cells in fluid samples often deteriorate during transport to the laboratory, and inclusion of a formalin fixed fluid sample can be useful to help preserve nucleated cell morphology. Fixation is achieved by the addition of at least two drops of ten per cent buffered formalin per millilitre of specimen. Special staining techniques are required for fixed specimens and are not available at all commercial or reference laboratories. Consult the laboratory services directory to determine if fixed samples are an option. A separate unfixed aliquot should be submitted for culture.

In-house versus reference/ commercial laboratory examinations

Some specimens are best examined in-house, based on the need for fresh specimens, although courier delivery to the reference/commercial laboratory with same-day evaluation may overcome some of these limitations.

The American Society for Veterinary Clinical Pathology, Quality Assurance and Laboratory Standards Committee's recommendations for urinalysis states that urine should be examined within 30 minutes of collection. If immediate examination is not possible, urine should be stored at refrigerated temperatures to minimise changes in its physical and chemical make-up and to inhibit bacterial growth. Strict recommendations for duration of refrigerated storage cannot be made, because this depends on specific urine components (Rabinovitch, 2009).

Storage for a maximum of 24 hours in the refrigerator

Table 2. Recommendations for cytology stain maintenance

Recommendation	Actions/comments
■ Keep staining jars covered when not in use to prevent evaporation and environmental contamination ■ Covering will help prevent water uptake in the alcohol fixation step (first step) of most rapid stains	■ Covers should fit tightly ■ The laboratory should be free of plants or other potential sources of environmental contamination ■ If there is a humid environment or frequent use, the alcohol (first step) solution may require topping up more often or changing
■ Avoid exposure to sunlight in order to prevent stain deterioration	■ Do not keep stains on windowsill
■ Filter whenever "floating" material is seen or daily when stain is used in order to prevent "floaters" that may be confusing or result in misdiagnosis	■ Inexpensive coffee filters in a funnel can be used for this; no need to use expensive filter paper ■ Be sure that the container into which the stain is filtered is clean
■ Clean staining jars and staining racks or slide holders whenever stain is being filtered to eliminate any adherent material or precipitate that may compromise staining quality	■ A short soak in dilute bleach solution (three per cent solution) may be used to help eliminate stubborn precipitate ■ Be sure to rinse jars thoroughly and dry them before re-filling with stain
■ Use a stock bottle for working solutions of stain (not the bottle in which the stain is supplied). This will help prevent stain deterioration and loss of the entire stock should a spill or contamination occur	■ Be sure to store bottles of stain and stock bottles securely capped, and avoid prolonged exposure to light ■ Filtered stains can be "topped up" from the stock bottle as needed to provide complete coverage of the area of the smear

Table 3. Troubleshooting common cytology staining problems

Problem	Actions/comments
■ Excessively pink staining, with lack of contrast and detail	■ Check staining times. If no error in timing has occurred and if adjustments in timing do not result in improved staining quality, the stains may need to be completely changed and timing on fresh stains re-established
■ Excessive blue staining	■ Check staining times, as outlined above ■ Exposure to formalin fumes may result in excessive "blueness" of stained smears ■ Ensure that cytology slides are not prepared, handled or stained in the area where formalin is used or formalin pots are stored ■ Be sure cytology slides are not shipped in the same package as formalin-fixed tissues
■ Refractile foci or round "droplets" in smears. These most commonly occur in erythrocytes, but may involve multiple cell types or areas in the smears	■ Suggests lack of sufficient fixation in the alcohol (first step) of rapid stains. Be sure that smears are well air-dried (hairdryer or heat plate) prior to staining. If the refractile areas persist in well-dried smears, the alcohol (first step) may need to be discarded and replaced with fresh solution. If slides appear "greasy'" dipping in alcohol and wiping with a lint-free tissue may be needed to clean the slides prior to use
■ Excessive precipitate	■ Be sure that stains are regularly filtered and that staining jars are regularly cleaned to prevent stain build up
■ Excessive "keratin bars" that may obscure details	■ Keep slides in a covered box prior to use, handle slides only by the edges ■ Gloves are recommended for personal protection when handling slides and stains, and help limit skin contamination
■ Excessive starch granules	■ These are likely the result of slides being handled, stored or stained in an area where powdered gloves are used. Remove gloves carefully and limit exposure of slides to area where gloves are removed
■ Excessive refractile angular crystalline material	■ Suggests contamination from serum separator tube, separator beads or a silicone-lined transport tube. Use only plain plastic tubes or EDTA tubes for fluids for cytologic preparations

is generally recommended – Osborne (1999) cautiously suggests six to eight hours – but urine may be stable for shorter or longer periods depending on its initial make up. Chemical constituents that are particularly unstable include bilirubin and glucose, and pH if bacteria are present (Rabinovitch, 2009; Osborne, 1999). Stability of formed elements depends on urine pH and concentration. Crystals may form in vitro during storage at either room temperature or under refrigeration (Albasan, 2003; Sturgess, 2001). If crystalluria is a clinical concern, freshly collected urine should be examined immediately.

Refrigerated samples should be brought to room temperature prior to analysis. As urinalysis results may be affected by storage duration and temperature, the time the urine was collected, the time it arrived in the laboratory, and method of storage should be recorded (www.ascvp.org).

Other assays that may benefit from being done immediately include faecal parasite examination. The benefits of in-house evaluation for other types of assays may depend on a number of factors, including turn around time, need for immediate treatment and/or diagnosis, prognosis or monitoring of patient status.

For cytologic evaluations, it may be useful to stain at least one slide and check whether the sample is representative, and of diagnostic quality. If of non-diagnostic quality, there is an opportunity to return to the patient for additional samples and avoid frustration of a non-diagnostic cytology report – particularly if the animal is sedated or anaesthetised.

In-house staining of cytology specimens

Attention to the routine stain maintenance and quality is required to achieve a good contrast and the cellular details that are crucial for interpretation of cytology specimens. Periodically checking staining quality using a "control slide" prepared from a scraping from the inside of your cheek is suggested. The use of a standardised specimen to periodically evaluate the staining quality, and ensure that sufficient contrast and detail are obtained, is advised. Recommendations for stain handling and maintenance, and for troubleshooting common staining problems, are presented in **Table 2** and **Table 3** respectively.

Relationship with a clinical pathologist

For submissions to a reference/commercial laboratory, attention to correctly filling out the submission form is needed. A succinct history and information pertinent to the lesion sampled is recommended, rather than inclusion of a printout of the animal's veterinary record. Any questions to be specifically addressed by the pathologist should be clearly stated. It is unacceptable that specimens are submitted without information about the site or type of lesion sampled, or the method of collection (scraping, aspirate, or impression smear). This limits the amount of information that the clinical pathologist can provide, and limits the ability to provide the best possible information to enhance the care of the veterinary patient.

Establishment of a relationship with clinical pathologists in the reference/commercial laboratory may provide the ability to discuss aspects of concern, enable ▸

re-evaluation of the specimen if required, and allow for a more comprehensive review of other laboratory data that is pertinent to the patient's condition. These relationships are best established one-on-one. As Daniel Pink, (Pink, 2009) highlights, the opportunity for providing context and meaning by "telling the story" motivates individuals far more strongly than relationships based on financial or convenience considerations alone.

Summary

Collection, preparation, handling and transport of cytology specimens are of paramount importance to obtain the best information from a cytology specimen. If evaluated in-house, the staining of the specimens is also critical for evaluation. The best samples and cytologic information usually are from clinicians that sample frequently, are comfortable with sampling a variety of lesions, take care with preparation, handling and transport, and have an ongoing relationship with a clinical pathologist. ■

CPD Questions

1. You aspirate a submandibular mass that is suspicious for a lymph node, but obtain a bloody sample with few nucleated cells. You decide to repeat the collection using a different technique. Which of the following would you choose to decrease the probability of blood contamination and obtain a better cellular yield?

   A. Scraping with a scalpel blade
   B. Non-aspiration technique
   C. Use of a larger gauge needle

2. The optimal time interval for examination of urine sediment, as recommended by the American Society of Veterinary Clinical Pathology, Quality Assurance and Laboratory Standards Committee, is?

   A. 30 minutes
   B. 60 minutes
   C. 90 minutes

3. Why should rapid stains used for cytologic evaluations be kept covered when not in use?

   A. Prevent evaporation
   B. Prevent environmental contamination
   C. Prevent uptake of water from a humid environment
   D. A, B and C

4. Excessive blue staining of cytologic preparations may be due to?

   A. Prolonged staining time in the blue solution of rapid stains
   B. Lack of adequate fixation in the methanol step of rapid stains
   C. Exposure to formalin fumes
   D. A and C

5. Excessive precipitate in smears stained for cytologic evaluation may be due to?

   A. Lack of attention to periodic filtering of stains
   B. Build up of stain precipitate in staining jars that are not regularly cleaned
   C. Uptake of water from a humid environment in the initial fixation step of staining
   D. A and C
   E. A and B

Answers
1. B – Non-aspiration technique 2. A – 30 minutes 3. D – A, B and C 4. D – A and C
5. E – A and B

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Emma currently works as head nurse in the Cotswolds at a busy small animal hospital with a fantastic team of nurses.

Declaration of interests: Emma Opperman is head nurse at a small animal hospital in the Cotswolds.

NURSING CPD

Ocular emergencies

First aid for ocular emergencies can be limited and often the most important piece of advice is to bring the patient in for assessment as soon as possible. Eye conditions can deteriorate rapidly and prompt arrival at the surgery enables swift administration of the correct therapy, which could save the eye from blindness or enucleation.

Trauma

It is important to realise that traumatic damage to the eye, especially if it is secondary to a road traffic accident (RTA), is often a small part of the bigger picture when assessing the small animal patient. Traumatic eye injury can look shocking (**Figure 1**) but should not distract from global evaluation, resulting in other more life threatening injuries, such as pneumothorax, being missed.

When the patient has arrived at the surgery, a rapid assessment is carried out before prioritising treatment. Specific questions relating to the injury should include the following:

- Time of incident
- Prior history
- History of trauma
- Nature of onset of symptoms

Figure 1. Cat with proposed globe following road traffic accident.

Veterinary first aid kit for ocular emergencies

- **Ice pack**
- **Sterile saline**
- **Non-linting swabs**
- **WECK-CEL spears:** merocel ophthalmic products
- **Haemostatic dressing material:** for wounds above or below the eye, such as a calcium sodium alginate dressing
- **Topical anaesthetic:** for example, proxymetacaine 0.5 per cent
- **Fluorescein stain**
- **Culture swabs**
- **Mydriatic agent:** for example, one per cent atropine sulphate
- **Pen torch**
- **Tonometer**

Begin with the question "What seems to be the problem?" This information is extremely useful to enable the veterinary nurse to prepare equipment prior to the arrival of the patient and to relay pertinent information to the clinician on duty.

It can, however, be difficult for the owner to describe the injury, especially if haemorrhage and/or swelling is present (**Figure 2**). Therefore, the true extent of the injury may only be revealed at the veterinary examination, but the client may describe discharge from the eye, clouding, redness or squinting (blepharospasm).

Specific notes regarding the appearance of the eye should include the following:

- Fluid or tissue protruding from the globe
- Presence of foreign body
- Haemorrhage
- Wounds and contusions (bruising)
- Pupil size and position

It can prove helpful for clinicians to use an ophthalmic examination chart to record abnormalities as they can be illustrated and changes more easily identified.

Ocular injury can be caused in many ways and these can be split into two groups: traumatic injuries (**Figure 3**) and spontaneous conditions.

Traumatic injuries include:

- Proptosis

- Corneal penetration
- Corneal or lid laceration
- Ocular contusion and hyphaema (blood in the anterior chamber)
- Chemical burns
- Foreign bodies
- Traumatic ulceration

Non-traumatic injuries include:
- Acute uveitis
- Acute glaucoma
- Ulceration
- Sudden onset blindness

First aid advice for owners

The eye should be prevented from dessiccation by keeping it moist ideally with artificial tears or saline. Failing this, application of a clean towel or cotton wool that has been soaked in cool water can be used to keep the globe moistened for the short-term. It is also critical that the patient is prevented from causing further trauma to the eye with gentle restraint, but do explain that if the animal is struggling not to fight with them, rather to arrive at the surgery promptly.

It cannot be overemphasised how carefully these patients must be handled to prevent sudden increases in intraocular pressure (IOP) and possible globe rupture. Head or neck position, sneezing, gagging and retching can all result in an increase in IOP so this should be kept in mind if the patient becomes fractious.

As part of the minimal ophthalmic database, the clinician is likely to measure the eyes' IOP with one of two devices; a "pen" type tonometer or a Schiotz tonometer. A topical analgesic is applied to the surface of the eye before measurement is performed.

Normal IOP is 10 to 26mmHg in the dog and 12 to 32mmHg in the cat.

Mannitol may be used by the clinician to reduce IOP if necessary, therefore intravenous access equipment needs to be close at hand. It may also be necessary to stain the eye with fluorescein to check for ulceration, as well as performing a Schirmer tear test to check tear production.

Prolapse of the globe

This is often presented to the surgery with a history of blunt trauma; for example, a pet that has been hit by a car. It can also occur with overzealous handling (particularly "scruffing") of brachiocephalic breeds, such as the pug (**Figure 4**). First aid can help with this instance. The globe should be gently held in the orbit with wet cotton wool to prevent the lids going into spasm behind the eye.

It is important to remember that other breeds, and cats, will require a much greater force to be applied for the globe to prolapse and with this in mind, severe head trauma is likely.

Head trauma is its own subject matter but it is pertinent to mention assessment of mentation status as well as pupil size and position as a prognostic tool. For example, constricted, responsive pupils have a more favourable outlook than a dilated, unresponsive pupil. Other observations include ocular position and movement abnormalities, such as strabismus and nystagmus. Anisocoria is observed frequently in practice in such individuals.

The importance of these observations, from a nursing perspective, is that they are recorded at the time of admission. If any change in pupil size or reactivity is observed, they must be reported to the clinician immediately.

The veterinary surgeon has many factors to consider when establishing outcome, such as presence of haemorrhage, retinal detachment and degree of displacement, but if any of the following listed are present prognosis is grave and, unfortunately, enucleation is likely to be the only option:
- Severed optic nerve
- Extruded intraocular contents
- All extraocular muscles ruptured
- Poor prognosis is also cited when facial fractures are present

Foreign bodies

Penetrating foreign bodies must not be removed by the owner but should be left alone for the veterinary surgeon to treat and remove in appropriate conditions. The patient must be prevented from causing further trauma to the eye and an Elizabethan collar may be used if the owner has one at home. It may be useful to apply a light bandage to both front dew claws to prevent dogs 'pawing' at the affected eye.

Figure 2. Kitten with severe chemosis, swelling of the conjunctiva, due to foreign body.

Figure 3. Collie with eye lacerations. Common rural dog injuries include being kicked in the face by a horse.

Figure 4. Overzealous handling, particularly "scruffing" of brachiocephalic breeds, such as pugs, can lead to a prolapse of the globe.

First line treatment at the clinic usually involves instillation of a topical local analgesic agent to relieve pain and relax the patient, thereby facilitating a more detailed eye examination (**Figure 5**). Proxymetacaine 0.5 per cent is often used for minor ophthalmic procedures, such as foreign body removal. Sedation may be necessary to calm the patient and a dose of 0.05mg/kg of acepromazine (ACP) is suggested (Spies et al, 1996).

Direct trauma

Cat claw injuries are frequently observed in young dogs and can cause severe injury – such as corneal and lens capsule rupture – with the subsequent damage and/or infection leading to possible eye loss. Third eyelid injury is also seen commonly. The reason it is frequently seen in younger canines is the protective mechanism of the menace response is not present until puppies are at least four months old (Green, 2002). In a retrospective study, 52 of 77 patients (10 cats, 67 dogs) were known or strongly suspected to have suffered corneal injury due to a cat claw incident. (Paulsen et al, 2012).

Corneal ulceration is also a common sequela in cats receiving claw laceration to the eye. The cat may simply be exhibiting blepharospam ("squinty" eye) and the owner may not appreciate the danger of a "wait and see" approach. It has been shown that a more favourable outcome is likely if the patient is brought in within 72 hours of the injury occurring. This is a good example of why all eye problems must be checked out sooner rather than later, even if they sound innocuous.

Chemical burns

Alkali chemical burns are much more likely to cause severe "sight" damaging injury than acid chemical burns, because alkali burns can penetrate the ocular tissues more readily (Wingfield, 2000).

The primary treatment for chemical burns is copious lavage of the eye with tepid saline, although the owner may struggle to achieve this as the eye will be very painful. Lavage should be carried out for a suggested 30 minutes or until the corneal surface returns to normal (pH 7.3 to 7.7). Sedation or anaesthesia may be necessary at the practice to complete effective lavage.

Case study of an ocular emergency in a cat

"Max" domestic shorthaired feline, male, neutered, nine years old, weight 3.5kg

Presentation: The patient was presented to the surgery after being attacked by a dog and was bitten in the face. Lacerations were seen on the right lower eyelid, as well as evidence of corneal abrasion. Ocular discharge and blepharospasm were observed at admission. Max seemed physically well otherwise on primary examination.

Treatment: Treatment began with fusidic acid twice daily as well as artificial tears gel applied to the affected eye four times daily. He was also administered meloxicam and buprenorphine for analgesia and systemic antibiotics, in the form of clavulanic acid.

Max was anaesthetised later in the day to suture his facial wounds and recovered uneventfully. Despite it being a short procedure, he was given intravenous fluids during the anaesthesia, as he was an older patient.

He was hospitalised for several days as he was reluctant to eat and withdrawn, therefore requiring supportive care and analgesia. He was discharged on day four with instructions to continue with the topical ointments prescribed for his right eye. He was fitted with an Elizabethan collar to prevent self-trauma.

Max returned to the practice two months later. The owner reported observing a cloudy appearance to his right eye. He was showing signs of facial nerve paralysis on the right side of the face; palpebral reflex absent, menace reflex reduced and no response to 'pinching' the side of the face. He appeared to have no or reduced sensation in his ear and side of his nose. The ophthalmic examination revealed positive fluorescein stain of a 4mm area in the centre of the cornea. Further treatment with fusidic acid and artificial tears gel was prescribed.

When Max was brought back in for a check-up, the owner reported that it was becoming increasingly difficult to medicate him. Gentamycin drops were dispensed as the ulcer was not reducing in size. One month after the initial injury, the corneal ulcer was still not healing. Medication was changed again to cyclosporin.

Outcome: Despite surgical treatment by corneal debridement, grid keratectomy and two third eyelid flap surgical procedures, the ulcer never fully healed and enucleation was opted for five months after the dog attack injury occurred.

Reflection: Max required additional support from the nursing team to encourage his appetite, and to clean his face and around his damaged eye. He had to wear an Elizabethan collar for a period of time. This can make feline patients particularly depressed and it is vital that they are given assistance in grooming and cleaning themselves. Max had also started to lose some weight during his hospital stay, therefore weighing at least once daily, combined with nutritional support was essential.

The case of Max illustrates how challenging eye cases can be, despite initial injuries appearing as minimal. He sustained months of treatment that unfortunately resulted in the loss of his eye. The decision to do so was partly due to the persistence of the corneal ulcer, but also because his "personality" seemed to have been affected by the traumatic nature of the injury, as well as the need to frequently restrain and administer medication. The patient, as a result, was withdrawn and reluctant to come to the owner. This was understandably upsetting for the owner and raises the question whether it would have been pertinent to keep Max within the hospital for a longer period of time to monitor his response to treatment.

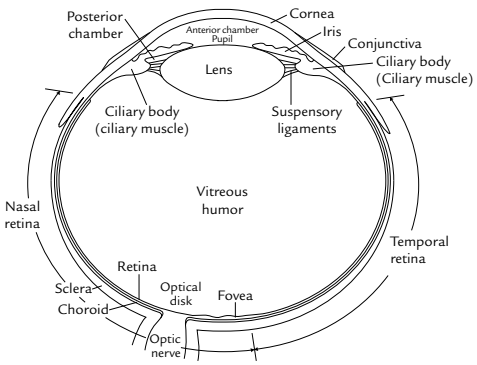

Figure 5. A diagram of horizontal section of an eye.

Contusions and swelling

First aid measures in the form of ice packs (for example, a bag of frozen peas wrapped in a clean tea towel) can be used to reduce swelling above or below the eye immediately after the event. Advice to the owner should include gentle restraint and reassurance while applying the ice pack. The above first aid treatment will only help if trauma is known to have occurred and the swelling is not due to another cause such as neoplasia, foreign body or abcessation.

Analgesia

Ocular pain is extremely distressing and it is unlikely that the patient will allow you to examine the eye without appropriate analgesia first. Topical analgesics are commonly used to facilitate the primary examination, but these only last a very short period of time (10 to 20 minutes). Pure agonist opioids, such as pethidine and morphine, are advised for the treatment of ongoing ocular pain.

Post-operative notes

Patients that have undergone eye surgery will benefit from very close monitoring in the immediate post-operative period to prevent complications arising. Many animals become disorientated and distressed when awaking from anaesthesia and require a darkened, quiet and calm environment. They will require lots of verbal and possibly physical support, and may initially require sedation. If the patient has experienced a violent recovery post-operatively and is coughing or retching, this must be reported to the surgeon immediately.

Pain must be assessed regularly as this will help to prevent self-trauma occurring. An Elizabethan collar is mandatory in the majority of cases and all staff members must understand the importance of leaving the collar in place during this time.

A suitable care plan should be drawn up for these individuals as they may well be a high dependency case for a period of time; their nutritional support, analgesia, physical support and special care needs should all be included in this plan of nursing care. This helps to ensure that care is consistent and provided to a high standard at all times.

Medical and surgical ocular emergencies may require very frequent topical medications – such as antibiotics, steroids, serum as well as lubricants – to be given at regular intervals (every half an hour for the first 12 hours) and it is imperative that the correct medication is given on time and is meticulously recorded as such.

Summary

Ophthalmic emergencies can be challenging for all involved but with a little organisation and knowledge, the nursing team can provide valuable support to prevent deterioration in these critical situations. ■

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CPD Questions

1. What is chemosis?
2. What is the normal range for intraocular pressure (IOP) in a cat?
3. What is most damaging to the cornea: alkali chemical burn or acid burn?
4. What age approximately do puppies gain the “menace” reflex?
5. What drug may be used to reduce IOP if it is dangerously raised?

Answers

1. Swelling of the conjunctival tissues 2. 12 to 32mmHg 3. Alkali 4. Around four months of age 5. Mannitol

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Karen is a full-time behaviour counsellor and trainer with Pawprint, based near Peterborough, with 18 years experience in the field. She is a full member of the Association of Pet Behaviour Counsellors (APBC) and is an Associate member of the British Institute of Professional Dog Trainers (ABIPDT). Karen is guest lecturer at Anglia Ruskin University on human animal management, and animal behaviour and welfare.

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BEHAVIOUR

Behaviour services in practice

It is essential to triage cases appropriately with a view towards specialist behaviour referral. There is an important distinction between long-term help with behavioural modification and what might be achieved in a busy veterinary practice. There is emphasis on the responsibility of the veterinary professional to consult an appropriately qualified, experienced and registered behaviour practitioner, so client and patient can achieve a favourable long-term prognosis. This article offers a guide for first aid behavioural advice in a veterinary practice.

Reporting of behaviour problems

Often veterinary practitioners are the first to be contacted for behavioural problems; either the client reports specific issues with their pet or veterinary staff observe behavioural problems and raise their own concerns.

It is understandable that animals requiring medical treatment or investigation may show elevated levels of stress and with this there may also be changes to their behaviour. The focus, however, must be on the animal's unwanted behaviour within their everyday environment.

Common behavioural symptoms

For canines:

- Separation anxiety
- Aggression towards other dogs and people
- Guarding behaviours
- Hyperactivity
- Inappropriate toileting (**Figure 1**)
- Pica
- Coprophagia
- Chewing and destruction (**Figure 2**)
- Pulling on the lead

For felines:

- Inappropriate toileting
- Timidity
- Over-grooming
- Feline lower tract urinary disease (FLUTD)
- Aggression towards other cats in the home and externally

Figure 1. Significant numbers of owners report house-soiling which can be rapidly alleviated with first aid behavioural advice.

It is worth noting that often the animal may be behaving normally, but the client is dissatisfied with the behaviour (**Figure 3**). Cases of this nature require careful counselling as they form a significant aspect of behaviour problems.

Early identification and appropriate triage improves prognosis

Dealing with behaviour problems at first report is essential. Practitioners should immediately triage the problems, assessing three main aspects:

- What may be the cause of the behaviour?
- What are the risks of it continuing?
- Have all medical causes for the behaviour been ruled out, especially pain-related issues?

Advice for clients in a first aid behavioural context

If the correct steps are not followed, there is a danger that incomplete or inappropriate behavioural advice may be given. This is why the first aid approach is encouraged alongside specialist referral. A first aid approach is more likely to be brief, allowing interim safety; whereas, behavioural history is complex and must be taken sensitively and in great detail.

The following example shows the important difference between a full behavioural

consultation in the long-term, and what may be achieved far more effectively by a first aid approach in the interim.

Long-term: Specialist behaviour referral

Once the animal has been checked for any medical issues, a specialist behaviour practitioner should be consulted, particularly in cases of high risk. A register of practitioners can be found at www.apbc.org.uk

Extensive history will need to be taken. A specialist will offer appropriate counselling prior to advice being offered, while practical support (in an appropriate setting) improves long-term compliance on behalf of the client. This is especially true with cases of dog-to-visitor aggression, dog-to-dog reactivity (**Figure 4**), and with feline behaviour problems developing either from their home environment or from neighbouring felines.

Treatment of behavioural problems often requires practical or training advice, which requires an additional level of qualification and again should be referred on to a specialist animal trainer (**Figure 5**).

It is not appropriate to attempt dog-to-dog aggression rehabilitation training in the surgery car park. Specialist trainers can provide an appropriate location, dogs to work with, and encourage clients to adhere successfully to a long-term positive reward-based approach. Veterinary practitioners therefore have a responsibility to refer clients to appropriate aid.

Short-term: First aid behavioural triage in veterinary practice

Behaviour history may be taken in a more brief but practical way in the veterinary practice by assessing:

- Immediate risk to the animal
- Immediate risk to others

Figure 2. Providing alternative chew items is essential for destructive dogs.

Figure 3. Often behavioural problems are only a problem to the owner.

Figure 4. Owners may have serious concerns about dog-to-dog behaviour and this risk must be addressed.

Figure 5. A referral behaviour specialist gives longer term appropriate aid.

in contact with the animal, including family, other pets, other animals and the public

- Risk or success involved in efforts to manage unwanted behaviour so far
- Client relationship with the animal
- Crisis level the client has reached with the animal

These five aspects can be effectively addressed simply and immediately. For example, a client reports that their dog has growled at their baby. The dog only growled when the baby crawled towards him. The dog prefers to get up and move away. With the points above, the first aid behaviour practitioner can identify:

Immediate risk to the animal

- Risk that the dog could be destroyed or rehomed
- Risk of physical or verbal punishment from the owner
- Dog's inability to escape stressful attention from the baby

Immediate risk to others

- Risk to baby who is unaware that the dog's growling means stop or keep away
- Risk to the owner whose attempts to intervene may be inappropriate (panic or aggression towards the dog), leading the dog to redirect his aggression towards them
- Risk to the owner with mobility problems resulting in slower intervention
- Risk if household is open plan as the owner cannot restrict the dog's movement and its threat to others, or its potential to damage items or areas

Efforts to manage

The owner may consider shouting at the dog – a perceived successful intervention (growling stops through suppression), but this fails to assess the increase in the dog's stress and its learned "dislike" of the baby; not only is the baby's approach unwanted, but it also results in stress caused by the owner's shouting. The future impact of this may be significant. The owner may grab the dog to move him, with the risk of the redirection of the dog's aggression to the owner and increased stress to the dog. Alternatively, the owner may encourage the baby to "make friends" and allow interaction to continue.

Client relationship with the animal

- The owner feels unhappy that they can no longer trust their dog, and is anxious about future recurrence
- The family may be in conflict about what to do next

Crisis level the client has reached with the animal

A client in crisis will not be making balanced decisions as their perspective is often skewed by emotion, while the client-pet relationship is strained due to the new baby disrupting the old routine.

Advice from triage approach

This example is brief, but gives rise to the following first aid suggestions as a result of this triaging approach. It allows the practitioner to act effectively and immediately without needing a great deal of detail. The practitioner must impart to the client that the advice given is an opinion based on the information received at this stage. It is also important to convey to the client that these are not long-term solutions.

For the previous example, the practitioner can:

Reduce immediate risk to the animal

- Reassure the client that growling is a normal part of communication
- Advise the client regarding punishment pitfalls and how this will only "switch off the alarm" without making the dog feel any less worried
- Advise the client to allow the dog to have an escape route at all times

- Suggest the dog walker give the dog more exercise
- Ask if family members can take the dog out or look after the dog for short periods of time

Reduce immediate risk to others

- Suggest a play pen for the baby and stairgates across doorways
- Provide the dog with a "haven" to retreat to where he can rest undisturbed
- Allow the dog to be part of the family only when adults are immediately present and closely supervising (an adult must not just be "in the room," they need to be there giving the dog and the baby their undivided attention at these times)
- Advise the owner that dogs do not see hugging and close contact as "friendly," rather this is how we teach children to show affection

Improve efforts to manage

- Point out the risks of some interventions and discuss the above suggestions in this context
- Emphasise to the client that managing the behaviour does not provide a long-term or complete solution and for this a specialist may be needed to ensure future improvement and stability

Improve client relationship with the animal

- Empathise with the client that while their dog has behaved in a way that is potentially risky, this may be the first incident and with appropriate help it need not reoccur
- Behavioural advice can also lead to enrichment between an owner and their animal, especially with felines (**Figure 6**)

Crisis level of client

As a result of the above the client feels more in control and that help is at hand.

Delivering first aid advice

All advice must be offered in an empathetic but practical way. This aids:

- Compliance
- Conviction that advice is appropriate to the client's own circumstance
- Emotional support
- Behavioural triage
- Loyalty to veterinary practice through building a relationship of care and trust
- Manages the client expectations of specialist help and treatment

Examples of first aid management and situations where it may be appropriate

Table 1 gives some clear options that are immediately available to clients. In each section, a first aid option is outlined with possible reasons as to why this may be advised. Finally the cost-benefit analysis of each option is considered.

Key points to aid compliance

- Thank the client for bringing the issue to your attention
- Acknowledge the client's difficulty and how they could be feeling out of control
- Provide practical, list-based advice, to assist the client to think and plan clearly
- Provide handouts where appropriate for the client to follow
- Offer referral to a specialist behaviour counsellor ■

Figure 6. Behavioural advice can lead to enrichment between the owner and their pet, especially with felines.

Table 1. Examples of first aid management and the situations where it may be appropriate

First aid options	Possible reasons to advise	Cost-benefit analysis (welfare etc)
■ Temporary boarding with family, friends, daycare, kennels/ cattery	■ Separation anxiety issues ■ Boredom ■ Puppy destructiveness when owners are absent ■ Nuisance noise ■ Possible aggression to other pets ■ Cats fighting with others in home	■ Financial cost to owner ■ Improved supervision helps with dog training ■ Alleviates boredom ■ Not suitable if pet shows aggression or fear of other animals ■ Best if animal has previously been boarded without stress
■ Restriction of territory	■ House-soiling ■ Guarding the home against visitors ■ Barking at passers-by ■ Fighting with other pets	■ Owner may feel restriction compromises pet's welfare ■ Reduces damage to the home ■ Effective safeguarding to prevent ingestion of items or power cable chewing ■ Crate training may increase animal distress if done rapidly
■ Child safety gates, dog stop gate, doors, magnetic cat flap	■ Aggression to visitors ■ Inter-pet aggression ■ Chasing ■ Unwanted cats entering home ■ Barrier frustration and fence guarding	■ "Timeshare" for cats that do not get along ■ Two offset gates may be required ■ Gate with fitted cat flap can provide escape route for elderly cat (as long as dog cannot fit through)

■ Keep items out of reach including anything that may be chewed or ingested; wires, pipework , etc	■ Puppy chewing ■ Boredom chewing ■ Attraction to certain substances/ scents ■ Pica ■ Coprophagia ■ Wool-sucking ■ Eating plastic bags	■ Ensure owner keeps any fuss to a minimum when these items are removed to prevent attention seeking behaviours ■ Consider that other chewable and safer items need to be provided ■ Avoid retrospective punishment
■ Muzzle	■ Aggression to people and other animals ■ Pica ■ Coprophagia ■ Scavenging on walks	■ Muzzles can exacerbate stress if used during stressful event (although may be essential during vet examination) ■ Cage muzzle allows panting, drinking, etc ■ Develop pleasant association with muzzle using treats, attention, fuss ■ Muzzle can become a “food bowl” where food is dispensed by owner ■ Owner distress at dog wearing muzzle ■ Muzzle must only be used during supervised periods ■ Long-term muzzling can have negative impact on welfare
■ Houseline (two metre line attached to flat collar)	■ Stealing ■ Recall ■ Puppy behaviours ■ Chasing other pets	■ Allows dog to move safely around the home ■ Stops dog jumping up at visitors ■ Entanglement, chewing/ingesting, strangulation risk ■ Gives owner immediate control over situation ■ Dog may guard line as well ■ Tug of war games can develop ■ Dog may form “walkies” association with a houseline ■ Allows dog to integrate into home under control rather than be shut out ■ Chain lead is an option to prevent chewing
■ Hiding places ■ Cover any areas where outdoor cats can view indoors ■ Prevent access through cat flap ■ Additional feeding/water stations ■ Environmental enrichment	■ Over-grooming ■ Aggression between cats in home ■ Other cats outdoors	■ Environmental changes are quite simple ■ Overpopulation/territorial disputes can lead to serious welfare concerns ■ Owners may take view that cats need company
■ No-pull harnesses/head collars	■ Any issue regarding control when outside the home and sometimes inside the home ■ Frail/small owners, or large, powerful/fast dogs	■ Head collar must be carefully introduced so as not to become aversive ■ Harness easy to fit and quick result when lead attached to front of harness ■ Restraint can lead to frustration and redirected aggression
■ Larger litter trays ■ More litter tray sites ■ Allow hiding ■ Change substrate ■ Create access in/ out of home ■ Change cleaning materials used on tray ■ Make sure of cleanliness of tray ■ Check to see if any changes in household ■ Keep food and toilet area separate	■ Inappropriate elimination in felines ■ Stress in household	■ Generally very few disadvantages ■ Owner may not wish to comply

Jane Ellison
BSc (Hons)

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

Declaration of interests: Jane is an employee of VPIS.

POISONS

All the joys of spring

With spring comes new threats and inevitable trips to veterinary surgeons with poisoned pets. Daffodil bulbs and other plants represent a toxic threat to dogs and cats, while Easter brings the dangers of chocolate, poisonous to dogs, cats, rodents and rabbits.

Spring, although a relief from the long winter, does have its own challenges, including the things to which cats, dogs and other companions can be exposed. These range from bulbs – ready for planting in the garden, or even bulbs that have been freshly planted and then subsequently dug up by helpful dogs – garden fertilisers, and the abundance of chocolate found in the weeks leading up to and during Easter.

Chocolate poisoning relating to dogs is one of the most common enquiries received by the Veterinary Poisons Information Service (VPIS), with the severity of the poisoning being influenced by the amount of chocolate eaten, and the type of chocolate (milk or dark). Milk and dark chocolate differ greatly in the amount of theobromine (a methylxanthine similar to caffeine) they contain, which in turn is reflected in the toxic dose.

Clinical effects following poisoning may be slow to appear, as theobromine is absorbed more slowly by dogs compared to humans and initially comprises vomiting and diarrhoea, which may lead to dehydration – made worse as theobromine is also a diuretic. Theobromine and its metabolites stimulate the myocardium and the Central Nervous System (CNS), leading to animals becoming hyperactive, hyperthermic, and developing hypertension and severe tachycardia; in extreme cases muscle rigidity, tremors and convulsions may be seen.

Chocolate is also toxic to cats, rodents and rabbits, but there is insufficient data to determine a toxic dose. Cats seem less inclined to eat chocolate, although each year there are a few cases where significant clinical effects are seen. Treatment is essentially supportive with the emphasis on rehydration, reducing the stimulant effects with sedatives and monitoring vital signs. The use of repeated doses (four hourly) of activated charcoal to enhance elimination is particularly useful, as theobromine undergoes enterohepatic recirculation.

The VPIS rough guide for chocolate poisoning in dogs:

White chocolate: No treatment required, as insufficient quantities of theobromine present.
Milk chocolate: Treatment for amounts over 9g
Dark chocolate: Treatment for amounts over 1g
Cocoa powder: Treatment for amounts over 0.77g

We also receive many enquiries regarding the ingestion of daffodil bulbs and flowers during the spring months, and this is in fact quite toxic. All parts of the plant contain the toxic agents alkaloids and glycosides, although they are most concentrated in the bulb. The exact mechanism of toxicity is not fully understood, however even small doses can cause vomiting and diarrhoea. In addition, the bulb contains calcium oxalate crystals, which is a mechanical irritant and can facilitate the entry of other irritant substances and allergens into tissues. Effects can vary from gastrointestinal upset of varying degrees, lethargy and pyrexia in mild cases to hypothermia, hypotension, bradycardia and dehydration in more severe cases.

Contact with the sap of the plant can lead to the development of pruritus or erythema with clinical effects occuring from 15 minutes to 24 hours post-ingestion. Treatment is essentially supportive, with emphasis on rehydration if necessary.

Other bulbs, such as grape hyacinth, tulip and primrose are considered to be of low toxicity and ingestion will probably cause nothing more than mild gastrointestinal upset. It is unlikely that treatment or observation in the veterinary surgery will be required.

Spring crocus is of a similarly low toxicity, although the autumn crocus is highly toxic due to the presence of colchicum. The onset of clinical effects can be between 2 and 48 hours after ingestion and is likely to include severe gastrointestinal irritation with inappetence, hypersalivation, vomiting, severe diarrhoea, abdominal tenderness and haemorrhagic gastroenteritis. Treatment includes gastric emptying, activated charcoal, intravenous fluids and gastroprotectant drugs. In addition, blood count, liver and renal function should be monitored.

Fertilisers, as long as they do not contain moss or weed killers, are generally of low toxicity, although ingestion can lead to gastrointestinal effects due to the irritant nature of the constituents. Treatment is symptomatic and supportive care aimed at maintaining adequate hydration. ■

Poisons CPD courses are available from the VPIS website www.vpisuk.co.uk/portal/CPD/CPDCourses/tabid/150/Default.aspx VPIS has also launched 10 online CPD modules, available at www.vetacademy.org/CE-CPD-Providers/VPIS-veterinary-poisons-information-service

Sudden death racehorse research: Age a significant factor

A research project has been carried out into the risk factors associated with sudden death in racehorses.

Veterinary surgeon Catriona Lyle led the project after being awarded a three-year scholarship to study at the Royal (Dick) School of Veterinary Studies. Sudden equine death refers to any fatality in a closely observed and previously healthy horse, during or immediately after exercise.

The project aimed to identify risks to help reduce the occurrence of sudden death. The research team used information from racecourses in North America, Japan, Australia and Hong Kong.

In the UK, post-mortem examinations are not always carried out in sudden death cases, so access to international records was vital. The team studied postmortem data from 284 cases covering a 20-year period.

Catriona said: "The study has shown that the cause of death can be quite variable, ranging from severe lung bleeding to a pelvic fracture that causes massive bleeding into the abdomen. But in approximately half the cases I studied, the pathologist was uncertain as to the cause of death. The most likely explanation for death in these situations is cardiac rhythm irregularities, but this is very difficult to prove."

After analysing international data, Catriona began studying cases involving British racehorses. In a 7-year period, there were 201 recorded cases of sudden death in British racecourses. Catriona found age to be a risk factor, while racing during summer was also linked to a higher risk of sudden death. Steeplechases were thought to pose more of a risk than flat races, although it is also thought that steeplechasers are older on average.

Chief veterinary officer for the British Horseracing Authority Jenny Hall said the project was "extremely useful".

"We are continuing to build on Catriona's research with an ongoing investigation currently running at Britain's northern racetracks. Sudden death is very distressing and we hope that owners will understand that allowing a full investigation into every racecourse death will help us reduce this risk," she said.

"Faster and safer" technique for equine eye examinations

Veterinary ophthalmologist Dr Eric Ledbetter at Cornell University Hospital for Animals has pioneered the use of in vivo corneal confocal microscopy in horses, adapting a technique from human medicine that allows doctors to take pictures of living eyes in microscopic detail without a scratch.

"Horses have very prominent eyes and live in environments that put their eyes at risk of trauma," said Dr Ledbetter. "Horses frequently get fungal infections of the cornea. This has traditionally been a hard problem to diagnose – regular culturing methods of diagnosing fungal infections can take 10 to 14 days for results to come back, creating long treatment delays."

Confocal microscopy gets immediate results without needing a biopsy or any other kind of surgery.

By comparing his results with cytology and histopathology, he has been able to validate confocal microscopy as a quicker, non-invasive technique to accurately diagnose fungal infections of the cornea.

In this section

In brief

An annual survey of horse owners designed to improve equine health and welfare, and help veterinary surgeons become better informed when tailoring advice for certain issues, is to launch next month.

The study, which asks horse owners for their views of their horse's health, is being carried out by a team of veterinary surgeons, epidemiologists and sociologists based at the University of Liverpool. The project is being jointly funded by the BVA and the Animal Welfare Foundation.

While the introduction of the Control of Horses (Wales) Act 2014 has been welcomed, equine organisations have raised concerns that it could result in the problem of fly grazing merely being moved over the border into England.

Organisations including World Horse Welfare and The British Horse Society are calling on Defra to instigate similar new laws.

The British Horse Society's director of policy, Lee Hackett, said: "We just have to hope that the politicians of Westminster are watching and will be encouraged to step up to the plate and take the action that we so desperately need."

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

Neonatal foals: What is normal and what is not

Foal nursing is a complex process that requires the application of expert critical care and continuous monitoring. It is also one of the most rewarding processes in which a registered veterinary nurse (RVN) can be involved. Sick foals are often admitted to hospital for critical care, however due to financial constraints, foals are also treated out on yards. In either situation an RVN should have a detailed knowledge of normal neonatal foal behaviour and this can be used to identify abnormalities. Practical knowledge of critical care techniques is also required to allow the application of swift and accurate treatment to give the foal the best chance of survival. This article will provide information on the normal presentation and behaviour of neonatal foals, conditions encountered and treatment that can be provided by or involve RVNs.

Foal nursing is an incredibly rewarding process.

Normal equine neonatal behaviour

Most mares will foal out on yards without a veterinary surgeon or RVN present. Knowledge of normal neonatal behaviour is, however, important in the event of a mare foaling in a hospital or on an occasion where a vet may need assistance with a dystocia out on a yard.

The following points summarise the adaptations and reflexes displayed by a normal neonatal foal just after birth:

- Within moments of birth the foal should start gasping respiration and exhibit a righting reflex to sit in sternal recumbency (Stoneham, 2012)
- The suck reflex should develop within ten minutes, the foal should successfully stand within one hour and nurse from the mare within two hours (Austin, 2013)
- Neonatal foals should nurse from the mare five to seven times per hour and begin to produce large quantities of dilute urine within twelve hours (Stoneham, 2012)
- Meconium, consisting of glandular secretions, swallowed amniotic fluid and their cell debris, is formed during gestation and is black/dark brown in colour (Acworth, 2003). The meconium should be passed within the first 12 hours of life, after which paler milk dung is observed (Stoneham, 2012)
- Young foals are bright and inquisitive; they explore the environment and interact with the mare, owners and veterinary staff (Stoneham, 2012)

The normal clinical parameters for a healthy neonatal foal are summarised in **Table 1**.

APGAR scoring

The APGAR scoring system is used to grade the health status of a foal at birth and comprises

Table 1. Normal clinical parameters for a healthy neonatal foal (Stoneham, 2012)

Age	Heart rate (bpm)	Respiratory rate (bpm)	Temperature (°C)
1 minute	60-80	Gasping	37-39°C
15 minutes	120-160	40-60	37-39°C
12 hours	80-120	30-40	37-39°C
24 hours	80-100	30	37-39°C

Table 2. Advanced APGAR score sheet (Knottenbelt et al. 2004)

Score	0	1	2
Pulse (per min)	Absent	<60 or irregular	>60 or regular
Respiration (per min)	Absent	<60 or irregular	>60 or regular
Muscle tone	Flaccid	Sluggish attempts to sit up	Sternal recumbency
Ear tickle	No response	Slight head shake	Shakes head/moves away
Nose stimulus	No response	Moves head	Grimace Sneezes/moves away
Rump scratch	No response	Moves/no attempt to stand up	Attempts to stand
Mucous membrane colour	Grey/blue	Pale pink	Pink

assessment of:
- Appearance
- Pulse (rate)
- Grimace (response)
- Activity (muscle tone)
- Respiration (rate)

(Knottenbelt et al. 2004)

Foals are best scored between one to three minutes of age; however, it is important to reduce intrusion as far as possible so as not to disrupt mare-foal bonding. An APGAR score can be attained using **Table 2**, and interpretations and actions to be taken for each APGAR score are presented in **Table 3**.

The APGAR system does not use rectal temperature to provide information. Useful information can, however, be derived from elevations or reductions in rectal temperature, so taking this reading can be a useful addition to the assessment of the newborn foal. As an RVN, it is important to have knowledge of APGAR scoring if monitoring a mare for foaling at the practice or if called out on a visit to a dystocia to assist a veterinary surgeon.

General neonatal foal care

The first week of life for a neonatal foal is a period of adaptation and maturation (Stoneham, 2012). Therefore, neonatal foals still require special care even if they are not sick. The following are important points to consider even when caring for normal equine neonates:

- A foal is born without circulating antibodies because the equine placenta prevents the transfer of antibodies from mare to foetus (Stoneham, 2012). This leaves neonatal foals particularly vulnerable to infection. Standards of nursing and hygiene must therefore be very high to reduce the level of environmental challenge
- A number of dramatic changes occur in the cardiovascular system during the first few hours of extra-uterine life. The ductus arteriosus and foramen ovale close and pulmonary vascular resistance is reduced. During the first few days, factors – such as hypoxia, acidaemia and hypothermia – can result in reversion to a transitional circulation with right/left shunting of blood through the heart (Stoneham, 2012). It is therefore essential that normal homeostasis is maintained in the equine neonate early on to reduce the risk of this
- The foal is dependent on continuous ingestion of colostrums and milk to maintain normal blood glucose levels. A 50kg foal will consume 12 to 15 litres of milk per day (Stoneham, 2012). Therefore, it is important to ensure that the mare is also well cared for and well nourished to enable her to keep up with this demand
- Newborn foals have little body fat and their ability to thermoregulate is dependent on shivering, muscular activity and continuous milk intake (Stoneham, 2012). Foals born in cold weather should be protected from drafts and rugged if necessary

Complications

Failure of passive transfer (FPT)

As mentioned above, immunity in foals is essentially a passive transfer of colostral immunogloblins and ideally needs to happen within the first six to twelve hours after birth (Hodgson, 2006). The foal absorbs the immunoglobulins via specialised cells throughout the length of the small intestine. This absorption is most efficient immediately after birth but then declines rapidly, being mostly ineffective after 24 hours (Stoneham,

Table 3. Interpretations and actions to be taken for each APGAR score (Knottenbelt et al. 2004)

Score	Interpretation	Action
11-14	Normal	Continue to monitor from a distance Avoid interference
7-10	Moderate depression	Administer nasal oxygen External rubbing stimulation Encourage sternal recumbency
2-6	Severe depression	Administer doxapram Nasal oxygen External stimulation Encourage sternal recumbency Further respiratory and cardiovascular resuscitation may be required
0-2	Dead – nearly dead	Administer artificial respiration and full cardio-pulmonary resuscitation for limited time only

2012). It is vital that the foal ingests approximately one to two litres of good quality colostrum in the first few feeds. Immunity is assessed by measurement of immunogammaglobulins (IgG) concentrations in plasma (Hodgson, 2006). Optimal concentrations of IgG in foal plasma 24 hours after birth are greater than 8g/l. Values less than 4g/l reflect failure of passive transfer and those between 4g/l and 8 g/l are considered suboptimal (Hodgson, 2006).

Foals with low IgG concentrations are more likely to be predisposed to a variety of bacterial infections that can then lead to the development of septicaemia. Maternal antibodies peak at 18 to 24 hours of age, therefore foals can be tested for FPT as early as 12 to 18 hours of age (Austin, 2013). Symptoms of FPT in foals include dullness, recumbency and loss of the suck reflex – although it is much better to test the foal for FPT early on, rather than wait until symptoms develop.

Causes

- Poor quality colostrum
- Failure to ingest adequate amounts before 24 hours of age
- Insufficient absorption of colostral antibodies
- Mare has 'run milk' or lost the colostrum before the birth of the foal

Treatment

If there is access to frozen colostrum, one litre should be defrosted and administered to the foal within the first eight to twelve hours after birth (Hodgson, 2006). If supplemental colostrum is not available or if the foal is older than 24 hours a plasma transfusion will be required (**Figure 1**). Frozen plasma with a high concentration of immunoglobulin G, is commercially available for this purpose. Plasma transfusions require close involvement of an RVN.

Equipment required

- One litre of frozen plasma
- Water bath set at 40°C to thaw the plasma. Frozen plasma should never be put in the microwave
- A drip stand
- Clippers are required to clip the catheter site. The left jugular vein is usually selected
- Swabs soaked in a four per cent chlorhexidine solution and swabs soaked in surgical spirit for aseptic preparation of the catheter site
- Catheter kit containing 16G catheter, 2ml local anaesthetic, a surgical blade, catheter ties, a catheter bung, 10ml heparin saline (10iu/ml) and sterile gloves
- A blood-giving set containing a filter
- A stethoscope and a thermometer
- A monitoring sheet for noting down clinical parameters
- Bandages and rugs for the foal if necessary
- A "crash box" in case of an allergic reaction

For health and safety reasons, there should always be a member of staff designated to hold the mare, even if she has a good temperament. The mare should be positioned so she can still see the foal but with her back end pointing away from any staff members. The recommended dose of plasma is 20ml/kg and one litre can be administered to a 50kg foal over a 30 minute period (Stoneham, 2012).

The transfusion should be started very slowly and the rate gradually increased at the discretion of a veterinary surgeon. The foal should remain standing if possible and an RVN should monitor closely for signs of an allergic reaction including:

- Increase in heart rate
- Increase in temperature
- Obvious signs of discomfort, for example persistent movement
- Urticaria

If an allergic reaction is suspected, a vet must be notified immediately. The batch number on the plasma should always be recorded on the monitoring sheet in case there is an allergic reaction.

On average, one litre of plasma will raise IgG concentrations by 2g/l. Therefore, multiple

Box 1. Treatment of Neonatal Maladjustment Syndrome (NMS)

- Restraint of the unco-operative, seizuring patient is essential and therefore an RVN or veterinary surgeon should remain with the foal 24 hours a day (Hess-Dudan and Rossdale, 2003)
- Feeding is extremely important in the management of NMS foals, whether by stomach tube (**Figure 2**), bottle or by bucket (**Figure 3**). The RVN must correctly measure feeds and give frequently
- To prevent hypothermia, body temperature should be monitored closely. The RVN must apply rugs (**Figure 4)** and bandages to the foal. Heat lamps can also be used to provide extra warmth. The foal should be kept in a well insulated area and protected from draughts (Hess-Dudan and Rossdale, 2003)
- If the foal is recumbent, the RVN should maintain it in a sternal position to prevent the development of hypostatic pneumonia. If this is not possible, the foal should be turned every one to two hours and a record should be kept of position (Stoneham, 2012)
- Foals are motivated by the need to stand and swallow milk. Therefore, the RVN should support the foal to encourage it to stand and walk it over to the udder to instigate normal feeding and bonding with the mare
- If the foal is considered to be septic, then application of colostrum within the first 18 hours after birth is required, usually via a stomach tube (Hess-Dudan and Rossdale, 2003). If the foal is older than 18 hours, then a plasma transfusion would be given following the process discussed earlier
- Fluid therapy is required and affected foals should be given just maintenance levels to avoid contributing to CNS oedema. Total parenteral nutrition (TPN) may also be required if the foal has no suck reflex. Separate intravenous (IV) catheters should be used if both fluids and TPN are to be given at the same time. The RVN must monitor the catheter site stringently for heat, pain, increased firmness of the vein and swelling (Copas and Boswell, 2012). Although all IV catheters are thrombogenic and carry a risk of causing a thrombus, the use of TPN further increases the risk of the patient developing thrombophlebitis. The catheter site should be bandaged and all IV tubing should be changed every 24 hours (Harris, 2012). Self disinfecting catheter caps impregnated with isopropyl alcohol, can be used to reduce the risk of thrombophlebitis (Rippingale and Fisk, 2013)
- Oxygen therapy is often given via soft intranasal tubing placed in the medial canthus. The RVN should set a flow rate of 2l/min to 10l/min of almost 100 per cent oxygen. If the oxygen is to be used for more than one hour it must be humidified to prevent it drying out the foal's mucous membranes (Stoneham, 2012). The RVN should monitor respiratory function by taking regular arterial blood gas samples and alter oxygen flow rate accordingly
- The RVN must record all clinical parameters, measurements of feed, fluid and oxygen given, position changes, and any other nursing care given on the clinical care notes

Figure 2. Feeding by stomach tube.

Figure 3. Bucket feed.

Figure 4. Rugs to prevent hypothermia.

transfusions may be required, although this increases the risk of an allergic reaction.

Prognosis

This is always very guarded even if FPT is treated early and aggressively. Foals that are IgG deficient at 24 to 48 hours old have a high chance of sepsis and a low subsequent chance of survival. This highlights the important role an RVN can play in increasing the chance of foal survival. Early monitoring and detection that the foal has not sucked successfully will lead to early intervention, such as stomach tubing with colostrum or a plasma transfusion, with life saving consequences.

Neonatal maladjustment syndrome (NMS)

NMS is an important syndrome of young foals (often less than three days old) in which there are gross, non-infectious behavioural disturbances. NMS is common in foals that are resuscitated at birth and those born by caesarean section, and are often admitted to a veterinary hospital for treatment. The condition is thought to be a result of peripartum hypoxia or central nervous system/thoracic trauma (Knottenbelt et al. 2004).

Figure 1. Plasma transfusion.

Clinical signs

Two major forms of the condition are recognised:
Category 1 – the foal appears normal at birth and signs of onset occur six to twenty four hours after birth (Knottenbelt et al. 2004). Clinical pathology is normal.
Category 2 – the foal is abnormal from the outset and shows signs of prematurity or sepsis. At birth the foal may appear confused or clumsy with a loss of suckle reflex and disinterest in feeding (Knottenbelt et al. 2004).

Further clinical signs include but are not limited to:

- Behavioural abnormalities including unsuccessful udder searching, tongue constantly hanging out, sneezing and hyperesthesia on handling
- Persistent chewing and loss of suck reflex
- Weakness and rapid exhaustion, aimless wandering and undirected galloping movements
- Barking vocalising
- Convulsions and head pressing
- Tachycardia (over 150 beats per minute) and a prominent jugular pulse (Knottenbelt et al. 2004).

Treatment

Medical veterinary treatment of these cases is complex and beyond the scope of this article but is discussed comprehensively in the literature written by Hess-Dudan and Rossdale (2003) and Knottenbelt et al. (2004). Hess-Dudan and Rossdale (2003) stated that nursing care is one of the main determinants of patient outcome in NMS foals. The main nursing care required therefore is summarised in **Box 1**.

Prognosis

Foals in category 1 usually have a better prognosis (up to 80 per cent survival) than those in category 2. Complete recovery is possible, given the appropriate treatment and the prospects of a normal life are good (Knottenbelt et al. 2004). Appropriate treatment in the form of excellent and knowledgeable nursing care is where the RVN can really make a difference to the patient, alongside medical veterinary treatment.

Conclusion

Foals, although being one of the larger neonates encountered in veterinary nursing, are prone to a number of life threatening complications and require specific treatment and care. Knowledge of what is normal for equine neonates is essential for an RVN so that detailed ▸

and accurate monitoring can occur from birth. Use of the APGAR system can help to identify abnormalities and guide treatment decisions, although the veterinary surgeon would always be involved in formulating a treatment plan. Early detection and treatment of complications, such as FPT or NMS, can increase the chances of survival for equine neonates. Nursing foals is time consuming, intense and often required 24 hours a day. For willing RVNs, however, the benefits will definitely outweigh the extraordinary efforts required. ■

CPD questions

1. How long after birth should it take for a normal neonatal foal to develop a suck reflex?
2. How many times per hour should a neonatal foal nurse from the mare?
3. What is the normal heart rate of a healthy neonatal foal expected to be 15 minutes after birth?
4. What does APGAR stand for and what is it used for?
5. What action should be taken for a foal with an APGAR score of seven to ten?
6. What quantity of milk will a healthy neonatal foal weighing 50kg require per day?
7. What quantity of good quality colostrum must a neonatal foal ingest shortly after birth to ensure successful passive transfer of antibodies?
8. What would an IgG reading of more than 8g/l suggest in terms of immunity for a neonatal foal?
9. How should commercial frozen plasma be defrosted?
10. What clinical signs would suggest an allergic reaction is taking place in a foal receiving a plasma transfusion?
11. What is thought to cause NMS in neonatal foals?
12. What is thought to be one of the main determinants of patient outcome on neonatal foals with NMS?
13. How can RVNs reduce the risk of neonatal foals with NMS developing hypothermia?
14. Name four ways in which an RVN can help to reduce the risk of thrombophlebitis in neonatal foals with NMS.
15. How could an RVN monitor respiratory function in a neonatal foal who is receiving intranasal oxygen?

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Answers
1) 10 minutes **2)** Five to seven times per hour **3)** 120-160 beats per minute **4)** Appearance, Pulse (rate), Grimace (response), Activity (muscle tone), Respiration (rate). The APGAR scoring system is used to grade the health status of a foal at birth. **5)** Administer nasal oxygen, provide external rubbing stimulation and encourage sternal recumbency. **6)** 12 to 15 litres. **7)** One to two litres. **8)** Successful passive transfer of antibodies. **9)** In a water bath set at 40°C. **10)** Increase in heart rate, increase in temperature, obvious signs of discomfort for example, persistent movement and urticaria. **11)** The condition is thought to be a result of peripartum hypoxia or central nervous system/thoracic trauma. **12)** Good nursing care. **13)** To prevent hypothermia body temperature should be monitored closely. The RVN must apply rugs and bandages to the foal. Heat lamps can also be used to provide extra warmth. The foal should be kept in a well insulated area and protected from draughts. **14) 1.** The RVN must monitor the catheter site stringently for heat, pain, increased firmness of the vein and swelling. **2.** The catheter site should be bandaged. **3.** All intravenous tubing should be changed every 24 hours. **4.** Self disinfecting catheter caps impregnated with isopropyl alcohol can be used to reduce the risk of thrombophlebitis.**15)** The RVN should take and process arterial blood gas samples on a regular basis.

Urgent defences needed against African swine fever

The UK's pig industry could be seriously damaged unless the Government takes action to bolster the country's defences against African swine fever (ASF), a leading organisation has warned.

Chairman of the National Pig Association (NPA) Richard Longthrop has called for security at border posts to be improved to prevent contaminated meat entering the country illegally. The disease has already been found in wild boar in Lithuania.

BPEX, meanwhile, has urged pig farmers to review their own biosecurity and warn staff travelling to and from Eastern Europe that the disease can be transported via contaminated meat. While harmless to humans, ASF is a highly contagious and often fatal disease in pigs, with mortality rates as high as 100 per cent. It can survive in raw, cooked, cured and even frozen meat for months.

In a letter to food and farms minister George Eustice, Mr Longthrop warns that the virus has the potential to cause serious harm to the UK pig industry, with mass slaughters and a ban on British pork exports – which represent nearly a quarter of pig farmers' income.

"The UK pig industry is just emerging from its own recession created by high feed prices," Mr Longthrop wrote. "To be struck with ASF now would be a blow from which some would not recover.

"We – that is the pig industry and Government – must do all we can to ensure ASF does not spread to the UK."

He said the loss of exports valued at £350m as a result of an ASF outbreak would be devastating to the pig industry and UK trade in general. Mr Longthrop added that such a loss would undermine "all the great work" that the industry and Defra have put into developing export markets for British pork and high-performance breeding pigs.

On top of the security measures, the NPA chief has also called for posters and leaflets to be displayed at border posts, and in-flight announcements to be made on all planes arriving from Lithuania.

Selective breeding may help control bTB

Farmers may be able to breed cattle with increased resistance to bovine tuberculosis (bTB), scientists have discovered.

Led by the University of Edinburgh's Roslin Institute, the research compared the genetic codes of healthy and TB-infected female Holstein Friesians. In the cows that remained unaffected by the disease, scientists identified a number of genetic signatures linked to TB resistance.

Researchers from the institute say the findings are significant, as they help to determine whether bTB control could be improved by selective breeding.

Lead researcher Professor Glass, said: "If we can choose animals with better genotypes for TB resistance, then we can apply this information in new breeding programmes alongside other control strategies. It is hoped that can help us to more effectively control TB in cattle."

The disease is responsible for major economic losses worldwide, impacting both animal welfare and farm profitability. The University of Edinburgh says the effects of bTB cost the UK Government £152 million from 2010 to 2011.

Published in the journal *Heredity*, this study builds on previous research by the institute that indicated genetic make-up could be linked to increased resistance to TB. A further study will focus on refining the genomic predictors of resistance, for which the institute will collaborate with Scotland's Rural College and the Agri-Food and Biosciences Institute.

In this section

CPD

Measuring poor rumen health

In the second of Owen Atkinson's series, he looks at the various methods available for testing for SARA

Turn to P32

In brief

BPEX has announced the extension of its Pig Health Scheme (BPHS) for a year, while a replacement Food Standards Agency (FSA) scheme is devised.

The scheme, which provides disease data on slaughtered pigs, has been extended to March 31, 2015, while BPEX continues its work with the FSA and abattoirs on the replacement Collection and Communication of Inspection Results (CCIR) project. The CCIR programme will provide a similar quality of postmortem pig data as that currently delivered by the BPHS veterinary assessment.

The data from slaughtered pigs provides valuable information for both veterinary surgeons and farmers on how best to manage pig diseases and improve carcass quality.

The diet of broiler breeder chickens has long been a welfare issue for those involved in poultry production.

The Biotechnology and Biological Sciences Research Council (BBSRC) has awarded £400,000 for research into a solution that will stop poultry becoming obese or left hungry. A team from Scotland's Rural College (SRUC), Newcastle University, The Roslin Institute and Biomathematics and Statistics Scotland (BioSS), will carry out the project.

Dr Rick D'Eath, who will be leading the project at SRUC, said: "At the end of this three year project we hope to inform and influence future poultry industry guidance on feeding broiler breeders which could improve the welfare of millions of chickens around the world."

Owen Atkinson
BVSc DCHP MRCVS

Owen has worked in farm animal practice since 1994, mainly with dairy cows. He began his professional life in North Yorkshire, before moving on to the University of Liverpool to teach farm animal veterinary practice, and then to Wrexham in North Wales. He settled in Cheshire with his family where he became a partner in farm-only vet practice, Lambert, Leonard and May, part of XLVets.

Owen's interests in rumen health, cattle foot care and lameness reduction led him to do an increasing amount of training and advisory work. In 2009, Owen was awarded a Trehane Trust/Nuffield travel scholarship to look into the role of the dairy vet in knowledge transfer.

In 2013, Owen left the practice to found Dairy Veterinary Consultancy Ltd, to better pursue his vision for preventive health management and strategy. He works with dairy farmers, other vet practitioners and the wider dairy industry and supply chain. Owen's goal is to help farmers make changes on their farms that benefit the cows, the quality of life and the bank balance.

Declaration of interests: Owen Atkinson is founder of The Dairy Veterinary Consultancy.

CPD

Diagnosing SARA and monitoring rumen health in practice

In my last article, I described the difficulty of defining – and hence diagnosing – subacute ruminal acidosis (SARA). Concentrating on rumen pH alone is very limiting when considering rumen health, and low pH is only a proxy measurement of poor health of the rumen micobiome. The term "high concentrate syndrome" might more accurately describe the health problems typically attributed to SARA.

While this article considers ways to measure rumen pH, I will also look at other parameters that may be just as pertinent a measure of rumen function/health.

Measuring rumen pH

pH is either measured in situ, using a probe in a canulated rumen (research purposes only) or a telemetric rumen bolus (see later), or a sample of fluid is collected.

There are two ways to collect a sample; by an oral tube or by percutaneous rumenocentesis. There are various devices available for introducing a guarded stomach tube into the rumen, and the recent vogue for pumping fluids into rumens of sick or freshly calved cows means they are generally readily available in practice.

Certainly, collection of large volumes of rumen fluid as might be required for rumen transfaunation (for example) is only possible using an oral probe. However, for the purposes of measuring rumen pH, the technique does have its drawbacks, as reviewed by Duffield et al (2004). Principally, saliva contamination can raise pH, and inconsistent sampling sites makes it hard to compare samples. Typically, a higher pH threshold is used to indicate SARA (say 0.5 pH units higher than other methods) to partially counter these problems.

Rumenocentesis is a simple, quick procedure that is as well tolerated as, say, an intravenous injection. Recent large scale studies have used this technique without significant welfare concerns or adverse effects (Kleen, 2004; Nordlund, Cook and Oetzel, 2004; Gianesella et al, 2010; Atkinson, 2013). The method used by the author is described in the boxed section below, and was found to be very well tolerated by cows in a 240-cow study, requiring no

Rumenocentesis technique

The rumenocentesis site is on a cow's left-hand side, at the level of the stifle, 2cm caudal to the last rib. Cows are restrained in a stall or a cattle crush, which allows access to the left flank. Another person holding the tail up assists in keeping the cow still while local anaesthetic is injected. The site is clipped (to mark it) but not otherwise surgically prepared and 3ml of local anaesthetic (procaine) is injected under the skin using a 1in 18 gauge needle. Sufficient time (five minutes) is left for the local anaesthetic to take effect.

A 16 gauge 10cm needle (**Figure 1**) is used to aspirate approximately 5 to 10ml of rumen fluid using a 20ml syringe. The needle is advanced in a confident manner in a single, swift stroke aimed slightly cranially. Discomfort to the cow is minimal, but if the needle is advanced too gingerly, the abdominal muscles are more likely to twitch and this carries greater risk of damaging the rumen wall with the tip of the needle. Once the tip of the needle is safely through the rumen wall, there should be very little risk of traumatic injury to viscera.

The needle lumen will occasionally block with larger particles and this is relieved by using the syringe to flush air through the needle. In theory, excessive negative pressure applied during aspiration can raise the pH as carbon dioxide can be drawn out of solution. In practice, this is not a concern.

Precautions: A heavily gravid uterus might potentially extend to the rumenocentesis site, so it is a sensible precaution to avoid the technique in cows in the last trimester of pregnancy. Shorter needles should be avoided, as it is important that the needle tip is safely rested in the rumen lumen once fully inserted. Wider bore needles are likely to be more painful and cause greater resentment. Finer needles will block. Needles are for single use only. After a failed first attempt (for example, grossly bent needle or signs of pain to the cow) the procedure should be abandoned to avoid further distress or risk of injury to the cow.

special restraint (even possible at locking yoke feed barriers). Prior local anaesthesia of injection site was always used.

As discussed in the previous article, diagnosis of SARA ideally includes standardisation of time of sampling in relation to feeding or measurement over a prolonged period: Gozho et al, (2007) used a threshold of rumen pH depression of between 5.2-5.6 for at least three hours per day, and this definition is now the preferred one for research purposes (Plaizier et al, 2012). Such a diagnosis can be made in fistulated cows but not in practice.

Telemetric reticular pH boluses

Recent developments in telemetric rumen pH monitoring using reticular boluses enables pH to be measured over a period of time (Mottram et al, 2008, Zosel et al, 2010; Kimura et al, 2012; Sato, Ikeda, et al, 2012 and Sato, Mizuguchi et al, 2012), and this carries significant advantages over a measurement at a single time point. Rumen pH values per se can have limited value, with lower pH often simply indicating those cows with the greater recent feed intakes. However, the dynamic of pH fluctuations (amplitude and timing of fluctuations) can be more revealing about feeding behaviour and risk of poor rumen health. Interpreting pH values over 24 hour periods, or longer, can be useful. It must be remembered that the boluses will reside in the reticulum, not the rumen, so the pH is not comparable. Typically, reticular pH is likely to be around 0.2 to 1.0 pH units higher than the ventral sac of the rumen (Kimura et al, 2012), but the fluctuations approximately mirror each other.

Now that the technology has improved (better battery life of probes, less pH drift, better reliability), perhaps the biggest barrier to pH boluses being used routinely in practice is the cost. A single bolus, designed for single-use in one cow and with a likely useful lifetime of four to six months, costs around £450. In addition, reading equipment is required (a modified phone handset with software), costing around £700. Choosing representative sentinel animals in which to insert the boluses will be a consideration. One manufacturer recommends inserting one bolus per thirty cows in a group.

Table 1. Description of protozoal scores

Description	Protozoal score PS
Highly motile and very crowded; a dense field of small and large protozoa darting randomly over the field of view. Large protozoa are uncountable as they transect a 1cm line on the coverslip. Movement visible to naked eye.	+++ (3)
Motile and crowded, a mixture of small and large protozoa. Large protozoa are countable as they cross a 1cm transect line on the coverslip.	++ (2)
Sluggish motility and low numbers, mainly small protozoa. Large protozoa in a 1cm diameter field of view are countable.	+ (1)
No or sporadic live fauna: Less than 2 large protozoa detectable in a 1cm diameter field of view.	0

Target: Score 2 or 3 (Adapted from Atkinson, 2009)

Rumen fluid is examined under low magnification (x40) using an illuminated dissecting microscope over a plastic slide and plastic coverslip marked with a score line. Approximately 0.25ml of warmed fluid (37+2°C) is placed under the coverslip and immediately examined using a subjective assessment with a simple scoring system to record results.

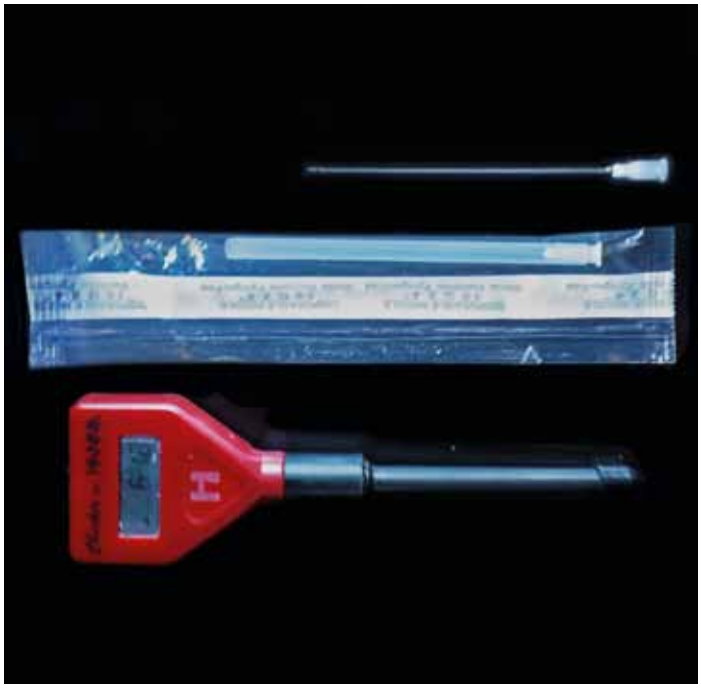

Figure 1. pH meter and rumenocentesis needle.

Other rumen fluid characteristics

Once a sample of rumen fluid has been collected by whatever means, there are probably far more useful and interesting things to do with it other than simply measuring the pH.

Visual observation of the fluid alone can be useful. Kleen et al (2009) examined rumen fluid visually, collected from 197 Dutch dairy cows by rumenocentesis, and scored it qualitatively one to five based on a composite assessment of colour, smell, consistency, protozoa density (by eye), and protozoa activity (visual assessment of gas bubbles). With the exception of consistency, the rumen fluid scores were correlated with ruminal pH ($P<0.001$), with lower scores occurring more frequently in animals with a pH ≤ 5.5. Higher scores, which would indicate a more biologically active ruminal fluid, occurred more often in the animals with a rumen pH ≥ 5.7. Simply speaking, a less healthy rumen fluid might be described as pale, watery, sour smelling and with no visual protozoal activity

Table 2. 198 cows grouped by protozoa score showing prevalence of low rumen pH (≤5.5)

Protozoa score	Number in category	Number pH 5.5 (SARA)	Percentage SARA
0	36 (18.0%)	25	69.4
1	49 (24.7%)	21	42.9
2	67 (33.8%)	8	11.9
3	46 (23.2%)	0	0

(From Atkinson, 2013)

(seen in a test tube by gas bubble production).

More detailed tests that can be readily done in practice might include direct microscopy and a methylene blue reduction test.

Methylene blue reduction test

The methylene blue reduction time is an indirect measure of the redox potential and hence bacterial activity of rumen fluid. The test is probably best known historically as a simple test for bacterial contamination of milk; the higher the number of bacteria, the faster the oxygen use and decolourisation of the methylene blue.

The method involves adding 0.5ml or 0.03 per cent methylene blue (0.3mg/ml) to 6ml of rumen fluid. The fluid should be incubated at 37°C and standardised by reading after three and six minutes. When feeding a mixed ration of roughage and concentrates, methylene blue will be decolourised in less than three minutes for normal rumen fluid (Steen, 2001). Reduced microbial activity in the rumen after a prolonged period with reduced appetite or with acidosis, such as associated with excess concentrate feeding, will cause an increase in reduction time.

Direct microscopy

A more accurate assessment of protozoa numbers and activity can be gained by using a low powered microscopy (**Figure 2**). A simple scoring system is described in **Table 1**. Protozoal activity is affected by temperature of the sample, so samples must be warmed to 37°C and the use of a heated stage is preferable. If a heated stage is not available, the author finds that ensuring the microscope is at room temperature and using plastic (instead of glass) slides and cover slips is sufficient, providing the examination is performed immediately after preparing the slide. The author's experience is that samples of rumen fluid stored for up to 24 hours at 4 to 20°C are not adversely affected and can still be usefully examined as long as they are then warmed back to body temperature.

The concentration of protozoa in rumen contents, especially small entodiniomorphs (oligotrichs), generally increases with the addition of concentrates to roughage diets (Dehority and Orpin, 1997). A fall in the pH of rumen contents is generally accompanied by a decrease in the protozoal concentrations and motility (Atkinson, 2013).

Table 2 shows how cows with excellent protozoal scores all had rumen pH above 5.5, but a high proportion of cows with low rumen pH (≤5.5) also had poor protozoal scores. The large entodiniomorphs are the most sensitive of the protozoal species, whereas the smaller trichostomatids (holotrichs) are the most tolerant to low pH. Nearly all protozoa die when pH declines to 5.0. Goad et al, (1998) concluded that a decline in the concentration of ciliated protozoa may be the only microbial indicator of subacute ruminal acidosis.

It is as well to remember that several other factors may be involved. These factors could include rate of feed consumption, rate of passage, salivary production, starvation and antimicrobial agents (such as mycotoxins, or dietary ionophores, for example monensin boluses). It is the author's opinion that protozoal examination is a more useful measure of rumen health than a single pH measurement, as pH fluctuates more rapidly than protozoal numbers, and therefore is very dependent on sampling in relation to feed intakes. Cows with poor rumen health are often anorexic, and rumen pH will consequently not be low.

Clinical assessment of cows

Grove-White (2004) describes that assessing cows for rumen fill, body condition score (BCS) loss in early lactation, body dirt score, lameness prevalence, faecal characteristics, rumination, fertility and production parameters, as well as the overall health and appearance of the cows within a herd, can be used in the diagnosis of SARA. In the

Table 3. Description of faecal consistency scores

Score	Description
1	Watery thin. Faeces run through fingers and form a liquid puddle on the ground over a large area.
2	Faeces have a custard like consistency. On the ground, the faeces splash over a large area and form a pool approximately 1cm deep.
3	Faeces have a porridge like consistency. When dropped on the ground, the faeces make a plopping noise and a thin, wide based pat around 2cm thick.
4	Faeces have a consistency like thick porridge. If thrown at a wall, it would stick. When dropped it makes a heavy plopping noise and forms a well circumscribed pat with concentric rings like a large rosebud.
5	A firm faeces redolent of horse droppings.

Targets: Normal scores for a lactating dairy cow are typically 2 or 3.
(Adapted from Zaaijer and Noordhuizen, 2003)

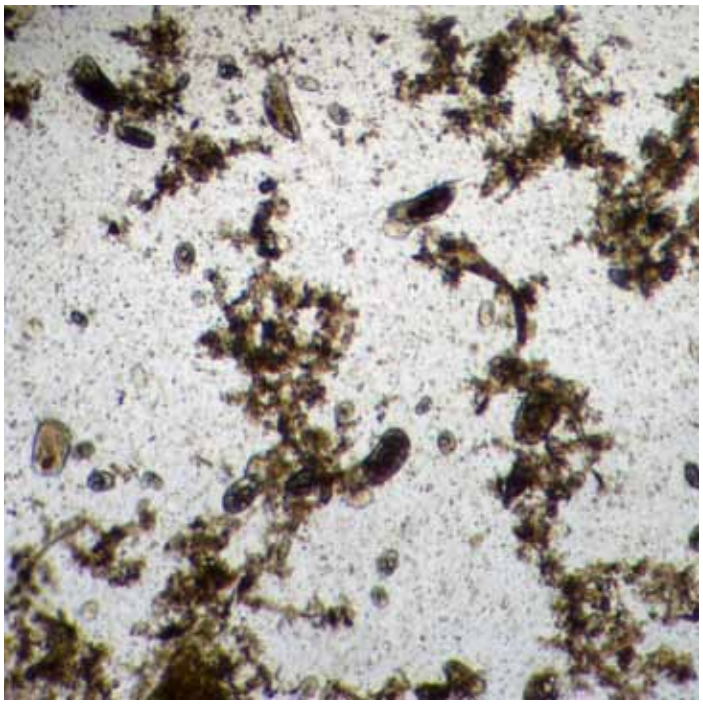

Figure 2. Large and small protozoa under low magnification.

Figure 3. A nice faecal pat – consistency score 3.

Figure 4. Faecal fibre digestion score 5 (very poor) – almost tempting to refeed it.

field, SARA is often diagnosed on the basis of this general type of assessment (personal observation), but there is no recorded illustration of diagnosis of SARA using these methods either experimentally or in field studies.

Kleen et al (2009) found no correlation between BCS and rumen pH in 196 Dutch dairy cows. However, in the same study, there was some suggestion that cows suffering SARA showed greater BCS loss between three weeks before and three weeks after calving.

Atkinson (2013) designed a study to more accurately measure clinical parameters that might be associated with poor rumen health. If the gold standard diagnosis of poor rumen health was taken as low pH (≤5.5), there were no significant correlations between BCS, faecal characteristics, milk yield, milk constituents (butterfat; protein) or ketosis, and rumen health. Cows with higher rumen fill scores, however, had significantly lower rumen pH values; this was attributed to an indication of a recent feed rather than poor rumen health.

The same study did find that if low protozoal scores were used as the gold standard test for poor rumen health, diarrhoeic and thin cows (low BCS) were more likely to have poor rumen health (but not cows with high rumen fill scores). There was no correlation between protozoal scores and milk yields, ketosis, milk constituents or faecal fibre (digestion) scores. The study did not investigate rumen motility.

Table 4. Description of faecal digestion scores

Score	Description
1	The faeces have a creamy, homogenous, well digested consistency and will pass through a sieve so that only a very small volume remains (less than 25 per cent of original volume). The fibre that remains will be short length and fluffy. If rapeseed meal is fed, the small black seed husks will form part of this remaining fibre.
2	Less than a third of the faeces' volume remains in the sieve. The remaining fibre is mainly short length but some larger, undigested fibre particles are present.
3	The faeces shrink to only half the original volume. There are some lengths of fibre more than 1cm long. There may be a few incompletely digested concentrate particles or maize grains.
4	The faeces shrink to around 75 per cent of the original volume. The remaining fibre is rough in texture and some is more than 2cm long. There may be several undigested grains.
5	The faeces hardly shrink in volume. The remaining fibre is rough and has the appearance of a total mixed ration, with a lot of long (greater than 2cm) fibre and undigested grains. There may be casts of intestinal mucosa present.

Targets: Normal scores for a lactating dairy cow are typically 1 to 3.
(Adapted from Atkinson, 2009, based on a method by Mgbeahuruike, 2007)

Faecal assessments

There has been much written and suggested about faecal examination and assessment of rumen health. Beware, the evidence base behind nearly all that has been written simply does not appear to exist. Faecal characteristics alone should never be used to diagnose poor rumen health/SARA.

To declare that faecal examination is pointless, however, might be a step too far; rather the influence of diet and rumen health on faecal characteristics is not fully understood. Useful inferences might be made, for example, if excessive long fibres exist in the faeces. This could be due to poor quality diet (high lignin), rapid rumen transit time (not enough time for complete cellulose digestion), or poor rumen function

(the microbiome being poorly adapted to cellulose digestion, or having insufficient function, as could possibly be the case with high concentrate syndrome/acidosis).

Similarly, inconsistent faecal scores within a herd might indicate that the cows are receiving varied dietary intakes. This could occur where sorting of a total mixed ration (TMR) or partial mixed ration (PMR) diet is occurring and some cows are eating excessive concentrates, while others are eating a higher proportion of forage. In the author's opinion, the biggest determinant of faecal consistency is the overall dry matter of the diet. Wetter diets result in wetter, more diarrhoeic faeces.

Two methods of faecal scoring are described below:

Faecal consistency scoring

This is assessed using fresh faeces only. Scoring is perhaps easier when the faeces is on a concrete floor (**Figure 3**), but a score can be allocated when faeces is collected directly from the rectum for later sieving (**Table 3**). Scores are one (thin) to five (firm).

Faecal fibre digestion scoring

Scores are allocated after sieving a handful of faeces (the size of a tangerine) through a kitchen sieve with 1.75mm apertures (**Table 4**). The faeces are sieved under a slow flowing faucet of water and gently massaged around the sieve for around 30 seconds. The remaining particles in the sieve are then examined (**Figure 4**) to give a score of one (well digested) to five (poor digestion). A more elaborate purpose-designed graded sieve is now available commercially for faecal sieving, which probably extends this art form to its maximum potential.

Analysis of milk constituents

If faecal analysis for assessment of rumen health is questionable, then milk constituent analysis should be viewed with even greater caution. Much is made of butterfat levels (and sometimes butterfat:protein ratios) for SARA diagnosis – and hence rumen health assessment – but there are too many confounding factors influencing milk butterfat percentage for this to be relied upon. Milk quality parameters should *never* be relied upon to assess rumen health (Tajik and Nazifi, 2011; Atkinson, 2013). Perhaps of more interest is the analysis of milk fatty acid profiles. For example, Colman et al (2010) conclude that specific milk fatty acids might have the potential to discriminate acidotic cows and could be used diagnostically in the future. A simplified version of this technology is already used commercially but in reality, the science is still young and rumen health assessments based on this type of report should, in the author's opinion, be treated with caution. Future developments might yet prove to be useful.

Summary

Rumen health monitoring can be an important part of veterinary involvement of dairy farms. It is important to differentiate science from anecdote; nevertheless, a multi-pronged approach to rumen health assessment is probably justified. There is much the veterinary surgeon can bring to the table of cow nutrition, and accurate rumen fluid analysis is a unique service. The final article in this series will discuss what to do with rumen health information and how to ensure rumen health is maintained while optimising production. ■

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New blood test for snake disease

A "first-line diagnostic tool" for identifying inclusion body disease (IBD) in snakes has been developed by scientists at the University of Florida's College of Veterinary Medicine.

The new blood test will help veterinary surgeons confirm the debilitating disease, which is usually fatal and most commonly found in boa constrictors.

A unique protein that accumulates in the cells of snakes with IBD was studied by scientists at the college. While the cause of the disease remains unclear, the team found links between the protein and a family of viruses that predominantly infect rodents, but may also affect humans. According to researchers, however, there is no evidence to suggest people can become infected with the virus causing IBD.

The disease is highly infectious in snakes and is first said to have been seen in the late 1970s. It affects both animals in captivity and those sold as pets throughout the world. Pythons and other snake species from the boid family can also occasionally become infected.

Elliott Jacobson, professor of zoological medicine at the university and co-author of a report into the study, said: "We don't know the prevalence, but we see more of IBD in the United States because there are some two million boas being kept as pets in this country."

Snakes infected with the disease may show neurological signs such as head-tilting, chronic regurgitation or disequilibrium. However, some snakes appear healthy despite being infected with IBD.

"That's a big problem, because healthy-seeming animals that are affected with IBD are being sold and sent around the world. However, they may develop the disease sometime later and may be the source of infection for other snakes," Dr Jacobson said.

The new test is now being offered at the university's veterinary diagnostic laboratories. It is intended to be used alongside existing molecular and histological tests, which are more readily available, but also more expensive.

Researchers say the blood test will provide veterinary surgeons with a "first-line diagnostic tool" to screen for IBD in animals displaying signs of the disease, or even before signs occur.

Golden gate virus was discovered by researchers from the University of California-San Francisco in 2012, and scientists now believe it could be a cause of IBD. Dr Jacobson says further research is needed to confirm this.

In brief

Amphibian extinction education and awarenesss will be at the heart of an international Save The Frogs day that takes place on April 26.

Organisers at Save The Frogs say nearly a third of the world's amphibian species are on the brink of extinction and that threats to these animals will rise as the human population grows, unless action is taken.

It is the sixth year that the Save The Frogs day has been held. Last year supporters held 270 events in more than 30 countries. Visit www.savethefrogs.com

In this section

BVA backs ban on primate pets

The BVA is calling for the Government to ban the keeping of primates as pets after concluding that it is almost impossible for private owners to meet their needs as laid down in the Animal Welfare Act 2006.

It follows a Government inquiry into pet primate keeping in the UK.

President of the BVA Robin Hargreaves said: "Primates cannot be kept on their own. They need at least one companion in order to express natural behaviour. They require both an indoor and outdoor enclosure to ensure adequate exercise and exposure to UV light, and each species has specific dietary requirements.

"These animals are not domesticated companions like dogs and cats, or even livestock, and are extraordinarily difficult to care for properly. Very few people can provide the necessary resources to meet their welfare needs."

He added that it is recognised that a ban could not be enforced immediately, as a transition period would be required to ensure existing primate pets could be moved to appropriate accommodation.

"We appreciate that many people who keep primates privately care deeply for their pets and do their utmost to provide for them appropriately. However, primates are long-lived, intelligent, socially complex animals and we can think of no circumstances where they would benefit from being kept as a pet," Mr Hargreaves said.

The BVA has recommended, however, that individuals who are working with accredited zoos should be allowed to breed primates for conservation purposes.

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Humane euthanasia of fish

There are a large number of potential euthanasia techniques in fish. Some of these require drugs and equipment only available in a veterinary practice, others can be performed humanely by an owner or lay person.

Tom Dutton
BVM&S MRCVS Resident
ECZM(avian)

Tom is a 2011 graduate of the University of Edinburgh. After finishing his veterinary degree he completed a one-year rotating internship at Northwest Surgeons in preparation for his residency training. He started his European College of Zoological Medicine (ECZM) residency training in avian medicine and surgery at Vets Now Referrals in May 2012.

Neil Forbes
BVetMed DipECZM(avian) FRCVS

Neil qualified from the RVC in 1983. He gained his RCVS Specialist Status (Zoo and Wildlife [avian]) in 1992. Neil received his FRCVS by examination in exotic bird medicine in 1996 and became a Diplomate of the ECAMS in 1997. He has lectured internationally and contributed to more than 25 books. Neil has received a wide range of awards for his work and is senior vice-president of the ECZM and senior vice-president of the European Board of Veterinary Specialisation. Neil heads the avian and exotic department at Great Western Exotic Vets (part of the Vets Now group) in Swindon, where he runs the only ECZM-approved avian residency in the UK.

CPD

As with reptiles, following all methods of euthanasia, destruction of the central nervous system (CNS) should be performed – most commonly via pithing.

Anaesthesia is often used as part of the euthanasia technique. Signs of a surgical plane of anaesthesia are:

- Hypoventilation (respiration is almost absent)
- Loss of response to stimulation
- Loss of equilibrium
- Loss of muscle tone

Waterborne anaesthetic agents delivered in an aqueous solution are widely used. This enters the blood stream via the gills, is far more convenient and causes less distress to the fish than the administration of parenteral agents.

Euthanasia of a fish at home

RCVS regulations state euthanasia is not an act of veterinary surgery and can be performed by a suitably trained individual. With careful explanation of the required techniques, euthanasia performed at the home, can still be considered humane. In the authors' experience, however, few owners (except perhaps keen fishermen) feel comfortable performing euthanasia at home and prefer veterinary assistance.

Cranial concussion followed by decapitation, exsanguination or pithing can be performed by the client at home. Catching the fish quickly and calmly will limit any stress. The fish can then be restrained (tea towel or similar is helpful) and struck hard over the head with a heavy blunt object.

Figure 1. Carassius auratus spp being euthanised in MS222. Note the loss of equilibrium.

When performed correctly cranial concussion will cause sufficient damage to the CNS that pithing or decapitation should not be required – nonetheless, it is often recommended when a less experienced person is performing the euthanasia procedure. A sharp knife can be used to decapitate the fish or a thin knife or skewer to pith the head and spinal cord.

Cervical dislocation and/or decapitation followed by pithing is another method of euthanasia that can also be performed at home. Following restraint, you firmly pull the head away from the body to dislocate the cervical vertebrae (owner must be warned decapitation can occur), before using a sharp implement (a skewer or thin knife) to pith the head and spinal cord.

Chemical overdose is not recommended for home euthanasia, due to the difficulty with safe disposal and risks to the public when handling chemicals. Although clove oil is widely recommended as a euthanasia solution, recent guidelines produced by the American Veterinary Medical Association state that the use of clove oil is not currently deemed acceptable because adequate and appropriate clinical trials have not been performed on fish to evaluate its effects.

Euthanasia of a fish in the practice

Chemical overdose is the most commonly deployed

method of euthanasia in practice, and all practices should keep appropriate chemicals of one variety or another in stock. All veterinary practices will have a stock of volatile anaesthetic agents.

"Chemical overdose is the most commonly deployed method of euthanasia in practice, and all practices should keep appropriate chemicals of one variety or another in stock"

Fluorinated hydrocarbons, such as isoflurane, halothane or sevoflurane, can be added to the fish's water to effect, by either pouring the liquid into the water and mixing well or by bubbling the vaporised compound through the water.

Use of such chemicals has the major disadvantage of being potentially hazardous to the operator, so the use of a fume cupboard, if available, is recommended.

Practices that see large numbers of exotic animals are more likely to stock tricaine methanesulfonate (MS222), which is an easy to use fish anaesthetic and euthanasia chemical (**Figure 1**). A dose rate of 300ppm to 500ppm for 15 minutes is usually sufficient for euthanasia of most fish species. MS222 should always be used as a buffered solution – sodium bicarbonate is the most readily available buffering agent. A pH monitor should be used to confirm a neutral pH (7 to 7.5) before a fish is added to the solution. A urine dip-stick can be used if a dedicated pH monitor is not available.

Special considerations are required for the disposal of MS222. The drug should be mixed with cat litter until fully absorbed and stored in a pharmaceutical waste bin. The practice's designated police officer then needs to witness its destruction, at which point the container can be sealed, labelled and sent for incineration.

Parenteral delivery of a chemical agent for euthanasia is suitable for large fish species where immersion in a chemical solution is not practical or poses too great a health and safety risk. First anaesthesia should be induced and a number of drugs are recommended; such as ketamine with or without an alpha-2-agonist, propofol, lidocaine and alfaxalone. The authors' preferred choice is an intramuscular injection of alfaxalone as it is not associated with pain on injection. Following induction of anaesthesia, pentobarbital, at a dose of 60mg/kg, can be given intravenously. A lateral or midline (**Figure 2**) approach to the caudal veins (lying ventral to the tail vertebrae) or the veins (medial aspect) on the opercula can be used (Ross, 2001). Pithing should then be performed to destroy the CNS with a needle or other sharp implement.

Figure 2. Injection of euthanasia solution into the caudal vein in a rainbow trout (Oncorhynchus mykiss). The needle is inserted in the ventral midline just caudal to the anal fin. The vein is ventral to the overlying spine.

Amphibia

Most of the same methods described for anaesthesia of fish can also be used in amphibia, prior to an injection of euthanasia solution. Immersion, with the addition of a fluorinated hydrocarbon (isoflurane, halothane or sevoflurane) at a ratio of 1:3 into the amphibian's water (if aquatic) or trickled over the skin, is most useful as the required materials are commonly found in a veterinary practice. MS222 can also be used, as in fish, with appropriate attention to buffering (**Figure 3**).

Figure 3. Immersion of a axolotl in buffered MS222 solution.

An adequate plane of anaesthesia (deep) has been reached when there is:

- Loss of the withdrawal reflex (hind toe pinch)
- Loss of righting reflex
- Absent corneal reflexes

The preferred method of euthanising amphibia is an overdose of pentobarbital via intravenous or intracardiac injection (**Figure 4**). As with reptiles, a doppler (**Figure 5**). can be used to help identify the location of the heart.

An overdose of MS222 at 200mg/kg intracoelmically is rapid and does not harm organs for pathology (Mylniczenko, 2009). As with fish, the chemical methods of euthanasia should be followed with pithing to ensure death.

Similiarly to reptiles, cooling of amphibia should *never* be used as a method of inducing anaesthesia or euthanasia; however, rapid freezing (dipping in liquid nitrogen) is approved and effective in amphibia weighing less than 40g in weight – larger species may not be rendered unconscious rapidly enough and hence this technique should *not* be used in such cases (Mader, 2006). Use of carbon dioxide is thought to be inhumane because amphibia can tolerate hypercarbia (Mylniczenko, 2009).

Invertebrates (aquatic and terrestrial)

Although not commonly presented to first opinion veterinary practice, invertebrates require ▸

specific techniques when performing humane euthanasia.

While there is still debate as to whether the sensory function of invertebrates allow them to feel pain, it is commonly appreciated that invertebrates do show a response to noxious stimuli. It is best to assume they feel pain and euthanise them in a humane manner, rather than assume otherwise and later be proved wrong. Anaesthesia should precede euthanasia.

In lower invertebrate species (such as sponges, corals, jellyfish) anaesthetic overdose may be considered appropriate alone, but in higher species such as decapod crustaceans (including shrimp and crab) pithing (destruction of nervous tissue) is considered optimal for euthanasia and ensuring death.

"It is best to assume they feel pain and euthanise them in a humane manner, rather than assume otherwise and later be proved wrong. Anaesthesia should precede euthanasia"

Fluorinated hydrocarbons, such as isoflurane, halothane or sevoflurane, can be used effectively in most invertebrates – via an anaesthetic chamber for terrestrial species (ensure the circuit pipes are covered by gauze to prevent escape) or in water for aquatic species (use their own water particularly in marine species to minimise stress). The RSPCA (2011) cites slowly cooling as a suitable method of rendering crustacea insensible prior to death. The chilling gradient must not be more than two degrees an hour.

Figure 4. Intracardiac injection of pentobarbital in a anaesthetised pirenaica salamander.

Figure 5. Using a doppler to confirm euthanasia.

Spiders and other terrestrial invertebrates can be euthanised via pithing or immersion in a fixative such as formalin or alcohol (Pizzi, 2011), but the patient *must* be anaesthetised first. Rapid freezing (following for example immersion in liquid nitrogen) will also instigate death – however, this method results in tissue damage and so should not be used if histological examination is required. ■

CPD Questions

1. Which method would you recommend to a client as most appropriate for euthanasia of a gold fish at home?

   A. Cranial concussion

   B. Clove oil

   C. MS222

   D. Freezing

2. True or false: MS222 can be safely disposed of in a commercial drain?

   A. True

   B. False

3. What pH should MS222 solution be at prior to anaesthetising a fish?

   A. Neutral pH 7-7.4

   B. Acidic pH 4-5

   C. Alkaline pH 9-10

Answers
1.A 2.B 3.A

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Declaration of interests:
Tom Dutton and Neil Forbes both work for the Vets Now group in Swindon.

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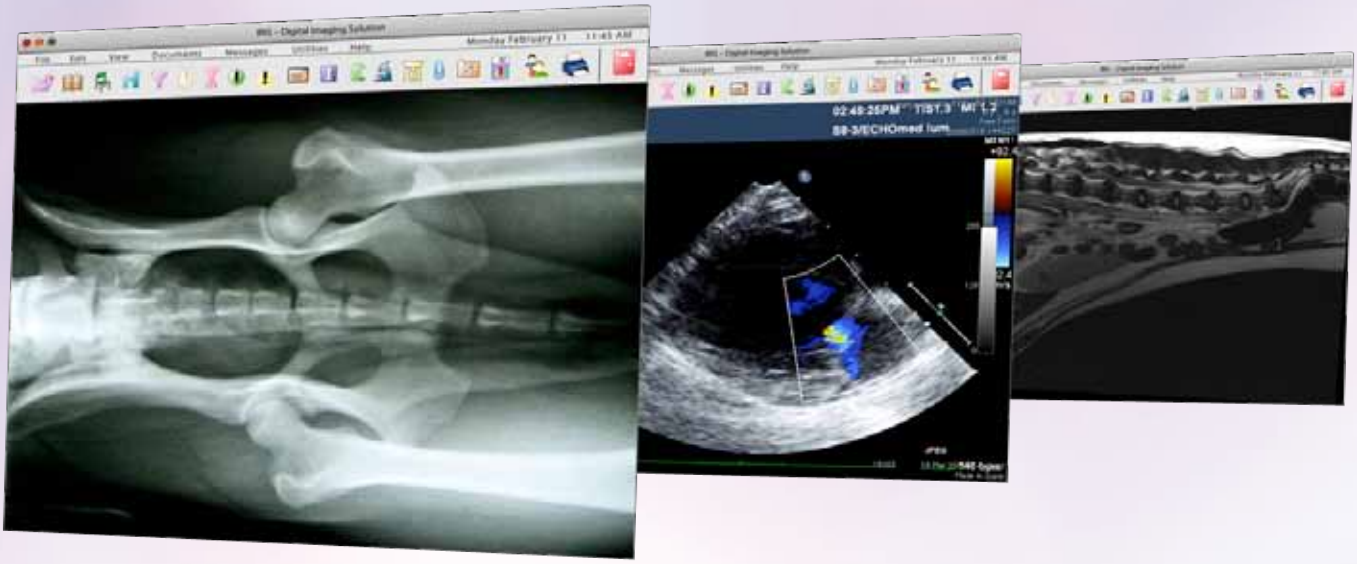

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Six-figure investment in 3D titanium veterinary implants

A six-figure investment will enable a company which makes 3D veterinary implants to roll out the product across the UK.

Fusion Implants was formed out of the University of Liverpool, by Dr Chris Sutcliffe and Dr Dan Jones from the School of Engineering, alongside Professor John Innes, Rob Pettitt and Ben Walton from the School of Veterinary Science. Their device, the Fusion TTA implant, is already being sold to veterinary practices in the North West. It will now be launched nationally after the company received backing from The North West Fund for Venture Capital, managed by Enterprise Ventures.

Rupture of the canine cranial cruciate ligament (CCL) remains the most common orthopaedic problem seen in veterinary practices around the world. The firm says insertion of the Fusion TTA implant following a cut to the tibia, changes the biomechanics of the knee joint.

The Fusion Implants team use 3D printing to make titanium implants which are covered by an extensive patent, and which have been optimised for osseointegration to form a natural bond with bone, improving performance.

Dr Jones, general manager, said: "The use of 3D printing gives greater design freedom than conventional manufacturing techniques and also allows us to combine solid and porous sections for optimum strength and biological performance. Our future plans include working closely with our veterinary surgeon customers to provide the next generation of animal implants. In particular we will be working on a range of hip implants to suit specific breeds."

Animal health and welfare body for Wales

Veterinary surgeons and farmers are to have their say as part of a new body which will shape the country's animal health and welfare strategy.

The Wales Animal Health and Welfare Framework Group will develop a new ten-year strategy with the aim of continuing to improve the welfare of kept animals and helping to protect public health.

Welsh chief veterinary officer Christianne Glossop said: "This new group will advise the Welsh Government on prevention, control and the eradication of animal disease to improve the national level of health and welfare of both livestock and companion animals in Wales.

"Disease outbreaks and the measures to control them can carry wide and costly consequences for public health, the economy and the environment, and achieving high standards of animal health and welfare is important to all of us."

Work starts on £45m veterinary school

Construction work has begun on a £45 million School of Veterinary Medicine at the University of Surrey.

The new school will be used both for the teaching of veterinary medicine, and for clinical research. It will see three new buildings at the university's Guildford campus, and is due to be completed by summer next year.

State-of-the-art research laboratories built to the highest levels of biosecurity, will feature within a 7,150sqm academic building with offices and flexible teaching space. There will also be a central atrium hosting a café, reception and administrative facilities.

High containment teaching and research labs will be included in a 2,500 sqm animal management centre.

Finally a 1,500sqm clinical skills building, will feature an animal examination area.

Architects have included sustainability features with naturally ventilated offices and teaching spaces, and an atrium roof shaped to guide rising air into the plant room for heat extraction.

Prof Lisa Roberts, executive dean of the Faculty of Health and Medical Sciences, said: "We are pleased to be partnering with BAM Construction to deliver this major project for the University of Surrey.

"The construction of this site will provide a state-of-the-art learning environment for the next generation of veterinarians, and world-class facilities that will benefit the entire university community."

Construction manager Anthony Nagle said: "We look forward to creating top-class facilities for students, teachers and clinicians and - just as importantly - to ensuring the project benefits the regional veterinary community by providing lifelong learning facilities, research and commercial opportunities to work with the university."

High-tech glasses enable surgeons to see cancer cells

Surgeons can see cancer cells more easily during surgery, thanks to high-tech glasses developed by Washington University scientists.

Cancer cells glow bright blue when viewed through the glasses, enabling surgeons to make sure no tumour cells are left behind, eliminating the need for repeat surgery and the cutting away of surrounding healthy tissue. The technology was developed by a research team lead by Dr Samuel Achilefu, professor of radiology and biomedical engineering at the university, and has been used during surgery at the Alvin J Siteman Cancer Centre at Barnes-Jewish Hospital.

Breast surgeon Julie Margenthaler, who performed the first operation using the glasses, said: "We're in the early stages of this technology, and more development and testing will be done, but we're certainly encouraged by the potential benefits to patients."

Dr Margenthaler said between 20 and 25 per cent of breast cancer patients who have lumps removed require a second operation as current technology does not adequately show the extent of the disease during the first surgery.

"Imagine what it would mean if these glasses eliminated the need for follow-up surgery and the associated pain, inconvenience and anxiety," she said.

According to a study published in the Journal of Biomedical Optics, tumours as small as 1mm in diameter could be detected using the glasses.

Dr Achilefu is now helping to develop a molecular agent to use with the glasses which will target cancer cells for longer. Approval for the agent is being sought from the Food and Drug Administration.

Ketamine to become Class B drug

Ketamine is to be become a Class B drug after a report highlighted evidence of serious physical and psychological harm where it is heavily and frequently misused.

Minister for crime prevention Norman Baker confirmed the move following a review by the Advisory Council on the Misuse of Drugs (ACMD).

In its first review of the drug since 2004, the council also recommended that ketamine be placed in Schedule II of the Misuse of Drugs Regulations 2001.

Ketamine is widely used as an anaesthetic and analgesic in veterinary medicine as well as in some areas of human medicine.

According to the ACMD, 120,000 individuals are estimated to have misused ketamine in 2012 to 2013.

The ACMD said there is new evidence of chronic toxicity to the bladder from ketamine misuse, resulting in numerous reports of individuals having to have their bladders removed.

In addition to this, for regular high-dose users the drug is believed to cause a range of psychological and physical problems, as well as significant toxicity to the urinary tract and kidneys.

A consultation will be held on the rescheduling of ketamine to determine the effect it will have on the veterinary and healthcare sectors.

In brief

The Animal Welfare Foundation (AWF) has produced a leaflet designed to offer sympathetic guidance to owners about euthanasia of their pet.

Chairman of the AWF Tiffany Hemming, said the leaflet had been produced to demystify what happens during euthanasia and what happens next.

"Saying goodbye – the ultimate kindness" is written by veterinary surgeons to help pet owners understand why euthanasia may be the most caring thing they can do for their pet and what choices they have.

"As vets we often see pet owners struggle with letting their pet go when really it can be the kindest thing for the animal to be put to sleep," Tiffany said.

"Guilt may be the strongest emotion owners feel when making this decision and we wanted to guide owners through this difficult time in a sensitive way and encourage them to ask questions and work with the vet to help them come to terms with the end of their pet's life."

A copy of the leaflet can be downloaded at www.bva-awf.org.uk/pet-care-advice

In this section

Nicky Ackerley

Nicky Ackerley, together with Helen Moyse and Steve Prout, runs the British Veterinary Nursing Association (BVNA) members advisory service.

This service is free to members of BVNA and is in its fourteenth year.

Nicky has worked in HR for over 25 years, following the completion of a BA (Hons) degree in Business Studies.

After a career with large organisations, Nicky established HR Support Consultancy in 1999, providing advice to individuals and businesses in Europe and the USA.

Nicky has six Gordon setters and is an active member of a number of dog-related clubs, including The Kennel Club, Gordon Setter Association, and Setter and Pointer Committee.

Declaration of interests: Nicky Ackerley works for the British Veterinary Nursing Association (BVNA) members advisory service.

SOCIAL MEDIA

Social media in the workplace

Social media has an important part to play in driving any business forward and employees will access social media for both business and personal use. However, this new means of communication can also ruin a company's good reputation and lead to the dismissal of staff. So, how should social media be properly managed?

Social media is interactive and allows people to instantly communicate with each other or to share information in a public forum. This does, however, blur the distinction between professional and personal life, and inappropriate comments made on social media sites can damage both a business' reputation and a person's career.

There are many types of social media, such as Facebook, Twitter, Pinterest, YouTube, Instagram, Flickr and blogs. It is a constantly changing environment and there are many more examples of social media than can be listed here.

A growing trend

More than 36 million adults in Britain (73 per cent of the adult population) access the internet every day – 20 million more than when records began in 2006.

Around 21 million households have internet access while access via mobile phones has doubled to 53 per cent. More than half of adults participate in social media and the figure for young adults (16 to 24-year-olds) is 93 per cent (Office for National Statistics, 2013).

Social media sites can benefit a business in a multitude of ways. It can assist a company in obtaining professional contacts, new business opportunities and development. It can also help when searching for new staff or advertising the products or services that a company has to offer.

Employees use social media sites via smartphones and computers while at work every day, which can be a great asset to an organisation.

Malicious Communications Act

It is an offence to send a message to another person that is indecent, grossly offensive, threatening or false under the Malicious Communications Act 1988. The act covers all forms of electronic communication, telecommunication and even a letter. It is illegal if the communciation is sent, delivered or transmitted, and there is no requirement for the message to reach the intended recipient. An employee should be aware that they lose the right to privacy once their comments are placed in a public forum and they should be mindful of their actions.

Employers should be clear about the positives and negatives of the use of social media and should

have a policy that includes statements about harassment and bullying.

Employer policies

While working within any organisation an employee should not:

- Use social media sites, mobile telephones or the internet in working hours for personal use, unless your employer gives you permission to do so
- Make any public comment that could damage the reputation of the business, its clients or your colleagues
- Disclose confidential company information

If an employee is found to be using a social media site inappropriately, whether it is under their own profile or that of the company's, they should be aware that their employer can take disciplinary action against them. If this is the case, employees should be treated fairly and consistently. The employer should then assist the employee in removing any derogatory comments that have been placed on any of their accounts.

Gross misconduct

The use of social media in the workplace, if inappropriate or without permission, may be deemed as gross misconduct and could lead to dismissal from the practice. More and more employees have access to computers at work and participate in social media activities, and if used incorrectly they may face disciplinary action being taken against them in any of the following categories:

- Vandalism of, or otherwise intentionally interfering with the practice's computers or computer/telephone network
- Posting derogatory, offensive, discriminatory or defamatory comments online about the practice, its employees, clients or customers or otherwise conducting themselves in a way that is detrimental to the practice or brings it into serious disrepute
- Breaches of copyright or any other proprietary interest belonging to the practice
- Using the practice's property to carry out work for third parties on a personal basis i.e. moonlighting

The BVNA members advisory service has received queries from veterinary practices and nurses alike on the strengths and perils of social networking. While it can aid publicity and recruiting, it can also lead to dismissal and poor publicity. It was not long ago a veterinary nurse criticised her practice on Facebook forgetting her manager and the owner were her "friends". She was subsequently dismissed for bringing the business into disrepute. Employees should remember they have a duty to protect and respect the employer in public. Making adverse comments and publicising them online could easily lead to disciplinary action.

Similarly, the case of a well-known airline's dismissal of a number of cabin crew for disparaging comments about customers and the company, and the recent spate of

drinking challenges making the rounds on Facebook – which could well see employees being dismissed – are further examples of inappropriate social media use. The cautionary note is not to advertise where you work or your chosen career on a social media website if you do not want the connection made between social activity and employment.

Employees should check their contracts and handbooks to see if they have a policy on social media and what it states. Employers meanwhile should ensure that they have a clear policy in place, and that it has been read and understood by all members of staff. ■

References

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Social media in your personal life

A company should recognise that many of its employees may make use of social media in a personal capacity while at work and while not acting on behalf of the organisation. Employees must be aware that they can damage a company's reputation if they are recognised as being part of that organisation.

It is natural for staff to want to discuss their careers on social media. An employee's online profile should not, however, contain the company's name.

If an employee does discuss their place of work on social media, they should include on their profile a statement along the following lines: "The views I express here are mine alone and do not necessarily reflect the views of the company".

Any communication that an employee makes in a professional capacity through social media must not:

- Bring the organisation into disrepute
- Breach confidentiality
- Breach copyright
- Fail to give acknowledgement where permission has been given to reproduce something
- Do anything that could be considered discriminatory against, or as bullying or harassment of any individual

Erica Dorling
PGCMS PGCE BSC(Hons)

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Vocational veterinary nurse training: Why, when and how?

It is difficult to underestimate the value of an experienced, qualified veterinary nursing team to the modern veterinary practice. Nurses have a central role in pulling together many aspects of the efficient functioning of the practice; from ensuring second-to-none care for patients to helping clients feel confident, informed and involved in the ongoing care of their animals.

Many practices aim to employ qualified and experienced veterinary nurses to join their teams, indeed the veterinary press is scattered with adverts seeking "an experienced RVN". There is a solid argument for employing ready-qualified nurses who know the job and can immediately take up the varied and complex responsibilities, *but* could practices who only seek ready-qualified nurses be missing a trick?

Home-grown nurses

The most valuable asset to a practice is arguably a nurse that knows the running of the practice inside and out; understands the "quirks" that make a practice unique; has developed a strong relationship with the client base and gels well with the rest of the practice team. All of these qualities are developed through spending time working within the practice itself and are not necessarily learnt working for another organisation who may have a very different working style.

Another highly prized quality in a member of the practice team is loyalty to the business, which poses the question: what breeds staff loyalty? Of course, there are a number of interrelated factors, but a feeling of being valued and of your employer having made an investment in you as a person is becoming increasingly prevalent. Loyalty is not simply developed through offering a competitive remuneration package; it is a process that takes time and mutual understanding. One of the ways in which staff develop an important connection and fierce loyalty to their place of work is if the practice has been instrumental in their training for their chosen career path, and in turn, training nurses from a grass roots level can pay the practice huge returns in the resulting team it creates.

Becoming a training practice

Nurse training, rather like a marriage, is not something to be entered into lightly or selfishly, but reverently and responsibly. Provision of good nurse training requires a great deal of time and effort on the part of the practice, and demands a commitment of both human and physical resources. Happily, in recent years there has been a far more enlightened approach adopted by many providers of nurse training to engaging with practices that seek to invest in their staff. Awarding bodies and providers alike have worked hard to ensure that while the qualifications written and administered are fit for purpose and result in excellent nurses, they are also reflective of the real world and as such are approachable for a diverse range of practices.

Of course, a practice needs to feel ready to take on the responsibility of nurse training and to feel that it is in a position from which the provision of training can be mutually beneficial for the organisation and for the students involved. Any queries or concerns need to be addressed early on to ensure that informed decisions can be made along the way.

Working with a training provider

All veterinary nurse training providers (by which the author seeks to include colleges and private training providers) have prescribed processes in place for working with a practice to provide nurse training. There are individual nuances and differing requirements depending on which provider the practice decides to use but, by and large, the points below are an indication of what to expect if you are a practice new to nurse training and/or if you decide to undertake supporting a student nurse.

The training provider will want to send a representative out to the practice to make an assessment of the facilities available and the type of case load to which the practice is involved. The following are areas that will be looked at during such a visit:

- **Existing staffing levels** – are these sufficient to allow a member (or members) of the team to have some of their time allocated to supporting a student? Typically, the practice will need to provide a minimum of three hours per week to teaching students, in order to support them with their development of practice skills. The practice will be required to provide either a Registered Veterinary Nurse (RVN) or veterinary surgeon (MRCVS) to act as a "clinical

Declaration of interests: Erica is centres co-ordinator at Central College of Animal Studies, providing veterinary nurse training programmes and managing student placements in practices.

TRAINING

coach" for each student – the role of this individual is to mentor the student and assist in the effective development of their clinical skills. It is the job of the training provider to train and support clinical coaches to allow them to carry out their mentoring role effectively

- **Physical resources** – does the practice have hospitalisation facilities for day and overnight cases, isolation facilities, laboratory facilities, diagnostic imaging equipment, surgical facilities, sterilisation equipment, anaesthesia facilities and dispensing facilities?
- **Practice caseload** – the training provider will want to feel confident that the throughput of cases in the practice is regular and varied enough to give the student experience across the whole syllabus. Training providers do understand that some practices are not involved in certain types of work and most are very open to the system of seconding students to other practices. An example of this might be that of students working in a referral practice who are unlikely to see routine surgical procedures carried out in first opinion practice. There are no rules to say that these students would not be able to adequately cover the syllabus by going to visit a practice elsewhere on a temporary basis. If these kind of arrangements need to be made then the training provider will highlight this in their visit report to the practice and will agree a workable solution
- **Practice recording systems** – the training provider will likely ask to see various documentation to ensure that the practice efficiently manages their environment for safety and patient care; for example, equipment maintenance records, health and safety policies and procedures, standard operating procedures, records of radiographic exposures and anaesthetic monitoring records. For the most part, the documentation requested is also required by other bodies likely to be monitoring the practice for other aspects of its work

Practices are unlikely to be perfect and training providers do not expect to walk in on their first visit to find everything in place, especially not in the case of practices that are new to nurse training. The relationship that training providers have with practices ought to be a collaborative and supportive one, where the training provider helps the practice to develop the evidence of its working practices if required. Practices should expect training providers to communicate effectively with them about the progress of their students. Training providers should also involve the practice with the planning of training by engaging with them about what is being taught in the classroom and when; this allows the practice to time the training of practical skills with the delivery of the underpinning theory that is occurring in the classroom.

Managing expectations

As students begin their training and the practice becomes fully involved in student development what can they expect? A tricky question to answer! All students are individuals and therefore come with their own unique set of circumstances. Some students will seem to breeze through their programme of training and need limited help and support in the development of clinical and academic skills. However, others will need more time and nurturing to ensure that they complete their training and become confident, skilled nurses.

If practices agree to take a "placement" student from a training provider, they need to feel confident that the student will fit in with their organisation. The training provider has a responsibility to ensure that they find a good fit for a practice willing to take on a trainee. It is vital that both the practice and the student are happy; any other situation is not conducive to harmony and can seriously jeopardise the chances of a student completing their training successfully and of the practice continuing to be involved with nurse training.

Some practices may prefer to select their own students and carry out the recruitment process themselves before contacting their chosen provider. When this is the case, it is useful for the practice to be aware of the academic entry requirements for the training programme(s) so as to ensure that selected candidates are eligible to begin the professional training. Although awarding bodies set the minimum entry requirements for their programmes, it is up to training providers to set the absolute entry requirements for their courses so a practice may find some variation nationally with regards to the number of GCSE passes required or what constitutes a suitable alternative entry qualification. It is therefore worth seeking advice on this from the provider with which the practice is looking to engage.

What else do practices need to be aware of?

- The training provider will make scheduled visits to the practice to oversee the quality of the clinical training provided, and to help and guide the practice in developing this if required
- The professional regulator of veterinary nursing, the Royal College of Veterinary Surgeons (RCVS), can make visits to any veterinary practices that are registered as centres for nurse training with either of the two awarding bodies that provide the Level 3 Diploma in Veterinary Nursing in the UK. Their visits are to check that the practice's facilities (outlined earlier in this article) are sufficient
- There might be a number of areas where training providers charge for the provision of their services – these vary from provider to provider, so research by the practice is required to ensure that you get the deal that best suits you

Summary

Although there is a raft of considerations to make before embarking on nurse training, practices should not be daunted by the prospect. Indeed, a forward thinking training provider can make the whole process enjoyable, resulting in great benefits to the long term health of the practice. ■

Workplace pensions: Are you prepared?

By now you should have heard about Automatic Enrolment (AE). This article is aimed at every veterinary employer. It should assist you in planning, implementing and complying with the new legislation, which will affect most practices during the next two years.

David Hodgetts

David Hodgetts is a partner at Professional Practice Services (PPS). He established the firm of corporate chartered financial planners in 1997 having previously had 10 years veterinary advisor experience with another company. PPS only provides advice to the veterinary profession and now represents more than 2,500 veterinary practices across the UK.

Paul Jackson

Paul Jackson joined PPS in 1999 having specialised in advising veterinary assistants for the previous five years. Paul became a full equity partner in 2002. Collectively the partners have in excess of 45 years combined veterinary advisory expertise.

Declaration of interests: David Hodgetts and Paul Jackson are partners in The PPS Group, an organisation specialising in financial services.

In simple terms, the Government cannot afford to support us as we move into our retirement years. The cost of providing pensions, coupled with the significant increase in life expectancy, has far exceeded the affordability stage.

Extended state retirement age

The state retirement age has risen from 60 for females and 65 for males, to 68 for everyone and this is planned to be increased further to age 70 in order to reduce the financial burden. In an effort to address this, the Government at the time introduced stakeholder pensions in 2001. The hope was that this would encourage workers to approach their employers asking to join the scheme. This did not happen and stakeholder pensions failed. The Government concluded that it failed because a) it was voluntary and b) there was no compulsory employer contribution.

There has been a history of pension reform failings over the past 25 years. Graduated state pension schemes (1961-1975) were replaced with State Earnings Related Pensions (SERPS) in 1978. These were subsequently withdrawn and replaced with State Second Pensions (S2P) in 2002 by the then Labour Government. In April 2012, this was also abolished. All of this pension reform confirms that the state can no longer afford to provide earnings-related benefits in retirement.

> "We strongly advise all practices to consider bringing their staging date forward by at least six months in order to ensure that the scheme is running efficiently by the required legal timescale"

With the advances in medical science over the past two generations, the percentage of over 85s in the country has increased exponentially, as has the cost of providing state benefits. While the current administration has introduced an increased flat rate pension of £144 per week from April 2016 in an attempt to address this issue, there is no doubt that the longer-term problem is that of an increasingly elderly population requiring state benefits juxtaposed with reducing receipts from National Insurance contributions from the working population as a whole. In simple terms, there is more money going out than is being paid in. This is not viable and action has had to be taken.

To address this financial black hole, compulsory workplace pensions have been introduced. They are now coming into effect, with the "staging date" (**Box 1**) depending on your number of employees. Your staging date is linked to your PAYE reference number and you can check online to find out when you must have your scheme established. You can find out your staging date by visiting www.thepensionsregulator.gov.uk and entering your PAYE reference number.

How do I prepare my practice?

Without doubt, you should start early to manage the pressure. Veterinary practices do not have a HR department. Typically, this responsibility will fall on the practice manager or the managing partner. You therefore need to address the issues that will impact on you personally.

We strongly advise all practices to consider bringing their staging date forward by at least six months in order to ensure that the scheme is running efficiently by the required legal timescale.

You also need to manage the pressure on payroll and HR systems already in place. This will involve understanding

Box 1. Key staging dates

Number of employees	Date
90-159	May 1, 2014
62-89	July 1, 2014
58-61	Aug 1, 2014 – Jan 1, 2015
54-57	Apr 1, 2015
50-53	May 1, 2015
40-49	Aug 1, 2015
30-39	Oct 1, 2015
Less than 30	June 1, 2015 – Apr 1, 2017
New employers	May 1, 2017 – Feb 1, 2019

Box 2. Contribution levels

Staging date	Minimum ER contribution	E/ee contribution
Up to Sept 30, 2017	1%	1%
Oct 1, 2017 to Sept 30, 2018	2%	3%
Oct 1, 2018 onward	3%	5%

the costs, risks attached and whatever resource and change requirements you may have.

Legislative requirements

As the employer you will become legally responsible for pension contributions, collection and payment. Fines of up to £2,500 per day can be levied against the employer for repeated non-compliance. It is very important to get it right by your staging date – so plan early.

Communicate change to your staff

You must have a plan in place to meet your initial and ongoing obligations to your employees. The minimum contributions are detailed in **Box 2**, but be aware that the actual amount may be higher and is dependent upon how you calculate pensionable earnings. You may also elect to pay more, as can an employee.

Pensionable earnings include the following:

- Basic salary
- Commission
- Bonus
- Overtime
- Statutory sick pay
- Statutory maternity/ paternity pay
- Statutory adoption pay

Your obligation

From your staging date you will have to automatically enrol all eligible employees. You must also write to all staff to tell them what AE means to them.

Who in my practice is eligible to join?

We have produced a grid (**Table 1**) for simple guidance; qualifying earnings and the associated bands are correct up to April 5, 2014 and will be subject to annual reviews by the pensions regulator.

How do I prepare?

Our concern here is the effect of "triggers" within the scheme. A trigger is a change requiring you to provide information at a specific point in time. This could be:

- When an employee reaches age 22 and must be auto-enrolled
- When an employees variable income takes their total remuneration above £787 per month
- Where an opted-out member must be automatically re-enrolled at a set date in the future

These triggers, if not acted upon in a timely manner, could result in a breach of the rules, resulting in a fine for non-compliance. We believe that it is crucial to have bespoke software in place that not only flags the need to take action but additionally produces the required documentation to hand to the employee at the right time.

Action plan

1. Identify your staging date
2. Decide on a scheme owner within your practice
3. Fully understand the data you are required to hold and maintain
4. Fully assess your employees for eligibility
5. Identify a qualifying pension scheme
6. Enrol your employees
7. Provide communication
8. Register your scheme
9. Continually re-assess employees and your ongoing responsibility
10. Continually engage with staff

You may already have a plan to deal with AE or you may not have started yet. Whatever stage you may be at, the benefits of starting early include:

- Cost control – by knowing the cost you can plan a budget
- Risk management – the risk of errors/fines are reduced
- Engagement – planning early means more time to involve staff
- Peace of mind – planning early means less to worry about

This article is for information only and must *not* be considered as financial advice. We always recommend that you seek independent financial advice before making any financial decisions. ■

Table 1. Who in my practice is eligible to join?

Employee	Category	Action required
Already in the scheme on a qualifying basis (paying at least minimum contributions)	Existing member	No joining action needed
All other employees earning at least £787 per month (£182 per week) and between age 22 and State Pension Age (SPA)	Eligible joiner	Employer must automatically enrol these into a Qualifying Workplace Pension Scheme
Earning between £473 and £787 per month (£109-£182 per week) and age 16 to SPA	Non-eligible jobholder	Not eligible for AE but can choose to join and receive employer contributions
Earning less than £473 per month (£109 per week) and age 16 to SPA	Entitled workers	Are "entitled" to join a pension scheme but employer is not obliged to contribute

Rob Tillyard

Rob has more than 24 years of programming experience and is head of software development at AT Veterinary Systems. He has worked with all major operating systems and has spent more than 20 years designing, writing and supporting veterinary software.

A check list for choosing the right PACS

Maintaining accurate and accessible patient records is an essential component of every veterinary surgery. It is also good practice to maintain laboratory records, referral letters and diagnostic images for the entire life of the animal concerned and beyond if necessary. It is universally accepted that the best method for digital x-rays, CT and MRI studies is within a comprehensive Picture Archiving and Communication System (PACS). As practices continue to move to and upgrade their digital imaging systems, the issue of storage and retrieval of data is becoming more important. Not all PACS are the same, and there are some important elements to bear in mind when choosing to invest.

Why can't I just use manual backups to a disk?

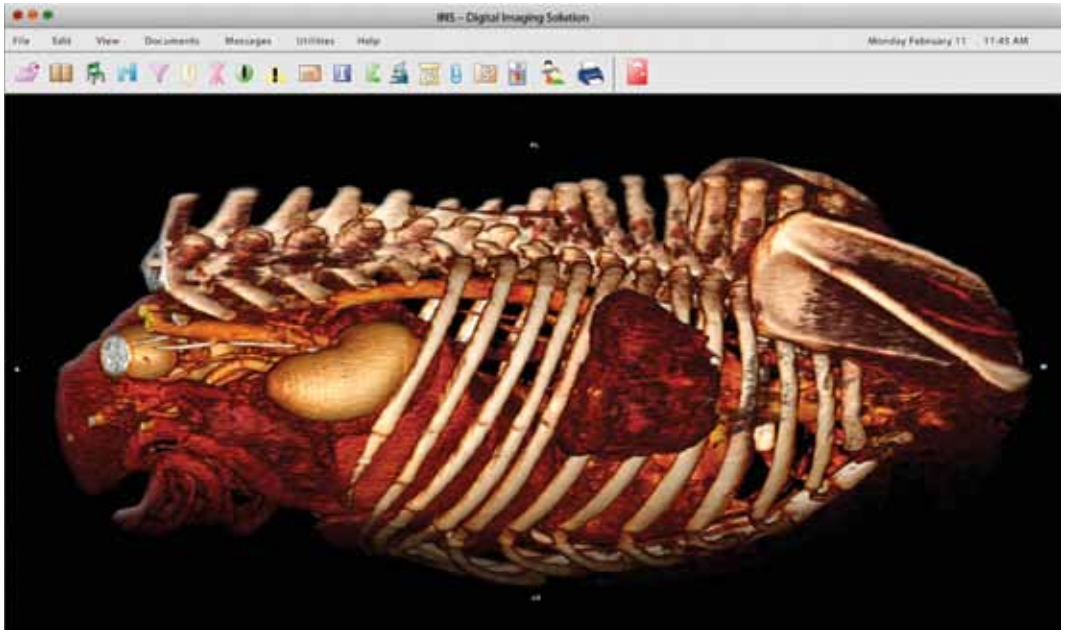
Purchasing a series of large capacity drives and manually archiving images studies to these, is perfectly acceptable. It does, however, take up a lot of time and can be prone to human error. It is also extremely time consuming to find and retrieve all studies.

PACS were designed to make the process quick, easy to use and robust. They date back to the early 1980s when Dr Harold Glass, a medical physicist, secured UK Government funding to transform Hammersmith Hospital into the first filmless hospital in the UK. Having taken off in the medical profession, PACS has since been introduced to the veterinary industry.

How will PACS help my practice and what is the financial return?

As well as complying with essential data storage requirements, some veterinary PACS solutions go the extra step of integrating with the patient records and providing multi-user access from a number of locations on the practice network. You are also able to pull up on screen any x-ray or scan relating to that pet from the previous period to enable a direct comparison or a visual study of a condition over time. Consequently, better and easier diagnostic comparisons can be made and the visual experience for the client enhanced. With a calibrated screen, accurate measurements can also be made. While it is difficult to put a price on the benefits of a high quality client experience, this professional approach is much appreciated by clients.

With a PACS everything is stored in and retrievable from a single, central place. Digital storage removes the demand on practice staffs' time; there is no need to go hunting for an x-ray or a scan, no rooting through an index or alternative system to find where a piece – or several pieces – of imagery have been filed and no laboured trawl through manual files. Ultimately your surgery is running more efficiently, as any file can be accessed from any computer in your practice. Imagine how many hours your staff spend over the course of a month



Declaration of interests: Robert Tillyard is head of programming at AT Veterinary Systems. He is one of the programming team that pioneered and developed the IRIS veterinary PACS solution. AT Veterinary Systems is a supplier of practice management systems and PACS solutions.

TECHNOLOGY

searching out hard copy images in your manual files and how you could put their time to better use. A PACS will therefore give more time to veterinary surgeons and nurses to allow them to do what they do best – caring for and treating animals.

Moving to digital imaging and having a centralised PACS will also free up the physical space currently occupied by hard copy file storage. This space can, in turn, be redeployed for the further benefit of client experience and patient care. Importantly PACS also ensures that a backup of your data can be taken off site, which will protect the practice in the event of fire or flooding.

A PACS solution for your practice

As well as your imaging equipment, your PACS solution should also be fully Digital Imaging and Communications in Medicine (DICOM) compliant.

DICOM is the universally recognised file format used for picture/imaging archiving systems. It enables the integration of workstations, servers, and hardware such as scanners and printers – all from multiple manufacturers – into one PACS, while also remaining accessible on removable media. With DICOM files a patient's ID is embedded in the file – in a similar way as JPEG photographic images include tags – preventing the information from being separated from the digital image by mistake.

It should go without saying that your PACS solution should be sized to match your anticipated caseload. You may wish to consider initially having enough storage for say at least three years worth of data and expanding your system at a later stage. Your PACS supplier will be able to advise you, but bear in mind that generally speaking going digital increases the number of images that are taken and stored.

It is worth bearing in mind that a PACS offering 1TB to 5TB is the equivalent of seven years' worth of storage for the average practice.

It is additionally important that your PACS is backed up and these copies are taken off site. In case of flooding, theft or fire, your practice will be able to retrieve patient records, thereby allowing your surgery to continue to function, and minimising disruption to your clients.

Some PACS providers offer a fully integrated system, which allows MRI scans, CT scans, x-rays and ultrasound images to be accessed via a centralised server by multiple users, from multiple terminals, at multiple practices, while working alongside your existing practice management system. This ease of access to patient files is a further benefit to your clients; following an x-ray a client is not required to visit the main surgery to see and discuss the results; rather, they can visit their usual (and nearest) surgery where the images will be readily available for them to view from the consulting room. It is also recommended to opt for a PACS that allows remote access – this will provide veterinary surgeons with a method of retrieving x-rays and scan results along with the rest of their patient's records from their laptops or other web-enabled devices, when on site visits to farms or livery yards. An integrated PACS with remote access therefore provides an added service and convenience to current clients, as well as a means to attract new customers to your business.

PACS that incorporate 3D imaging software can aid in a client's understanding of their pet's condition. A simple click of the mouse allows you to convert a 2D image of a MRI/CT scan into a 3D model, which is particularly useful when explaining a condition to an anxious pet owner. Similarly, some PACS software even allows you to strip away elements of the image, such as bone on an MRI scan, so you can view and explain the area of concern relating to the animal in more detail.

A 3D printing service is now available from certain providers. The innovative new service, launched at London Vet Show in November 2013, allows digital images to be turned into a 3D model for use in diagnostics. Practices simply send DICOM files to a manufacturer who then produces replica models so all surgical components can be fitted with precision and surgery time reduced. Finally, when considering your PACS supplier, it is important to be aware of file sizes and speeds. Having a PACS solution in your practice is much faster than using remote or cloud based systems. A typical DICOM file can move around a practice network at more than 500 times the speed of a typical internet connection. If you are lucky enough to have superfast internet connections and are considering cloud storage systems, then ensure you evaluate the upload and download speeds.

The future of PACS

There are software developments likely to come onto the veterinary PACS market by the end of the year that are designed to improve patient record keeping by reducing the possibilities for human error. For example, when an x-ray is ordered, the patient's demographics will appear on screen for the radiographer to simply select, and once taken, the x-ray is automatically added to that animal's file. This automation of updating patients' files reduces the risk of error associated with manually entering patient data into an x-ray machine. In turn, this process will offer increased stability of performance and client retention. ■

Peter Done

Peter and his brother decided to set up Peninsula in 1983 after paying more than £8,000 in legal fees in an unsuccessful employment tribunal. They saw an opportunity to help other businesses reduce the stress, expense and time spent trying to stay on top of employment and health and safety law. Peninsula is the leading employment law consultancy in the UK, with more than 900 staff who protect and support more than 27,000 clients nationwide.

Good practice for employing staff and not falling foul of the law

With fines set to double in 2014, it is important to ensure that the people you employ are who they say they are. Checks on work permits and compliance with RCVS rules as well as UK regulations need to be made by a practice before taking on new staff. So, what are the necessary questions when taking on new staff in a veterinary practice and where should employers go to confirm that the information supplied by the candidate is correct?

Making sure you have chosen the correct candidate for the vacant position in your practice can be a difficult task. Once you have interviewed, you will find yourself asking questions like: "Will they fit in?" or "Do they have the same forward thinking vision for the practice as me?"

Getting the right kind of person for your practice involves these types of questions, but you shouldn't forget the legal obligations you have during the recruitment process – the other type of questions you should be asking yourself. This is to ensure that you do not breach various pieces of law relating to employment and access to work.

There are several considerations for practices with regard to pre-employment checks. Hefty fines are in place for those practices who do not comply with legal requirements. Similiarly, failure to carry out other checks, though not resulting in a financial penalty, can be detrimental to the practice leading to extra time, effort and money being spent when the exercise has to be repeated because the right person was not identified the first time around.

Immigration law

The law on immigration places an onus on employers to make certain checks on an individual to satisfy themselves that they have the right to work in the UK. It should not be taken for granted that because an individual is in the UK they have the right to work here. Employers will be in breach of the legislation if they employ those who are subject to immigration control and have no entitlement to live and work in the UK.

It is essential that, in ensuring compliance with the legislation, employers do not discriminate against people because of their race, colour, or ethnic or national origin. The same checking procedures should be applied equally to all.

Individuals must be able to provide documentation to prove their entitlement to work in the UK. The UK Border Agency (UKBA) has issued a list of documents that are acceptable as evidence of eligibility. Some documents may be accepted alone, such as a passport showing that the holder is a British citizen, and

Declaration of interests: Peter Done is managing director of Peninsula, a leading employment law consultancy.

STAFF CREDENTIALS

some must be accompanied by another document. A P45, for example, is only permissible as evidence when accompanied by a full birth certificate issued in the UK that includes the name(s) of at least one of the holder's parents. Additionally, depending on the document provided by the individual, future checks may need to be carried out to ensure continuing eligibility.

UKBA expects that employers take "reasonable steps" to satisfy themselves that the documents produced are valid, which includes ensuring that any photograph on a document provided is that of the individual. Fines can reach £10,000 when an employer has not made the checks required and employs an illegal worker. During 2014, fines for non-compliance will double.

Criminal records

Where necessary, a criminal record check must also be carried out. This checking system is in place to help employers make safer recruitment decisions with regard to criminal convictions and to ensure the individual employed is suitable for carrying out the type of work. Not all positions in a veterinary practice will be subject to this kind of check as it is generally restricted to veterinary surgeons only. The check is carried out by the Disclosure and Barring Service (DBS, formerly known as the Criminal Records Bureau) and must be applied for by the practice itself, not the individual. The practice will need to ask the individual to see the certificate.

DBS checks have been portable since summer 2013, which means that it may not be necessary to apply for a new check in full when an individual changes employment. The DBS update service allows an employer to make an online check using the individual's reference number to ascertain whether any new information has been added to the individual's last full check. This is only available where the individual themselves has signed up for the update service. DBS checks should only be carried out on successful job applicants. A job offer can be withdrawn where the results show anything that would make the individual unsuitable.

RCVS registration

Checks should also be made to ensure a veterinary surgeon or nurse is registered with the RCVS. It is a prerequisite for these roles that the individual is registered, and furthermore, that a veterinary surgeon is registered as UK practising. It is possible to check the individual's registration number on the RCVS website at www.rcvs.org.uk/registration/check-the-register-list

> "Fines can reach £10,000 when an employer has not made the checks required and employs an illegal worker. During 2014, fines for non-compliance will double"

Proof of qualifications

On a similar note, an individual applying for a veterinary surgeon role should also be able to produce evidence of his/her veterinary science/medicine qualifications. It is best practice to ask the individual to bring evidence of this for you to see in order that you can satisfy yourself that the individual does hold these qualifications. This should be done for all staff where any kind of qualification is required in order to carry out the role.

Although the required checks will inform you that the individual is legally permitted to carry out the work in question, they do not provide any kind of insight into whether that individual is the right person to carry out the role in your practice, according to your specific needs. Application forms and cover letters will allow you to learn a little more about the person themselves, as will the formal interview process.

References

It is helpful when attempting to gain an all-round view of an individual, to get an external opinion. You can not only use this perspective to corroborate what the individual has already told you, but also to learn about how the individual actually fares in a workplace environment from those who have first-hand experience. Past behaviour can be one of the best indicators of future behaviour and therefore seeking references for a potential new recruit can be invaluable.

The individual must provide permission for you to contact their previous employers, and is usually the one to provide the contact details. Many employers prefer to simply confirm basic employment details, such as start and finish dates, job position and salary, when providing a reference. Some may provide details of particular tasks undertaken or projects worked on, which will give you an idea of workplace experience, and some will be much more detailed, giving descriptive opinion on the performance of the individual. Even where scant information is provided, the reference will still confirm to you that the employment was undertaken and for how long.

References can also help you gain an insight into whether the individual possesses characteristics that are desirable for the role in question – for example, whether they have a good ability to communicate or have strong organisational skills. It is possible to make a job offer conditional on receipt of satisfactory references; however, any decision to withdraw an offer as a result of information provided in the reference should be made carefully and preferably with legal advice.

You should exercise care when asking for information on an individual's health or absence record in a reference request to a previous employer, unless your reason for asking falls into one of the exceptions under the Equality Act 2010. Needless questions on this topic may leave you open to a claim of disability discrimination, even when asked inadvertently.

Social media

Employers are now beginning to widen their information sources for obtaining a perspective on a potential new recruit, by using social media. Checking profiles on Facebook, Twitter or LinkedIn can allow you to delve deeper into the life of the individual in question and help you form an impression. However, while it is not unlawful to make these checks, it may be easy for employers to form a misguided opinion on someone who may actually make a perfect addition to the team, based on informal remarks made on a forum that were not intended by the individual to be used in a recruitment process.

As discussed, some pre-employment checks are required by law and should not be compromised. Others, while not obligatory, make for a wise, informed choice on your new team member, who will hopefully become an integral part of your practice. ■

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Industry Insights

Your name: Simon Masding
Position: Head of sales and partnerships
Company: Petplan
Number of UK pets insured by Petplan: 850,000

Your role As a company, Petplan's stated goals are to ensure we keep more pets healthy and more pet owners happy – put simply, to provide the best insurance product cover for pets and deliver the best grade of service to our clients. As head of sales and partnerships, my role is to ensure that we deliver the Petplan goals in our key partner businesses in a way that inspires them to work in long term relationships with Petplan. We work with our intermediary partners (veterinary practices, charities, microchippers, retailers) globally from head office to site level, providing insurance support, and sales and marketing activities.

Biography Having worked in corporate sales and marketing roles for over 30 years spanning companies such as Kraft, Mars, Sara Lee and CPM, I joined Allianz in 2010 in my first venture into financial services. The worlds of fast-moving consumer goods and insurance have more synergies than one might expect with the behaviours and characteristics of our brands' partners being closely aligned. Outside of work, I enjoy all outdoor pastimes and I am a director of Cheltenham Town Football Club.

What are your predictions for the year 2014?
With household budgets continuing to feel the squeeze, paying a set amount each month for pet insurance – as opposed to running the risk of receiving a large unexpected veterinary bill – will continue to appeal to pet owners.

The pressure on independent veterinary practices will increase as corporate firms continue to increase their market share. Successful surgeries will put the pet owner at the centre of their business, increase local marketing activity and learn to effectively use social media to maintain their client base and drive recommendations to attract new business.

It is possible that further fragmentation of the current veterinary business model will occur with the increase of internet pharmacies, substitute medicines and constant changes to legislation. The opening up of the market to supermarkets, pet sitters and groomers, who will strengthen their engagement with the pet owner and offer more services, will add to this fragmentation.

What are the biggest challenges facing your industry sector?
One of the main challenges within the pet insurance industry remains consumer awareness about the different types of pet insurance and the importance of not just shopping around on price alone. Many insurers position their products based on price rather than cover. Increased use of aggregator sites for

> "Statistically people are more likely to claim on their pet than their home or motor policy"

research further encourages pet owners to look for a policy based on price.

What steps are being taken to address these?
We work closely with veterinary practices to help inform pet owners of the importance of choosing a policy based on the cover it provides for the long term health of the pet, and of the company's reputation for paying claims quickly without quibble. We provide training and a range of support tools to make it as easy as possible for practices to build this message into their day-to-day interactions with clients.

What has been the highlight for Petplan this past year?
We had a fantastic year in 2013. We refreshed our brand identity and launched our new TV advert, which was well received with over 30,000 people sending photos of their pets to appear in the next advert. We received a record number of nominations for our veterinary awards, with over 11,000 people taking the time to tell us why they felt their practice or someone in the team deserved to win. Most importantly, we continued to deliver high level service, paying out over £3millon in claims every week and 90 per cent of claims within five working days.

What do you consider the biggest successes in terms of animal health and welfare this past year?
The announcement of the new Dangerous Dogs Amendment Bill 2013, microchipping legislation and the pet advertising advisory guidelines are all important stepping stones in raising awareness of animal health and welfare. The ongoing research into evidence based veterinary medicine is also important in helping the profession find more effective and consistent results-based care that helps maintain healthier pets and happy owners. Petplan has for many years been an active participant and supporter of numerous groups and associations involved in animal health and welfare. These include the Association of Dog and Cat Homes (ADCH), the Association of Charity Vets, the Veterinary Medicines Directorate and Defra. We also saw in 2013 the very successful start of the annual Petplan and ADCH Animal Charity Awards, designed to recognise hard work and dedication within the animal welfare sector.

Do you believe the current model of veterinary practices splitting fees between services and products is successful and/or sustainable?
Although we work closely with over 4,300 veterinary practices across the UK, we do not believe it is the role of the insurer to tell veterinary practices how to run their businesses. Different groups and practices price their products and services in different ways depending on many factors, and should continue to manage their own businesses how they see fit to offer a consistent, sustainable service to their clients.

Is it right that veterinary practices rely so heavily on product sales to keep them in business?
In recent years practices have seen new financial pressures that in some cases have required the development of new business

models and a greater understanding of which products and services add the most value for them. We know from feedback from our veterinary partners that increasing the number of insured clients in practice can help increase practice cash flow and reduce time spent chasing bad debtors, in turn reducing reliance on having to 'sell' other products.

Is it your opinion that companion animal behaviour issues are on the increase? What might be the reason?
Petplan continues to provide clients with financial help for behavioural treatment recommended by a veterinary practice, and in our experience do not believe that behavioural issues are significantly increasing, although there is now greater awareness of the help available to pet owners.

"Pet insurance is there to cover the cost of unexpected treatment, which can run into hundreds or sometimes even thousands of pounds. In our experience, one in three pets require unexpected veterinary treatment each year"

How does your company support the veterinary profession?
Petplan has worked closely with the veterinary profession for over 36 years. In addition to providing quality insurance to help veterinary practices undertake the required treatment to improve the health of pets, we provide support for the profession in a variety of ways.

Our team of regional account executives visit practices daily across the UK to provide face-to-face support and training. We also work closely with the veterinary associations, and invest in and attend many industry events. Our veterinary awards are now in their fifteenth year and continue to be seen as one of the highlights in the veterinary calendar, creating an opportunity to celebrate success within the profession, and inspire and thank hard working practice teams.

What do you think is the public's perception of the products and services offered by veterinary practices?
We know from the feedback we receive from our customers and the thousands of nominations we receive each year for the veterinary awards that the public hold the work of veterinary practices in very high esteem. Many pet owners do not realise how much veterinary treatment costs and have no idea how many common conditions require ongoing treatment. So they are often surprised by how quickly veterinary costs can mount up. This is where Petplan can help practices so that clients are not left feeling veterinary products and services are "unaffordable".

What do you think of coverage of pet insurance in main stream news recently?
Much of the recent pet insurance coverage has highlighted the issues that some insurers have had in offering customers a good pet insurance experience. It has helped raise awareness of the need to choose an experienced pet insurance provider. Statistically people are more likely to claim on their pet than their home or motor policy, so it is essential that insurers price pet insurance products fairly to ensure a consistent experience for the long term health of the pet. Cheap introductory offers are not usually sustainable and, as has been seen in the press, often lead to drastic hikes in premiums or excesses – and in extreme cases can even result in insurers withdrawing from the market when the cost of claims exceed premiums.

What are your views on "non life-stage" insurance policies?
Lifetime policies offer the most comprehensive cover for the pet and the best value for clients over the life of their animal. There are now hundreds of different pet insurance products available, so it is important that clients understand not all pet insurance is the same and they need to choose their policy carefully. If clients make a conscious decision to choose a cheaper policy, which will only cover their pet for 12 months or up to a certain amount per condition, then of course that is their decision, but the danger is many clients may buy a cheaper policy just because the premium is lower and not realise that the cover for their pet is significantly less than on other products available.

What are your views on practice health plans?
Practice health plans have become increasingly popular in the last couple of years with many practices now encouraging clients to spread the cost of their routine treatment and rewarding their loyalty with additional discounts. Petplan has been working closely with practices to help them promote health plans alongside pet insurance as the complete care package. Health plans help the client with routine treatment and pet insurance is there to cover the cost of unexpected treatment, which can run into hundreds or sometimes even thousands of pounds. In our experience, one in three pets require unexpected veterinary treatment each year, so it is essential that clients understand the difference between the two products and do not choose a health plan instead of pet insurance. ■

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