

Issue 2 – Winter 2024

# Together

with Blaise



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year of Blaise

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treatment for  
Maine Coon,  
Geralt

**blaise™** Veterinary  
Referral Hospital  
Birmingham

[blaise-referrals.com](https://blaise-referrals.com)

# Our latest news

## **We are pleased to announce that we launched our internship program in October 2024.**

In early October, we welcomed our first interns, Agueda, Xantal and Owen.

Another four interns are expected to join us in April 2025.

Agueda, Xantal, and Owen are participating in a rotating internship. They will rotate through various core areas in three-week blocks. These areas include surgery, medicine, anaesthesia, neurology, and out-of-hours. Additionally, they have options for elective rotations, such as cardiology, oncology, critical care, and diagnostic imaging, with opportunities to explore rotations outside of Blaise.

Our primary goal is to foster ongoing development for both the hospital and veterinary professionals. The program enables us to provide hands-on, diverse learning experiences, and to build a strong foundation for veterinary professionals.

Notably, two out of the three current interns come from the IVC Evidensia Graduate Academy, highlighting the clear path provided for graduates.

Developing and launching an internship program has always been part of our long-term vision, and we plan to have two cohorts per year.

Through exposure to various core disciplines, hands-on practice, and elective options that cater to their specific interests, interns at Blaise will benefit from a comprehensive learning experience.

This approach ensures they develop a broad skill set that is both practical and adaptable to the diverse challenges of veterinary medicine. Additionally, the internship is designed not only to improve their knowledge and skills as veterinarians who may work in general practice, but also to serve as a stepping stone to a potential residency for those looking to specialise.



Agueda, Xantal, and Owen pictured during their 'Tubes, Lines and Drains' practical session, which formed part of their induction.

## Marios gives a talk in Crete

Marios Charalambous, Neurologist, has recently returned from Crete. He delivered a talk to primary care vets as part of a neurology course which included neurological examination and various disease.

If you're a veterinary professional and interested in a talk being delivered by our specialist teams please get in touch.

Scan to get in touch



Scan to read article



## New article published

Sandra Sanchis-Mora Lda. Vet MVetMed PhD DipECVAA PGCertEd FHEA MRCVS, Anaesthesia Specialist, has published a new article in collaboration with Spanish University Universidad Catolica de Valencia. This study evaluated a new locoregional technique to provide pain relief for spinal pain and surgeries involving the cervical region.

## New starters

### Welcome, Camilla

During September, we welcomed Camilla Piazza who joined us as an ECVIM Resident. Camilla brings a wealth of experience having completed a three-year residency at Pride Veterinary Referrals.



# Tune in to...



A podcast by and for vet professionals. Each episode of the Beyond the Clinic podcast explores pressing issues and advancements in veterinary medicine. We are delighted to have had several members of our brilliant team feature recently.



**Marios Charalambous DVM PGC PGD Csci PhD DACVIM DECVN FHEA MRCVS, Neurologist**, discusses the latest ACVIM consensus on seizures in dogs and cats.



Scan for  
Marios' episode



**Andrew Kent BVSc DipECVIM-CA MRCVS, Clinical Director and Internal Medicine Specialist**, highlights the lack of evidence supporting the use of antibiotics in both acute and chronic cases during the episode titled 'The Role of Antibiotics in Gastrointestinal Disease: Exploring the Evidence'.



Scan for  
Andrew's episode



**Emma Suiter BSc(Hons) BvetMed PGDip(VCP) MRCVS Referral Clinician in Neurology** discusses the neuro exam in a recent podcast titled 'Overcoming Neurophobia'. Emma provides practical tips on how vets can overcome 'neurophobia' and triage neurological exams efficiently.



Scan for  
Emma's episode





## Our pricing is now available online

Scan to view pricing



**Pricing can now be found via our website, making it even easier to inform your clients of expected costs for their pet's treatment.**

For some scenarios, we can outline exact costs but for others, there simply isn't a 'one size fits all.' We have, however, provided guide prices to ensure both you and pet owners are aware of the treatment available, the costs associated, and any inclusions and exclusions.

A detailed estimate is always discussed with the client at the time of any consultation and will be based on the individual presentation/requirements.

Should you have any questions or require advice, our team are always happy to help.

Our common inclusive packages include:

**BOAS** **£3,000**

Includes surgery and up to two days of hospitalisation. Excludes CT (add-on £500), tracheostomy.

**Hemilaminectomy (spinal surgery)**

**<15kg** **£5,500**

**>15kg** **£6,000**

Includes advanced imaging, surgery, routine hospitalisation (up to 3 days) and re-check consultation.

**Echo Puppy/Kitten** **£266**

Only for patients which are asymptomatic, includes a consultation with a cardiology specialist and a Doppler echocardiography.

Restrictions and exclusions apply. Prices are subject to change, prices shown are correct as of 6th November 2024. See website for latest pricing.

We've teamed up with CarefreeCredit to provide additional support to pet owners when it comes to paying for their pet's treatment. Pet owners can choose to spread the cost of their pet's treatment through direct debit payments managed directly by CarefreeCredit.

Teaming up with CarefreeCredit has allowed us to further support pet owners and improve the quality of life for pets.

For further information about CarefreeCredit, please contact our client care team via **0121 238 2000** or email **hello@blaise-referrals.com**.

For further details about CarefreeCredit including interest free credit and their terms and conditions visit **carefreecredit.co.uk**

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# Celebrating our 1st anniversary

**blaise™**  
Veterinary  
Referral Hospital  
Birmingham



**When we first set out, we did not expect to receive the level of support we have had from veterinary practices. In all honesty, we did not know what to expect.**

With our sights set on bringing people together to make pet care better, Blaise officially opened its doors during November 2023.

We knew that creating a hospital from scratch was ambitious. Fortunately, we had a team of talented individuals who came together with a collective vision.

We chose a brownfield site to build our referral centre in a part of Birmingham where regeneration continues to be vital to the community.

After securing the site at Longbridge, we began the task of carefully recruiting 100 brilliant individuals who would form the backbone of Blaise.

Designed by veterinary professionals, for veterinary professionals, our purpose-built hospital allows our team to provide exceptional care to patients in the best way possible. We place great emphasis on collaboration and our hospital promotes this through its unique layout.

Our clinical floor is nurse-led which means our expert nurses take the lead in organising and coordinating patient care. This not only promotes efficiency, but provides continuity of care for all patients during their stay and fosters a positive working culture.

Our positive working culture and focus on wellbeing are intrinsic to delivering exceptional pet care. After all, the best care for our patients requires a positive team approach. We combine our individual skills, knowledge, and experiences to provide exceptional care and support to our patients, clients, and the veterinary community.

Our people, our hospital, and our advanced equipment help us provide the best possible care. Beyond this, we're also proud to focus on the small things that often make a big difference, always striving to make the extra personal touches we feel create lasting impressions on pets, clients, and referring vets.

With everything under one roof to treat patients, including the largest and best-equipped emergency and critical care department in the region, we are well prepared to provide care and support as needed.



**7,000**  
patients cared for

**100**  
CPD hours delivered

**600**  
CT & MRI scans performed

**325**  
surgeries completed

With our referral services available 24/7, we exist to support you and your patients. Our team are on hand not just for referred cases, but also if you require advice or a second pair of eyes on a particular case. We're just a phone call away.

**Reach us via telephone**  
**0121 238 2000, via email at**  
**hello@blaise-referrals.com, or**  
**via our website blaise-referrals.com.**



# Geralt's life-saving treatment

A cat facing death after being left paralysed by a rare infection has been saved our brilliant neurology team.

Four-year-old Maine Coon Geralt couldn't even crawl and anguished owner Samantha feared he would have to be put to sleep.

But our team found he was suffering from cervicothoracic discospondylitis, much more commonly seen in dogs. And, after pinpointing the problem, they were able to administer treatment and save his life.

"Geralt was referred to us with acute paraplegia with absent deep pain perception, i.e., he was unable to move and feel his hind limbs at all," said vet Dr Marios Charalambous, an ABVS American, EBVS

European and RCVS Recognised Specialist in Veterinary Neurology.

"We did a neuro exam, a spinal tap and an MRI scan which showed the discospondylitis. It was severe and extended inside the canal, so it was compressing the spinal cord.

"It's an extremely rare case, which I have only seen previously in dogs, never in cats."

The neurology team did blood and urine culture to try and identify the bacteria responsible. Although that usually has a



success rate of less than 50%, the culture sensitivity allowed them to pinpoint an antibiotic which might be effective.

Once this was administered, along with painkillers and other targeted medication, the impact was both remarkable and rapid.

"I wouldn't have expected a very good prognosis as the neurological status was very severe," said Dr Charalambous. "But to my surprise, there was a marked improvement.

"Within a couple of weeks of receiving the treatment, he had already started walking. And when I examined him a few months later, he was virtually normal.

"Our most recent MRI showed that while there were some chronic changes resulting from the infection, there no longer appeared to be an active lesion.

"And while there was still a mild compression of the spinal cord, it was much less than before, and Geralt compensates very well."

"Previously I have only seen cases where there has been pain, not plegic, and this was also unusually in the cervical area," added Dr Charalambous.

"So, as this was one of the most severe cases I have seen, and the first in a cat, I am

"We are so grateful to Blaise and for Marios for believing and giving Geralt every chance."

**Samantha**  
Geralt's owner

delighted with the outcome. If we hadn't acted, Geralt would either have died from the disease or would have to be euthanised.

"It shows that even when the prognosis seems poor, it is always worth trying to do something if the owners are motivated."

Geralt is extra special for owner Samantha who bought him as part of an inheritance from her late grandfather.

Having watched him collapse in front of her and then believing he'd die she is eternally grateful to have him home and well.

"If you saw him now, you'd never know anything had ever happened," said Samantha. "We thought we were going to lose him.

"We are so grateful to Blaise and for Marios for believing and giving Geralt every chance."





## An in-discussion with our neurology team

Blaise's neurology department covers disorders of the brain, spine, and peripheral nerves. Commonly encountered conditions include intervertebral disc disease, inflammation (meningitis), seizure disorders, structural disorders (syringomyelia), trauma, and neoplasia.

Our comprehensive neurology and neurosurgery service is supported by the latest diagnostic equipment. That includes a 1.5T high field Siemens MRI, electrodiagnosis testing with EMG, ERG, EEG and BAER, and a 64-slice Siemens CT. We also have an on-site lab for immediate analysis of CSF and other fluids.

### What made you choose a career in neurology?

**Marios**, "I love the challenge of neurology, and I had an interest right from when I was a student. I knew a lot of vet students were a bit afraid and found it quite complicated, but I was always fascinated.

After I graduated, I increasingly knew this was what I wanted to pursue."

**Emma**, "I discovered my love for neurology during my first degree, where I got to work closely with some truly inspiring and compassionate veterinary neurologists. Their enthusiasm got me researching more into the vast array of interesting neurological disorders and their treatments. I very quickly knew veterinary neurology was the career for me."

### What might a "normal" day in neurology look like?

"We see both routine cases and more urgent

cases where you might need to make quick interventions, either medical or surgical. You may see dogs where it's more about managing chronic pain, and then right away a dog you know needs to get to theatre as soon as possible. It really is a case of never knowing what your day is going to be like. When we start in the morning, we will usually examine hospitalised cases. Then we'll do the rounds and discuss those cases as well as others we are expecting, either emergencies or routine consultations. That helps us plan our working day, but there may also be transfers from the emergency department."

### **What's it like working in a state-of-the-art hospital like Blaise?**

"All the machines here are on par with the best you would find anywhere. So, we have all the MRI, electrodiagnosis and CT equipment to let us do everything we need. We also have very good theatre facilities. In some places, they try to save space, but that's not the case here, which is great.

The quality of the theatre imaging available here is better than elsewhere. And it's just such a nice place to work. The building is so spacious and modern, and everyone is so friendly. We really communicate as a team."

### **On that communication and teamwork then, who do you work with most?**

"We communicate with anaesthesia all the time, as we need them when our patients go for diagnostic imaging, for example during MRI or surgery. We also speak to the ECC department a lot, as they may want us to examine emergency cases or transfer them to us. It really is a team environment at Blaise."

### **What are the most common cases you see?**

"In neurology, the most common is dogs with seizures or dogs that are paralysed. So, with a medical condition, it would be epilepsy. Surgically it would be disc disease. In medical cases, we can do the full work-

up the dog needs – MRI, CSF, CT – and with surgery we have all we need, including implants if required. Overwhelmingly, it's dogs that we tend to see. The ratio is probably about 20 dogs to one cat. We see them from all over the West Midlands, and have even seen them from as far away as London."



### **Are there any cases you've seen so far that have stuck in your mind?**

"When you have a paralysed dog that you operate on, and they're able to walk again after just a few days, it's always so satisfying. It's remarkable for everyone – us, the vets, and the owners. They are always the ones you remember. When people come to you for an emergency appointment and you see the distress of the family, you always try to reassure them you will do everything you can. Seeing the positive outcome reassures them that you can make a difference, which is so rewarding. It's always nice to see their happy faces."

### **What message would you like to share about what neurology at Blaise can offer?**

"We have highly skilled vet specialists, working in a state-of-the-art environment and we can offer an excellent service to our clients. We are here and available to do our very best for our patients."

Should you require advice on a particular case or you would like to refer a patient, our neurology team are available to provide help and support.

# Get to know our fantastic neurology team...



## Marios Charalambous

**DVM PGC PGD PhD DipACVIM (Neurology) DipECVN FHEA MRCVS  
Neurologist Board Certified Specialist and Referral Consultant Neurologist**

Marios graduated in 2010 from Aristotle University of Thessaloniki, Greece.

After graduating, he worked in academia and private practice in Greece and the UK, before undertaking a residency at Cornell University. After this Marios took a further residency at Ghent University before becoming a Diplomate of ACVIM and ECVN.

His clinical interests are all aspects of neurology and neurosurgery, with particular interest in epilepsy and seizure emergencies. Marios shares his working time between Blaise and the University of Veterinary Medicine in Hannover.

Marios says, "I find neurology one of the most challenging specialities in veterinary medicine. In addition, since many vets experience neurophobia, my aim was to explore and enhance further in this field."

In his spare time, Marios likes to spend time with friends and family, and also enjoys hiking, exercising, and cooking. He also shares his life with Pablo and Kyuubi, his two orange cats, both of whom are naughty, and sweet!



## Sophie Evans

**Clinical Team Lead for Anaesthesia and Neurology**

Sophie has been a Registered Veterinary Nurse since 2018 working in both primary and referral practices. Since qualifying, Sophie has obtained additional certificates in Emergency and Critical Care, Surgical Nursing, and Feline Nursing. At the moment, she is working towards an Advanced Anaesthesia Nursing certificate.

Her passions within work include surgical anaesthesia, physiotherapy, and rehabilitation. Sophie says 'Neurology is a hugely rewarding department to work within. Every day we see such tenacity in care within the whole team. The Blaise neurologists are fantastic to work with and show such knowledge and passion with each case.'

Away from work, Sophie loves walking her handsome fox red Labrador, Chester.



### Emma Suiter

#### **BSc (Hons) BvetMed(VCP) MRCVS ECVN Residency Trained Clinical Neurologist**

Emma graduated from the Royal Veterinary College in 2016, and subsequently spent two years in a small animal first opinion practice before completing a rotating internship in 2019. During this time, she also gained a postgraduate certificate in veterinary clinical practice. She then joined Pride Veterinary Referrals and started a neurology internship followed by a neurology residency, which she completed in February 2024.

Emma's clinical interests are neurosurgery, and in particular decompressive spinal surgery and spinal stabilisation. In her words, she is "very excited to help build a successful and passionate neurology service." Emma has also presented at several veterinary and veterinary neurology congresses.

Emma says, "I find neurology fascinating, and genuinely love that I will never stop learning in this discipline. It is also extremely rewarding, especially in those cases where I can help the previously paralysed patient walk again. I feel very lucky that I truly do what I am most passionate about every day."

Emma has a very spoilt, long-haired Dachshund called Hewie, who has been with Emma throughout her journey to becoming a veterinary neurologist. He had spinal surgery himself and made a full recovery, and often joins Emma on CPD events to help show vets, nurses, and students how to perform a neurological examination.







# Tea time teaser

Anaesthesia and analgesia are at the heart of everything we do at Blaise. Led by Jacques Ferreira, our Head of Service, the team manage cases receiving sedation and anaesthesia from pre-medication through to recovery, offering a range of anaesthetic techniques and medications. They also utilise advanced multi-parameter technology for close monitoring of all patients.

Our anaesthesia and analgesia team provide our latest 'tea time teaser.'

A 4 year 2-month-old, female Pug presents to you with a diagnosis of extrahepatic portosystemic shunt for general anaesthesia for ventral coeliotomy, portovenogram, partial shunt attenuation, and liver biopsy. Let's review the history of this patient:

The dog presented 2 months ago for an initial consult with a history of 3-4 episodes of possible seizures. Previous surgery (cystotomy) had also been performed to remove a struvite urate stone in the urinary bladder. Recovery from anaesthesia was unremarkable and no clinical signs from that perspective were present at the time of consultation. Blood work showed low albumin (24.9g/dl [26.0-40.0]), high cholesterol (9.5 mmol/l [2.8-8.3]) and increased bile acids (57.6  $\mu$ mol/l [ $\leq$ 15]). The rest of the haematology and biochemistry were unremarkable. The dog did not have any other problems in the past and was up to date with vaccinations. There was no travel history either.

Combining history and tests performed, the suspected diagnosis was a possible hepatic portosystemic shunt (PSS). The referring vet did an ultrasound scan which was not diagnostic for a PSS, but a

high index of suspicion remained due to the clinical history. The dog was then put on trial treatment consisting of lactulose and metronidazole, and observed for improvement of the clinical signs.

A good response to treatment was observed characterised by resolution of neurological signs/episodes. A month later, the dog underwent general anaesthesia for a Computed Tomography (CT) study in which a left gastrophrenic shunt was confirmed. There were no mineral foci or sediment visible in the kidneys or urinary bladder. The owners were keen to continue with medical treatment for another month before deciding about surgical correction of the PSS.

Today, the dog is admitted for surgery as the owners want to go ahead with the procedure. At presentation, the dog is bright and alert, and your physical examination is unremarkable.

You have performed complete biochemistry, coagulation profile, packed cell volume (PCV), and total solids preoperatively. A focal ultrasound will also be performed before surgery to confirm no further uroliths were formed during the time the dog was on medical treatment.



# Questions

- 1 What would you expect to find in the blood tests performed in dogs with hepatopathies like PSS?
- 2 Based on history, physical examination, and diagnostic tests performed, could you make a list of your considerations for general anaesthesia for this patient?
- 3 In addition to this specific case, is there any other considerations to be aware of?
- 4 Things to avoid in this case?

Answers on next page

# Tea time teaser answers

What would you expect to find in the blood tests that you just performed in dogs with hepatopathies like PSS?

## **Abnormalities observed in this case:**

- Persistent hypoalbuminemia: reduced hepatic synthesis
- Persistent increased bile acids

## **Additional abnormalities that could be found in dogs with PSS:**

- Hypcholesterolaemia: reduced production in the liver
- Hypoglycaemia: reduced gluconeogenesis and glycogenolysis
- Anaemia: alterations in erythrocyte processing and iron metabolism
- Hyperammonaemia: reduced clearance from the portal circulation of the accumulated ammonia produced by the breakdown of amino acids in the gastro-intestinal track by bacteria
- Low urea: decreased synthesis in the liver
- Coagulopathies-both hypo and hypercoagulable states: decreased synthesis of coagulation factors, anticoagulants, fibrinolytic factors and clearance of activated factors

All the above abnormalities are the direct consequence of a chronic reduction in portal blood flow.

Based on history, physical examination and diagnostic tests performed, could you make a list of your considerations for general anaesthesia for this patient?

## **We can stratify our considerations in the following way:**

### **1 General considerations:**

Firstly, any considerations related to general anaesthesia are common to every anaesthetised patient. Usually, sedatives, analgesics and anaesthetic agents are going to influence the cardiovascular, respiratory and central nervous systems, among others, that might carry general risks of hypothermia, hypoventilation, hypoxaemia, and hypotension.

### **2 Considerations related to the patient:**

#### **A. Brachycephalic breed:**

Brachycephalic breeds have the potential to suffer from the well-known brachycephalic obstructive airway syndrome (BOAS). BOAS specific risks/considerations and management techniques are beyond the scope of this discussion, but it is highly recommended to be included in any peri-anaesthetic plan where brachycephalic patients are to be sedated or anaesthetised. The plan should not be restricted to the respiratory system, and the other less obvious organ systems should be managed, e.g. ophthalmic preparations and longer fasting times.

#### **B. PSS/compromised liver function:**

i. Altered drug metabolism. Reduced drug metabolism can prolong the duration of action of the anaesthetic and analgesic drugs. This is important in drugs strictly metabolised by the liver, e.g. opioids and acepromazine.

ii. Hypoalbuminemia may lead to a greater plasma concentration of unbound, active drugs (many anaesthetic and analgesic drugs), and to hypotension due to affected plasma oncotic pressure.

iii. Risk of vasodilation and further hypotension due to elevated bile acids

and nitric oxide and inflammatory mediators.

**iv.** Reduced hepatic heat generation predisposes to hypothermia. Hypothermia prolongs metabolism of drugs, may reduce clotting efficacy, is potentially arrhythmogenic and slows recovery.

**v.** Risk of hypoglycaemia may lead to neurological complications such as lethargy, weakness, seizures, and delays in recovery from anaesthesia or sedation. Hypoglycaemia may contribute to bradycardia, hypotension, and potentiate hypothermia.

**vi.** Risk of hepatic encephalopathy/seizures due to increased ammonium in blood.

**vii.** Increased blood brain barrier permeability due to inflammation and some drugs such as opioids, leading to sensitivity to drugs, increased recovery, and exacerbated hepatic encephalopathy.

**C. Small size of the patient increases the risk of further hypothermia due to an increased body surface area to volume ratio. Also consider that a proportion of patients with PSS will be young with an immature liver, although this is not in our case.**

### **3 Considerations related to the procedure:**

- A.** Risk of severe hypothermia: loss of temperature due to evaporation during celiotomy.
- B.** Risk of bleeding during the surgical procedure.
- C.** Personnel safety when performing fluoroscopy.
- D.** Postoperative complications due to attenuation of the PSS: portal hypertension (abdominal discomfort, ascites, vomiting, and diarrhoea), and seizures.

## **General considerations for all patients with suspected PSS:**

**1.** Medical treatment: it is important that the dog receives medical treatment (lactulose and antibiotics) for at least a month before performing surgery, to reduce the hepatic encephalopathy and avoid complications post attenuation. Treatment with levetiracetam before portosystemic shunt attenuation reduces the likelihood of developing post-operative seizures.

**2.** Fasting times: animals requiring surgery for PSS are often at risk of hypoglycaemia and proposed fasting times in the literature recommend a period of 4–6 hours. In brachycephalic breeds, delayed gastric is thought to increase the risk of regurgitation; (however; there is contradicting evidence suggesting shorter fasting times may reduce the incidence of reduced gastroesophageal reflux or regurgitation) and for this reason we limit fasting times to 4–6 hours and routinely prescribe preoperative maropitant and omeprazole.

**3.** Prewarming the patient before sedation and general anaesthesia helps to minimise hypothermia, as discussed in the previous questions.

**4.** Although the risk of bleeding is considered low in this case, having the facility to perform a blood transfusion is essential.

**5.** To monitor and maintain anaesthesia and analgesia adequately in this patient, we need a multiparametric monitor (with pulse oximeter, capnography non-invasive blood pressure, electrocardiogram (ECG), and thermometer). Additionally, invasive blood pressure is always the best way to monitor arterial blood pressure in these cases, and the dorsal pedal artery is commonly catheterised for this purpose.

**6.** Simple cases are usually managed for drug and fluid administration with 2 intravenous catheters (one spare in case blood products are needed).

More complex and unstable cases might benefit from the aseptic placement of a multi-lumen long stay catheter in the jugular vein.

**7.** Hartmann's solution contains lactate. Lactate is metabolised via the liver, however, does not accumulate significantly in patients with PPS and remains the replacement fluid of choice. Conversely, 0.9% NaCl solution, may result in hyperchloraemic acidosis, and should be avoided. The rate of fluid administration in dogs with PSS is the standard surgical rate (5 ml/kg/hr) recommended for healthy patients and in acutely hypovolaemic animals, a fluid bolus of 3-5 ml/kg over 10 minutes can be administered. An improvement in blood pressure, reduction in heart rate and/or improvement in pulse quality, suggests the patient is fluid responsive and may warrant a high fluid rate or additional boluses.

**8.** Lubricate the eyes regularly.

**9.** Despite the analgesia provided (usually with a full mu opioid such as methadone) at premedication, other analgesic techniques to provide multimodal analgesia are encouraged in these cases to facilitate the reduction of the dose of the inhalant anaesthetic that will cause dose dependent vasodilation and hypotension. Techniques include locoregional analgesia (carefully choosing the dose of the local anaesthetics that are metabolised in the liver), or continuous infusion of opioids such as remifentanyl (extrahepatic metabolism). Other opioids and ketamine can be also used at the low-dose range.

**10.** Initiate mechanical ventilation in the event of hypercapnia ( $PE'CO_2 > 60$  mmHg).

**11.** Intraoperative management of hypotension and hypoglycaemia.

Hypotension during general anaesthesia is considered when the mean arterial blood pressure falls below 60 mmHg. Assess the patient's depth of anaesthesia.

If possible, reduce the volatile anaesthetic agent administration. The administration of anticholinergics should be considered if bradycardia is deemed to be the cause of reduced cardiac output and hypotension. If these measures fail, infusions of dopamine or noradrenaline should be started. Treat hypovolaemia as described above.

Hypoglycaemia happens when blood glucose is less than 3.33 mmol/L. Blood glucose monitoring should be carried out every 30-60 minutes throughout the peri-operative period and supplemented, if necessary, until the animal is eating normally. Postoperatively, food should be offered as soon as possible. Acute hypoglycaemia may be treated with 0.5-1 ml/kg of 50% glucose solution, diluted 1:1 with 0.9% saline. If the animal requires continuous administration, a 2.5-5% glucose solution can be administered at a once-twice maintenance rate intraoperatively.

## **12. Postoperative care**

### **A. Antagonists**

Due to the delayed hepatic metabolism of commonly used anaesthetics, the use of drugs that can be antagonised is advised. Medetomidine and methadone both have antagonists (atipamezole and naloxone).

### **B. Monitoring**

Ongoing monitoring of the patient in the recovery period is essential. In addition to pulse oximetry, non-invasive blood pressure and temperature, blood glucose monitoring should also be performed every 30-60 minutes until the patient has eaten or is maintained on glucose supplemented fluid therapy.

### **C. Continue medical treatment.**

Continued provision of cardiovascular support and glycaemic support may be required once the patient has recovered. Of particular importance is anti-emetic therapy. The risk for seizures post-



attenuation is high during the immediate post-operative period and a robust plan to manage the seizures should be in place.

**D. Analgesia and pain assessment.**

Post-operative pain may be significant. In addition to the pain associated with exploratory laparotomy, the redistribution of blood to the liver can result in significant congestion, pericapsular stretching, and pain. Opioid-mediated analgesia may be rewarding, but the results of repeat doses cannot be predicted, and should therefore be guided by regular pain scores. In our hospital, we use the short-form Glasgow composite measure pain scale, which guides analgesia provision. A multimodal approach is also advised, with ketamine or dexmedetomidine constant rate infusions often added to existing opioid analgesia.

**Things to avoid in this case?**

**1.** Unfortunately, many drugs that we use in anaesthesia are metabolised in the liver. However, it is possible to avoid using long lasting drugs (e.g. acepromazine) that can't be antagonised, if there is an alternative. Otherwise, reducing the dose of such drug would also help in reducing the time needed to be metabolised.

**2.** Propofol is better than alfaxalone as an induction agent in these cases due to it having some extrahepatic metabolism.

**3.** Some clinicians recommend avoiding benzodiazepines. This is because they require hepatic metabolism, failure to metabolise the drug alongside increased endogenous benzodiazepines in the portal circulation, raises the risk of adverse side effects.

**4.** Avoid the continuous infusion of drugs that are highly accumulative within the body (for example lidocaine constant rate infusion), and also avoid total intravenous anaesthesia (volatile agents are preferred).

**5.** The use of non-steroidal anti-inflammatory drugs in dogs with hepatic disease is cautioned against, due to the increased risk of gastric ulceration. Patients receiving concurrent lactulose therapy have an elevated risk of gastric ulceration, which is further increased if peri-operative hypotension is encountered. In select patients with hepatic disease and no clinical signs, it has been suggested that low doses of NSAID can be beneficial, as well as increasing time between administrations, e.g. 36 hours instead of 24 hours. In these cases, owner consent for off-label use is required.

**6.** The use of paracetamol in patients with hepatic disease is controversial. The accumulation of an active metabolite (NAPQI) may lead to liver damage and methaemoglobinaemia.

**7.** The ideal fasting period in patients with PSS is unclear. In this case, the risk of regurgitation and aspiration needs to be weighed up against the risk of hypoglycaemia. It is advised to reduce the fasting time to less than 4 hours, with routine blood glucose monitoring.

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- Tonge, M.; Madruga, F. (2021) Sedation and general anaesthesia of the portosystemic shunt patient. Companion Animal (26: 1-9).



# An Insight into our diagnostic imaging department

**Most animals referred to Blaise will visit the imaging department at some stage during their referral journey. Whether for ultrasound-guided biopsy, staging CT, fluoroscopic-guided PDA occlusion, orthopaedic x-rays, or a spinal MRI, all our patients are catered for by our expert team led by Carlo Anselmi DVM DipECVDI MRCVS, Head of Service - Diagnostic Imaging.**

With the increasing use of telemedicine, it has considerable benefit to the clinical team and our patients to have Carlo as an on-site radiologist. He is a vital part of the multidisciplinary team, able to provide rapid radiological reports leading to expedited treatment plans and resolution for our patients and their families. He regularly presents at several congresses, conferences, and academic institutions. Carlo is the Secretary of the Italian Society of Veterinary Diagnostic

Imaging (SVIDI), and is also a member of the Credentials Committee of the European College of Diagnostic Imaging (ECVDI). He is an excellent teacher, and never too busy to explain his findings or discuss cases with other disciplines. Carlo enjoys all aspects and modalities of radiology, and is particularly interested in the cardiorespiratory system, abdominal ultrasound, exotics, neurology, and oncology.

Working alongside Carlo is Devon Caffull BSc (Hons) RVN, Imaging Nurse. Devon has 8 years of experience in imaging. She is a fantastic asset to the team, and takes great pride in providing high-quality images to aid in the diagnostic process. She has been instrumental in helping to develop CT and MRI protocols to ensure efficiency. Devon is also one of our Radiation Protection Advisors.

Marianne Painter, BSc (Hons), Radiographer, started her career as a veterinary nurse, but then retrained as a human radiographer. After leaving the NHS, she spent five years providing post-mortem CT imaging for the Coroner. Three years ago, she came full circle and focused on veterinary radiography, where she has been using both of her qualifications to the fullest. Marianne has applied her extensive knowledge and worked hard to write and implement our MRI local guidelines, ensuring the team and patients remain safe within the magnetic resonance environment.

Carina Jones, BSc (Hons), Radiographer, joined Blaise recently as our second radiographer, transitioning with over 15 years' experience working in the NHS. After starting in paediatrics, she found her passion focusing on interventional radiology and cardiology. Carina is a fantastic asset to the team and has applied her knowledge and experience within the field to help patients.

Having such an experienced and dedicated team means we hold ourselves to the highest of standards, and constantly seek to provide the best quality images to provide the maximum information. It takes skill and expertise to get high-quality images, especially from our smaller patients, so having a great team with advanced equipment is crucial.

At Blaise, we currently have a Siemens 1.5T MRI, and each member of our imaging team has undergone extensive training in-house and externally on how to get the most out of the scanner. This enables the team to deliver targeted scans with high-resolution images, keeping scan times to a minimum so that patients are not under anaesthetic for longer than necessary. While predominantly used for neurology cases, we are also using the scanner for orthopaedic cases, enabling us to see complex structures in more detail than CT.

Since opening in  
November 2023, the  
team have performed  
**200 MRIs and 400 CTs**

Our Siemens 64-slice CT allows rapid scanning to reduce motion blur in thoracic structures. Protocols have been created for each discipline, meaning we can minimise the patient's time in the scanner while obtaining all the images we need.

Detailed 3D reconstructions can then be created to help measure and visualise structures for surgery, or to demonstrate pathology.

We also have a Fujifilm digital radiography suite, capable of horizontal beam imaging in addition to standard projections. The floating table and tracking tube head enable us to minimise moving our patients, reducing excessive manual handling. In addition to the x-ray suite, we also have a portable digital unit which is used predominantly for intra-operative and post-operative imaging in theatre. This unit can also be used in any of our controlled areas if we have a particularly busy day in clinic.

Having a flat-panel fluoroscopy unit with a vascular package has been invaluable for complex procedures, such as PDA occlusions and shunt repairs, as well as being utilised for tracheal studies, barium swallows, and orthopaedic procedures.

Our multiple ultrasound units, including a dedicated cardiology unit and several portable point-of-care units, are in constant use throughout the hospital.

At Blaise, our team are always ready to carry out advanced imaging and provide immediate feedback about diagnosis, treatment, and post-procedural care to promote the very best patient outcomes.



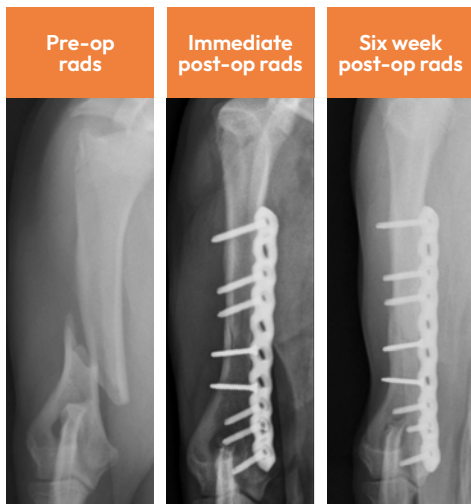
# The team treat Teddy's humeral fracture

**Teddy, a 6-month-old male Cockapoo, was hit by a car and sustained a short oblique fracture of his right humerus with a concurrent fissure in the distal segment.**

The fracture repair was performed by Vassilis Chantziarasa, Referral Veterinary Surgeon – Orthopaedics, and was achieved with the placement of lag screws, a 2.0 mm neutralisation titanium locking plate, and one of our brand-new fracture repair systems supplied by Arthrex.

Teddy has made an excellent recovery. The fracture healed uneventfully, and Teddy returned to being a carefree playful puppy only six weeks after surgery.

Should you require advice on a particular case, or would like to refer a patient, our team are happy to help.



# How to refer to Blaise

We are keen to make the process of referring as easy as possible for you, so we are happy to take referrals in a number of ways.

## Routine referrals

**Online** [www.blaise-referrals.com](http://www.blaise-referrals.com)

**Email** [hello@blaise-referrals.com](mailto:hello@blaise-referrals.com)

**Call** 0121 238 2000

## Emergency referrals

Most emergency referrals (same day, evening, weekend) at Blaise are seen by our expert Emergency & Critical Care service.

**If you need us urgently then please call 0121 238 2000 and speak to one of our ECC clinicians**

## Refer a patient

Scan the QR code to refer a patient quickly. Once you have made a referral, we take care of the rest while keeping you fully informed throughout the whole referral journey – it's that simple!



## Advice

We are always happy to offer advice on cases that cannot be referred or in advance of referral. You can contact us on the details above or contact our discipline teams directly.

**Medicine** [birmingham.medicine@blaise-referrals.com](mailto:birmingham.medicine@blaise-referrals.com)

**Soft Tissue Surgery** [birmingham.softtissue@blaise-referrals.com](mailto:birmingham.softtissue@blaise-referrals.com)

**Orthopaedic Surgery** [birmingham.ortho@blaise-referrals.com](mailto:birmingham.ortho@blaise-referrals.com)

**Oncology** [birmingham.oncology@blaise-referrals.com](mailto:birmingham.oncology@blaise-referrals.com)

**Cardiology** [birmingham.cardiology@blaise-referrals.com](mailto:birmingham.cardiology@blaise-referrals.com)

**Neurology** [birmingham.neurology@blaise-referrals.com](mailto:birmingham.neurology@blaise-referrals.com)

**ECC** [birmingham.ecc@blaise-referrals.com](mailto:birmingham.ecc@blaise-referrals.com)

Please note that discipline mailboxes are generally monitored Monday to Friday during office hours so emails outside that time may not have an immediate response. Urgent queries are always best sent to [hello@blaise-referrals.com](mailto:hello@blaise-referrals.com) and accompanied by a telephone call.





## Book your tour

Our doors are always open, and we'd love the opportunity to say hello and show you round. You'll have the chance to explore the hospital, meet our dedicated team and understand more about how we work.



**0121 238 2000**

**[hello@blaise-referrals.com](mailto:hello@blaise-referrals.com)**

**[blaise-referrals.com](https://blaise-referrals.com)**

1601 Bristol Road South  
Longbridge – Birmingham – B45 9UA



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