### Project update, Spring 2014





Your Knowledge Hub Degenerative mitral valve disease study



# **Project progress**

### What's it all about?

In collaboration with primary care veterinary practices, we are conducting important research looking at the epidemiology of degenerative mitral valve disease (DMVD) in dogs. To do this, we are undertaking two studies: a retrospective (baseline) study and a prospective (longitudinal) study.

#### Retrospective study results

To date, clinical record data on over 3/4 million animals have been shared with the VetCompass database. We have used these data to conduct a retrospective (baseline) study to estimate the

prevalence of and identify risk factors for DMVD in dogs. For a summary of some initial results, please see page 3.

#### Over 180 dogs enrolled to prospective study!

Our ongoing prospective study aims to evaluate whether cardiac biomarker blood tests and clinical measurements are predictive of survival in dogs with DMVD. The

	Dogs enrolled 18th Dec — 1st May (n)	New practices contrib- uting samples (n)
Dec-13	3	2
Jan-14	8	2
Feb-14	25	6
Mar-14	55	16
Apr-14	54	9



outcomes of the study included in the study will improve our ability to advise clients and manage DMVD cases.

Vets at participating practices have now enrolled over 180 dogs to the study (May 2014), which is a great start. However, we have funding for 1000 dogs, so more cases would be very welcome! Dogs

benefit from the new **IDEXX** cardiac biomarker assays (NT-proBNP and cardiac troponin I), provided free of charge to practices for these cases.

Please see page 2 for a reminder of how to enrol a dog with DMVD to the prospective study and page 4 for information about the cardiac biomarkers.

For more information, visit www.rvc.ac.uk/VetCompass/research-projects

## Many thanks from the RVC...

## **FREE CPD!**

Participating practices are entitled to a free 2-hour Webinar lecture. To claim your CPD voucher, please send the following details to mmattin@rvc.ac.uk

- **Delegate Title:**
- Name:
- Qualifications:
- Personal email:
- Phone number:
- Recorded Webinar Name:

For a list of webinars please see:

We would like to thank everyone who has participated, lent their support or otherwise assisted with all aspects of the project so far. This includes the collaborating veterinary practices, dog owners and their pets, IDEXX laboratories, veterinary societies, cardiologists, dog welfare organisations

and PMS providers. The project would simply not be possible without your ongoing help and support.



#### VetCompass DMVD study update

### VetCompass DMVD study: Meet the team! Maddy Mattin Dr. Dave Brodbelt

Maddy is a PhD student at the RVC who is responsible for the day-to-day management of the project. Maddy is always happy to answer any gueries you may have, so please don't hesitate to contact her about any aspect of the study.

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Adrian is Professor of Veterinary

European Specialist in companion animal cardiology. Adrian's main

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Dr Dave Brodbelt is a Senior Lecturer in Companion Animal Epidemiology at the Royal Veterinary College and is a European Veterinary Specialist in Anaesthesia. Dave is the primary supervisor of the DMVD study and is co-project leader of the RVC VetCompass project.

## Prof. David Church

Professor David Church is the Vice Principal of Academic and Clinical Affairs at the Royal Veterinary College. He is co-project leader of the RVC VetCompass project and has an ongoing interest in relevant continuing education for practitioners.





## How to enrol a dog into the prospective study

- 1. Please obtain **owner consent** using the form provided.
- 2. Take a 2ml **blood sample** and place it into an EDTA tube. Centrifuge the sample and place the separated plasma into a plain tube labelled with the patient's details & BNPE CANINE.
- 3. Please complete a **clinical information** form.
- Fax the consent and clinical information forms to the RVC 4. and submit the blood tube and submission form to IDEXX.
- 5. Ask the client to record their dog's **sleeping respiratory** rate and subsequently record this in your clinical notes.



Please ask the client to record their dog's respiratory rate when the dog appears to be sleeping deeply (no paddling or twitching) in the home environment, when it is not too hot or cold





## **Retrospective DMVD study**

#### **Methods**

The clinical records of dogs attending veterinary practices were shared with the VetCompass database. Cases were defined as dogs with a veterinary diagnosis of DMVD (or synonym) recorded in their records. Dogs with a documented heart murmur not inconsistent with DMVD were classified as possible cases. The characteristics of the cases were compared to those of a random sample of dogs without DMVD (controls).

#### Results

#### **Prevalence estimate**

- •111,967 dogs attended 93 practices during the 2 year study period.
- •405 dogs (0.36%) were identified as having a veterinary diagnosis of DMVD.
- 3962 dogs (3.54%) had possible or veterinary confirmed DMVD.

# Descriptive statistics (405 DMVD cases)

**German Shepherd** 

**English Springer Spaniel** 

- Mean age disease first recorded:9.52 years (standard deviation 3.20)
- •Median maximum weight recorded: 11.3kg (IQR 8.4 - 16.3kg)
- •Sex: 252 dogs (62.2%) were male
- •Insurance status: 274 dogs (69.0%) were insured
- Echocardiography performed: 253 dogs (62.5%) (Figure 1)

### Table 1: Breeds at increased or decreased risk of DMVD

#### Breeds with the highest odds of DMVD compared with crossbred dogs (increased risk)

Breed	Odds ratio	95% Confidence interval	
Cavalier King Charles Spaniel	47.05	25.82 - 85.74	
King Charles Spaniel	30.65	11.03 - 85.21	
Chihuahua	5.11	1.79 - 14.65	
Poodle	2.73	0.98 - 7.65	
Yorkshire Terrier	2.04	0.98 - 4.26	
Breeds with the lowest odds of DMVD compared with cross- bred dogs (decreased risk)			
West Highland White Terrier	0.40	0.17 - 0.90	
Staffordshire Bull Terrier	0.37	0.13 - 1.04	

0.23

0.10



# Figure 1. Percentage of 405 dogs with veterinary diagnosed DMVD undergoing diagnostic testing

- •Treatment: 78.9% of dogs starting treatment had a least one clinical sign consistent with DMVD
- Deaths during follow-up: 212 dogs (52.4%) died
- •Cardiac deaths: 84 (39.6% of deaths)

# Factors associated with an increased risk of DMVD diagnosis:

- Older age
- Being male
- •Being insured
- •Lower body weight (small dogs)
- •Certain breeds (Table 1)

0.03 - 1.87

0.01 - 0.87

**Odds ratios** larger than 1 mean that dogs of this breed have an **increased risk** of having DMVD compared with crossbred dogs (the baseline group).

Odds ratios smaller than 1 means that dogs of this breed have a **decreased risk** of having DMVD compared with crossbred dogs.

If the **95% confidence interval** range does **not** include 1, the association is **statistically significant**.

## Why use cardiac biomarkers?

Each time you enrol a dog to the prospective DMVD study, you will receive the results of the new IDEXX cardiac biomarker assays (NT-proBNP and cardiac troponin I), free of charge to your practice. A copy of the results will be sent to you at the time that the sample is analysed, for the benefit of your patient.

#### **NT-proBNP**

- Production of BNP, the parent molecule to N-terminal pro-B-type natriuretic peptide (NT-proBNP) is increased in response to myocardial stretch and wall stress.
- Concentrations of NT-proBNP are elevated in a number of heart conditions including DMVD.
- Circulating NT-proBNP levels are positively correlated with echocardiographic and radiographic measurements of disease severity.
- NT-proBNP assays can help to:
  - Determine whether respiratory signs are due to CHF or non-cardiac disease.
  - $\Rightarrow$  Predict the onset of CHF in dogs with subclinical DMVD.
- Levels can also be increased in the presence of renal disease and systemic and pulmonary hypertension.
- Samples are stable at room temperature for 48 hours. Please send samples with an ice pack if you anticipate a delay in transportation.
- The assay results include IDEXX's interpretive criteria to help you interpret the results for dogs with DMVD enrolled to the study.

#### **Cardiac troponin I**

- Cardiac troponin I (cTnI) is an intracellular protein that is released into the circulation following damage to myocardial cells.
- Dogs with a variety of heart conditions, including moderate or severe DMVD, have been shown to have elevated concentrations of cTnI when compared with healthy dogs.
   Practice Management Systems
- Myocardial damage is likely to occur in the more advanced stages of DMVD, so cTnI levels can be normal in dogs with mild disease.
- cTnI assays lack specificity; concentrations can be increased as a result of non-cardiac diseases.
- Elevated levels of cTnI were associated with all-cause mortality in a group of dogs with DMVD closely monitored by veterinary cardiologists.

## **Contact us!**

#### By post:

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compliant with VetCompass

We would be grateful if practices not using the above PMSs

could fax, email or post the clinical notes of dogs with DMVD recruited to the study when requested. Thank you.

ORKS



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