When emergencies arise, you need to know that there is a resource available to you, with leading-edge emergency and critical care clinicians and facilities as well as a knowledgeable, caring staff. The Veterinary Medical Center (VMC) at The Ohio State University is here whenever you and your clients need us, for companion animal, farm animal, and equine cases ranging from neonatal issues to fractures to emergency blood transfusions.

In this issue, we talk about two recent emergency and critical care cases in the companion and farm animal hospitals of the VMC. We also provide a Q&A about the services offered by our Animal Blood Bank, one of the largest in the country. Finally, we provide an overview of our specialty areas, with a more detailed look at the equine ECC area.

As always, I welcome your feedback on how we are doing, especially regarding our emergency and critical care services. We are here for you 24/7/365.

COMPANION ANIMAL EMERGENCY AND CRITICAL CARE

Using CO-Oximetry to Monitor a Canine Case of Smoke Inhalation

Normal human instinct tells us to get out of a building if it is on fire. But a dog is more inclined to help her owner, no matter what the cost. Such was the case when an early morning house fire struck in Columbus, and Cleo, a seven-year-old Bernese mountain dog, ran inside looking for her owners.

Smoke inhalation had left Cleo unconscious and unresponsive when the firemen found her in the home. They brought her to Ohio State, where she was seen by Dr. Andrea Monnig, assistant clinical professor and board certified emergency and critical care specialist in the Hospital for Companion Animals. The emergency and critical care team immediately went to work to assess the extent of Cleo’s injuries.

Upon presentation, Cleo was unresponsive to stimuli and was breathing heavily with increased lung sounds. She was provided with supplemental oxygen, and a CO-Oximeter monitored her carbon monoxide levels, which were initially as high as 21% (normal is 0-1% and greater than 10% is potentially life-threatening).

The Veterinary Medical Center is able to provide the highest level of emergency and critical care, in part because of our state-of-the-art monitoring equipment. CO-Oximetry, available on specialized blood-gas analyzers, measures carboxyhemoglobin and methemoglobin – useful in smoke inhalation cases as well as for a number of toxicities. Detection of these potential alterations in blood oxygen-carrying capacity can be important in helping to guide therapy.

Nova CCX with Co-Oximetry
Fortunately, Cleo sustained no major burns, and her chest radiographs were not suggestive of the secondary pneumonia that can often occur with fire victims.

Cleo was started on IV fluids and allowed to rest in an oxygen cage that could accommodate her large size. The ICU technicians closely monitored her vitals and used CO-Oximetry to track resolution of her high carbon monoxide levels. With the round-the-clock care provided by the dedicated ICU staff, by the next day Cleo had improved significantly – she was still coughing, but was no longer oxygen dependent. After two days of observation she was cleared to go home.

“Cleo’s response to treatment was excellent,” said Dr. Monnig. “In critical cases, close monitoring is often the key to success. With Cleo, we were able to normalize her oxygen levels and do not expect her to have any residual effects from the smoke inhalation.”
FAQ: Animal Blood Bank

A number of you have asked about the services the Animal Blood Bank provides to veterinarians. In this article, we will try to answer some of the most frequently asked questions.

The Ohio State University Animal Blood Bank is among the largest of the six commercial animal blood banks in the United States. In the past, our blood components were used primarily to treat patients at The Ohio State University Veterinary Medical Center, but in the past decade the Blood Bank has expanded its services to distribute blood products across the country. Our staff includes Dr. Cristina Iazbik, managing director of the Animal Blood Bank, and Dr. C. Guillermo Couto, director. They are assisted by Amanda Simons, AHT, and other veterinary technicians.

Q: Do you have products available all the time?
A: Yes. However, if you are planning a surgery ahead of time and know you are going to need blood products, please call us in advance so we can have the product ready for you. Blood components are stored in state-of-the-art freezers and refrigerators in packaging designed to maintain a safe supply for ready access.

Q: How do you obtain the blood products?
A: We acquire our blood products from donor dogs and cats. Most of them are rescued animals that are placed in homes and typically donate every other month or on demand. Currently, we have actively enrolled 90 dog and 90 cat donors.

Q: What products do you offer?
A: We offer the following:

- Canine and Feline Packed Red Blood Cells (RBCs)
  Used in patients with acute or chronic hemorrhage, hemolysis, renal disease, and bone marrow disorders

- Canine and Feline Fresh-frozen Plasma (FFP)
  Contains all clotting factors and albumin; used to treat bleeding due to anticoagulant rodenticide toxicity, liver failure, DIC, or congenital clotting deficiencies

- Canine and Feline Frozen Plasma (FP)
  Contains minimal amounts of clotting factors V and VIII, but can be used to treat rodenticide toxicity, hypoproteinemia, pancreatitis, antithrombin deficiency, or hemophilia B

- Canine Cryoprecipitate (CRYO)
  Rich in fibrinogen, factor VIII and von Willebrand’s factor; used for the treatment of hemophilia A and von Willebrand’s disease. It can also be used as a topical hemostatic in surgery and in patients in DIC

- Canine Cryopoor Plasma
  Contains all coagulation factors except von Willebrand’s factor and factor VIII and can be used in the treatment of rodenticide toxicity as well as the replacement of proteins (albumin and immunoglobulins). **SHOULD NOT** be used to treat von Willebrand’s disease or hemophilia A

Q: What should I do if I have a patient that needs an emergency transfusion?
A: If you need blood products:
Call (614) 688-8460 for emergencies during these hours: Monday to Friday – 7 a.m. to 5 p.m.
Call (614) 292-3551 for emergencies after hours and on weekends/holidays

Q: How is the product transported to me?
A: If the blood products need to be sent overnight, we can use either Fedex or UPS.

Q: What are the prices/protocols?
A: See the Blood Bank website at [vet.osu.edu/vmc/blood-products](http://vet.osu.edu/vmc/blood-products). Along with each component and its description, you can access detailed instructions for the indications and safe utilization of the particular component. As one could anticipate, special handling or storage is often required with each product.

Q: What if I have a particularly complicated case?
A: The veterinarians at The Ohio State University Animal Blood Bank – Dr. Iazbik and Dr. Couto – are available for consultation services when unusual cases or those requiring specialized expertise present to the general practitioner. This service is free of charge.
The Equine Emergency and Critical Care Service at the Galbreath Equine Center sees more than 200 colic cases per year, as well as many other emergencies such as lacerations, septic joints, respiratory difficulty, acute neurologic issues, and other life-threatening disorders.

We are open 24 hours a day, 365 days a year, to provide emergency and intensive care for all equine medical and surgical emergencies.

Board certified criticalists, surgeons, and internists work with residents to provide specialized medical, surgical, anesthetic, and obstetrical expertise for the evaluation and management of horses with life-threatening conditions.

The Galbreath Equine Center includes an Equine Neonatal Intensive Care Unit to provide expert, state-of-the-art care for sick foals. Please visit our website for tips on stabilizing foals for transport. vet.osu.edu/vmc/neonatal-icu

Both the Equine and Neonatal ICU are staffed by experienced, certified animal health technicians who provide the highest quality of nursing care and monitoring to all our patients.

Consultation is available with boarded specialists in anesthesia, cardiology, ophthalmology, neurology, and radiology.

Special equipment and technologies include: stall-side oxygen, blood pressure devices, 24-hour laboratory services (hematology, serum chemistry, blood gas), sling and hoist for recumbent horses, electrocardiography, radiography, and ultrasonography.

### FAST FACTS

**Equine Emergency and Critical Care**

- Anesthesiology and Pain Management
- Arthroscopy
- Cardiology
- Dermatology and Otology
- Diagnostic Imaging
  - Digital Radiography
  - Computed Tomography
  - Magnetic Resonance Imaging
  - Nuclear Scintigraphy
  - Teleradiology Services
  - Ultrasonography
- Emergency and Critical Care Medicine (available 24/7/365)
- Hematology and Transfusion Medicine
- Internal Medicine
  - Endocrinology
  - Gastroenterology
  - Infectious Disease
  - Respiratory Medicine
  - Urology
- Interventional Medicine
- Laparoscopy
- Laser Lithotripsy
- Neonatal Care
- Neurology & Neurosurgery
- Nutritional Support
- Oncology
- Ophthalmology
- Orthopedic Surgery
- Radiation Oncology
- Soft Tissue Surgery
- Theriogenology & Reproductive Medicine
- Intensive Care Medicine
- Monitoring High-Risk Pregnancy in Mares
- Neonatal Intensive Care
- Performance Evaluation & Sports Medicine
  - Lameness Evaluation
  - Dynamic Endoscopy on High Speed Treadmill
  - Regenerative Medicine Therapy
- Blood & Plasma Transfusion
- Downer Cow Stalls with Hoist, Sling, Hip Lifters
- Hydroflotation System
- Theloscope (Teat Endoscopy)