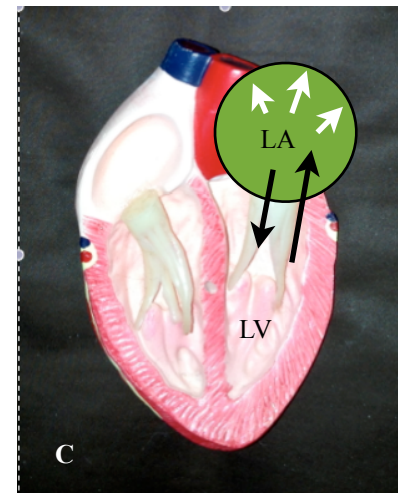
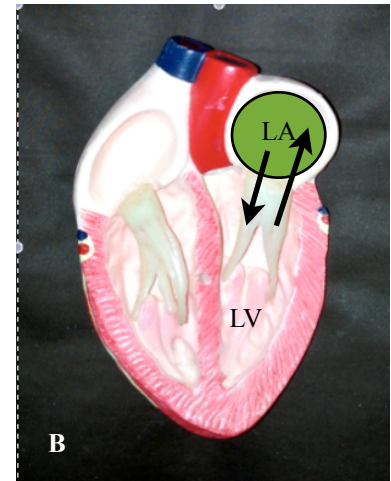
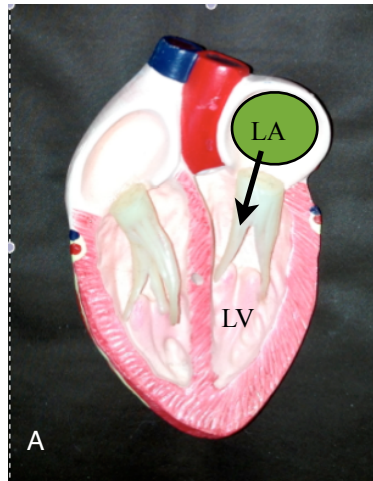
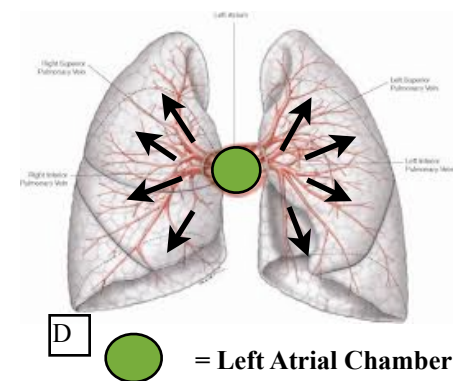


By Dr. Janet Olson, DVM, DACVIM (Cardiology)

**BACKGROUND:** Chronic Degenerative Valve Disease (CDVD) is an acquired heart condition in dogs that primarily affects the mitral valve inhibiting its ability to function appropriately. The mitral valve is located on the left side of the heart and is designed to function as a one way gate to allow blood to move forward from the left atrial (LA) chamber into left ventricular chamber (LV) with each heartbeat (See image A to the right - the arrow represents direction of bloodflow from the LA into the LV). However, when the mitral valve leaflet develops degenerative changes (thickening and irregularities) associated with CDVD, gaps form in the “gate” and the valve can no longer prevent back-flow (regurgitation) from the left ventricle into the left atrium as the heart beats. As a result two way flow occurs across the valve (See image B). The blood flowing backward across the gap in the valve leaflet does so at a high speed and in a turbulent manner (like water going over rapids) and creates the murmur (sound) that we hear on physical examination. The altered blood flow can eventually lead to heart enlargement and left-sided congestive heart failure.



**CONDITION:** Stage C CDVD refers to a patient that has reached the stage of left-sided congestive heart failure (LCHF) defined by fluid build-up in the lungs secondary to left-sided heart disease. The progression to LCHF secondary to CDVD typically occurs gradually over time. As CDVD progresses, more and more blood leaks back into the left atrial chamber. The LA chamber compensates by becoming enlarged. As it enlarges, it is like blowing up a balloon, the larger it gets the more pressure that will develop (See image C: The black arrows indicate 2 directional blood flow across the mitral valve and the white arrows indicate increase increase in pressure within the LA). Eventually, if enough pressure develops in the LA chamber the pressure will push backwards into the blood vessels coming from the lungs (just like backed up plumbing). The vessels in the lungs don't tolerate that well. In order to alleviate the increase in pressure, the vessels can respond by pushing fluid into the lung tissue itself (see image D to the right - the arrows represent fluid being pushed into the



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## Chronic Degenerative Valve Disease - Stage C

lungs, the green circle indicates the left atrial chamber of the heart). This is termed left-sided congestive heart failure. When this happens, the patient will begin to show clinical signs of heart failure including increased respiratory rates at rest. Rarely, the left atrial chamber can tear during this process creating a more sudden emergency situation for the patient.

It is important to understand that the term “failure” means that the heart is failing to move blood forward effectively, so pressure has backed up and fluid has accumulated in the lungs. It does not mean that the heart itself has inherently failed. Medications are used at this point to help the heart work more efficiently and to help rid the body of the excessive fluid build-up in the lungs so your dog can breathe comfortably. Heart failure is a dynamic process. Dogs can go in and out of “failure” over time as the condition progresses and therapy is adjusted.

**DIAGNOSIS:** Thoracic radiographs (chest x-rays) are necessary to confirm the presence of left-sided heart failure (fluid in the lungs). However, a thorough history, physical examination, screening blood work and an echocardiogram are important pieces in diagnosing and staging CDVD in dogs.

**THERAPY:** An individualized medical therapy protocol will be prescribed for the specific needs of your pet. Medical therapy can not fix the diseased valve, but it can help the heart function better and reduce fluid accumulation in the lungs. “Set-backs” with intermittent re-accumulation of fluid within the lungs can occur as the condition progresses causing relapse of clinical signs. On occasion in-hospital care may be indicated to stabilize your pet’s condition. Adjustments to therapy will be made as indicated over time to help prolong and maintain your dog’s quality of life.

**HOME MONITORING:** Worried about your pet’s heart disease? Take a deep breath, then count theirs. Early intervention and close monitoring is the key to helping your pet breath easy and live longer. The most specific clinical sign to watch for at home associated with the onset (or relapse) of left-sided heart failure is increased resting respiratory rates (RRR). [Click here](#) for a printable handout on how to assess and log the RRR for your pet. You can also download the free Cardalis APP ([Apple](#), [Google Play](#)) to log and graph your pet’s RRR on your preferred device. Additional clinical signs associated with left-sided heart failure may include exercise intolerance, coughing, generalized weakness, collapse or significant respiratory distress. As always, consult with a veterinarian with any concerns.

**VETERINARY FOLLOW-UP:** Based on your pet’s test results, clinical signs and prescribed medications, a customized cardiac care plan will be formulated for your pet. Routine recheck examinations are typically recommended every 3 months to include a physical exam, thoracic radiographs and screening blood work. Periodic echocardiogram studies are also recommended. This follow-up is essential in managing and fine tuning your dog’s cardiac care in order to help maintain their quality and longevity of life.

<sup>1</sup> Heart models in photos courtesy of Boehringer-Ingelheim, Vetmedica

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