



Veterinary Specialist Group

The Next Step

EXPERTISE • TECHNOLOGY • COMPASSION

Hyperbaric Oxygen Therapy (HBOT) - by Debbie Simpson

Hyperbaric oxygen therapy (HBOT) is the administration of 100% oxygen at pressures greater than one atmosphere. It involves the use of a pressurised chamber and the provision of 100% oxygen for respiration.

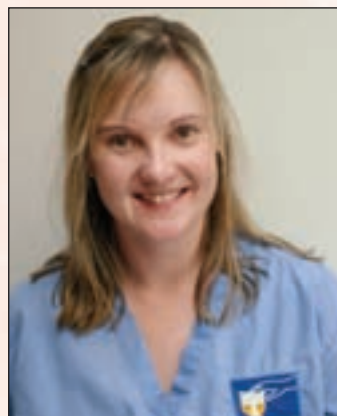
It has been used in human patients for over 50 years for a variety of reasons including diving-related injuries and non-healing wounds but is relatively new in the field of veterinary medicine. The main indications for veterinary therapy (based on experience in the human field) are likely to be for inflammatory and traumatic conditions such as pancreatitis, brain and spinal cord injuries, acute intervertebral disc herniation, muscle and tendon injury; for acute ischaemic conditions such as compromised skin flaps or grafts, aortic thromboembolism, reperfusion injuries and near drowning; for infectious conditions such as abdominal sepsis, severe wound infections and osteomyelitis; for problem wounds such as burns and also to accelerate healing post-surgery for a variety of conditions.

In July 2008 the Veterinary Specialist Group began using HBOT on in-house patients, and to date about 15 animals, both dogs and cats, have had the benefit of treatment. Treatments are 90 minutes long and depending upon the condition involved anywhere from three to ten treatments are given. It is hoped in the near future to be able to offer this service on an outpatient basis. If you would be interested in this service please feel free to contact VSG® reception on 09 845 5455.



Canterbury Resident in Training

Dr Gidget Henderson graduated from Massey University in 2005. Gidget spent two and a half years in small animal practice in Dunedin before joining the VSG® team in July 2008 as a Resident in Small Animal Medicine. The plan is for Gidget to be part of a Small Animal Medicine team based in Christchurch in conjunction with Veterinary Surgical Specialties (VetSpecs). Gidget is beginning a recognised Residency program under the auspices of the Australian College of Veterinary Scientists (ACVSc), aimed at Fellowship.



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The Veterinary Specialist Group hospital is located on the Unitec campus situated between Gates 2 and 3 on Carrington Road.



Hill's Pet Nutrition - A new Partnership for VSG®



Dr. Pru Galloway.

Like our other sponsor Pfizer, Hill's is a very strong supporter of the New Zealand veterinary profession. They provide support for undergraduates from the first year (Veterinary Leadership Experience program) on through to final year and beyond (free scrubs and stethoscopes, funds for texts etc). Hill's actively financially support continuing education for veterinarians and are Diamond Sponsors of the NZVA. It is worth noting that without sponsorship support from companies like Hill's and Pfizer the registration costs for NZVA conferences would rise by \$300 - \$500 per delegate.

We are very lucky to have such support. The list of Hill's support to the profession is too long to document here but does

This year VSG® has been very fortunate to formalise a partnership with Hill's Pet Nutrition. We have always had close ties with Hill's through our long relationship with Dr Pru Galloway but this sponsorship agreement is a new level of engagement.

include free in-house feeding for patients at Massey University, CE events, funded speaker tours, sponsoring VetScholar courses, technical support from nine veterinarians in Australia (including four specialists) and the list goes on. VSG® thanks Hill's for their ongoing sponsorship.

Hill's sponsorship allows VSG® to continue our CE program through our VSG® Seminar Series (keeps the wine and food quality high), helps publish The Next Step newsletter in your hands and free in-house feeding of our patients. All this before we talk about the excellent product range this company has. VSG® welcomes our new sponsor and looks forward to a long, mutually beneficial relationship.



Hill's were the financial sponsors of the Veterinary Leadership Experience (VLE) for first year Massey University veterinary students. VLE was held for the first time this year in July at a camp in the Pohongina Valley. VLE was a joint initiative between Massey University, the NZVA and Hill's.

Hill's™. Your first choice for weight loss.

With Hill's™ Prescription Diet™ Canine r/d™ dogs lose at least 22% body fat in 8 weeks while maintaining lean muscle mass.¹

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- Lower stool volume.¹



To see how Prescription Diet™ r/d™ can make a real difference for your clients, contact your Hill's representative or call the Hill's Vet Consultation Service on 0800 344 557 in New Zealand



Clinical Nutrition to Improve Quality of Life

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Yonkers RM, Frantz NZ, Friesen KG. Effects of 3 Canine Weight Loss Foods on Body Composition and Obesity Markers. 2007.

Boz's Oesophagus a Big Problem - by Jane Finlayson, Backbone Marketing

Boz and Mack are seven month old Labrador Retrievers, who like most young pups like to get up to a bit of mischief. Along with two cats, Oscar and Gus, they entertain Sue and Andrew Powers and their daughter Maddy with their antics.

The Power's puppy ordeal began when Boz and Mack were only ten weeks old. The family were visiting their property at Mangawhai and the pups were doing what Labrador's do so well - eating everything and anything in sight; mud, swamp water and possum poo included.

Suddenly Mack started vomiting, followed swiftly by Boz. Mack recovered quickly after expelling the offending material but Boz just kept retching. When there was no let up Sue and Andrew took Boz to Mangawhai Vet Centre where he was soon under the care of Mike Macartney. Mike initially suspected a foreign body or poisoning, however treatment didn't provide relief for the distressed pup. Late on Saturday night Sue was so concerned for Boz that they took him to Maungaturoto for emergency care. Exploratory surgery was carried out at Mangawhai the next day but still there was nothing identified as the cause of Boz's illness.

After several days of limited improvement followed by relapses the Powers' family readily agreed that a referral to VSG® would be in Boz's best interests "We would've done anything to save him."

Darren Fry saw Boz and diagnosed megaesophagus. "This congenital condition must have been aggravated by what Boz had eaten and once he started to vomit he couldn't stop."

Treatment has proven successful for Boz and he has slowly changed back to a near normal diet. Sue says "I still feed Boz with the bowl elevated to help the food go down but other than that he is eating normally and you'd never know that he had once been so terribly sick."

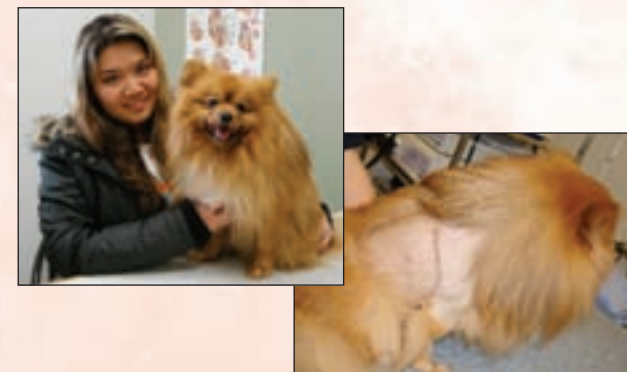
Sue says "Our experience with VSG® was absolutely fantastic and we couldn't recommend them highly enough. I honestly believe that Boz was loved back to life by the nurses who doted on him."

"Boz is a big softy who always aims to please and loves to be close. I am convinced he is all the more affectionate because he was so gravely unwell". Sue says that she has no doubt that Boz wouldn't have made it without Mangawhai Vets and VSG® and their family is very grateful to have him back.



Boz (left) and Mack.

Prada is Back Strutting His Stuff - by Jane Finlayson, Backbone Marketing



Prada Kelman is a friendly 3 year old male Pomeranian who is a special friend to his young owners Gizelle and her good friend Gabrielle.

As his name suggests Prada loves to strut his stuff so Gabrielle would walk him in the morning and Gizelle would walk him in the afternoon. One morning when Prada got short of breath, began to cough and insisted on going home to rest Gabrielle phoned Gizelle quite concerned. Over the next couple of hours Prada's condition deteriorated so Gizelle took him to Paul Elliot at Bucklands Beach Veterinary Hospital.

Paul says "Prada was struggling to breathe and his heart,

though difficult to hear, suggested an arrhythmia. He was however nice and calm so we x-rayed his chest and found he had suffered a spontaneous pneumothorax. His pulse was very weak and we felt that his case would be best seen by VSG® where any complications could be monitored and responded to on the spot.

Danielle Bowles and Richard Jerram managed the case and took the time to explain what was required to return Prada to better health.

Gizelle says it was very upsetting to find out that her little friend was so sick and that his care was going to cost a significant amount of money. "VSG® were really helpful and gave us an accurate figure on how much the surgery would cost. We couldn't afford to lose him though, so we went ahead and made the arrangements."

Gizelle says "Everything went really well and Prada just loved going in for his checkups. He's always happy to see the nurses who looked after him so well after his surgery so that shows me that they really give them great care and attention."

"He's out enjoying his walks twice a day again now. I'd definitely recommend VSG® to other pet owners and don't regret spending the money on our special friend."

Megaoesophagus in a Labrador Puppy - by Danielle Bowles

Megaoesophagus is a syndrome characterised by dilation and aperistalsis of the oesophagus. The underlying pathophysiology of megaoesophagus is not fully understood, however a defect in the oesophageal neural function associated with distension is suspected. Idiopathic megaoesophagus is seen most commonly. Other conditions are associated with megaoesophagus including lead toxicity, hypoadrenocorticism, vascular ring anomalies, strictures, oesophagitis, oesophageal foreign bodies and myasthenia gravis. Congenital megaoesophagus is uncommon.

The most common clinical sign associated with megaoesophagus is regurgitation. Many patients present with a history of 'vomiting' according to the owner and a high clinical suspicion and careful questioning is often necessary to differentiate between true vomiting, which is an active process, and regurgitation which is a more passive process. It can be very difficult to differentiate between the two, especially in cats, who can have quite violent appearing regurgitant efforts.

Although regurgitation is a salient feature of megaoesophagus, many other clinical signs can be seen including weight loss or emaciation associated with a good appetite, coughing, dyspnoea and/or pyrexia associated with inhalation pneumonia, other gastrointestinal signs associated with lead toxicity or hypoadrenocorticism and generalised muscle weakness associated with myasthenia gravis and other neuropathies.

Diagnosis of a megaoesophagus is often made on survey radiographs of the neck and thorax. Radiographs show an air, fluid or ingesta filled oesophagus with a tracheal stripe sign. A radio-opaque foreign body, inhalation pneumonia or cranial mediastinal mass effect may also be seen on plain radiographs. Contrast radiographs may be necessary to confirm the diagnosis and can help rule out strictures, foreign bodies or vascular ring abnormalities. Idiopathic megaoesophagus is a diagnosis of exclusion, and a lead level, acetylcholine receptor antibody test and a random cortisol concentration or an ACTH stimulation test are needed to rule out other causes.

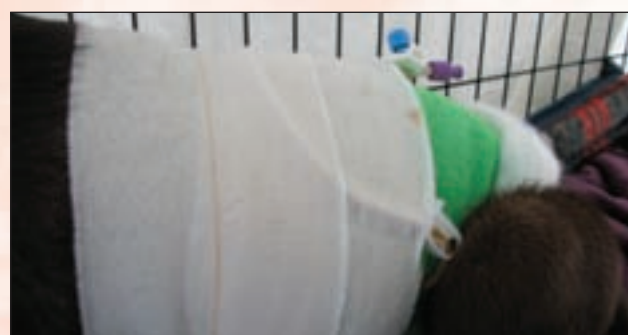
Unfortunately, not every clinical case has read the textbook, making the diagnosis of a megaoesophagus frequently a clinical challenge. Boz was one of these patients. Boz and his brother Mack, like typical Labrador puppies, found an irresistible pile of something on the family farm. Both puppies vomited immediately after consuming the unidentifiable substance. Mack recovered uneventfully after his vomit however Boz continued to vomit profusely. Given the scavenging history, an intestinal foreign body was suspected at the referring vet clinic and an exploratory laparotomy was performed. No abnormalities were found and he was referred for further work up.

On presentation he was quiet, depressed, lethargic and a very unhappy puppy. He retched frequently during the initial consultation. On careful questioning the description of the vomiting given by his owners was consistent with both vomiting and regurgitation. Vomiting secondary to dietary indiscretion and regurgitation secondary to oesophagitis from frequent vomiting or a congenital megaoesophagus was suspected. Thoracic radiographs showed a dilated cervical

and intrathoracic oesophagus and an alveolar pattern in the ventral cranial lung fields consistent with inhalation pneumonia. Other causes of megaoesophagus were ruled out based on blood tests (cortisol concentration and lead levels). Endoscopy showed no gross evidence of oesophagitis and a tentative diagnosis of congenital megaoesophagus was made. A PEG feeding tube was placed and Boz was started on empirical treatment in case he had microscopic oesophagitis - ranitidine and sucralfate - analgesia, ondansetron and metoclopramide for nausea associated with a presumed gastritis and antibiotics for his inhalation pneumonia. Boz was hospitalised for 8 days over which time the frequency of regurgitation decreased. He was discharged and initially was fed and medicated entirely through his PEG tube. Repeat radiographs 2 weeks after discharge showed a persistent megaoesophagus in spite of oesophagitis treatment. Boz continued to do well and started eating solid food when fed from a raised position. Three months on, Boz is the same size as his brother and is tolerating raised feeding well. Repeat radiographs have shown a persistent air filled oesophagus but no obvious oesophageal dilation.



Boz during his first weekend in hospital. He was regurgitating fluid out his nose and mouth even with instructions for NPO. He tolerated his PEG tube very well.



The PEG feeding tube with bandage covering to protect it from a hungry Labrador puppy brother.

A familial predisposition to congenital megaoesophagus is seen in Labrador Retrievers as well as other breeds. Although we were initially hopeful that Boz was suffering oesophagitis secondary to vomiting from his dietary indiscretion, the presence of the persistent air filled, dilated oesophagus in spite of time and treatment for oesophagitis is highly suggestive of a congenital megaoesophagus. Although most congenital megaoesophagus patients become clinical once they start eating solid food, it seems that Boz was tolerating feeding well until the vomiting started. Boz is exceeding the expectations of both the medicine department at VSG® and his owners, and we are hopeful he will continue to astound us with his progress.

Spontaneous Pneumothorax - by Richard Jerram

Spontaneous pneumothorax is defined as the development of air within the pleural space in the absence of trauma or iatrogenic causes. Spontaneous pneumothorax has been described in veterinary patients secondary to bullous emphysema, parasitism, bacterial and viral pneumonia, neoplasia, and pulmonary abscess formation. The most common cause of spontaneous pneumothorax is reported to be the rupture of pulmonary blebs or bullae.

Pulmonary blebs occur when air escapes from the lung parenchyma and becomes trapped between the layers of the visceral pleura. Clinically these appear as small blister-like lesions on the surface of the lung commonly at the lung apices.



Pulmonary bullae are generally large air-filled spaces within the lung parenchyma that occur when numbers of adjacent alveolar are destroyed. Pulmonary bullae may not be visible clinically on the surface of the lung.



In humans, spontaneous pneumothorax is reported most commonly in adolescent, tall, ectomorphic males. There is also an association with an increased incidence of spontaneous pneumothorax in cigarette smokers, divers and pilots. Theoretically, it is assumed that small airway obstruction results in formation of pulmonary bullae or blebs and that a change in atmospheric pressure or mild trauma results in rupture of air-filled structure. The subsequent development of a tension pneumothorax becomes an emergency situation that if not aggressively treated can be fatal. It is not known whether the pathophysiology of canine spontaneous pneumothorax mimics that of humans, however, the required urgency of treatment is no different.

The classical clinical sign of spontaneous pneumothorax in dogs is respiratory distress that may be acute in onset. Tachypnea, increased respiratory effort, tachycardia, and anxiety are common presenting features. Radiographs of the thorax typically reveal bilateral pneumothorax (an air-filled pleural space, partial pulmonary collapse, retraction of lung margins from the chest wall, and elevation of the heart shadow off the sternum in the lateral radiographic view); however, unilateral pneumothorax has also been reported. Pulmonary bullae are occasionally evident radiographically.

Initial emergency clinical treatment should consist of thoracocentesis and/or thoracostomy tube drainage. Tube



drainage is not reported to be effective in resolving pneumothorax in dogs with pulmonary blebs or bullae. The recurrence rate reported is greater than 70%. Definitive treatment for dogs with spontaneous pneumothorax due to pulmonary blebs or bullae should involve surgical resection with partial or complete lung lobectomy. A median sternotomy approach is recommended, however, a lateral thoracotomy may be appropriate when an individual bulla is evident on radiographs. As pulmonary blebs or bullae may be present on more than one lung lobe a careful exploration of the thoracic cavity should be performed and the use of automatic stapling devices for partial lung lobectomy is recommended. Pleurodesis, the production of adhesions between the parietal and visceral pleurae, has been advocated as treatment for spontaneous pneumothorax in humans by using mechanical abrasion or chemical sclerosis. This was the topic of my research project during my residency where mechanical abrasion and talc slurry failed to produce satisfactory adhesions in normal dogs. Further research would be necessary to determine whether pleurodesis may be effective in dogs with pulmonary blebs or bullae.

In Prada's case, the spontaneous pneumothorax appeared to result from a single large bullous lesion within the right middle lobe. Therefore, a lateral thoracotomy was chosen as the surgical approach of choice. Surgical treatment consisted of complete lung lobectomy using an automatic stapling device. Postoperative care consisted of intermittent chest drainage, oxygen therapy, and a continuous rate infusion of fentanyl for postoperative analgesia. Prada has made an excellent recovery from surgery. Histopathology of the resected lung confirmed a diagnosis of bronchiectasis and bullous pulmonary disease with no obvious underlying cause identified. The underlying reason for the development of the large bullous lesion in Prada's lung lobe is undetermined.



For The Imaging Geeks - Test Your Knowledge - By Chris Warman

- A 20-kg body weight, mixed breed dog, was evaluated with an echocardiogram. The following values were recorded. Which of the cardiac parameters recorded would be considered normal for this body weight?

 - left atrial diameter = 3.8 cm
 - end-diastolic left ventricular internal diameter = 4.6 cm
 - end-systolic left ventricular internal diameter = 3.1 cm
 - systolic left ventricular free wall thickness = 1.1 cm
 - LV PEP/ET ratio = 0.7
- When performing cystography, moderate distention of the urinary bladder is achieved by the instillation of: -

 - 2 mg/kg of contrast
 - 3 mg/kg of contrast
 - 4 mg/kg of contrast
 - 5 mg/kg of contrast
 - 6 mg/kg of contrast
- In addition to perifetal free gas, overriding of the calvarial bones is considered a radiographic feature of in utero fetal death. The overriding of the skull bones is frequently called: -

 - the Dunlop sign
 - the Slazenger sign
 - the Spalding sign
 - the Wilson sign
- A feline patient reveals the following echocardiographic parameters. Diastolic septal wall thickness = 7mm, diastolic left ventricular free wall thickness = 6 mm, diastolic left ventricular chamber diameter = 11 mm, systolic left ventricular chamber diameter = 5mm, left atrial diameter of 17 mm and a shortening fraction of 55%. The above values would be consistent with: -

 - dilated cardiomyopathy
 - hypertrophic cardiomyopathy
 - unclassified or ischemic cardiomyopathy
 - restrictive cardiomyopathy
- A rapid intravenous infusion of iodinated contrast media, for intravenous urography, is given at a dose rate of 800 mg of iodine/kg if normal renal function is present. If the creatinine is greater than 180 $\mu\text{mol/l}$ the dose required is: -

 - 400 mg/kg
 - 600 mg/kg
 - 1000 mg/kg
 - 1200 mg/kg
 - 1600 mg/kg
- The accuracy of the vertebral scoring system (VHS) in detecting cardiomegaly in the Boxer is:-

 - 58%
 - 68%
 - 78%
 - 88%
 - 98%
- Which of any of these dogs has an abnormal vertebral heart score?

 - Labrador with VHS = 11.6
 - King Charles Spaniel with VHS = 11.2
 - Boxer with VHS = 12.1
 - All of the above
 - None of the above
- In abdominal radiography, the diameter of small intestinal loops in a normal feline patient should not exceed: -

 - 8mm
 - 10mm
 - 12mm
 - 14mm
 - 16mm
- In the dog, the saggital length of a normal kidney, relative to L2, when measured on a VD image is: -

 - 1.75-2.25 times L2 length
 - 2.00-3.00 times L2 length
 - 2.50-3.50 times L2 length
 - 3.00-4.00 times L2 length

10. What is the primary problem in this case? Typical radiology test, with no history given.



The prize is the winner's choice of a bottle of **Dom Pérignon** or a Veterinary Imaging textbook (choice at discretion of Chris Warman). Please email your answers to office@vsg.co.nz by 31st October 2008. Answers will be available on the website www.vsg.co.nz from November 2008. Previous quiz answers also available on the website.

Winner of the Medicine Quiz

Congratulations to Melissa Alley at Franklin Vet Services, Pukekohe, who is the winner of the Medicine quiz from the July newsletter. Melissa chose a Nelson & Cuoto textbook as her prize.

Provet Diagnostic Imaging Atlas (DIA) - by Mark Robson

VSG® is very pleased to be an early adopter of the Provet Diagnostic Imaging Atlas (DIA). We are very grateful to Provet for donating this very innovative program for our use. At VSG® we have always tried to play an educative role. We teach nursing students, veterinary students and house officers and we work with practising veterinarians who come to VSG® for seminars or to see practice. We have also tried to make sure that clients leave here with a deep level of understanding about their animal's problem and what procedures have been performed.



It is impossible to convey the depth and breadth of the images and animations that are incorporated into DIA. This single image of a feline kidney can only give a glimpse of what is available.

We believe that DIA is the most exciting teaching and client-education tool that we have ever seen. The graphics are

amazing and the group behind the program have taken an incredibly comprehensive look at how imagery will best serve the needs of the profession when trying to communicate complex concepts to pet owners.

It is a well-known fact that educated clients are good clients, and in these days of everyone being internet-savvy, modern pet owners are receptive to a high degree of technical information from their vets. In fact they will go elsewhere for this information if it is not readily provided. DIA would provide every practice with a peerless way of informing owners about the "insides" of their pet, and what has gone wrong.

We don't see a limit to this type of technology as momentum builds, and encourage everyone to get with your Provet rep and have a good look at DIA. We think you will become fans very quickly!

