

BREED-SPECIFIC VERTEBRAL HEART SCORES (VHS)

The VHS measurement is a useful tool to establish whether a dog with mitral valve disease (MVD) has an enlarged heart (cardiomegaly). This is important since dogs with asymptomatic MVD and cardiomegaly will benefit from treatment with Vetmedin®¹.

In dogs with MVD, an increased VHS is strongly suggestive of cardiomegaly. The degree of cardiac enlargement is dependent on the stage and severity of the underlying disease and is reflected by an increase in VHS measurement. The VHS was originally designed to be clinically relevant for all dog breeds of differing sizes and chest conformation and in general, a VHS of less than 10.5 is normal, meaning the dog does not have cardiomegaly.

A VHS between 10.5 and < 11.5 means that the dog has borderline cardiomegaly and a cardiac ultrasound should be performed if possible or, if an ultrasound cannot be performed, the VHS should be rechecked in 6 months time.

A VHS of 11.5 or greater, or a VHS increase of 0.5 or more over 6 months means that a dog has cardiomegaly and would benefit from treatment with Vetmedin®¹.

However it is important to be aware that some breeds have normal VHS values that would commonly suggest cardiomegaly.

The table below summarises the breed-specific normal values where these have been developed and published. Use this table when interpreting the VHS in your MVD patients to determine whether cardiomegaly is present.

Breed	Normal VHS range from a Right Lateral X-ray
Normal VHS range (non-breed specific)	9.2 – 10.5 ²
Boston Terrier	10.3 – 13.1 ³
Boxer	10.8 – 12.4 ⁴
Bulldog (English/French)	11.0 – 14.4 ³
Cavalier King Charles Spaniel	10.1 – 11.1 ⁴
Labrador Retriever	10.2 – 11.4 ⁴
Norwich Terrier	10.0 – 11.2 ⁵
Pomeranian	9.6 – 11.4 ³
Pug	9.8 – 11.6 ³
Whippet	10.5 – 11.8 ⁶

References: 1. Boswood A, *et al.* Effect of Pimobendan in Dogs with Preclinical Myxomatous Mitral Valve Disease and Cardiomegaly: The EPIC Study—A Randomized Clinical Trial. *JVIM.* 2016;30:1765-1779. 2. Buchanan JW, Bücheler J. Vertebral scale system to measure canine heart size in radiographs. *JAVMA.* 1995;206(2):194-199. 3. Jepsen-Grant K, *et al.* Vertebral heart scores in eight dog breeds. *Vet Radiol Ultrasound.* 2013;54(1):3-8. 4. Lamb CR, *et al.* Use of breed-specific ranges for the vertebral heart scale as an aid to the radiographic diagnosis of cardiac disease in dogs. *Vet Rec.* 2001;148(23):707-711. 5. Taylor CJ, *et al.* Norwich terriers possess a greater vertebral heart scale than the canine reference value. *Vet Radiol Ultrasound.* 2019;1-6. 6. Bavegems V, *et al.* Vertebral heart size ranges specific for whippets. *Vet Radiol Ultrasound.* 2005;46(5):400-403.

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