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## Saving a Life: An Account of an Emergency Case

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## *Saving a Life*

**O**n Thursday, February 3, we had the unfortunate need to use the veterinary hospital to care for our dog, Erie. We want to share our experience with you and to thank the “family” at VHUP that cared for Erie and the two of us.

Thursday night at 10 p.m., after running outside, Erie suddenly became weak and was unable to walk. His pulses were poor and his mucous membranes were gray. We gave him a physical examination at home and were unable to identify a cause for the sudden shock. We drove the 30 minutes to the VHUP emergency service.

Dr. Kristen Hibbets and nurse Danielle Pino examined our dog, started fluid therapy to treat shock, and drew blood. The presence of an ultrasound in the emergency room allowed Kristen to confirm a pericardial effusion (fluid around the heart); Kristen and Susan then performed pericardiocentesis (fluid withdrawal) which produced frank blood. Within minutes of the centesis, Erie’s mucous membranes became pink and his pulses stronger. Erie remained stable until 4:30 a.m.

At 4:30 a.m., Dr. Phil Mayhew called us and informed us that Erie was pale again. We returned to the emergency room where ultrasound was repeated and identified a new accumulation of blood around the heart. Centesis was again performed; more blood was removed, and the emergency room nurses cared for his hydration and perfusion states. A rather tenuous stability was achieved and we waited until morning to discuss therapy with the specialists. During this time Erie was monitored via Dynamap, continuous ECG, blood gas analysis, the new coagulation monitors, and constant re-evaluation by nurses and students in the emergency room.

At 7 a.m., by using our portable phones, we contacted both Drs. Nuala Summerfield and Dan Brockman, who were on their way to work, and described Erie’s condition. By 7:30 a.m., Erie was being examined by both the sections of cardiology and surgery. Dr. Summerfield, using the cardiology echocardiogram, identified a mass associated with the

right atrium. Dr. Brockman spent very useful time telling us our surgical and non-surgical options to treat the suspected heart base mass and to control the hemorrhage. By 8:30 a.m., Susan and I decided to have Dan perform a pericardectomy and to visually evaluate the right atrium. Dan arranged with the blood bank, specifically Kym Marryott, to have whole blood and plasma ready; due to Erie’s status as a blood donor, his blood type was easily available on file. Crossmatching, CBC, serum chemistry analysis, and coagulation profiles were immediately collected and delivered to the laboratory with the aid of Dr. Clif-

ford. Blood freely flowed through this hole between the atrium and the pericardium resulting in pressure on the heart. Dan and Greg removed the pericardium, performed a partial resection of the mass, and oversewed the defect in the atrial appendage. The mass was sent to the veterinary school’s biopsy service for evaluation. Post-surgery, Erie was moved to ICU to recover. He received additional whole blood. Erie’s mucous membrane color returned to normal and his blood pressure stabilized.

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### *an account of an emergency case*

*by Drs. Charles Vite and Susan Volk*

ford, and were analyzed immediately by our diagnostic laboratory before the results were faxed to ICU. The entire intern group, with special mention of Dr. Amanda Boag, and Dr. Callan, helped to cover Susan’s medicine patients so that she could attend to Erie.

Erie was transferred to ICU where he was given blood and plasma, a third pericardiocentesis was performed to remove 500 ml of blood, and he was judged to be stable for surgery by ICU clinician Dr. Colleen Brady. During this time our pharmacy staff rapidly provided the medications and equipment necessary to help stabilize Erie. Nurses wheeled him across the hall to be prepped for surgery. Following induction of anesthesia and positioning for surgery, he rapidly decompensated. Dr. Sandie Perkoski and nurse Tonya Foster worked to stabilize his blood pressure while Drs. Brockman and Griffin performed an immediate sternotomy and opened the pericardium which helped to stabilize our dog. In the meantime, Dr. Lesley King collected blood from her dog Legend, and Erie was transfused with Legend’s blood to help treat severe blood loss and thrombocytopenia. At surgery, a small tumor was found in the wall of the right atrium; the center of the tumor was necrotic and resulted in a hole between the atrium and the peri-

cardium. Blood freely flowed through this hole between the atrium and the pericardium resulting in pressure on the heart. Dan and Greg removed the pericardium, performed a partial resection of the mass, and oversewed the defect in the atrial appendage. The mass was sent to the veterinary school’s biopsy service for evaluation. Post-surgery, Erie was moved to ICU to recover. He received additional whole blood. Erie’s mucous membrane color returned to normal and his blood pressure stabilized.

By 4 p.m., he had produced over 500 ml of blood from his chest tube. Although appearing stable, he continued to lose blood three hours after surgery suggesting that re-exploring the thorax would be necessary. The earlier blood loss and the neoplasm had depleted Erie’s platelets and clotting was likely impaired. At this point we had the defensible choice to discontinue further therapeutics, make him comfortable, and spend some final moments with him. Maybe that was even the correct thing to do considering his likely long-term prognosis and his immediate condition. He had already received two units of whole blood, three units of packed red cells, and eight units of plasma and was still unstable. However, the choice was really never a possibility — neither for us nor for the hospital staff. Within minutes, four people and others had volunteered their dogs for blood donation. I walked through the wards to the blood bank headquarters. Here, Donna Oakley, Kym Marryott, and Krista Drew, were collecting blood from waiting donors. Thankfully, the blood would be available not only for Erie but for other emergency admissions. In a week when an eastcoast human blood shortage had been declared, and both a snow storm and ice storm had occurred, and on a day when another two inches of snow fell, both staff and students were traveling to bring in their dogs to donate blood. Moreover, we had to ask the names of many of the people

helping us for we did not know who they were; they all surely did not know Erie, yet they knew what was needed and made it available.

Erie went on to a second surgery to try to control the bleeding into his thorax. Drs. Brockman and Griffin, and student Jenn Hopkinson, re-opened the carefully wired-together sternum, identified bleeding vessels in the mediastinum, cauterized the vessels, and Erie was again in recovery under the observation of the section of anesthesia. He returned to ICU were Drs. Brady, Campbell, and Waddell monitored his recovery.

This experience left me, as a veterinary neurologist, with a little role. In fact, it allowed me only the role of a client able to intimately watch the functioning of our hospital; an opportunity that not even the most dedicated of our clients is able to experience. I was in awe of the way that each person functioned specifically and independently in caring for Erie and yet completely contributed to his excellent care. I was



brought to tears at the way that people I did not even know volunteered to

have blood drawn from their dogs to treat a dog they did not know. And finally, I was amazed that when the day ended, all the other cases in the hospital had been cared for in a similar fashion by the same people; that the students were receiving training and experience by caring for Erie and other client-owned animals; and that perhaps for no one else but for Erie, Susan and I, this was an unusual and miraculous day. A nurse in anesthesia summed it up when I thanked her for her help and she replied that it was her job and she treated all cases this way — she was just happy to see it done this time for someone that she knew. Perhaps for me, the place is an extended family, but from what I saw and know, this family works just as hard for those people not directly a part of it. I can only imagine what the client's miss

by only getting to see snapshots of how this place works.

Erie was in ICU recovering from surgery and cared for by a partially new group of clinicians, students, and nurses, all working at the same high level as the group the day before. They deserve the same thanks and respect as all clinicians, nurses, students, and support staff here the day before. When Erie is no longer here we hope to remember all the love and care that all three of us experienced

and to be able to provide it for our VHUP family and to our clients.

*P.S.* Erie recovered and was discharged from VHUP. His final diagnosis was hemangiosarcoma. Erie lived for six weeks following surgery and was happy and playful. He passed away March 26.

*Editor's note: Dr. Charles Vite is a neurologist and a research fellow at the School. Dr. Volk is an intern at VHUP and will begin a residency in surgery in July.* 🐾

## High Risk Pregnancy Program

The High Risk Pregnancy Program at New Bolton Center is twelve years old. It has been housed in its present location, the Graham French Neonatal Section of the Connelly Intensive Care Unit, New Bolton Center, University of Pennsylvania, for 10 years and over 1,000 neonates have been seen there. The program is modeled after regimens developed 20 years ago in human medicine. The intention is to identify high-risk pregnancies and intervene in time to help both the foal and the mare.

There are basically two groups of mares in the program:

1. Mares who have the same problems year after year. We encourage owners to have these mares foal at New Bolton Center to minimize problems. Many of the troubles begin prenatally, and we can monitor the fetus to keep track of how it is doing. Depending on the problem, the fetus can be treated — some treatments are simple, while others are quite complex.

Many mares in this category have problems with the placenta, which can be detected with ultrasound examinations. The most common problem is placentitis (inflammation of the placenta), which can be treated with antibiotics, non-steroidal anti-inflammatory drugs, and by supple-

menting the mare with the hormone progesterone. Placentitis interferes with oxygen delivery. If the mare's blood oxygen level is normal, she still can be placed on supplemental oxygen and this will result in more oxygen being delivered to the fetus.

The fetal heart rate is monitored, and this information is used to determine if the foal is in distress. Although there is still a lot to be learned about interpreting fetal heart rate patterns, there are changes that indicate a positive response after the mare is placed on oxygen.

2. The second group of patients in the High Risk Pregnancy Program are mares with new problems that put their pregnancies in jeopardy. The “new problems” can be anything that needs treatment: colic, laminitis, hernias, and anorexia, to name some common ones. The mare must be treated in terms of how her medical problem and how the treatment (such as medication) affect the fetus.

If a mare is off-feed the fetus is not getting enough nutrients, and we can give the mare an IV and monitor the fetus for distress while the mare is treated. (A mare who is completely off-feed for 36–48 hours without IV feeding is at great risk for aborting seven to ten days later even if she begins eating again). 🐾 *J.R.*