

Veterinary college study and pioneering database tackle most common heart disease in dogs

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Clio, a border collie participating in a clinical trial at the veterinary college, poses with owner Jane Shaw (right) and her daughter Lily Kazaks (left) of Floyd, Virginia.

When Jane Shaw of Floyd, Virginia, brought her 14-year-old border collie, Clio, into the Veterinary Teaching Hospital last fall, she learned about a clinical research study at the Virginia-Maryland College of

Veterinary Medicine at Virginia Tech that might help other dogs with similar heart conditions.

Veterinary researchers hope to determine whether an echocardiogram—a noninvasive type of ultrasound that uses sound waves to measure heart function—can effectively assess the pulmonary pressure on dogs with mitral [valve disease](#). Mitral valve disease is the most common form of cardiac disease in the species, and [pulmonary hypertension](#), which involves abnormally high pressures in the pulmonary vessels, is a typical complication affecting 25 to 30 percent of dogs with the disease.

"Participating in the study seems like a no-brainer," said Shaw, whose sister's pet had participated in an earlier clinical trial at the college. "When I learned that Virginia Tech was doing a study on the same problem that Clio had, I knew we should sign up. This study helps us and it helps other patients with the same disease."

Mitral valve disease occurs when the heart's left valve does not close properly, leading to a backflow of blood. According to Michele Borgarelli, associate professor of cardiology in the Department of Small Animal Clinical Sciences, it affects nearly all dogs over 10 years old, though many will never develop symptoms.

"There are certain breeds that are more susceptible to mitral valve disease, especially small breed dogs," said Borgarelli, who is the principle investigator on the study. "Among these dogs, Cavalier King Charles, dachshunds, miniature poodles, and whippets are more commonly affected."

Like other diseases, symptoms can range from mild to severe. The study, which began in 2013, compares the results of an echocardiogram to the "gold standard" method of assessing pulmonary hypertension used in

human medicine, where a catheter placed in the right side of the heart measures pulmonary vessel pressure.

Borgarelli performs an echocardiogram on each dog enrolled in the study, while his research partner Jonathan Abbott, associate professor of cardiology in the Department of Small Animal Clinical Sciences, takes the same measurement using the catheter. The researchers will not compare the results of each procedure until the study's completion so that they do not inadvertently affect the outcome.

According to Abbott, the catheter procedure is the tried and true way to measure pulmonary hypertension, but it is rarely performed in veterinary practices. If the study finds that an echocardiogram can produce accurate results, veterinarians would know that they have a reliable, noninvasive way to measure this common complication in patients with mitral valve disease.

In a related project, Borgarelli is also spearheading a first-of-its-kind database to serve as a reference library about dogs with mitral valve disease.

"Despite being the most common cardiovascular disease in dogs, we don't have much data to better understand the natural history of mitral valve disease or assess what happens to the dogs once a veterinarian makes a diagnosis," he explained. "Through this database, we are collecting a large amount of data from as many patients as possible and then following them for the next five years."

The database will allow researchers to pose questions about which metrics predict outcomes and which interventions affect prognosis. No such database currently exists for [mitral valve disease](#), but according to Borgarelli, disease registries have proven effective in other veterinary and human diseases. He added, "The preliminary phase of the study

started in October, and we are already tracking data on more than 500 dogs in just a few months."

While patients with a new diagnosis at the Veterinary Teaching Hospital in Blacksburg are entered into the database, the investigators are also broadening their reach through the college's Collaborative Research Network, which was formed in 2014 to enable specialty practices in Virginia and Maryland to participate in the veterinary college's cutting-edge research. They are partnering with Bill Tyrrell, a 1992 graduate of the veterinary college, and other clinicians at Chesapeake Veterinary Cardiology Associates, a group of cardiac specialty practices in northern Virginia and Maryland, as well as the Swedish University of Agricultural Sciences in Uppsala, Sweden, to expand the database.

Provided by Virginia Tech

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