



## PATIENT

Frankie Baldowski

## SPECIES

Canine

## BREED

English Bulldog

## SEX

Male Neutered

## AGE

9 years

## WEIGHT

43.4lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

G. Gunther, DVM

## HOSPITAL NAME

New Frontier Animal  
Medical Center

## REFERRING VET

Dr. Gunther

## INVOICE

32399

## DATE

8/17/23

## PRESENTING CLINICAL SIGNS

History: Recheck echo. Acute onset pneumonia and suspected pulmonary hypertension in Feb 2023 - treated with oxygen, enrofloxacin, Amoxicillin/Clavulanate and started Sildenafil. Furosemide added 3/1 due to lack of improvement then tapered and discontinued after 5 days. Currently on Sildenafil 20mg TID. Sleeping respiratory rate-varied between 10-18. Coughing daily-numerous times daily, soft wheezy cough. Exercise tolerance-normal, has been steadily improving over last few months. Has regained the 3lb lost after February. Eating/drinking normally. BP: Normal.

-Radiographs (2/27/23): Moderate cardiomegaly with RHE. Enlarged MPA. The cardiac silhouette is moderately increased (VHS cannot be determined due to several anatomical shortcomings) with a predominant right ventricular enlarged. The pulmonary arteries are increased. There is a moderate diffuse increase in bronchial pattern. An interstitial pattern is also noted in the perihilar region. The trachea is elevated. Abdominal detail is normal.

-Radiographs (4/2023): Cardiomegaly (VHS cannot be performed due to skeletal abnormalities), enlarged pulmonary arteries, bronchial pattern and a peri-hilar interstitial pattern. Thickened mediastinum and pleural thickening/mild pleural effusion.

-Pertinent previous echo findings (4/2023 EL): TR with mild PAH and RHE. TR: 3.0m/s

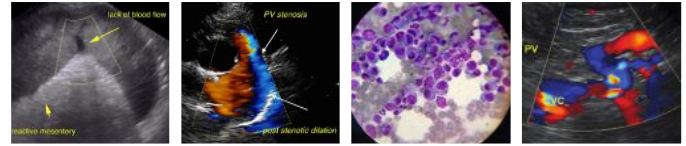
## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve leaflets with no prolapse into the left atrial lumen. No significant mitral regurgitation with no left atrial dilation. Normal LV diameter with adequate myocardial function. The tricuspid valve appears thickened with mild to moderate tricuspid regurgitation. Normal velocity (suspected to be an under-estimation). Mild to moderate right atrial dilation. Moderate RV dilation with mild hypertrophy. MPA and branches are prominent. The pulmonic valve is normal. No PI. The aortic valve is normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No aortic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

## CARDIAC CHART

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	NA	2.7	1.5	1.3	46	79	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LA 2D short axis Base view (cm)	LVIDd Avg; 2D and m-mode short axis (cm)	LVIDs Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	NM	1.5	1.2	19.7	2.5	2.7	1.5
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
*Note: All measurements based upon multi-modal images and methods. An average value is reported.				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)

Adapted from June Boon, Veterinary Echocardiography, 1998  
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435  
Hansson et al, Vet Rad and Ultrasound 2002  
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995



**PATIENT**

	50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)
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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Compared to what is described previously, findings appear similar. The right heart is enlarged; however, the recorded pulmonary pressures are unremarkable. While some degree of underestimation is suspected this likely reflects reasonable continue on Sildenafil. The left heart is unremarkable without significant pathology.

Given these findings, it is reasonable to continue Sildenafil for now and reconsider it's use should the patient maintain stability in the future. Pulmonary hypertension develops secondary to respiratory disease, rather than being a primary issue in most cases as is suspected here. Further treatment of the respiratory disease should it worsen in the future will help keep pressures controlled. This includes Hydrocodone, intermittent steroid and antibiotic therapy, etc. Given that the patient is doing well, no additional medications are clearly indicated. Monitor for signs of progressive PAH such as exertional dyspnea or syncope.

Anesthetic risk is considered moderately elevated if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 if possible. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

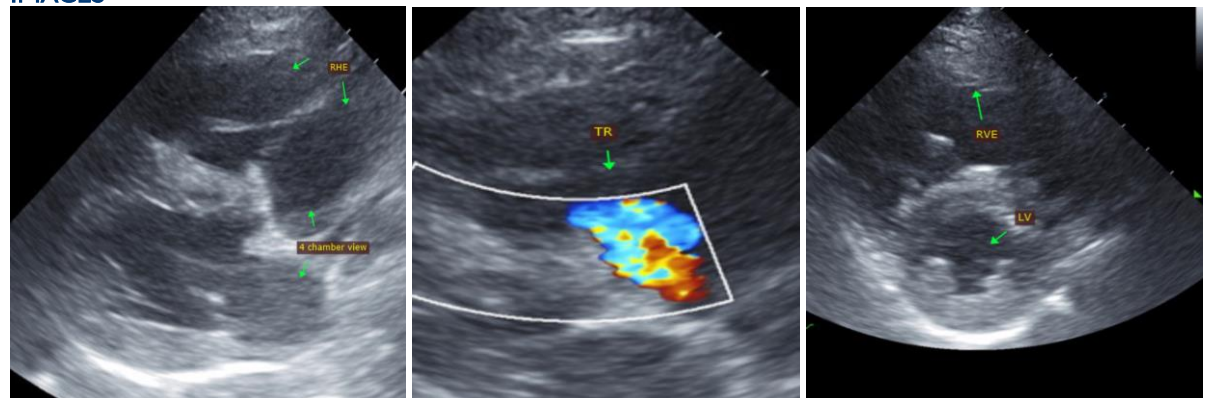
Omega fatty acid supplementation (anti-inflammatory) may be of some long-term benefit. Monitor for worsening of labored breathing, exercise intolerance or collapse episodes.

**PLAN:**

Continue Sildenafil as previously recommended. If the respiratory signs worsen in the future, repeat CXR, Baytril, Hydrocodone, etc. can be considered based upon the significance.

Recommend recheck echocardiogram in 6 months to reassess pulmonary pressures, sooner if any development of clinical signs.

**IMAGES**





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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

Maggie Machen Lamy, DVM  
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info@sonopath.com