

# Some Dogs Without Heart Murmurs Aren't Safe to Breed

By Susan Chaney

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Veterinary cardiologist [Janet Olson, D.V.M., DACVIM](#), is on a mission to keep heart defects out of your breeding lines. Why? Because she knows that listening to your dog's heart at a dog show heart clinic doesn't provide enough information for her to tell you, "Sure, go ahead and breed this one."

She also knows that it's not just congenital heart conditions – the ones dogs are born with – that breeders need to be wary of. It's also the ones that a dog can inherit, but not show any signs of until it's an adult and already whelped or sired multiple litters.

And while it's never good news when she has to tell a breeder that a dog has subaortic stenosis or tricuspid valve dysplasia, she says, most who receive such diagnoses "want to know. To find out one of their dogs has a defect is heartbreaking, but they want to do the right thing."

Olson, founder of [Veterinary Cardiology Specialists](#), in St. Paul, Minn., adds: "My job is to educate. My job is not to regulate. They go home, and then it's up to them how to proceed."



Golden Retrievers can be tested for subaortic stenosis before they develop heart murmurs. Photo © [Can Stock Photo](#).

Nonetheless, she says the breeders she meets at dog show heart clinics are "proud of their line. They want the best for their breed. They want the best for their dogs. They want to know what the recommendations are."

The heart clinics she and other veterinarians, some who are cardiologists, offer around the country are "very, very well-received," she says.

However, if you're showing your dogs at a show in Olson's territory – mainly Iowa and Minnesota – you're fortunate. Because she practices cardiology in other veterinarians' clinics and hospitals, she has a portable ultrasound machine. So, in addition to listening to your dogs' hearts for murmurs, she can do an echocardiogram, right there, on the show grounds.

"Echos," as they're known, and EKGs, or electrocardiograms, are the studies of the heart that allow Olson and her fellow cardiologists to diagnose both the major congenital heart defects and those that develop after birth, but are also inherited, including chronic degenerative mitral valve disease, dilated cardiomyopathy and Boxer cardiomyopathy.

"The heart clinic was designed to try to help screen for congenital heart disease," Olson says. "Often, congenital heart disease is associated with heart murmurs. One screening test is to listen for heart murmurs" with a stethoscope. It's called "auscultation."

“What we’re finding more and more is that there are definitely congenital and acquired heart diseases that aren’t associated with heart murmurs.

Thus, the portable ultrasound machine.

“What I wanted to do with my background,” Olson says, “was to do this talk and just spread more education and awareness.” She’s recently started presentations on heart disease at dog shows, where she also talks about the breeds that are predisposed to the major heart diseases. One big goal, she says, is “to help breeders understand that just listening for a murmur isn’t necessarily enough, particularly in certain breeds anymore.”

Despite the fact that the Orthopedic Foundation for Animals won’t certify heart screening results done before 1 year of age, Olson recommends that puppies at risk be screened before then. Some puppies have “physiological murmurs” that don’t lead to heart disease, but those usually disappear by 4 months, she says. “What I tell people is it really comes down to what their intention is for that dog. By the time they’re a year old, they’re probably already dedicated to a breeding line. Don’t wait. Maybe you can’t certify them [with OFA], but if you’re intending on breeding these dogs, you need to know earlier.”



Subaortic stenosis is a congenital heart defect seen most often in Rottweilers, Golden Retrievers, Boxers and Samoyeds. Photo © Can Stock Photo.

### The Congenital Biggies

An echocardiogram, done at a dog show or at a veterinary clinic for \$200 to \$300, can help Olson diagnose subaortic stenosis in Golden Retrievers, Boxers, Rottweilers and Samoyeds, the breeds most commonly struck by the disease in which tissue protrudes into the atrioventricular valve in the heart’s left ventricle. Olson says it’s easiest to understand subaortic stenosis if you think of it in terms of hydrodynamics. “If you’re out in a prairie in a nice wide river, then the river narrows and you have rocks creating rapids, at that point the water would be going over the rocks at a higher speed with more turbulence.”

The condition’s severity is rated by how fast blood passes through the valve. Any dog with a rate greater than 2 meters per second has subaortic stenosis. Olson says a dog with a 2.5 or greater should not be bred. “If you have a beautiful dog with a 2.2, and he or she is perfect for breeding in all other respects, you have to be kind of cautious” about removing it from the line. If every dog with a 2.2 in some breeds was pulled, she explains, you could end up with a gene pool that’s “too small.” A dog between 2.2 and 2.5 is “equivocal,” and it can also depend on the breed, she says.



A Labrador Retriever can have tricuspid valve dysplasia without having an audible heart murmur. Photo © [Can Stock Photo](#).

Tricuspid valve dysplasia is most often seen in Labrador Retrievers, Olson says. The tricuspid valve regulates blood flow between the top, or atrium, and bottom, or ventricle, on the right side of the heart. “The valve is just deformed when the heart develops, and you get a leak across that valve that can progress into heart failure.”

A dog can have severe tricuspid valve disease and no heart murmur whatsoever, she says. “Then, you’re breeding that trait into the line. These are dominant traits, so there’s a high likelihood that these traits are going to get passed on.” Of about 500 dogs Olson has screened at dog shows in the last three years, only 20 were Labs.

“Labradors, I feel very strongly, should all have heart screening tests including an echocardiogram” if they are going to be used for breeding, she says, adding that if she was a breeder, she would pull any dog with tricuspid valve dysplasia from her program.

Subaortic stenosis and tricuspid valve dysplasia are the “two big” congenital heart defects that are “silent killers that can get passed on and spread,” Olson says.





Chronic degenerative mitral valve disease, an inherited heart condition, doesn't develop until age 4 or 5 in Cavaliers. Photo © [Can Stock Photo](#).

### **Three Inherited Biggies**

It can be even more heartbreaking to find out your dog has an inherited heart condition because you typically won't learn this until the dog is well into adulthood. That means contacting owners of any of the dog's progeny that are intact so they can be tested and possibly removed from their breeding programs.

[Cavalier King Charles Spaniels](#) are known for their predisposition to chronic degenerative mitral valve disease, Olson says. Most have the first signs of disease at age 4 or 5, so may have already whelped or sired several litters. The mitral valve, the atrioventricular valve on the left side of the heart, simply doesn't do its job of controlling blood flow into the heart. And it does the job more poorly as time goes on.

In Denmark, all Cavaliers must be screened with echocardiograms before breeding. At the June 2013 American College of Veterinary Internal Medicine conference in Seattle, researchers presented data on the program. Between that and a Swedish study, they determined that if every Cavalier with a murmur was not allowed to breed, the gene pool would become so small that other health problems would arise. On the upside, Denmark has seen a "significant reduction in early adult onset" of degenerative mitral valve disease, Olson says.



Great Danes, Whippets, Boxers and Dobermans won't show signs of dilated cardiomyopathy until age 3 to 5. Photo © [Can Stock Photo](#).

Dilated cardiomyopathy, or dilation of the left ventricle, is typically diagnosed typically between ages 3 and 5 in Whippets, Boxers, [Great Danes](#) and [Dobermans](#). Olson likens it to an overstretched rubber band. Both the ventricle and the valve get overstretched. It's another silent killer, she says, because by the time you can hear a murmur, "it's usually late in the – devastating – disease process." A medication is now available that can "statistically delay heart failure with a trend toward longer survival times," if started before the dog has any clinical signs. So, although a heart screening leading to a diagnosis of dilated cardiomyopathy would suggest removing the dog from a breeding program, it is not a death sentence as it was in the past.

The final major inheritable heart condition is Boxer cardiomyopathy, properly known as "arrhythmogenic right ventricular cardiomyopathy" or ARVC. The myocardium or muscle of the right side of the heart "gets infiltrated with fibrous tissue and fat," so the heart can't beat normally, Olson explains. "Those dogs develop unusual heart rhythms. Often the first sign is sudden death."

It is also seen in some other breeds, though not as frequently as in Boxers.

"These early screening tests are really important," she says. It takes an EKG to identify ARVC's abnormal heart rhythms. "If you have a Boxer that has ARVC, you definitely don't want to breed that dog. It's devastating. It's just awful."

EKGs usually cost about \$140, depending on where you live.

If abnormal heart rhythms are identified, the next step is a 24-hour EKG, Olson says, which requires a Holter monitor. Interpreting the test is labor intensive, she says. "You're looking at 99,000 heartbeats in 24 hours." A Holter costs about \$275.

The effect that heart screenings can have on breeding programs is a hot topic in the veterinary cardiology world right now, Olson says. "A lot of the talks" at the recent ACVIM conference were on breeding and heart disease.

Spreading the word about heart screenings is a "kind of a win-win for everyone," Olson says. "The majority of breeders are trying to do a really, really good job."

Although the costs of screening beyond auscultation can add up, the tests can provide you with the knowledge that your dogs aren't passing on life-threatening heart conditions and with the confidence that generations to come will be just that much healthier.

Tags: ACVIM, American College of Veterinary Internal Medicine, arrhythmogenic right ventricular cardiomyopathy, ARVC, auscultation, Best in Show Daily, BSD, Boxer cardiomyopathy, chronic degenerative mitral valve disease, dilated cardiomyopathy, Janet Olson DVM, subaortic stenosis, Susan Chaney, tricuspid valve dysplasia, Veterinary Cardiology Specialists

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**Written by Susan Chaney**

Susan Chaney has been on the editorial side of publishing since 1990, starting her career as a newspaper features writer and editor. A lifelong lover of dogs, Susan has lived with German Shepherds, Labs, Yorkies, an Irish Setter, a Great Dane-Bloodhound mix, a Sheltie and currently a Chihuahua mix of unknown pedigree. She was the editor of *Dog Fancy* magazine, content editor of DogChannel.com and group editor of *Dog World*, *Dogs USA*, *Puppies USA*, *Natural Dog*, *Cat Fancy*, *Cats USA* and *Kittens USA* from March 2005 to December 2009 when she left her position to work at home, part-time. Susan lives in Long Beach, Calif., with her artist husband, Tim, that Chi mix and two big cats. As an editor and writer for Best In Show Daily, she is reveling in the amalgam of three loves: writing, editing and dogs.