

## **REPORT FOR BVA IN RECOGNITION OF HSB SCHOLARSHIP 2006**

Ultrasound and Small Animal Emergency Service Externship – July/August 2006  
North Carolina State University, College of Veterinary Medicine.

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I was leaving London Gatwick on a Wednesday in late July that was predicted to break all temperature records for the UK and it seemed a little strange since these conditions would normally be expected in the North Carolina climate that I was heading towards. We were 3800 miles and eight and a half hours from Raleigh-Durham so it was a good opportunity to start writing diary-style report to keep track of what went on during my month in America.

My plan was to spend a month on rotations at the NC State College of Veterinary Medicine (NCSU-CVM) on the Ultrasound and Small Animal Medicine Emergency Services. Both of which we don't have direct equivalents of at home in our final year at Cambridge but both disciplines that are guaranteed to be really useful in practice when we finally graduate next year. The NCSU-CVM is a fairly new veterinary faculty being first established in 1978 and it has only been 20 years since its first class of vets graduated. The college has approximately 300 DVM students, 75 graduate students and 55 interns and residents, and provides services for more than 4,000 clients annually. The faculty is based on a large 180-acre campus in west Raleigh, with much of the small animal, equine and farm animal facilities at this main site. The CVM was recently ranked as one of the top four colleges of veterinary medicine in the US and its faculty student ratio is near the top. So I was looking forward to being able to learn from some of the authorities in their field and to experience some of the excellent facilities on offer.

Landing was ironically enough delayed due to bad weather and then it took some time to negotiate the elaborate passport control and customs area. Eventually I made it to the graduate housing complex I had been fortunate enough to rent for the month and was pleasantly surprised I had some luxuries like ... a bed! (as I had been told the studio would be unfurnished). Also the air-conditioning was a tremendous bonus as I hadn't been prepared for the level of humidity I experienced as I was walking around outside. I now had a few days to adjust to the time difference, work out how to get around and buy some basics before starting at the vet school on the Monday morning. I thought it would be good idea to introduce myself at the vet school the week before starting but an initial foray on foot turned out to be an abortive attempt as the hot and humid conditions became too much to endure for the full 3 mile stroll! So I elected to head for the safety of the nearest supermarket and pick up some supplies and head home by taxi.

The next day I finally made it to the vet school by navigating the initially slightly confusing bus system and was impressed by its size and facilities. I had a brief tour around the small animal department and was introduced to the ultrasound department that I would need to find on the Monday morning. I was also shown out to the equine hospital and temperatures generated there made me quite relieved that I was going to be spending my time in the relative comfort of indoors.

On Monday I met the other students on the ultrasound rotation for the following two weeks. Both from St George's University on Grenada they spend their final year within various US or other international teaching hospitals, completing rotations along with the rest of the students from the vet school. So it was really interesting to hear of the different routes we had taken to get to this Monday morning in North Carolina. I think it was a bit more a culture change for them than me! The morning involved a brief run-through the ultrasound machines used in the department and handing out of the textbooks we would be reading and producing our four projects from over the course of the next two weeks. Without much further ado cases started arriving on a busy schedule that took us through most of day. Some cases were awaiting ultrasound from a busy weekend emergency shift and filled me with a bit of apprehension about my final two weeks, but plenty of time to think about that later. The ultrasound department is a good place to get to know the clinicians and the cases that are in the hospital as good percentage of cases for medicine and surgery come through imaging at some point during their stay. So this was a great chance to see the kind of cases dealt with and some of the types of surgeries and treatments used. From oncology patients that required their conditions to be staged and suitability for treatment to mapping of mast cell tumours prior to resection. Medicine patients were also a good opportunity to follow cases through the week as things like ureteroliths were checked for progression and response to treatment on a number of occasions.

The first couple of days of ultrasound were spent just helping to prepare and sedate patients for examination, getting used to the images produced, normal appearances and how to examine the abdomen. At first it all seemed like a bit of another world and it was difficult to concentrate on the images for the whole day. However as time went on, normal anatomy started to become more familiar and understanding of some of the common artefacts produced meant that each case was becoming more meaningful. The images became clearer and more tangible later in the week and it was possible to start making diagnostic sense of what was being done. We could comfortably identify the major abdominal organs and make judgements on their appearance and texture and likely pathology. We were learning new things with each case but the repetition of normal in the range of different animals that came in was vital in differentiating pathology. I was also surprised by the number of animals that were untroubled by the ultrasound procedure and often no sedation was necessary at all. As part of the rotation we were encouraged to make a gelatine phantom model to practise our aspiration technique. When it appeared the next day a freezer bag had been filled with coloured gelatine and a few surprise objects plus the requisite grapes and carrot. We all discovered that grapes are surprisingly difficult to aspirate, particularly in gelatine becoming increasingly more liquid as time went on! Nevertheless after some persistence we managed to perfect the technique and move onto the comfortably easier task of aspirating from urinary bladders for ultrasound guided cystocentesis. We eventually managed to decipher that the mystery objects were various types of melon and sections of gherkin in an interesting new version of the animal, vegetable, mineral game!

As part of our rotation we also had the opportunity to come in early twice a week and practice some of the techniques we had been taught and seen during the examination of the hospital's cases, on Joan. Joan was a Beagle kept by the vet school, who happily donated her time and abdominal contents for our examination! It was invaluable to get this hands-on experience as it consolidated what we were seeing throughout the rest of the week.

With the CVM covering such a large catchment area the number and variety of cases was amazing. It was also interesting to hear about some of the other concurrent conditions in animals that we saw that didn't necessarily relate to our examination. The number of snake and exotic insect bites was a little worrying. We examined cases such as porto-systemic shunts, made assessments of renal morphology and identified conditions such as hydronephrosis. It was fascinating to see adrenal glands affected by adrenal tumours and changes in adrenal size and morphology in pituitary dependent hyperadrenocorticism. We saw conditions such as renal calculi, peritoneal effusions, chronic hepatic disease and acquired shunt development. Cystitis, cholecystic calculi, inflammatory bowel disease, prostate gland pathology, intestinal foreign bodies and how to make assessments and aspirates of various abdominal masses were all covered. It was particularly useful to see the situations in which it is useful and / or safe to take aspirates of abdominal structures and the difficult job (for us) of identifying and assessing various abdominal lymph nodes. We even scanned the hindlimb flexor and extensor tendons in relation to a lameness case in a poodle. The appearance of steroid hepatopathy was a fairly frequent finding, as were renal cortical cysts. Even some thoracic imaging was performed although this was usually reserved for the cardiology service. As you can see the list goes on and on but suffice to say the experience was invaluable and hard to come by in any other EMS placement I have encountered at home in the UK.

My time on ultrasound also provided the opportunity to see a little of Raleigh including seeing a performance at a comedy club, which was entertaining but where I think a little more local knowledge may have helped get the best out of it! We also had chance to see a public open-air concert organised by the state authorities and although I'd never heard of any of the performers the atmosphere was good!

Having finally adjusted to my new time zone I had to brace myself for further body-clock confusion by starting the emergency rotation the following Monday. The CVM has been running its out-of hours emergency room for just a year or two and as you might expect it can be very unpredictable in nature. We were rota'd on in weekday shifts from 5pm to 8am with rounds at 4pm each day to go through cases we'd seen or to discuss pertinent topics in the realm of emergency medicine and critical care. We also provided cover 24hrs a day over the weekends so I knew the following two-weeks were probably going to fly by. That was certainly the case on the first night when following a healthy discussion about fluid therapy and emergency resuscitation we were quickly initiated with a fairly brisk night's activity. As with any new place it took some time to get used to the necessary paper work and procedures but I did at least have a little head start with having completed at least one rotation within the hospital. I think accent and manner also provided some novelty value for a number of the clients who seemed keen to share their experiences of England and to procure tips on where to visit on their next vacation!

Again we saw such a variety of cases, including the emergency stabilisation of diabetic keto-acidosis, many cases of decompensated cardiac failure, seizure management, acute vertebral disc disease, cases of vomiting and diarrhoea amongst others. It was also interesting to consider cases where differentials would include what would be regarded here as fairly exotic. For example Ehrlichia testing and heartworm were important to consider and we even had a number of cases of snake bites on one particular night. The pictures below show the dramatic effect that an unwelcome back yard visitor can have! Fortunately in the location we were in Copper head snakes greatly outnumber the far more dangerous Rattle snake. I even managed to get a close up view for comparison, although this was in the danger free environment of a local aquarium that I was able to take time out to visit on one of my free mornings. So many of

the things I picked up on this rotation will be directly useful when I am on clinics back at home although it may be some while before a venomous snake bite is quite so high on my differential list!

The problem-orientated approach used to these cases reinforced the process used on rotations at home but thinking about it from a different angle in an emergency setting really helped to develop my approach and pick out the important details in a case history and to prioritise them into those which are most life-threatening and most diagnostic and how best to rationalise treatments to facilitate stabilisation of the patient. This was a great rotation to gain the experience of many medicine cases and initial work-ups but then being able to transfer cases to the relevant department the next day and move onto a fresh crop of cases the next night, even if the hours were a little less sociable.

My final week in North Carolina was very feline orientated. Firstly I was introduced to the resident cat blood donor colony. I've never been in a room like it; it was a cat lover's dream. It housed around 12 beautifully natured cats of various types all desperately vying for your attention but despite this getting on with one another impeccably. I found that it was easy to spend quite a lot of time with them and still feel guilty about leaving.

In addition to this, the weekend before finishing my rotations coincided with the CatNip charity's monthly spay/neuter day. This was a small voluntary organisation that took feral cats from the surrounding urban and rural areas for neutering and attending to routine health care needs. The organisation used a team of volunteers to trap cats in the preceding few days and then other volunteers and staff / facilities from the veterinary faculty to complete an impressive operation where up 100 cats are induced, prepared, neutered and recovered in an incredibly short time. The pictures below show a few highlights of this awesome task. I was involved in the recovery monitoring of many patients that Sunday and although pretty hectic it was a very rewarding experience.

My visit to the North Carolina has been a fantastic experience that has greatly extended my clinical knowledge and allowed me to develop perspectives that I can benefit from for the rest of career. I would like to thank all the staff and other students (and Joan) that were so helpful to me during my time in America and also to the trustees of the Harry Steele-Bodger Memorial Fund for their generous award, which enabled me to undertake this visit. I would also like to express my gratitude to St Edmund's College and the Department of Veterinary Medicine in Cambridge that have made it possible for me to take advantage of such a prestigious award. I can already feel the benefits of my time abroad and believe that I will gain far more from the time I now spend on clinics at home as a result of what I have learned. I look forward to putting these skills into practice during the remainder of my final year at Cambridge.