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Clinical Conundrum
Polydipsia in a mixed breed dog P8

Pet Travel
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BSAVA News

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The BSAVA has established an important partnership with the University of Liverpool to ensure continued development of a national UK disease surveillance network for companion animals.

The Small Animal Veterinary Surveillance Network (SAVSNET), was established in 2008 by a team of veterinary scientists at the University of Liverpool to monitor the disease status of the UK small animal population (mainly dog, cat and rabbit). When funding for the pilot project came to an end in August last year, BSAVA believed that not only would the profession benefit from the continued activity of this group and that, in fact, it is vital for the successful management of disease in small animals.

Key aims of the project are to:

- Monitor disease trends over time and highlight appropriate interventions
- Identify small animal pet populations at risk and monitor treatments and outcomes
- Improve general public awareness of pet diseases and prevention
- Provide a system where vets in practice can compare their disease and management profile with those of their anonymised peers
- Allow scientists to analyse the data, while maintaining high standards of data protection and anonymity
- Enrol a wider and more representative sample of veterinary practices from across the UK.

BSAVA president Andrew Ash said: “SAVSNET ticks all the boxes for BSAVA. Disease surveillance gives us the information to treat animals better, and the research papers help us inform veterinary policy and education. This is an important scheme for both animal and human health. Furthermore, supporting high quality, large scale epidemiological research helps us fulfil our obligations as a charity to contribute to the public good.”

The impressive team at the University of Liverpool, led by Alan Radford, will now roll the scheme out on a national scale and will be talking to delegates about it at Congress in April. You can read more about the pilot scheme, how to get involved, and plans for the future in the February edition of companion.

Scottish tail docking study

Members will be aware of the Scottish ban on the docking of working dogs’ tails in 2007 and the campaign by the Scottish Gamekeepers’ Association against the introduction of the legislation. Earlier this year the Scottish Government commissioned new research looking at the impact of tail docking on working gun dogs and terriers. The first stage of that study is now complete. However, these interim results will not be made public and the final report from the study is not expected until the middle of 2012.

In the meantime, two further stages of research will take place and colleagues in Scotland are encouraged to contribute. For the second stage dog owners have already been recruited. Injuries will be reported, some will be visited and others working in the same environment will be monitored as controls. For the third stage, data from veterinary practices will be analysed to capture information on the number and severity of tail injuries.

Practices across Scotland will shortly be contacted by the Glasgow University team, led by Tim Parkin. You can email Tim at Tim.Parkin@glasgow.ac.uk.

Coordinators appointed for Postgraduate Certificates

BSAVA is pleased to announce the appointment of two Programme Coordinators, who will work closely with the Academic Director and teachers to support the delivery of the BSAVA postgraduate certificate programmes.

Professor Jimmy Simpson will be Programme Coordinator for the medicine programme. Jimmy is well known in the field of gastroenterology, and has been a clinician, teacher and researcher at the University of Edinburgh for many years.

Alasdair Hotston Moore will be Programme Coordinator for the surgery programme. Alasdair is a soft tissue surgeon who currently works in private practice after spending a substantial part of his career as a clinician and teacher at the University of Bristol.

Both appointees bring to their roles a wealth of experience in veterinary education and a passionate belief in the value of accessible and relevant postgraduate education for those working in practice.
In the next few months the launch of the BVA-Kennel Club health screening programme for syringomyelia, a condition which is most prevalent in Cavalier King Charles spaniels, is expected. The scheme is the product of lengthy discussions between the two organisations on the best way to control this painful and debilitating disease. But they must now talk to the Cavalier breeders and persuade them that this initiative provides the best hope for restoring the health of a well loved breed. 

John Bonner reports

Hertfordshire dog breeder Margaret Carter was understandably proud of her Cavalier King Charles spaniel Monty. Born in 1992, the dog became a breed champion at the age of four and went on to sire at least eight other champion Cavaliers both in Britain and abroad.

Then, when he was nine years old, Margaret was told that one of her dog’s progeny had been diagnosed with the recently recognised neurological condition, syringomyelia (SM). Alerted to the possibility that Monty was the likely source of the defective genes that cause this problem, she was on the lookout for signs of clinical disease in her dog.

Two years later, Monty began ‘screaming and writhing’ if touched on his neck. He was euthanased within two months when the pain could not be controlled. A post mortem examination showed the characteristic tubular defects or syrinx in the spinal cord, postulated to result from a skull conformation which does not allow free flow of cerebrospinal fluid (CSF) through the foramen magnum.

**New approach to not-so-new condition**

As someone who had kept and shown Cavaliers since the 1970s, Margaret says that some of the clinical signs now known to be associated with the condition, such as scratching and a ‘bunny hopping’ gait, had been commented on since the 1950s. However, those practices that breeders commonly use to preserve a desired trait, such as line-breeding between closely related animals, had made the situation much worse.

More severe signs had started to become widespread in the breed and to affect dogs much younger than her own, which had survived to the age of 11. So, realising she had played an albeit minor role in helping to create the problem, Margaret became active in efforts to deal with it. She volunteered to serve as Health Coordinator for the breed club and organise donations of clinical samples to Dr Clare Rusbridge, the south London-based veterinary neurologist who first described syringomyelia and the associated Chiari-like malformation (CM) in Cavaliers in 1997 and who remains a world authority on the condition.

Dr Rusbridge’s investigations have demonstrated just how widespread the condition is in Cavaliers. The published prevalence for the breed is an overall 46% but the disease is a progressive condition and up to 70% of older dogs appear to have pathological changes. The numbers showing overt clinical signs is probably around 15%. Furthermore the inheritance of SM associated with CM in CKCS has shown it to be a complex trait with a moderately high heritability.

**Proposals for the scheme**

So given both the prevalence of the disease and the severity of its clinical effects, syringomyelia was a particular focus of the BBC television programme ‘Pedigree dogs exposed’ in August 2008. This led to the Kennel Club opening its discussions with the BVA on extending the range of screening programmes aimed at tackling the major health and welfare problems seen in pedigree dog breeds.

Under the scheme agreed by those two bodies, magnetic resonance images of the skull and neck will be examined by an expert panel at a proposed cost of £100. The results from dogs aged over 2½ years will be entered on a database which will be maintained by researchers at the Animal Health Trust. They will compile estimated breeding values – calculations of the likely risk of dogs passing on the condition – based on a statistical analysis of results in closely related dogs. The initial scans will be carried out by a network of veterinary centres with MRI scanners in Britain and several other countries, that have agreed to carry them out at significant discounts on the normal cost of MRI procedures. Dr Rusbridge, for example, is hoping to offer scans at the Stone Lion veterinary hospital in Wimbledon for £200.
plus VAT, little more than the cost of the general anaesthetic used in the process. Costs at other practices may differ significantly.

**Interested parties**

However, there are ten (soon to be 11) separate breed clubs representing Cavalier owners and breeders in the UK and only a couple of these have expressed support for the scheme. Breeders’ anxiety when too much attention is paid to the health problems within the breed predates the announcement of this health screening scheme. “Before I became health rep I hadn’t realised how many breeders had – or suspected they might have – this condition in their dogs. There was a belief that you don’t talk about these things for fear that it will ruin the breed. I found myself becoming increasingly unpopular and was voted off the health rep position after I agreed to speak to the makers of the ‘Pedigree Dogs Exposed’ programme,” Margaret recalls.

Cavalier breeders point out, quite reasonably, that other pedigree breeds have health problems and so it is unfair for their breed to be singled out. But as the documentary explained, at that time Cavaliers were the sixth most popular pedigree breed in Britain. Cavaliers are also affected by a high prevalence of mitral valve disease, which manifests itself earlier than in other breeds, as well as single gene disorders such as curly coat/dry eye and episodic falling syndrome.

Yet it is syringomyelia that attracts the most attention because it is so distressing for those witnessing its effects, as well as for the dogs themselves. “I have spoken to people who have a very similar human condition. They say it is extremely painful and there is no justification for allowing an animal to suffer as they do,” said Carol Fowler, a former teacher who has had two affected dogs and is now a campaigner against hereditary canine diseases.

**A big challenge**

Although Cavalier breeders have a good record in trying to eliminate single gene ocular diseases in their dogs, the multigene inheritance and variable onset of syringomyelia make it a much more difficult challenge. But if enough scans are carried out in the scheme, the calculation of estimated breeding values (EBV) will at least help to eliminate the influence of environmental factors which tend to muddy the water.

But will there be enough cases entered on to the database to produce reliable EBVs?

Kennel Club spokeswoman Sarah Wilde recognises that this may be in doubt. The 10 Cavalier breed clubs have at least agreed to put forward a single representative for discussions with the Kennel Club and BVA on running the
scheme. However, “the Kennel Club has seen that the breed clubs supports the scheme in theory but not the publication of results at this stage (but could do so in the future). As publication of health results is an intrinsic part of the new scheme, it is therefore unlikely that the clubs themselves will fully support the scheme but individuals within them might certainly do so.”

Breeders’ perspectives
Clare Rusbridge points out that the attitude of the UK Cavalier breed clubs is in stark contrast to that of breed clubs in Scandinavia where there is an automatic presumption that publicising details of health screening programmes will help to improve the breed. “The only people that will benefit from non-publication are those who have something to hide. It is not protecting good honest breeders who are trying to do a good job.”

Another issue for the breed clubs is their belief that they have not received enough credit for their efforts in the past, particularly the large sums that have already been spent on full cost MRI scans at more than £1000 a time. “The plan was for those of us who have had scans done previously, that meet the criteria of the new scheme, to submit them and pay a flat fee to have them read. Unfortunately, most of them don’t meet the scheme criteria because the dogs were not microchipped or the scanning protocol was different to that being used now. So all that expense and effort which we undertook in good faith is now wasted,” said Sheena Maclaine, Chairman at the Cavalier King Charles Spaniel Club.

Dr Rusbridge says it is not true that previous scan results have no value. The data from earlier MRIs will be included when Sarah Blott at the Animal Health Trust, who is collating the data, can be sure that their inclusion will not bias the results. Her concern is that only data from Grade A dogs with no abnormalities will be submitted, when the important feature of the BVA scheme is that it includes the results of all animals scanned. “We are trying to produce the tools that will help breeders but we have to have the right data,” Dr Blott explains.

Clare feels that many breeders misunderstand the nature of the scheme. They believed that the BVA would issue a health certificate for those dogs that have already been scanned and found to be clear. But this is a progressive disease and the value of a scan carried out as a young dog will gradually diminish as it gets older, she says.

No cure-all
Dr Rusbridge also warns supporters of the screening scheme that it is not a panacea for the health problems that exist in the Cavalier breed – or indeed the other breeds in which the condition is known to occur, such as King Charles spaniels, Griffon Bruxellois, Affenpinschers, Yorkshire terriers, Maltese terriers, Chihuahuas, Pomeranians and Papillions. The ultimate aim must be to identify the specific genes involved in the disorder and produce a specific test.

Indeed, any breeding programme that has to exclude about 50 per cent of the population, as would seem likely in this case, is likely to generate further problems by creating a genetic bottleneck. “So I don’t think it is realistic to aim for the elimination of this condition. What we can do is to reduce the prevalence and severity, and to extend the age of onset. In effect, we should be trying to return to the situation which probably existed with the breed in the 1950s and 1960s,” she suggests.

Given the scale of the health problems in the breed, there are some like Carol Fowler who would argue that the only hope is to allow outcrossings with closely related breeds, a strategy that was sanctioned by the Kennel Club to help Dalmatian breeders affected by problems with uric acid metabolism. This, of course, would be anathema to those who have dedicated their lives to raising pure-bred Cavalier puppies.

Dr Rusbridge also doubts that it would provide a practical solution. She points out that syringomyelia has been recorded in Cavaliers crossed with other breeds. Furthermore, because the Cavalier brain is the same size as a Labrador, the only way to make sure crossbreed puppies have sufficiently large skulls is to mate the Cavalier with something the size of a Springer spaniel and the result may be nothing like the two parent dogs.

Is there hope?
So is there any point in putting all this effort into trying to save the Cavalier breed? Dr Rusbridge insists that it is worthwhile. “They are engaging little dogs with an excellent temperament and they are likely to remain popular if
puppy buyers can be given some reassurance that they will get a healthy animal”, she says.

However, Sheena Maclaine acknowledges that the controversy over the health of Cavaliers has had damaging effects on its reputation and reduced demand for the puppies. The recession has further hurt the prospects for pedigree breeders, who are now being asked to pay significant sums to screen their pups and yet still compete in this shrinking market with the products of low cost puppy farming operations.

Dr Rusbridge points out that breeders are not being asked to bear the costs of maintaining the health scheme by having every single puppy tested. “That is the advantage of the EBV concept, if data from enough dogs are included on the database. You won’t have to scan every puppy in every litter as the grandparents’ EBVs will give you much of the information that you need and the quality of that information will improve generation by generation.”

So in the meantime, it is a responsibility of veterinary practitioners to try to educate prospective puppy buyers to avoid the health risks of farmed puppies and support the efforts of reputable breeders. Clare says; “Practitioners can make an important contribution by steering their clients towards those breeders that have made this investment in the health of their breed.”

### CLARE RUSBRIDGE DESCRIBES THE PERTINENT FEATURES OF SYRINGOMYELIA

Syringomyelia (SM) is characterised by fluid filled cavities (a syrinx or syringes) within the spinal cord. SM occurs secondary to obstruction of the flow of fluid (cerebrospinal fluid or CSF) around the spinal cord especially if that obstruction is at the junction between the skull and the neck bones (foramen magnum). The most common predisposing cause in the dog is Chiari-like malformation (CM) (Figure 1). The primary clinical sign of CM/SM is pain, either due to obstruction of the fluid and/or a neuropathic pain syndrome due to damage to the spinal cord.

**Figure 1: T1W mid-sagittal MRI scan from a dog with CMSM (fluid = dark grey)**

Chiari-like malformation (CM) is a condition characterised by mismatch in volume between the brain (too big) and the skull (too small) such that the cerebellum and brain stem are herniated into or through the foramen magnum (Figure 2).

**CLINICAL SIGNS AND DIAGNOSIS OF SYRINGOMYELIA AND CHIARI MALFORMATION**

The most important and consistent clinical sign of CM/SM is pain – however, this may be difficult to localise. Owners may describe postural pain, for example pain on jumping or being picked up. Sleeping with the head in unusual positions may be reported. Pain is positively correlated with syrinx width and symmetry i.e. dogs with a wider asymmetrical syrinx are more likely to experience discomfort, and dogs with a narrow symmetrical syrinx may be asymptomatic. Siringes can progressively expand and a dog which is asymptomatic in early life may eventually become painful.

Dogs with a wide syrinx may also scratch, typically on one side only, while the dog is walking and often without making skin contact. Such behaviour is often referred to as an “air guitar” or “phantom” scratching. Dogs with a wide syrinx are also more likely to have curvature of the spine (scoliosis). SM may result in other neurological deficits such as weakness and poor coordination. Seizures, balance (vestibular) disorders, facial nerve paralysis (Bell’s palsy) and deafness may also be seen; however, no direct relationship has been proven and this association may be circumstantial. CM alone appears to cause significant head and spinal pain in some dogs. Magnetic resonance imaging (MRI) is essential for diagnosis and determining the cause and extent of SM.

**TREATMENT**

The main treatment objective is pain relief and dogs may be medically and/or surgically managed. There is no cure and at best treatment improves signs. The clinical signs of CM/SM are often progressive.

The most common surgical management is cranial/cervical decompression (also described as foramen magnum or suboccipital decompression) in essence creating more space for the brain by removal of bone. There are three main drugs used for treatment of CM/SM: drugs that reduce CSF production e.g. cimetidine or omeprazole or possibly diuretics such as furosemide; analgesics; and corticosteroids. Simple actions, for example raising the food bowl and removing neck collars, can also help.

More information from Clare Rusbridge about syringomyelia can be found at [www.veterinary-neurologist.co.uk](http://www.veterinary-neurologist.co.uk). Also, as more detail about the Kennel Club scheme becomes available BSAVA will add this information to its website [www.bsava.com](http://www.bsava.com).
Hypoalbuminaemia can result from increased loss (protein-losing nephropathy (PLN), protein-losing enteropathy (PLE), burns, external haemorrhage, vasculitis), decreased production (liver disease, malnutrition, malabsorption) or sequestration of albumin into a body cavity. Hypocalcaemia is an expected finding in dogs with hypoproteinaemia due to a reduction in the protein bound fraction. With PLE hypocalcaemia may develop due to calcium malabsorption or secondary to vitamin D deficiency or hypomagnesaemia. Additional causes of hypocalcaemia (renal failure, pancreatitis, ethylene glycol toxicity, primary hypoparathyroidism) were excluded given the history, clinical findings and normal inorganic phosphate level. Clinical signs of hypocalcaemia were not present and ionised calcium was not assessed.

Hypercholesterolaemia can arise as a result of increased cholesterol production (nephrotic syndrome), decreased lipolysis (hypothyroidism) or by multiple mechanisms including obstruction (pyelonephritis, hyperadrenocorticism, hypoadrenocorticism, hypercalcaemia, hypokalaemia, hepatic disease, primary nephrogenic diabetes insipidus).

Proteinuria can arise from non-urinary (physiological or pathological) or urinary causes (renal, parenchymal, tubular, glomerular and non-renal). Significant proteinuria and non-inflammatory urinary sediment combined with hypoalbuminaemia is indicative of glomerular proteinuria (PLN). Generally PLN is associated with hypoalbuminaemia; in this case panhypoproteininaemia was present. As there was no evidence of blood loss or burns, either the glomerular damage was severe enough to allow leakage of large molecular weight globulins as well as albumin into the urine, or occult concurrent

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**Case presentation**

A 5-year-old female neutered mixed-breed dog presented with a 48-hour history of abdominal enlargement. Four weeks previously the dog had experienced polyuria/polydipsia, lethargy and pyrexia. Treatment with amoxicillin clavulanate resulted in resolution of the pyrexia and lethargy but the polyuria/polydipsia persisted. At presentation the dog was bright with a good appetite and no other abnormalities were reported.

**Physical examination**

The dog was bright, alert, responsive and body condition was good (BCS 4/9). Mucous membranes were pink and moist with a CRT of <2 s. Heart rate was 120 bpm with good pulse quality. Respiratory rate was 28 breaths per min. Thoracic auscultation was unremarkable. There was moderate abdominal distension with a positive fluid thrill but no palpable discomfort or masses. Rectal temperature was 38.3°C and systolic blood pressure was 150 mmHg.

**Construct a problem list and discuss the pertinent differential diagnoses**

**Polyuria/polydipsia (PU/PD)** – Polydipsia can be the primary abnormality (psychogenic polydipsia) or compensatory to polyuria. Impaired renal concentrating ability, resulting in polyuria, can result from solute (chronic renal failure, diabetes mellitus, primary glucosuria) or water diuresis (pyelonephritis, hyperadrenocorticism, hypoadrenocorticism, hypercalcaemia, hypokalaemia, hepatic disease, primary nephrogenic diabetes insipidus).

**Abdominal distension** can result from organomegaly, organ distension, an abdominal mass or effusion. Causes of abdominal effusion include transudate, modified transudate, exudate, blood, chyle, bile and urine. As the dog was clinically well and a fluid thrill was palpable, a transudate or modified transudate abdominal effusion was most likely.

**Describe your initial diagnostic investigation of this case.**

Initial investigation was aimed at narrowing the differential diagnoses for PU/PD and determination of the nature of the abdominal fluid. In the majority of cases, a combination of urinalysis and serum biochemistry can achieve the former, and evaluation of a sample obtained by abdominocentesis the latter.

**Evaluate the haematology, biochemistry, urinalysis and abdominal fluid analysis and revise your problem list accordingly**

Classify the abdominal fluid as a transudate, modified transudate or exudate.
PLE was present. Reported urinalysis findings in PLN include microscopic haematuria (15–18% of cases), granular (21–35%) and hyaline (7–21%) casts, all of which were present in this case. Adequate urine concentrating ability (USG 1.040) and normal water intake (30 ml/kg/day) indicated that the polyuria/polydipsia had resolved or was relative in comparison to the historical water intake.

The abdominal effusion was a pure transudate consistent with the level of hypoalbuminaemia. The combination of hypoalbuminaemia, proteinuria, hypercholesterolaemia and ascites indicates that nephrotic syndrome is present.

What are the differential diagnoses for PLN and how would you investigate this case further?

Diseases associated with glomerular proteinuria are numerous: bacterial (borreliosis, chronic infections (e.g. endocarditis), discospondylitis); protozoal (babesiosis, leishmanioss; rickettsial (ehrlichiosis); parasitic (dirofilariasis); fungal (blastomycosis, coccidioidomycosis); viral (canine adenovirus-1); inflammatory (e.g. chronic dermatitis, periodontal disease, pancreatitis); systemic lupus erythematosus (SLE) or other immune-mediated disease (e.g. polyarthritis); neoplasia (lymphoid and carcinomas); miscellaneous conditions (corticosteroid excess, toxins, drugs); hypertension; amyloidosis; familial; and idiopathic.
Thoracic radiography and abdominal ultrasonography were performed to look for evidence of pleural effusion, neoplasia or chronic infectious/inflammatory diseases. Radiography was unremarkable but splenic changes were seen with ultrasound. Spontaneous contrast in the splenic vein raised the possibility of thromboembolic disease or increased blood viscosity. Hyperviscosity associated with PLN is attributed to a relative increase in higher molecular weight proteins and reduced plasma volume. Ultrasonography excluded gross intestinal disease. Faecal alpha1-antitrypsin would have been valuable in excluding PLE but is not readily available and was not performed.

Testing for infection and inflammatory diseases, which can cause glomerulopathy was performed. Negative antinuclear antibody serology did not exclude but made SLE less likely. *Borreli* and *Ehrlic*ia PCR was negative. Babesiosis, leishmaniosis, dirofilariasis and fungal diseases are not endemic in the UK and were excluded as the dog had not travelled outside the UK. Current vaccination status excluded canine adenovirus-1. Clinical examination did not support a diagnosis of endocarditis or discospondylitis; however, these differentials cannot be completely excluded as spinal radiography and echocardiography were not performed.

Remaining differentials for the PLN included idiopathic, amyloidosis, familial and toxic causes. Differentiating these would influence treatment and therefore renal biopsy was indicated. Normal buccal mucosal bleeding time and normal clotting times indicated that the risk of haemorrhage after biopsy was not increased.

Utrasound-guided Tru-cut renal biopsy was performed under general anaesthesia. The histopathological diagnosis of membranous nephropathy was tentatively supported after initial electron microscopy evaluation, but the changes were unusual and the opinion of a human nephropathologist was sought. A **final diagnosis of mesangio proliferative glomerulopathy** (MPGN) was made (Table 5); aetiology was unknown.

### How would you treat this case?

Glomerular proteinuria is most commonly secondary to soluble antigen–antibody complexes or antigen deposited within glomerular capillary walls causing complement activation, production of proinflammatory cytokines, vasoactive substances and growth factors, and recruitment of inflammatory cells resulting in an alteration in glomerular permselectivity and proteinuria. As with many cases the aetiology in this case was undetermined. Treatment was aimed at reducing and managing the complications of proteinuria (ascites, thromboembolism, malnutrition, azotaemia).

**Treatment**
- **Benazepril (0.5 mg/kg orally q24h)**
- **Low-dose aspirin (0.5 mg/kg orally q24h)**
- **Predisolone (1 mg/kg orally q24h)**
- **Spironolactone (2 mg/kg orally q24h)**
- Moderate protein diet (mixture of a commercial adult food (Pedigree) and renal diet (Hill’s k/d))

Benazepril, aspirin and the moderate protein diet were started following renal biopsy. Angiotensin-converting enzyme inhibitors are the primary treatment for PLN when the aetiology is unknown. They have been shown to reduce proteinuria and delay the onset of progression to azotaemia in dogs with idiopathic glomerulonephritis. Low-dose aspirin selectively inhibits platelet cyclo-oxygenase (and therefore thromboxane production, which induces platelet aggregation) without preventing the beneficial effects of prostacyclin formation. A positive effect in dogs on reducing proteinuria has been shown.

**Table 5: Renal biopsy**

<table>
<thead>
<tr>
<th>Technique</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histopathology</td>
<td>Nine glomeruli are present in total indicating an adequate sample size. There is minimal, multifocal infiltrate of lymphocytes and plasma cells in the interstitium and regenerative change is present in a single tubule. There is mild segmental thickening of the basement membrane in most glomeruli. There is no evidence of glomerular fibrosis or amyloidosis. <strong>Conclusion:</strong> Mild segmental thickening of the basement membrane in most glomeruli is supportive of a mild membranous glomerulopathy. There is a minimal concomitant chronic tubulointerstitial nephritis.</td>
</tr>
<tr>
<td>Electron microscopy (final report not available until day 42)</td>
<td>Abnormal glomerular basement membrane with podocyte effacement. There is suspicion that some membrane splitting may be present. There is no obvious inflammatory component to the changes. The changes are segmental in nature and most likely reflect a mesangiocapillary glomerulopathy. There is no associated inflammation making an immune-mediated reaction unlikely.</td>
</tr>
</tbody>
</table>

---

**Glomerulus**

**Gbm1**
The WSAVA Renal Standardization Study Group comprises 19 internationally recognised scientists in companion animal nephrology whose aim is to form a consensus on the diagnosis of canine glomerular disease. The group’s work is still in its early stages and practitioners are encouraged to consult the WSAVA website for further information and guidance on submission criteria.

The purpose of this initiative is to use all three diagnostic modalities (microscopy, immunohistochemistry and electron microscopy), as used in human nephropathology, to accurately characterise glomerular disease in proteinuric dogs and to relate these findings to clinicopathological presentation and outcome.

This proposal achieves this objective by establishing an international network of cooperating diagnostic renal pathology service centres to systematically evaluate tissue specimens obtained from proteinuric dogs worldwide and collect information about the clinical and clinicopathological features of their illnesses. The long-term goal of this study is to better understand and evaluate and thus optimise the medical management of dogs with proteinuric renal disorders by identifying distinct glomerular diseases for which specific prognoses and therapeutic guidelines can be provided.

For updates on the Renal Standardization Study Group please visit the WSAVA website – www.wsava.org.

<table>
<thead>
<tr>
<th>Parameter (units)</th>
<th>Reference range</th>
<th>Measured value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Day 14</td>
</tr>
<tr>
<td>PCV (%)</td>
<td>37.0–55.0</td>
<td></td>
</tr>
<tr>
<td>Platelets (x10^9/l)</td>
<td>200.00–500.00</td>
<td></td>
</tr>
<tr>
<td>Albumin (g/l)</td>
<td>22.0–29.0</td>
<td>15</td>
</tr>
<tr>
<td>Globulin (g/l)</td>
<td>25.0–45.0</td>
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</tr>
<tr>
<td>Creatinine (µmol/l)</td>
<td>44.0–159.0</td>
<td>118</td>
</tr>
<tr>
<td>Urea (mmol/l)</td>
<td>2.5–9.6</td>
<td>8.8</td>
</tr>
<tr>
<td>Cholesterol (mmol/l)</td>
<td>2.8–8.2</td>
<td>8.9</td>
</tr>
<tr>
<td>Inorganic phosphate (mmol/l)</td>
<td>0.81–2.19</td>
<td>1.87</td>
</tr>
<tr>
<td>Calcium (mmol/l)</td>
<td>1.98–3.00</td>
<td>2.21</td>
</tr>
<tr>
<td>Urine protein:creatinine ratio</td>
<td>&lt;0.5</td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;160</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Long-term follow up information (abnormal results in bold). *Prednisolone started then reduced and stopped after day 58; †amlodipine started; ‡aluminium hydroxide phosphate binder started

diets can reduce proteinuria and delay death due to renal failure. In this case the hypoalbuminemia was severe and it was felt that a low protein diet would result in protein malnutrition. A combination of maintenance and renal diet was fed to give a moderate protein intake.

Outcome

For financial reasons albumin rather than urine protein:creatinine ratio was predominantly used to assess the response to treatment. After three weeks there was no change in the albumin level (Table 6) and prednisolone treatment was started. Immunosuppressive treatment is beneficial in 50% of human patients with membranous nephropathy, but is of little benefit in adults with MPGN. In dogs with glomerulonephritis ciclosporin treatment has not been shown to reduce proteinuria or improve survival. The general consensus for dogs appears to be that response to immunosuppressive treatment is poor and may be detrimental when prednisolone is used as this drug may worsen proteinuria. However, due to the findings in human medicine, some authors have recommended trialling immunosuppressive treatment in dogs with membranous nephropathy. In this case after a further five weeks prednisolone was stopped as albumin levels were unchanged, significant proteinuria persisted (UPC = 9.4) and the final diagnosis of MPGN had been reached.

Spironolactone, an aldosterone antagonist diuretic was used when necessary to control the ascites and subcutaneous oedema. Eventually hypertension (which was managed with the calcium channel blocker amlodipine) and progressive azotaemia developed and the dog was euthanased eight months after presentation.

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For updates on the Renal Standardization Study Group please visit the WSAVA website – www.wsava.org.
Surgical staplers

Surgical staplers are used increasingly in a wide variety of veterinary procedures and may reduce the potential morbidity associated with surgery, which is particularly useful in animals that are critically ill. Vicky Lipscomb, Senior Lecturer in Small Animal Surgery at the RVC and co-editor of the brand new BSAVA Manual of Canine and Feline Surgical Principles, outlines a case study.

CASE
Thor – a 6-year-old male neutered Great Dane

Presentation and stabilisation
Thor was referred for suspected gastric dilatation and volvulus (GDV). On presentation he was recumbent, retching white froth and had a very distended, tympanic abdomen. He was tachycardic with poor quality, irregular pulses.

An ECG confirmed ventricular tachycardia with a rate of 200 bpm. Two large bore catheters were placed in the cephalic veins and a blood sample was obtained for a PCV/TP, electrolytes, lactate and venous blood gas analysis.

Intravenous fluid resuscitation was started with boluses of a crystalloid and 7.5% hypertonic saline. Thor’s mucous membrane colour, capillary refill time, heart rate, pulse quality and blood pressure were monitored to assess the response to the intravenous fluids. A right lateral radiograph confirmed the diagnosis of GDV and as much air as possible was removed from the stomach via gastrocentesis. When Thor’s vital signs, ECG rhythm, blood pressure and lactate concentration showed that perfusion had been improved sufficiently, he was anaesthetised for surgery using the minimum amount of fentanyl and midazolam necessary to achieve intubation, followed by maintenance of anaesthesia with isofluorane.

Surgery
Coeliotomy revealed a large distended stomach twisted 180 degrees in a clockwise direction. Gastrocentesis was performed intraoperatively to enable de-rotation of the stomach. A large bore, lubricated stomach tube was passed to empty and lavage the stomach. A large portion of the fundus and greater curvature of the stomach was not viable due to its dark black/blue colour (Figure 1). Abdominal exploration revealed the head of the spleen also looked non-viable due to its black colour.

Options
Options for the removal of the unviable portion of the stomach included:

1. Conventional open gastric resection and closure with two layers of a continuous appositional suture pattern.
2. Inversion of the necrotic portion of the stomach with two layers of an inverting, continuous suture pattern.
3. Resection and anastomosis with a linear and/or linear cutter stapler.

Open gastric resection and anastomosis exposes the contents of the stomach to the abdomen and is a relatively lengthy procedure to undertake in a critically ill animal. Gastric inversion is quicker and avoids abdominal contamination, but sloughing of large portions of necrotic stomach into the gastrointestinal tract has been associated with life-threatening haemorrhage due to postoperative melaena. Gastric resection and anastomosis using stapling equipment was chosen in this case because it is a rapid, efficient method that avoids contamination of the abdomen with gastric contents and the complications reported with gastric inversion. The stapled gastric incision was oversewn with a single inverting continuous suture pattern in case of undetected mucosal necrosis underneath a viable looking serosa.

Stapling equipment
A linear or linear cutter stapler could have been used. A linear cutter stapler (Figure 2) was chosen for convenience as it cuts off the necrotic stomach as well as stapling the edges of both the remaining stomach and resected necrotic portion (Figure 3). The linear cutter stapler fires two rows of staggered, B-shaped, titanium staples either side of the incision. Two overlapping 80 mm long staple lines were required to complete the gastric resection and anastomosis.
The necrotic spleen could have been removed using multiple conventional ligatures, but a ligate and divide stapler (LDS; Figure 4) was used to save time in this critically ill patient. The LDS stapler places two U-shaped staples around the vessel and divides the tissue between them. Vessels up to 7 mm wide that may be compressed to 0.75 mm can be safely secured using an LDS stapler. Another option for rapid splenectomy is to use a thermal sealing device, such as a LigaSure/Force Triad Energy Platform system, which can also be used on vessels up to 7 mm wide.

The splenic artery and vein were very large in this patient so were double ligated with absorbable synthetic ligatures on each side before transection of the vessels with scissors.

**PRINCIPLES OF APPLICATION OF SURGICAL STAPLERS**

- Do not staple tissue that is inflamed, oedematous or not viable.
- Every staple must penetrate all layers of the tissue.
- Choose the correct staple size. In particular, the tissue must not be too thick or too thin for the closed staple to hold it securely.
- Do not place excessive amounts of tissue in the stapler.
- Inspect the tissue before firing to ensure that it is correctly aligned within the stapler and that no other tissue is caught up in the stapler.
- Carefully remove the stapler after firing, so as not to disrupt the staple or the staple line.
- Inspect the staple or staple line for haemorrhage, leakage or loose staples, especially at both ends of a staple line.

**Outcome**

Thor recovered well from surgery, began eating the following day and was discharged on the fourth postoperative day. Improvements in outcome following surgical treatment for GDV, from 50% mortality 20 years ago to around 90% survival currently, are largely due to the significant improvements in stabilisation and critical care of these animals.

However, the ability to perform a rapid, efficient surgery using stapling equipment is helpful and may decrease morbidity and mortality in those animals that require gastric resection and splenectomy. Equally, it should always be remembered that using stapling equipment does not compensate for inadequate surgical technique, and the basic principles of soft tissue surgery and the principles of application of surgical staplers must be followed.

**Closure**

A right-sided incisional gastropexy was performed followed by routine closure of the abdomen. The long exploratory laparotomy skin incision (xiphoid to pubis) was closed using skin staples for speed. Rapid closure of skin wounds can be achieved using skin staples without increasing the risk of wound infection or delaying wound healing. As for skin sutures, all the wound tension should be borne by the underlying tissues and not the skin staples. In Thor’s case an intradermal suture layer placed prior to skin stapling placed the skin edges in close apposition, producing an ideal wound for skin stapling.

**NEW FROM BSAVA**

**Member price £49**

Non-member price £75

The BSAVA Manual of Canine and Feline Surgical Principles provides a solid grounding in best practice for the basic tenets of veterinary surgery. In addition to a chapter dedicated to surgical staplers, the Manual also covers:

- Preoperative stabilisation
- Fluid therapy and electrolyte and acid–base abnormalities
- Shock, sepsis and SIRS
- Postoperative management.

Purchase your copy online at [www.bsava.com](http://www.bsava.com) or contact our Membership and Customer Services Team on 01452 726700 to place your order.
This article provides a brief summary of the various active ingredients and formulations of insecticides and acaricides currently authorized for use in dogs and cats in the United Kingdom, in order to help the busy practitioner to find his/her way through the jungle of products available. Although legislation for pets entering the UK no longer requires tick treatment, travelling pets are still at risk of contracting ‘exotic’ diseases such as ehrlichiosis, dirofilariasis (heartworm) and leishmaniosis when abroad through contact with the arthropod vectors and should be protected appropriately. For more information on changes to the legislation regarding treatment of travelling pets please see the article on p24 of this issue of companion.

**Insecticides**

Insects of veterinary importance in small animals include fleas, chewing and sucking lice, mosquitoes and certain flies (e.g. phlebotomine sandflies).

**Imidacloprid** (Advantage spot on®, Bayer plc)
- Advantages: Adulticidal activity against fleas on contact within 24 hours; larvicidal in environment; authorized for flea control in rabbits; will control biting lice in dogs.
- Disadvantages: No repellent (anti-feeding) action; reduced efficacy after bathing/swimming; occasional application site reactions.
- Comments: The only flea product authorized for use in rabbits.

**Imidacloprid + permethrin** (Advantix spot on for dogs®, Bayer plc)
- Advantages: Adulticidal activity against fleas on contact within 24 hours; larvicidal in environment; acaricidal and repellent efficacy against ticks for 3 weeks; repellent activity against sandflies for 2–3 weeks; repellent activity against mosquitoes for 2–4 weeks; repellent activity against stable flies for 4 weeks.
- Disadvantages: Reduced efficacy after bathing/swimming; occasional application site reactions.
- Comments: Do not use on cats (toxic). Has repellent activities.

**Imidacloprid + moxidectin** (Advocate spot on®, Bayer plc)
- Advantages: Control of canine Sarcoptes and Demodex mites, feline and canine Otodectes mites, feline and canine roundworm and hookworm, canine whipworm, and canine biting lice. Authorized for the prevention of heartworm (active against L3 and L4 larvae of Dirofilaria immitis) in dogs, cats and ferrets. Prevention and treatment of canine angiostrongylus and treatment of canine lungworm (Crenosoma vulpis). For the treatment and prevention of flea infestation (Ctenocephalides felis) in dogs, cats and ferrets.
- Disadvantages: No repellent action; reduced efficacy after bathing/swimming; occasional application site reactions.
- Comments: The only anti-flea and heartworm prevention product authorized for use in ferrets.

**Fipronil** (Frontline Spray® or Frontline spot on®, Mérial Animal Health Ltd; Fiprodog® or Fiprocat®, Dechra Veterinary Products Ltd; Fiprospect®, Ceva Animal Health Ltd; Effipro spray® or Effipro spot on®, Virbac Ltd; Fiproline, Francodex, SAS & 4Fleas Fipronil, Alfamed SAS)
- Advantages: All products kill adult fleas. Effipro spot on® also effective for tick infestation in dogs and cats, whereas...
<table>
<thead>
<tr>
<th>Trade name</th>
<th>Active ingredient(s)</th>
<th>Species</th>
<th>Minimum age for first use</th>
<th>Spectrum of activity</th>
<th>Affected by weekly bath/swim</th>
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<td>Imidacloprid</td>
<td>C, D, R</td>
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<td><strong>✓</strong></td>
<td><strong>A, L</strong></td>
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<td></td>
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<td></td>
<td></td>
<td><strong>✓</strong></td>
<td><strong>D only</strong></td>
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<td>Nitenpyram</td>
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<td><strong>Comfortis</strong></td>
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<td>Fipronil</td>
<td>A, L, O</td>
<td>8 weeks</td>
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<td>Every 2 weeks max.</td>
<td>Weekly</td>
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<td></td>
<td></td>
<td></td>
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<td>Weekly</td>
</tr>
</tbody>
</table>

**C = cat, D = dog, F = ferret, R = Rabbit, A = Adulticidal, L = larvicidal, O = ovaricidal.**

*Can be used in pregnant bitches/queens, **Can be used during pregnancy and lactation, ***Can be used in nursing bitches/queens.*
How to pick your way through the jungle of ectoparasite treatments for dogs and cats

Frontline spray®, Frontline spot on® and Effipro spray® will additionally treat canine and feline biting lice infestations. Sprays can be used on puppies and kittens older than two days.

- Disadvantages: No repellent action; no larvicidal/ovaricidal activities; reduced efficacy after bathing/swimming; occasional application site reactions; spray is labour-intensive.
- Comments: Do not use on rabbits (toxic).

Fipronil + (S)-methoprene
(Frontline Combo spot-on for dogs and cats, Merial Animal Health Ltd)

- Advantages: Adulticidal, larvicidal and ovaricidal activities against fleas; effective against ticks and/or biting lice in dogs and cats.
- Disadvantages: No repellent action; reduced efficacy after bathing/swimming; occasional application site reactions.
- Comments: Do not use on rabbits (toxic).

Fipronil + (S)-methoprene + amitraz
(Certifect spot-on solution for dogs, Merial Animal Health Ltd)

- Advantages: Adulticidal, larvicidal and ovaricidal activities against fleas; effective against ticks and/or biting lice in dogs. Affects a wider range of tick species than Frontline Combo, increased speed of kill (starting at 2 hours and >90% at 24 hours) and a longer duration of activity. Unlike other products, dead and dying ticks fall off the patient.
- Disadvantages: Reduced efficacy after bathing/swimming; occasional application site reactions.
- Comments: Do not use on rabbits or cats (toxic). People with diabetes mellitus or taking monoamine oxidase inhibitors (MAOI) should take particular care when handling the product.

Selamectin
(Stronghold spot on®, Pfizer Ltd)

- Disadvantages: No repellent action; reduced efficacy after bathing/swimming; occasional application site reactions reported.
- Comment: Very wide spectrum product.

Metaflumizone + amitraz
(ProMeris Duo®, Pfizer Ltd)

- Advantages: Kills adult fleas on contact. Authorized for the treatment and prevention of infestations by ticks, treatment of canine demodicosis and canine biting lice.
- Disadvantages: No repellent action; reduced efficacy after bathing/swimming; side effects (sedation, lethargy, CNS depression, hyperglycaemia, bradycardia) can be seen; strong odour of product (author's own experience).
- Comments: People taking MAOI-containing medication or who have diabetes should take particular care when handling the product. Potential risk of dogs developing drug-induced pemphigus foliaceus¹.

Metaflumizone
(ProMeris spot on for cats®, Pfizer Ltd)

- Advantages: Kills adult fleas on contact.
- Disadvantages: No repellent action; reduced efficacy after bathing/swimming; occasional application site reactions (temporary oily appearance, clumping/spiking of the coat, colour change of fur). Slow acting (2–4 days).
- Comment: Clients may not be happy with oily coat appearance and possible coat colour changes.

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Pyriprole (Practic spot on solution for dogs®, Novartis Animal Health
UK Ltd)
■ Advantages: Kills adult fleas within 24 hours; kills ticks within 48 hours.
■ Disadvantages: Not suitable for cats; no repellent action; fur discoloration,
greasy appearance/clumping of the fur, alopecia or pruritus may be observed
at the application site.
■ Comments: Do not use in rabbits. Weekly immersion in water does not
affect efficacy against fleas/ticks, but dogs should not be bathed/shampooed
from 48 hours before treatment and/or within 24 hours after treatment.

Nitenpyram (Capstar tablet®, Novartis Animal Health UK Ltd)
(Other products with the same active ingredient are available)
■ Advantages: Kills 95–100% of adult fleas within 6 hours; can be given to
animals at all stages of pregnancy or lactation.
■ Disadvantages: No repellent action; no larvicidal/ovaricidal activities
against fleas.
■ Comments: Not for use as sole anti-flea therapy.

Spinosad (Comfortis chewable tablet for dogs®, Elanco Companion
Animal Health)
■ Advantages: Rapid onset of action and long duration (one month); therefore
almost complete prevention of appearance of flea eggs in the
environment.
■ Disadvantages: Cannot be used in cats. Cannot be used in dogs weighing
<3.9 kg as accurate dosing not possible. Do not use in dogs with
pre-existing epilepsy. Product may interact with other P-glycoprotein
substrates (e.g. digoxin, doxorubicin, ciclosporin). Vomiting commonly
occurs in the first 48 hours after dosing, but is transient, mild and does
not require symptomatic treatment.
■ Comments: Comfortis is authorized for use in cats in the USA – so watch this
space!

Deltamethrin (Scalibor Protectorband for dogs®, MSD
Animal Health)
■ Advantage: Control of infestations with ticks and sandflies (Phlebotomus
perniciosus) for 5–6 months; anti-feeding effect on adult mosquitoes
(Culex pipiens) for 6 months; can be used during pregnancy and lactation.
Long acting!
■ Disadvantage: Collar maybe not convenient for owner; strong smell; local
reactions may occur.
■ Comments: Remove collar before swimming/bathing the dog because
deltamethrin is harmful to aquatic organisms. Prevent dog from swimming
in water for the first 5 days of wearing the collar.

Insect growth regulator inhibitors
Lufenuron (Program tablet for dogs®, Program suspension for
injection for cats, Novartis Animal Health UK Ltd)
■ Advantages: Inhibition of chitin synthease results in flea eggs failing to
hatch. Can be given to pregnant bitches and queens, lactating queens
and puppies/kittens taking solid food; injection for cats lasts 6 months.
■ Disadvantages: No effect against adult fleas; time lag of 60–90 days required to disrupt flea life
cycle; no repellent activity.
■ Comments: For heartworm-positive dogs, adulticidal therapy is indicated
before administering Program Plus.

Acaricides
Products for tick control
■ Deltamethrin (Scalibor Protectorband for dogs®, MSD Animal Health)
■ Fipronil (Frontline Spray® or Frontline spot on®, Mérial Animal Health Ltd;
Effipro spray® or Effipro spot on®, Virbac Ltd)
How to pick your way through the jungle of ectoparasite treatments for dogs and cats

- **Fipronil + (S)-methoprene** (Frontline Combo spot-on for dogs and cats, Merial Animal Health Ltd)
- **Fipronil + (S)-methoprene + amitraz** (Certiflee spot-on solution for dogs, Merial Animal Health Ltd)
- **Imidacloprid + permethrin** (Advantix spot on for dogs®, Bayer plc)
- **Imidacloprid + moxidectin** (Advocate spot on®, Bayer plc)
- **Metaflumizone + amitraz** (ProMeris spot on for dogs®, Pfizer Ltd)
- **Pyriprole** (Prac-tic spot on solution for dogs®, Novartis Animal Health UK Ltd)
- **Selamectin** (Stronghold spot on®, Pfizer Ltd)

**Products to treat sarcoptic mange**
- **Amitraz** (Aludex cutaneous solution for dogs®, MSD Animal Health)
  - Advantages: Very effective.
  - Disadvantages: Not user-friendly (see product insert for handling and application directions); cannot be used on Chihuahuas, pregnant or lactating bitches or puppies <3 months old; concurrent use with other alpha-2 adrenoceptor agonists not recommended. Known side effects include skin irritation, sedation, lethargy, CNS depression and bradycardia; these usually subside in 24 hours; if they are severe or persistent, the patient should be washed in warm water and dried, and use of a reversal agent (atipamezole 0.2 mg/kg i.m.) considered.
  - Comments: Amitraz is an MAO inhibitor and should not be used on dogs or applied by anyone taking other MAO inhibiting drugs. Care is needed if the drug is being handled by a diabetic owner or applied to a diabetic patient, as they may develop transient hyperglycaemia. Do not use on cats or horses.
- **Selamectin** (Stronghold spot on®, Pfizer Ltd)
- **Imidacloprid + moxidectin** (Advocate spot on®, Bayer plc)

In-contact animals and the environment should be treated concurrently.

**Products to treat canine demodicosis**
- **Amitraz** (Aludex cutaneous solution for dogs®, MSD Animal Health)
- Advantages, disadvantages and comments as above for Amitraz in treating sarcoptic mange.
- **Imidacloprid + moxidectin** (Advocate spot on®, Bayer plc)
- **Metaflumizone + amitraz** (ProMeris spot on for dogs®, Pfizer Ltd).

**Products to treat cheyletiellosis**
Currently there are no products authorized for this use, although reports have shown that fipronil- and selamectin-containing products are effective. Alternative treatments include weekly lime sulphur dips, or weekly bathing with 1% selenium sulphide shampoo over 3 consecutive weeks. In-contact animals and the environment should be treated concurrently.

**Products to treat trombiculidiasis**
To the author’s knowledge there is currently no authorized product available, but there is evidence in the literature that fipronil- and selamectin-containing products may be effective.

**Products to treat otocariosis**
- **Imidacloprid + moxidectin** (Advocate spot on®, Bayer plc)
- **Selamectin** (Stronghold spot on®, Pfizer Ltd)
- **Tiabendazole** (Auroto ear drop solution®, Dechra Veterinary Products Ltd)

In-contact animals and the environment should be treated concurrently.

References and further reading available at the companion area of BSAVA.com
Have we got reviews for you

The review of immunomodulatory drugs published in last February’s issue was by some distance the most downloaded JSAP paper of 2011. The authors, Nat Whitley and Michael Day, explain the importance of a review on this topic.

When we were contacted by JSAP with an idea for an immunology review, we were allowed free rein to structure the review in a manner that we hoped would offer something to practitioners at all levels. We make no apology for commencing with a ‘refresher’ section summarising current thinking on the normal immune response and development of autoimmunity – the field is sufficiently complex and rapidly evolving that an appreciation of recent advances in understanding is highly desirable for those aiming to effectively manage and refine their care for such patients. We then introduced the principal immunosuppressive drugs available to the practitioner – both ‘traditional’ and emerging therapies, before focusing in depth on specific diseases.

Five distinct conditions were chosen to illustrate the spectrum of canine immune-mediated disease, ranging from those where immunosuppressive therapy has been considered mandatory to those in which it is often not required or may even be detrimental. Acknowledging both the difficulties encountered when studying these diseases in a clinical setting and the seductive logic of employing immunosuppressives, we then took a frank look at the relatively small amount of published evidence for current prescribing practices. We concluded with an overview of future therapeutic strategies that we hope will develop based on the more refined therapies now used in human medicine.

We hope that readers find the review both a useful resource when making treatment decisions and are inspired to support or become involved in further studies on management of these serious diseases.

A longer version of this review appears in the January issue of JSAP.

Why commission review papers?

Gerry Polton, one of JSAP’s Commissioned Reviews Editors, explains the philosophy behind the journal’s strategy for review papers:

Although the primary function of JSAP is to provide a vehicle for the presentation of the methods and outcomes of scientific investigations, and thus to chart progress in the field, it is also appropriate to seek to provide learned articles defining the state of global expert opinion and evaluating the evidence base for this opinion – in the form of commissioned reviews.

The aim of a review paper is to collate evidence and opinions, to summarise and explain inherent controversies, and objectively to evaluate the pertinent questions at the time. Times change, and as they do, so do knowledge and opinion.

There are many reasons for commissioning a review paper but, perhaps most importantly, a review may be justified because the subject matter is important to our readership. It is vital that JSAP continues to be regarded as valuable by the members of BSAVA. In commissioning reviews we therefore strive to identify subject areas of interest and importance to the practitioner in daily clinical small animal practice.

If you are interested in writing a review paper, or have any suggestions for topics that would add to understanding of key areas of veterinary practice, please contact JSAPadmin@bsava.com.
Finding a way to repair the damaged cartilage surface in patients with osteoarthritis has been described as the Holy Grail of orthopaedic surgery. If that is so, then the man who may take the role of Sir Galahad in that adventure will be speaking to BSAVA members at their annual Congress in Birmingham next April.

Jim Cook is the veterinary researcher who heads a multidisciplinary team at the University of Missouri pioneering new treatments for osteoarthritis in both canine and human patients. A former maths teacher and champion water-skier, Dr Cook was a late arrival at veterinary school but has made up for lost time in investigating techniques for recreating fully integrated and functional hyaline cartilage and subchondral bone in damaged joints. His presentation will describe those techniques that are already here, some that will be available very soon and others that may loom over the horizon in the next few years.

**Osteochondral grafts**

Osteochondral grafts taken either from the patient’s opposite limb or occasionally from another dog being euthanased for other reasons are methods currently being used by Cook and veterinary surgeons at other leading referral centres. His own clinic has performed more than 80 osteochondral autografts to repair injured stifle joints, generally in large and giant breeds.

The dogs have generally been in the six to 18 months age range and have severe pain and lameness in the affected joint. With follow up periods of up to seven years, the results to date have been excellent with good integration of the graft and improved function, he says.

Given that the tissue is usually the patient's own, it is no surprise that the graft is accepted but this approach does have a number of drawbacks – it is technically demanding, can usually be used only for small defects and there is a danger of long term injury at the donor site, he says. Allografts taken from a donor dog can help repair much larger defects and those in a wider range of anatomical sites but the cells can deteriorate during the processing phase and there is the potential for both tissue rejection and the transmission of other disease conditions.

**Synthetic grafts**

There is also the possibility that synthetic materials could replace the canine tissue used in those grafts. The basic technology for two potential methods is already produced commercially and is currently undergoing clinical trials in the US and Canada.

Dr Cook is one of the patent holders for one of these systems, known as canine unicompartmental elbow (CUE) arthroplasty. This is used to treat the common problem of damage to the medial compartment of the elbow – the worn cartilage is replaced by a synthetic plug on the ulna and a metal implant on the medial aspect of the humerus. Dr Cook says that the early results from initial studies on both methods are very encouraging.

However, any metal and plastic will be at its best at the moment it is implanted and will start to deteriorate from that day onwards, says Cook. The ideal solution would be to create a perfect replica of the original joint using materials that will adapt and strengthen as the limb is used.

**Leading the field**

Cook’s laboratory is leading the field in the development of cell-based and tissue engineering options for repairing injured joints. His team’s approach, which has been successfully tested in a rabbit model, involves moulding a scaffold combining a synthetic material, polycaprolactone and a
natural component of bone, hydroxyapatite. They then culture the patient’s own stem cells with a specific cytokine which will transform the undifferentiated cells into the healthy cartilage used to cover the surface of the joint implant.

Dr Cook says the research is opening up exciting possibilities for treating both dogs and the thousands of human patients who would currently be candidates for total hip or knee replacement surgery. But because of the regulatory authorities’ concerns over the potential risks of using synthetic growth factors on human tissues and the need for long follow up periods in clinical trials, it may be 10 or 20 years before the technique becomes widely available.

In the meantime, he points out that there are alternatives to palliative medical treatment in dogs with painful osteoarthritis; but it is important that the long term effects of any novel therapy are examined carefully. “Biological options for the treatment of cartilage defects are available now and should be a consideration for appropriate cases. But it is important that we develop optimal treatment algorithms based on evidence from long term cohort studies,” he says.

A highly skilled veterinary nurse is an invaluable member of the clinical team, and with speakers like Charlotte Donohoe at Congress, VN delegates will be returning to the practice with the most up-to-date and practical skills.

Dealing with a medical or surgical emergency is probably the biggest test of a VN’s knowledge and training. These may happen every week in a specialist centre but for most young nurses working in a first opinion practice, they may be an infrequent occurrence and one that is bound to create a twinge of anxiety.

So guidance on exactly what to do in these high pressure situations will be given in one of the nursing streams at BSAVA Congress in Birmingham next year by a Canadian veterinary nurse, Charlotte Donohoe. She has spent the past 13 years working in the critical care unit of the small animal hospital at the University of Guelph in Ontario, including the past six years as the coordinator for emergency referrals.

Charlotte has earned an impressive reputation as an inspiring speaker, and her presentation on triage skills for the VN will provide a useful checklist for what to do, and what not to do, when a client calls in a panic because they fear for their pet’s life. Charlotte will set out a plan for assessing the pet’s condition and administering appropriate emergency care, as well as supporting the client and the entire clinical team.

“You must remember not to get distracted by the emotional upset of the client, while still being sympathetic. You have to focus on what is most important with regard to the immediate health and safety of the animal,” Charlotte explains. Yet even for a highly experienced emergency room technician, it is important not to rely completely on standard protocols. “If there is one take-home message that I would like my audience to remember, it is that in these situations they should never take anything for granted. Some animals cope much more effectively with severe illness than others and so they may look much healthier than they actually are. So it is vital that when assessing the animal on its arrival, the technician is very thorough and makes full use of their powers of observation.”
The speakers for BSAVA’s business programme have been chosen because they have real, practical knowledge and experiences to share. So your time in the Management Marquee will be very well spent – and your practice will be better off for it too. Here is a little detail about the talks taking place on the Thursday and Friday of Congress…

**An overview of key findings from BRAKKE – Dave Nicol**
The BRAKKE study is a large scale view of what is happening in the US vet market. The session will look at the key messages from the results and examine why owners do not access vet care and what can be done about it, and what this means for you. Data from other countries will add to the richness of the session.

**What makes a successful veterinary practice? – Mark Beaney**
This session will look at the “must know” rules of the veterinary business. Why do some people do well and end up with a great lifestyle and a great clinical practice and others struggle to make ends meet? The key differences are all in the way they do business and how they manage the numbers. This is a must attend session.

**The role of Net Promoter Score – Alison Lambert**
The Net Promoter Score is a statistical measure of overall client satisfaction. It allows you to understand how your clients feel about your practice’s service, and track any improvements or declines. More importantly, you can then act to address any issues quickly before turnover, profitability and growth are affected.

**Managing people to get good results – Shawn McVey**
Shawn will take you through a no-holds-barred approach to getting the best from people – what to do and how to do it! The session promises to be a memorable one.

**So what if I make no profit; I still have cash, don’t I? – Mark Beaney**
The role of cash and profit – in the current climate cash is king. This session will take you through how to manage your profit (or get some if you haven’t!) and make better use of your cash.

**How to deal with things when they don’t go to plan – Shawn McVey**
Improve not only your life but the running of the practice with this simple and practical process – the After Action Review.

**What pet owners want from a vet – Alison Lambert**
Find out how clients choose their practice through a range of rational and emotional factors, including; locality and convenience, recommendation, and from local key opinion leaders.

**Performance management – Dave Nicol**
This session will give you a route map and guide you through what to do and how to make performance management work.

**Growth in the face of local competition – Marwan Tarazi**
NuVet launched three years ago from a standing start – with no history in the Peterborough area and no relationships with local pet owners. Now they have 100 new client registrations every month. Find out how they did it.

**Owning a practice and making it work, a VN perspective – Tracey Mayne**
The journey to practice ownership by a nurse – this session will look at the highs and lows of a VN owner. A brilliant, personal view of what is possible.

**Sites and customers: the corporate view – Peter Watson**
This is a ‘through the key hole’ view of what Vets4Pets do when they open up a site. A unique perspective and one not to miss.

**Communication: how to make it all work – Shawn McVey**
Change at work begins with authentic, honest conversations. To stay competitive, we must become black-belt conversationalists.

**What really happens in the consult room – Alison Lambert**
Paying attention to seven key steps during a client consultation will improve both practice efficiency and client satisfaction.

**Reprogramming pets and vets – Margit Bossard**
If you would like to improve the behaviour of your staff, your colleagues and your clients, encourage and reward them – recognise stress and diminish the factors that are causing stress.

**How to motivate your staff – Shawn McVey**
Staff motivation is one of the hardest challenges for any business owner. This session will give top tips and inspiration to make it happen.

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Any delegate can attend these lectures, though priority will be given to those who are attending on a Practice Manager’s ticket – allowing attendance at these lectures on Thursday and Friday, plus access to the exhibition on Saturday and Sunday. Register now at www.bsava.com/congress.
Skin lumps and bumps
7 February
An entirely practical approach to managing skin tumours of the dog and cat

**SPEAKER**
Iain Grant

**VENUE**
The Bridge, Wetherby

**FEES**
BSAVA Member: £227.00
Non BSAVA Member: £340.00

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The ear, the nose, the throat
20 March
Tackling tricky problems and providing practical solutions

**SPEAKER**
Davina Anderson

**VENUE**
Chilworth Manor, Southampton

**FEES**
BSAVA Member: £227.00
Non BSAVA Member: £340.00

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Introduction to practical cytology
13 March
A very practical day with individual use of high quality microscopes

**SPEAKER**
Michael Day

**VENUE**
BSAVA Headquarters, Gloucester

**FEES**
BSAVA Member: £338.00
Non BSAVA Member: £507.00

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For more information or to book your course
[www.bsava.com](http://www.bsava.com)
On the border of change

New year means new regulations – as the UK loses its derogation under EU rules. This is what you need to know about pet travel and the implications for your clients.

On 31 December 2011 the UK lost its derogations under EU Regulation 998/2003 relating to the non-commercial movement of pet animals between EU member states. This will bring the UK into line with other member states and make it easier to bring pet animals into the UK. Until now the UK, as well as Ireland, Sweden and Malta have been able to apply more stringent controls to protect against the entry of rabies. These countries, plus Finland, have also had a second derogation to apply additional entry conditions to protect against the entry of tick-borne diseases (e.g. Mediterranean spotted fever) and the tapeworm, *Echinococcus multilocularis*.

New regulations

From 1 January 2012 the rules for bringing pet dogs, cats, and ferrets into the UK changed. All pets entering the UK will still need to be microchipped and vaccinated against rabies. However under the new rules pet dogs, cats and ferrets from other EU Member States, and listed approved countries, will not need a blood test and can enter the UK 21 days after their rabies vaccination (rather than having to wait 6 months and provide proof of a protective titre).

Pets entering the UK from non-approved countries will still require a blood test, which should be taken at least 30 days after vaccination and 3 months before entry into the UK. Providing pets meet these requirements they will no longer be required to undergo quarantine on entry.
The up-to-date list of non-EU countries and specific requirements relating to these countries can be found at: www.defra.gov.uk/wildlife-pets/pets/travel/pets/countries/non-eu-countries/.

Pets travelling from the UK to EU countries will also need to be microchipped and vaccinated against rabies at least 21 days before travelling. The number of pets (dogs, cats and ferrets) that can be moved between EU Member States, including into and out of the UK, is limited to five per person. Anyone moving more animals, for example to take part in a show or sporting event will require a specific health certificate issued by the Animal Health and Veterinary Laboratories Agency animalhealth.defra.gov.uk/imports-exports/index.htm. Countries outside the EU will continue to set their own entry requirements. It is important to note that these changes may have an effect on the entry requirements to other countries, for example From 1 January 2012, cats and dogs from the UK, will be required to have a rabies vaccination and rabies blood test prior to entry into Australia www.daff.gov.au/aqis/cat-dogs.

**Client information**
The regulations are primarily designed to promote free movement throughout the European Union and protect human health, based on a risk assessment for the spread of diseases of zoonotic importance; they are not concerned with the protection of individual animals. BSAVA have prepared a poster to help you inform owners of the health and welfare implications of taking their pets abroad www.bsava.com/Advice/PetTravel/tabid/172/Default.aspx.

**Disease risks abroad**

*Echinococcus multilocularis* – is a taeniid tapeworm endemic in much of Europe, from central France eastwards. Foxes are the main definitive hosts and voles and other small rodents act as intermediate hosts. Dogs are easily infected and although the adult parasite produces no clinical signs in dogs it can cause a potentially fatal condition in humans (alveolar echinococcosis). The microscopic eggs are infective immediately. Infection is uncommon but not impossible in cats.

In endemic areas it is recommended that dogs which have access to rodents are wormed monthly with praziquantel. It is also important to advise clients that the eggs can also be found in the dog’s coat especially if it becomes contaminated with fox faeces. Dogs are required to be treated *E. multilocularis* before entry into the UK.

**Vector borne diseases**

**Tick borne diseases**

Although the requirement to treat pets for ticks before re-entry into the UK has been removed the need to treat them before travelling abroad has not. While both ticks and tick borne diseases such as *Lyme disease* (*Borrelia burgdorferi*) are present in the UK there are also species of tick (*Rhipicephalus sanguineus*) and diseases (e.g. *Ehrlichia canis*, *Babesia canis canis* and *Hepatozoon* spp) which are not. While the majority of ticks are found in pasture and woodland it should be remembered that *R. sanguineus* can be found in domestic environments such as homes and kennels.

Acaricides should be applied before travel, animals should be checked regularly and visible ticks removed. It should be remembered that frequent water exposure may reduce the efficacy of the acaricidal product and products should be reapplied in line with the manufacturer’s instructions.
**Other vector borne diseases**

**Leishmaniasis** is an infectious and potentially fatal disease caused by a protozoan parasite common in Mediterranean coastal areas and transmitted by phlebotomine sand flies. Despite the name, which relates to their brownish colour, the flies are found in woodlands and crevices in old buildings. The sand flies are active from May to October and feed mainly at dusk and dawn. Prevention involves avoiding the sand flies and the use of insect repellents such as those containing synthetic pyrethroids (do not use in cats) although repellents alone cannot be relied upon to prevent disease. A vaccine has recently been launched in Europe but is not yet available in the UK.

**Dirofilaria immitis** (heartworm) is a nematode worm endemic in Mediterranean areas. Dogs are the primary definitive host however the cat is a susceptible if not ideal host. Microfilariae are spread by blood sucking mosquitoes during feeding and the larvae migrate to the pulmonary artery and adjacent areas where they develop into adult worms. Many mosquitoes are capable of transmitting the parasite including species present in the UK. While the synthetic pyrethroids have some repellent effect on mosquitoes these should not be relied upon and preventive treatments such as Milbemycin or Selamectin should be given throughout the mosquito season starting 1 month before exposure.

**Rabies**

Rabies in Europe is predominately sylvatic, with wildlife species, especially the Red Fox (*Vulpes vulpes*), accounting for approximately 80% of all rabies cases. While many Western European Countries have successfully controlled rabies in wildlife through the use of oral vaccination programs it should be remembered that sporadic cases do still occur, usually in illegally imported animals. While travelling pets will be protected by vaccination it is important for clients to realise that humans will not be and to get immediate treatment for any bite wound.

It is also important to stress to clients the importance of not deciding to rescue strays of unknown health status as this risks introducing a number of diseases into the UK.

**Implications for disease risks in UK**

It is likely that the changes in the regulations will increase the number of pets travelling between the UK and Europe. This coupled with the loss of pre-entry tick treatment means that we are likely to see more of the “exotic” diseases mentioned above. While the risk of rabies entering the UK is still considered to be very low, and most likely to be brought in by an illegally imported animal, it would be wrong to be complacent and we must remain vigilant. Rabies is a notifiable disease and any suspect case should be reported immediately to your nearest Animal Health Office

animalhealth.defra.gov.uk/about/contact-us/index.htm. The suspected animal should be kept isolated and restrained along with any other animals that have had contact with the suspect case. A veterinary officer will normally come to the practice immediately and will manage the investigation.

See the How To on p14 of this issue of companion.

**On the border of change**

**STOP PRESS**

**Movement of pets between Republic of Ireland and the UK**

The following information became available just before going to press with this article…

Under the EU pet movement system, all pet dogs, cats and ferrets moving between EU Member States must meet the same animal health rules. From 1 January 2012 the requirement is that all pets travelling from the Republic of Ireland to the UK should be microchipped, vaccinated against rabies and accompanied by a pet passport.

As both the Republic of Ireland and the UK have had no indigenous rabies for many decades, compliance checks on pets travelling between the two countries will not be applied. Pet owners travelling with their pets should therefore not experience any change on the ground from the 1 January.

Further information is available on the BSAVA website in the Pet travel section under the Advice link. Other sources of information include:

- Defra travel regulations  
- BVA – Animal Welfare Foundation leaflet on taking your pets abroad  
  [www.bva-awf.org.uk/resources/leaflets/BVA_AWF_Taking_your_pets_abroad_1008.pdf](http://www.bva-awf.org.uk/resources/leaflets/BVA_AWF_Taking_your_pets_abroad_1008.pdf)
- ESCCAP – Parasite maps  
  [www.esccapuk.org.uk/maps/by_parasite.html](http://www.esccapuk.org.uk/maps/by_parasite.html)
- Health Protection Agency advice on Rabies  
The American Animal Hospital Association’s accreditation programme, currently unique to North America, accredits practices based on their adherence to standards covering, for instance, the physical environment they provide, the type of equipment they offer and the clinical standards they adhere to. Specific standards have been developed for a range of practice settings including a general clinic, an emergency clinic and a specialty practice. Practices have to submit to a detailed inspection and those completing it successfully are awarded a certificate of accreditation. Re-inspections are arranged based on the accreditation on a periodic schedule.

Debbie Gadomski, RVT, National Field Operations Manager at the AAHA comments: “Each year we receive many calls from veterinarians around the world who want to become AAHA accredited in order to optimise their hospital procedures and patient care. While we can’t expand our own programme beyond North America, we can help other associations develop accreditation programmes which are appropriate to their needs so this is where we are now focusing our efforts with the support of the WSAVA. Earlier this year, for instance, we had the privilege of working with a group of veterinarians and educators from the Veterinary Practitioner Association of Thailand (VPAT), including Siraya Chunekamrai, DVM, PhD, a member of the WSAVA’s Executive Board, to explore the best way of developing accreditation schemes for

WSAVA has announced its support for AAHA’s accreditation programme and is working to raise awareness of the help that similar programmes can offer to veterinary professionals.
An active year for the WSAVA’s One Health Committee

Michael Day reports on a busy 2011 as the OHC progresses towards its goals

2011 was a busy year for the new WSAVA One Health Committee (OHC) as we work towards our mission of ‘ensuring the prominence of the small companion animal–human interface in the global One Health agenda.’ We’ve reported previously our participation in the first international One Health Conference in Melbourne, Australia, an achievement built on with the signing of a formal memorandum of agreement with the OIE in May, making WSAVA the official voice for small companion animals in this global forum. We followed this in September with Sarah Cleave, Professor of Comparative Epidemiology at the University of Glasgow, representing the OHC at the OIE-World Health Organization conference on rabies eradication in Seoul, Korea.

Of course One Health was also prominent at the WSAVA Congress in Korea in October and the first WSAVA Global One Health Award was presented to the OIE and was accepted on behalf of the organisation by Dr Tomoko Ishibashi, Deputy Director of the OIE in the Asia-Pacific Region.

In addition to attending these key events, the OHC has published two scientific papers in the open access journal Parasites and Vectors during the year and is currently working on a series of further review articles. We have identified global rabies eradication as a focus for attention and will announce exciting new initiatives to support ongoing programmes in this area next year.

Just recently on 30 November and 1 December, we attended a meeting at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, USA. During the session, we were privileged to be able to visit the Emergency Operations Center at CDC, the operational hub for the co-ordination of global infectious disease outbreaks. We also attended a lecture on the new One Health programme emerging from the US Department of Agriculture and met with numerous CDC Subject Matter Experts to discuss topics as diverse as issues surrounding the global transport of exotic animal pets and the role of dog walking in tackling human obesity.

All in all, it was a busy and productive first year for the OHC with much more planned to help us move towards our goal in 2012.

Professor Michael Day

WSAVA ENDORSES ACVD GUIDELINES

Following review by our Scientific Advisory Committee (SAC) the WSAVA Scientific has endorsed peer-reviewed guidelines on the treatment of atopic dermatitis in dogs published by the International Committee for Allergic Disease of Animals (ICADA). The Guidelines, aimed at educating general practitioners on the treatment of this common allergic skin disease, can be downloaded in English at www.wsava.org and translations into more than 15 languages are also being uploaded. WSAVA Secretary Walt Ingwersen commented: “These Guidelines provide valuable clinical information which SAC believes to be relevant to small animal veterinary medicine globally.”
WSAVA is delighted to announce that 13 new member associations joined the Association during 2011. Between them, they represent around 65,000 new companion animal veterinarians, bringing the total number represented globally by WSAVA to around 180,000. This is a great achievement and reflects the hard work carried out by our existing members to demonstrate the value and effectiveness of the organisation in enhancing the clinical care of companion animals globally.

Momentum is building with our recently launched WSAVA Foundation thanks to the generosity of the Swiss Small Animal Medicine Association, which has donated 30,000 Swiss Francs (£20,000) for initial projects. A new website for the Foundation has also been launched at [www.wsavafoundation.org](http://www.wsavafoundation.org). WSAVA President Jolle Kirpensteijn has also set an example by making a personal donation of $1,000. He says: “The WSAVA Foundation is one of our most important initiatives. It will ensure we can deliver our mission on a global scale and provides a framework for individuals and companies to support our work.”

Dr Larry Dee, WSAVA Foundation President, commented: “Through the WSAVA Foundation we aim to deliver on an ambitious vision to improve global companion animal care. We’re indebted both to Jolle and to Christophe Amberger and his team in Switzerland for their significant donation and would be most grateful for further donations, whether from member associations, industry or other partners, to support the Foundation’s work.”

In a previous issue we reported on the new WSAVA Foundation – here’s an update on progress

A record year for new members!

Thirteen new member associations joined WSAVA in 2011. WSAVA now represents around 180,000 vets around the world

Our new members are...

**Full members**
- The American Veterinary Medical Association
- The Canadian Veterinary Medical Association
- The Society of Japanese Companion Animal Practitioners
- The Japanese Board of Veterinary Practitioners
- The St Petersburg Veterinary Society

**Associate members**
- The Albanian Chamber of Veterinary Surgeons
- Ghana Private Veterinary Medical Association
- The Society of Companion Animal Practitioners of Sri Lanka
- The Mongolian Veterinary Medical Association
- The Vietnam Small Animal Veterinary Association

**Affiliate members**
- The Veterinary Society of Surgical Oncology
- The Western Veterinary Conference
- The World Aquatic Veterinary Medical Association

We’d like to extend a big welcome to all our new member associations. We look forward to working with you in 2012 and beyond!
Richard Saunders
BSc(Hons) BVSc MSB CBiol
DZooMed(Mammalian) MRCVS

Richard grew up in East Sussex and went to school in Battle. His father was a carpenter and his mother a secretary. Richard qualified from Liverpool University in 1994, obtained his Certificate in Zoological Medicine in 2001 and his Diploma in Zoological Medicine in 2010. Having previously worked in small animal, avian and exotic first opinion practice, Richard has just completed the RWAF Senior Clinical Training Scholarship in Zoo and Rabbit Medicine at Bristol Zoo and Langford, University of Bristol. Richard has lectured and written articles on rabbits and exotics, co-authored *Notes on Rabbit Internal Medicine* and has a particular interest in chinchillas, rabbits and birds of prey. He is married to Sian, who is a vet working for the PDSA, and they have two children, Taryn and Dylan. Richard is a valued speaker on BSAVA courses and is a *JSAP* Associate Editor.

**Q**
Did you have any vets in your family?

**A**
No vets, but the rest of my family on my father’s side were farmers (livestock and arable).

**What made you want to be a vet?**
I was particularly inspired by Gerald Durrell – I loved his books and it made me want to see and treat exotic, wild and zoo species.

**How did you decide to take the veterinary career path you chose?**
I have always wanted to have a variety of patients, wanting to treat all species of animal, not just cats and dogs – everything I have done has been aimed at increasing the range of different animals I am lucky enough to see.

**What jobs have you done?**
I have worked in general small animal practice, with British wildlife at the RSPCA Norfolk Wildlife Hospital, in referral avian and exotic practice, and I recently completed a residency in zoo and rabbit medicine at Bristol, where I am currently working part time for Bristol Zoo Gardens, and part time as the veterinary advisor for the Rabbit Welfare Association and Fund.

**What is your involvement in BSAVA?**
I have attended BSAVA CPD since my first time at Congress in my fourth year at University, and bought each new exotic manual as it came out. Recently I have been lucky enough to speak at BSAVA regional courses, and at Congress. I am an Associate Editor (exotics) for *JSAP*.

**What does your role with JSAP involve?**
My role involves reading exotic animal papers submitted to *JSAP* for peer review, and assigning the most appropriate reviewers to them from within this very broad field.

**Why is the peer review process so important in journal publishing?**
Peer review is vital to journal publishing.
Independent, blinded peer review carried out by at least two suitable people allows these papers to be questioned and investigated by enquiring minds. It is all too easy for the author(s) to get too close to a topic, and to have not asked themselves awkward questions about it. That questioning process helps to identify any potential flaws, and allows the author(s) to look deeper at their work, and produce a more robust and thoughtful paper.

**Do you think we can do more to encourage practitioners to submit papers to peer reviewed journals?**

I think practitioners are disinclined to submit papers for publication for many reasons. Partly because they do not feel they have anything to submit, which is a shame, and not true, as so many exotic animal cases out there go unreported. Often they also lack easy access to literature searching of more than just abstracts, in order to read around a topic. And finally, because they think it is a lot of work.

I feel that we all need encouraging on the first point: many exotic case series reports are sitting in folders and on computers just waiting to be written up. I would strongly encourage practitioners to find out if they have the first cases of a condition, or whether they have noticed something out there which needs investigation. Practitioners see a huge caseload compared to academics, and have a lot to offer journal publishing. I would like to see easier access to electronic journal searching, from practitioners’ alma maters or the RCVS, with a wide range of journals and complete paper access, for an appropriate and reasonable cost. There is not much anyone can do about the last point. Electronic submissions have made this easier than it once was, but getting all the details together and writing up a paper takes time.

**What is the greatest challenge faced by someone reviewing papers for journals?**

I think the biggest challenge is when you read a paper which contains useful information, and you know it will help others, but realising that by itself it just isn’t enough – for instance, information is lacking, or assumptions or speculations are made that are just not supported by the data. This is often because the data is collected retrospectively, and sometimes it will never have been possible to collect. It’s frustrating for the reviewer, and obviously for the author, to know that they have news of a condition or technique or epidemiological factor that is useful but just not quite significant enough, with the information available, to publish.

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If you had not been a vet, what other career might you have chosen?
Crime writer or forensic pathologist. Or both.

Who would you invite to your dream dinner party?
Bill Bryson, the late Douglas Adams, Joss Whedon, Eddie Izzard, Lucy Mangan and Sandi Toksvig.

Which living person do you most admire, and why?
It’s a cliché, but David Attenborough. He has probably done more to inspire people about the importance of the natural world than anyone alive.

What single thing would improve the quality of your life?
Teleportation.

What is the most important lesson life has taught you?
“Never ascribe to malice that which can adequately be explained by incompetence.” — Napoleon Bonaparte

Is there a song that will always get you on the dance floor?
Love Cats by The Cure.

If you were given unlimited political power, what would you do?
Start treating global warming as a serious problem that affects the entire world, and make all world governments start developing technical solutions to stop dependency on our finite reserves of fossil fuels before the human cost is too great. Use green technological development as an economic force for good, employing people throughout the world. Fund it all with a tax on the essentially pointless movement of money from one place to another.
Hyperthyroidism is an increasingly common condition of old cats with a reported annual incidence of 6% in four London based first opinion practices. Chronic kidney disease (CKD) is also a common condition of geriatric cats, reported to be present in around 15% of cats aged 15 years or older. As approximately 30% of hyperthyroid cats have concurrent CKD, it has been postulated that hyperthyroidism might cause damage to the kidney through a number of mechanisms.

Hyperthyroidism causes derangements in phosphate metabolism, such as hyperphosphataemia and hyperparathyroidism, which are similar to those observed in feline CKD. Hyperphosphataemia and hyperparathyroidism are also associated with progression of CKD in cats; therefore, hyperthyroidism-associated hyperphosphataemia and hyperparathyroidism might also lead to renal damage and the progression of pre-existing CKD.

In addition, hyperparathyroidism is associated with bone demineralisation and bone pain in human CKD patients. It is possible that the hyperparathyroidism associated with feline hyperthyroidism will contribute to morbidity, reduced quality of life and thus reduced survival time in hyperthyroid cats.

For the past 20 years, our group has run free geriatric cat clinics in the PDSA Bow and the Beaumont Sainsbury Animals’ Hospital in Camden, where we have collected samples from over 400 hyperthyroid cats, many of which were managed and followed for many years. This has given us a large amount of longitudinal data, enabling us to determine which hyperthyroid cats develop CKD.

Using residual stored blood samples from these cats we plan to investigate the changes in phosphate metabolism that occur in hyperthyroidism by measuring the plasma concentrations of the three regulatory hormones of calcium and phosphate; parathyroid hormone (PTH), calcitriol and fibroblast growth factor-23 (FGF23). We will then determine if there is a correlation between derangements in phosphate metabolism, such as hyperparathyroidism, and the presence of CKD and survival time in hyperthyroid cats.

Preliminary results suggest that patterns of PTH and FGF23 secretion in hyperthyroid cats are different to those seen in human patients with hyperthyroidism (Graves’ disease). Human hyperthyroid patients are reported to have suppressed serum PTH concentrations and elevated serum FGF23 concentrations, whereas cats with hyperthyroidism appear to have elevated plasma PTH concentrations and suppressed plasma FGF23 concentrations.

Why phosphate metabolism in hyperthyroid cats differs so greatly from that of hyperthyroid humans is an intriguing question. Differences in renal function between geriatric hyperthyroid cats and (generally younger) human hyperthyroid patients might be one potential explanation, however further analysis of plasma ionised calcium and calcitriol concentrations will be required before the physiological relationships between hyperthyroidism and phosphate metabolism in cats can be fully explored.
Focus on...
BSAVA Midland Region

Midlands go interactive
The Midlands have been our first region to trial the use of interactive equipment called TurningPoint in their meetings; you might have used it at BSAVA Congress in the past. It was deemed a big success at a November talk called Practical Reading of Chest Radiographs with the speaker Richard Ewers.

Richard told BSAVA that he felt it worked really well for speaker and delegate alike, saying; “Using TurningPoint definitely increased delegate engagement and interest whilst giving them instant feedback on how well they have understood the material as well as seeing how they compare to the others – in private”.

The next interactive meeting in the Midlands will be on Tuesday 17 January – Managing Seizures with Mike Targett in Derby (details below).

BSAVA Midland Region is always keen to hear what you want in your region so please let us know. Email midlandregion@bsava.com with your suggestions on topics and speakers – and to find out about getting involved and helping to design the delivery of CPD in your area.

Who’s who on Midland Committee
- Chair – Mike Davies
- Secretary – Helen Ozelton
- Treasurer – David Godfrey
- Petsavers Rep – Derek Attride
- Committee Members – Carol Dickson and Rachael Mort

Courses in 2012

JANUARY – Tuesday 17
Managing seizures (interactive)
- Evening Meeting 7.00 for 7.30–9.30pm
- Mike Targett MA VetMB PhD DipECVN MRCVS
- Yew Lodge Hotel, 33 Packington Hill, Kegworth, Derby

FEBRUARY – Tuesday 21
Otitis externa
- Evening Meeting 7.00 for 7.30–9.30pm
- Sue Patterson MA VetMB DVD DipECVD MRCVS
- Wolverhampton Medical Institute, New Cross Hospital, Wolverhampton

MARCH – Wednesday 14
Rational management of heart failure in practice
- Evening Meeting 7.00 for 7.30–9.30pm
- Prof Malcolm Cobb MA VetMB PhD MBA DVC MRCVS
- Yew Lodge Hotel, 33 Packington Hill, Kegworth, Derby

MAY – Wednesday 23
Managing chronic diarrhoea in practice
- Evening Meeting 7.00 for 7.30–9.30pm
- David Murdoch BVMS DVR MRCVS
- Wolverhampton Medical Institute, New Cross Hospital, Wolverhampton

JULY – Tuesday 18
An update on gastrointestinal surgery
- Evening Meeting 7.00 for 7.30–9.30pm
- Rachel Burrow BVetMed CertSAS CertVR DipECVS MRCVS (TBC)
- Wolverhampton Medical Institute, New Cross Hospital, Wolverhampton

SEPTEMBER – Wednesday 12
Recent advances in the management of infectious diseases
- Evening Meeting 7.00 for 7.30–9.30pm
- Prof Susan Dawson BVMS PhD MRCVS, Head of School (Veterinary Science) University of Liverpool
- Wolverhampton Medical Institute, New Cross Hospital, Wolverhampton

OCTOBER – Tuesday 16
Pitfalls in interpretation of in-house laboratory results
- Evening Meeting 7.00 for 7.30–9.30pm
- Dr Joy Archer VMD MS PhD MRCPath DECVP MRCVS
- Yew Lodge Hotel, 33 Packington Hill, Kegworth, Derby

NOVEMBER – Thursday 8
Interpretation of ultrasound images
- Evening Meeting 7.00 for 7.30–9.30pm
- Speaker TBC
- Wolverhampton Medical Institute, New Cross Hospital, Wolverhampton

DECEMBER – Wednesday 5
Evidence-based management of renal failure
- Evening Meeting 7.00 for 7.30–9.30pm
- Hattie Syme (RVC) (TBC)
- Yew Lodge Hotel, 33 Packington Hill, Kegworth, Derby

Prices
- Members Early Bird (2 weeks prior to meeting): £20.00
- Members post early bird: £30.00
- Non-members: £50.00
<table>
<thead>
<tr>
<th>Event Description</th>
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<tr>
<td><strong>Evening Meeting – South Wales Region</strong></td>
<td>Wednesday 11 January</td>
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<tr>
<td>The cat-friendly practice</td>
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<td>Speaker: Andrea Harvey</td>
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<td>The International Legacy Hotel, Cardiff CF15 7LD</td>
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<td>Details from <a href="mailto:southwalesregion@bsava.com">southwalesregion@bsava.com</a></td>
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<tr>
<td><strong>Evening Meeting – Northern Ireland Region</strong></td>
<td>Thursday 12 January</td>
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<td>An update on stifte disease</td>
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<tr>
<td>Speaker: Bill Oxley</td>
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<td>VSSCo, Lisburn, BT28 2SA</td>
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<td><strong>Evening Meeting – Midland Region</strong></td>
<td>Tuesday 17 January</td>
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<td>Managing seizures (interactive)</td>
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<td>Speaker: Mike Targett</td>
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<td>Yew Lodge Hotel, 33 Packington Hill, Kegworth, Derby DE74 2DF</td>
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<td>Details from <a href="mailto:midlandregion@bsava.com">midlandregion@bsava.com</a></td>
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<td><strong>Day Meeting – North East Region</strong></td>
<td>Sunday 22 January</td>
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<td>Collapse conundrums</td>
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<tr>
<td>Speakers: Mike Martin and Laurent Garosi</td>
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<td>Campanile Hotel, Bradford</td>
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<tr>
<td><strong>Evening Meeting – Southern Region</strong></td>
<td>Tuesday 24 January</td>
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<tr>
<td>Canine and feline epilepsy; current best practice and new developments (includes BSAVA Southern Region AGM)</td>
<td>Wednesday 22 February</td>
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<tr>
<td>Speaker: Laurent Garosi</td>
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<td>Potters Heron Hotel, Romsey, Hampshire</td>
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<td><strong>Day Meeting for Vets – Scottish Region</strong></td>
<td>Sunday 29 January</td>
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<tr>
<td>A practical guide to ultrasound of the dog (includes AGM)</td>
<td>Wednesday 15 February</td>
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<td>Speaker: Elizabeth Munro</td>
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<td>Edinburgh Vet School</td>
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<tr>
<td><strong>Evening Meeting – Scottish Region</strong></td>
<td>Saturday 29 January</td>
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<tr>
<td>Update on infectious disease (10am – 12pm)</td>
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<td>Speaker: Kerry Simpson</td>
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<td>Diagnostic imaging (2pm – 4pm)</td>
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<td>Speaker: Kimberly Palgrave</td>
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<td>Edinburgh Vet School</td>
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<td><strong>Evening Meeting – Surrey and Sussex Region</strong></td>
<td>Tuesday 31 January</td>
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<td>Practical abdominal radiography</td>
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<td>Speaker: Paul Mahoney</td>
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<td>Holiday Inn, Gatwick</td>
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<td><strong>February 2012</strong></td>
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<td><strong>Day Meeting</strong></td>
<td>Tuesday 2 February</td>
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<td>Skin lumps and bumps</td>
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<td>Speaker: Iain Grant</td>
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<td>The Bridge, Wetherby</td>
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<td><strong>Evening Meeting – North West Region</strong></td>
<td>Wednesday 8 February</td>
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<td>Diabetes</td>
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<td>Speaker: Rebecca Littler</td>
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<td>Venue TBC (Wrexham)</td>
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<td><strong>Evening Meeting – South West Region</strong></td>
<td>Wednesday 8 February</td>
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<td>Medical work-ups in rabbits</td>
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<td>Speaker: Richard Saunders</td>
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<td>Canalside, Huntworth, Bridgewater, Somerset TA7 0AJ</td>
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<tr>
<td><strong>Day Meeting</strong></td>
<td>Wednesday 22 February</td>
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<tr>
<td>A practical guide to gut stasis in rabbits</td>
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<tr>
<td>Speaker: John Chitty</td>
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<td>Carrington House Hotel, Knuyeton Road, Bournemouth, Dorset BH1 3QQ</td>
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March 2012

**EVENING MEETING – METROPOLITAN REGION**

Wednesday 22 February
**Basic ECG interpretation**
Speakers: Simon Dennis and Charlotte Pace
University of Hertfordshire, College Lane, Hatfield, Hertfordshire AL10 9AB
Details from metropolitanregion@bsava.com

**DAY MEETING – EAST ANGLIA REGION**

Sunday 26 February
**Neurology: the five minute consultation**
Speaker: Mark Lowrie
Venue TBC
Details from eastanglia.region@bsava.com

**DAY MEETING – SOUTH WEST REGION**

Tuesday 28 February
**Abdominal ultrasonography**
Speakers: Nic Hayward and Esther Barrett
Charter Vets, Barnstable
Details from southwestregion@bsava.com

**DAY MEETING**

Tuesday 6 March
**Thinking and doing: animal welfare in veterinary practice**
Speaker: James Yeates
BSAVA Headquarters, Gloucester
Details from administration@bsava.com

**EVENING MEETING – NORTHERN IRELAND REGION**

Thursday 8 March
**Feline behaviour**
Speaker: Sarah Millsopp
VSSCo, Lisburn BT28 2SA
Details from nirelandregion@bsava.com

**DAY MEETING FOR NURSES**

Thursday 8 March
**Cardiology for nurses**
Speaker: Simon Dennis and Charlotte Pace
BSAVA Headquarters, Gloucester
Details from administration@bsava.com

**DAY MEETING**

Tuesday 13 March
**Introduction to practical cytology**
Speaker: Michael Day
BSAVA Headquarters, Gloucester
Details from administration@bsava.com

**APRIL 2012**

**BSAVA Congress**

**WORLD CONGRESS**

**11–15 April**

**WSAVA/FECAV/BSAVA**

**Early Bird Discount: Register before 12 January 2012**

*Not available on some registration types*

The ICC/NIA, Birmingham, UK
Email: congress@bsava.com

**MAY 2012**

**DAY MEETING**

Thursday 3 May
**The acute abdomen case: making the right call**
Speaker: Iain Grant
Ramsdale Hall, Durham
Details from administration@bsava.com

**DAY MEETING – SOUTHERN REGION**

Thursday 10 May
**Ferocious felines and confrontational canines: unravelling the reasons and offering practical approaches**
Speaker: Sarah Heath
Venue TBC (Swindon)
Details from southernregion@bsava.com

**DAY MEETING – EAST ANGLIA REGION**

Sunday 13 May
**Breeding for the future: reproductive management and genetics**
Speakers: Angelika von Heimendahl, Sarah Blott, Cathryn Mellersh, Eleanor Raffan and Jeff Sampson
Animal Health Trust, Newmarket, Suffolk
Details from eastanglia.region@bsava.com

**OTHER UPCOMING BSAVA CPD COURSES**

See www.bsava.com for further details

- Metropolitan Region: Tuesday 15 May
  Soft tissue surgery for the general practitioner: beyond the bitch spay
- South Wales Region: Wednesday 16 May
  Itchy cats and dogs
- Surrey and Sussex Region: Thursday 17 May
  Practical dentistry
- Midland Region: Wednesday 23 May
  Managing chronic diarrhoea in practice
- Northern Ireland Region: Friday 25 and Saturday 26 May
  Endocrinology
- Scottish Region: Thursday 7 June
  Emergency and critical care: my patient is bleeding, what do I do next?
BSAVA Manual of Canine and Feline Surgical Principles
A Foundation Manual

Edited by
Stephen Baines, Vicky Lipscomb and Tim Hutchinson

NEW
Available now
312 pages
BSAVA Member price: £49
Price to non-members: £75