Orthopedic Foundation for Animals
2300 E Nifong Blvd, Columbia, MO 65201-3806
Phone: (573) 442-0418; Fax: (573)875-5073, *www.offa.org*, A Not-For-Profit Organization

Pediatric Cardiac Exam—Border Terrier Pilot Study

owner name

co-owner name

mailing address

city state/province zip/postal code

phone email

date of current evaluation (month-day-year)

veterinarian/cardiologist/specialist performing this test

mailing address

city state/province zip/postal code

phone email

Registration number of sire *Registration number of dam* *Litter registration number* *Date of birth*

1. Each puppy must have unique identification, microchip or Canadian unique tattoo. Each litter must be registered. AKC registered litters should have the microchip assigned to the individual number.
2. The attending veterinarian (cardiologist or internist not required) must conduct the exam in compliance with OFA protocols.
3. Any Grade 3 or above murmur, or any murmur still present at 15 weeks, must be referred to cardiologist or internist.

				Cardiac Ascultation Results				Summary Evaluation			
Litter-mate#	**Name/Identifier**	**Chip#**	**Sex**	Normal	Soft Murmur	Moderate/ Loud Murmur	Point of Max Intensity	Normal	Equivocal	Abnormal	Echo (Y/N)
#1											
Veterinarian notes:											
#2											
Veterinarian notes:											
#3											
Veterinarian notes:											
#4											
Veterinarian notes:											

Veterinarian signature _____ ❑ Practitioner ❑ Specialist ❑ Cardiologist *Date*_____

Note: If more than 4 littermates, please attach second sheet.

Methods of Examination

A. Clinical Examination

1. The clinical cardiac examination should be conducted in a systematic manner. The arterial and venous pulses, mucous membranes, and precordium should be evaluated. Heart rate should be obtained. The clinical examination should be performed by an individual with advanced training in cardiac diagnosis. Board certification by the American College of Veterinary Internal Medicine, Specialty of Cardiology is considered by the American Veterinary Medical Association as the benchmark of clinical proficiency for veterinarians in clinical cardiology, and examination by a Diplomate of this specialty board is recommended. Other veterinarians may be able to perform these examinations, provided they have received advanced training in the subspecialty of congenital heart disease.
2. Cardiac auscultation should be performed in a quiet, distraction-free environment. The animal should be standing and restrained, but sedative drugs should be avoided. Panting *must* be controlled, and if necessary, the dog should be given time to rest and acclimate to the environment. The clinician should be able to identify the cardiac valve areas for auscultation. The examiner should gradually move the stethoscope across all valve areas and also should auscultate over the subaortic area, ascending aorta, pulmonary artery, and the left craniodorsal cardiac base. Following examination of the left precordium, the right precordium should be examined.
   - The *mitral valve* area is located over and immediately dorsal to the palpable left apical impulse and is identified by palpation with the tips of the fingers. The stethoscope is then placed over the mitral area and the heart sounds identified.
   - The *aortic valve* area is dorsal and 1 or 2 intercostal spaces cranial to the left apical impulse. The second heart sound will become most intense when the stethoscope is centered over the aortic valve area. Murmurs originating from or radiating to the *subaortic* area of auscultation are evident immediately caudoventral to the aortic valve area. Murmurs originating from or radiating into the ascending aorta will be evident craniodorsal to the aortic valve and may also project to the right cranial thorax and to the carotid arteries in the neck.
   - The *pulmonic valve* area is ventral and the one intercostal space cranial to the aortic valve area. Murmurs originating from or radiating into the main pulmonary artery will be evident dorsal to the pulmonic valve over the left hemithorax.
   - The *tricuspid valve* area is a relatively large area located on the right hemithorax, opposite and slightly cranial to the mitral valve area.
   - The clinician should also auscultate along the *ventral right precordium* (right sternal border) and over the right craniodorsal cardiac border.
   - Any cardiac murmurs or abnormal sounds should be noted. Murmurs should be described as indicated below.
3. Description of cardiac murmurs—A full description of the cardiac murmur should be made and recorded in the medical record
   - Murmurs should be designated as systolic, diastolic, or continuous.
   - The point of maximal murmur intensity should be indicated as described above. When a precordial thrill is palpable, the murmur will generally be most intense over this vibration.
   - Murmurs that are only detected intermittently or are variable should be so indicated.
   - The radiation of the murmur should be indicated.
   - Grading of heart murmurs is as follows:

     Grade 1—a very soft murmur only detected after very careful auscultation

     Grade 2—a soft murmur that is readily evident

     Grade 3—a moderately intense murmur not associated with a palpable precordial thrill (vibration)

     Grade 4—a loud murmur; a palpable precordial thrill is not present or is intermittent

     Grade 5—a loud cardiac murmur associated with a palpable precordial thrill and audible even when the stethoscope is lived from the thoracic wall

     Grade 6—a loud cardiac murmur associated with a palpable precordial thrill and audible even when the stethoscope is lifted from the thoracic wall
   - Other descriptive terms may be indicated at the discretion of the examiner; these include such timing descriptors as: proto(early)-systolic, ejection or crescendo-decrescendo, holo-systolic or pan-systolic, decrescendo, and tele(late)-systolic and descriptions of subjective characteristics such as: musical, vibratory, harsh, and machinery.
4. Effects of heart rate, heart rhythm, and exercise.
   - Some heart murmurs become evident or louder with changes in autonomic activity, heart rate, or cardiac cycle length. Such changes may be induced by exercise or other stresses. The importance of evaluating heart murmurs after exercise is currently unresolved. It appears that some dogs with congenital subaortic stenosis or with dynamic outflow tract obstruction may have murmurs that only become evident with increased sympathetic activity or after prolonged cardiac filling periods during marked sinus arrhythmia. It also should be noted that some normal, innocent heart murmurs may increase in intensity after exercise. Furthermore, panting artifact may be a problem after exercise.
   - It is most likely that examining dogs after exercise will result in *increased sensitivity* to diagnosis of soft murmurs but probably *decreased specificity* as well. Auscultation of the heart following exercise is at the discretion of the examining veterinarian.
   - At this time the OFA does not require a post exercise examination in the assessment of heart murmurs in dogs; however, this practice may be modified should definitive information become available.