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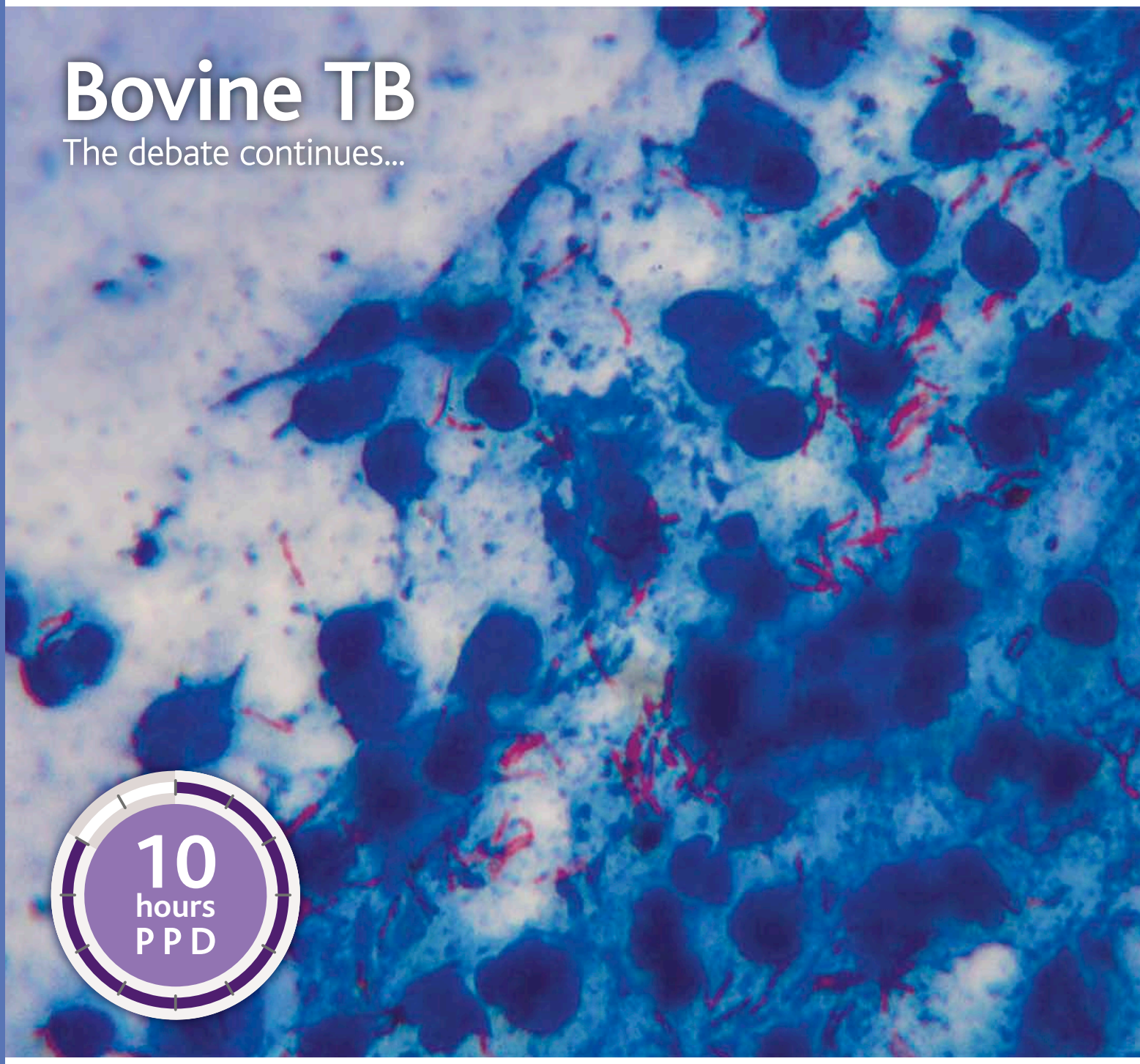
Veterinary PracticeToday

THE JOURNAL FOR PERSONAL & PROFESSIONAL DEVELOPMENT



Tortoise hibernation
Advice for a critical time

Equine neonatology
Common diseases of neonatal foals

Canine atopic dermatitis
Pathogenesis and target management plans

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Finding the people to make your business succeed

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UP FRONT...

As a zoologist I care about all animals and it's hard to come to terms with the culling of badgers that has recently begun again. It's just as hard to consider the thousands of cattle that have been slaughtered as reactors to TB testing.

Everyone has an opinion on this issue and it's sometimes difficult to think clearly about the issues because of the emotions involved, including the fact that the badger is used as the symbol for the Wildlife Trust. This is why I hope that our comment article, written by Robert Broadbent, will help to give you as many sides of the argument as possible and provide food for considered thought.

It is rather ironic that as we have this debate we are also further exploring the link between liver fluke in cattle and TB testing. This issue is discussed in our large animal insight article on page 49.

We live in frightening times in terms of the spread of infection, with the big issue of the moment being the Ebola crisis. Infection control in whatever environment – large or small – is now an integral part of our lives and nurses have a vital role in practice when it comes to minimising the spread of infection and disease. I think that all the nurses among you, as well as the veterinary surgeons, will appreciate Victoria Bowes' very comprehensive and readable article addressing this subject and giving sound practical advice on putting infection control into practice.

My particular interest is in the management of veterinary practices and I would draw your attention to the excellent article by Mark Hedberg on developing talent within your practice. It's something we need to address. As a profession, we have been slow to recognise talent and empower employees. This is by no means an easy thing to do and we have all been bitten when attempting it, but it is the way forward and in the current economic climate we ignore this area of management at our peril.

As a PPD journal we are committed to providing you with first class articles, but we also want to make you think around your subject and to generate debate; so we welcome your comments on our leading articles and on the insights we provide at the end of each subject section of the journal.

VPT has increased in size to 68 pages, to a large extent because of the increasing number of quality PPD articles we are receiving from authors of all veterinary disciplines. We always welcome submissions and suggestion for articles. The even better news is that from January 2015 we will be publishing VPT six times per year and continue to fill it with clinical, nursing and management articles for all the practice professionals.

Maggie Shilcock
Editor

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join the conversation

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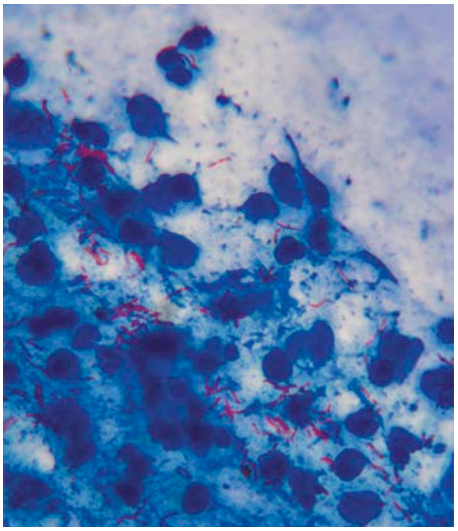

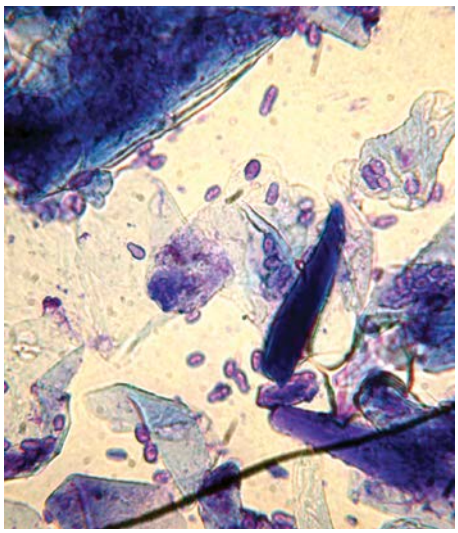

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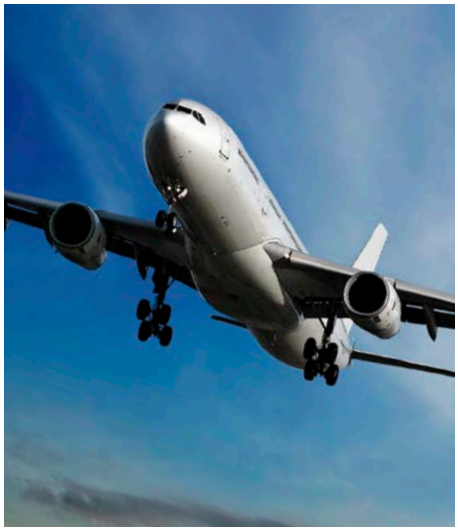

Management

Industry

Featured contributors

Mark Hedberg
DrMedVet MRCVS

Mark began his career in a small animal/exotic veterinary hospital in Jeddah. He then spent two years in mixed practice in Dover. He currently runs a CPD programme for the College of Animal Welfare, and completed a Certificate in Leadership and Management in 2014. He has written extensively on new and recent graduate support and personal development, and has given presentations at the BSAVA, LVS and NAVC conferences.

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Laura graduated from the RVC in 2003. After six years in general practice she achieved her RCVS Certificate in Veterinary Dermatology. She completed a three-year residency in veterinary dermatology at the University of Liverpool in 2012 and returned in 2014 as lecturer in veterinary dermatology and clinical skills, Laura's clinical interests include canine and feline allergic skin disease, antimicrobial resistance and chronic otitis.

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After an internship and a large animal internal medicine residency in the USA, Bettina attained her PhD from the University of London in 2008. Since then she has been employed as a senior lecturer in equine medicine at the Royal Veterinary College. Her main clinical and research interests are equine platelets, neonatology, respiratory diseases and equine critical care.

Graham Duncanson
BVSc, MSc (VetGP), DProf, FRCVS. Committee Member of the Goat Veterinary Society (GVS)

Graham qualified from Bristol in 1966. He spent eight years as a government veterinary officer in Kenya where he developed his interest in goats and disease control. Since 1975 Graham has been working at Westover Veterinary Centre in Norfolk. He has written five text books, including '*Veterinary treatments of sheep and goats*'.

Bovine TB: the debate continues...

Bob Broadbent
BVetMed MRCVS

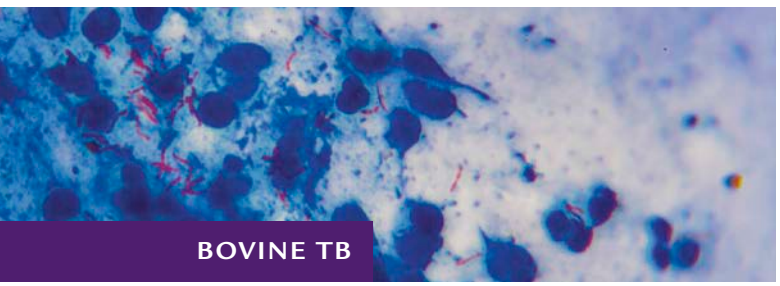
My views stem from an avid interest in the diseases caused by Mycobacterium spp., especially in cattle and camelids. They have been formed after working for 32 years of my career in the TB hotspot that is Gloucestershire and seeing at first hand the devastation that is wreaked when cattle, camelids and badgers are affected and in close contact.

Public awareness has been focused very much on the badger cull, its progress and the attempt by various groups to stop it going ahead; yet the discussion about the general problem has continued behind the scenes. The two sides are still very polarised – witness these recent quotes from two eminent scientists!

For: (*Veterinary Times*, August 2014): *"Why is it we seem so hesitant to tell the public what a thoroughly nasty Mrs Tiggy-Winkle, Larry the Lamb and Chirpy Chick eating, over-populous, TB-ridden, silently suffering underground, verminous fellow Mr Brock really is? Until 'Middle England' comes to realise these truths, the Badger Trust and its witless followers will continue to prevent this timorous vacillating Government from undertaking the general and countrywide cull of badgers that is so desperately needed to rid us of TB."*

Against: (Scientific Review Team): *"The scientific case is as clear as it can be – this cull is not the answer to TB in cattle. I have not found any scientists, who are experts in population biology or the distribution of infectious disease in wildlife, who think that culling is a good idea. People seem to have cherry-picked certain results to try to get the argument they want. Furthermore, all the evidence shows that culling badgers increases the proportion of badgers that have TB. Culling badgers, as planned, is very unlikely to contribute to TB eradication."*

Warwick University published a paper in June 2014 suggesting that most herd outbreaks are caused by multiple transmission routes, including cattle-to-cattle on farm and by movements, and that badgers play a relatively minor role in TB transmission. Farm ministers dismissed the study, as it did not investigate all the ways in which TB might spread.



BOVINE TB

The majority of outbreaks comprise a single reactor – unlikely if cattle-to-cattle spread was common. Reactor cattle do not readily shed *M. bovis* (Vordemeier, 2007) and the same spoligotypes of cattle reactors are clustered geographically – difficult to explain considering the widespread movement of cattle, if one assumes cattle-to-cattle transmission to be equally common.

Thomas explained that cattle are the disease sentinel not the reservoir (*Veterinary Record*, 28 June 2014). Unfortunately for the badger, it does not 'wall off' the organism within tubercles as cattle do; but rather develops a disseminated disease where the organism localises – notably in the kidneys and lungs – from whence it is excreted in large numbers. The expanding badger population within an underground home then provides an ideal environment for its cultivation.

In addition to the discussion about 'what' to do, the 'who' and 'how' is also under discussion. The Animal and Plant Health Association (APHA), after several years of threatening, finally announced the introduction of a process of 'competitive tendering' to procure the services of vets to carry out TB testing in cattle herds – a job which historically has been carried out by local practitioners or Defra vets.

Defra has protested for some years that this change is necessary to improve the delivery of the service and to comply with EU working rules. The cynical large majority of farm vets in the UK believe that it is a decision driven purely by the need to work with a smaller budget, and that the successful bidders will effectively be the cheapest option available.

The APHA has said that the changes in the system will be 'really fundamental'. They are likely to produce a reduction in farm animal veterinary practice numbers and in the relationship between practitioners and the State. Defra had 30 per cent budget cuts imposed in 2010, and has now been advised that it needs to show further savings of £37m by 2015. Its ability to continue functioning and funding disease control is limited; it might find that honesty would engender more sympathy and support rather than hiding behind EU legislation and claims of cost sharing.

'Team Badger' launched a 'Myth Busters' document in June 2013 claiming to refute many of the accepted connections between badgers and TB. They highlighted the document published by Smith et al, (2012) as one showing that 'there is very little difference between the results of badger culling and badger vaccination on TB in cattle'. However, the research summary clearly states that the badger is partly responsible for the maintenance and spread of TB in cattle and against a background of existing control measures – where 144 herd incidents were expected in 10 years – limited badger culling prevented 26, while badger vaccination prevented 16. Culling plus ring vaccination prevented 40.

McGill et al (*Veterinary Record*, 7 July 2014) purport that the increase in TB is the result of flawed changes in farming systems, AI and farm genetics; while others – including a large number of farmers and farm practitioners (Allen, 18 August 2014) – still think it absurd and depressingly ridiculous that Defra is trying to shoot a

nocturnal subterranean living animal in isolated pockets rather than carrying out wide-scale gassing with carbon monoxide or carbon dioxide and then sealing off the infected setts.

A recent survey of 'roadkill' badgers in Cheshire found seven of 48 had TB.

Meanwhile because of the extremely poor performance of the current TB skin test in alpacas and llamas, the camelid industry – after spending hundreds of thousands of pounds of its own money – is well on the way to putting into use the Enferplex kit, a serological blood test which can be tuned to give very high specificity or sensitivity depending on the scenario. If it lives up to early expectations, then it may prove to be a useful adjunct to the skin test in cattle. Defra is watching; but, as ever, slowly.

Current progress of the disease

According to Defra figures published in October 2013, the provisional incidence rate for cases of TB in cattle, the numbers of new herd incidents and the number of cattle slaughtered, were all slightly reduced. However, despite the renewed recent efforts the disease seems to be only on a plateau rather than a decline; and still costing 30,000 cattle their lives and the taxpayer £100m each year.

To be sure that there is a reduction in the frequency of bovine TB – independent of the cyclical trends – there would need to be a sustained and marked downward trend for more than five years in both incidence and prevalence, and a reduction in the incidence in cattle and other species throughout the UK.

The cull

A recent BVA policy statement recognised that targeted and managed badger culling is necessary in areas where badgers are regarded as significant contributors to the persistent problem of bovine TB. When the initial 2013 badger pilot cull trials finished, 35 per cent of the Somerset target and 20 per cent of the Gloucestershire target had been met.

Defra extended the Somerset cull for three weeks, allowing a further 10 per cent to be culled. Owen Paterson (Secretary of State at Defra) announced in a ministerial statement on 9 October that "current indications suggest that the pilot has been safe, humane and effective in delivering a reduction in the badger population of just under 60 per cent". One can only be pleased that he is not working in the Treasury!

A failure to kill 60 to 70 per cent of the population is accepted as a failure to impact on the long-term health of the occupiers of the sett, hence rendering futile the death of those badgers which have been shot. The discrepancy in the figures has been explained by an apparent change in the estimated badger population in the pilot cull areas – down from 2,400 in September 2012 in Somerset to 1,450 in August 2013; and from 3,400 to 2,350 in Gloucestershire.

Both pilot culls were postponed in 2012, after surveys suggested that badger populations in the areas were significantly higher than the original estimates. This inability to accurately describe a wildlife population is just one of the reasons why cull protesters and farmers alike have little faith in the current cull process. Effectively, cull protesters would like to see the cull stopped completely, and farmers would like to have a total cull of infected setts using a method such as gassing and allowing large areas to be targeted to prevent perturbation.

Cull protesters say that any killing of this wildlife population is needless and unjustified, farmers argue that wiping out infected populations is the most humane way of dealing with them rather than leaving them to a slow death by starvation, and that re-population does occur afterwards, as it did after the Thornbury trials of the 1980s.

Both sides agree that shooting large numbers of badgers humanely with only 'clear shots to the heart and lung of standing badgers and no head, neck or running shots' (Defra) was going to be difficult or impossible, and unlikely to reach the required target numbers.

Shooting 100 badgers a night for six weeks, while avoiding shooting other farmers, cullers and protesters was always likely to be impossible; even ignoring the fact that the badger is a reasonably intelligent – if complacent – animal, that will almost certainly become more wary and secretive and avoid the haunts from which one or more of its number has failed to return.

Reports labelled the pilot culls as a 'shambles'.

Post mortems on shot badgers to prove humane killing are almost pointless, as by definition the sample is skewed. Wounded badgers are unlikely to turn up at the local veterinary practice asking for help and inclusion in the survey! It has been reported by animal welfare groups that between 7.4 and 22.8 per cent of badgers were still alive five minutes after being shot.

The future

Cattle TB testing

If left unchecked, bovine TB is predicted to cost the taxpayer £1 billion over the next decade. Government thrust is towards a risk-based strategy on all fronts – splitting the country up into low-risk (north east) and high-risk (south west, West Midlands and Sussex) areas with an 'edge' area separating them. The options put forward are said by Defra 'most likely' to achieve OFT (Officially Free of TB) status in 25 years, while maintaining a viable livestock industry.

Dutch action has already halted the export of calves to Holland. UK farmers are unimpressed by the Defra proposals and simply view the changes as likely to be no more effective, while blaming farmers for the deterioration and asking them to foot more of the bill in future years.

Annual testing of all cattle in Wales – introduced in 2009 – has resulted in a 50 per cent reduction of cattle being slaughtered by 2012; the number of new herd breakdowns fell by 23 per cent and the numbers slaughtered by a further 35 per cent in the year to February 2014.

Badger vaccination

The Welsh Assembly is currently inviting applications for a Badger Vaccination Grant for privately delivered projects in Wales up to 2019.

The well-publicised cost of badger vaccination is around £600/animal, played up by the 'pro cull' community and down by the Badger Trust. The delivery of vaccine to enough animals within a sett is not without its problems, although it does

not seem to be too stressful – the same animals repeatedly returning to the traps for the bait!

Smith et al (2012) purported that sustained badger vaccination could be useful in reducing cattle TB in the contact area.

The 2014 AHVLA/Surrey University review found that deployment of bait down every sett would need to be used avoiding the risk of exposure to cattle and other wildlife. Colaco and Birtles (*Veterinary Record*, April 2014) reminded us that in the original Medical Research Council human TB vaccine trial, there was no difference in response to vaccines made from *M. bovis* or *M. microti*, and there is a lack of tuberculin sensitivity after using a 'microti' vaccine – a distinct advantage in the production of a DIVA (differentiating infected from vaccinated animals) test.

Meanwhile in Ireland, a five-year badger trial has just started (June 2014) on measuring the effects of a badger test and vaccinate/remove protocol on the incidence of TB in cattle in a high prevalence area of 100 sq km.

Cattle vaccination

Defra has developed a BCG cattle vaccine against bTB and an accompanying DIVA test and is currently looking for a 'delivery partner' to help run the initial trials, expected to run for two to five years. We can see from this time scale that we are still some way from having a TB vaccine in the surgery dispensary fridge. Government estimates are 10 years, assuming that the EU (and the World Organisation for Animal Health, OIE) will change the law to allow the trade of live cattle, meat and milk from BCG-vaccinated animals using the associated DIVA test.

The EU prohibits the use of a cattle vaccine because of the incomplete protection offered by BCG and the sensitisation of the vaccinated animals to the intradermal tuberculin test – currently the mainstay of the UK TB control/eradication scheme.

Adoption of a cattle vaccine without trade restrictions is not now expected until 2023, as so far all the work has been confined to the laboratory (AHVLA Review, 2014). The design of the field trials complying with European Food and Safety Authority (EFSA) regulations are to be completed this summer, although Wales has looked at the use of a cattle vaccine in Ethiopia and may seek an EU derogation for its use in cattle to be sold in the UK food chain only.

Vaccination of cattle and badgers are important components of what needs to be a comprehensive multifaceted approach to TB eradication. BCG vaccine appears to behave in cattle and badgers as it does in other species, so some individuals are afforded no protection at all, some are partially protected by having reduced severity of disease and the rest are fully protected – though no one has yet quantified the precise percentages and, although farmers are open to the idea of funding cattle vaccination, cost and effectiveness will play a large part in convincing them that it is their role rather than Defra's (Chambers et al, *Veterinary Record* 2014)

Badger culling

This is likely to remain controversial, with people exercising their legal rights to peacefully protest while being brought into disrepute by extreme activists harassing, threatening and intimidating others carrying out legal culls. If a cull is to take place it must be carried out in the most effective way even at the cost of some welfare – a difficult compromise to arrive at as a healthcare professional.

We might remember that few badgers will experience a quick death in the wild unless as the result of a road traffic accident. Most suffer a violent, traumatic death by predation, or a miserable lingering one caused by starvation and/or disease. A less-than-perfect death by gassing is probably better – and certainly no worse than – what ultimately awaits them, but would require a change in the Badger Protection Act 1992.

In April, Defra tweeted that it was carrying out initial investigations into using gas as a culling method, but not including badger testing yet. Ironically, had the wildlife vector of bTB proved to have been the rat, we would not be having this discussion today because the disease would have been eradicated many years ago. We would happily have agreed to rat poisoning despite the undoubted inhumane end that warfarin often brings.

The BVA has lent its support again to a second year of culling having been reassured that the recommendations of the Independent Expert Panel would be taken up, banning the use of shotguns (other than for close dispatch) and improving contractor selection and training. The Association has also agreed to Defra's new Badger Edge Vaccination Scheme (BEVS) running to the end of November – for which Defra has invited applications for funding.

The Badger Trust has brought a challenge resulting in a judicial review starting in August into why Defra has chosen not to put in place an expert panel for the second year of culling. The Trust lost its first review in 2012 owing to a lack of scientific argument. This is all very last minute and subject to criticism from both sides.

Conclusions

Government commitment to the eradication of this disease is vital. Fortunately, the EU is firmly behind an eradication programme. If that were not the case, then probably neither this nor any other UK political party would find the will or the funds to carry it through. The EU also has a vision of sustainable livestock production in the UK and a belief that, without human interference, the badger population will be unable to survive its own endemic TB outbreak.

The complete eradication of TB from British cattle and badgers will probably only be achieved by a combined use of:

- Continued total whole herd testing of cattle at annual intervals over as much of the country as we can afford
- Continued use of pre-movement testing and restrictions on movement of infected or contiguous herds combined with compulsory biosecurity measures, including the exclusion of vectors
- Rigorous post-mortem inspections of carcasses and the follow up of source herds with detailed investigation as to how the infected cattle have remained undetected to slaughter
- The improved testing regimens (skin and blood tests) that are available and that should be made mandatory to all infected herds, not just those experiencing difficulties in clearing up infections
- The identification of infected badger populations in contact with infected cattle and the targeted, humane culling of those entire setts and others within a wide defined radius in line with historical successful cull strategies
- The ring vaccination of badger populations around the cull areas

Finally, as much as we may disagree on the route, we all want to end up in the same place. Healthy cattle and healthy badgers! ■

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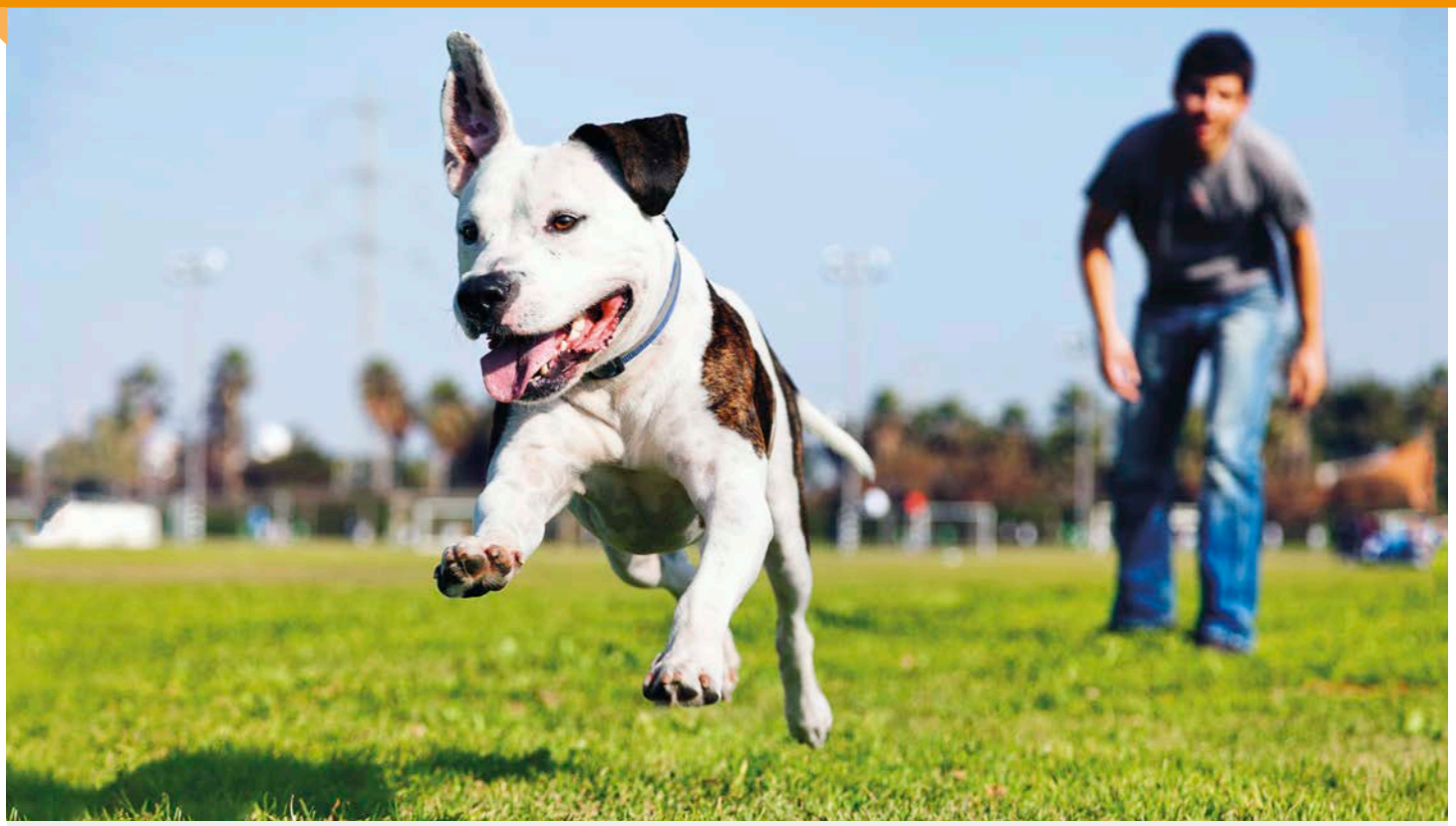

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Laura graduated from the Royal Veterinary College in 2003. She spent six years in general practice where she achieved her RCVS Certificate in Veterinary Dermatology. In 2012, Laura completed a three-year residency in veterinary dermatology at the University of Liverpool and was subsequently awarded the European Diploma in Veterinary Dermatology.

Following her residency, Laura worked in private practice where she provided a dermatology service for two referral clinics in Yorkshire and London and for the Guide Dogs Centre at Redbridge in Essex. Laura returned to the University of Liverpool in 2014 as lecturer in veterinary dermatology and clinical skills, and teaches and assesses the postgraduate RCVS CertAVP dermatology course there.

Laura's clinical interests include canine and feline allergic skin disease, antimicrobial resistance and chronic otitis.

**Suggested Personal & Professional Development (PPD)*

DERMATITIS

An update on management of **canine atopic dermatitis**

Canine atopic dermatitis (CAD) is a common skin disease affecting up to 10 per cent of dogs worldwide. It causes chronic, relapsing pruritus, dermatitis and otitis and a recent study demonstrated the detrimental impact on the quality of life of both the animals affected by CAD and their owners. This article reviews the pathogenesis of CAD and its importance in formulating a targeted management plan for affected individuals.

During the last 80 years, an improved understanding of the pathogenesis of this complex skin disease has changed the way in which we investigate and manage affected dogs and has promoted the development of novel therapies.

The complexity of the pathogenesis means that a multimodal treatment approach will provide the greatest chance of successful management. Use of single therapeutic agents will fail to target certain areas of pathogenesis and could result in the increased use of potent drugs associated with risk of adverse effects.

Overview of pathogenesis

The pathogenesis of CAD involves a genetic predisposition to skin barrier dysfunction and immune dysregulation. Environmental factors also play a role in the development of the disease, and in many individuals specific allergen sensitisation and enhanced microbial colonisation also contribute.

This has lead to the disease being redefined as *'a genetically predisposed inflammatory and pruritic allergic skin disease with characteristic clinical features associated with IgE antibodies most commonly directed against environmental allergens'.*

However, environmental allergens are not always implicated and the term atopic-like dermatitis (ALD) is used to describe *'an inflammatory and pruritic skin disease with clinical features identical to those seen in CAD, in which an IgE response to environmental or other allergens cannot be demonstrated'.*

In addition, the term food-induced atopic dermatitis is used to describe cases of CAD in which food allergens can cause disease exacerbation.

The widely recognised breed associations with CAD highlight the genetic background of this disease.

The West Highland white terrier, bull terrier, Labrador retriever and bichon frisé among others have been shown to be predisposed to CAD. In addition, genetic studies have highlighted widespread alteration of gene expression including genes associated with skin barrier function, IgE function, regulation of cell messaging, cell cycling and inflammatory mediators.

Skin barrier dysfunction

The stratum corneum forms the essential skin barrier, preventing access of microorganisms and other foreign substances and reducing loss of water and solutes. A number of abnormalities including increased transepidermal water loss, widened intercellular spaces between corneocytes and deficiencies in lipid content and organisation have been identified in the skin of atopic dogs.

In human atopic dermatitis, it is theorised that a genetically determined increase in skin permeability leads to increased allergen penetration, which in combination with a predilection towards an abnormal immune response, increases the risk of allergic sensitisation. Abnormalities are present in both lesional and non-lesional atopic skin and can be aggravated by allergen exposure.

Immune dysregulation and specific allergen sensitisation

It is thought that affected dogs are genetically predisposed to the development of an abnormal immune response to various environmental and microbial stimuli, ultimately leading to a Type I hypersensitivity reaction and generation of allergen-specific IgE.

Aberrant regulatory mechanisms lead to a failure of tolerance of harmless environmental allergens and promotion of allergic sensitisation. In most affected dogs, specific allergen sensitisation can be demonstrated via serological or intradermal IgE testing.

In the chronic stages of CAD, there is a switch from a predominantly humoral to a cell-mediated immune response. This process is likely to occur owing to skin damage and microbial toxin-associated activation of skin cells, release of inflammatory mediators and failure of regulatory mechanisms. It results in chronic epidermal thickening and further disruption of the epidermal barrier.

Microbial colonisation

Staphylococcus spp. and *Malassezia pachydermatis* are thought to play a role in the pathogenesis of chronic CAD. Atopic canine skin is more prone to colonisation by *Staphylococcus* spp. and there

is increased carriage of *S. pseudintermedius* at mucosal sites compared with healthy individuals. This increased susceptibility to bacterial colonisation may occur as a consequence of the increased ability of *S. pseudintermedius* to adhere to inflamed skin and abnormalities in the amount – or function of – antimicrobial peptides.

Colonisation by microbes results in a marked inflammatory response that drives cell-mediated immunity in the chronic phase of atopic inflammation. In addition, ceramidases and proteases produced by these microbes can further damage components of the stratum corneum, resulting in further skin barrier dysfunction.

Recent studies have identified the development of specific IgE to both staphylococci and *Malassezia* in atopic dogs, suggesting specific sensitisation can occur to microbial antigens in addition to environmental allergens.

Approach to management

The complexity of the pathogenesis of CAD means the use of single therapeutic agents is unlikely to be successful in the clinical management of this disease.

A therapeutic plan, targeting the following specific pathological processes, will give the best chance of management success:

- Skin barrier dysfunction
- Cutaneous inflammation and immune dysregulation
- Specific allergen sensitisation
- Microbial colonisation and infection

Following diagnosis of CAD, an initial management plan incorporating these four treatment categories should be devised based on the findings of a comprehensive panel of investigations. These include assessment of the role of food as a cause of allergic flares, assessment of the presence of specific allergen sensitisation and cytological assessment for microbial overgrowth or infection. An effective flea control programme should be continued to eliminate flea infestation/hypersensitivity as a cause of further pruritic flares.

Skin barrier dysfunction

It should be assumed that all dogs suffering from atopic dermatitis, including ALD and food-induced AD, have a defective skin barrier; and that all areas of the skin – not just lesional areas – are affected.

Products aimed at improving skin barrier function include oral essential fatty acids (EFAs), non-irritating and moisturising shampoos and sprays, and topical lipid complexes. A combination of these products should be considered based on the individual animal and the practicalities of application of topical therapies, including time and physical constraints of the owner.

Oral EFAs are available as dietary supplements or EFA-enriched diets, and dietary supplements should be added to the dog's usual food once daily.

There are a large number of topical shampoos and sprays available for the management of skin disease, none of which has been proven to improve skin barrier function. Generally, commercially available shampoos which have less antimicrobial activity and contain ingredients such as essential fatty acids, essential oils and colloidal oatmeal are designed to cleanse the skin without causing irritation.

Sprays containing propylene glycol are designed to moisturise the skin. Shampoos may be used twice weekly or as necessary and moisturising sprays can be used once daily.

Topical lipid complexes aim to restore the lipid deficiencies within the skin barrier of atopic dogs. Preliminary studies have shown that some of the deficiencies can be reversed by a skin lipid complex containing

Table 1. Summary of the efficacy and safety of anti-inflammatory and immunomodulatory drugs used in the management of canine atopic dermatitis

Therapeutic intervention	Summary of evidence
■ Oral glucocorticoids ■ Prednisolone, methylprednisolone ■ 0.5mg/kg once to twice daily and tapered as appropriate	Multiple high-quality *RCTs show consistent efficacy with minor and predictable adverse effects
■ Oral calcineurin inhibitors ■ Ciclosporin ■ 5mg/kg once daily and tapered following response	Multiple high-quality *RCTs show efficacy and safety, apart from minor reversible adverse effects. The most common of these is minor, transient gastrointestinal disturbances. Efficacy is comparable to but slower than that of oral glucocorticoids
■ Topical glucocorticoids ■ 0.0584% hydrocortisone aceponate	Several high-quality *RCTs confirm efficacy. Major safety risk is skin thinning with prolonged use. Intermittent application appears to prevent this problem and might delay the recurrence of flares if applied proactively (e.g. twice weekly even when lesions no longer visible) to previously affected sites
■ Topical calcineurin inhibitors ■ Tacrolimus ointment ■ Twice daily application	Three small *RCTs suggest efficacy, the highest of which seen with a 0.1% ointment for localised skin lesions. Treatment of generalised lesions of lower benefit and also impractical and costly. Appears safe, apart from application-induced licking
■ Recombinant interferons	Small number of intermediate-quality *RCTs show efficacy. However, protocols for optimal benefit and safety still unknown
■ Oral tyrosine kinase inhibitor ■ Masitinib ■ 12.5mg/kg once daily	Appears to have a promising effect but currently low-quality evidence for efficacy and safety and further studies required. Monitoring for urine protein loss is required to assess for protein – losing nephropathy
Other interventions: ■ Antihistamines ■ Misoprostal ■ Pentoxifylline	Low-quality or number of *RCTs suggest: ■ Poor efficacy, good safety ■ Moderate efficacy, good safety ■ Poor efficacy, good safety

**RCT = randomised controlled trial*

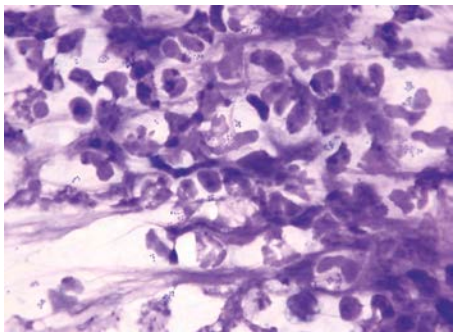

Figure 1. *Impression smear cytology demonstrating bacterial infection – note the large number of degenerate neutrophils and intracytoplasmic coccal bacteria.*

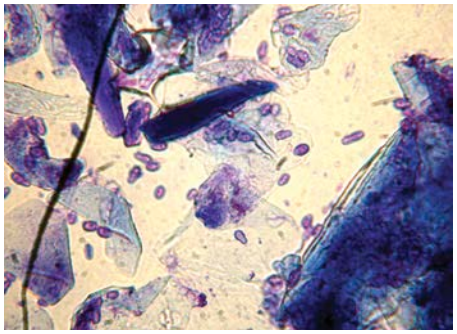

Figure 2. *Acetate tape impression cytology consistent with bacterial overgrowth – note the absence of inflammatory cells, occasional corneocytes and the large number of bacteria.*

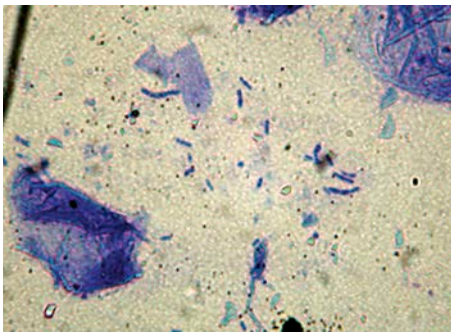

Figure 3. *Acetate tape impression cytology consistent with yeast overgrowth – note the large number of corneocytes and budding yeasts (morphology consistent with Malassezia pachydermatis).*

fatty acids and ceramides. Evidence of clinical benefit in the control of CAD is limited but an open study showed clinical improvement in atopic dogs following twice-weekly application of this product for 12 weeks.

In another small study in atopic dogs, a product containing fatty acids and essential oils were shown to reduce transepidermal water loss together with lesion and pruritus scores when applied once weekly for eight weeks. These products need to be distributed over all affected skin according to the manufacturer's instructions.

Cutaneous inflammation and immune dysregulation

Control of skin inflammation and pruritus is an extremely important part of the management of CAD; however, it can be challenging as many of the drugs used to treat this component of the disease can be associated with side effects, particularly if used at high doses and/or long term. Control of inflammation and pruritus is essential in the prevention of chronic skin lesions which are more difficult to treat and cause considerable discomfort and debilitation in affected animals.

In terms of selecting therapeutic agents, there are a large number of anti-inflammatory and immunomodulatory drugs available. Systematic reviews are extremely useful for summarising the literature and providing us with the information needed to practise evidence-based medicine. Two systematic reviews of the efficacy and safety of therapeutic interventions for CAD have recently been published (Olivry, 2010 and Olivry, 2013).

Table 1 summarises the results of these reviews for the various anti-inflammatory and immunomodulatory drugs used for the management of CAD.

The evidence suggests that the use of oral and topical glucocorticoids and the calcineurin inhibitors ciclosporin and tacrolimus provide consistent benefit in the treatment of CAD. Adverse effects are well known and predictable and can be monitored and managed accordingly.

There is poorer quality evidence to support efficacy of antihistamines. These drugs, however, carry a low risk of adverse effects and can be considered for adjunctive therapy with the aim of reducing the use of other agents.

Subsequent to these reviews, the novel, targeted immunomodulator oclacitinib, has been developed. It has been shown to effectively and safely reduce pruritus through selective Janus kinase inhibition.

Individuals with severe, generalised disease require treatment with systemic anti-inflammatories or immunomodulators. Daily treatment should be continued until the disease is in remission; then treatment should be tapered to the lowest effective dose that controls clinical signs.

The level of treatment can often be reduced by using products to target the other areas of pathogenesis and also using additional topical anti-inflammatories, such as hydrocortisone aceponate and less potent anti-inflammatories, such as antihistamines.

Animals with less severe – or localised – disease can be managed by means of regular use of topical anti-inflammatory or immunomodulatory treatments, in addition to products used to target other areas of pathogenesis. There is evidence to suggest that twice-weekly use of hydrocortisone aceponate spray can reduce the frequency of atopic flares.

For atopic animals on maintenance therapy that suffer an acute flare of pruritus, precipitating factors such as ectoparasites and microbial infection should be eliminated using diagnostic tests. Treatment with anti-inflammatory or immunomodulatory agents should be given promptly to re-stabilise the animal and prevent the development of chronic lesions.

For localised flares, topical therapy can be used. For more generalised flares, a short course of systemic glucocorticoids (0.5 mg/kg prednisolone once daily for 3-5 days) is very effective at re-establishing remission.

Specific allergen sensitisation

In animals diagnosed with CAD – and where sensitisation to environmental allergens has been identified via allergy testing – allergen avoidance and allergen-specific immunotherapy (ASIT) can be included in the management plan.

There are three small studies to suggest subcutaneous ASIT has a beneficial effect and carries a low risk of adverse effects. There is no standardised protocol for the administration of ASIT and generally the procedure recommended by the vaccine supplier is undertaken. The greatest concern with the use of ASIT is the (low) risk of anaphylaxis at the beginning of therapy. So it should only be commenced on patients that are under the close

supervision of a veterinary surgeon. Treatment response is slow and usually assessed over six to nine months; therefore, treatment of the other areas of pathogenesis must be addressed while ASIT is taking effect.

Microbial colonisation and infection

Microbial overgrowth and infection is common in CAD. The most effective way of managing animals prone to secondary microbial infection is by controlling their skin inflammation adequately and regular use of topical antimicrobials.

The presence of bacterial and yeast overgrowth or infection should be assessed using skin surface cytology (**Figures 1-3**).

Swabbing of the skin surface for culture and susceptibility testing is not helpful in the diagnosis of microbial overgrowth or infection because the commensal population is likely to be sampled and this may lead to inappropriate use of antimicrobial agents.

Affected animals can be managed with topical shampoos, sprays, gels and wipes containing chlorhexidine and other biocides. These products may be used once daily to treat existing overgrowths or superficial infections, and two to three times weekly to prevent further microbial overgrowths.

Systemic antibiotics should be reserved for the treatment of deep bacterial infections that have been confirmed cytologically. Culture and susceptibility testing should be performed when systemic antibiotics have been deemed necessary in order to determine the narrowest spectrum antibiotic to which the bacterium is sensitive.

Conclusion

This approach to management can be applied to dogs presenting with ALD, food-induced AD and non-food (environmental allergen) induced AD.

As the nature and severity of lesions vary widely between animal breeds and individuals of the same breed, it is important to re-evaluate the animal frequently and tailor treatment to meet its individual needs. By targeting the four areas of pathogenesis, safe and successful long-term management of CAD patients is more likely. ■

PPD Questions

1. Which hypersensitivity reaction(s) are involved in the pathogenesis of atopic dermatitis?

2. Which of the following would be most appropriate for stabilising an acute flare of severe, generalised pruritus and cutaneous erythema in a dog with atopic dermatitis?

   A. Ciclosporin
   B. Amoxycillin-clavulanic acid
   C. Chlorhexidine-based shampoo and antihistamines
   D. Prednisolone

3. What are the indications for performing IgE serology? Choose all that apply

   A. To make a diagnosis of atopic dermatitis
   B. To identify food allergens for avoidance
   C. To identify environmental allergens to include in an immunotherapy vaccine where a diagnosis of atopic dermatitis has been made
   D. To make a diagnosis of food-induced atopic dermatitis

4. How would you confirm the presence of bacterial pyoderma?

5. Which of the following have been shown to provide consistent benefit in the treatment of canine atopic dermatitis? Choose all that apply

   A. Ciclosporin
   B. Prednisolone
   C. Topical tacrolimus
   D. Chlorpheniramine

Answers
1. Type I (immediate) and type IV (delayed or cell-mediated) hypersensitivity 2. D 3. C 4. Consistent clinical signs and presence of neutrophils with intracytoplasmic bacteria on cytology samples 5. A B and C

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Ivan graduated from the Royal Veterinary College and has been working in general practice in the UK for the last 15 years. He developed a large rabbit caseload made up of first-opinion, second-opinion and rescue work. He also designs and develops a variety of veterinary products.

Ivan is recognised as an international teacher on rabbit airway management and anaesthesia, as well as maintaining his general practice and second-opinion rabbit work.

**Suggested Personal & Professional Development (PPD)*

DENTISTRY

Rabbit dentistry: an overview for general practitioners

Dental problems in rabbits can be diagnosed relatively easily but are always difficult to treat effectively. This article is directed towards general rabbit practice where expensive diagnostic methods, such as CT scanning, may not be available.

Normal dentition

Rabbits are designed to eat a diet consisting almost entirely of fibrous vegetation. Because of this, the teeth can grow continuously at about 4mm/week, (Moxham, 1979). Enamel is produced continuously from the base of the tooth, covering the entire root and crown, and wearing against the opposing teeth, forming ridges between enamel and dentine layers.

The teeth can be considered in two groups: 'incisors' and 'cheek teeth/molars' – maxillary cheek teeth 1-6 and mandibular cheek teeth 1-5 (**Figure 1**).

They are kept in shape during feeding on fibrous vegetation, especially various grasses. The molars are offset from each other so that each lower cheek tooth occludes with two upper cheek teeth, forming a series of sharp enamel ridges.

Pathogenesis of dental disease

Acquired dental disease accounts for the vast majority of cases seen in general practice. It is likely to be a multifactorial condition, involving elements of:

- Inadequate dietary fibre (normally ad lib pellets/muesli and minimal hay/grass consumption)
- Metabolic bone disease (dietary calcium deficiency +/- vitamin D deficiency which can be the result of insufficient year-round exposure to natural light or lack of dietary vitamin D)
- Genetic predisposition and poor husbandry standards

Congenital dental disease (prognathism) is an uncommon cause of dental disease. It tends to cause severe incisor malocclusion in young rabbits. Other issues such as neoplasia, non-dental abscesses, mandibular or maxillary fractures and tooth fractures can also occur.

> "Dental disease is generally easier to manage in older rabbits with slower tooth growth and hence often carries a better prognosis"

Dental disease may be seen as a complicating factor or cause of other dental diseases. Concurrent disease (consider *Encephalitozoon cuniculi*, multifocal bacterial infections and digestive system disease) is normal with sick rabbits and should be considered as a possibility with every case.

Dental examination and diagnosis

As always, the considerable weight of your diagnosis comes from a detailed clinical history and careful physical examination. Anaesthesia carries significant risks in anorexic or sick patients. Some of your anorexic, sick rabbits may have renal disease which will not be helped by anaesthesia; however, some dental diagnosis and treatment will be impossible without anaesthesia.

Clinical history taking

This should include:

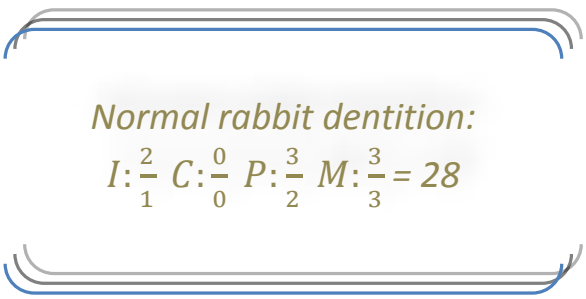
- Husbandry, especially diet and exposure to natural light (direct, not through glass)
- Changes in appetite and food choice – hay is frequently refused owing to tooth pain
- Changes in behaviour or droppings that might indicate disease
- Other changes such as polyuria/polydipsia, coughing or sneezing that might indicate other disease

Clinical signs

Rabbits with dental disease tend to present with some of the following clinical signs:

- Weight loss
- Appetite change or anorexia
- Problems with prehension of food
- Epiphora, dacrocystitis
- Oral or mandibular pain
- Facial (especially mandibular) abscesses
- Retrobulbar swelling

Figure 1. *Normal rabbit dentition.*





Figures 2-4. *Rabbits are far calmer and easier to handle when placed on a towel rather than simply on the table top. Gently wrap them during the examination to give them a hiding place.*

(generally from maxillary cheek tooth root disease)

Clinical examination

Rabbits are far calmer and easier to handle when placed on a towel rather than simply on the table top. Gently wrap them during the examination to give them a hiding place (**Figures 2-4**).

The author prefers to examine the rabbit standing behind them and leaning over. This generally means that no assistance is required as the rabbit naturally backs into you and then tends to stay still.

Dental assessment

This is a critical part of the diagnostic process:

- Visual assessment (abnormal face shape, exophthalmos, epiphora, and nasal or oral discharge)
- Incisor check – enamel ridging (a sign of tooth root disease) or malocclusion
- Palpate the mandibles (and maxilla) – a common finding is a painful bone bump corresponding to the root of an overgrown mandibular cheek tooth. This change is *always* significant and requires treatment
- Otoscopic examination of molars – straight rostro-caudal view, then diagonally towards the lingual surface, then straight towards the buccal surfaces (**Figure 5**). Look for excessive salivation, gingivitis, blood and purulent discharge

At this point, you can decide whether a sedated dental examination is required for further diagnosis. Radiography is very useful to identify the extent of dental disease and is essential for surgical planning. Two slightly oblique lateral views tend to be best to offset the cheek tooth roots (**Figure 6**).

Treatment and management options

In many cases, you may simply not have the funds available to diagnose or treat disease accurately. Euthanasia should be discussed as an option in these cases.

Dental abscesses will not resolve easily – if owners are not prepared for potentially protracted treatment and will not correct underlying husbandry problems, then euthanasia may be the kindest option.

The recent experience of the author is that far more cases present with molar root disease than with the classic tooth spur disease. If there are no spurs coming from the molars and root abscesses are absent, it is worth considering a medical – rather than surgical – approach.

With respect to analgesia, under the terms of the 'cascade', meloxicam can be used. Various doses are recommended and the half life is about eight hours (Turner et al, 2006). The author has good results from oral meloxicam preparations licensed for dogs, using the maintenance dog dose rate of 0.1mg/kg, but every 12 hours. Some clinicians recommend higher dose rates every 24 hours (Carpenter et al, 2009).

In early cases of tooth root changes, where the mandible is painful on palpation but an abscess has not yet developed, meloxicam alone may be sufficient to halt and control the disease process (author's experience), although radiographs are still recommended.

> "Dental disease in rabbits is best considered as manageable, rather than curable"

Appetite should improve within two to five days, with emphasis placed on feeding of fibrous grasses and hays. The author would normally maintain this level of pain relief for three to six months, with regular clinical examinations and home weight checking to ensure that recovery is genuine. Once the rabbit has been stable for several months, analgesia is gradually reduced and then stopped.

Monitoring continues and analgesia is re-established if clinical signs return. Meloxicam can in some cases be continued for many years.

Management of incisor disease

Three options currently exist for the management of incisor disease. With experience, regular trimming and incisor reshaping can be performed without sedation or anaesthesia because sensitive tissue should not be entered. Clippers should not be used alone as they fracture the tooth root, causing pain and infection.

Regular trimming/ shortening

This should be carried out by using a water-cooled, high-speed burr or cutting disc. Do not use molar cutters or nail clippers – these cause painful enamel fractures and make the underlying disease worse.

Incisor reshaping

This technique carries a relatively low success rate of about 40 to 50 per cent in the author's experience (**Figure 7**). However, it can be done instead of a normal trim, so little is lost if it is unsuccessful. It does not tend to work on cases of congenital incisor malocclusion.

Trim once weekly – if the tooth shape is not changing by week three or four, it is unlikely to work. Angled cuts are made to both upper and lower incisors, allowing a sliding force between upper and lower incisors, pushing the lower incisors caudally and upper incisors rostrally. The

Figure 5. *Otoscopic dental examination.*

Figure 6. *Radiograph (oblique lateral view) of normal dentition.*

Incisor reshaping procedure

- Normal incisors
- Malocclusion
- Angled cuts made to incisors
- Side cutting burr used for angled cuts
- as teeth shift, step appears in lower incisor
- End result, not perfect but generally sufficient for long term care

Figure 7. *Incisor reshaping procedure.*

author finds it easier to work without a tongue guard; cutting through 90 per cent of the tooth depth and using molar clippers to remove the last section, thereby protecting the soft tissues.

Incisor extraction

This is done under full general anaesthesia. It is best to maintain the patient on gaseous anaesthesia via an endotracheal tube or v-gel airway device. Clean the gingivae using dilute iodine, then use a scalpel to sever the gingival attachment. Luxate all aspects of the tooth using a Crossley incisor luxator or curved hypodermic needles.

Once the tooth is loose, rotate it back deeper into the socket to damage the germinal epithelium and help prevent regrowth. If the germinal epithelium does not come out as a pink plug inside the root, use a curette or similar instrument to destroy the tissue at the base of the socket. The author flushes the socket with dilute iodine and then sutures the socket closed using absorbable suture material.

Management of molar disease

A primary consideration in the management of molar disease is pain management, even if the disease must ultimately be managed surgically (**Figure 8**).

Molar 'crown' disease ('spurs')

This normally presents with acute anorexia and weight loss. Other facets include:

- Occlusal surfaces flatten and elongate, forming (mostly) medial/lingual mandibular spurs and lateral/buccal maxillary molar spurs
- Vertical 'spurs' are almost always a result of the normal occlusion of the molar teeth. Anything less than 2-3mm in height and directly vertical is unlikely to be pathogenic
- Spurs normally cut into adjacent soft tissue, thereby causing pain and hypersalivation
- Can be hard to diagnose if slim or caudal spurs present, needing anaesthesia and soft tissue retraction to confirm

Spurs may be removed using diamond rasps or molar burrs (ideally use soft tissue guard to prevent tongue damage)

Molar root disease management process

1. Identify and start correction of underlying husbandry factors
2. Begin analgesia (meloxicam)
3. If analgesia is effective (early stage disease), monitor and manage, if husbandry is corrected, no more treatment may be necessary
4. If analgesia is not effective, radiograph before any treatment, identify offending tooth roots
5. Intra-oral or extra-oral extractions, marsupialise and treat abscesses
6. Culture and sensitivity testing should be performed on pieces of abscess capsule

Figure 8. *Molar root disease management process.*

under general anaesthesia. They can re-grow rapidly; although good dietary and pain management can reduce the rate of spur formation.

Molar 'root' disease

The germinal epithelium grows away from the 'root' of the tooth through the surrounding bone. Examination will reveal palpable bumps on the ventral surface of the mandible (mandibular cheek teeth), or facial swelling, exophthalmos, epiphora, or nasal/sinus disease (maxillary cheek teeth).

Mandibular root bumps are simple to palpate and a pain reaction is obvious during palpation (generally a head tilt and jaw tremor) with an active injury. Once formed these root bumps will not regress spontaneously, so noting jaw shape is useful to check for new changes later (**Figures 9 and 10**).

Be wary of the lingual artery at the back of the mouth which, if traumatised, will cause catastrophic haemorrhage. Have a vial of adrenaline and a cotton bud on standby for all dental procedures – an adrenaline-soaked cotton bud applied to the artery immediately should save your patient.

Intra-oral extractions can be performed with the correct instruments. Small right-angled luxators and forceps are essential, together with either a dental table or padded gag and cheek dilators (**Figure 11**).

Gently sever the root attachments with the luxator, rotate the tooth using the forceps until very loose, then gently extract. Extraction may not be possible with angled roots. The 'crown' may be very short with the germinal bud deeply involved with deep abscesses, so the removal of all mineralised material may not completely solve the problem.

Extra-oral extractions are relatively simple on mandibular molars but trickier for maxillary

Figures 9 and 10. *Severe root changes resulting in penetration through the mandible, requiring complex dental surgery and mandibular root penetration and abscess formation.*

Figure 11. *Small mammal dental kit.*

Figure 12. *Central abscess tract during dissection process.*

molars. Gentle technique and frequent reference to the radiographs is very helpful.

Abscess tracts normally lead to the tooth root and are easy to follow (**Figure 12**). Draining bone tracts can be very narrow, often 0.5mm. The abscess top can be removed and the capsule marsupialised to the skin. Any overlying bone can be removed with a low-speed burr or curette.

Once the root is exposed, either rabbit dental or cat dental instruments can be used, and extraction is extremely simple. Clean sites can be closed surgically; abscesses should be marsupialised and treated as open wounds.

Conclusion

Dental disease in rabbits is manageable to the point where the majority of patients can enjoy a good quality of life for long periods after diagnosis.

Treatment is always time consuming and costs will add up. It is best to be 'up front' about this in the early stages of treatment so that owners understand the complexity of the disease and the need for long-term care. With this taken care of, the disease is rewarding to treat and high-quality treatment can be undertaken at the level of veterinary general practice. ■

PPD questions

1. Which one of the following factors is not likely to be implicated in the development of acquired dental disease in rabbits?

   A. Percentage of fibrous food (grass and hay) in diet
   B. Lack of exposure to natural sunlight
   C. Dietary vitamin D content
   D. Exposure to *Encephalitozoon cuniculi*

2. Which of the following is not likely to be a clinical sign of dental disease in rabbits?

   A. Weight loss
   B. Tachycardia
   C. Changes in dropping size or shape
   D. Epiphora

3. Which of the following options might be appropriate for treatment of molar root disease? (Choose all that apply)

   A. Oral meloxicam with re-checks, including weight assessments
   B. S/C injection of enrofloxacin followed by one week of oral enrofloxacin
   C. Immediate analgesia, followed by general anaesthesia for radiography and molar root extractions
   D. Oral meloxicam without booking any follow-up or re-checks

4. Which of the following options is not appropriate for treatment of incisor tooth malocclusion?

   A. Incisor shortening using a water-cooled, high-speed burr
   B. Incisor shortening using a diamond cutting disc
   C. Incisor shortening using nail clippers or molar cutters
   D. Incisor reshaping using a water-cooled, high-speed burr

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

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Victoria is a qualified veterinary nurse with 15 years of experience in both small animal and emergency practice environments.

She has been a lecturer at Warwickshire College for the past 10 years and is currently course manager for Veterinary Nursing. As a practical examiner for the RCVS, Central Qualifications and City and Guilds, she also has the privilege and pleasure of assessing the next generation of veterinary nurses.

**Suggested Personal & Professional Development (PPD)*

INFECTION

Controlling infections in veterinary practice

Infection control in the veterinary practice is a vitally important role for the veterinary nurse. The cleanliness of a veterinary practice can not only affect the health status of your patients but also the apparent client cleanliness rating. It is a role which should have equal time allocated and enough staff to ensure all areas are cleaned to the appropriate standard.

Nosocomial infections, particularly Methicillin-resistant Staphylococcus aureus (MRSA), in the human medical field have been the subject of increased media attention in recent years and research has shown that MRSA can be a pathogen in companion animals in the UK (Duquette and Nuttall, 2004).

Pet owners have now become more significantly aware of the risk of nosocomial infections (Polton and Elwood, 2006).

First principles

To first understand the control of infection in a veterinary practice, you need to be familiar with what could be the cause of any breakdown of sterility. Pathogens, such as viruses, bacteria and fungi, are disease-causing microorganisms. It is common to confuse them, but they are as different as a mouse and an elephant!

> "Effective methods and protocols for sterilisation in the practice are vital"

It is also critical to be familiar with some basic terminology.

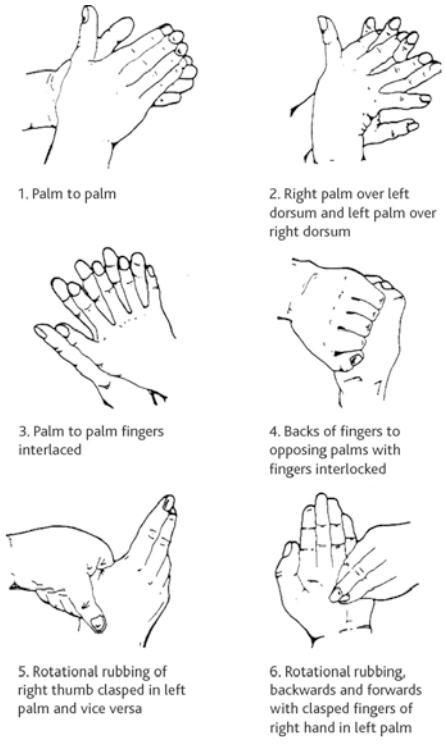
Sterilisation describes the process of destroying all microorganisms and their pathogenic products. Effective methods and protocols for sterilisation are vital in the practice environment, particularly in the operating theatre where patients are extremely vulnerable to infection.

Asepsis describes a complete absence from infectious material. The aim of the veterinary nurse should be to achieve this wherever realistic or practicable.

Disinfection describes the process of destroying microorganisms on inanimate objects, such as surfaces or equipment. This may be achieved using a suitable solution and cleaning routine.

Antisepsis describes the process of destroying microorganisms on living tissue. This is accomplished by the use of an antiseptic

Figures 1 and 2. *Clean hands protect against infection (WHO, 2014).*



"There is a wide range of antiseptic and disinfectant solutions available to veterinary practices"

solution to clean wounds, prepare a surgical site or scrub hands before surgery.

Setting and maintaining correct protocols to ensure the risk of infection to patients and staff members is reduced is an important role of the veterinary nurse. Effective sterilisation, disinfection and antisepsis can be achieved if correct codes of behaviour, procedure and routine are implemented.

When dealing with known or potentially infected patients, veterinary nurses wear protective clothing and carry out disinfectant protocols to limit the risk of infection being spread by personnel or by faeces (Polton and Elwood, 2006). Veterinary nursing staff should also be encouraged to wear normal clothes when travelling to and from work so as to minimise the risk of contamination.

Antiseptics and disinfectants

There is a wide range of antiseptic and disinfectant solutions available to veterinary practices (**Table 1**). The most appropriate product should be selected for each specific disease, patient or situation. Before choosing a solution for use, consideration should be given to the reason for disinfection, the microorganism to be eliminated, the surface requiring disinfection and the health and safety of those in the vicinity.

Each available solution is classified with regard to its active ingredients. Before being approved for sale, all disinfectants – including the domestic products found on supermarket shelves – are analysed in a laboratory to assess their efficacy against a range of pathogenic microorganisms.

When using disinfectants, consideration should be given to their preparation. Factors such as concentration, water temperature, pH and volume of solution will all affect the efficacy of the chemicals and, therefore, the effect on the area to be disinfected.

The veterinary practice will play host to a range of different microorganisms, so it is important to select the most appropriate solution to deal with each specific pathogen.

Solutions are said to be bactericidal, fungicidal or virucidal. The suffix 'cidal' indicates that a chemical is capable of killing the stated microorganisms, whereas the suffix 'static' indicates that a solution will only inhibit bacterial, fungal or viral growth and replication. This should be taken into consideration when selecting a disinfectant for a particular circumstance.

Generally speaking the halogens, phenols, aldehydes and alcohols are the most effective against bacteria; the halogens and aldehydes are the most effective virucidals; and the phenols, aldehydes and halogens have the best fungicidal action. However, it is worth checking the data sheet of a solution before use to establish its specific action (**Table 1**).

Terms used in relation to spread of disease

The term infection refers to the invasion of the animal body by pathogenic microorganisms, such as bacteria, viruses, fungi, parasites, protozoa and prions. The disease caused by an infectious agent is called an infectious disease.

Contagion refers to a microorganism that may be transmitted to another living thing. Most infectious diseases are contagious.

Colonisation indicates the settlement and replication of infectious agents in a particular area such as the skin, upper respiratory tract or intestine.

Contamination is the term used to describe the introduction of infection into the animal body or on to inanimate objects.

Endemic is the term for a disease which is present at a normal level within a population (Helps et al, 2012).

Table 1. Types of disinfectant agent, their mode of action and use in practice

Category	Name	Mode of action	Application	Warnings
Alcohols	Surgical spirit	Bactericidal, not virucidal	Skin preparation	Do not use on open wounds or delicate structures. Rapidly evaporates
Aldehydes	Formaldehyde (Parvocide)	Bactericidal	Environmental use	May be irritant to tissues
	Chlorhexidine (Hibiscrub)	Bactericidal, fungicidal and virucidal	Skin preparation	Easily inactivated by organic material
Halogens	Iodophors (Pevidine)	Bactericidal, fungicidal and some viruses	Skin preparation	
	Hypochlorite (Bleach)	All pathogens	Environmental use	May be irritant to tissues. Discolours material
	Peroxide (Virkon)	Bactericidal	Environmental use	
Phenols	(Jeyes Fluid, Dettol)	Bactericidal, fungicidal and virucidal	Environmental use	Toxic to cats
Quaternary Ammonium	(Savlon)	Bactericidal, fungicidal and some viruses	Skin preparation	
	(Trigene, Vetaclean)		Environmental use	

Epidemic is the term for a disease which has had an observed increase within a country or a geographical area. Enzootic refers to animal disease (Moreton, 2012).

Pandemic is the term for an epidemic disease which has then spread across many countries or continents (Helps et al, 2012).

Importance of hand washing and correct technique

The single measure that will have the greatest impact on infection risk is adherence to an effective hand washing policy (Polton and Elwood, 2006).

Effective hand washing is a key area of preventing the spread of infection. All the veterinary practice team should be trained and encouraged to use correct hand washing protocols that should be displayed near the hand washing facilities (**Figures 1 and 2**).

Veterinary nurses should also be reminded that using sanitising gels does not replace the need to wash hands with soap and water because some gels can be inactivated by organic particles. When moving between patients and areas of the veterinary practice, the recognised hand washing technique should be implemented using soap and water, then alcohol hand gel applied to finish the procedure.

Practices can also train all staff on the procedure using UV hand gels which illuminate to recognise areas that have not been correctly cleaned (**Figure 3**) (Poulton and Elwood, 2008). The importance of hand washing procedures needs to be actively encouraged by all members of the veterinary practice team.

Further infection control protocols will be discussed in future articles.

> "Effective hand washing is a key area of preventing the spread of infection"

Sterilisation of surgical instruments

Sterilisation is the process of destroying all microorganisms and their pathogenic products. The strictest operating protocol will fail if a surgical pack is not sterile. Failure to use sterile materials exposes the patient to the risk of infection, which may impede its recovery.

Preparation of equipment for sterilisation

Cleaning instruments

Once surgical instruments have been removed from the operating theatre, they should be sorted to ensure that any sharp items are disposed of safely – every practice should have a protocol identified to ensure safety is guaranteed.

Blades and needles should be discarded into a 'sharps' container and any organic material should be disposed of in a clinical waste container. Instruments and drapes should be put into cold water to soak. This will remove blood and debris and make cleaning easier (McHugh et al, 2012)

Once the organic material has dispersed, the instruments may be scrubbed in a suitable solution using a soft brush. All areas of the items should be scrubbed, particularly the teeth, serrations and ratchets. Once clean, the instruments should be rinsed thoroughly and then dried before packing (McHugh et al, 2012).

Packing instruments for sterilisation

This part of the sterilisation procedure is essential as errors at this stage can lead to serious postsurgical infections.

- Sharp instruments should be protected to prevent the edges piercing the packaging
- The ratchets of hinged instruments should be left open to ensure all surfaces are accessible to the steam or heat
- The instruments should be placed into a suitable bag incorporating a sterilisation indicator
- The pack should be labelled with the date, included instrument/s and initials of the packer

Methods of sterilisation

Autoclave

This is probably the most common method of sterilisation used in veterinary practice. It works on the principle of steam under pressure. When steam is pressurised, the temperature will rise. The higher the pressure, the higher the temperature will be.

Hot air oven

This method of sterilisation works by maintaining very high temperatures to kill microorganisms. The higher the temperature, the faster the cycle works.

Ethylene oxide

This method of sterilisation involves the use of gas to destroy microorganisms. Adequate ventilation is required when using this method. It is potentially toxic and irritant to living tissue.

Gamma radiation

This method of sterilisation is not used within the veterinary practice, but many items used in the surgery will have been sterilised in this way. These include sterile gloves, suture materials and disposable sterile supplies.

Methods of monitoring the sterilisation process

Bowie Dick tape is adhesive tape, impregnated with a chemical that turns black when a temperature of 121° C is reached. Its use is limited, as it will only indicate that the desired temperature has been reached, not that this has been maintained for the necessary length of time.

Figure 3. *Hand washing efficacy can be checked by using UV hand gels that 'illuminate' to recognise areas that have not been correctly cleaned.*

Browne's tubes are glass tubes filled with liquid that changes from red to green when the sterilisation cycle is complete. There are a number of different tubes for use with different sterilisation methods and cycles.

TST strips are chemically impregnated paper strips that change colour when the desired temperature, pressure and time have been reached.

Spore tests consist of a strip of paper impregnated with dried spores that is autoclaved and then cultured and incubated. If sterilisation is effective, no growth of any microorganism should be evident (Brooks, 2012).

Thermocouples are electrical devices with temperature-sensitive tips that are placed in different parts of the sterilisation chamber and give readouts of the temperature that has been reached (Brooks, 2012).

Summary

Media coverage about the vital nature of infection control is growing. This will impact

on client knowledge and expectations. It is paramount that within the veterinary practice the infection control protocols are set to a high standard that is achievable.

The veterinary nurse is a key figure in the maintenance and completion of these protocols, so it is imperative that the knowledge base and understanding of procedures is encouraged and actively sought. ■

PPD Questions

1. The definition of a disinfectant is a cleaning product used to clean:

   A. Instruments
   B. Animal skin
   C. Hands
   D. Surfaces

2. The suffix 'cidal' indicates the:

   A. Death of a contagion
   B. Colonisation of a contagion
   C. Sterilisation of a contagion
   D. Spread of a contagion

3. Endemic refers to:

   A. Disease that is present at normal levels within a population
   B. Disease that has had an increase in a specific geographical location
   C. An animal disease that has had an increase in a specific geographical location
   D. An epidemic which has spread over different countries

4. Bowie Dick sterilisation indicator tape indicates that the correct:

   A. Time has been achieved
   B. Temperature and time have been achieved
   C. Pressure has been achieved
   D. Heat has been reached

5. The skin disinfectant Hibiscrub is classified in which disinfectant group?

   A. Aldehydes
   B. Alcohols
   C. Halogens
   D. Phenols

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

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BVM&S MRCVS

Jenny qualified from R(D)SVS in 1998. She worked in mixed practice for four years before moving into the field of small animal emergency and critical care with Vets Now, where she worked for 12 years. Through Vets Now, she ran the practical trial researching canine blood banking in 2005-2006.

Jenny has been the veterinary supervisor for Pet Blood Bank UK (PBB) since its launch in 2007.

Her role includes advising practitioners on the appropriate use of blood products, overseeing the practical and VMD legislative veterinary aspects of blood collection at PBB and leading research on future development opportunities. Alongside this role she works part time in general practice.

**Suggested Personal & Professional Development (PPD)*

BLOOD

Transfusion medicine today

More and more veterinary professionals are making the shift from whole blood to safe and selective blood products as they recognise the advancements in veterinary transfusion medicine. Pet Blood Bank UK supports this 'sea change' with a reported average increase of 25 per cent in demand for blood and ancillary products year on year.

Pet Blood Bank UK (PBB) was established in 2007 to provide a canine blood bank service for all veterinary practitioners across the UK. It was the brainchild of Vets Now colleagues, Wendy Barnett DipAVN(Surgical) RVN and Jenny Walton BVM&S MRCVS who, working in emergency and critical care, were constantly reminded of the need for quick and convenient access to blood.

The catalyst for their research into pet blood banking was the UK legislation change in 2005 that allowed the application for a licence to collect, process, store and supply blood within the veterinary profession. With the help of Vets Now, Wendy sought both practical and feasibility advice from the National Blood Service, visited in-house programmes in the UK, as well as visiting many animal blood banks in the United States. Then 2006 saw Jenny piloting the initiative in the north east of England in preparation for the launch of PBB the following year.

After almost 30 years, canine – and indeed feline – blood banking is now well established in the US with over 20 regional and national animal blood banks; one of which is reporting that it distributes over 35,000 canine units every year.

Pet blood banking in the UK is still in its infancy, yet growing at an exponential rate. Last year, PBB supplied over 3,000 units of blood products to the profession, indicating that an increasing number of veterinary professionals are recognising the benefits of quick and convenient access to blood.

Figure 1. *Blood donor 'Tarka'.*

Blood types

Blood type plays an important role in pet blood banking and transfusion medicine because the use of type-specific blood is recommended to reduce the risk of transfusion reactions, as well as ensuring the demand for certain types of blood is always met.

The different canine blood types are described as dog erythrocyte antigens (DEA). There are eight DEA antigen systems 1.1, 3, 4, 5, 6, 7, 8 and Dal with potentially more to be defined as research continues. The DEA 1.1 antigen has the most transfusion significance in terms of acute immunologic transfusion reactions and this is the only canine blood type that has a commercial test kit widely available for use in practice.

Dogs are either described as DEA 1.1 positive – meaning the 1.1 antigen is present – or DEA 1.1 negative – meaning the 1.1 antigen is absent. It is important to note that a universal canine blood type does not exist and that DEA 1.1 negative dogs have been incorrectly termed universal in the past.

Research findings from PBB's own data report that 70 per cent of dogs are DEA 1.1 positive – compounding the need to 'blood type' recipients to ensure that DEA 1.1 negative blood is preserved and only used when necessary. As awareness has grown, so

has the split in supply of DEA 1.1 positive versus DEA 1.1 negative packed red blood cells (PRBC). Last year, PBB reported an encouraging 14 per cent increase in positive PRBC orders last year, indicating the veterinary profession is helping to protect the minority DEA 1.1 negative blood supplies.

PBB also reports an increased demand in fresh frozen plasma (FFP) with more and more veterinary practices storing this useful product. FFP has a shelf life of one year from the date it was collected when stored at -20°C or below; and when it has expired, it can be re-labelled as frozen plasma (FP) with a further shelf life of four years.

Having this product available can, in severe haemostatic disorders, make the difference between life and death and its long shelf-life makes it suitable for all veterinary practices to store for such emergencies.

Under licence from the Veterinary Medicines Directorate (VMD), PBB collects blood from canine donors who meet a set of criteria and are registered on the donor programme by their owners, classifying it as a volunteer programme (**Figure 1**).

PBB is working to provide a substantial and sustainable blood supply for the UK's canine population. With almost 10 years of knowledge and expertise, it continuously aims to bring advancements in pet blood banking and transfusion medicine by running long-term veterinary education programmes. With the help of nearly 5,600 registered canine donors nationwide, it holds over 200 collection sessions a year; and with increased recognition from dog owners, the veterinary profession and the media, it is able to invest in ongoing research initiatives.

The following overview covers in brief the PBB collection process, storage and administration of canine blood.

Collection

The selection of suitable canine blood donors is critical to a successful donation programme. Dogs should:

- Be over 25kg body weight
- Be between one and eight years old
- Have a friendly disposition
- Have no prior medical conditions
- Not be on any medications apart from routine worm and flea treatments
- Be up to date with their vaccinations
- Have never travelled outside the UK
- Never have received a previous transfusion themselves

The donation procedure is similar to that of the human blood service, with donors giving 450ml of blood every 12-16 weeks. All donor dogs have a full history taken and undergo a thorough clinical examination. Blood screens are performed which include blood typing (on first donation only), complete blood count, platelet count and full chemistry profile (first donation and annually) and packed cell volume/total solids (PCV/TS) is performed at every donation.

Blood samples are taken from the cephalic vein or opposite jugular vein to the site of donation.

Collections take place in a quiet room with donors lying on a full-sized, raised table for gravity flow blood collection. A lateral recumbency position is preferred for both donor and assistant's comfort, which in turn increases the likelihood of a successful donation (**Figure 2**).

A collection system with a 450ml collection bag primed with 63ml of citrate phosphate dextrose (CPD) anticoagulant is used routinely. Scales are tared with the collection bag placed on them or their weight is added to the final draw volume. Both methods ensure the correct volume to be collected is known before the needle is placed. Collection volume for a 450ml unit of whole blood weighs 477g (1ml = 1.06g weight) and can be +/- 10 per cent of this weight to be useable.

Figure 2. *Lateral recumbency is the most comfortable position for donor and operator alike.*

Figure 3. *A correctly placed needle in the jugular vein of a donor.*

It is mandatory if blood is to be stored that a closed collection system is used. This is achieved by ensuring the collection line is clamped prior to uncapping the phlebotomy needle.

Prior to venepuncture the phlebotomy area is cleaned and the jugular vein raised, the needle is placed caudally, bevel up into the vein and advanced to the hub so that as much of the needle lies within the lumen of the vein as possible (**Figure 3**). The collection tubing is unclamped, and the desired amount of blood collected with careful agitation of the collection bag every 50ml to ensure a good mix with the anticoagulant.

When the desired amount has been collected, pressure on the vein is released and the collection line re-clamped. The needle is then removed and sheathed to prevent injury. Firm digital pressure is applied over the phlebotomy site for one to two minutes prior to a bandage being placed and left in situ for a further 30-60 minutes.

Donors are checked for normal mucous membrane colour, heart rate, demeanour, and rewarded with treats, food, and attention (**Figure 4**). Collected blood units are labelled to allow identification and placed in boxes ready for transportation to the processing centre. Normal activity is resumed for all donors after blood donation.

Processing

The collected blood units are centrifuged at 3,800 rpm for 15 minutes to separate the plasma and erythrocytes. A manual plasma separator is used to remove the plasma into the attached satellite bags within the collection system, thus making two separate products of packed red blood cells and fresh plasma (**Figure 5**). Further processing and division can be performed to allow one donation potentially to aid in the treatment of up to four recipients.

Three aliquots (samples) of each product produced are retained at this stage for cross-matching and quality control purposes.

Storage

Plasma that is separated and frozen at a temperature of -20°C or below within 24 hours of collection maintains all its coagulation properties and is called fresh frozen plasma (FFP) with a shelf life of 12 months.

Figure 4. *Checking the heart rate of a donor.*

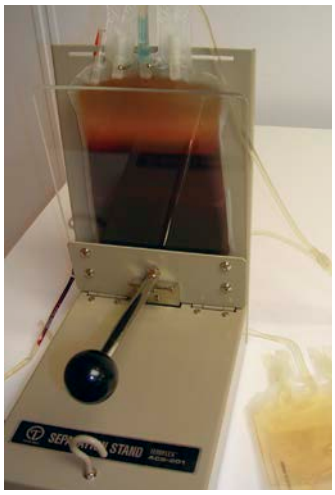

Figure 5. *Plasma separation in progress.*

Plasma frozen after 24 hours is described as frozen plasma (FP) owing to a reduction in coagulation properties. It has a shelf life of five years. Packed red blood cells can be stored at 4°C +/- 2°C for up to 42 days because of the addition of a nutrient solution (SAGM) within the collection system that helps preserve the red blood cell life.

Administration of blood products

Blood products have a limited life span and must be prepared carefully for use. Once breached, they must be fully used within four hours and any remaining product after this time discarded. Prior to transfusion the warming of blood products to at least room temperature is recommended, although they should never be warmed to more than 37°C.

Warming can be achieved by placing the blood product in a waterproof zip-lock bag and placing this in a temperature-monitored water bath. Gentle and slow warming of products is sensible if time allows.

Blood products should be given intravenously and can be given via both a peripheral or central (jugular) line. In very moribund patients, if intravenous access is not possible, the intraosseous route can also be utilised as an effective and rapid method of administration.

All blood products must be administered via a filtered giving set to reduce the risk of micro-thrombi and given to a calculated dose to prevent hypervolaemia in small or compromised patients. Patients be monitored closely before, during and after transfusion, and regular diagnostic tests carried out to assess the response to transfusion.

Transfusions must not be administered through the same intravenous line that has any solutions containing calcium or glucose. Normal 0.9% saline can be used to flush giving sets and bags of remaining PRBC or to administer concurrent crystalloid requirement.

Plasma transfusions can be administered via an infusion pump or syringe driver, but it is advisable to check with the manufacturer for accuracy of the equipment and giving sets beforehand. Following recent studies, it is recommended that PRBCs are transfused by gravity alone.

Dose rates and volumes

Transfusions in essence have no 'dose rate'. Blood products should be administered and the recipient monitored until the desired clinical effect is achieved.

When considering volume requirements to prepare for a transfusion these general guidelines to initial transfusion dose rates can be considered:

- A rate of 1ml of PRBC/kg recipient body weight would be expected to raise the recipient PCV by 1%
- In an anaemic but normovolaemic dog, a general dose rate of 10ml of PRBC/kg can be utilised as a starting dose rate and then adjusted according to the required response
- Plasma doses vary according to the condition being treated. The most common use is to treat haemostatic disorders. Recent human literature suggests a dose of at least 20ml/kg of plasma is likely to be required in a symptomatically bleeding patient
- Initial rates of transfusion should be slow for the first 30 minutes of a transfusion. A suggested dose of 1ml/kg of product should be administered. After that 30-minute period, if no acute adverse reactions have been noted, the rest of the breached product transfusion volume should be administered within a four-hour time scale

In a normovolaemic animal, a maximum transfusion rate of 20ml/kg/hr is suggested.

Monitoring

Parameters routinely monitored are demeanour, mucous membrane colour, heart rate and rhythm, temperature and respiratory rate. If after 30 minutes no concerns have arisen and continuous monitoring is not possible, regular checks of 15-30 minutes are appropriate. ■

PPD Questions

1. What two routes of administration can be used for blood products?
2. How old should an ideal canine blood donor be?
3. How many millilitres of whole blood do we collect in 'one unit' and how many grams does that weigh?
4. What is the shelf life of fresh frozen plasma (FFP)?
5. What temperature should plasma products be stored at?

Answers
1. IV/IO 2. 1-8 years old 3. 450ml and 477g 4. One year 5. -20°C or below

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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.

**Suggested Personal & Professional Development (PPD)*

POISONS

The holly and the ivy... and other festive hazards

Christmas brings much joyous hustle and bustle and, for the curious pet, it usually means the presence of items not normally encountered around the house – or in the case of food, greater quantities than usual! Busy owners may be unaware of the risks these items pose and will often have their usual focus distracted by all the inherent festive planning and organising.

Chocolate

Chocolate poisoning is particularly common in dogs over the Christmas period, with the severity of the effects being influenced by the amount and type of chocolate consumed. Milk and dark chocolate differ greatly in the amount of theobromine – a methylxanthine similar to caffeine – that they contain, which in turn is reflected in the toxic dose (**Table 1**).

The initial clinical effects are vomiting and diarrhoea, which may lead to dehydration, especially as theobromine is also a diuretic. Theobromine stimulates the myocardium and the central nervous system (CNS), leading to animals becoming hyperactive and 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 are insufficient data to determine a toxic dose. Cats seem less inclined to eat chocolate.

Treatment is 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 and is well bound by charcoal. Fatal cases of chocolate poisoning – even in dogs – are rare.

Onion family

Onions, garlic, leeks, shallots and chives all belong to the *Allium* species of plants. They can cause toxicity even when cooked, so foods to keep away from dogs include sage and onion stuffing. Initially there may be gastrointestinal signs; but the main effect is damage to red blood cells resulting in anaemia. This may not be apparent for several days after ingestion.

> "Grapes - and their dried products (currants, sultanas and raisins) - are toxic to dogs"

Grapes and dried fruits

Grapes – and their dried products (currants, sultanas and raisins) – are toxic to dogs. Ingestion of even a small quantity can cause acute kidney injury and possibly failure. Don't forget this will include food items that contain dried fruits, such as Christmas pudding, Christmas cake and mince pies. Chocolate-coated raisins

Table 1. VPIS Rough Guide to Chocolate Poisoning in Dogs

Type of chocolate	Suggested treatment threshold
White	No treatment required, as insufficient quantities of theobromine present
Milk	Amounts over 9g/kg
Dark	Amounts over 1g/kg
Cocoa powder	Amounts over 0.77g/kg

pose the additional risk of chocolate toxicity.

Xylitol
Xylitol (E967) is a naturally occurring, sugar-free sweetener and is found in sugar-free chewing gums and sweets, and some pharmaceuticals including nicotine-replacement chewing gums. Xylitol is extremely harmful to dogs and can cause rapid onset hypoglycaemia and, in larger doses, liver damage.

Alcohol
Dogs may help themselves to any unattended alcohol, including wine and liqueurs, and it can cause similar signs (unsteadiness and drowsiness) to those seen in their owners when drunk to excess. In severe cases, there is a risk of hypothermia, low blood sugar and coma.

Macadamia nuts
Macadamia nuts can cause lethargy, increased body temperature, tremor, lameness and stiffness. Chocolate-coated macadamia nuts pose the additional risk of chocolate toxicity.

Leftovers
If there is any food left over at Christmas, be careful to dispose of it promptly and appropriately. Mouldy items (including yoghurt, bread, cheese and rice) can contain toxins produced by the mould that cause rapid-onset convulsions in dogs.

Poinsettia (*Euphorbia pulcherrima*)
Poinsettia has the reputation of being a toxic plant, but this has been greatly exaggerated. It may cause irritation to the mouth and stomach with hypersalivation and sometimes vomiting.

Holly (*Ilex* species)
Although the plant is considered to be of low toxicity, it is not edible, and ingestion of holly berries (*Ilex aquifolium*) may result in gastrointestinal upset.

"Dogs may help themselves to any unattended alcohol, including wine and liqueurs, this can cause similar signs to those seen in their owners when they have drunk to excess"

Mistletoe (*Viscum album*)
The plant is considered to be of low toxicity. Reports of alarming effects refer to American mistletoe (*Phoradendron flavescens*) and not European mistletoe (*Viscum album*). Ingestion of the berries of European mistletoe may cause gastrointestinal upset.

Christmas trees
These trees are considered to be of low toxicity. Ingestion may cause a mild gastrointestinal upset, accompanied by a mechanical obstruction or physical injury from needles.

Ivy (*Hedera* species)
The ivy used in wreaths and decorations is *Hedera helix* (not *Toxicodendron radicans*, the American poison ivy). *Hedera* species cause many gastrointestinal upsets when ingested.

Where there is significant or prolonged skin contact, they can cause both irritant and allergic contact dermatitis.

Lilies (*Lilium* species)
Many households will have lilies at Christmas and all parts of this plant – even the pollen – are extremely toxic to cats and cause acute kidney injury and possibly, failure. Lilies are not hazardous to dogs but might cause mild gastrointestinal upset if ingested.

Silica gel
Silica gel comes in small sachets and is often found in the packaging of new shoes, handbags, cameras or electrical equipment. Although it is labelled 'Do Not Eat', it is considered to be of low toxicity.

Christmas decorations
Decorations made of plastic, paper or foil are of low toxicity; although they can obstruct the gastrointestinal tract. Glass decorations pose the risk of a mechanical injury to the mouth and gastrointestinal tract. Homemade dough is sometimes used to make Christmas decorations and its high salt (sodium chloride) concentration can cause severe – even fatal – hypernatraemia.

Wrapping and crepe paper
Ingestion may cause staining of the mouth which may look alarming; but this material is considered to be of low toxicity. Ingestion of a large amount might cause obstruction of the gastrointestinal tract.

Candles
Although candles – even scented ones that contain low levels of perfume oils – are considered to be of low toxicity, ingestion could potentially cause obstruction or a choking hazard.

Pot pourri
Ingestion of pot pourri causes significant gastrointestinal effects in dogs. These may last several days – even after the material has passed through the gut. It is more likely that this is related to the highly mechanically irritating nature of the dried material rather than any toxic effects. ■

Dangerous dogs – **cause and effect**

Every year, 6,000 people are injured as a consequence of dog attacks; with a large percentage occurring on private property. Recent changes to the Dangerous Dogs Act (13 May 2014) require dog owners to ensure that their dogs do not bite or display threatening behaviour towards people while in the home, as well as in public places.

Before the amendment, dog owners could only face criminal prosecution if their dog displayed aggressive or threatening behaviour towards a person in a public place; but this has now been extended to private property, with dog owners facing criminal charges even if their dogs commit the offences in their own home.

The decision to extend prosecution to incidents that occur on private property coincides with other tougher dog laws brought in as part of the amended Dangerous Dogs Act. Under the new law, owners whose dogs attack a person could face five years in jail – raised from the previous maximum of two. Owners whose dog kills someone could now go to prison for up to 14 years.

It is likely that these new amendments have helped to increase the already rising number of so-called aggressive dogs being abandoned or left to be rehomed by animal charities. Currently, one-third of the dogs in Battersea Dogs and Cats Home are Staffordshire bull terriers and the charity has seen a "huge increase" in the numbers of this breed coming into its care – a third of the dogs taken in being 'Staffies' or 'Staffie-crosses'.

This situation is commonplace throughout many of the rehoming centres in the UK. It is highly likely that some owners – possibly those who are not in total control of their pet – have decided to err on the side of caution and let someone else cope with the problem.

Staffies or Staffie-crosses personify the image of the 'aggressive/dangerous dog'. However, their negative public image can be put down in a large part to ownership according to Laura Jenkins, head of animal services at Battersea, which is working with other animal welfare trusts to help change the perceived image of this breed.

One such organisation is Hull Animal Welfare Trust, and centre manager, Amy Bryan, has launched a campaign to challenge the negative image Staffies have acquired – commenting that responsible owners will tell you that Staffies are gentle, friendly dogs and a million miles away from the hard image with which they have been unfairly tarnished.

So do these dogs have an unfair reputation? The Staffordshire bull terrier has an unpleasant history. It's ancestors were bred specifically to be aggressive so that they could perform well in bear and bull baiting and the like. These early 'proto-Staffords known as a 'bull and terrier' provided the ancestral foundation stock for the Staffordshire bull terrier, the bull terrier, the American pit bull terrier and American Staffordshire terrier.

> "Currently, one-third of the dogs in Battersea Dogs and Cats Home are Staffordshire bull terriers"

In the mid-19th century, as Britain began to introduce animal welfare laws, proponents of blood sport turned to pitting their dogs against each other and used this both as a blood sport and a way to continue to test the quality of their stock. The Staffordshire bull terrier breed attained UK Kennel Club recognition in 1935. Many were imported into the US by pit fighters and used in their breeding programmes to produce the American pit bull terrier and American Staffordshire terrier.

Modern Staffies are naturally muscular and may appear intimidating, while the dog's origins as a fighting breed can make them prone to taking on any other dog that seeks to fight. Most, however, exhibit a natural fondness for people and are much loved by owners. The Staffie's history and uncertain reputation has sadly attracted some less-than-responsible owners resulting in the breed's reputation suffering even further.

When we first consider dangerous dogs, we tend to think only about dogs attacking humans; yet there are just as many instances of 'out-of-control' dogs attacking other dogs, including attacks on 'guide dogs' – in fact, three guide dogs every month are attacked by other dogs. The performance or behaviour of guide dogs is affected in half of these cases and, in some instances, the guide dog has to be withdrawn from service.

It has been recorded that 40 per cent of the attacks on guide dogs were by so-called bull breeds, such as bull terriers, bull mastiffs and Staffordshire bull terriers, despite the fact that these breeds make up a much lower percentage of the dog population.

There is nothing surprising about this statistic bearing in mind the history of Staffies; although what should also be considered is that if you look at dog bite statistics, the majority of bites on humans are inflicted not by bull breeds, but by common breeds, such as collies, spaniels, terrier breeds, German shepherd dogs, and golden retrievers.

Any dog can be aggressive to humans, all dog ownership carries a risk, and all dogs – regardless of their breed – need to be trained and kept under control.

So where do we go from here? The Staffie has the bad 'street cred' yet, in reality, all breeds of dog have the potential for aggressive behaviour and all owners have the potential to harness or unleash this in their pet. This is not a cry in the defence of Staffordshire breeds, but more a question to the veterinary professions – asking how can they help to educate the public better in the training and control of their 'best friend'.

Responsible ownership, knowledgeable owners and support in the care and understanding of their dogs surely will go some way to make dog ownership safer and, by default, more pleasurable. And even perhaps stop the rise in the number of abandoned Staffies. ■

Bettina Dunkel
DVM PhD Dip ACVIM Dip ECEIM Dip ACVECC FHEA MRCVS

After a fellowship, internship and a large animal internal medicine and an emergency and critical care residency (alternate track) in the USA, Bettina attained her PhD from the University of London in 2008. Since then she has been employed as a senior lecturer in equine medicine at the Royal Veterinary College. Her main clinical and research interests are equine platelets, neonatology, respiratory diseases and all aspects of equine critical care.

**Suggested Personal & Professional Development (PPD)*

NEONATAL

Equine **neonatology**

Neonatal foals are very susceptible to a variety of diseases that can be acquired after birth or even in utero. This article discusses some of the most common conditions affecting foals of this age group, including brief discussion of treatments.

Newborn foals, less than seven days old ('neonatal foals'), are very vulnerable to exogenous influences causing illness and injury. A foal's condition can deteriorate within hours and timely and efficient veterinary attention is essential to ensure complete recovery.

Fortunately, even severely ill foals can survive if appropriate care is provided and up to 80 per cent of foals recover and are discharged from neonatal intensive care units around the world with excellent chances of becoming healthy and well-performing adults – even elite athletes (Toth, Slovis et al, 2014). Neonatal intensive care has improved greatly over the last 30 years and significant advances have been made in understanding, diagnosing and treating neonatal disorders.

Many diseases affecting neonatal foals, such as sepsis and perinatal asphyxia syndrome (PAS), are not acquired after birth but actually begin in utero. Examination, monitoring and treatment of the pregnant mare is, therefore, an essential component of neonatology.

Bacterial or viral infections can be transferred to the foal via the placenta. In addition, any maternal disease process that compromises perfusion of

Table 1. Differential diagnoses for compromised neonatal foals

Clinical signs	Differential diagnosis
■ Lethargy/listlessness, increased time sleeping ■ Slow to stand/nurse ■ Difficulties standing/nursing ■ No interest in mare/failure to follow mare	■ Perinatal asphyxia syndrome (PAS) ■ Sepsis ■ Other systemic diseases
■ Colic ■ Abdominal distension ■ Straining to defaecate	■ Meconium impaction ■ Enterocolitis ■ Uroperitoneum ■ Intussusception ■ Small intestinal volvulus ■ Other strangulating/non-strangulating lesions ■ Congenital malformation (atresia ani/coli)
■ Diarrhoea	■ Infectious or non-infectious enterocolitis ■ Sepsis ■ Lactose intolerance
■ Changes in respiratory rate or pattern	■ Rib fracture ■ Neonatal isoerythrolysis ■ Aspiration pneumonia/other pneumonia ■ Anaemia ■ Central hypoventilation (PAS) ■ Prematurity ■ Persistent foetal circulation ■ Choanal atresia
■ Neurological signs ■ Head tilt ■ Blindness ■ Abnormal vocalisation ■ Collapse ■ Seizure ■ Coma	■ PAS ■ Sepsis ■ Severe electrolyte abnormalities ■ Bacterial meningitis ■ Hepatic disease ■ Congenital malformation
■ Abrasions on limbs/over joints ■ Lameness ■ Joint distension	■ PAS (abrasions) ■ Sepsis – infectious arthritis/osteomyelitis/physitis ■ Trauma ■ Rupture of gastrocnemius muscle ■ Prematurity

Figure 1. *Foal with failure of passive transfer secondary to perinatal asphyxia receiving a plasma transfusion.*

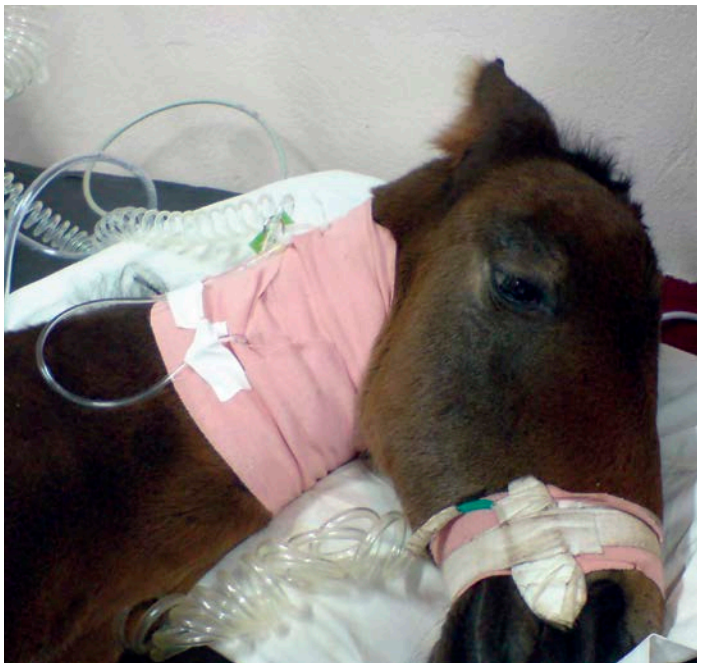


Figure 2. *Foal with perinatal asphyxia syndrome.*

the placenta can affect the foetus negatively.

Examination of the pregnant mare includes ultrasonographic evaluation of placenta, foetal fluids and the foetus itself. If problems with the pregnancy are identified – or if a mare had trouble foaling in the past (so-called high-risk pregnancy) – referral of the mare to a hospital prior to delivery might be indicated. This allows continuous monitoring and regular assessments of the pregnancy, foaling can be supervised and immediate care can be delivered, if necessary.

The majority of neonatal foals requiring veterinary attention suffer from one of the following diseases: failure of passive transfer (FPT), sepsis, PAS, prematurity, neonatal isoerythrolysis (NI), enterocolitis, pneumonia or colic. A list of differential diagnoses based on clinical signs can be found in **Table 1**.

Failure of passive transfer

Foals are born with a functional – but naïve – immune system and rely entirely on the maternal antibodies provided in the colostrum for protection from infectious diseases for the first weeks of life. Lack of passive transfer predisposes the foal to infectious diseases, especially bacteraemia/sepsis, septic arthritis, diarrhoea or pneumonia.

FPT can occur as a consequence of lack of colostrum or poor quality colostrum – for example as a result of premature lactation or failure of the foal to nurse which could be caused by underlying diseases such as PAS or sepsis (foal unable to get up), orthopaedic problems (tendon contracture) or rejection by the mare. Foals may also fail to absorb immunoglobulins if colostrum is given too late (>12-24 hours after birth).

"Foals are born with a functional – but naive – immune system and rely entirely on maternal antibodies in colostrum for protection"

The diagnosis is established by measuring IgG concentrations in the foal's blood; an IgG concentration >8g/L is indicative of successful passive transfer. Treatment consists of oral colostrum if the foal is less than 12-18 hours of age. Oral colostrum should not be given if the foal also suffers from a systemic disease process (sepsis, PAS, severe prematurity) that compromises haemodynamic function.

If the foal is >12-18 hours old or suffers from systemic disease, intravenous administration of plasma is indicated (**Figure 1**). One litre of commercial plasma will increase the IgG concentration by approximately 2g/L, consequently often two litres are necessary to achieve the required antibody concentration. Sick foals can use up large quantities of IgG, making repeated measuring and potentially repeated plasma transfusions necessary.

Perinatal asphyxia syndrome (PAS)

Perinatal asphyxia describes a syndrome that has long been thought to derive from inadequate availability of oxygen to the tissues of the body. New research suggests that imbalances of the foal's steroid hormone profile might be either responsible for – or at least contribute to – clinical signs (Madigan, Haggett et al, 2012; Aleman, Pickles et al, 2013). However, further research is needed to confirm and further describe these findings.

Regardless of the exact aetiology, several diseases that affect the mare's placenta can predispose a foal to development of PAS with placental insufficiency, placentitis or partial placental separation being some examples. Severe diseases of the mare during pregnancy causing hypotension, hypovolaemia or hypoxaemia, can also compromise the developing foetus. Foals that experience difficulties during the birth process – particularly prolongation of stage 2 and any foal requiring resuscitation – are also predisposed to develop PAS.

PAS affects all organ systems. Clinical signs vary depending on the severity of the underlying damage and the primary organ system most severely affected and range from very mild behavioural abnormalities to complete cardiovascular collapse. Neurologic signs often cause the most noticeable symptoms (**Figure 2**) but frequently other organ systems are equally compromised, particularly the gastrointestinal and urinary system, and meconium retention, colic, diarrhoea and inability to tolerate enteral feeding may occur.

There is no specific treatment against PAS but, in the majority of cases, dysfunctions are reversible and resolve with time and supportive care. Foals that do not stand within two hours after birth or do not nurse within three hours, or foals that are born during a dystocia or via Caesarean section, require immediate veterinary attention. Early referral of these cases, where appropriate, can reduce the severity of the disease and the costs involved for intensive care.

Sepsis

Sepsis is defined as an infective process that provokes uncontrolled activation of the immune system and release of inflammatory mediators into the systemic circulation (McKenzie and Furr, 2001). Clinical signs vary depending on the severity and extent of the underlying infection and the resulting inflammatory response from mild abnormalities to cardiovascular shock and death.

Clinical signs in neonatal foals are frequently subtle, such as hyperaemia of mucous membranes, conjunctiva and coronary bands, petechiae in ears and on mucous membranes or the presence of uveitis. Foals may have a normal, high or low body temperature, heart and respiratory rates and peripheral white blood cell counts; although a low white cell count is strongly suggestive of sepsis.

Clinically, it is almost impossible to distinguish between PAS and sepsis, and the two conditions may be coexistent. PAS and sepsis must be suspected in any compromised neonatal foal unless proven otherwise and appropriate antimicrobial therapy and supportive care, as necessary, should be initiated as quickly as possible (Corley and Hollis, 2009).

Neonatal isoerythrolysis

Neonatal isoerythrolysis (NI) is an immune-mediated haemolytic anaemia of foals caused by antibodies present in colostrum that are directed against the foal's red blood cell (RBC) antigens. It occurs as the result of a blood group incompatibility between mare and foal when the foal has inherited the stallion's RBC antigens which must be different from the mare's. It usually occurs in multiparous mares that are assumed to have been sensitised against the foal's RBC antigens during earlier pregnancies. However, the disease can also occur in maiden mares.

> "Clinically it is almost impossible to distinguish between PAS and sepsis and the two conditions may be coexistant"

The RBC antigens the foal has inherited from the sire must be strongly antigenic – usually blood group Aa or Qa. Mule foals (donkey sire x horse dam) suffer from NI more frequently owing to the so-called donkey factor – a RBC antigen present on donkey but not on horse RBCs (Traub-Dargatz, McClure et al, 1995; Boyle, Magdesian et al, 2005).

Once the mare has been exposed to foreign RBC antigen, antibodies against those antigens are produced and accumulate in the colostrum. The foal ingests and absorbs the antibodies into its blood where the antibodies coat and destroy the foal's own red blood cells.

Such foals are often normal at birth but then develop clinical signs within the first four days of life. Weakness, lethargy, increased heart and respiratory rates, icterus and pale mucous membranes are the most prominent features. Time of onset and severity of clinical signs are dependent primarily on the amount of antibodies ingested and the affinity of the antibodies to the RBCs (Polkes, Giguere et al, 2008). A diagnosis can often be made based on clinical signs or by performing a cross-match between the mare's plasma and the foal's RBCs.

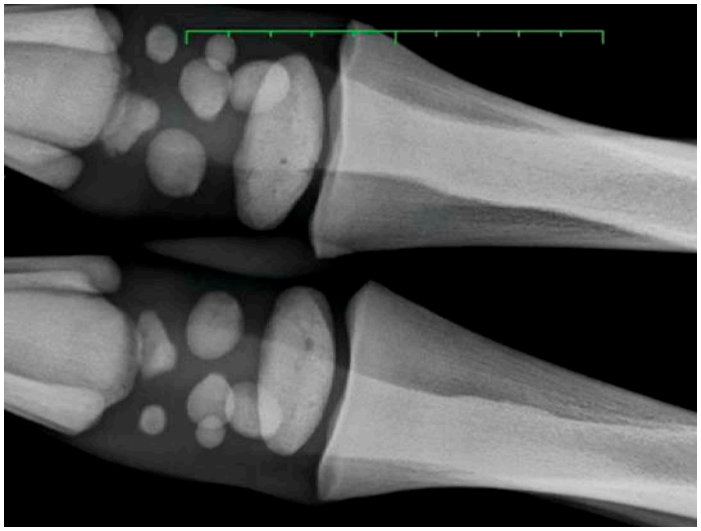
If the foal is less than 24 to 48 hours of age, any further colostrum ingestion must be prevented as it could aggravate the disease. Plasma and/or blood transfusions may be necessary to provide the foal with antibodies (prevent or treat failure of passive transfer) and treat the anaemia, if indicated. Mares with a history of NI foals should be examined for the presence of antibodies in late gestation. The newborn foal must then be prevented from nursing for the first 24 to 48 hours and provision of alternative colostrum and nutritional sources are necessary. The mare's colostrum must be discarded.

Prematurity

Normal gestation length for a horse is approximately 335-365 days; however, the normal gestational length varies greatly between breeds and individuals. The length of gestation is, therefore, not a good indicator as to whether or not a foal has been born prematurely. Dysmaturity is a term used to describe foals that are inappropriately premature for their gestational age (Lester, 2005). Foals born at a gestational age of <275 days are unlikely to survive; while prematurity or dysmaturity are rare, but possible, after 320 days of gestation.

The prognosis for foals born prematurely from a grossly infected uterus is assumed to be better compared to foals born from an

Figure 3. *Incomplete ossification of carpal bones in a premature foal.*



apparently normal uterus, particularly if the birth was induced or occurred via a Caesarean section. It is speculated that physiological stresses associated with development in an infected uterine environment lead to faster foetal maturation and enhanced readiness for birth.

Clinical signs of prematurity include a small size (normal foal weight is approximately 10 per cent of the dam's weight), short, silky haired coat, floppy ears, a domed forehead, weakness, tendon laxity and incomplete ossification of the tarsal and/or carpal bones (**Figure 3**). Many foals will seem relatively strong and vigorous for the first 12 to 24 hours of life, but then rapidly deteriorate.

The two major limiting factors that influence survival are: insufficient surfactant production leading to progressive lung atelectasis and ultimately respiratory failure, and incomplete ossification of the cuboidal bones. This can lead to deformation of the tarsal or carpal bones, greatly reducing chances of a future athletic career. Many foals are euthanased for this reason.

Treatment for foals with prematurity is mainly supportive, including respiratory, cardiovascular and nutritional support. Exercise may need to be restricted until ossification in the cuboidal bones has progressed, in order to avoid compromise of the immature bones.

Enterocolitis (diarrhoea)

Diarrhoea can occur in foals of all ages and the severity varies from mild and self-limiting to severe and life-threatening. Many infectious and non-infectious causes can induce diarrhoea. Some of the infectious causes (*Salmonella* spp. *Cryptosporidium*, *Clostridium difficile* and rotavirus) are highly contagious and potentially zoonotic agents (Magdesian, 2005). To protect staff working with the foal and other horses – in particular other foals – affected foals should be isolated and have their faeces tested for common pathogens.

Foals with diarrhoea can lose large quantities of water and electrolytes and can become dehydrated quickly. The foal becomes weaker and less willing to nurse, which quickly leads to a vicious cycle of progressive deterioration. If diarrhoea persists for several days, severe – and sometimes life-threatening – electrolyte imbalances can develop.

The disease also enhances intestinal permeability, thereby allowing absorption of toxins – and even bacteria – into the blood stream. In two studies, between 49 and 63 per cent of foals with diarrhoea were found to be bacteraemic (Hollis, Wilkins et al, 2008; Frederick, Giguere et al, 2009). Foals that stop nursing quickly become dehydrated and lose weight, leading to a vicious circle of progressive weakness.

Fortunately, many foals recover quickly if the vicious circle is disrupted by giving intravenous fluids, electrolytes and, if necessary, enteral or parenteral nutrition. Foals are also treated with broad-spectrum antimicrobials to prevent haematogenous spreading of infection.

"Diarrhoea can occur in foals of all ages and the severity varies from mild and self-limiting to severe and life-threatening"

Supportive care for compromised neonates

Regardless of the underlying disease process, compromised foals are often unable to maintain their normal vital functions. Hypotension, hypoxaemia and intolerance to enteral feeding are common problems encountered in more severely affected foals.

Supportive care can range from relatively simple intermittent or continuous intravenous fluid therapy and provision of intranasal oxygen to advanced haemodynamic support, parenteral nutrition and mechanical ventilation (Dunkel, 2008). Continuous nursing care is essential for the recovery of any recumbent foal. Frequent turning, cleaning and prevention of self-inflicted injury are as important as medical therapy for the recovery of neonatal intensive care patients.

Prognosis

The ability to treat compromised foals has increased significantly during the last 30 years and most studies report about a 50 to 80 per cent survival of all neonatal intensive care unit admissions. Success of treatment is largely dependent on timely institution of treatment and, if necessary, speed of referral to a tertiary care facility.

Unfortunately, no single factor or combination of factors can reliably predict whether a foal will survive. Few studies have investigated long-term survival and athletic performance, and very few surviving foals display permanent deficits. Although conflicting information is present in the literature with regards to future athletic performance, it is probably safe to say that once a foal has recovered from neonatal illness, there are few limitations to its future use – including athletic performance – at a high level (Axon, Palmer et al, 1999).

For foals suffering from orthopaedic conditions (multiple infected joints or incomplete ossification of the cuboidal bones), prognosis for athletic performance, in particular racing, is more difficult to predict (Neil, Axon et al, 2010).

Prevention/early recognition

Recognition of risk factors during pregnancy enhances the chances to detect and treat any abnormalities before significant problems occur. Referral prior to parturition might be contemplated if problems during/after parturition are expected or have repeatedly occurred in the past.

Education of owners with respect to proper hygiene and neonatal foal care is essential to guarantee that veterinary attention is sought promptly to allow timely identification of foals at risk.

Prophylactic use of antimicrobials in all foals has not been shown to decrease the incidence of disease and, in the light of increasing antimicrobial resistance, should be strongly discouraged (Wohlfender, Barrelet et al, 2009). However, early recognition of warning signs during/following birth by the owner/foal handler and quick and efficient consultation with the veterinarian and referral by the attending veterinarian, if appropriate, are key to increasing chances of survival for the foal. ■

Please turn over for PPD questions

PPD Questions

1. Which of the following infectious agents is not a cause of diarrhoea in neonatal foals?

A. *Salmonella*
B. *Clostridium perfringens*
C. *Clostridium difficile*
D. *Lawsonia intracellularis*
E. *Cryptosporidium*

2. Which equine red blood cell antigens are most commonly associated with neonatal isoerythrolysis?

A. Aa and Qa
B. Ab and Qb
C. C and D
D. Ha and Hq
E. Aq and Qq

3. Complete transfer of passive immunity is often defined as a plasma IgG concentration of:

A. >8.0mg/L
B. >0.8g/L
C. >8.0g/L
D. >80g/L
E. >800g/L

4. Based on recent research, what percentage of neonatal foals with diarrhoea might be bacteraemic?

A. Bacteraemia is rare in foals with diarrhoea
B. <5%
C. 5-10%
D. 10-20%
E. 50-60%

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

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BSAVA congress team 2011 with Grant Petrie, BSAVA president (centre).

AT VETERINARY SYSTEMS

Celebrating 25 years of partnership

Twenty-five years ago veterinary surgeon Martin Barrow, recognising that good management was crucial to the delivery of quality veterinary services, started AT Consultants. The company would be instrumental in the conversion of many practices from paper-based client records, accounting and payroll to fully computerised systems. It soon became apparent there was a need for an easy-to-use, reliable and modern practice management system backed by a 24-hour support network and AT Veterinary Systems was born.

With 100 percent veterinary ownership, and commitment to the veterinary profession, AT developed the ATVantage practice management system, the forerunner of its current flagship product the Spectrum Release 5 practice management system.

A social enterprise before the term became popular, AT ploughs profits back into research and development for the benefit of its customers and is committed to the long-term support and development of veterinary practices.

AT is a UK Company with its headquarters in Suffolk and it serves practices all over the UK and Ireland. Innovative and progressive, with a strong research and development team, the company prides itself on listening to what clients want now and in the future, incorporating these requests and ideas when developing new systems and above all, doing the right thing for veterinary practices.

The continuous improvement and development of software and systems ensures that veterinary practices can harness the power of modern technology for the benefit of their practice with a completely integrated solution.

As an independent company, AT Veterinary Systems is able to work with all wholesalers, manufacturers, equipment suppliers, accountants and other third parties. In the rapidly changing veterinary marketplace, this independence and rock solid commitment has been welcomed by AT's customers.

With 25 years of continual development, AT's range of products and services has expanded considerably to provide practical and easy-to-use solutions for the everyday issues facing veterinary practices as well as creating new opportunities for practice development.

AT's combined expertise and experience cover the complete spectrum of computer technology. Its programming team cover software applications for Windows, Linux, UNIX and Apple computers while its web development team produces Apps for mobile phones, tablets and internet based software solutions. >>

AT VETERINARY SYSTEMS

Spectrum R5 Practice Management System

This fully featured practice management system can be customised to meet the needs of practices of all types and locations. Over the years AT has worked with several start-up practices, installing their first systems and assisting with their growth into much larger ventures.

"In the early 1990s no one used to worry too much about batch number accounting, but now it's essential. Our systems are continually changing to meet the needs of practices."

Rob Tillyard,
head of programming,
AT Veterinary Systems

Managing the more complex needs of multi-site, multi-species, first opinion and referral practices, as well as veterinary colleges and universities, is all part of a day's work for AT Veterinary Systems.

With continuous improvements and development by software engineers at AT, Spectrum Release 5 is a substantial suite of software with several million lines of hard working programming code.

A major development over the last five years has been the inclusion and integration of cluster technology into Spectrum R5, to produce Spectrum R5 DDS, which brings huge benefits to practices using AT practice management solutions.

SR5 DDS™
Spectrum DDS uses protocols and techniques found in large high performance mission critical data systems. This landmark release is the result of over five years research and development by the software laboratories at AT Veterinary Systems and brings new levels of computing performance and resilience to veterinary practices of all types.

Spectrum DDS allows practices to create any number of computing "nodes" which seamlessly integrate and function as one system. As the performance of each node is independent of the others, this cluster architecture has a number of advantages for practices.

A single server system is inevitably prone to hardware failure. While this is a rare occurrence the effect can nevertheless be disruptive for the practice. With Spectrum DDS, multiple servers ensure continuity of service takes priority.

Spectrum DDS branch surgeries can now run at network speeds of over 1000 MB per second. While central database, cloud and data replication systems can be limited by the connection speeds and reliability of their internet connections, Spectrum DDS is much less dependent on this. With Spectrum DDS, when the 'internet is down', branch practices continue to function normally with data transactions resuming when the line is restored. The cost of opening and managing branch surgeries is thus considerably reduced.

The benefits of accessing data anywhere and anytime is a key benefit of Spectrum. For mobile and out of hours veterinary services, having clinical and prescribing information at hand can be useful if

Developments **through the years**

1989 AT Consultants started

1989 Tim Berners Lee invents the World Wide Web

1990 Windows 3.0 launched

1991 Linux kernel released

1992 AT Veterinary Systems starts with development of ATvantage systems on UNIX

1993 First Microsoft Windows browser 'Cello' released

1995 Vision Information System launched on CD ROM

1997 Callbacks system introduced

1998 Eight million users of the internet in the UK

2001 Apple moves to UNIX based operating system OS X

2002 Vision VBox launched

2002 More than 33 million users of the internet in the UK

2003 First practice to get the Spectrum PMS goes live

not essential. With a laptop computer running as a Spectrum DDS node, this problem is resolved.

Digital communication – Vision email and text messaging
AT recognised the importance of electronic communications and developed the first integrated email and text messaging server for veterinary practices – the VBox. This product enables veterinary practices to have powerful managed email solutions that comply with national regulations, for a fraction of the cost of alternative solutions.

Internet and network security – Vision Sentinel
Maintaining the reliability and business continuity of management systems, as well as the professional reputation of veterinary practices, is of paramount importance to AT Veterinary Systems. Through years of investment and research it developed the Vision Sentinel service for practice security and the Visionline ID service for online security.

Personal cloud solutions – Vets Anywhere
With strong security an integral part of its systems, AT installs servers in practices, on the internet or at other locations to produce "personal cloud solutions". This flexibility gives practices the ability to choose what's best for their needs.

"AT's continued success can be attributed to the experience and expertise of its team in producing powerful world class internet-ready products, its first class customer service and the commitment it has to veterinary practices."

SPECTRUM™
PRACTICE MANAGEMENT SYSTEM

2003 Equine and large animal Daybook system launched

2003 Number of text messages sent in a single day in the UK exceeds 100 million for the first time

2005 Automated text messaging via Spectrum is introduced

2006 57 percent of UK households have internet access

2007 Rota Manager makes staff scheduling easier and more accurate

2007 Apple's iOS mobile operating system unveiled

2009 AT releases first iPhone app

2009 Windows 7 released

2010 VetStation and VetStation Pro terminals launched

2010 First practice to get IRIS digital imaging goes live

2011 Spectrum runs fully on OS X

2013 Spectrum R5 second release to practices

2014 Apple launch OS X Yosemite in October

2014 Spectrum R5 full release in January

2014 First Spectrum DDS Cluster goes live on 12 February

2014 Spectrum R5 for OS X Yosemite in October

Staff planning and scheduling software – Rota Manager
With staff rotas being a continual source of problems for many practices, AT's programmers rose to the challenge and produced Rota Manager, a fully featured flexible system that could deal with everything that was thrown at it.

Rota Manager addresses the whole concept of managing staff time efficiently and it receives excellent reviews wherever it's implemented.

Digital imaging - Picture Archive and Communication Systems (IRIS PACS)
AT Veterinary Systems produces the IRIS PACS which fully integrates digital X-rays, MRI and CT with the Spectrum R5 practice management system, or can be used standalone alongside any other practice management system. A fully DICOM compatible system, IRIS is a great addition to any practice computer system.

Veterinary workstations – VetStations
VetStation and VetStation Pro terminals have been specially designed by AT to provide practices with robust, standardised and powerful workstations that require minimal practice administration. Running on either Windows or Apple OS X these are the terminals of choice for veterinary practices.

Mobile phone, web and tablet applications
AT produces software apps for iPhones, iPads, as well as web-based content management systems and applications. The list of products and services here is not exhaustive, with developments continuing apace, adapting and changing with both technical developments and the needs of practices.

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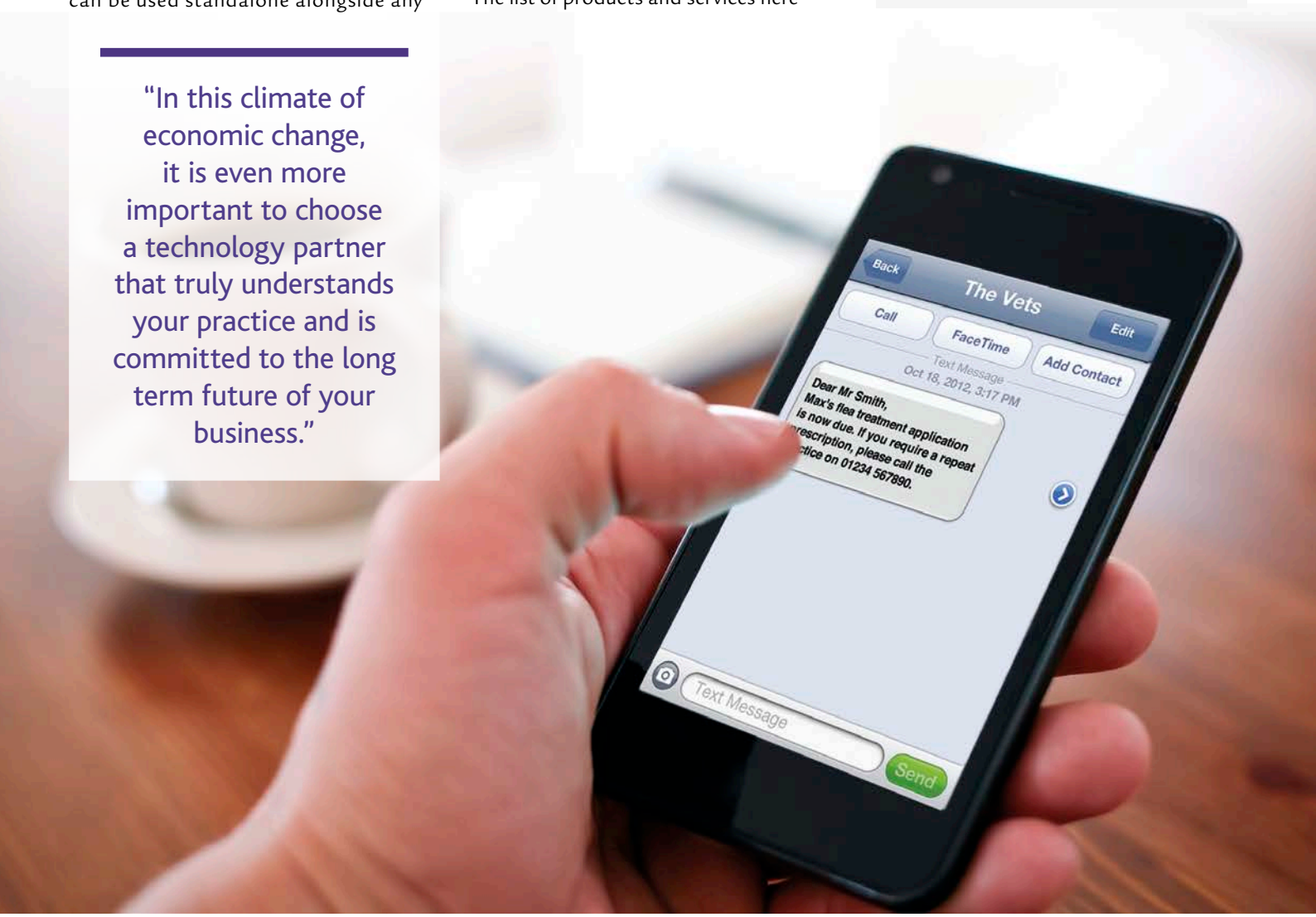

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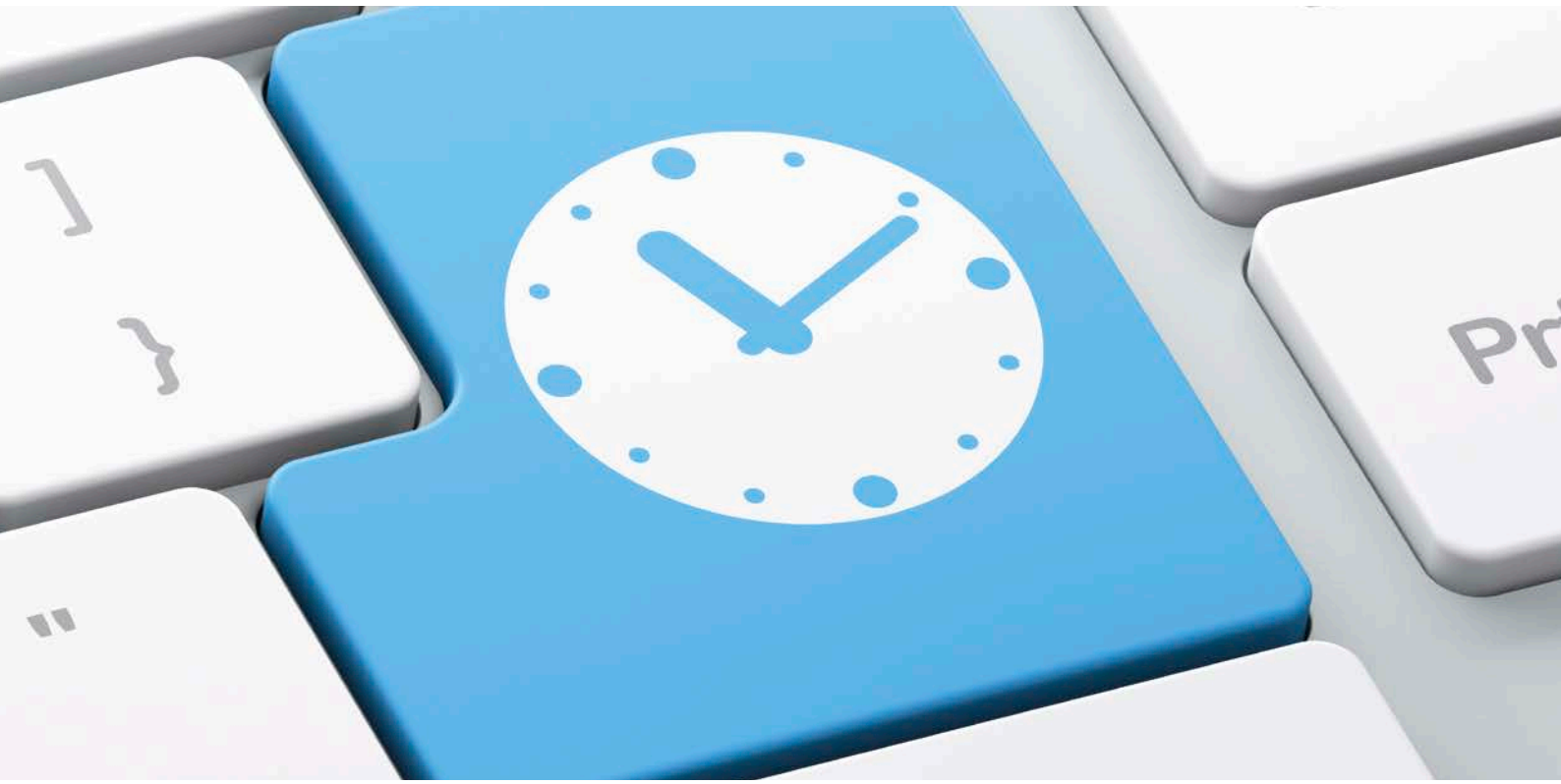

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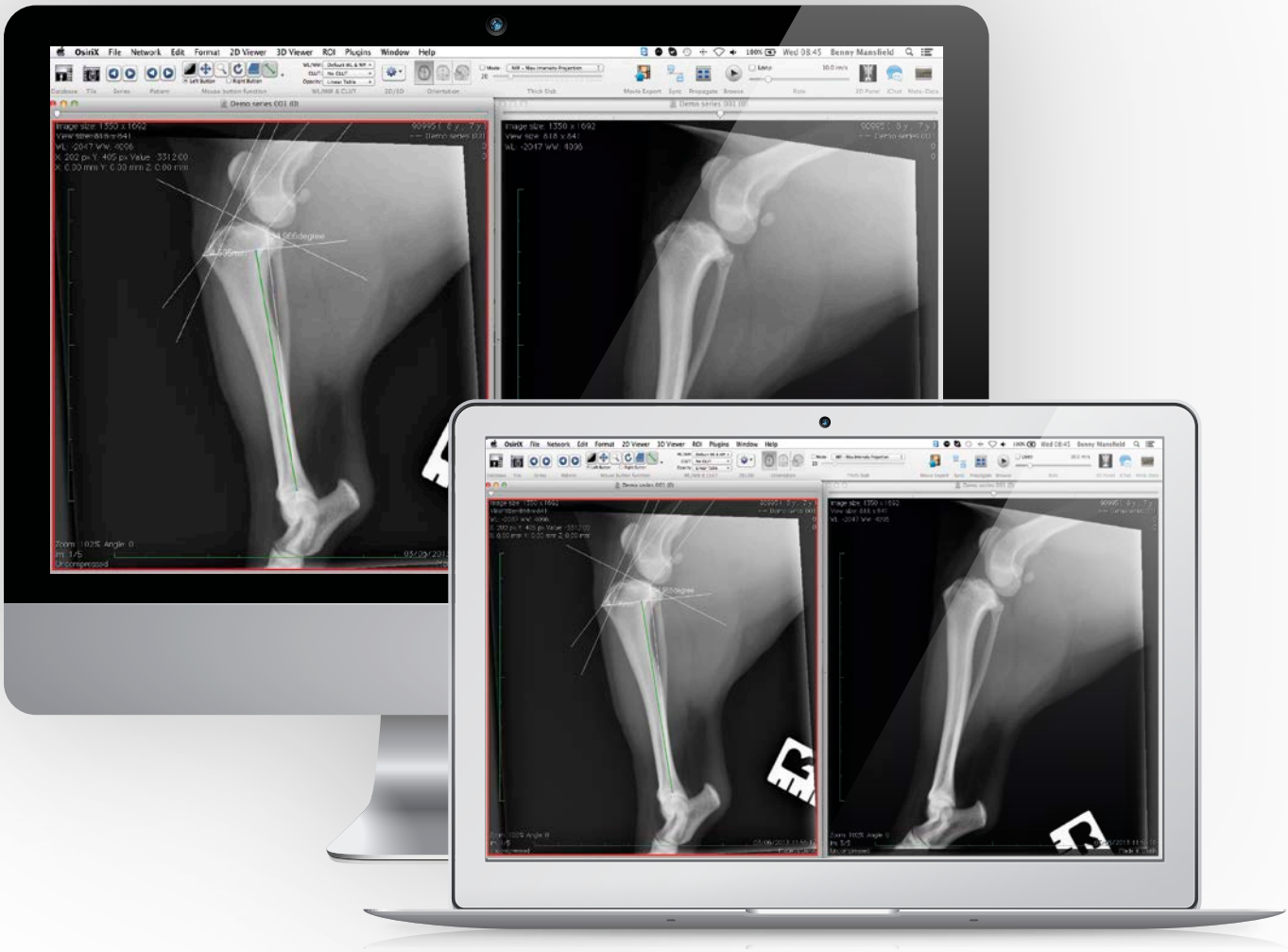

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The perils of being an equine vet

'Equine vets' receive more injuries during their working life than any other civilian profession, including people working in construction, the Prison Service and the Fire Brigade. This is according to the results of a survey commissioned by the British Equine Veterinary Association (BEVA) and conducted by leading medical professionals at the Institute of Health and Well-being and Glasgow's School of Veterinary Medicine.

A total of 620 equine vets completed a work-related questionnaire which indicated that during a working life of 30 years, they sustained an average of seven to eight work-related injuries that impeded their ability to practise. Data from the Health and Safety Executive (HSE) suggests that, compared with other civilian occupations, this is a very high number of injuries.

Key findings were:
- Most injuries were described as bruising, lacerations and fractures
- The leg was the most common site of injury (29 per cent), followed by the head (23 per cent)
- The main cause of injuries was a kick from the horse's hind limb (49 per cent)
- Eleven per cent were injured by a strike from a forelimb, and five per cent sustained crush injuries
- A quarter of injuries resulted in hospital admission
- In seven per cent of cases, the vet reported loss of consciousness owing to the injury
- 'Pleasure' horses accounted for 38 per cent of the worst injuries
- In 48 per cent of all responses, the horse handler at the time of the injury was the owner or the client; whereas the number of laypersons or handlers injured at the same time was low

Prior to this survey, evidence of equine vets sustaining frequent injuries was largely anecdotal – the prevalence and type of injuries have never before been quantified, though it is widely believed that some equine vets are forced to give up work as a result of injuries and that there had been some fatalities.

Tim Parkin, veterinary surgeon and lead researcher, pointed out: "This work should act as a wake-up call to all involved in the training, employment and engagement of equine vets. The risks associated with handling and working with horses should be the primary consideration for equine vets and horse owners alike, every time a horse is examined or treated. In addition, the experience of the horse handler should be considered when undertaking riskier procedures."

Former BEVA president, Keith Chandler, commented: "We were shocked to discover the extent of the injuries sustained. Of greatest concern is the number of vets who suffered head injuries and unconsciousness."

He added that those injuries appeared to be more common during certain procedures; for example while changing bandages or during wound management – when the vet is crouched down next to the patient for a long period – or during endoscopy of the respiratory tract, when vets are partly unsighted and using examination equipment.

> "The experience of the horse handler should be considered when undertaking riskier procedures"

The BEVA is now looking to work with its members, HSE, veterinary schools and large employers of vets to develop strategies for reducing the risk of injury to equine vets. The survey indicates the need for extra and specialist training for all those practice staff involved in working not just with horses but also with large animals generally.

> " 'Pleasure' horses accounted for 38 per cent of the worst injuries"

It is important that practice owners have all the necessary health and safety measures in place to protect their staff. The HSE recognises that working with horses is a potentially dangerous occupation.

Employers have to be able to demonstrate that they have taken all real and practical steps to minimise the hazards and risks existing in all working situations with horses.

This means that a very stringent risk assessment needs to be carried out for all staff involved in equine work, risks addressed and minimised as far as is practical, and staff fully trained in equine handling.

It also begs the question – just as in the small animal world – about allowing owners to hold their animals rather than trained practice staff. ■

Owen Atkinson
BVSc DCHP MRCVS

Owen has worked in farm animal practice since 1994, mainly with dairy cows. His interests in rumen health, cattle foot care and lameness reduction led him to do an increasing amount of training and advisory work.

In 2013, Owen left the practice to found Dairy Veterinary Consultancy Ltd, to better pursue his vision for preventive health management and strategy. Owen's goal is to help farmers make changes on their farms that benefit the cows, the quality of life and their bank balance.

*Suggested Personal & Professional Development (PPD)

Understanding lameness in dairy cows: part two

This second article follows on from the previous one (VPT, Autumn 2014) in which the findings of an 18-month study on lameness in 11,800 dairy cows across 44 herds in north-west England during 2012/13 were discussed (RADA, 2013).

The project concluded that three key qualities of dairy producers appear to be important for good mobility on their dairy farms: accurate awareness of their herd lameness prevalence; an understanding of foot diseases, lesion recognition and aetiology; and a positive attitude towards their personal ability to influence lameness.

It also found that those producers engaging with the DairyCo Healthy Feet Programme (23 of the 44 herds) were more likely to reduce their herd lameness levels in 12 months (by an average of 20 per cent) compared to those producers which were not.

This article discusses health, welfare and economic aspects of lameness, as well as considering behavioural models which might be useful to help producers reduce lameness.

Health and welfare aspects of lame cows

When interviewed, it was almost universal that producers in the study felt lameness was "very important" for the British dairy industry. The top three reasons for this were: public perception (of British dairy farms); reduced production; and concern for the health and welfare of cows.

Even so, the study showed that farmers consistently under-estimated to what extent lameness affects cows' health and welfare. Part of the reason for this is, perhaps, that lame cows hide their lameness very well – an essential aspect of their evolution. To avoid attack by predators, a cow has evolved to always stay with the herd, preferably hiding somewhere in the middle, so as not to show signs of weakness yet to be able to run as fast as her herd mates.

DairyCo mobility score 3 cows, by definition, can not keep up with their herd mates. In Darwinian 'survival of the fittest' terms, they would be the lions' breakfast or the jackals' supper. In terms of

"Farmers consistently under-estimate to what extent lameness affects cows' health and welfare"

***Figure 1**. Lame cows are often in poor body condition, like this one; but does a lame cow become thin or a thin cow become lame?*

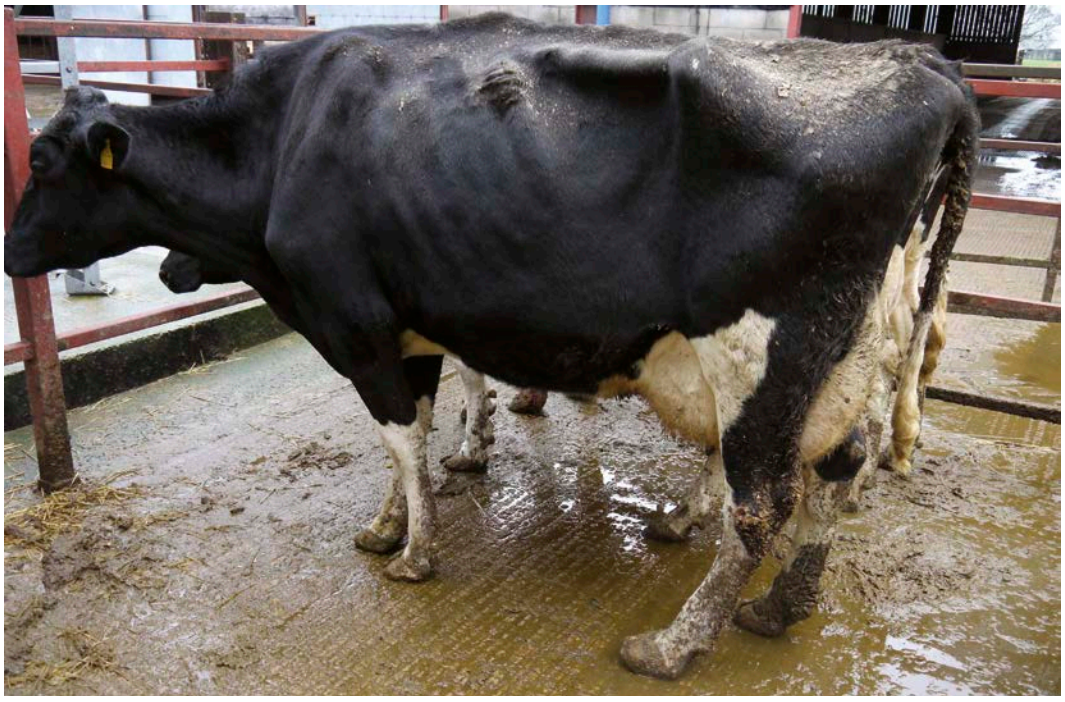

Figure 2. *The economic effects of lame cows are difficult to assess. Claw horn lesions, such as this sole ulcer, are likely to have a greater economic consequence than less severe or short-lived lameness; but all lame cows are likely to have altered lying and feeding behaviour which can affect production, as well as an increased risk of premature culling.*

what farmers see, this five to 10 per cent of the herd are the ones that they perhaps notice – this might account for the large discrepancies found between the true prevalence of lame cows and producers' own estimates (see previous article).

But what of the less severely lame cows? The mobility score 2 cows are lame – you can spot them if you try, but they have not yet lost their ability to stay 'hidden'. They will most likely have lesions though, only observable if their feet are lifted for close inspection. They will also be feeling pain; and, importantly, they will be experiencing consequences to their ability to function well.

Lame cows, even these 'hidden' ones, have altered feeding behaviour (Cook et al, 2007). In housed herds, they get up to feed less often, so their meals are larger and more prone to inducing rumen acidosis. In both grazing and housed herds, their total dry matter intakes might be less – so they produce less milk than their potential. They "milk off their backs" and lose weight.

Body condition and lameness appear to have a complex interaction (**Figure 1**). Do thin cows get lame or lame cows get thin?

In answer to this debate, there is increasing evidence that thin cows are more likely to become lame (Bicalho et al, 2009), probably through having thinner fat pads within the hoof that cushion the pedal bone – think air-cushion soled trainers, and cows' hooves have a similar anatomical mechanism with fat instead of compressed air. Nevertheless, once a cow has become lame, her altered feeding behaviour is very likely to contribute to further weight loss.

"There is increasing evidence that thin cows are more likely to become lame"

Weight loss means these individuals are less fertile too. This and the fact they want to 'hide' means that they come into heat less strongly (if they are cycling at all) and they take a longer time to conceive and have a higher chance of being culled as barren. Willshire (2012) found that lame cows, even if lame for a short period of time, took on average over 60 days longer to get in calf than their herd mates who never went lame.

Lameness, in its own right, is a significant reason for premature culling. For some herds, culling owing to lameness can account for over 10 per cent of the milking herd per year. These cows usually have a higher economic loss associated with them than other forced culls – infertility or mastitis, for instance – because they have the lowest 'trade in' value (**Figure 2**). For some producers, it is only these very lame cows to which they attribute losses; but in reality they are only the tip of the iceberg.

Economic effects of lame cows

So what of producers' abilities to estimate the economic effects of lameness? No wonder – as the academics and researchers cannot agree on the true costs of lameness – that producers find estimating losses very difficult. In the north-west England study, an interesting agreement amongst farms engaged in the DairyCo Healthy Feet Programme (DHFP) and the control farms was that many felt that the costs of lameness were significant, but 'not as high as my vet says!'

Figure 3. *Three types of producer and the likely lameness prevalence.*

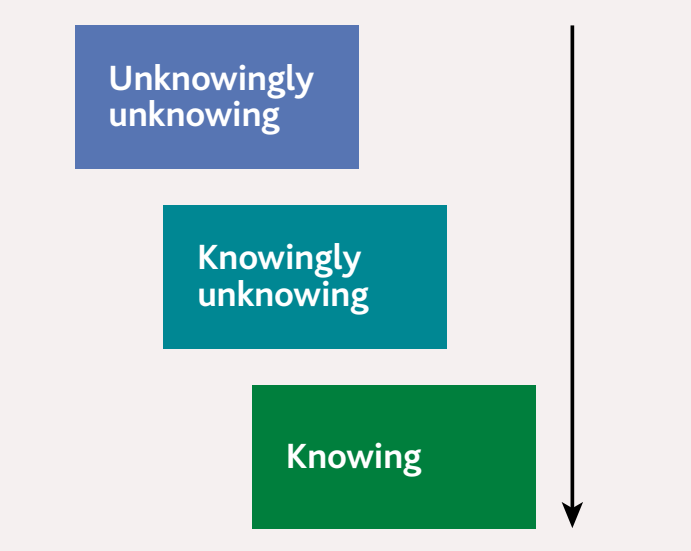

Figure 4. *How fair is it to say that the extent of lameness in a herd is largely the farmer's choice? In this well-managed housed Jersey herd, a zero tolerance to lameness has contributed to lameness prevalence remaining consistently very low.*

Producers ranked infertility, milk loss and cost of culls as the main reasons for financial losses, followed by treatment costs, time and labour, loss of condition, foot trimmer costs and foot-bathing. However, compared to the study's estimates of economic losses, farmers underestimated the total by a mean factor of three – if the study estimated the cost to be £300/cow/year, the farm estimate was £100/cow/year.

The study estimate was based on an average cost of a lame cow incident being £330 (Willshire and Bell, 2009) and a relationship between prevalence and incidence being approximately 1:2.5 (Clarkson et al, 1996).

If producers had a more realistic view of the economic costs of lameness, would that knowledge stimulate them to take more actions to improve cow mobility? Cost was certainly found to be a motivating factor in the study, but not the only one. Producers were also concerned about – and motivated by – care for their animals, public perception and the morale of themselves and their employees.

"If producers had a more realistic view of the economic costs of lameness, would that knowledge stimulate them to take more actions to improve cow mobility?"

However, there is a strong case that as long as farmers find it difficult to evaluate the true cost of lameness, the economic argument to reduce lameness is not being harnessed to its potential. One recommendation coming out of the project was for the development of an industry-recognised 'ready reckoner' for costs associated with lameness, in much the same way as there is for days not in calf (poor fertility).

Lameness as a choice

A way of stratifying producers with respect to their herd lameness prevalence is summarised in **Figure 3**, reflecting the project's findings that greater awareness and understanding is often accompanied by reduced prevalence.

The 'unknowingly unknowing' producers tend to have the most lameness, have the poorest ability to estimate their herds' lameness levels, and the least understanding of lameness. However, they do not recognise this as a factor in their ability to prevent lameness, instead having a greater tendency to blame external factors for their cows being lame – from "poor tracks", to "the weather", to "genetics", to "not enough money". They overestimate their own understanding of lameness.

The 'knowingly unknowing' producers have improved awareness and are better able to recognise their own shortcomings. They begin to place value on better knowledge/training/information about lameness, and can better estimate the lameness levels in their herd. They begin to take control of their own herd's lameness and are more likely to identify things they can do to reduce lameness.

The 'knowing' producers have the best understanding of mobility in their herds. They have an action plan and are

Figure 5. *The Theory of Planned Behaviour (Azjen, 1991).*

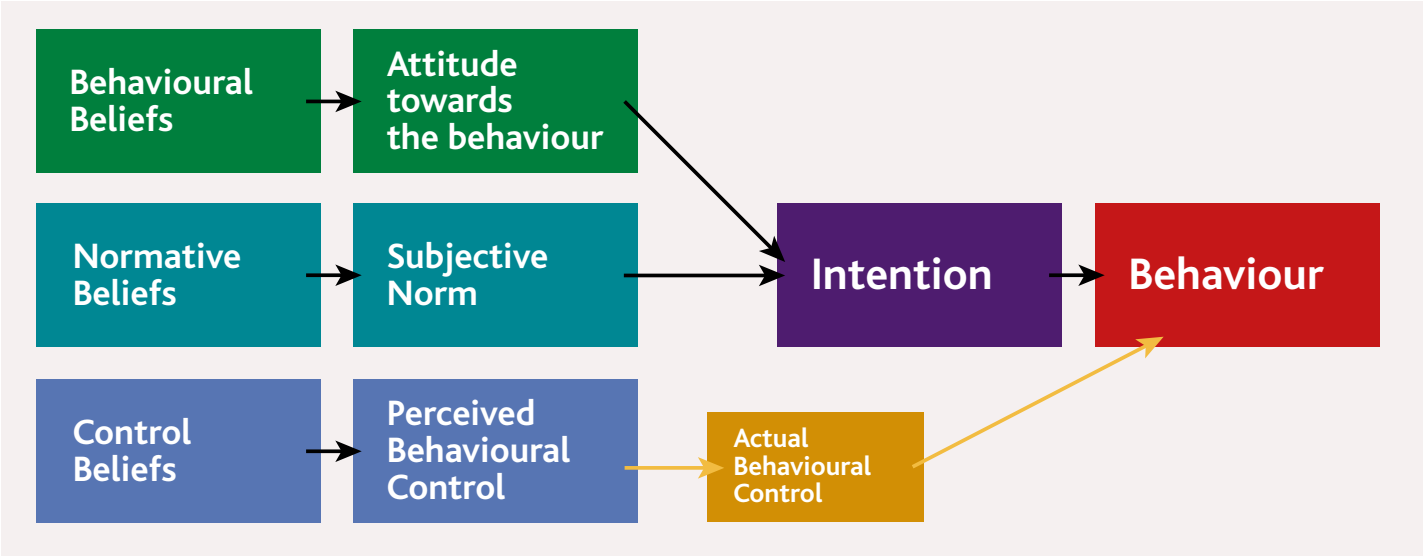

Figure 6. *Illustration of six phases a producer might go through to reduce lameness.*

measuring and monitoring their progress closely. They are less likely to identify barriers to reduce lameness as things out of their own control and show the greatest motivation to reduce lameness. These farms have the least lameness (**Figure 4**).

The previous article discussed how the project indicated that an intrinsic 'can-do' attitude towards lameness control appeared to be beneficial. It might be said "lameness is a choice", and producers' self-belief towards their ability to control it influences their herd lameness prevalence.

Taking steps to reduce lameness

Theoretical models of human behaviour are useful when devising strategies to motivate producers. One such model is the Theory of Planned Behaviour (Ajzen, 1991) (**Figure 5**).

Briefly, the theory suggests that intentions (to do something) are a function of three factors:

- Attitude, which is formed from an overall evaluation of a behaviour
- Subjective norm, which reflects perceived social pressure;
- Perceived behavioural control, which reflects confidence that a behaviour can be performed

"Theoretical models of human behaviour are useful when devising strategies to motivate producers"

Before change occurs, behaviour must alter. The theory examines the beliefs which govern intent and, hence, behaviour change. Before a producer has an intention to reduce lameness, he or she first has to believe lameness is not a good thing (behavioural belief); believe they have more lameness than they should (normative belief); and believe that it is in their control (control belief).

Actual behavioural control may differ from perceived behavioural control if, for example, a person lacks key skills or understanding to influence the change.

For an intention to reduce lameness, a producer must believe that lameness is not a good thing (attitude to lameness); believe that he or she has more lameness than they should (compared with their subjective norms); and believe that reducing lameness is within their control (perceived behavioural control).

Working to increase producers' perceived behavioural control is likely to be beneficial.

It is useful to look beyond veterinary science for experience of successful programmes for changing behaviours. An example is the Department of Transport's ongoing campaign to reduce deaths associated with speeding motorists (Department of Transport report, 2006).

In this instance, speed awareness workshops have resulted in measured success by adopting simple principles of behavioural change, including the Theory of Planned Behaviour (McKenna, 2007). Delegates are encouraged to accept responsibility for their own speed and are given simple tools to alter their inherent habits, both of which can increase their perceived behavioural control.

Producers accepting responsibility for lameness within their own herds is probably a prerequisite before expecting them to implement any technical advice (Atkinson and Fisher, 2014). Developing a producer's belief in their own ability to control lameness, and then providing simple practical tools to do so, might increase the likelihood of their choosing to reduce lameness.

The steps involved are summarised in **Figure 6**.

Summary

The North West Mobility Project showed that while the DairyCo Healthy Feet Programme can help individual farms reduce lameness, there are many challenges yet to be overcome. For example, there is a widespread mismatch between perceived and actual lameness prevalence on farm, and reducing lameness is seldom prioritised.

Clearly identifying the economic impact of lameness, motivating producers to reduce lameness and providing effective, simple tools to do so, are areas where more can be done. Vets in practice have an important role not only in raising producers' understanding of lameness, but in facilitating the farm team to adopt changes. A brief appreciation of human psychology, and models of behavioural change, can be useful in this regard. ■

Please turn over for PPD questions

PPD Questions

1. Which of the following statements most closely reflects current thinking on the most significant effects of nutrition on lameness in dairy cows?

   A. Nutrition of the cow is unlikely to influence lameness significantly
   B. Rumen acidosis, such as is common with high concentrate diets of high-producing dairy cows, causes changes in the blood flow in the claw, affecting suspension of the pedal bone
   C. High concentrate feeds cause laminitis but the mechanism is uncertain
   D. Cows losing weight, or in poor body condition, such as is common in high-producing dairy cows early in lactation, have a thinner digital cushion (fat pad) and so are more prone to claw horn disruption
   E. Mineral supply is the most significant effect the diet has on hoof disease
   F. Biotin deficiency, which is common in high-producing dairy cows with acidic rumen conditions, is the most likely reason why claw horn disruption occurs
   G. High concentrate diets result in more liquid slurry, which creates the wet environment so important for both claw horn diseases and digital dermatitis

2. Which of the following statements about the costs of lameness do you agree with?

   A. The economics of lameness are particularly hard to calculate because cost per case is the usual measure available in the literature, yet prevalence is the more usual data set available on farm
   B. Because producers do not rate costs of lameness as being their main motivating factor for lameness reduction, the economics of lameness are less important
   C. The costs of lameness are obvious for producers because lame cows produce less milk
   D. There is no published evidence that lame cows take longer to get back in calf than their non-lame herd mates
   E. Lameness probably costs a typical UK dairy farm an estimated £264/cow in the herd/year

3. According to the Theory of Planned Behaviour, which of the following statements is correct:

   A. Producers will respond best to a direct approach of advisers telling them what actions they should take
   B. Producers who have an accurate appreciation of their herd's lameness prevalence are more likely to act to reduce it
   C. Producers who believe lameness is controlled by their own actions are more likely to act to reduce it
   D. If a producer is told they have a high lameness level, they will be more likely do something about it
   E. Producers who have a plan will, in theory, be more able to control lameness levels
   F. A producer's behaviour can be influenced by giving them a plan

Answers

1. D. While rumen acidosis/high concentrate syndrome is quite likely to affect pedal bone suspension via changes in the laminae bonds, the more significant effects of nutrition on claw horn disruption is now thought to be exerted by the interactions between diet, body condition score, and the digital cushion. There is strong evidence that biotin supplementation reduces lameness in some herds, particularly white line disease, and biotin deficiency is more likely with acidic rumen conditions (biotin is synthesised in abundance in healthy rumens). However, this isn't thought to be the main nutritional effect on claw horn disruption. Dietary mineral availability is likely to affect horn quality, and there is some evidence that supplementation, particularly of zinc, can be beneficial in some herds to a small degree. The dietary effects on slurry consistency are likely to be significant factors in lameness aetiology, but as yet are not quantified. Excess liquid slurry can both reduce horn quality (high moisture), potentially leading to more claw horn diseases, and increase the risks of infectious diseases, such as digital dermatitis.

2. A & E. While remains so difficult to estimate costs of lameness, the economic argument is a lost potential opportunity to motivate some producers to invest time and effort in reducing lameness. The problem is perhaps worsened because lame cows continue to produce saleable milk, and often in very large quantities. The relationship between lameness and milk yield is a complicated one – higher yields are a risk factor for increased lameness, so the lame cows may be the highest yielding. The lameness may be preventing them from reaching their true potential, but this is an entirely hidden loss.

A simple lameness cost calculation: Typical prevalence = 32% Cost per case (average) = £330

To convert prevalence to incidence, multiply by 2.5. This figure is derived from Clarkson et al, 1996, but is also consistent with other work which suggests a cow is lame for an average of 5 months (12/5 = 2.4).

Thus, Cost = 0.32 x 2.5 x 330 = £264/cow in herd/year

3. C. Answer B is almost correct – producers who believe their lameness prevalence is too high (compared to their own subjective norms) are more likely to act to reduce it, but simply knowing their herd's lameness prevalence is not enough. Answer D is not correct because a producer being told their lameness is too high does not necessarily alter their belief.

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Graham Duncanson
BVSc MSc (VetGP) DProf FRCVS

Graham is a sheep farmer's son who qualified from Bristol Veterinary School in 1966. He spent eight years as a government veterinary officer working in all districts of Kenya, where he developed his interest in goats. He returned to the UK to work in general practice in Norfolk in 1975 and has been working at Westover Veterinary Centre, Hainford, Norfolk ever since.

Graham is a committee member of the Goat Veterinary Society (GVS) and has written five text books, including 'Veterinary Treatments of Sheep and Goats'.

**Suggested Personal & Professional Development (PPD)*

GOATS

Essential goat husbandry

This is the first in a series of articles prepared by members of the Goat Veterinary Society (GVS). It should be stressed that these express the views of the individual authors and do not necessarily reflect the policy of the GVS. This article will contain information on feeding, housing, behaviour, general management issues and legal implications.

General management

There are fewer than 100,000 goats in the UK. Perhaps a quarter of these are in large milk-producing herds, with the remainder in small herds or being kept as pets. The small herds produce milk, fibre and meat, and individuals from these herds are often exhibited at agricultural shows and farms open to the general public.

The principal geographical area where goats were developed for milking was in the European Alps (**Figure 1**). The main dairy breed is the British Saanen; although there are six other breeds: Anglo-Nubian, British Alpine, British Toggenburg, Golden Guernsey, Saanen and Toggenburg.

Angora goats are kept for mohair production and Boer goats for their meat. Pygmy goats are very common pets (**Figure 2**).

Biosecurity needs to be addressed by goat keepers and, in the majority of cases, disease comes from other animals of the same species.

If we want to control the risk of unaffected animals becoming infected, we need to stop contact with other individuals and not import any new animals. This may occur at the farm level or at the national level.

If we have to introduce new individuals, we need to have pre-movement testing, pre-movement certification, and quarantine and vaccination strategies in place. We must also be aware that there is cross-over of infections from other animals, mainly from other ruminants (foot-and-mouth disease, for instance); but also from non-ruminants (toxoplasmosis from cats, for example) and even wildlife (bovine TB from badgers).

Finally, we must be aware that some infectious diseases are spread by vectors, such as bluetongue spread by midges.

Feeding

To satisfy the Five Freedoms – the ethical framework around which the codes of recommendation for the welfare of farmed livestock are presently crafted in the UK – all farm animals must be given access to proper nutrition. Goats are included under this umbrella.

Physiological values for goats

- **Temperature:** 101-103°F (38.3-39.5°C)
- **Heart rate:** 70-80 beats/min
- **Normal resting respiratory rate:** 15-35 breaths/min
- **Oestrous cycle:** 21 days (September to March in the UK). It should be noted that it is possible to manipulate the breeding pattern to ensure all-year-round milk production in the commercial sector
- **Duration of oestrus:** 32-96 hours
- **Age at puberty:** 4-5 months

It is vital to be aware that goats are 'browsing' rather than 'grazing' animals. This means not just that forage and water must be offered at all times, but also that the total nutrient balance is such that the animals do not suffer from hunger, thirst or malnutrition. In the UK and in the EU there are strict rules regarding the feeding and watering of animals in transit.

Sadly, most of the welfare problems in the UK result from overfeeding, leading to obesity, acidosis and urolithiasis. Most pet goats, that are not lactating, do not require any concentrate feeding – this is particularly

Figure 1. *Goats in Austria.*

Figure 2. *Pygmy goat.*

Figure 3. *Sheep and goats in Iran.*

important when feeding Pygmy goats.

Body weights for normal adult goats span a wide range. They are: dairy females 55-105kg, dairy males 75-120kg, Angora females 35-55kg, Angora males 50-70kg, Pygmy females 22-27kg and Pygmy males 28-32kg.

The diet of animals must match their production needs and overcome any potential dietary shortcomings, such as mineral deficiencies, energy shortfall or constituent imbalance. Feeding practice, in particular, must be good to optimise the health, welfare and productivity of the animals whether they are kept for meat, milk, fibre or even 'lawn mowers' as pets.

Judicious use of browsing and grazing can be used to satisfy the nutrient demands for a large part of the year. The grazing should be managed to maintain sward height and ensure that fresh grazing is available to the animals as needed or, alternatively, the animals should be allowed to roam to find new pasture. The roaming may be timed to make best use of the grazing to fit in with the weather, the altitude, the harvesting of crops or even the use of the garden.

It should be stressed that to attain a maintenance weight, a pet goat should be fed good quality hay ad lib and nothing more. This is a difficult concept for pet goat keepers who like to give either concentrates or titbits – they would be far better providing branches of 'browse'. Some experienced goat keepers advise cheap pasta shells from the supermarket as a good 'pocket' treat – and 80g of coarse mix or sugar beet pulp twice-daily would be a good addition to hay.

In an intensive situation, attention to stocking rates and the monitoring of sward height will allow the best use of grazing, with optimal swards of four to six centimetres to be maintained. Properly managed grazing patterns, coupled with good forage preservation, are the goal.

Complications to diets start as soon as supplements are introduced. Balanced diets do not need ad libitum mineral blocks or powder supplements; indeed, some of these act to cause dietary imbalance by either competing with nutrients in the diet or by indirect competition. An example is the rich red mineral supplement that is often supplied by farm wholesalers. It contains high levels of iron and will effectively lower the absorption of copper from the gut, maybe even leading to marginal or deficient status.

Similarly, imbalances of calcium, magnesium and phosphates can be precipitated by injudicious use of mineral supplements. There is very little research on goat nutrition published in English. Most values of requirements are extrapolated from dairy cows or sheep. One of the main problems in feeding goats is the limited numbers in a herd and the wide range of milk yields – 600 to 1,500 litres per lactation.

Often goats have long lactations when they fail to 'get in kid' yet are run with the higher milking animals in the milking herd. Such goats require much lower energy density diets. They are thus over-fed and become fat.

Goats have a very short pregnancy compared to cows. Everything, therefore, tends to happen at the end of pregnancy. It is very difficult to manage kidding dates; this is even worse if the does are allowed to run with the buck.

A useful figure is that a goat's dry matter (DM) intake should be 2.8 per cent of its body weight; thus, a middle range goat of 75kg will require 2.1kg of DM daily. This will decrease to 2.7 per cent in early lactation, such that a 'light' dairy doe will require 1.75 kg of DM daily.

Housing

Goats should be given access to shelter at all times. This can be simple and inexpensive, provided it is large enough to accommodate all the goats. Goat keepers need to be made aware that dominant goats may bully others and so, ideally, there should be two entrances to the shelter, which should give protection from rain, wind and snow.

Young kids should be provided with a 'kidding box' in which they can stay secure while their mothers are eating elsewhere. Goatlings enjoy playing, so safe climbing toys should be provided. Goats must never be fed from nets.

Behaviour

General

In many parts of the world, sheep and goats are kept together in large flocks/herds with no problems. Goat social behaviour in these circumstances is very similar to that of sheep, in that they tend to 'bunch' when danger threatens (**Figure 3**).

When goats are kept just as goat herds, they tend to scatter – and the young either tend to hide or freeze – at any sign of danger. Horns tend to play a more major role in male goat behaviour than with horned rams. In fact, this is a good trait as injuries in bucks are less common because they tend to stand on their hind legs and wrestle with their horns rather than charging from a distance like rams.

Large numbers of goats in the UK either do not have horns or they have been disbudded as young kids. Disbudding of kids will be covered in a subsequent article.

Specific behaviour problems

Behaviour problems are rare in goats, except for 'self-suckling' – defined as an animal sucking on its own teats – and 'inter-suckling', defined as one animal sucking the udder of another. These are abnormal behaviours observed in dairy goats (Martinez-de la Puente et al, 2011). Their occurrence may be affected by feeding management or nutrient deficiencies and can lead to udder and teat damage, causing economic losses owing to reduced milk yield.

Self-suckling increases the width of the teat and reduces the milk yield. Its frequency can be reduced significantly by feeding wheat straw ad lib in addition to the ordinary feed. However, it is a habit that is difficult to break and may ultimately require culling of affected animals.

Legal considerations

Every goat is considered by the Department for Environment, Food & Rural Affairs (Defra) as a farm animal and is covered by animal health and welfare legislation. Owners should contact their local divisional veterinary manager (DVM) if they have any problems. Owners – and, indeed, their veterinary surgeon – have a duty to report any suspicion of a notifiable disease: anthrax, bluetongue, brucellosis, contagious agalactia, foot and mouth disease (FMD), goat pox, pestes des petits ruminants, rabies, rift valley fever (RVF), scrapie and tuberculosis.

Goats must be kept on land that has been allocated a nine-digit County Parish Holding (CPH) number; goat flocks are given a six-digit mark. Goats may not be moved off a holding – except for slaughter – within six days of any cattle, sheep or goats being moved on to the holding. This is known as the 'six-day standstill'.

All goats must have an ear tag with a unique numerical identification number; if they are breeding goats, they have to be double-tagged. The legislation for tagging is complex and owners are urged to consult the Defra website.

There is very little movement of goats into or out of the UK. Practitioners should discuss any intended movement with the local Defra office.

Straying of goats is a real problem in certain parts of the UK and is a likely cause of spreading disease, as well as the more obvious road traffic accidents. Good fencing should thus be encouraged; tethering on the other hand should be strongly *discouraged* as there are a large number of welfare implications.

Goats are farm animals; therefore, in England, carcases, parts of carcases and abortion products may not be buried; there are only a few very specific remote areas in Scotland and Wales where it is allowed. If owners do not want the carcase to be treated as that of a farm animal, they can arrange for it to be cremated as for a companion animal, except that the ashes may not be returned. ■

PPD Questions

1. What is the main dairy goat breed in the UK at the present time?

A. British Alpine
B. British Saanen
C. British Toggenburg
D. Anglo-Nubian

2. What is the duration of oestrus?

A. 12-24 hours
B. 24-36 hours
C. 32-96 hours
D. 72-96 hours

3. As 'a rule of thumb' what percentage of a goat's body weight of dry matter should it consume daily?

A. 0.8%
B. 1.8%
C. 2.8%
D. 3.8%

4. There are several notifiable diseases found in goats. Which statement below is correct?

A. Bluetongue and malignant catarrhal fever are both notifiable
B. Neither brucellosis nor tuberculosis are notifiable
C. Tuberculosis but not brucellosis is notifiable
D. Tuberculosis and bluetongue are notifiable

5. Which statement below is correct?

A. Single pet goats do not require a County Parish Holding (CPH) number
B. Only milking goats require a (CPH) number
C. All goats require a CPH number
D. Pygmy goats do not require a CPH number

6. Which statement below is correct?

A. All goats must have a unique numerical identification number
B. All goats need to be double-tagged
C. Goats may not be moved off a holding within six days of other goats being moved on to the holding in any circumstances
D. Goats may not be allowed off for slaughter if goats have been brought on to the holding within six days of other goats being moved on

Answers
1.B 2.C 3.C 4.D 5.C 6.A

Reference

Martinez-de la Puente J et al. (2011) Effects of feeding management and time of day on the occurrence of self-suckling in dairy goats. Veterinary Record 168(14): 378.

Further reading

Duncanson GR (2012). Veterinary Treatment of Sheep and Goats. CABI Nosworthy Way, Wallingford, Oxford OX10 8DE. ISBN 978-1-78064-004-4.

Harwood D (2006). Goat Health and Welfare: A Veterinary Guide. The Crowood Press, The Stable Block, Crowood Lane, Ramsbury, Marlborough, Wiltshire SN8 2HR. ISBN 978-1-8612-6824-2.

Matthews JG (2009). Diseases of the Goat (3rd edn) Wiley-Blackwell, 9600 Garsington Road, Oxford OX4 2DG. ISBN 978-1-4051-6136-7.

The reader is also directed to the British Goats Society (BGS) website at www.allgoats.com This contains much practical and useful information on management, feeding and breeds of goats.

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Exploring the link between **liver fluke** and **TB tests**

Alison Howell and Diane Williams from the University of Liverpool are conducting a two-year study to find out the extent to which liver fluke infection in cattle affects the reliability of TB skin test results. Research has identified a link between the presence of liver fluke in cattle and reduced reactions to TB skin tests (Claridge et al, 2012).

The team will be looking for UK dairy and beef herds that have large numbers of reactors or a persistent TB problem to take part in the study.

Whole herds will be blood sampled and fluke tested at the time of the TB test, using an enzyme-linked immunosorbent assay test (ELISA), to test for fluke infection. This will be done on 'day one' of the TB test to minimise any inconvenience. Researchers will also analyse the results of the herd TB test and farmers will be asked to complete a short questionnaire about TB and fluke risk factors. Farmers will receive payment for their time as well as having access to the results of the fluke test.

"Research has identified a link between the presence of liver fluke in cattle and reduced reactions to TB skin tests"

The diagnosis of bovine tuberculosis (bTB) in cattle requires detection of the host's immune response to the causative agent. It is known that some pathogens – notably helminth parasites – impair their host's immune response; increasing susceptibility to infection while also affecting the sensitivity of immunologically based diagnostic tests.

It is possible that bTB could be spreading across Britain because the most widely used test to identify the disease is ineffective when cattle are infected with the common liver parasite, *Fasciola hepatica*. Work carried out by Claridge and others in 2012 – which noted that the prevalence of *F. hepatica* increased substantially between 2000-2009 in the UK – showed that a significant negative association existed between exposure to *F. hepatica* and diagnosis of bTB.

The effectiveness of the single intradermal comparative cervical tuberculin (SICCT) test used to diagnose bTB was reduced in cattle experimentally co-infected with *M. bovis* and *F. hepatica*. The results indicated that, in the presence of *F. hepatica*, the SICCT test was compromised. The authors concluded from their study that their findings may, in part, explain the continuing spread of bTB and the failure of the current eradication programme in the UK – they estimate that around a third of bTB cases in England and Wales are undiagnosed.

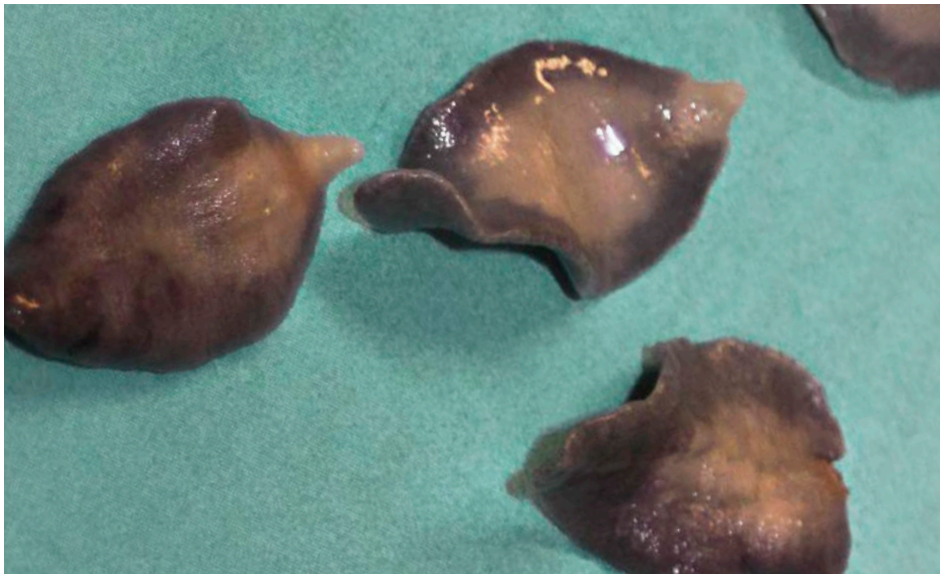
These findings are significant because it is estimated that around 70 per cent of dairy and cattle herds in England and Wales are exposed to liver fluke, which in itself has a huge effect on production costs in the dairy and beef industry. The organisation for the British beef and sheep industry, EBLEX, estimates that liver fluke costs the beef industry £8-9.5 million each year with a significant decrease in milk yields in dairy cows.

"In the presence of *F. hepatica*, the SICCT test was compromised"

Eradicating liver fluke from cattle may seem the obvious option in terms of obtaining more reliable TB test results; however, this has its own difficulties. Keeping cattle away from damp fields that are home to the fluke's snail host clearly helps.

Treating infected dairy cattle is more complicated owing to the 2010 European Union ban on most flukicidal agents because they leave potentially toxic residues in milk. The milk from cows that receive the two drugs that are licensed for use against liver fluke has to be withheld from human consumption for three days after treatment, thereby impacting on the economics of an already financially strained dairy industry.

It will be two years before the results of the current study are available; but the issue clearly plays a not insignificant role in the whole bTB debate. ■



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Claridge J et al. (2012) Fasciola hepatica is associated with the failure to detect bovine tuberculosis in dairy cattle. Nature Communications 3(853): 1-8.

Tortoise hibernation

It is important to appreciate that not all species of tortoise kept as pets hibernate. Temperate terrestrial species such as *Testudo marginata*, *T. hermanni*, *T. graeca* and *T. horsfieldii* are all commonly kept in the UK and should be hibernated. African spur thigh (*Centrochelys sulcata*), Indian star tortoise (*Geochelone elegans*) and red-footed tortoises (*Chelonoidis carbonaria*) are commonly kept species that should not hibernate. Other less-common species of tortoise are also kept in the UK and a thorough review of their natural husbandry and habitat will allow you to determine if hibernation is appropriate.

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 ECZM residency training in avian medicine and surgery 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. He received his FRCVS by examination in exotic bird medicine in 1996 and became a Diplomate of the ECAMS in 1997. Neil heads the avian and exotic department at Great Western Exotic Vets.

**Suggested Personal & Professional Development (PPD)*

TORTOISE

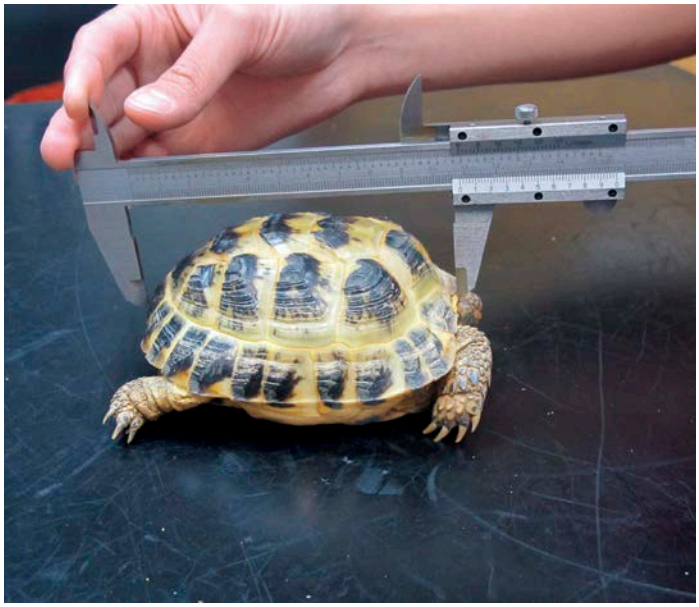
For a successful hibernation, tortoises should be in correct body condition, with adequate stores of fat, energy and body fluid. The Jackson Ratio (and its variants) is a useful method for estimating the body condition of a tortoise. This is a ratio of straight carapace length to body weight of tortoise. The graph is widely available online for reference.

The Jackson Ratio *must only* be used with the Hermann's tortoise (*Testudo hermanni*) and Mediterranean spur-thighed tortoises (*T. graeca* and *T. ibera*). Other body weight: carapace length ratios are published for Horsfield's tortoises (*Testudo horsfieldii*) or marginated tortoises (*Testudo marginata*). Using the Jackson Ratio in these species will produce an entirely misleading result.

When measuring the carapace length for the Jackson Ratio, it is vital that a 'straight carapace length' is measured and the curve of the carapace is excluded (**Figure 1**). Female tortoises which appear overweight (especially if they are anorexic) could be carrying eggs – if this is suspected it should be investigated with a radiograph.

Under no circumstances should a tortoise that is under weight, ill – or recently been ill – be hibernated. It is always recommended that a tortoise has a pre-hibernation check from an experienced reptile vet. This should include a faecal parasite check (pooled sample of three consecutive motions). If in doubt, tortoises can be over-wintered with artificial heating and lighting. There is no evidence to show that missing one hibernation will have any ill effect on a tortoise.

Figure 1. *Correct technique for measuring the straight carapace length in a tortoise.*



"The age a tortoise is first hibernated is cause for debate"

The age a tortoise is first hibernated is cause for debate. In the wild, environmental conditions determine that a first-year tortoise must hibernate; however, these animals will have lower body reserves and will be more susceptible to any errors in hibernation. When advising clients who have no previous experience of hibernating tortoises, we recommend that healthy tortoises (*Testudo* spp.) are hibernated annually once they reach an appropriate age (two to three years) and size (at least 100mm plastron length).

Many breeders and herpetologists do have success in hibernating younger tortoises and the debate as to which age is best practice will continue until further research is carried out.

Winding down for hibernation

Environmental triggers initiate hibernation in late summer and early autumn. Reduced ambient temperatures, reduced light intensity and shorter day lengths all play their part in stimulating the start of hibernation.

To prevent early onset of hibernation in the UK – especially if we have poor summer weather – an owner needs to provide artificial light and heating to encourage continued feeding until the early autumn. The further north you are situated, the more often this problem occurs. It is very dangerous to suddenly place an active feeding tortoise straight into hibernation because the gastrointestinal tract will be full of semi-digested food which will cause problems during hibernation.

A method for hibernation wind-down is summarised below:

- Reduce thermostatically controlled heat gradually (approximately 1°C/day until temperatures are around 15°C (59°F))
- As temperatures drop, feeding decreases, which is vital for hibernation – it takes two to four weeks for a tortoise's gut to empty, so *do not* hibernate a tortoise that has eaten within two weeks for young tortoises and four weeks for adults. Tortoises should naturally reduce their intake as temperatures drop. Enforced starvation is not recommended
- Bathe your tortoise for 20 minutes daily to ensure good hydration and encourage defaecation and urination – ensure the bath temperature is the same as the core body temperature
- Once body temperature is around 15°C (55°F), the tortoise should be inactive and can now be moved to its hibernation box (usually early November)

> "It is very dangerous to suddenly place an actively feeding tortoise straight into hibernation"

Hibernation methods

The author's preferred method for hibernation is refrigeration. This method allows far closer control of temperature than an outside hibernaculum. It also provides protection against predators and rodents and allows quick and easy monitoring of the hibernating reptile (**Figure 2**).

Temperature is the key to success in hibernation. You must be able to monitor and maintain temperature accurately – the best way is with a maximum/minimum thermometer. A 'datalogger' can be used to allow even closer monitoring of temperature.

The optimum temperature for hibernation is around 5°C (41°F) (range 4-7°C (39-44°F)). The environment must be frost-free, remaining above 0°C (32°F) at all times. Tortoises kept below this range may suffer frost damage to their eyes and toes, suffer serious metabolic compromise or even die.

Tortoises may be kept in a refrigerator in a single box – generally high-sided with no lid. Substrate, such as shredded paper, soil/sand mix should be placed inside the plastic box (a small drinks fridge is perfect for a single tortoise). It is important to realise most fridge thermostats are designed to work at room temperature.

Placing a hibernation fridge in a garage or outbuilding will not prevent freezing if prolonged cold weather is experienced. We recommend the use of fridges without freezer compartments – if thermostat failure were to occur, it is more likely that with these units, dangerously low temperatures could be attained. Even in modern fridges with an accurate thermostat, it is possible for the back of a fridge close to refrigeration pipes to attain sub-zero temperatures.

The hibernation box should be placed in the centre of the shelves away from the back and sides. Placing bottles of water in the fridge helps maintain a closer temperature range – especially after opening the door to perform daily checks.

Duration

Adult tortoises (*Testudo* spp.) should be hibernated for 12 to 14 weeks. As with the 'age to first hibernate' debate, there is much discussion over the appropriate length of time juvenile tortoises should be hibernated. Of course, wild juvenile tortoises will hibernate for the same length of time as the adults of the species. However, juvenile tortoises have lower reserves than the adults and hibernation errors could, comparatively, be of greater consequence.

The author currently recommends hibernating two to three-year-old tortoises for six to eight weeks initially. The length of hibernation can be increased in subsequent years until a full 12-week hibernation is achieved by the age of around six years.

Figure 2. *Rodent bite wounds in a tortoise hibernated in an inappropriate hibernaculum.*

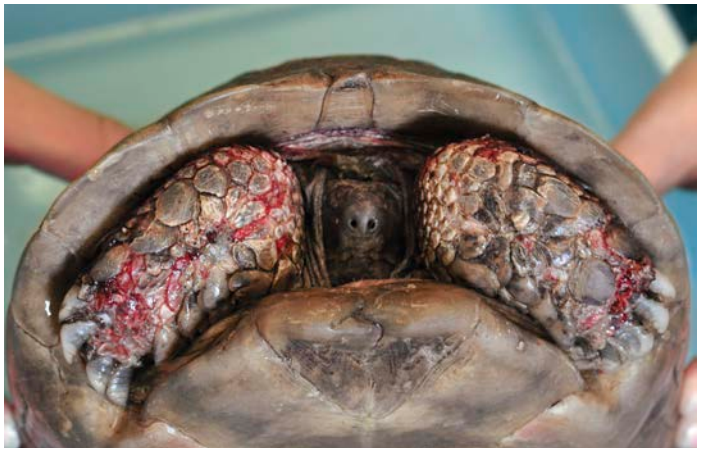


Figure 3. *Pharyngostomy tube in a tortoise with post-hibernation anorexia.*

Monitoring

It is important to weigh a hibernating tortoise twice weekly. At each check, look for signs of significant movement or urination. If *either* has occurred, the tortoise should be woken immediately. An adult tortoise will lose approximately one per cent of its body weight per month during hibernation. If a tortoise loses significantly more than two per cent per month or more than six to seven per cent over the hibernation period, the animal should be brought out of hibernation immediately and seen by a vet.

Waking up

The hibernation period can last 12 weeks from the start, but may be as short as six to seven weeks in juveniles. Fridge-hibernated tortoises need to be woken up proactively by maintaining them at warmer temperatures.

At the end of the hibernation period, move the tortoise to an area at a room temperature of 18°C to 20°C. It should then be placed in a lukewarm bath for at least 30 minutes before moving it to an area with artificial light and heat sources – for instance, a tortoise table.

Bathing should be performed daily for around 10 days to encourage hydration and for the tortoise to excrete toxins accumulated during hibernation. Normal foods should be offered during this period, and supplemental heating is important during the spring as temperatures can be highly variable and frost can kill hibernation/post-hibernation tortoises.

If the tortoise does not drink within 48 hours, is not eating within five days or has not urinated within the first week, it should be examined by a vet as a matter of urgency (**Figure 3**).

Summary

Artificial heating and lighting are vital to enable the extension of summer and reduction of hibernation time; a major consideration is to ensure the tortoise has emptied its stomach prior to hibernation.

Monitor temperature constantly throughout hibernation – using a fridge is most reliable but doesn't avoid this requirement; weigh the tortoise twice-weekly during hibernation and bathe it to facilitate rehydration before and after hibernation. ■

PPD questions

1. An owner rings reporting a tortoise weighing 976g at the start of hibernation has lost 112g by week eight of hibernation. What steps should you advise?

A. Continue hibernation as planned until 14 weeks but lower the temperature
B. Recover the tortoise early from hibernation and present for examination
C. Continue hibernation but increase the temperature

2. An owner brings a four-year-old African spur thigh tortoise for a pre-hibernation check. What is the appropriate advice for length of hibernation?

A. Hibernate the tortoise but only for eight weeks owing to its age
B. Do not hibernate the tortoise
C. Hibernate the tortoise for 12-16 weeks

3. An owner presents a tortoise with post-hibernation anorexia. You discover it has been hibernated in a box in the shed. You examine the tortoise and see white opacity in both eyes. What is the likely cause of the anorexia?

A. Freezing during hibernation
B. Mature cataracts affecting vision

4. On checking his Hermann's tortoise during hibernation, the owner noticed a serous ocular and nasal discharge. What should you recommend?

A. The tortoise should be recovered from hibernation
B. The tortoise should be taken to a vet for examination
C. A swab should be taken for herpes virus and mycoplasma PCR
D. All of the above

Answers

1. B 2. B This is a species that does not require hibernation 3 A 4. D

Primates are **not pets**

In January this year, the British Veterinary Association (BVA) called on the Government to implement a ban on the keeping of primates as pets, after it concluded it was 'almost impossible' for private owners to meet the needs of these animals to the extent laid down in the Animal Welfare Act 2006. The keeping of – or trade of – pet monkeys is already outlawed in seven European countries, including Austria, Belgium and the Netherlands.

Robin Hargreaves, who was BVA president at the time, explained: "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."

While it was considered that changes to existing legislation and licensing could improve primate welfare, the Association says its members did not feel these options went far enough. Mr Hargreaves added: "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."

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

In June, the Environmental, Food and Rural Affairs Committee (Efra) called for urgent action to establish how many primates were being kept in the UK. Committee chair, Anne McIntosh, said: "We were surprised to find that so little is known about the types and numbers of primates being kept or traded by private individuals in the UK and about the manner in which they are being kept".

The committee also felt that, although a future ban was still possible to address the welfare problems associated with primate ownership, it preferred to recommend registration of primates as an initial step, stating: "While we support the adoption of a ban in principle, this is a draconian step that must be based on solid evidence and only after attempts to improve the operation and implementation of the existing regulatory framework have been exhausted'.

Ten arguments were listed in favour of a ban; these included recognition that 'a domestic environment is incompatible with their complex social, behavioural, environmental and dietary needs', and that 'most people lack the expert knowledge required to care properly for primates".

> "The exotic pet trade causes suffering to millions of animals, disrupts ecosystems and may even be driving species to extinction"

All this was welcomed by the BVA, as was the recommendation for a review of the Pet Animals Act 1951. The current Act was drafted at a time before internet sales were possible, and when there was less interest in primate keeping and animal breeding. Pet monkeys, including baby chimpanzees, are increasingly advertised and sold online, where they can be bought for as little as £750.

MPs called for the Government to "ensure that legislation governing the Act is fit for the internet age". MPs also recommended that the Department for Environmental, Food and Rural Affairs (Defra) issue local authorities with guidance on implementing the Dangerous Wild Animals Act 1976, without delay.

In September, the Government published its response to the calls for independent research into the number and type of primates being kept as pets in the UK. Estimates have varied regarding the number of privately kept primates – evidence given by Andrew Greenwood of the British Veterinary Zoological Society states that the number of primates kept as pets in the UK is 'probably fewer than 1,000', whereas other estimated figures were as high as 9,000.

The Government considered that, "it would be the best use of public resources, which need to be prioritised, to undertake independent research on the number and type of primates being traded and kept as pets in the UK".

It also responded to the call for a review of the Pet Animals Act 1951, saying that the Act still provides appropriate protection and that Defra would be working with the Pet Advertising Advisory Group to encourage advertisers to adhere to its minimum standards for advertising pets for sale online. Among other things, the standards state primates should not be advertised for sale.

Defra will also ensure that guidance on the potential use of zoo inspectors or vets for accommodation inspections involving primates – prior to licences being granted or renewed – will be published within the next 12 months. In Britain, licences are needed to keep some species, but some of the most popular – including marmosets and tamarins – are not included in the scheme.

Primates that have highly-specialised needs are being bought and sold to grandmothers, young men and even children, because there is absolutely no regulation covering their sale, distribution and care afterwards. It is a 'huge and significant' problem and is claimed to be 'growing exponentially'.

The RSPCA, the BVA and other animal welfare groups are calling for the practice to be banned. ■

Annual leave and holiday pay

For most UK workers, the statutory right to paid holidays only came about when the Working Time Regulations came into force in 1998. These Regulations were the UK's implementation of the EU Council Directive 'concerning certain aspects of the organisation of working time' – the EU 'Working Time Directive'. This article looks at the background, the current position and the possible future of holiday pay and leave.

David Hewitt

David Hewitt has been involved in employment law for more than 40 years. He has held senior HR roles in industry and has been employed in personnel and employment law consultancy roles since 1990.

He joined Citation Ltd in 1999 and is currently their Head of Employment Law Information.

Annual leave

Under the original Regulations the annual leave entitlement was three weeks, which only arose after a worker had completed 13 weeks of service with their employer. A year later, the entitlement increased to four weeks and annual leave subsequently became a 'day one' right.

The entitlement has always been expressed in weeks; so a five-day week worker was entitled to 20 days' leave, a three-day worker to 12 days, a six-day worker to 24 days, and so on. The EU regards the taking of annual leave as a health and safety issue, so under normal circumstances any leave remaining at the end of one leave year cannot be carried forward to the next leave year (the 'use it or lose it' principle, to encourage workers to take their annual entitlement), and days of leave cannot be 'bought out' by pay in lieu except on termination.

Additional annual leave

The four weeks of annual leave was for all leave, including any leave for bank/public holidays. This meant that a five-day week worker who took the eight public/bank holidays only had 12 days left for 'annual' holidays. This changed in October 2008 when the UK Government introduced 'additional annual leave'. It was expressed as an additional 1.6 weeks' leave (eight days for a five-day week worker), giving a total leave entitlement of 5.6 weeks, but subject to a maximum of 28 days.

As the additional annual leave was introduced by UK legislation and is not EU-driven, the rules governing additional annual leave do not have to comply with any EU requirements. The main difference between annual leave and additional annual leave is that, with the employer's agreement, up to 1.6 weeks of additional annual leave can be carried forward, once, into the next holiday year.

Part-time workers

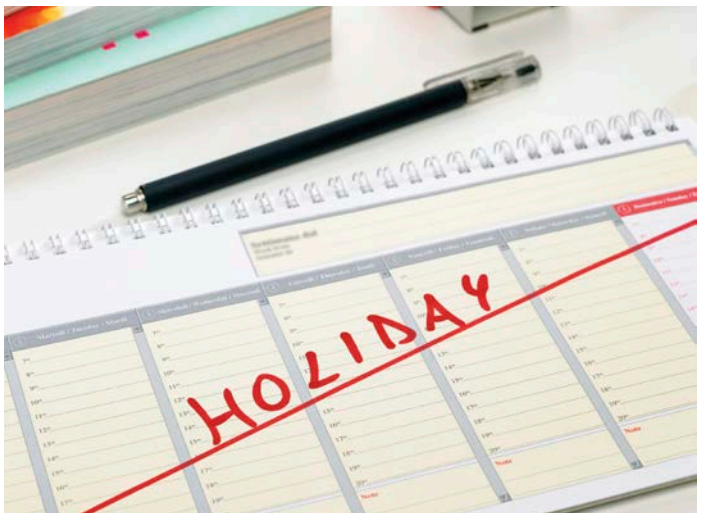
Part-time workers have exactly the same leave entitlement as full-timers – 5.6 of 'their' weeks. Thus a part-time worker who works five mornings a week is entitled to 28 mornings' leave each year; and someone who works three days a week is entitled to 16.8 days' leave (5.6 x 3) each year. For many part-time workers this will leave a part-day of leave remaining at the end of the leave year, and the easiest way to deal with this is to carry it forward into the next leave year.

Note that it is unlawful to treat a part-time worker less favourably than a full-time worker. A part-time worker who works three days a week is still entitled to 5.6 weeks' leave a year even if the three worked days are Tuesday, Wednesday and Thursday, and the worker doesn't need to reserve any of the leave for bank holiday Mondays.

'Accruing' leave

The old idea of workers accruing holidays with service is now a thing of the past. If a worker joins an employer at the beginning of the employer's holiday year, they have an immediate entitlement to a full year's leave. If they join a quarter of the way through the holiday

> 'The old idea of workers accruing holidays with service is now a thing of the past'



*Suggested Personal & Professional Development (PPD)

HOLIDAY PAY

year, they are entitled to three quarters of a year's leave, and so on.

The obvious problem with a worker having all the leave 'up front' is that, for example, a new starter could take two weeks' paid annual leave early on in their employment, never to be seen again! To prevent this from happening, although workers have an immediate entitlement to the full annual leave remaining in the employer's holiday year – for instance, three-quarters of the annual leave if three-quarters of the leave year is remaining – the employer can restrict the taking of this entitlement during the first year of employment to one-twelfth of the full leave entitlement for each month of service.

A five-day week worker can, therefore, be restricted to one-twelfth of 28 days' leave (2.33 days) each month. The leave is rounded up to the nearest half day, so at the beginning of month one this equates to 2.5 days (2.33); at the beginning of month two, it is five days (4.67) minus any leave that has been taken; at the beginning of month three, it is seven days minus any leave that has been taken, and so on.

Carry-forward exceptions

Although annual leave from one leave year cannot normally be carried forward to the next leave year, and additional annual leave from one leave year can normally only be carried forward once into the next leave year, there is an exception if the worker is already on a different type of leave, such as maternity, adoption or parental leave.

In this situation, any untaken leave rolls over into the next leave year which means that, theoretically, an employee who goes off on maternity leave at the start of a leave year will return to work the following leave year with a double leave entitlement of 11.2 weeks.

> 'Part-time workers have exactly the same leave entitlement as full-timers'

This rarely suits the employer or the new mother, and one way to avoid this situation is for the expectant mother to still have the 52 weeks of absence they had planned for, but to take the first five weeks (as an example) as annual leave and to only take 47 weeks as maternity leave. This way the expectant mother gets five weeks' full pay (holiday pay), then Statutory Maternity Pay (SMP) for six weeks at 90 per cent of earnings and 33 weeks at the basic rate of SMP – 44 weeks' pay in total instead of just 39 weeks' pay.

For the employer, the new mother will only be on leave for an additional 0.6 of a week in the new holiday year, a total of 6.2 weeks, instead of 11.2 weeks.

One further exception is with regard to sickness. An EU Court judgement has ruled that, if a worker is unable to take leave because of sickness, the leave can be taken at a later date. This includes taking the leave in a subsequent leave year if the worker runs out of time to take the leave in the current year.

Just to complicate matters, this judgement only applies to the EU entitlement to four weeks' annual leave, and the UK's 1.6 weeks' additional annual leave is still restricted to one 'carry-forward'.

Requesting leave

Employers can determine their own rules regarding the notice required to request leave; but in the absence of any such rules, the fall-back position is that workers must make the request in advance at least twice the length of the leave, before the leave date, and the employer must give an answer to the request at least the length of the leave, before the leave date.

For example, a worker who wants to take one week's leave must request it at least two weeks before the leave date and the employer must respond to the request at least one week before the leave date. Similarly, an employer can impose leave on a worker or workers by giving notice of the leave which is at least twice as long as the period of leave.

Holiday pay

Holiday pay is currently based on 'a week's pay', using a formula that has been around since the 1960s. For salaried workers, this just involves continuing to pay their normal basic salary while they are on leave. For hourly paid workers – with a set basic hourly rate of pay and contractual weekly hours – a week's pay is the hourly rate multiplied by the contractual hours. Where there are no contractual hours, a week's pay is the average earnings over the previous 12 weeks in which there were earnings.

This method of calculating holiday pay has recently been called into question, with a UK employment tribunal case being referred to the European court for determination. The case concerns a British Gas worker whose earnings comprise 40 per cent basic salary and 60 per cent commission, such that this worker only receives 40 per cent of his normal pay when he takes leave.

The worker argued that – because of the drop in pay – the current practice discourages workers from exercising their statutory right to take annual leave, and that holiday pay should be based on normal remuneration. The European Court has found in his favour, so at some time in the future holiday pay will inevitably have to be based on a yet-to-be-determined definition of 'normal remuneration' rather than on 'a week's pay'.

Workers who leave their employment with untaken leave have a statutory right to be paid in lieu of that leave on termination. There is, however, no equivalent statutory right for the employer to recover holiday pay for any leave taken in excess of the entitlement. This is a matter of contract between the employer and the worker and, unless there is a provision in the worker's contract permitting the deduction of 'overtaken' holiday pay, any such deduction will be unlawful. ■

How do you encourage the team to buy into your marketing plan?

So your marketing plan is written, you are happy with it, and life can move on. Or can it? Developing a marketing plan is one thing, but encouraging the team to buy into it is quite another. This article will highlight the importance of ensuring a collective team approach to practice marketing, as well as exploring ways to help you achieve it.

Kristie Faulkner

Kristie is the business manager for Onswitch and has over 18 years of experience in the veterinary sector – with previous roles including head nursing, practice management and working within the pharmaceutical industry.

Having seen the industry from all angles, Kristie has developed a passion for excellent customer and veterinary care provided by efficient and motivated team members within a well-run business.

Figure 1. *The key characteristics that pet owners look for in a veterinary practice. (Onswitch Vox Pop data, 2014)*

Before starting work on writing and implementing a marketing plan, it's useful to remind ourselves of the point of marketing.

Marketing is defined by the Chartered Institute of Marketing as: 'The management process responsible for identifying, anticipating and satisfying customer requirements profitably'. Or re-phrased more specifically for the veterinary profession, 'marketing is the art of communicating the services and value that your practice provides for the customer, in a way that delivers healthy client numbers and finances' (your marketing plan should include a target annual net profit). Whichever definition you prefer, the fundamental point is the same – the customer's needs are paramount.

So what is it that customers want?

Onswitch regularly undertakes 'vox pop' research with pet and horse owners across the UK and Ireland. When we ask what the key things are that they look for in a veterinary practice, the answers they give are clear and consistent.

Figure 1 illustrates these findings, with the largest words being those most often quoted.

So, owners want you to be friendly, caring and helpful. Not (as you might have imagined) to be cheap. Because 'cheap' is probably not a word you have included in your vision statement anyway – with words such as caring, friendly and professional being used instead. Which means that the two pretty much match up, right? If your marketing plan is aligned with your practice vision, then the end result is surely in the bag? Whether that end result is to increase turnover by x per cent or client numbers by z.

Yet Onswitch research shows that two words in particular stand out (the size of the word once again reflects its frequency of use) when vets were asked what they found most challenging about marketing – the words team and resources (**Figure 2**).

What you want to do, and what you are able to do are not always the same.

Consistency is key

Unless you are master of all trades, chances are it will be your team dealing with the customers who contact the practice following your marketing efforts – the 'team' being made up of every single person you employ, not just those front of house. That includes the vets, nurses and admin staff, who each

Figure 2. *What you want to do, and what you are able to do, are not always the same. (Onswitch Practice Managers' Survey, 2014)*

**Suggested Personal & Professional Development (PPD)*

MARKETING

have a vital role to play in ensuring that every point of client contact is a great one – from a phone call picked up in prep, to every type of consultation, including admission and discharge.

Imagine a potential customer contacting the practice as she – 68 per cent of clients are female – has received an eye-catching mail drop with an exciting offer. Or she may have seen your lovely, interactive Facebook page, or had one of her 'nearest and dearest' recommend you. But the person who picks up the phone comes across as abrupt, rushed and has no idea what the leaflet offer is all about.

How does this customer feel now? That the practice is organised, professional, interested in her and on the ball? That this is the practice she will choose above others? Probably not.

National Index data find that the average practice score for telephone customer care is just 44.98 per cent, taking into account the level of engagement and interest shown, the offer of an appointment and whether additional information is given, such as directions to the practice website.

Practices that routinely measure the 'phone experience', however, see scores consistently sitting between 80 and 100 per cent month on month. The difference in these scores can mean a potential client choosing your practice or your competitor – food for thought I am sure you will agree.

Your team must be both aware of – and fully behind – your practice vision in order for it to become reality. Are you currently an average practice but have ambitions to be the best in the town (or region – why not think big?) Do you promise an excellent customer and pet/horse experience

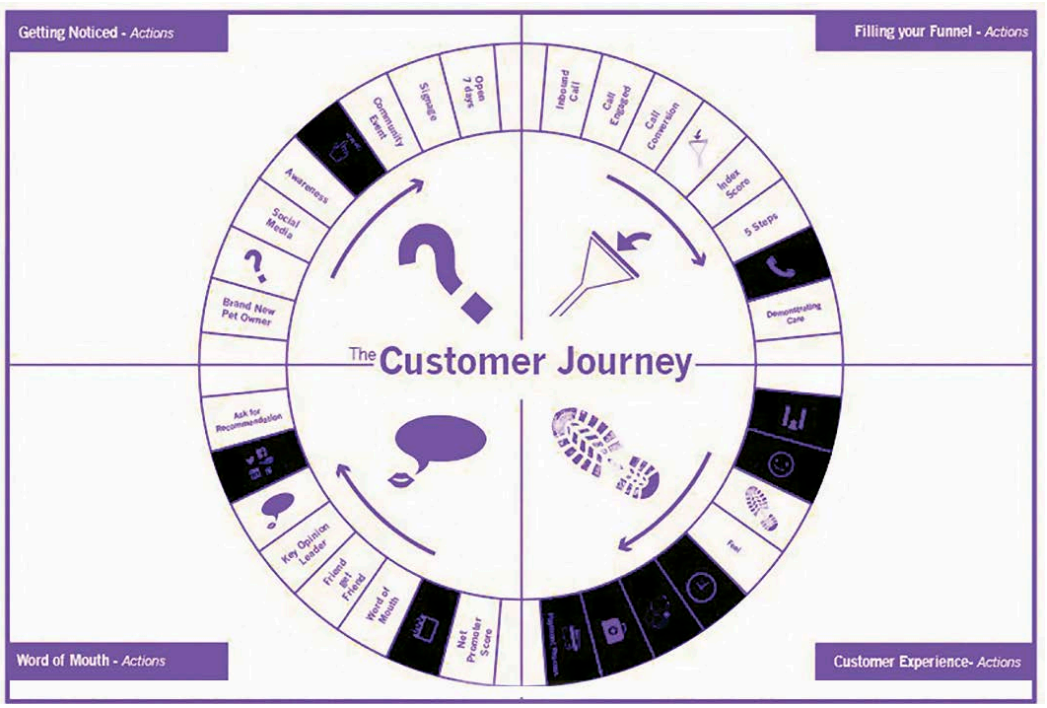


Figure 3. *Each of the four stages on the journey of customer experience requires focus.*

yet deliver a hit-and-miss service depending on who the customer sees that day?

It's crucial that your team understand your vision and engage with it; that they understand the importance their own actions play in its success or failure. Sadly, the question "What is your practice vision?" is almost always met with a blank face.

The customer journey

Starting way before that customer walks through the door, the customer journey begins with an awareness of the practice – and this is where your marketing plan comes in.

The marketing plan will feature many different ways to connect to the customer; and once this connection is made, your team members then play a key role in converting awareness into business, ensuring that the customer chooses you and not one of the many other practices in the area.

Thus any marketing plan needs an action plan to accompany it, with clear steps that might go along the following lines:

Alignment of all team members to the practice vision by sharing with everyone what it is that you are trying to achieve, and why.

Ensuring that all team members have up-to-date, relevant job descriptions and regular appraisals. These job descriptions should detail how each individual role contributes towards achieving the practice vision; because in order to be fully productive, each and every employee needs to understand his or her own responsibilities, as well as being able to visualise how the marketing plan aligns with the practice vision.

National Onswitch TeamTrack data show that, on average, only 64 per cent of employees receive regular praise or recognition (within the last seven days); yet without this, motivation levels are in danger of slipping. Fortunately 81 per cent of employees feel that their job is important and 88 per cent say their colleagues are committed to doing quality work. What would your team score in these areas?

Communication is key. So team members – vets, nurses, front of house and admin staff – must all receive regular, clear and concise information detailing the marketing plan's latest content and results, with a level of detail that allows every employee to see how their own actions impact on its success. And remember, 'The communication process itself may be more important than the content of the process' (Richardson and Denton, 1996).

The type of communication medium used is important too – face-to-face discussion is much richer than putting up a memo on the staff room notice board, and meetings to detail the plan in full facilitate a two-way communication where the team can ask questions and voice concerns, as well as determine how best these plans are executed.

Connecting the team to the four stages of the customer

journey, each of which needs focus (**Figure 3**):

Getting noticed. This stage relates to the marketing plan, where it all starts! Using social media and the internet, speaking with local key opinion leaders (KOLs), holding community events, carrying out mail drops and mobile advertising, such as handing out branded 'bag-for-life' or 'dogdanas' and other awareness-building activities, are all important here.

Filling the funnel. How easy is it for potential customers to contact you? What is the likelihood that they will choose you based on the experience they have on the phone? Your marketing has taken effect, now it is down to your team members to demonstrate that they are friendly, interested and have all the information required in order to convert that enquiry into custom.

Customer experience. How easy is the practice to find? Is the reception space clean and tidy? Do the team members acknowledge and engage with the customer as soon as they walk in? Does the vet make the customer feel that they too are interested in the pet/horse? Do they communicate effectively and does the client feel he or she has received value for money?

The consult room is the heart of the practice, where your vets and nurses provide owners with the individual time and focus that underpins great veterinary care.

Think about that booster appointment – it is not just a catch-up appointment, it is probably the one time this owner will be in your building in the whole year; so a two-minute in and out will not help ensure their retention or recommendation any more than it will improve the healthcare status of the pet.

In a nutshell, does the customer's experience meet the expectations raised by the marketing activity that brought them here in the first place?

Word of Mouth. As many as 80 per cent of new clients will hear about their chosen practice through word of mouth. Essentially, there is no better marketing than a customer telling a friend or family member to go there! Your team are key to promoting this positive word of mouth through the experience they create for every customer.

Measure, measure, measure

Then measure some more! The team must be able to see that marketing activity is working and having a positive effect in order to lend their support to future marketing activities.

> "Team members must all receive regular, clear and concise information"

Equally, the management team must demonstrate their commitment to the marketing plan in order to continue to motivate the team towards delivering their goals. Using a balanced scorecard approach to measure practice data in four core areas allows both management and the team to keep a track of business performance and monitor the success of the marketing plan.

Recommended targets to aim for in each of the four areas are shown in **Table 1**.

Marketing shapes practice success

In conclusion, the role of marketing is to create awareness and drive people to pick up the phone. After that it is over to your team to create an experience that not only converts the enquiry into an appointment, but also retains the client and – most importantly – gives them a reason to recommend you to their friends and family and so the footfall cycle begins again.

Customer experience is the key to every successful business, and your team are fundamental in creating an experience that has people talking, for all the right reasons. The time and effort you put into giving the guidance, tools and information to each individual on the payroll will always prove to be a wise investment. In this way the marketing plan you so carefully created will be at its most effective, dovetailing perfectly with your practice vision and delivering tangible results. ■

Acknowledgement

The author wishes to express her sincere thanks to Hazlewoods Accountants for supplying financial data used in this article.

Reference

Richardson and Denton (1996).

Table 1. Recommended targets in the four key areas of the customer journey

Customer	Finance
■ New client registrations per month: Target 20 per FTE vet small animal, 8-10 per FTE equine vet ■ Record 'How did you hear about us?' data to identify which elements of the marketing plan are working best ■ Net Promoter Score: Target 85% ■ Consult Index: Target 85% ■ Phone Index: Target 85%	■ Annual turnover per FTE small animal vet: Target £230,000 ■ Per FTE equine ambulatory vet: Target £150,000 ■ Gross profit: Target 73% of turnover ■ Spend per new client: Target >£250 per year
Operational Effectiveness	**Staff**
■ Number of inbound calls per FTE vet: Target 1,000 per month ■ Consults admitted for imaging, work up or surgery: Target >25% of first consults ■ Call conversion rate: Target 40%	■ Team track results: Target >80% ■ Collect staff feedback relating to every aspect of the marketing plan, what went well and what didn't go so well? ■ Make time for two-way conversations and feedback with regards to future plans

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Looking for a position in a veterinary practice, college, university or veterinary company?
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There is no obligation to accept any offer.

Mark Hedberg
DrMedVet MRCVS

Mark began his veterinary professional career in Saudi Arabia in a small animal/exotic veterinary hospital in Jeddah. Following this he spent two years in mixed practice in Dover where, in addition to his clinical work, he served as regional secretary for the BSAVA Kent region.

He currently runs a CPD programme for the College of Animal Welfare, and completed a Certificate in Leadership and Management in 2014. He has written extensively on new and recent graduate support as well as personal development, and has given presentations at the BSAVA, LVS and NAVC conferences.

*Suggested Personal & Professional Development (PPD)

TALENT

Developing talent in veterinary practice

'Talent management' is an increasingly popular term in today's business world; yet it is not widely used – or even understood – in the veterinary world. Most businesses do their best to keep the good people that they find, although the fact of the matter is that developing talent in the veterinary practice can be an exceedingly complicated balancing act.

Just what is talent, anyway?

The Chartered Institute of Personnel and Development (CIPD, 2014) defines talent as '…those individuals who can make a difference to organisational performance either through their immediate contribution or, in the longer-term, by demonstrating the highest levels of potential'. Essentially, they are the people who have the technical or management skills – or the potential – to really make a difference in your team.

The two basic goals of talent management are to find those people you need to make your business succeed, while investing the time, training and effort in them to make sure they succeed just as much as you do. The long-term goal of good talent management is to create a sustainable 'talent pipeline' that will help you identify, train, and promote your staff members.

This will result in your having a team that has the management and technical skills to make your business more productive and your practice more effective. Ideally, they should eventually be able to form a team that can cover for any staff absence – even yours.

This may seem an obvious statement, but in a 2012 survey by the Institute of Leadership & Management (ILM), it was found that only 57 per cent of surveyed workplaces had any kind of plan in place to develop a pool of leaders and managers for their business (ILM, 2012).

Planning, recruitment, training and management are all key parts of developing the talent in your workplace. All too frequently these areas of good business practice are ignored or under-resourced as being 'soft skills' unworthy of a 'proper' veterinary surgeon's attention, so the proportion of veterinary practices with a 'talent pipeline' is probably far lower than in the rest of the UK business world.

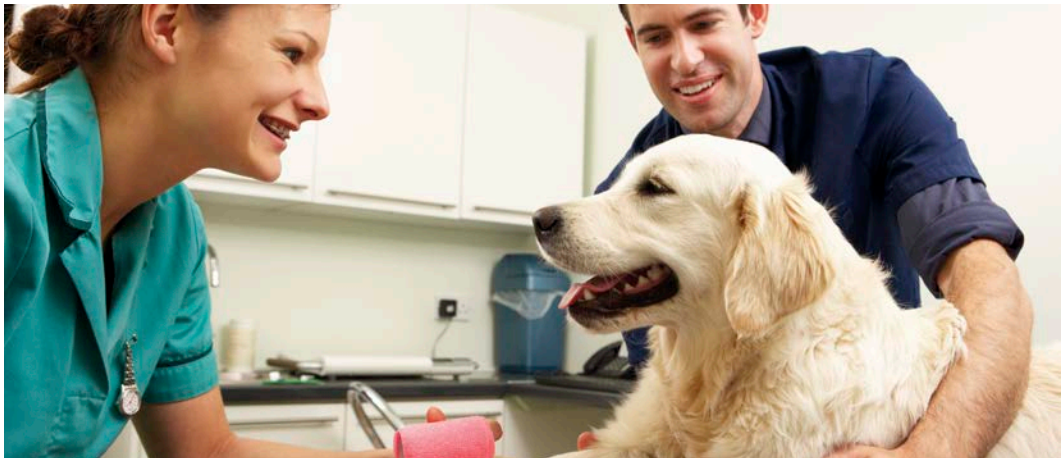
'Talent planner'

The 'talent planner' is the first of many hats you need to wear when you are managing your practice's personnel development. The number one reason that veterinary practices don't achieve their staffing goals is because, quite often, they don't actually have any goals set.

> "The easiest way to make your team aware of your goals is simply to tell them what they are"

It is fashionable in some areas to denigrate key performance indicators (KPIs) as holding vets hostage to numbers; but in actual fact a KPI can be anything you choose to measure that is the result of a business's (or employee's) function. It's not necessarily measuring money – it can be the number of times a specific activity takes place. After all, how can you develop talent when you don't know what the talent needs to do, or be?

The first important step is to develop a talent plan – what you intend to do with your people once you've hired them. This doesn't mean mapping out



a rigid timetable for a person who doesn't yet exist. It means mapping out the people and support you intend to use to improve your employee's skills and (hopefully) yours as well!

Lacking a talent plan frequently means that many new employees are left to 'sink or swim' when they're brought on board – their inductions and training left to chance, the luck of the rota, and whoever doesn't happen to be too busy. It is up to an employer and their talent plan to develop a schedule for ensuring the new employee learns what he or she needs to know.

For those of you who recognise this and have a solid and effective induction process for new employees, congratulations – you're on the right path. But what happens after the induction is complete?

A good and flexible talent plan will help your people to proceed further in their career, once they've been 'induced'. The end of their learning journey is not the consult table or the surgery table. If you help your staff discover and plan their future, you'll find they will follow you 'through hell and high water'.

'Talent recruiter'

Once you've devised your talent plan on paper, you can start looking for people with whom to use it. The 'talent recruiter' role is the Achilles' Heel of every business. Nothing is more frustrating than not being able to attract the best and the brightest, other than hiring the best and the brightest, only to see them hand in their notice six months later.

There is no shame in not being good at hiring, as very few vets receive any kind of training in good hiring practice. The shame is in accepting that you are not good at hiring, and not working to fix the problem.

Most of a practice manager's recruiting issues stem from not knowing who or what they want the employee to be. A true 'all rounder' employee simply doesn't exist, although this hasn't stopped veterinary practices from looking for them. A 'jack of all trades' is master of none – nobody is uniformly good at everything. Even team members who are consistently good will have their strengths and weaknesses.

Before you start advertising for your next team member, it is well worth deciding on exactly who it is you are seeking. Typically, the top three types of employee veterinary practices wish to hire are:

- Someone just like the last one that left
- Anyone except the last one that left
- We don't care – we simply need to fill the hole in the rota

Identifying talent when you haven't even met the person yet is difficult; but you can build a personal and professional profile that helps predict the type of person who will do well in your environment. A very simple step is to review your most successful staff members (past and present) who were – and are – highly productive and effective in your business. Write down their memorable traits or abilities, as well as any qualifications or background that helped your team.

Naturally, you are not expected to hire clones of your past staff, so don't even try. If, however, a certain style or skill set worked well in a particular position, it is not unreasonable to try to replace them with a similar individual.

Conversely, while it's tempting to erase memories of your less successful employees, it's worth recalling them dispassionately. Did you have any 'hires' that turned out to be disappointments, or even outright disasters? Take the time to write down what it was about them that 'didn't work out' and try to avoid it. Be careful here because if it was a personality clash, it may not always be their fault.

Sit down with your current team members and gather their views. Your new member of staff will be working with them as well as you, and sometimes the way you remember things may not have been quite the way things happened.

Once you've done that, you will have an effective job and personnel profile that you can use to screen applicants and add to your talent plan. Interviewing and hiring is much easier once you have a good sense of what your business needs. It is better to hunt for someone, rather than fish for anyone.

'Talent manager'

Richard Branson famously said that you should: "Train people well enough so they can leave, treat them well enough so they don't want to". Dealing with people is a key part of being a 'talent manager'; so to invoke the old cliché, people don't leave bad jobs, they leave bad managers.

There are many reasons why small businesses struggle with management issues. Many clinicians find management difficult because employee or business issues don't always have a single 'right' answer. When managers have little or no training in management, you can end up with a very poorly performing workplace indeed. There is even evidence to support this.

The 2012 ILM survey reported that 93 per cent of respondents were worried "that low levels of management skills are having a direct impact on their business achieving its goals".The same study found that only 18 per cent of respondents expected their managers to have management training.

To put that in perspective, that's like only 18 per cent of veterinary practices expecting their veterinary surgeons to go to veterinary school, and then hearing 93 per cent of them saying their vets aren't very good!

Entire books have been written about the benefits of good management and the perils and pitfalls of bad management; yet the brief summary is this – finding the best people is one thing, keeping them is another.

"The easiest way to make your team aware of your goals is simply to tell them what they are"

The 2013 Royal College of Veterinary Surgeons (RCVS) survey of 1,406 recent graduates showed that 179 (17.2 percent of those who responded) left their first job because of 'poor management'. Although 179 people may not sound that many, when you consider the costs incurred in recruiting and training them, that does add up. Indeed, the veterinary profession is well-known for having turnover issues – staff seem to either stay for a few years, or decades.

So what is to be done if you wish to retain staff? The answer is to give them a chance to make a difference to themselves and your practice. 'Employee engagement' is a popular buzzword in today's business world, but a distilled definition is useful – an engaged employee is someone who is aware of your goals and works enthusiastically to make them happen.

The easiest way to make your team aware of your goals is simply to tell them what they are. When it's a goal that meshes with their values and ambitions, you may find they'll move heaven and earth to make them happen. So find out what motivates your team and help them to see how your goals complement their aspirations. You may even consider having team members influence your goals.

Targets set 'from above' are useful to a point; but having colleagues working towards a goal they've suggested is a powerful motivator. The same applies to a 'talent plan' – when both you and your employee agree on a development plan, you are both going to work to make things happen. It is like lifting a particularly heavy patient – they are more easily moved when you are both pulling in the same direction.

'Talent trainer'

It is a common misconception that training only starts when you authorise the first CPD course the employee attends. This is very far from the truth. Training starts the minute your staff member walks in the door. This is the time your new employee 'learns the ropes' at your business, whether it's the name of Tuesday's part-time receptionist, the discount policy, or where the endoscopes are kept.

Once they have 'made themselves at home' in your building is the time you begin working with them to map out their employment path. It doesn't end with the CPD certificate – a mistake that many practices make is to train staff and then not let them implement the lessons in their daily work. If you won't let them make changes, why even let them learn?

Periodically assess your team members to find out in which areas they need to improve. See how their training has influenced your business. Investigate your business processes and facilities at the same time, to see where the bumps in the road are that need fixing. Not everything is a question of staff training – if your induction plan includes reminding staff to prop open a faulty door to prevent them being locked in the isolation room overnight, you need to fix the door!

'Talent pipeline'

It is important to remember that you will not miraculously solve all your problems with a talent pipeline. Staff will come and go, some of your ideas will work, and some won't. People will have good days, bad days, sick days, and holidays. Sometimes the staff member you earmarked as having high leadership potential just won't work out.

By integrating your planning, management, recruiting and training, you will be taking proactive action to make management happen. Your talent plan is your plan for the future – because veterinary practice isn't just something that happens between consults and phone calls. ■

PPD Questions

1. What percentage of UK businesses have a talent plan to develop leaders and managers?
2. What is a simple definition of employee engagement?
3. What are the two basic goals of talent management?
4. List the attributes of your best employee or colleague that made them successful in your practice.
5. What percentage of UK businesses expect their managers to have any management training?

Answers
1. 57 % **2.** An engaged employee is someone who is aware of your goals and works enthusiastically to make them happen **3.** Find and invest in people who will make you and your business a success **4.** Reflective exercise, no correct answer **5.** 18%

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PPD? CPD? What's the difference and does it matter?

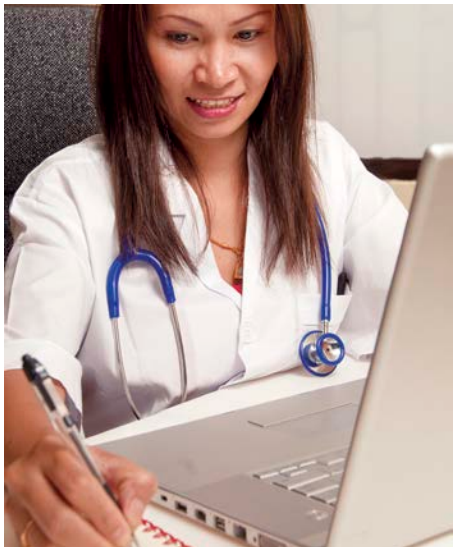
You will have noticed in the last issue of *Veterinary Practice Today* our move from the term CPD (continuing professional development) to PPD (professional and personal development). We think that PPD more closely reflects what our journal represents – scholarly articles in all areas of veterinary practice, mixed with critical and thought-provoking comment on current veterinary topics. We ask you to join in our discussions, create debate and give opinions – all part of the professional development process.

CPD is an essential part of being a good vet, nurse or manager, but to be a fully-rounded professional, personal development within work is essential. In his article, 'Developing talent', on page 60 of this issue of *Veterinary Practice Today*, Mark Hedberg writes: 'It's a common misconception that training only starts when you authorise the first CPD course the employee attends'.

"Getting the CPD certificate is simply not enough"

It is the training and development of staff that leads to a successful workforce. Getting the CPD certificate is simply not enough; empathy, compassion and understanding are also an essential component of being a good vet, nurse or manager.

CPD is the means by which people maintain and increase the knowledge and skills related to their professional lives and is usually based upon a structured approach to learning to help ensure competence in the individual's field of work. The RCVS *Code of Professional Conduct for Veterinary Surgeons* makes it very clear that veterinary surgeons and veterinary nurses have a responsibility to maintain and develop the knowledge and skills relevant to their professional practice and competence.



The recommended minimum CPD for veterinary surgeons is 105 hours in any three-year period with an average of 35 hours per year; and for veterinary nurses, 45 hours in any three-year period with an average of 15 hours per year.

The RCVS has defined what it considers to be the activities vets and nurses might undertake in order to further their professional competencies and has produced a very flexible list of ways of achieving the required number of CPD hours (rcvs.org.uk). In addition, the RCVSs new online system – the Professional Development Record (the PDR) – is now available for vets to record and reflect on their professional development plans and objectives.

So CPD is undoubtedly vital for the maintenance of current knowledge and technical skills; but equally important is the development of personal skills. To be truly competent, vets and nurses also need to develop their ability to communicate and discuss cases and techniques with colleagues and clients. It is important that not only are they up to date with their specialist area, but that they are also aware of the current veterinary issues, the 'big debates', and are able to think objectively about controversial industry issues. In this way the individual becomes a more rounded professional.

Veterinary managers also need a full training and development programme. One would hope that a good manager has already acquired the necessary 'people skills', yet equally they need to be aware of what is going on in the veterinary industry, because this inevitably affects the workings of their practice and, in some cases, the management decisions that need to be made.

The medical profession – including medical schools – is placing more emphasis on personal professional development and

"Reflection helps to drive change, is the key to effective performance and should be integral to any personal development planning"

the value of reflection in attaining it. It considers that reflection helps to drive change, is the key to effective performance and should be integral to any personal development planning.

Reflecting on – and including in your records – what you have learnt not just from clinical CPD, but also from complaints and compliments, significant events, discussion with others and reading about current veterinary issues, is an important part of PPD. Reflection helps to highlight future training and development needs.

Taking time out simply to think is not always easy in a busy professional life; however, it is this thinking and reflective process that enables us to see how we have developed and where we need to develop further.

So what's in an acronym and does it really matter what we call our method of learning and personal development within our chosen profession? Perhaps the main thing to say is that CPD conjures up the connotation of tick boxes – been there done that, fulfilled the necessary requirements.

The term professional personal development offers a more modern, proactive perspective. It is a softer, more reflective, all-embracing term placing an emphasis on the 'personal'. We believe it represents the complete development of the individual as a person and encompasses their relationships with colleagues and clients. ■

Industry Profile

Your name: Claire Bessant

Position: Chief executive

Charity: International Cat Care (iCatCare)

Our role is to benefit:

- Cat owners and cat professionals worldwide by collating, interpreting and disseminating the best possible evidence-based knowledge on the understanding of domestic and pet cats, and their physical and emotional well-being
- The public, and cats, by providing evidence-based information, protocols, procedures and practical training to enable sustainable and ethical solutions to be developed to manage unowned domestic cat populations worldwide, while maintaining cat welfare and human health as the highest priorities
- Veterinary surgeons, nurses/technicians and the public who use their services, by providing evidence-based information and educational resources to enable better understanding of – and improved veterinary healthcare for – domestic and pet cats worldwide

What are the significant milestones in our understanding of the needs of cats?

I'm not sure there are obvious milestones – rather a continual improvement in knowledge from research, which is picked up and integrated into practical advice from organisations such as iCatCare and our veterinary division, International Society of Feline Medicine (ISFM). However, I think we have reached the state where this advice is taken on board more readily now in professional circles and there is much interest in cat behaviour, both in the home and in the other situations in which we keep them.

We now know that to treat cats in the veterinary arena you need to understand their behaviour and how the environment and stressful situations can impact on health and on veterinary measurements, diagnosis and treatments. In our homes things have changed for cats too – where people may only have kept one cat with free access in and out, we now have more multi-cat homes and probably a greater density of pet cats outside in many areas. Some cats are kept indoors all the time, and this too can impact on their health and well-being.

Understanding how cats function in situations where they are confined can also have a large impact on whether they are re-homed, how well they survive the process and how well we can best match them with new owners.

Has this been reflected in the way we look after them?

People are fascinated by cat behaviour, especially that of their own cats; but there are many assumptions and myths about cats which are ingrained in our beliefs and it takes a long time to replace these. Recently, there have been some great BBC *Horizon* programmes that used brilliant footage to get over some of the key messages we want owners to take on board and hopefully rethink how they understand what their cats are doing and what their cats' needs are. We need to get these accurate messages out to the general public and this is something iCatCare feels passionate about.

What do you consider to be the major breakthroughs in treatment and control of feline disease?

In the early days of the Feline Advisory Bureau (as iCatCare was previously called) there was little information on cat health and disease. The charity funded Charles Povey to look at infectious disease in cats and he discovered the cat flu viruses and developed a vaccine for calicivirus. This was really a first in spending some money to take cat health seriously.

What has still to be done in this respect?

Moving forward is not necessarily about great breakthroughs; it is also about taking what we already know and making it relevant, practical and implementing it. For example, ISFM's 'Cat Friendly Clinic' programme is not based on new or difficult principles, but taking what we know and making the veterinary approach to cats logical, sensible, empathetic and effective. For example, we know that hypertension can be a serious problem in cats – taking blood pressure is not complex compared to many other veterinary procedures and the equipment is not expensive, it just requires patience, a little time and a positive approach to cats. Just getting this right could improve cat health much more than a new procedure for treating a much less common (but perhaps more dramatic) problem.

How well do you feel that UK veterinary practices deal with feline patients?

Probably a great deal better than in many other countries – but with large individual variations. There is no doubt that most practices now know that they need to consider the cat 'experience' in the waiting room and how to improve that, in the hospital (the size and design of the cages, for instance) and the fact that good handling needs time and patience.

The 'cat is out of the bag' now and once the public are also aware there will be a strong demand for such cat-minded practices, which will be appreciated greatly by cats and their owners and practice staff who will also see the difference and enjoy the changes.

What are the essential features of a 'cat-friendly' practice?

In the UK there are almost 200 Cat Friendly Clinics and we now have them in 15 other countries – China, Japan, Spain, Italy, Australia and New Zealand, Czech Republic, Denmark, Germany, Greece, Portugal, Hong Kong, Norway UAE and Poland. The American Association of Feline Practitioners license the programme from ISFM and they have over 500.

There are basic principles in the scheme about reducing stress in the different parts of the clinic, from the 'cattitude' of the staff and how they handle the cats, to the waiting room, consultation room and the hospitalisation of cats. What we have done is provide the first ideas. As clinics take these on board, see how effective they are and begin to think about cats in a whole different way, they will come up with more ideas and approaches and we hope we can learn from people out there in practice as well.

Does veterinary treatment sometimes go too far?

Treating animals is a little different to treating people, because owners have the option of deciding when their cat "has had enough". There are also limits to what people can afford – so we

are very much in support of insuring cats to prevent the situation where money limits what treatment the owner might want their cat to receive. However complex or expensive treatments are sometimes not in the best interests of the animal if the benefits to the cat are not obvious.
It is easy to give some cats tablets; for others it is a struggle beyond the patience of both owner and cat. Some owners will do anything to keep an animal alive and others will not wish to treat at all; so each case needs to be considered on an individual basis.
As improvements in veterinary care take leaps and bounds, vets may be keen to try new treatments and there is nothing wrong with that; however, they need to advise clients in a way that explains that – even though treatments are available – owners are not coerced into taking them and should not be made to feel guilty that they have not gone to the limits of treatment.
At other times, of course, vets may feel that owners are trying to keep their cats alive when from a professional perspective they feel the cat has had enough. It is all about quality of life and this must be the major consideration in all decisions.

Similarly, do you have concerns about the direction that cat breeding is heading?

International Cat Care has strong feelings about breeding cats based on an ethos of 'first do no harm'. Cats are beautiful creatures and we have been able to manipulate their coat colour, length and pattern to give large variety – something that is part of human nature. But the human trait of pushing too far, of making something too extreme, has occurred in some breeds.
If body conformation makes the cat's life more difficult than that most perfect design, the 'moggie', then we should be asking serious questions.
Faces so flattened that breathing is difficult, eyes that continually water, teeth that are so displaced that eating is difficult, are not acceptable. 'Designs' that bring with them pain or discomfort from cartilage problems or movement problems are completely at odds with the naturally lithe and athletic cat. Cats with coats that are too long or non-existent, require a great deal of human intervention and often humans are not up to the job.
Many body conformation problems are the result of pushing to the extreme or taking a genetic mutation in one cat and making a new breed from it – and all of these can be avoided. There are also issues with diseases which are inherited and can become common within a breed because of small gene pools – these were not intended but have to be tackled for the individual cats. Keeping a line or breed absolutely 'pure' is no excuse for not doing whatever is necessary to tackle the problem. Cats don't care if their parents have complied exactly with a breed standard – they 'care' about living with pain or discomfort or illness, and under the Animal Welfare Act that should have this freedom.
There are some good breeders and breed clubs with an ethos which avoids extremes and looks to the health and well-being of the cats they produce. These are to be congratulated and encouraged. The public needs to understand that a certain look may mean that cat well-being is compromised and make their choices based on health.

How well does the present education of vets and vet nurses match the needs of cats and their owners?

As is most often the case, education is the key to the well-being of cats. Teaching veterinary students and nurses is vital to give them the right approach as they go out into practice. Some teaching hospitals and courses are good, others have not yet taken on board the cat friendly principles and there is certainly room for improvement in many cases.
Pet keeping is a complex and emotional thing. It is more than a science and, as always, the art of veterinary medicine is equally as important as the science. This is especially true for cats – they are people's secret pleasure. They are not a pet taken outside for a walk to meet everyone, they are home-based and personal. The relationships between people and cats can vary considerably – from feeding a feral in the garden to having an over-attached pedigree cat which is anxious if its owner is not around.
We are good at the science and the treatments, but are only just catching up with the importance of the relationship issues and how owners feel about the way their cats are approached and handled in veterinary practice. Clinics which get this right will keep their cat clients forever and attract many more. Getting this right will bring far more benefits to all concerned than the advancement of treatment for rare conditions.

Where does ISFM and iCatCare fit into the picture?

We 'think cat' all day every day! We work with cat experts and enthusiasts around the world. Our *Journal of Feline Medicine and Surgery* is unique in its combination of Clinical and Classic issues – understanding the need for both scientific research and discovery along with the practical implementation of the research and the value of expert opinion produced in a way busy practitioners can keep up with their CPD.
Because, historically, the charity has worked with everyone involved with cats – from vets through to owners – we understand the need to use good information across a variety of communication outlets, 'translating' it as necessary for the different groups of people to understand and gain benefit.
We strive to understand the 'whole' cat – not just as a body that can go wrong, but taking into account its natural history and behaviour, and how these affect how, why and when we treat it.
We work with owners to help them understand behaviour and health – our website **icatcare.org** provides vast quantities of information and is accessed by millions of people.

> "The art of veterinary medicine is equally as important as the science. This is especially true for cats"

Although it is only one species, it is a complex one which lives with us closely yet is hardly domesticated. It is brilliant at hiding illness and pain and requires time and patience in handling and hence is a challenge in the veterinary setting.
Many cats in owners' homes are stressed because of density of population or a misunderstanding of what a cat is and what and how it behaves. Cats reproduce extremely efficiently and thus population control is a big issue in many places. The answer is not going to rely on neutering every cat surgically but in a better solution that lies beyond surgery, so we are working with the Alliance for Contraception in Cats and Dogs to try and find that 'bigger' solution.
Our veterinary division, ISFM, has national partners in many different countries who are taking the care of the cat seriously and developing CPD and advice for growing numbers of interested vets. Through them, we need to ensure that people understand what a cat is, that suitable veterinary treatment is available for these creatures that are becoming part of the family all over the world, and that we can find a humane solution for population control to ensure that the suffering of many unowned cats is reduced.
As a charity we would so appreciate the support of the profession when they consider worthy charities for their fundraising activities – there is much to do and we try to give back a great deal. I think we will be in work for some time! ■

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