Consider the case of an anuric crossbreed

- Ask the expert with Hattie Syme
- How to diagnose canine cruciate ligament disease
- Working in the charity sector
Guidelines for the vaccination of dogs and cats

The WSAVA Vaccination Guidelines Group (VGG) was convened in order to develop guidelines for the vaccination of dogs and cats that have global application. The first version of these guidelines was published in 2007 and they were updated in 2010. The latest issue of JSAP presents an updated and expanded version of these international guidelines and indicates the scientific evidence base on which the recommendations are made. These guidelines are not a mandatory edict, but rather should be used by national associations and individual veterinary practices to develop vaccination schedules relevant to the local situation. However, the VGG strongly recommends that wherever possible all dogs and cats receive the benefit of vaccination. This not only protects the individual animal, but provides optimum ‘herd immunity’ that minimizes the likelihood of infectious disease outbreaks.

With this in mind, the VGG has defined core vaccines which all dogs and cats, regardless of circumstances, should receive. Core vaccines protect animals from severe, life-threatening diseases that have global distribution. The VGG has defined non-core vaccines as those that are required by only those animals whose geographical location, local environment or lifestyle places them at risk of contracting specific infections. The VGG has also classified some vaccines as not recommended where there is insufficient scientific evidence to justify their use.

The fundamental concepts proposed by the VGG may be encapsulated in the following statement: we should aim to vaccine every animal with core vaccines; non-core vaccines should be given no more frequently than is deemed necessary.

Adapted from Day, et al. JSAP 2016; 57. This is an abridged version; the full guidelines can be accessed in the online edition of January’s JSAP.

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ASSOCIATION NEWS

Capture your pet on camera ...

PetSavers has launched the 2016 photography competition and are honoured to announce that, Christopher Timothy, who played James Herriot in TV’s All Creatures Great and Small, will be the guest judge this year. Christopher says: “It is really important that research for both human and animal disease is in place; PetSavers do that for our furry friends. Let’s support them in any way we can”.

PetSavers is inviting amateur photographers and pet-lovers alike to submit their best pictures of their pets in action. The competition is FREE to enter and there is a category for everyone, so what have you got to lose? The winner from the adult and junior categories will receive £200 of Wex Photographic vouchers, 2nd place will receive £100 of vouchers and 3rd will receive £50 of vouchers. Plus their pet will appear on the PetSavers website and in other marketing activity!

Closing date for entries is 31 January 2016 so get your entries in quick! To enter visit www.petsavers.org.uk/GetInvolved.

Your membership renewal and benefits

Membership renewals are currently underway. Thank you to those members who have already renewed or paid by Direct Debit. Your new membership cards will be with you in the next month.

Prompt renewal of membership (before 31 January) secures your entitlement to the annual loyalty benefit; that’s Differential Diagnosis in Small Animal Medicine for vet members and Practical Physiotherapy for VN members. If you are coming to Congress, you can collect these books on the BSAVA Balcony (otherwise it will be sent to you in May).

For details about all your benefits, please visit the website, where you can also make sure your profile information is up to date. If you have not received your renewal information or have any questions, please email administration@bsava.com or call 01452 726700.

Trustee positions available

The Appointments and Presidential Honorarium subcommittee will be considering the applications for Trustee posts for the Association at their meeting in January. If you are interested in becoming part of the BSAVA volunteer community, contact our volunteer manager Carole Haile, via email – volunteer@bsava.com.

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Consultation on the use of electronic training aids

The Scottish Government is currently undertaking a consultation into potential controls or prohibition of electronic training aids in Scotland. The use of electronic collars in dogs and cats (including collars used to control behaviour and electric boundary fences, but not other types of electronic training aids such as those which rely on noise, vibration and spray) is already prohibited in Wales under the Animal Welfare (Electronic Collars) (Wales) regulations 2010. The Welsh Government is also preparing to review this legislation.

The BSAVA has to date not called for the prohibition of any particular type of training aid but it does have a position statement, which recommends against the use of electronic shock collars and other aversive methods for the training and containment of animals and strongly recommends the use of positive reinforcement training methods rather than those which use aversive stimuli.

In order to inform the BSAVA response to the current consultations, we would like to hear from any members with experience (direct or indirect) of the use of electronic training aids or consequences of their use. Please take a few minutes to complete the questions online before the 24 January.

Anyone wishing to read or respond to the full consultation from the Scottish Government can access it online. Anyone who has any more substantive evidence or comments relating to the use of electronic training aids can contact Sally Everitt, via email – s.everitt@bsava.com.

Beat the Congress earlybird deadline

Benefit from the best prices for Congress registrations by booking before 2 February and saving 20% on most registration types. Visit www.bsavacongress.com to take a look at the full programme, see the latest list of exhibitors and secure your place today at Europe’s largest small animal Congress.
Should we be doing more renal biopsies in dogs? What is the likely benefit in an individual animal?

I think people are very scared of doing renal biopsies and that sometimes deters them unnecessarily. Undoubtedly there are risks with kidney biopsy, but serious complications are no more frequent than with taking intestinal biopsies, or liver biopsies, and we accept that to treat patients effectively we need to know what the underlying disease is in these organs; the kidney is no different. Having said that, it is only a select group of patients with kidney disease that will benefit from biopsy – mainly those with significant proteinuria that are either not at all, or only mildly, azotaemic.

The benefit to biopsy is the identification of patients with immune-mediated glomerular disease that are potential candidates for immunosuppressive therapy. In addition, biopsy can occasionally be valuable in characterising a breed-associated nephropathy or diagnosing neoplasia. Unfortunately, to diagnose glomerular diseases effectively, it is often necessary to do electron microscopy using specialist nephropathology services and this makes it expensive. If the client can’t afford to go the whole hog, sadly, it may not be worth doing at all.

Now that telmisartan (Semintra®) is available, should we be using that instead of, or as well as, an ACE-inhibitor in proteinuric cats?

There is plenty we have yet to find out about using this drug in cats with kidney disease. All we really know at
One of the advantages is that the magnification and ability to pass the scope down the urethra means that stones are less likely to be left behind.

ACE-inhibitor treatment of dogs with protein loosing nephropathy (PLN) often does not seem to improve the proteinuria very much, even after the dose is increased. What's the best thing to do in that situation?

Well, linking in with the previous questions, I think it would be interesting to know whether the response to an angiotensin-receptor blocker, such as telmisartan, would be greater, but at the moment we just don't have that information (and under the cascade it shouldn't be our first choice as it is not licensed for use in dogs). I think I usually do see a response to ACE-inhibitor treatment in dogs with PLN, but the UPC rarely returns to normal. This is part of my decision-making process for considering a renal biopsy – if the patient is on ACE-inhibitors and other supportive care and the UPC remains above 2 or 3, then the patient needs a biopsy to characterise the disease further.

If the glomerular structure is obliterated by deposition of amyloid or immune deposits, or marked glomerulosclerosis is present, it doesn't matter how much you moderate glomerular haemodynamics with ACE-inhibitors; unfortunately you are not going to stop the proteinuria altogether, although it may ameliorate it.

For these patients, and smaller dogs or male cats, we will remove stones from the bladder by transvesicular percutaneous cystolithotomy. With this technique, essentially we put the scope through the abdominal wall into the bladder and bring out the stones through a very small hole.

One of the advantages of this, as well as the fact it is minimally invasive, is that the magnification and ability to pass the scope down the urethra (even in small dogs we can pass the scope some distance if we are guiding it from the bladder) means that stones are less likely to be left behind. We can also use the laser to non-invasively relocate the openings of many ectopic ureters using the scope passed through the urethra.

Are SDMA or cystatin C worth measuring or should we stick with creatinine?

Well, I think more information is usually a good thing, so long as you know how to interpret it. Sometimes
I think vets (and certainly owners) are looking for more 'black-and-white' answers than these tests will ever give us. I personally think creatinine is a better test than anyone gives it credit for. People seem to be obsessed with the knowledge that at least 75% of nephrons have to be lost before creatinine increases, but seem to overlook the fact that a major reason for this is that the kidney compensates by increasing filtration in the remaining nephrons. For example, when a kidney is removed for transplant, the overall GFR of the donor changes very little. We should not therefore be surprised that creatinine does not increase significantly; neither should we expect any other markers of GFR to perform any better.

Creatinine production is somewhat related to muscle mass, which is a potential confounder when we are using it to evaluate renal function. However, cystatin C and SDMA come from nucleated cells and it is likely that conditions that alter cellular metabolism will also have an influence on their concentration. In short, every test of renal function will have some limitations; it is just a case of building up knowledge as to what these are, and then we will be able to interpret the results of these tests wisely.

I've heard conflicting views of the best way to measure blood pressure non-invasively in dogs and cats. What method do you use?

I use the Parks Doppler machine. I think all methods of non-invasive blood pressure measurement have limitations in terms of their accuracy, and, of course, there are huge issues with the patient’s blood pressure going up due to the stress of being in the clinic. In spite of this, my clinical experience is that the majority of the cats that I get high blood pressure readings from will have retinal lesions substantiating the diagnosis of hypertension. I know other people use oscillometric machines and are quite happy with them; but if you look at the studies in which these have been used, measurements are usually only obtained in a proportion of the cats where it is attempted and it takes quite a long time to get the readings.

If I have 15 minutes to take a history, examine the cat, measure blood pressure, take blood and perform cystocentesis, I don’t want the blood pressure measurement to take longer than a couple of minutes, and Doppler rarely does once you have got the hang of it.

What are you most proud of in your career?

I am most proud of the residents and PhD students that I have mentored. They are individually and collectively amazing. Anything that I have done to date, or will do in the future, is going to be eclipsed by what they will achieve. Every day they teach me more than I do them.

Reconstructed sagittal CT image of an ectopic ureterocele (white arrow). The ureter is grossly dilated along its entire length.
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CONSIDER THIS CASE

Clinical conundrum

Ariadna Ribas, an Intern at the University of Liverpool, Small Animal Teaching Hospital, invites Companion readers to consider an anuric crossbreed

Case presentation

A 13-year-old, female neutered, crossbreed dog presented for further investigation of a potential anuric state. The patient was fully vaccinated with no significant previous medical problems and presented to the referring veterinary practice with dysuria. At that time an enlarged bladder was palpated and a therapeutic cystocentesis and serum biochemistry were performed. Serum biochemistry showed marked azotaemia with hyperkalaemia. Following cystocentesis the dog did not urinate again and her condition rapidly deteriorated; at this point she was referred as an emergency.

On presentation the dog was recumbent, depressed and had considerable generalized abdominal pain. Thoracic auscultation demonstrated tachycardia with a heart rate of 180 beats/min, a regular rhythm and no murmur. Peripheral pulses were adequate and synchronous. The dog was tachypnoeic with a respiratory rate of 48 breaths/min. Her mucous membranes were pale pink with a slightly prolonged capillary refill time. Her rectal temperature was 39.3°C.

Create a problem list

- Not urinating
- Painful abdomen
- Azotaemia
- Hyperkalaemia
- Tachycardia
- Tachypnoea
- Pale pink mucous membranes

Consider the possible differential diagnosis. Can these be prioritized based on the history and physical examination findings?

In this case, not urinating, abdominal pain, azotaemia and hyperkalaemia were considered the most important presenting problems. Tachycardia and tachypnoea were initially thought to be due to abdominal pain. In addition, tachycardia and tachypnoea can be due to anxiety, anaemia or hypoperfusion. Tachypnoea in this case could also be due to a compensatory mechanism for a possible metabolic acidosis.

Pale mucous membranes can be due to anaemia (regenerative or non-regenerative) or hypoperfusion due to a shock state (hypovolaemic, cardiogenic or distributive). In this case, considering the tachycardia, tachypnoea and the prolonged capillary refill time, a component of shock was suspected in addition to abdominal pain.

The inability to urinate was considered secondary to an obstruction or rupture of the urethra, urinary bladder or potentially both ureters. However, oliguria/anuria could not be excluded at this point.

Abdominal pain can be caused by a variety of problems (e.g. infection, neoplasia, obstruction, rupture, torsion or inflammation) of many abdominal organs including the gastrointestinal tract, urogenital system, pancreas, spleen, liver or peritoneum.
Differential diagnosis can be very broad but by localizing the pain to a specific abdominal area (however, sometimes this can be difficult if the pain is generalized), combined with the history and clinical signs, then the differential list can be shortened. Occasionally, musculoskeletal pain can manifest as abdominal pain if severe enough. In this case, considering the history and other presenting complaints, the abdominal pain was suspected to be associated with the urogenital system.

Azoaemia can be pre-renal, renal or post-renal in origin. Given the acute history, the fact that the dog had a cystocentesis, had a painful abdomen and had other clinical signs of lower urinary tract disease prior to this event, post-renal azotaemia was considered most likely; however, concurrent pre-renal or renal azotaemia could not be excluded.

Hyperkalaemia is most commonly associated with urinary tract problems such as oliguric/anuric kidney disease, bilateral ureteral or urethral obstruction or a ruptured urinary tract. Other causes of hyperkalaemia include hypoadrenocorticism, hypoadosteronism, gastrointestinal disease, massive muscular damage, reperfusion injury and certain drugs (e.g. potassium-sparing diuretics and ACE inhibitors, mainly). In this case, due to the history and lack of clinical signs related to the gastrointestinal tract and absence of relevant drug use, the increased potassium was considered urinary in origin.

Given the history and the clinical pathological findings, iatrogenic rupture of the urinary tract or a urinary tract obstruction was considered the most likely problem in this dog.

What would be your initial diagnostic and treatment plan?

Haematology, serum biochemistry and venous blood gas analysis were performed to further investigate the collapse, azotaemia, hyperkalaemia and painful abdomen. The most striking features were a severe azotaemia (creatinine 906 µmol/l; reference interval 44–159), hyperkalaemia (8.3 mmol/l; reference interval 3.5–5.8) and acidaemia (pH 7.3; reference interval 7.35–7.45) with a pCO2 of 26.5 mmHg (reference interval 35–38), bicarbonate of 13.2 mmol/l (reference interval 35–38), respiratory rate of 48 (reference interval 30–40) and heart rate of 180 (reference interval 60–120) with tachycardia at presentation which progressed to sinus arrest at 12 hours later. The patient’s condition had stabilized and the dog improved dramatically over the following 3 hours.

Table 1: Progression of the clinical and analytical parameters at presentation and 4, 8 and 12 hours later.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Arrival</th>
<th>+4h</th>
<th>+8h</th>
<th>+12h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (beats/min)</td>
<td>180</td>
<td>143</td>
<td>119</td>
<td>112</td>
</tr>
<tr>
<td>Respiratory rate (breaths/min)</td>
<td>48</td>
<td>36</td>
<td>36</td>
<td>28</td>
</tr>
<tr>
<td>Glucose (mmol/l)</td>
<td>5.2</td>
<td>2.3</td>
<td>6.3</td>
<td>6.5</td>
</tr>
<tr>
<td>K+ (mmol/l)</td>
<td>7.7</td>
<td>4.2</td>
<td>5.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Creatinine (µmol/l)</td>
<td>1031</td>
<td>523</td>
<td>535</td>
<td>104</td>
</tr>
<tr>
<td>pH</td>
<td>7.26</td>
<td>7.38</td>
<td>7.36</td>
<td>7.42</td>
</tr>
<tr>
<td>pCO2 (mmHg)</td>
<td>35.4</td>
<td>15.7</td>
<td>33.3</td>
<td>31.1</td>
</tr>
<tr>
<td>HCO3− (mmol/l)</td>
<td>15.9</td>
<td>9.4</td>
<td>19</td>
<td>20.1</td>
</tr>
<tr>
<td>Base excess (BE) (mmol/l)</td>
<td>-11.2</td>
<td>-15.6</td>
<td>-6.4</td>
<td>-4.4</td>
</tr>
<tr>
<td>Urine production (ml/kg/h)</td>
<td>2.2</td>
<td>3.2</td>
<td>3.4</td>
<td>4.0</td>
</tr>
</tbody>
</table>

The azotaemia and severe hyperkalaemia were consistent with a post-renal origin given the uroabdomen. Based on the history, the most likely cause was a traumatic cystocentesis or a rupture due to bladder over distension; however, the original cause of the urinary obstruction, which led to cystocentesis, was still undetermined.

Uroabdomen is an emergency requiring acute medical management. Potential life-threatening effects of hyperkalaemia can be seen when serum potassium is >8 mmol/l, but serum potassium > 6.5 mmol/l should be investigated and treated promptly. In this case, the dog was treated with intravenous fluids (Hartmann’s at 5 ml/kg, short-acting insulin (neutral insulin) at 0.5 IU/kg i.v., in an attempt to correct the marked hyperkalaemia and 5% glucose infusion added to the Hartmann’s to counter the hypoglycaemic effect of the insulin.

Due to the generalized abdominal pain, analgesia was provided in the form of methadone (0.2 mg/kg i.v. every 4 hours) and paracetamol (10 mg/kg i.v. every 12 hours). An indwelling urinary catheter was placed without resistance to maintain an empty urinary bladder and reduce further leakage of urine into the abdomen.

The patient was subsequently managed with repeat blood glucose measurements every 20–30 minutes initially and venous blood gas analysis was repeated hourly to monitor potassium, creatinine, glucose and pH. Urine production was measured every 4 hours to ensure adequate production (1–2 ml/kg/h). ECG showed sinus tachycardia at presentation which progressed to sinus rhythm. The dog improved dramatically over the following 3 hours. The patient’s condition had stabilized significantly 12 hours post presentation and the parameters were all within normal limits (Table 1).
What further investigations would you pursue?

After stabilization, an abdominal ultrasound was performed under general anaesthesia to investigate the cause of uroabdomen and also the cause behind the originally suspected urinary obstruction. This demonstrated a large intrapelvic heterogeneous mass and mild right medial iliac lymphadenopathy. To fully appreciate the origin of the mass and to determine if the mass was resectable a computed tomography (CT) scan was performed.

Abdominal CT confirmed the presence of an intrapelvic mineralized mass (Figures 1 and 2). The mass arose from the right hemipelvis and involved the ipsilateral hip joint. The mass occupied the entire width of the pelvic canal and involved a large portion of the right hemipelvis. It was compressing and displacing the rectum and urethra. The urinary bladder was poorly distended because the patient was catheterized during the scan. The presence of this mass was considered to be the cause of the original urinary obstruction.

Fine-needle aspirates were performed in order to more accurately characterize the nature of the mass. The aspirates were consistent with a malignant mesenchymal tumour, most consistent with osteosarcoma or chondrosarcoma (Figure 3).
Further management
Unfortunately, as the prognosis was grave in this case, the owner elected for euthanasia.

Discussion
Uroabdomen refers to the accumulation of urine within the peritoneal cavity, retroperitoneal cavity or both. It can be associated with blunt trauma (most commonly), urinary tract obstruction caused by nephroliths, ureteroliths, ureteral abscesses, neoplasia, perineal, inguinal or abdominal hernias and iatrogenic injuries (e.g. cystocentesis).

Uroabdomen should be considered as a differential when patients are diagnosed with concurrent azotaemia, hyperkalaemia and an abdominal effusion. By comparing the creatinine concentration of the abdominal fluid to that of serum, a diagnosis of uroabdomen can be made (if the free-fluid creatinine: blood creatinine ratio is >2:1). Uroabdomen is considered a medical emergency requiring:

- Fluid resuscitation to correct the hypovolaemia, azotaemia, acidosis and hyperkalaemia
- Urinary catheterization to minimize further urine leak from the bladder into the abdomen
- Specific therapy for hyperkalaemia (if intravenous fluid therapy does not work)
- Intensive monitoring during and after treatment.

Hyperkalaemia is a significant complication of uroabdomen as it can cause life-threatening cardiac arrhythmias including bradycardia, atrial standstill, ventricular fibrillation or asystole. In some patients with mild to moderate hyperkalaemia (potassium <7.5 mmol/l), fluid therapy alone may normalize serum potassium. However, in patients with severe potassium elevations (>7.5 mmol/l), additional therapies may be necessary, including a constant rate infusion of glucose or insulin and glucose together. Insulin facilitates the transport of glucose into the tissues and potassium simultaneously shifts in a similar direction. In addition, insulin also moves potassium into the intracellular space. A dextrose solution should be given simultaneously to counteract the hypoglycaemia caused by the insulin.

As hyperkalaemia results in increased excitability of the myocardium predisposing the cardiac muscle to conduction abnormalities and arrhythmias, it may also be necessary to consider specific therapy for hyperkalaemia-induced electrical disturbances. This can be achieved with calcium, which antagonizes the effects of potassium in the myocardium by reducing cardiac excitability and re-establishing the normal gradient between the resting membrane and threshold potentials. It should be noted that this therapy does not reduce serum potassium concentrations, merely protects the myocardium while other strategies are being implemented to reduce the hyperkalaemia.

Pain management should not be overlooked in cases of uroabdomen. These patients are thought to experience pain because of a chemical peritonitis secondary to the presence of free urine within the abdominal cavity. Commonly used analgesics include opioids such as pure µ-agonists (fentanyl, methadone, morphine or hydromorphone).

Multimodal analgesic options in addition to opioids can be used (ketamine, lidocaine or gabapentin); however, ketamine is excreted unchanged in the urine and therefore can cause prolonged sedation in cases of uroabdomen. Non-steroidal anti-inflammatories are not indicated because concurrent hypovolaemia and azotaemia are commonly present.

Summary
Uroabdomen is a potentially life-threatening condition that requires rapid diagnosis and instigation of therapy to correct or improve abnormalities in electrolyte and acid–base balance. This should be done before proceeding with investigations to diagnose the cause of the uroabdomen, which commonly requires sedation/general anaesthesia, imaging and potentially surgery.

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Guidelines for Clinical Conundrum submissions can be found online at www.bsava.com/companion.
How to diagnose canine cranial cruciate ligament disease

Karen Harris and Philip Witte of Southern Counties Veterinary Specialists explore this common cause of canine lameness

Cranial cruciate ligament (CCL) disease is the most common cause of hindlimb lameness in dogs. Even for those with little desire to perform orthopaedic surgery, the skills required for the diagnosis of this condition are invaluable.

A reasonable index of suspicion for CCL disease can be gained from the signalment, history and gait examination. In the absence of chemical restraint, a definitive diagnosis may not always be possible because this relies on specific manoeuvres. However, a preliminary physical examination within the confines of a 10 minute consultation should be sufficient to recommend further investigation under sedation or general anaesthesia if CCL disease is suspected.

Whilst there remains no consensus on terminology, the term ‘cranial cruciate ligament disease’ is used here to incorporate both partial and complete CCL ruptures. In contrast to the situation in humans, it is widely accepted that canine CCL disease is most commonly the result of ligament degeneration rather than acute trauma, though the pathogenesis of such degeneration remains poorly understood. Nonetheless, traumatic ruptures can occur, typically in association with the failure of one or more of the other soft tissue structures in the stifle such as the caudal cruciate ligament, medial and lateral collateral ligaments and menisci. Traumatic avulsion of the ligament’s femoral or tibial attachment is uncommon and is typically only seen in skeletally immature dogs.

Gait examination

It is not uncommon for confusion to arise between clients and vets regarding which of the dog’s limbs is affected by lameness. A lead-controlled walk down a long straight corridor or outside the practice can eliminate such confusion, though the judgement of the client regarding the problem limb should not be disregarded outright; gait examination provides only a snapshot of the dog’s function, whereas clients are able to monitor function continuously. In bilateral CCL disease cases, lameness may shift from limb to limb over time.

If lameness remains elusive on gait examination at the practice, and the orthopaedic examination findings are also equivocal, then asking the owners to video the lameness when it is observed in the dog’s normal environment (particularly when rising after a period of rest, or at the end of a walk) is usually feasible for most with a camera phone. Apps that play video in slow motion are inexpensive and can be helpful for gait analysis in short-limbed dogs or those that refuse to walk slowly.

In reality, many dogs with CCL disease present with lameness sufficiently severe to be immediately evident upon entering the consulting room. If space allows, allowing the dog to roam free in the consulting room provides further opportunity for gait examination and observation of weight distribution through the limbs when stationary.

Reduced weight-bearing through the affected limb can manifest as a toe-touching stance in which just the digital pads or claws of the affected limb rest on the floor (Figure 1). Such a stance may be apparent even in cases where overt lameness is not apparent at a walk or trot. Alternatively, uneven weight-bearing may only become evident when gentle attempts are made to lift the hind paws from the ground in turn.
General and orthopaedic examination

Thorough history-taking and general physical examination should not be omitted. These assessments may reveal additional clinical signs which may be of significance in diagnosing the cause of hindlimb lameness and/or in decision-making regarding treatment if CCL disease is subsequently diagnosed. Unfortunately with CCL disease, the history relating specifically to the lameness can be very variable, ranging from an acute onset severe lameness to a chronic (years in some cases) duration mild and/or intermittent lameness.

Sit test

The owners of dogs affected by CCL disease may report that their dog sits with the affected limb ‘stuck out to the side’, presumably to avoid the full stifle flexion required by a typical sitting position (Figure 2). This behaviour is known as a ‘positive (abnormal) sit test’ and, provided the dog is cooperative enough to stand and sit on request, the test can be performed in the consulting room. Whilst the sensitivity and specificity of the test has not yet been reported, a positive sit test is useful in at least prompting suspicion for stifle discomfort.

Examination of the limb

Examination of the affected limb should be approached in a systematic manner, even if suspicion for CCL disease is high, to avoid missing an alternative or concurrent abnormality. Bones and their prominences should be palpated in case of fractures, luxations (particularly patellar luxation, which commonly occurs concurrent to CCL disease), tumours, panosteoitis etc. Neurological assessment (proprioceptive responses, spinal reflexes) and spinal manipulation (including testing for lumbosacral pain) should also be performed and femoral and metatarsal pulses evaluated. All joints should be manipulated in turn, not only the joint suspected to be the cause of lameness.

Palpation of the limb

Hindlimb muscle mass is assessed by palpation of the quadriceps and hamstring groups whilst the dog is standing. It is useful to compare the hindlimbs to one another though it should be remembered that in a proportion of cases neither limb may be normal. Where muscle mass disparity is severe, a neurological condition should be suspected (‘neurogenic atrophy’). Less severe muscle atrophy is indicative of disuse as a result of chronic lameness.

The stifle should be palpated for effusion (increased synovial fluid volume) and the proximal tibia for medial buttress (fibrovascular proliferation of joint capsule). Stifle effusion may be appreciated on both the medial and lateral aspects of the joint in the roughly triangular space bounded by the cranial edge of the femoral condyles, the cranioproximal tibia and the patellar ligament (Figure 3).
In the normal stifle this triangular space is palpable as a depression. With stifle effusion this region tends to bulge (though it can still be depressed with a ‘bouncy’ feel) and the usually sharp-feeling medial border of the patellar ligament becomes harder to delineate. Firm thickening overlying the proximal tibia medially (medial buttress) has been reported to be one of the most useful indicators of CCL disease. Palpation of these features is a skill that improves with practice and incorporating palpation of the stifles into the routine clinical examination is excellent for building up experience of what is ‘normal’.

Manipulation of the stifle
Manipulation of the joint has the potential to cause discomfort and is therefore performed last, since further examination thereafter may be limited by the dog’s behaviour. Manipulation of the stifle, particularly maximal flexion and extension, is typically resented in dogs with CCL disease.

Assessment for patellar luxation (medial and lateral digital pressure applied to the patella with the stifle at various angles) should be initially performed with the dog awake, and later repeated under sedation or anaesthesia. Collateral ligament integrity should be assessed by applying valgus (medial collateral) and then varus (lateral collateral) stress to the extended stifle.

With an amenable dog the cranial drawer and tibial thrust tests may be attempted. Positive findings on these tests are pathognomic for CCL disease. The tibial thrust test is more easily performed in a standing position and is better tolerated than cranial drawer and therefore may be the preferred test to perform in a non-compliant dog.

Tibial thrust (tibial compression) test
The intention of this test is to mimic the instability that occurs in a CCL-deficient stifle during weight-bearing. It is therefore important that the stifle is held at or around its standing angle (135 degrees) whilst the test is performed (Figure 4).

If performing this test with the dog sedated or anaesthetized, the dog should be placed in lateral recumbency with the limb to be tested uppermost. The index finger (of the right hand if testing the left limb and vice versa) is extended to point from proximal to distal down the limb and the tip of that finger rests on the tibial tuberosity. The thumb of the same hand grasps the lateral fabella and the remaining fingers grasp the medial aspect of the femur. The grip on the femur is intended to hold it completely motionless. The index finger applies caudally directed pressure to the tibial tuberosity to reduce the tibia into a neutral position if it started cranially subluxated. The examiner’s other hand grasps the proximal metatarsus. Flexion of the tarsus (without altering the stifle angle) moves the calcaneal tuberosity distally as it pivots around the talocrural joint. This creates tension in the gastrocnemius muscle and tendon, pulling the femur distally and creating femorotibial compression that mimics that occurring during weight-bearing. In the CCL-deficient stifle, the tibia will subluxate cranially relative to a motionless femur. This results in passive cranial motion of the index finger overlying the tibial tuberosity (Video 1). A positive result is recognized as an increase in the distance between index finger and thumb as the proximal tibia moves cranially with respect to the distal femur.

Cranial drawer test
Experience eliciting cranial drawer is best obtained in the sedated or anaesthetized patient as tension in the hamstrings can be difficult to overcome in large, well muscled or nervous dogs. With the dog in lateral recumbency and the limb to be tested uppermost, the distal femur is grasped with one hand (the right hand if testing the left limb and vice versa) by placing the thumb on the lateral fabella and the index and middle finger tips on the patella (Figure 5). The other hand is used to grasp the proximal tibia, with the thumb on the fibular head and the fingers on the tibial tuberosity. In the CCL-deficient stifle, the tibia can be displaced cranially relative to the stable femur (Video 2).

This test should be repeated with the stifle held at various different angles as cranial drawer may be elicited in flexion but not extension in certain cases of partial CCL rupture. Note that in full extension, cranio-caudal stability may be conferred by the tension in the collateral ligaments. A few millimetres of movement may be elicited in young dogs without CCL disease or avulsion (so-called ‘puppy drawer’) however in such cases, the cranial drawer will abruptly stop – what is known as a ‘firm endpoint’ or ‘firm-end feel’, due to the integrity of the CCL.

The crucial difference between the two tests is that the tibial thrust test mimics the forces going through the joint during weight-bearing (and so assesses active joint stability) whilst cranial drawer tests passive joint stability by assessing the integrity of the CCL. For this reason, following procedures such as tibial plateau levelling osteotomy and cranial closing wedge osteotomy, which aim to overcome cranial tibial displacement during weight-bearing indirectly (through altering the morphology and mechanics of the stifle joint), tibial thrust should be eliminated (active stability obtained) but cranial drawer will always persist. Following procedures such as lateral (tibiofemoral) suture, which aim to emulate the presence of an intact CCL, both tibial thrust and cranial drawer should be eliminated.

The degree of instability present in cases with a complete CCL rupture or avulsion can be marked, with clear positive results to the tibial thrust and cranial drawer tests. However, these are operator-dependent subjective tests and in certain circumstances the results may not be clear. In cases of chronic CCL disease, peri-articular fibrosis (of which medial buttress is indicative) may act to stabilize the joint somewhat. With practice the examiner may detect a ‘soft-end feel’ to the cranial drawer manoeuvre, as the peri-articular soft tissues halt cranial subluxation more gradually in comparison to the firm-end feel experienced with an intact CCL. Additionally, instability can be harder to detect in cases with partial CCL rupture where some CCL tissue remains functional. Such cases are addressed in ‘Diagnostic pitfalls’ (see Box 1).

Consideration for the contralateral limb
As the majority of clinical cases presenting with CCL disease are likely to have undergone ligament degeneration rather than true traumatic rupture and avulsion, the possibility of bilateral disease should be considered in all cases, even in those overtly unilaterally lame. Buote et al. reported in 2009 that almost 50% of their Labrador Retriever population ruptured...
FIGURE 4: Lateral aspect of the right hindlimb, demonstrating the tibial thrust test. The stifle is held at or around its standing angle (135 degrees). The tip of the left index finger rests on the tibial tuberosity whilst the left thumb grasps the lateral fabella and the remaining fingers grasp the medial aspect of the femur, holding it motionless. The right hand grasps the proximal metatarsus and flexes the tarsus (green arrow), tensioning the gastrocnemius (blue arrow) and creating femoro-tibial compression. In the CCL-deficient stifle the tibia will subluxate cranially, widening the distance between the left index finger and thumb (red arrow).

FIGURE 5: Lateral aspect of the right hindlimb, demonstrating the cranial drawer test. The distal femur is grasped by placing the left thumb on the lateral fabella and the index and middle fingers on the patella. The right hand is used to grasp the proximal tibia, with the thumb on the fibular head and the fingers on the tibial tuberosity. In the CCL-deficient stifle, the tibia can be displaced cranially relative to the stable femur (red arrow).

BOX 1: DIAGNOSTIC PITFALLS
The minimally unstable stifle
Cranial drawer may be minimal or absent in dogs with a partial CCL rupture or significant peri-articular soft tissue thickening. In such cases a presumptive diagnosis of CCL disease may be made on the basis of recognition of stifle effusion, resentment of stifle extension and attempts to elicit cranial drawer, and ruling out of other differentials via radiography, synoviocentesis, synovial biopsy etc. Arthroscopy offers a minimally invasive method of confirming the diagnosis but is dependent on operator skill and the availability of equipment. Typical findings include a loss of the normal ligament fibre pattern with the ligament appearing frayed, oedematous and lax upon probing. Torn fibres may be visible. In addition arthroscopy may reveal synovitis, cartilage fibrillation and meniscal injury.

Caudal cruciate ligament rupture
While isolated caudal cruciate ligament rupture is rare and is typically accompanied by a history of trauma, the resultant stifle instability (caudal drawer) can be easily mistaken for cranial drawer. Differentiating the two requires practised assessment of the position of the lateral fabella and fibular head relative to one another when manipulating the stifle, to establish the direction of subluxation and reduction. Gaining experience of palpation of these bony landmarks during cranial drawer testing in CCL cases will be valuable when a case with suspected caudal cruciate ligament rupture is encountered.

Hindlimb neurological disease
The collapsed overweight large or giant-breed dog presents a diagnostic challenge due to the difficulty in getting these dogs into a standing position to assess gait, proprioception and muscle tone. Even when orthopaedic examination findings indicate stifle pathology, confidently ruling out concurrent neurological abnormalities can be challenging.
In the authors’ experience, obtaining a caudocranial (CC) exposure with the patient in sternal recumbency and the limb extended out caudally is the easiest method of obtaining a true CC view. In a true CC view the patella should be superimposed centrally over the femoral trochlear groove and the fabellae should be bisected by the lateral and medial femoral cortices respectively. Again the radiograph should ideally be collimated to include the tarsocrural joint. In a true CC view of the tibia, the medial border of the calcaneus should bisect the tarsocrural joint.

With film radiography the exposure should be such that the patellar ligament can be seen as a soft tissue opacity without need for a hot lamp, this makes assessment for stifle effusion easier. A radiopaque measuring device should be placed adjacent to the stifle joint at the same distance from the plate as the joint to aid surgical planning. A metal sphere is preferable to a ruler, since it does not need to be positioned perpendicular to the beam.

Whilst radiographs alone cannot confirm a diagnosis of CCL disease they do contribute evidence in support of it (typically joint effusion and radiographic evidence of secondary osteoarthritis, though the latter may be absent in acute disease), and help exclude alternative or concurrent abnormalities of the stifle, tibia and/or distal femur (see Box 2).

Effusion is visible in the stifle joint due to the cranial displacement of the more radiolucent infrapatellar fat pad. It is most easily recognized in the mediolateral view where the femoral condyles should be overlapping with <2 mm displacement – this typically results in superimposition of the fabellae though it should be remembered that displacement or absence of one of the fabellae (typically the medial one) can be a normal finding in certain dogs (for example, in West Highland White Terriers). The radiographic exposure is typically collimated to include the tarsocrural joint as the entire length of the tibia is necessary for measurement of the tibial plateau angle.

**Radiography**

Efforts should be made to obtain adequately positioned and well exposed radiographs of the stifles (Figures 6 and 7). In the mediolateral view the femoral condyles should be overlapping with <2 mm displacement – this typically results in superimposition of the fabellae though it should be remembered that displacement or absence of one of the fabellae (typically the medial one) can be a normal finding in certain dogs (for example, in West Highland White Terriers). The radiographic exposure is typically collimated to include the tarsocrural joint as the entire length of the tibia is necessary for measurement of the tibial plateau angle.
Synoviocentesis
Stifle joint effusion is not exclusive to CCL disease and, if the diagnosis is in doubt (for example with a minimally unstable joint), then synoviocentesis with cytological analysis (with or without bacterial culture) of obtained fluid may be indicated.

Typically with CCL disease a mononuclear arthropathy is present: an increased volume of clear, colourless to straw-coloured joint fluid with a typical total cell count of 2–5 × 10⁵, a predominance of mononuclear cells (88–100%) and minimal neutrophils (0–12%). It is important to remember that there is significant overlap between normal and abnormal mononuclear cell counts.

Meniscal injury
The menisci are two intra-articular fibrocartilages which enhance femoro-tibial congruence. Meniscal injury in the absence of CCL disease is considered extremely rare. In the CCL-deficient stifle the caudal pole of the medial meniscus acts as a wedge preventing the tibia from further subluxation but predisposing the medial meniscus to injury. Lateral meniscal injuries can also occur. The reported incidence of meniscal injury with CCL disease is 33.2–77%, with a higher incidence in overweight dogs and those with chronic and complete CCL ruptures. An audible click from the stifle during walking or stifle manipulation may indicate a meniscal injury, though it is not consistently present (Dillon et al., 2014) reported 31% sensitivity and 96% specificity). Meniscal injury is often implicated in lameness following stifle stabilization for CCL disease and should therefore be considered a possible contributor to hindlimb lameness for dogs with CCL disease, prior to any surgical intervention.

Definitive diagnosis
Though the majority of the clinical and radiographic signs and tests described here are not specific to CCL disease, a positive finding with the tibial thrust and cranial drawer manoeuvres confirms the diagnosis. Nonetheless, the authors consider examination by arthroscopy/arthroscopy (with meniscal probing) at the time of definitive surgical treatment for CCL disease to be routine. This allows for confirmation of CCL disease, exclusion of caudal cruciate ligament pathology and evaluation of the menisci.

It seems likely that less invasive methods of meniscal assessment including ultrasonography, computed tomography (CT) arthrography or high-field magnetic resonance imaging (MRI) will become more prevalent in the future as their availability increases. MRI has been reported to offer 100% sensitivity and 94% specificity for determination of meniscal injury (Blond et al., 2008).

Pre-surgical treatment
To minimize the risk of developing a surgical site infection the patient should be checked for active infections such as dermatitis, otitis and anal sac infections. Clinical signs of any other systemic disease such as stranguria or gastrointestinal upset should be investigated and addressed. Pre-anaesthetic haematology, serum biochemistry and a coagulation investigation may be indicated in geriatric patients or those with concurrent health issues.

Treatment options will be considered in a subsequent article but typically involve surgical stabilization of the joint. In the short term, prior to surgical management, analgesia may involve non-steroidal anti-inflammatory drugs (NSAIDs), strict rest (confinement to a single room with non-slip flooring and devoid of furniture to prevent jumping, or, alternatively, to a crate) and short lead walks to the garden for toileting purposes only, with abdominal sling support if necessary. Cold compression may be beneficial and can be performed at home by most clients.

Conclusions
Perhaps the greatest barrier to early diagnosis of CCL disease is failure of owner recognition of mild and intermittent hindlimb lameness. Prescription of rest and NSAIDs is a rational first line treatment for cases presenting with mild hindlimb lameness in which gait examination and orthopaedic examination findings are equivocal. However, veterinary re-evaluation a few weeks down the line should be encouraged, even if the lameness responds to this conservative management. If the lameness persists or if abnormalities of the stifle are then evident on examination, manipulation of the stifle under sedation, plus acquisition of radiographs, is justified.
Caroline Reay, Chief Veterinary Surgeon at Blue Cross, explains what it is like to work in the charity sector

There’s a range of reactions when you say you work for a charity: admiration from people who think you work for free; sympathetic comments from other vets about how you must be dealing with awful clients all day long; and when talking to people from outside the UK, you can be met with delighted amazement when they discover that the British not only have the NHS for people, but that needy pets can get free healthcare too.

In today’s tough economic climate, those who work for a charity are lucky; fewer discussions with clients about money, and no shortage of clients. But charities are feeling the pinch too and are looking for ways to cut costs and generate income.

Within the charity sector, working hours may be shorter and more predictable but experienced practitioners find that their salaries lag behind the private market rates. Combine that with changes in working patterns (in today’s economy some clients do work at least part-time) and the charity vets of the future may find they are in a different landscape.

Highs and lows

There are, however, many positives, and the charity sector has a loyal following as many people stay for years. The chance to work with a fantastic and generally altruistic group of people is not the least attraction and there’s a lot less of the dreary routine vaccination-after-vaccination clinic. The downside is that when you’re running late, there’s a lot less opportunity to catch up.

Most of the animals we see are unwell in one way or another and, while even in private practice pet owners can bring complications, working for a charity perhaps means you’re more likely to meet owners with problems. Getting chronically sick or having one of your nearest and dearest fall ill is one of the surest routes to ending up in our waiting room. You won’t forget the day you ask a lady with a dog with severely overgrown nails why she didn’t come sooner, only to find that she’s been struggling to find someone to sit with her seriously disabled adult daughter back at home.

Clients with challenges

Of course, euthanasia of a much loved elderly dog often leaves an impression, but there is even more to consider when the owner is absent because he’s in prison. It’s not just about the animal; pets have people too. You will come to feel that you are making a difference to the
world – to animals and people – in a positive way, by working with owners to overcome the challenges of caring for a spouse with Alzheimer’s, or a sick child, as well as coping with a pet with atopy.

With some clients you might consider it a small triumph just because they keep their next appointment. It’s pleasing to get a thank you call after phoning an elderly person’s GP because they seemed confused on the phone, especially when you hear that it might have saved her life. Of course, many vets will have similar experiences over the years, but it’s more likely when your clients are drawn from the lower socio-economic groups. That said, the vast majority are just normal people – carers, mothers with young children, pensioners. Jobs come and go these days and some of our clients go elsewhere when they get a job, only to return when the contract runs out.

Still counting the cost
A significant attraction for most vets and nurses is the focus on the animal welfare without worrying about generating income for the practice. There’s the temptation to do everything possible for a pet. In some cases that’s great, but you have a responsibility to be (increasingly) cost conscious, and to guide owners as to what’s in the animal’s best interests. Vets can be very focused on getting a diagnosis – looking at the bigger picture can be an ethical and emotional challenge. High expectations may be difficult for owners too. Your third attempt to fix that tricky fracture might work, but if the pet has already been in and out of the hospital numerous times, with the owner struggling to keep repeated appointments, is there a case for amputation?

For the 14-year-old dog, arthritic and nervous at the vet’s, how much work up should we do on the lump on its flank? The word ‘cancer’ often means owners want the lump off; but what sort of ‘cure’ do they expect from surgery? In private practice, it is often the owner’s will and ability to pay that takes much of this dilemma out of your hands; in the charity sector sometimes you’ll have to decide where charity should start and stop, though you’ll still be informing owners of all options. Making a decision based on your own evaluation of the pros and cons can be tough. How far do you go to prolong life – and for how long – for each pet?

The up side
There are, of course, definite benefits. There are lots of opportunities to do something a bit ‘different’. You could end up working abroad; several organisations offer neutering or vaccination initiatives. Also, the media generally like animal charities; they’re often the first resort for journalists wanting information. If it is something you are interested in, you could end up on TV, and there’s the occasional chance to meet celebrities or to attend various high-profile events.

Many charities have a voice in politics too – Blue Cross was one of the organisations instrumental in campaigning to bring in compulsory microchipping, and we’ve spoken out against breed-specific legislation.

Ways to engage
Our profession is united in its interest in animal welfare, and while we can’t all be lucky enough to get a job at a charity, there are lots of ways you can help. There are many vets who do some charity work, perhaps by offering a discount to the local animal rescue shelter.

‘Shelter medicine’ is an interesting field. You have to think about epidemiology and consider the role of stress in disease (a significant factor in most rehoming centres, however good the set-up). What are the consequences for the shelter if a litter of kittens has ringworm? What’s the risk if a young dog with diarrhoea tests positive for Giardia? How soon can he or she be rehomed once the diarrhoea has resolved? How much testing is necessary if all the cats in a shelter have intermittent mild diarrhoea?

Also, don’t forget that you are helping animals just as much if you are doing something fun (trekking in Peru is allegedly fun) for sponsorship or to raise money. Many charities do a ‘bake off’, and Blue Cross has an annual tea party. What better ways to give yourself and your teams an excuse to guzzle cake, as if one were needed?

Better together
Perhaps one of the most useful ways that vets can uphold welfare is by considering the role of charities, what we do and how we do it.
What does ‘rescuing a pet’ actually entail, particularly for a small, local organisation? Does it mean a dog spending two months in a small crate in someone’s back yard before going to a home with two other dogs and a cat? What are the consequences when someone gets the dog they’ve dreamed of, imagining long country walks with friends, only to find that the dog fights every dog in sight and the eagerly anticipated walks become furtive affairs on a tight lead in the dead of night?

So all vets can help charities, and animals simply by educating, campaigning and exposing the appalling truth of just how many unwanted animals there are.

For instance, for most charities talking about euthanasia is unappetising. The public admire ‘no kill’ shelters but don’t think about what it means. Can’t we as a profession speak out and campaign for local shelters and pounds to be regulated with welfare in mind? They are run by well-meaning people, but checking whether your local organisation is a member of the Association of Dogs and Cats Homes (it’s less than £100 a year to join) is a good start. The ADCH educates and encourages its members to adopt minimum standards. That we give unequivocal support to charities as a profession is understandable, but we have a responsibility to pet owners as well.

We all see clients who drag in a cowering dog which is scared of everything, not just the vet, and inclined to nip. They will explain it’s because the pet was “abused” in a previous home. Fortunately he or she was “rescued” by a charity, a “responsible” organisation that had her spayed and chipped. But we might also ask, is it really responsible to damage someone’s life by rehoming the nervous nightmare dog that won’t go out for a walk, and has to be shut away when there are visitors? No wonder rescue animals have a bad reputation.

Maybe our profession ought to consider how we can best work to change that? Who looks after the owner if the pet is euthanized as unmanageable?

More difficult questions

Of course it’s not responsible to give someone an animal knowingly concealing that it has a serious illness. But is it wrong to rehome a middle-aged cat with some dental tartar or an otherwise healthy middle-aged dog with a heart murmur unless they have had specialist referral and full ultrasound work-up?

Should clients be advised to contact the charity about paying for a hip replacement when the young dog they took on develops arthritis later in life? Should all susceptible dogs have hip X-rays before rehoming? Or are these things just a realistic reflection of life? When you buy a house, you’re not surprised to find the signs of normal wear and tear on the carpets, but it doesn’t mean it’s about to fall down.

Of course prospective owners should be told of major health issues, but for minor problems, a realistic overview of the potential consequences (or lack thereof) is very supportive of the work charities do. Isn’t it more important to have a lovely family pet than a dog that’s certified to have a perfect hip score?

Let’s talk

At Blue Cross we try to take a flexible approach and consider each case on its merits. Whether rehoming (contrary to myth, you won’t be ruled out if you don’t have a garden or do have children), or in sometimes being able to accept a straightforward case for veterinary treatment, even if owners aren’t strictly eligible, we look at each situation and client as an individual.

In these tough times, there is real scope for charities and private vets to work together to promote animal welfare, and the sector is receptive to ideas. Should we increase our preventive work, like neutering? (Did you know that we offer financial help for neutering bull breeds? Or that we provide free microchipping at all our centres and hospitals?) Do you have ideas about how you could work with a charity to help more pets? If so, why not get in touch? Talking is cheap and, in this era of change (greater availability of more and different pets, rising inequality, financial uncertainty), you can never have too many ideas on how to change things for the better.

Does a perfect hip score guarantee good health in all respects for eternity?

There’s also the question of exotic pets. While some are allegedly ideal for our busy lifestyles when we’re out all day, cheap availability of exotic animals condemns many to a life of hell. Misunderstood by their owners and kept in unsuitable conditions, many exotics end up at charities for veterinary treatment or rehoming. How, in the future, will charities afford to maintain the equipment and expertise to treat this assortment of reptiles, plus birds and all the varieties of fashionable small mammals from degus to mini pigs? We’ve made a small start but there’s an opportunity for us all to be more active in education and campaigning.
‘Practice makes perfect’ is useful advice in most fields of human activity – but even more so in a crisis, when lives may depend on a rapid, well-drilled response, BSAVA members will hear at Congress

Andrew Linklater will explain the importance for veterinary nurses to practise the skills used in assessing patients that may be showing signs of a condition such as hyperkalaemia.

Dr Linklater from Lakeshore Veterinary Specialists in Milwaukee, Wisconsin notes that having fast and efficient triage procedures are essential in a clinic like his own, which routinely handles such emergencies. But they are no less important for staff at a first opinion practice. “Abnormally high potassium levels in the blood will cause bradycardia and can be immediately life threatening. If clinical staff have been trained to quickly recognise and treat those signs, then it is very much more likely that the patient will survive.”

The expected – and the unexpected

Hyper- and hypokalaemia are the most common electrolyte abnormalities likely to be seen in companion animal practice. An immediate test of blood potassium levels would be an essential part of the baseline evaluation of emergency patients, along with blood gases and electrolytes, packed cell volume, glucose, lactate and renal function tests.

Urinary tract disease is top of the list of potential causes of life-threatening hyperkalaemia with acute kidney injuries, ruptured bladders and urinary tract infections all likely suspects. Addison’s disease is the next most common cause and there is a long list of much rarer conditions that may cause patients to present with these signs, including tumour lysis syndrome, rhabdomyolysis and heat stroke.

“The old adage that ‘common things are common’ is certainly true in this case but it is essential that clinicians are aware of the range of possible diagnoses. Every once in a while you are going to come across something that is atypical, and if you don’t know the list of differentials off the top of your head, then it is vital that you have a good resource available that you can quickly access,” he warns.

Speed of action

Even if there is an emergency centre within a short distance of the practice and the intention is to refer the case on, it is important to begin treatment immediately. Cats with lower urinary tract disease, a frequent cause of hyperkalaemia, will often be in considerable pain and so nursing staff should be alert to that possibility and suggest that their colleagues provide appropriate analgesia, Dr Linklater said.

Further treatment options may include IV fluids, calcium gluconate, insulin, dextrose, sodium bicarbonate and dialysis. The good news is that most of the underlying conditions that will cause hyperkalaemia are relatively straightforward to treat and are unlikely to cause any long-term problems, Dr Linklater will explain.

Andrew’s talks are in the Emergency and Critical Care stream on the Thursday and Friday of Congress. For more information about the programme, visit the new website – www.bsavacongress.com.
Down in the mouth

Rachel Perry is preparing to help Congress delegates teach their clients about the important role of oral hygiene

Pet owners are often unable to spot that there is something wrong with their animal, even when the evidence is staring them in the face. So that is why it is up to their veterinary adviser to explain that it is not good for either the animal or its owner if the former is suffering from halitosis so badly that it could strip paint, BSAVA members will hear at their annual Congress next year in Birmingham.

Rachel Perry, the first vet in the UK to qualify for the new advanced practitioner status in her chosen discipline of veterinary dentistry, will tell colleagues that they need to take a more proactive role to improve standards of oral hygiene in their patients.

“The problem is that many people think it is natural for their pet to have dog breath and so they just put up with it. But it isn’t normal; it is the first indication that the animal has diseased teeth or gums, and if we can treat it at that early stage, then we are most likely to be able to do something about it,” she says.

The vet’s responsibility

However, it isn’t only the client’s lack of olfactory sensitivity that is holding back efforts to improve the oral health of the nation’s dogs and cats. Vets can’t ignore their role in giving clear messages on what needs to be done, she warns.

Rachel cites the results of a US study that she believes would be equally applicable on this side of the Atlantic. It showed that when vets are asked why their clients don’t follow advice to bring pets in for dental treatment, they blame a number of factors – the clients didn’t want to pay, they didn’t have insurance or the animal was still able to eat and so the client didn’t perceive that there was a problem...

“The one thing they don’t do is to blame themselves. But when you question the clients, they would say that they were confused because they didn’t get clear advice,” Rachel says. “They are right, too, because if you look at the clinical records, it will say something like ‘Teeth dirty. Suggested that the dog might need a dental in 6–12 months.’ The client interprets that as meaning that there isn’t really a problem and they soon forget all about it.”

Rachel urges colleagues to make their treatment recommendations more explicit. “There is no other part of the body where, if you found signs of disease, you would let the client go off and ask them to come back in several months’ time. If it had, say, fleas or a skin condition, you would want to deal with it immediately,” she points out.
A destiny in dentistry

A 1997 Edinburgh graduate, Rachel recalls that there was very little emphasis on veterinary dentistry during her initial training. But once out in practice, she found that oral health problems were a significant factor in her case load.

“I was aware that I wasn’t very good at this work and I focussed my CPD on those areas where I was weak rather than strengthening the parts that I enjoyed. I quickly realised that through dentistry I could make a huge difference to the quality of life of my patients.”

In 2010, Rachel gave up general practice to concentrate on first opinion and referral work in veterinary dentistry and oral surgery at two practices in Sussex. She had studied through the European School of Advanced Veterinary Studies and in 2012, she passed the membership examination for the Australian and New Zealand College of Veterinary Scientists. A former course organiser for the British Veterinary Dental Association, she also provides in-house CPD at practices around the country.

Having worked for many years in mainstream companion animal work, she understands the time pressures facing general practice colleagues and appreciates how this may contribute to the neglect of dental issues.

“Only about 2% of consultations are arranged to deal specifically with a dental problem; all the others are found during examinations for an unrelated issue. The practitioner’s first responsibility is to address whatever is concerning the client and so often there is no time to talk in detail about dentistry. So what I recommend is that you ask the client to come back in a couple of days to look at the dog’s mouth. That may have to involve a free consultation but it is likely that a procedure will then follow and so the practice will not be losing money.”

What good dentistry practise looks like

Rachel emphasises that it is essential for the dog to undergo a general anaesthetic to ascertain the full extent of any oral diseases. The surgeon would need to use dental probes to investigate what exactly is going on beneath the gum line and ideally the practice should be equipped to carry out dental radiographs.

Time is also needed to explain to the client that it is they who are largely responsible for maintaining the oral health of their animal. Daily teeth brushing is still the best way to keep an animal’s teeth clear of plaque, but she understands that this will be a challenge for many dog owners and, even more so, for those with cats.

At the Birmingham meeting, Rachel will offer advice to colleagues on how best to train clients to look after their pets’ oral health. “There are many products available now that may help but I would encourage colleagues to seek out their own evidence for what works rather than relying on the claims of the manufacturers. Regular brushing is the gold standard and if owners are unable to provide that, then they must understand that a one-off dental treatment is not going to be a permanent solution. Dental disease is something that they will have to manage on an ongoing basis, working with their vet.”

RACHEL PERRY AT CONGRESS

- Dentistry: extraction satisfaction
  Friday, 11:05, Hall 4
- Basic dental radiography: equipment and technique
  Saturday, 08:30, Hall 7
- Interpreting dental radiographs
  Saturday, 09:25, Hall 7
- Client compliance in veterinary dentistry: getting the ‘Yes’
  Saturday, 17:45, Hall 7

For the full Congress programme for 2016, visit the new website – www.bsavacongress.com.

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Third edition
Edited by: Cedric Tutt, Judith Deeprose and David Crossley

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- Detailed chapters on inflammatory and infectious diseases
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WHAT THEY SAY

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Managing and working in a veterinary practice requires a variety of skills and a solid understanding of people – and good business management is an integral part of the veterinary profession. The management stream at Congress offers essential, practical advice to owners, managers, vets and nurses to aid them in their role in practice.

Following on from the success of the management stream in 2015, we have worked hard to develop this aspect of the programme for Congress 2016. This year’s lectures are designed to provide practical help and advice which can be taken back and implemented in practice.

Management touches all the lives of those involved in veterinary practice – not just dedicated practice managers – so the management stream aims to provide a broad selection of practical-based CPD for successful business and day-to-day management. The lectures are available to all practice managers, delegates with a veterinary registration, and registered BSAVA nurse members.

Team support

Working with colleagues has its joys and its difficulties and the people skills and team management lectures were some of the most popular lectures in 2015. Staff support and development and teamwork are a vital part of achieving successful management and a flourishing business.

The 2016 management stream sees a strong emphasis on these ‘people’ areas and starts on Thursday morning by addressing the important issue of new graduate support before moving on to look at coaching and mentoring for both new and long-term team members.

To be an effective manager, it is important to understand how our teams assess us as well as how we assess our teams, and we will look at this issue along with how you manage stress in both your team and yourself.

Friday morning sessions will talk about the much talked about difference between leadership and management. If you have the right management and leadership skills, the team will flourish, thus helping your business to do the same. There will also be sessions on
how to develop yourself as a leader, if gender makes a difference, and explore how monitoring staff can have an impact on your business.

Financial matters
Good financial planning is at the root of any successful business and the Friday afternoon sessions aim to provide an interesting and practical look at finance in veterinary practice.

Everyone in the practice needs a basic knowledge of how a small business operates in order to help the business grow, so this is where we start with the first lecture. However, the business of a veterinary practice is more than just the bottom line and the sessions following will explore how to be an ethical decision maker and still be profitable, be confident about fee structures and extend business boundaries.

Marketing
Marketing in this competitive environment is essential for success and managers need to understand how to set and achieve marketing goals. However, marketing must be geared to the needs of each practice and Saturday morning will be dedicated to how marketing can be personalised to individual practices, how good design can make an impact on marketing success and perhaps most importantly of all, how to carry out internal marketing that ensures all staff understand the goals of the practice and their role in achieving them. Marketing is important, but it is also essential to create a positive public image and this will be addressed in the lecture on public relations, which looks at how to create and implement one for the practice.

Client management
Clients and their pets are the most important part of the practice. We must set the highest standards and provide the best care possible for each individual. Saturday afternoon concentrates on good client management, considering the role of the manager in setting and maintaining standards, how to create a lifelong partnership with clients and how best to use the variety of communication methods available to develop good client relationships.

Congress creators
Volunteer GP Steve Courtney has finished his term with the Congress Programme Committee after helping create the first-class programme for 2016. Here he gives an insight into how he got involved and what he’s looking forward to in 2016.

Why did you get involved as a volunteer?
I got involved as a volunteer on the Programme Committee at the request of former BSAVA President Andrew Ash and spent three and a half enjoyable years on the Committee. I enjoyed meeting some very eminent people and it was fascinating to see all the work that goes into preparing a Congress, and rewarding to play even a small role in helping to get various lecture streams planned.

Which part of the programme are you involved in and what are you most excited for?
In the 2016 Congress, my streams are Behaviour, Reproduction and Dentistry. Of these I am most excited about the Dentistry stream as I feel this is one of the last big welfare issues for otherwise well-cared-for pets.

What sort of delegate would be interested in your stream? Who would find it really useful?
I think this stream will appeal both to vets hoping to improve their dentistry, and more experienced veterinary dentists.

Why is Congress important for a GP like yourself?
I feel the main value of Congress is that it offers a smorgasbord of quality continuing education in a fairly short space of time, combined with the opportunity to socialise and enjoy the excellent trade show.

BSAVA TO LAUNCH PR TOOLKIT FOR MEMBERS AT CONGRESS 2016
Join PR guru Andrew Rea on Thursday afternoon as BSAVA launches a new PR toolkit for managing positive and proactive public relations. Get equipped with simple techniques and templates for proactive public relations management as well as insider insight and motivation to make harnessing the power of PR an easily achievable goal.

Proactive Public Relations (to balance the media bias)
Thursday, 16:00–17:30, Hall 6

COULD YOU HELP CREATE CONGRESS?
We are looking for two volunteers to join the Congress committee. Working closely with BSAVA staff, one volunteer would focus on the lecture streams and social events and one would assist with exhibition logistics. For the chance to network with like-minded members of the profession, enhance your CV and create an internationally respected event, email volunteer@bsava.com for more information.
Reptile ownership has grown dramatically over the last two decades. This growth corresponds with a change in demographics of ownership from relatively small numbers of enthusiasts/hobbyists with a biological interest in various species to large numbers of people wanting a ‘pet’.

Unfortunately, almost all reptiles are maladapted for UK conditions. Many are highly specialised for their particular wild environments and most have specific requirements for temperature, light levels (including UV), photoperiod, humidity and diet, that are not straightforward to meet in captivity. These factors interact (e.g., reptiles’ ability to use UV light to activate vitamin D3 is reduced if they are cold), and reptiles’ ability to use UV light to activate vitamin D3 is reduced if they are cold), and subtle deficiencies in one or more over time can cause significant illness.

**Big challenge**

Even expert enthusiasts cannot keep some species well in captivity. Others require varying degrees of knowledge and understanding of their ecology, physiology and husbandry requirements to be kept physically healthy. The change towards ownership as pets by non-enthusiasts means that the majority of pet reptiles are now kept by owners with limited knowledge and understanding of their animals. Reptiles are convenient and easy to keep for owners, but because they are often not easy to keep well, this situation has resulted in a widespread animal-welfare problem.

**Husbandry know-how**

Every textbook and countless articles about reptile medicine emphasise the role of sub-optimal husbandry in the aetiology of the diseases of pet reptiles. Everyday experience in exotic animal practice shows that the husbandry of these species is often deficient, frequently grossly so, as might be expected when these animals are kept by owners lacking sufficient understanding of their biology and physiology, and training in their husbandry. Also, as is to be expected from this situation, many of the common diseases seen in everyday reptile practice have a direct husbandry-related component (see Table 1).

It is likely that husbandry deficiencies contribute to more illness than we recognise; metabolic bone disease in a UV-deficient bearded dragon may be clear cut, but might the osteomyelitis or clinical adenovirus disease commonly seen in bearded dragons also be partly caused by UV deficiency (vitamin D3 has a role in immune function in mammals; what about reptiles?) or other husbandry deficiencies suppressing their immune systems?

As a result of this situation, a large proportion of pet reptiles presented to vets such as myself are young animals with serious, often fatal, often avoidable illnesses. This contrasts with the situation for dogs and cats, where it is uncommon for young animals to be presented with serious illness caused by husbandry, and the majority of serious and fatal illnesses occur in older animals, and are mostly not obviously directly related to husbandry.

**Perfect storm**

These welfare problems are compounded by a ‘perfect storm’ of other factors:

- There is no legal restriction on who can own these species. Anyone over 16 can buy most species of reptile, even on impulse, and even if they know nothing about how to keep them and do not have the necessary equipment.
- Pet shops, internet suppliers and private breeders often do not provide appropriate advice. Indeed, some species are marketed as easy, convenient pets – they do not need walking twice daily, and landlords often do not object to a small lizard in a vivarium. But many pet owners, not being enthusiasts, are not motivated to find out and do everything that is
required to keep them well, and an A4 care sheet cannot provide sufficient information to do so. For owners who do investigate what is required, there is much advice on the internet, but not all of it is good and much is conflicting.

Well meaning, deficient in understanding

Obviously, most owners want to keep their pet well, but in my experience, most owners of reptiles with husbandry-related illness do not realise that their husbandry is deficient.

- The precise needs of some species are unknown.
- Reptiles have no facial expression and minimal ‘body language’ and vocalisation with meaning for humans, so there may be less empathy for reptiles than for mammals. Owners often do not recognise that their reptile is suffering until they are severely ill.
- Reptiles often take a long time to die of their illnesses.
- Anecdotal evidence (from internet forums and discussions with reptile pet shop staff) suggests that a large proportion of ill reptiles never see a vet.
- There is a shortage of vets with expertise in these species, and a shortage of knowledge about reptile diseases.
- The Animal Welfare Act (2006) cannot adequately protect the welfare of these animals. Most pet reptiles live out of sight of the public so, even if they are suffering, and even if that suffering is recognised, they are unlikely to be reported to any authorities. And, because most of the husbandry problems causing disease result from unintentional neglect, not wilful neglect, it is difficult to view the owners as culpable for the animals’ suffering.

Dealing with welfare concerns

In addition to the effects of captive environment on the physical health of these species, there is the further issue that these animals are not domesticated, in the sense of many generations of adaptation to living alongside man, as is the case for, say, a dog.

Even reptiles bred in captivity are genetically effectively wild animals, and a significant minority of pet reptiles in the UK are wild caught or ‘ranched’. Many pet reptiles are kept in small, relatively barren, enclosures and frequently exposed to and handled by humans. This may be stressful for many of them.

The health and welfare problems of reptiles and other ‘exotic’ pets are growing in profile in the UK and EU, both in the veterinary profession and beyond. In 2013, the Federation of Veterinarians of Europe called for the introduction of ‘positive lists’; lists of species that it would be legal to keep as pets. Belgium and The Netherlands have started introducing such lists (currently for mammals only).

In the last couple of years, BVA, BSAVA and the British Veterinary Zoological Society (BVZS) have all released position statements regarding reptiles as pets. During the 2015 BVA Congress, Sheila Voas, Scotland’s Chief Veterinary Officer, and Michael Stanford, BVZS Senior Vice-President, debated “Should the government tell us what pets to keep?”. The RSPCA, Blue Cross and PDSA are actively working in this area.

The Scottish Government is carrying out a review of the exotic pet trade, and the UK’s Environment, Food and Rural Affairs Select Committee held an inquiry into the keeping of primates as pets in 2014 and will specifically include exotic pets in their upcoming inquiry into the protection of animal welfare.

Measuring the problem

Despite consensus that a significant welfare problem exists, there is uncertainty regarding its scale and disagreement over how to deal with it. We do not even have a good estimate of how many pet reptiles there are in the UK – the Pet Food Manufacturers Association 2014 Pet Population Survey estimated 1.3 million reptile and amphibian pets but the Reptile and Exotic Pet Trade Association estimated over 8 million in 2013 – yet alone how many suffer as a result of poor husbandry.

Proposed actions to address the welfare problem include education of pet shop staff, potential purchasers of reptiles, and owners, licensing of keepers for certain species, and regulation of reptile imports to the EU, of pet shop supply of reptiles, of internet advertising and sale of animals, of reptile shows, of private breeders, and of the species that can legally be kept as pets.

There is consensus that education and some additional regulation, particularly of the supply chain (much of the relevant regulation is old and desperately needs updating), are necessary. The main disagreement is whether further regulation is required, with the exotic pet industry and hobbyists opposing some further regulation, and animal welfare groups and others arguing that additional regulation is necessary.

Participate in research

With funding from the Companion Animal Welfare Council and BSAVA’s PetSavers, and assistance from researchers Anna Wilkinson, Oliver Burman and Lisa Collins at the University of Lincoln’s School of Life Sciences, I am researching the husbandry, diseases and welfare of pet reptiles.

The project is in three parts: An online survey of the reptile-owning public to determine the species of reptile they own, and their husbandry, illnesses and lifespan; data mining the clinical records of exotic-animal practices to extract information about the cases seen, and a survey of vets in small animal and exotics practice about the reptiles they see.

That last part is where you can help. The survey is available at www.surveymonkey.co.uk/r/ReptileWelfareVets. Please take the time to fill it in. Your input will help to inform this important debate and guide the actions taken to address this major animal welfare problem.
Nick Gales is a veterinary surgeon and director of the Australian Antarctic Division (AAD), an agency of the Australian government’s Department of the Environment, responsible for looking after the country’s strategic, scientific, environmental and economic interests in the Antarctic region. Nick describes himself as a British Army brat. The son of a Colonel with the 10th Gurkha Rifles, he was born in Germany and lived in England, Singapore, Malaysia and Hong Kong before his father retired from the army in 1971 and the family settled in Perth, Western Australia. During his childhood, he developed a fascination with marine biology and after graduating in veterinary medicine from Murdoch University, he had ambitions to work in marine and wild animal medicine.

WHEN AND HOW DID YOU BEGIN YOUR CAREER IN MARINE MAMMAL RESEARCH?
During my final year in vet school, I heard that a Japanese company were looking to establish a new facility in Western Australia (WA) with dolphins, seals and other marine animals. They were looking for veterinarians with experience with marine mammals. Not surprisingly they were in limited supply in WA in 1979, so I contacted the company and talked my way into a job.

TELL ME A LITTLE ABOUT YOU DOCTORATE STUDIES AND YOUR EARLY RESEARCH CAREER.
I spent four years there, establishing the facilities and climbing up a very steep learning curve in medicine, husbandry and all the diverse skills that vets need to work in novel areas. It was a demanding 24/7 job, but I was aware that my real passion lay in research, particularly of free-ranging marine mammals. Antarctica was a particular interest and in 1984 I heard that the AAD was recruiting someone to study elephant seals. I was lucky enough to get that job and spent a wonderful few months on the remote subantarctic Heard Island.

Over the next 25 years I completed a PhD on Australian sea lions, and did marine mammal research in Australia and New Zealand, focused on how marine mammals and humans interact. This covered issues such as fisheries interactions, oil and gas exploration and tourism.

In 2001, I moved to Tasmania with my wife Taff and two children to work as principal research scientist with the AAD. I headed up the Australian science delegation to the International Whaling Commission and was involved in marine mammal conservation in Australia and abroad. Ten years on, I became chief scientist, with responsibility for a very broad range of science, and in late 2015 I was appointed director.

WHAT ARE YOUR DUTIES IN YOUR NEW JOB?
I have responsibility for our four research stations, an ice-breaker ship, a range of chartered aircraft, our...
head office and expedition staff and a diverse range of activities, participants and key relationships.

My whole career has focused on delivering the scientific evidence needed for good policy, management and programme delivery. This job covers a world-class science capability, important roles in developing effective environmental policy, a major operations and logistics capability and extensive international engagement. The work of the AAD not only affects Australians but the whole global community. We look at how changes in Antarctica will drive our climate, weather systems and future sea levels and how to ensure the region is valued, protected and understood.

IS IT A PURELY ADMIN ROLE OR WILL YOU STILL BE ABLE TO GET YOUR HANDS DIRTY (OR COLD AND WET) WITH REAL RESEARCH?

My days as a hands-on researcher ended some time ago when I took on my previous role as chief scientist, but I can live vicariously through research projects that I direct and support. Any successful research project is a collective endeavour with the mix of intellectual, technical, financial and hands-on input from many sources. This is particularly so for the large-scale, multi-disciplinary and international science that we do.

RESEARCHERS FACE INCREASING PRESSURE TO PROVIDE ECONOMIC JUSTIFICATIONS FOR THEIR WORK. HOW DO YOU DIVIDE YOUR EFFORT BETWEEN COMMERCIAL DRIVER RESEARCH (E.G. SUSTAINABLE FISHERIES) AND PURELY CURIOSITY-DRIVEN RESEARCH?

Antarctic field research is very expensive to support, and the scale of possible research outweighs the funding available. So we are explicit about our major priorities. In broad terms, our work falls into two major themes: understanding the role of Antarctica and the Southern Ocean in the global climate system, and how climate change will affect this system (physically, chemically and biologically). Second, to ensure we operate sustainably in Antarctica in all human activities, such as fisheries.

AUSTRALIA HAS LONG BEEN ACTIVE IN WHALE CONSERVATION – WHAT CAN YOU SAY ABOUT THE CURRENT STATUS OF THE MAIN WHALING SPECIES?

As you know, industrial-scale whaling drove most great whale populations to the edge of extinction, particularly in the Southern Ocean, where huge numbers would concentrate each summer. Since the late 1980s, when the International Whaling Commission (IWC) imposed a global moratorium on commercial whaling, those populations have started to rebuild. Today, whaling continues at a reduced scale. Whaling by indigenous communities is well managed and an example of how the IWC can tackle complex problems. But Japan, Norway and Iceland are beyond its control and have continued hunting. That is a huge challenge for the Commission’s authority.

It is also true that other threats to whales have grown enormously since the end of industrial whaling. Climate change, pollution, ship strikes, noise and poorly regulated fishing can all cause massive problems. If unmitigated, they could create similar damage, not just to whales but the whole marine ecosystem.

Science is the only process humans have developed that teaches us about our world.

A LOT OF YOUR WORK IS ON CLIMATE CHANGE – WHY IS IT SO DIFFICULT TO PERSUADE SOME PEOPLE THAT THIS IS HAPPENING?

The reality is this: we affect the world we live in, and we are doing so now with greenhouse gas emissions. Our chances of surviving without extreme impacts are diminishing rapidly. Science is the only process humans have developed that teaches us about our world. There is no other way to measure our effects on our world, or forecast how they might affect us. Our forecasts will invariably be wrong in terms of precision, but we have clarity and consistency in describing the trends. Alternative futures based on ideology and belief systems cannot fairly be compared against what our science tells us.

Globally things are moving fast – if belatedly. The focus is now far more on what we need to do. What actions best mitigate and allow for adaption in a world that is already changing fast? Climate science that improves our forecasts are vital – and a major focus of AAD’s research. But scientists must also work with economists, industrialists, actuaries, politicians and, most importantly, civil society. Social science and innovation technology will be key.

WILL THE WORK OF SCIENTISTS HELP IN PROTECTING THE ENVIRONMENT, AND AROUND, ANTARCTICA – OR IS THERE A DANGER THAT IT WILL ENCOURAGE A FEEDING FRENZY FOR THE RESOURCES UNDER THE ICE?

Antarctica is unique in that it is the only place on Earth that has been set aside for peace and science. It is managed under the Antarctic Treaty, a collection of over 50 nations cooperating to better understand and protect the region. The evidence generated by scientists from many nations feeds directly into formal decision processes that regulate Southern Ocean fisheries and human activities on the icy continent.

I am optimistic that this collective work will ensure it remains among the most protected regions of the globe. The single largest threat that sits outside the purview of the treaty is climate change. The Southern Ocean is warming, freshening and becoming more acid. Antarctica’s ice sheets are melting and contributing to global seal level rise. Our ability to respond to climate change will ultimately dictate our ability to conserve what is unique about Antarctica.

ON A DIFFERENT TACK, HOW WELL DID YOUR ORIGINAL DEGREE PREPARE YOU FOR THE WORK THAT YOU DO NOW?

I have found a veterinary degree a wonderful springboard for my career. Its broad, practical and multi-disciplinary skill set was a great basis for my move into research. By understanding how animals function and interact with their environment, answering broader ecological and physical science questions was an achievable progression. For marine mammal research, the combination of practical skills of anaesthesia and minor surgery with knowledge of physiology, anatomy and animal welfare have been invaluable.

WHAT DO VETERINARIANS HAVE TO OFFER ORGANISATIONS WORKING IN CONSERVATION BIOLOGY?

Veterinarians are wonderfully placed for this work in a broad range of roles. But it is a hard area to break into. You will rarely – if ever – see the perfect job advertised in a journal. Rather, the individual will usually forge their own path. This involves risk and uncertain job prospects, but those who do get there have a real opportunity to use their skills in creating tangible conservation outcomes. I have found it to be an extraordinarily rewarding job.

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Regional accents

Samantha Le-Vallee
Committee Member
Southern Region

Having qualified as an RVN in 1998, I worked in small animal and farm animal practice in both Hampshire and Somerset. I had a particular interest in nurse clinics, running weight management and arthritis clinics, but also loved the varied work with a local zoo.

However, my career path changed and I joined a pet food company. I am now working in the pharmaceutical industry as a Senior Territory manager.

Outside of work you can usually find me at the stables; I love to compete with my horse Louie, attempting to show jump and do some dressage.

I joined BSAVA Southern committee 3 years ago as their first RVN member. We endeavour to offer excellent quality local CPD to the area to both vets and VNs.

The Committee is a fantastic mix of vets and nurses who are very passionate about our profession and I would highly recommend anybody to get involved with their BSAVA region.

The dark side of dentistry

Alex Smithson’s talk in November for the North West Region combined an entertaining exploration of both veterinary and human dentistry, and the audience participated by sharing their own tales of distressing dental cases.

We began with a presentation on anatomy, pathology and pain and moved on to ways to prevent and manage the latter. The lesson that many took away was that we can manage pain with pre- and postoperative analgesics but also by using the best technique, instruments, environmental measures and, in some cases, antibiotics. We must remember humans have around 2 mm of enamel protecting their teeth but dogs only have about a tenth of this, so a little damage can result in a lot of discomfort.

Alex also introduced us to the ‘Daughter Test’ (don’t do anything that you wouldn’t want done to your daughter) and the interesting response Alex got of ‘They do WHAT?’ from a group of human dentists when he mentioned that vets will ‘atomise’ tooth roots if they have fractured (it’s very bad practice, in case you were wondering).

Overall it was an entertaining and absorbing (but slightly scary) talk; the main take home message for me was that I need to invest in a dental X-ray machine.

Michael Clarke, North West Region

South West Region: 50 things I wish I knew about surgery

The meeting was a great success, with the venue filled to capacity for this discussion-style meeting where delegates were asked to submit their questions in the weeks leading up to the meeting. A broad range of topics were covered by Ed Friend, from exteriorizing ovaries to the best technique for a PU. Top tips were gained from the meeting, and everyone left feeling full of new ideas. The meeting was kindly sponsored by Ethicon, who provided suture material for a sliding knot practical session at the end.

Sam Lane, South West Region

Dermatology and annual meeting for Southern

On 3 February, Southern Region are presenting an evening on dermatology with Dr Steve Shaw at Potters Heron Hotel, Ampfield.

In our practice labs we have one of the most useful and often underused diagnostic tools – the microscope. Steve will help us to make the most of our microscopes and explain how they can help us manage skin disease.

Steve was head of dermatology at the Animal Health Trust from 2001 to 2006 before establishing UK VetDerm. He is an RCVS Recognised Specialist in Veterinary Dermatology, and currently is President of the British Veterinary Dermatology Study Group. Steve is also National Dermatology Advisor for the Guide Dogs for the Blind Association.

The meeting will start at 20:00, and we will hold our annual regional meeting briefly before the speaker begins. Doors open at 19:30.

Carl Gorman, Southern Region

Bottoms in the West Midlands

We are looking forward to a busy year in 2016. We are kicking off with ’Bothersome Bottoms’, an evening meeting with Sue Paterson on 12 January. This has been a highly successful meeting in other regions and we are delighted to be able to put it on for our colleagues in the West Midlands. It is being held at The Falcon Hotel in Bromyard, locally famous for its delicious food. In February, we are holding a day course, ‘Practical approach to anaemia and coagulation disorders’, with a practical session on cytology. This course is being held at St Johns Hotel, Solihull, and is being presented by Sophie Adamantos and Kathleen Tenant, with parallel streams for both nurses and vets.

Caroline Queen, Chair West Midlands Region

VOLUNTEER VOICE

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Carl Gorman, Southern Region
Hearty Scottish CPD

We like to give everyone some breathing space to see out the old year and bring in the new, so we will be showing the region our love again in February, with a course scheduled for Valentine’s Day at Edinburgh’s RIDSJVS.

In ‘What becomes of the broken hearted’, Yolanda Martinez Pereira and Geoff Culshaw will talk about the presentation, investigation and management of heart disease using a problem-oriented approach, and they are eager to involve participants in the case discussions.

Covering canine and feline presentations and touching on respiratory disease, there will be content for both vets and nurses. The Scottish Annual Regional Meeting will also be held that day.

Also see the CPD diary pages overleaf for more Scottish Region CPD courses and on BSAVA’s website for more information or to book your place.

Wishing you all the very best for 2016.

The Scottish Region Committee

Guinea pigs in the pub

After Jill Pearson’s talk last year on rabbits, word has obviously got around because her October PUB CPD on guinea pigs was fully booked. To make room for all the attendees we switched to a buffet-style meal instead of the normal sit-down affair, but as usual the food was still great. Jill is an engaging and informal speaker, making it easy to ask questions and join in the discussion. Her passion for all things small and furry certainly came across and she encouraged us to consider where the guinea originates from and how this will affect their care. Jill also covered all the common presentations seen and although it did seem at one point that any guinea pig malady could be cured with vitamin C, diazepam syrup and Ribena (not the generic stuff!) this only reinforced the point they have specific individual needs compared to other small mammals. I think everyone left this course with some new knowledge which is going to help them care for their guinea pig patients in the future.

I certainly did.

Laura Pugh, East Midlands Region

Abdominal ultrasound in the North East

On 17 January we are delighted to be welcoming Gary England back, this time for practical CPD.

The course will alternate lecture and practical sessions to provide the basic skills in understanding how the ultrasound machine works, how to get the best image, and how to perform a systematic abdominal ultrasound examination. There will be live dogs (hopefully well behaved) and BCF are very kindly providing the ultrasound machines. Pet Crematorium are our sponsors. Harrogate Pavillions is one of our favourite venues and the hot food is always good.

Helen O’Kelly, Chair North East Region

Rabbits in Wrexham

Rabbit CPD is just around the corner on 28 January in Wrexham, when exotics specialist Molly Varga will be speaking to vets and nurses. She will be covering: why treating a rabbit is different from cats and dogs, the significant findings on clinical examination, diagnostic testing: what and when to test, and common presentations – what they mean and how to deal with them. Registration with a light buffet will start at 19:30 and the talk will begin at 20:00. The talk is free for BSAVA members.

Emma Owen, Cymru/Wales Region

Free CPD for South West Region members

Professor Stuart Carmichael will be speaking to us on Osteoarthritis on 17 February at 19:30 at The Engineers House, Clifton Down, Bristol. Refreshments will be provided, and even though this is free for BSAVA members it is still essential to book through the BSAVA website.

Jo Aplin, South West Committee

Coming up in the North West

This coming year includes a fantastic line up for BSAVA members in the North West. Look out for our full day of Practical Ultrasound CPD next month, where delegates will get the opportunity to brush up on their techniques. We are also looking forward to seeing Brian Faulkner present ‘The Colourful Consultation’ on 30 March at the Samlesbury Hotel. A key feature of this workshop is how a veterinary professional’s clinical orientation (their preferred diagnostic-therapeutic strategy) relates to achieving each of the four outcomes as well as their long-term financial productivity. This course will be perfect for vets, vet nurses and practice managers alike. For more information or to book, visit the website.

Karland King, North West Committee

To book a place on a regional course, please visit www.bsava.com/cpd or call 01452 726700 for more information.
January

WEST MIDLANDS Tuesday 12 January
Reg: 19:30, Meeting: 20:00–22:00
Bothersome bottoms
Sue Paterson
The Falcon Hotel, Herefordshire
Details from westmidlands.region@bsava.com

LEARN@LUNCH WEBINAR FOR VETS
Wednesday 13 January
Time: 13:00–14:00
Raw food diets
Marge Chandler
Details from webinars@bsava.com

NORTHERN IRELAND
Wednesday 13 January
Reg: 19:30, Meeting: 20:00–22:00
Emergency and critical care: a practical guide for vets and nurses
Lara Wilson
City Hotel, Londonderry
Details from nireland.region@bsava.com

NORTH EAST – PRACTICAL
Sunday 17 January
Reg: 09:30, Meeting: 10:00–17:00
50 shades of abdominal ultrasound
Gary England
Pavilions of Harrogate
Details from northeast.region@bsava.com

EAST MIDLANDS Tuesday 19 January
Reg: 19:30, Meeting: 19:45–22:00
THE PUB CLINICAL CLUB
Cost-effective anaesthesia: saving money SAFELY
Ian Self
The Royal Oak, Ockbrook
Details from eastmidlands.region@bsava.com

NORTH WEST Tuesday 19 January
Reg: 19:30, Meeting: 20:00–22:00
Tricky situations in urinary tract medicine
Dan Batchelor and Kevin Murtagh
Leahurst Campus, University of Liverpool
Details from northwest.region@bsava.com

SOUTH EAST
Wednesday 20 January
Reg: 09:00, Meeting: 09:30–17:30
Let’s talk about sex
Gary England
Holiday Inn, Gatwick Airport
Details from southeast.region@bsava.com

CYMRU/WALES Thursday 21 January
Reg: 19:30, Meeting: 20:00–22:00
Anaesthesia for complicated conditions
Karen Walsh
The Unicorn Inn, Cardiff
Details from cymru.wales.region@bsava.com

METROPOLITAN Monday 25 January
Reg: 19:00, Meeting: 19:30–22:00
Staying on the right side of the disciplinary committee!
Gordon Hockey
Royal College of Veterinary Surgeons, London
Details from metropolitan.region@bsava.com

LEARN@LUNCH WEBINAR FOR VETS
Wednesday 27 January
Time: 13:00–14:00
Simple wound sutures
Sam Woods
Details from webinars@bsava.com

CYMRU/WALES Thursday 28 January
Reg: 19:30, Meeting: 20:00–22:00
Treating rabbits with confidence
Molly Varga
Plas Pentwyn, Wrexham
Details from cymru.wales.region@bsava.com

February

SOUTH EAST
Tuesday 2 February
Reg: 19:30, Meeting: 20:00–22:00
Sweet dreams without a diaphragm
Daniel Calvo Carrasco
Leatherhead Golf Club, Surrey
Details from southeast.region@bsava.com

SOUTHERN Wednesday 3 February
Reg: 19:00, Meeting: 19:30–22:00
Cells, stains and microscopes in the diagnosis of skin disease
Steven Shaw
Potters Heron, Ampfield
Details from southern.region@bsava.com

NORTH WEST
Tuesday 19 January
Reg: 19:30, Meeting: 20:00–22:00
Tricky situations in urinary tract medicine
Dan Batchelor and Kevin Murtagh
Leahurst Campus, University of Liverpool
Details from northwest.region@bsava.com

SOUTH EAST
Wednesday 20 January
Reg: 09:00, Meeting: 09:30–17:30
Let’s talk about sex
Gary England
Holiday Inn, Gatwick Airport
Details from southeast.region@bsava.com

SCOTTISH
Sunday 14 February
Reg: 09:30, Meeting: 10:00–16:00
What becomes of the broken hearted?
Yolanda Martinez Pereira and Geoff Culpshaw
R(D)SVS, University of Edinburgh
Details from scottish.region@bsava.com

EAST MIDLANDS
Tuesday 16 February
Reg: 19:30, Meeting: 19:45–22:00
THE PUB CLINICAL CLUB
Clinical nutrition
Mike Davies
The Royal Oak, Ockbrook
Details from eastmidlands.region@bsava.com

METROPOLITAN
Wednesday 17 February
Reg: 08:30am, Meeting: 09:00–17:30
Essential radiography for the general practitioner
Richard Lam and Andrew Parry
Royal Veterinary College, London
Details from metropolitan.region@bsava.com

LEARN@LUNCH WEBINAR FOR VETS
Wednesday 27 February
Time: 13:00–14:00
Descaling and polish
Peter Southerton
Details from webinars@bsava.com

SOUTH WEST
Tuesday 20 February
Reg: 19:30, Meeting: 20:00–22:00
Pet loss support: the bereaved client
Ali Samuels
MAC Birmingham
Details from westmidlands.region@bsava.com

EAST ANGLIA
Sunday 21 February
Reg: 09:00, Meeting: 09:30–17:30
Sick to one’s stomach: oral and upper GI conditions in cats
Elise Robertson and Rachel Perry
Radisson Blu Stanstead
Details from eastanglia.region@bsava.com

LEARN@LUNCH WEBINAR FOR VNs
Wednesday 24 February
Time: 13:00–14:00
Descaling and polish
Peter Southerton
Details from webinars@bsava.com
**NORTHERN IRELAND**
Wednesday 24 February
Reg: 19:30, Meeting: 20:00–22:00
*Diabetes*
Grant Peirce
The Merchant Hotel, Belfast
Details from niroland.region@bsava.com

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**BSAVA EDUCATION**
Thursday 25 February
Reg: 09:30, Meeting: 10:00
*MINI MODULAR Medicine refresher*
Kil Sturgess
Eastwood Park, Nottingham
Details from courses@bsava.com

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**WEST MIDLANDS**
Friday 26 February
Reg: 09:00, Meeting: 09:30–17:30
*Practical approach to haematology for vets*
Sophie Adamantos and Kathleen Tennant
St Johns Solihull
Details from westmidlands.region@bsava.com

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**NORTH WEST**
Sunday 28 February
Reg: 09:00, Meeting: 09:30–17:30
*Practical ultrasonography*
TBC
Holiday Inn, Haydock
Details from northwest.region@bsava.com

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**March**

**SOUTHERN**
Wednesday 2 March
Reg: 19:30, Meeting: 20:00–22:00
*Analgesia deficiency in rabbits and its causes*
John Chitty
Pet Doctors, Newport, Isle of Wight
Details from southern.region@bsava.com

**BSAVA EDUCATION**
Thursday 3 March
Reg: 09:00, Meeting: 09:30–17:30
*BSAVA Dispensing Course*
Pam Mosedale, Mike Jessop, Michael Stanford and John Millward
Norton House Hotel, Edinburgh
Details from courses@bsava.com

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**WEST MIDLANDS**
Tuesday 3 March
Reg: 19:30, Meeting: 20:00–22:00
*Wound management*
Georgie Hollis
The Three Pears, Worcester
Details from westmidlands.region@bsava.com

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**NORTH EAST**
Sunday 6 March
Reg: 09:30, Meeting: 10:00–17:00
*Well, I think they did this on Casualty?*
Louise O’Dwyer and Carl Bradbrook
Wetherby Racecourse
Details from northeast.region@bsava.com

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**SOUTH WEST**
Thursday 10 March
Reg: 19:30, Meeting: 20:00–22:00
*Old cats: what’s new?*
Angie Hilbert
The Unicorn Inn, Cardiff
Details from cymru.wales.region@bsava.com

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**SOUTHWEST**
Friday 11 March
Reg: 08:30, Meeting: 09:00–17:00
*The collapsing dog*
Laurent Carosi and Kieran Borgeat
Tortworth Court Hotel, Wotton-under-Edge
Details from southwest.region@bsava.com

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**SOUTH EAST**
Wednesday 2 March
Reg: 09:00, Meeting: 09:30–17:30
*Top tips and case conundrums: a case-based approach to medical emergencies*
Sophie Adamantos and Christina Maunder
Darts Farm, Exeter
Details from southeast.region@bsava.com

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**SOUTH EAST**
Wednesday 2 March
Reg: 19:00, Meeting: 19:30–21:30
*Practical blood transfusions*
Mary Trehy and Sam Thompson
Hilton Maidstone Hotel
Details from southeast.region@bsava.com

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**SOUTHERN**
Wednesday 9 March
Reg: 13:30, Meeting: 14:00–20:00
*The psychology of communication, fulfillment and success in veterinary practice*
Brian Faulkner
Holiday Inn, Basingstoke
Details from southern.region@bsava.com

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**SOUTHERN**
Thursday 10 March
Reg: 19:30, Meeting: 20:00–22:00
*Pet blood bank*
TBC
Kingsley Village, Cornwall
Details from southwest.region@bsava.com

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**SOUTHERN**
Tuesday 8 March
Reg: 09:30, Meeting: 10:00
*MINI MODULAR Cats, canines, chemotherapy and novel cancer care: a medical oncology module*
Sue Murphy
Woodrow House, Gloucester
Details from courses@bsava.com

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**SOUTHERN**
Tuesday 8 March 016
Reg: 09:30, Meeting: 10:00
*THE PUBL CLINICAL CLUB Bothersome bottoms*
Sue Paterson
The Royal Oak, Ockbrook
Details from eastmidlands.region@bsava.com

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**SOUTHERN**
Wednesday 16 March
Time: 13:00–14:00
*Getting the elbow: what to do for elbow dysplasia*
John Innes
Details from webinars@bsava.com

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**EXCLUSIVE FOR MEMBERS**

Extra £5 discount on all BSAVA publications for members attending any BSAVA CPD event.

All dates were correct at time of going to print; however, we suggest that you contact the organizers for confirmation.
Learn@Lunch webinars

These regular monthly lunchtime (1–2 pm) webinars are FREE to BSAVA members – just book your place through the website in order to access the event. The topics will be clinically relevant, and particularly aimed at those in first opinion practice. There will be separate webinar programmes for vets and for nurses.

Don’t forget this valuable MEMBER BENEFIT.

Coming soon...

- 17 February  Critical evaluation of complimentary and integrated therapies
- 24 February  Descaling and polishing
- 16 March  Getting the elbow: what to do for elbow dysplasia
- 23 March  Dental X-ray

Dispensing course

The BSAVA dispensing course helps veterinary practices manage their dispensaries with up-to-date information on medicines regulations.

Thursday 3 March
Pam Mosedale, Mike Jessop, Michael Stanford, John Millward: Chaired by Fred Nind. With online content from Phil Sketchley and Sally Everitt
Norton House Hotel, Edinburgh EH28 8LX
BSAVA Member: £246.00 inc. VAT
Non Member: £369.00 inc. VAT

Cats, canines, chemotherapy and novel cancer care

This medical oncology course will take you through the basic approach to cases of suspected neoplasia, help you understand the whole of what the pathologist report means, and allow you to decide if non-surgical management is the best way forward for your case.

Tuesday 8 March
Sue Murphy
Woodrow House, Gloucester GL2 2AB
BSAVA Member: £246.00 inc. VAT
Non Member: £369.00 inc. VAT

Medicine refresher mini module

Are you coming back to work after a career break? Or simply looking for a refresher on medical aspects of practice life? This day course will allow you to refresh the skills and build your confidence.

Thursday 25 February
Kit Sturgess
Eastwood Hall, Nottingham NG16 3SS
BSAVA Member: £246.00 inc. VAT
Non Member: £369.00 inc. VAT

For more information or to book your course
www.bsava.com/cpd
Leptospirosis

Leptospirosis is a zoonotic disease caused by the bacteria Leptospira. It is a re-emerging disease in the UK and worldwide. The classical presentations of canine leptospirosis are acute renal failure and/or acute hepatothopy. However, there are many other possible presentations, including:

- Urinary: haematuria, polyuria/polydipsia without azotaemia, chronic kidney disease
- Liver disease: acute or chronic
- Respiratory: coughing, dyspnoea from pneumonia/pulmonary haemorrhage
- Uveitis
- Bleeding: thrombocytopenia, coagulopathies
- Secondary immune-mediated haemolytic anaemia
- Pyrexia of unknown origin
- Abortion
- Myocarditis: cardiac arrhythmias, collapse
- Rare: meningitis, central nervous system disease

Diagnosis

- MAT serology: tests the serum for antibodies against several serovars.
  - A single MAT titre ≥1:800–1:1600 with clinical signs is consistent with leptospirosis
  - Paired titres: leptospirosis is confirmed if there is a 4-fold titre increase within 3–4 weeks. A stable titre does not exclude leptospirosis
  - The highest titre does not always represent the infecting serovar due to cross-reactivity
  - False positives: titres often develop after vaccination, including for non-vaccinal serovars. Vaccinal titres are usually 1:800 or less (but occasionally higher) and usually last for a maximum of 3–4 months

- False negatives: in the first 1–2 weeks of illness (prior to seroconversion) or if the infecting serovar is not included in the serovars tested
- PCR: detects the bacteria
  - Can be performed on blood, urine, tissue
  - Blood PCR will be positive before MAT serology (thus is the best test in the first 7–10 days of illness)
  - Can be used to confirm leptospirosis in acute disease and in vaccinated dogs with a single positive MAT titre and isn’t affected by vaccination
- False negatives: possible if antibiotics administered prior to sample collection or if low numbers of bacteria
  - A positive result means the dog carries the bacteria, but doesn’t always mean clinical disease
- Immunofluorescence antibody test (IFA): detects antibodies against the sheath antigen shared by pathogenic Leptospira
  - Data on sensitivity and specificity are currently limited
  - Appears unaffected by vaccination
- In-house ELISA detecting IgM in serum appears promising but there is limited data
- Fluorescent in-situ hybridisation (FISH): detects Leptospira in tissue but isn’t widely available
- Tissue silver staining, urine dark-field microscopy: both are poorly sensitive but very specific

Treatment

- Antibiotics: intravenous co-amoxiclav or penicillin G in hospital, followed by oral doxycycline
  - Cefuroxime is not effective
  - Co-amoxiclav reduces clinical signs but doesn’t eliminate renal carriage
  - Important to eliminate renal carriage with doxycycline (5 mg/kg orally q12h for 2–3 weeks) to prevent infection of other dogs and humans
  - Perform urinary PCR after end of treatment to assess for renal carriage. If positive, restart doxycycline or treat with azithromycin
  - All in-contact dogs should receive 2 weeks of doxycycline then have a urine PCR as they could be asymptomatic carriers
- Supportive treatment as appropriate

Health and Safety precautions

Leptospirosis is a zoonosis and can be fatal. It is transmitted via urine, blood, tissue and bite wounds.

- Strict barrier nurse and containment of urine are important in the practice
- At home, affected dogs should not be walked outside of their own garden
- Decontaminate places where the dog urinates using a 10% bleach solution or another appropriate disinfectant
- Contact with immunosuppressed people, pregnant women, children is not recommended

Prevention

- Vaccination is essential in all dogs
- Vaccinated dogs can become infected by non-vaccinal serogroups
- Use a vaccine protecting against all serogroups in your area
- The vaccine should protect against disease and renal carriage
- In the UK, protection against serogroups Canicola, Icterohaemorrhagiae and Australis is recommended
- Protection has not been shown to persist beyond 12 months

Leptospirosis in cats?

Urinary shedding of Leptospira has been demonstrated in asymptomatic cats. Cats become infected through hunting rodents. Although clinical leptospirosis is rare, several cases have been reported, usually with renal disease. Feline leptospirosis may be underdiagnosed.
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References and further reading from Companion January 2016

How to... (page 12–17)