

**Report to Great Dane Club of America Charitable Trust:
Grant to GDCA Central Division for Cardiac Echo Screening Clinic
By JP Yousha
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Introduction

This report summarizes the procedures, results and expenditures of the cardiac echo screening clinic conducted at the Great Dane Club of America (GDCA)'s 2009 National Specialty Show in Chattanooga, TN. The GDCA Charitable Trust (CT) approved a grant to cover expenses over the \$50 per dog that was paid by each owner for cardiac evaluations. This discounted cost to the Dane owner is part of an effort to collect data on and document the cardiac condition of as many Great Danes as possible by making this typically expensive procedure more affordable.

Sixty-four Great Danes received cardiac evaluations, including auscultation and echocardiography, during the clinic held on October 20 & 21, 2009. Dr. William Tyrrell, Jr., DVM, DACVIM (Board Certified Veterinary Cardiologist) performed all cardiac evaluations. Several previously undiagnosed cardiac conditions were identified and referred for appropriate follow-up. Actual expenses were very close to the pre-event budget. The clinic met all stated objectives.

Recruitment and Scheduling Procedures

Advertisements and pre-registration forms for the cardiac echo clinic were posted on the GDCA – SE Division website six months prior to the National to allow owners the most flexibility in choosing their appointment times. The pre-registration form collected demographic and medical history of the dog (age, gender, reproductive status, history of previous cardiac echo/OFA and family history of heart disease) as well as preferred appointment date and owner contact information. Dog name was intentionally NOT requested, so individual participants remained anonymous. The Southeast Division scheduled Wednesday, October 21 as Health/Education Day to prevent any conflicts with general judging; however there was a potential for conflict with agility on Wednesday, and with final Futurity judging, Obedience, and two seminars on Tuesday, October 20. These were managed without issue and all appointments available were filled.

Pre-registrations (with pre-payment) of 54 Great Danes were made; pre-registrations were accepted until the entry closing date of the National. The remaining appointments were filled on a walk-in basis to complete the maximum number possible in two eight-hour days (64 total). An OFA Application for Congenital Cardiac Database, complete with the veterinary and echo clinic information, was sent to the owners that pre-registered, along with the confirmation of appointment. Owners were asked to bring this form to their appointment. Owners were encouraged to submit their echo results to OFA, but this was not required. As a further incentive, the echo clinic applied for and received a special event discount from OFA which reduced the OFA fee from \$15.00 to \$7.50 for clinic participants.

Clinic Administration

Clinic volunteers were instructed on confidentiality procedures prior to the clinic (i.e., not to discuss the identity of the dogs who participated or to reveal anything they might have seen or heard pertaining to individual dogs, not to leave the OFA forms where they might be seen, etc.). Dogs' names did not appear on the pre-registration form, only the age and demographic information as listed above. All echo exams were performed in a private room separate from the reception area. Other clinic participants and clinic staff could not see nor hear Dr. Tyrrell's conversation with the individual owners. GDCA clinic staff did not enter the exam room during exams.

Owners took the individual OFA forms into the exam room where Dr. Tyrrell filled out his portion of the form at the conclusion of the echo exam. OFA forms turned in by owners at the clinic were immediately placed in a confidential envelope and then were mailed directly to OFA. Owners were told they need not turn in their OFA forms at the clinic. Twenty-nine forms were returned

and mailed in as a group to the OFA Congenital Cardiac Database. Others may have mailed the form in privately, or not at all.

Echocardiography Procedures

Each dog was examined in a quiet, darkened private room to allow dogs to relax. Echocardiography was preceded by a brief physical exam focusing on the cardiovascular system. This exam included measurement of heart rate, pulses and auscultation of lungs and heart. Echocardiography was performed on all 64 dogs in a standing position using a GE Vivid I echocardiography unit. All patients were awake and non-sedated. No patients were shaved for the study. All standard (American Society of Echocardiography) views from both right parasternal and left apical imaging planes were obtained via an annular phased array 3S probe. Both color and pulsed/continuous wave Doppler studies were performed on all heart valves. Standard Mmode and two dimensional measurements were also obtained and detailed within the patient's report given to the owner.

Owners received both verbal results and a written cardiac echo report at the conclusion of the exam. The report contained all M-mode, two dimensional and Doppler measurements. Recommendations regarding breeding status (as pertaining to the heart), recheck echocardiography, follow-up with family veterinarian, etc. were also detailed within the report along with physical exam and echocardiography findings.

Demographics of Participants

Of the 64 Great Danes examined during the echo clinic in 2009, 31 were males and 33 were females. Fifty of the 64 were under the age of four years. All colors of Great Danes were represented. Further details on the demographics will not be presented in order to prevent unintentional disclosure of specific dogs who participated in the echo clinic.

Echocardiographic Findings: 2009 Great Dane Club of America Echo Screening Clinic

Echocardiographic Result	# Males	# Females	Total this Category	Percent (N=64)
Normal echocardiograms	19	22	41	0.64
Tricuspid valve dysplasia	1	0	1	0.02
Arrhythmias present during exam	3	0	3	0.05
Equivocal for DCM	3	0	3	0.05
Aortic Stenosis	1	0	1	0.02
Chronic degenerative valvular disease	2	6	8	0.13
Dilated cardiomyopathy	1	0	1	0.02
Mitral valve dysplasia	0	2	2	0.03
Equivocal for subaortic stenosis	0	0	0	0.00
Equivocal for tricuspid valve dysplasia	1	0	1	0.02
Equivocal for mitral valve dysplasia	0	2	2	0.03
Equivocal for subaortic stenosis	0	0	0	0.00
Aortic body tumor	0	1	1	0.02
Total Great Danes tested	31	33	64	100

Males in 2009 showed a slightly higher prevalence of abnormal echo: 39% (12/31) vs. females: 33% (11/33) for females. Overall, 36% (23/64) of Great Danes screened had a cardiac abnormality detected via echo. Only one definitive case of DCM was diagnosed, probably due to the young age of most participants (50 of the 64 dogs examined were under the age of 4 years). However three additional males were equivocal for DCM, and three males had arrhythmia during the exam; this may represent early stage cardiomyopathy. Based on responses to the question about known cardiac disease or family history, we can conclude that the vast majority of these abnormalities were new diagnoses unsuspected by the owners. Many times subtle or occult conditions not apparent upon auscultation were found. This underscores the value of conducting cardiac echo clinics at such venues as the GDCA National Specialty.

Expenses

Total cost of the echo clinic was \$10,338.40, which includes sixty-four echos @ \$150.00 each (\$9,600) plus Dr. Tyrrell's expenses; \$3,250 of this was paid by Dane owners (sixty-four echos @ \$50 each plus one prepaid not present/donated fee) for a net cost of \$7,088.40 to be paid for by a grant from the Charitable Trust. The OFA fees was paid by the owners on site and sent with the application and so did not affect the budget.

Compilation of 2008 & 2009 Data

In that Dr. Tyrrell offered the GDCA-CT data both in 2008 and 2009, this data is summarized in the table below:

Echocardiographic Result	# Males	# Females	Total this Category	Percent (N=120)
Normal echocardiograms	38	39	77	0.64
Arrhythmias present during exam	5	0	5	0.03
Tricuspid valve dysplasia	4	0	4	0.03
Chronic degenerative valvular disease	4	7	11	0.09
Aortic Stenosis	1	0	1	0.01
Equivocal for subaortic stenosis	2	1	3	0.025
Equivocal for aortic stenosis	2	1	3	0.025
Dilated cardiomyopathy	1	1	2	0.02
Equivocal for DCM	3	0	3	0.025
Mild increase in left ventricular internal dimensions	1	1	2	0.02
Equivocal for tricuspid valve dysplasia	2	0	2	0.02
Mitral valve dysplasia	0	3	3	0.025
Equivocal for mitral valve dysplasia	0	2	2	0.02
Equivocal for both mitral and tricuspid valve dysplasia	1	0	1	0.01
Aortic body tumor	0	1	1	0.01
Total Great Danes tested	64	56	120	100

Conclusions and Recommendations

These clinics were set up primarily to screen for dilated cardiomyopathy (DCM); however more congenital heart defects were discovered both years than Great Danes with a definitive diagnosis

of DCM. This result is at least in part based on the skewed age of the population of dogs examined; however the results reveal other cardiac diseases are an issue for this breed. The GDCA would be wise to take an aggressive position in seeing both that more young animals are screened for congenital heart disease and that middle aged and older animals are screened routinely for such as DCM via echocardiology.

The percentage of normal echocardiograms over 2008 and 2009 remained constant at 64%. In both years, not only were several cases of mild congenital heart disease discovered via echocardiography, it is likely that more cases of DCM even in its early (e.g. occult) stages could have been diagnosed if the population examined included more mature animals. It is well proven that early intervention in this deadly disease can have excellent results, improving both the dog's quality and quantity of life, never mind breeders need to be alerted as the earliest possible juncture of the existence of DCM in their dogs. But also echo screenings that discovers mild stenosis and valvular disease, as well as tumors, as is the case with these clinics, can then have a positive impact on an individual dog's health via owner education about appropriate prophylactic and therapeutic steps to take.

Future echocardiography clinics should consider offering further incentives to encourage greater participation of older Great Danes (such as free exams for those dogs entered as Veterans at the National Specialty), as well as ways to include more intact males as they represent current and/or future frequently used sires, and also consider a program to include families of great Danes with established risk factors for heart disease (for example a group rate for first generation relatives of a dog diagnosed with a significant abnormality at a previously held clinic), and to offer re-checks on dogs previously echo'd, particularly those which had abnormal results (to help build a breed data base).

The continuing compilation of such data, as the basis of further study into heart disease in the Great Dane, should also be a more central purpose of these reduced-costs clinics in the future, which now currently mainly serve the interests of the individual Dane owner/breeder. It is only with the compilation of breed relevant data that heart disease in this breed can be better managed, and the risk of potentially fatal disease viably reduced. One simple suggestion to increase the rate of acquisition of data is to require owners who participate in these GDCA-CT subsidized clinics in the future to submit the data on their dogs. The GDCA should also encourage blood samples be submitted to the OFA DNA Repository to increase the research potential made available by such assembled health data for our breed.

The GDCA supports the AKC-CHF CHIC program, which currently recommends baseline examinations on young adult Great Dane for hips, heart, eyes & thyroid. Follow-up examinations for both heart and thyroid are recommended; a two-year interval starting at two years of age is generally thought reasonable. If family history is not documented, or has revealed potential issue, screening may need to be done prior to two years of age, or at intervals more often than every two years. Echocardiograms should be included in cardiac evaluations whenever possible, and other procedures (e.g. ECGs, Holter) may be recommended at times. It is critical there is more extensive documentation of the status of heart health and specific disease in this breed to make inroads into improving overall heart health in the breed.

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