

## PATIENT PRESENTING CLINICAL SIGNS

**Maxwell Demers** History: Follow up to scan performed 2/24/22. COHAT scheduled at that time postponed due to cardiac disease, rescheduled for 6/28/22. Maxwell is currently receiving Pimobendan 1.25 mg BID, Furosemide 12.5 mg BID, and Cardalis 10 mg/1.25mg SID. He is reported to be more active at home, RRR has been  $\leq$ 24 BPM.

**SPECIES** Abnormal PE/Chem/CBC/UA Results: Grade iv/vi left apical systolic murmur, severe dental/ periodontal disease

Canine

## BREED ULTRASONOGRAPHIC EXAMINATION OF THE HEART

Terrier Mix	<b>CANINE</b>	<b>MR</b>	<b>TR</b>	<b>LA/AO</b>	<b>LA/AO</b>	<b>FS</b>	<b>EF</b>	<b>EPSS</b>
<b>SEX</b>	<b>CARDIAC</b>	<b>VMAX</b>	<b>VMAX</b>	(Boon method)	(Heart Base; Swedish)	(%)	(%)	(cm)
Neutered male	<b>PARAMETERS</b>	(m/s)	(m/s)					
<b>AGE</b>	<b>NORMAL PARAMETER</b>	4.5-5.5	<2.7		<1.6	28-40	40-100	<0.6
15 years	<b>PATIENT</b>	5.3	NM	Avg of 1.6	NM	34%	NM	0.19
<b>WEIGHT</b>	<b>CANINE</b>	<b>HR</b>	<b>AV</b>	<b>PV</b>	<b>BODY WEIGHT</b>	<b>LA</b>	<b>LVIDd</b>	<b>LVIDs</b>
11.8 lbs	<b>CARDIAC</b>	(BPM)	<b>VMAX</b>	<b>MAX</b>	kg	2D long axis Base view	Avg; 2D and m-mode short axis	Avg; 2D and m-mode short axis
<b>NORMAL PARAMETER</b>		50-100	0.7-1.7	0.7-1.6				
<b>PATIENT</b>			NM	NM	5.36	3.39	3.47	2.28
<b>INTERPRETED BY</b>	Adapted from June Boon, Veterinary Echocardiography, 1998 Sisson D et al. JVIM 1991; 5: 232, and Jacobs et al. Am J Vet Res 1985; 46:1705							

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### Echocardiographic findings

#### Mitral valve

#### IMAGING PERFORMED BY

Dr. Green

#### HOSPITAL NAME

Healing Spirit

#### REFERRING VET

Dr. Green

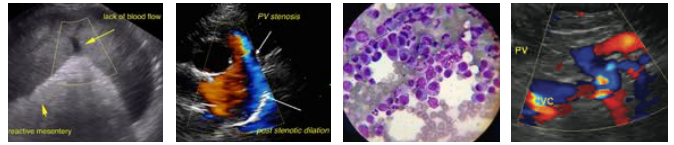
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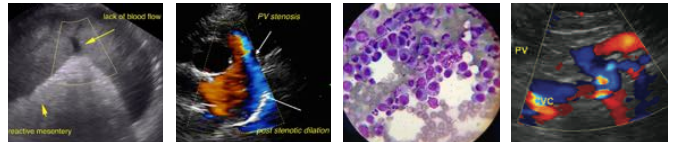
#### DATE

6/23/22

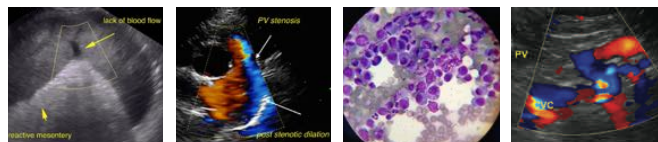
- Very severe thickening and irregularity of both leaflets, consistent with myxomatous degeneration. The septal leaflet is more severely affected compared to the posterior leaflet.
- Severe prolapse of the septal leaflet and moderate prolapse of the posterior leaflet.
- Marked mitral regurgitation.
- Severe left atrial enlargement
- Rounding of the interventricular septum, i.e. left ventricular enlargement is present
- LA: Ao ratio high normal reference range
- LA normalized for BW (LAN = 1.9); Marked left atrial enlargement
- LVIDd normalized for BW (LVIDND = 2.1); marked left ventricular enlargement
- LVIDs normalized for BW (LVIDNs =1.34); moderate enlargement



<b>PATIENT</b>	<i>Aortic valve</i>
Maxwell Demers	<ul style="list-style-type: none"> <li>No abnormalities</li> <li>N/E</li> </ul>
<b>SPECIES</b>	<i>Tricuspid valve</i>
Canine	<ul style="list-style-type: none"> <li>Mild myxomatous degeneration of the septal leaflet</li> </ul>
<b>BREED</b>	<ul style="list-style-type: none"> <li>Very mild prolapse of the septal leaflet.</li> </ul>
Terrier Mix	<ul style="list-style-type: none"> <li>Mild tricuspid regurgitation.</li> <li>No right ventricular or atrial enlargement.</li> </ul>
<b>SEX</b>	<i>Pulmonic valve</i>
Neutered male	<ul style="list-style-type: none"> <li>No abnormalities</li> <li>N/E</li> <li>Main pulmonary artery within normal limits.</li> <li>Pulmonary artery - bifurcation, no abnormalities.</li> <li>Pulmonary artery: aortic ratio within normal limits.</li> </ul>
<b>AGE</b>	<i>Other</i>
15 years	<ul style="list-style-type: none"> <li>No signs of pericardial or pleural effusion</li> <li>Pulmonary veins appear severely dilated.</li> <li>*Pulmonary edema is evident based on the presence of a few "B lines".</li> <li>No obvious signs of a mass.</li> <li>No abnormalities noted with the endocardium or myocardium</li> <li><i>Hepatic</i> veins do not appear congested.</li> </ul>
<b>WEIGHT</b>	
11.8 lbs	
<b>INTERPRETED BY</b>	
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	
<b>IMAGING PERFORMED BY</b>	
Dr. Green	
<b>HOSPITAL NAME</b>	<b>ULTRASONOGRAPHIC FINDINGS</b>
Healing Spirit	<ul style="list-style-type: none"> <li>Myxomatous degeneration of the mitral (moderate) and tricuspid (mild) valves, ACVIM stage C, i.e., there is evidence of very mild pulmonary edema ("B lines"), which is consistent with congestive heart failure. Maxwell does not appear to be showing signs of clinical signs despite today's findings. Marked left atrial and ventricular enlargement are also present. The decrease in fractional shortening compared to Maxwell's original exam, is consistent with decreased workload (and improved overall function) on his heart as a result of the cardiac medication.</li> </ul>
<b>REFERRING VET</b>	
Dr. Green	
<b>INVOICE</b>	<ul style="list-style-type: none"> <li>Adjustments to Maxwell's medications are recommended (see below).</li> </ul>
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<b>DATE</b>	<b>INTERPRETATION OF THE FINDINGS &amp; FURTHER RECOMMENDATIONS</b>
6/23/22	Other suggestions/recommendations include:



<b>PATIENT</b>	<ul style="list-style-type: none"> <li>Evaluation of blood pressure</li> </ul>
Maxwell Demers	<ul style="list-style-type: none"> <li>pimobendan (Vetmedin). Continue 1.25 mg PO every 12 hours (0.23 mg/kg).</li> </ul>
<b>SPECIES</b>	<ul style="list-style-type: none"> <li>furosemide 12.5 mg PO q12h (2.33 mg/kg PO q12h). Administer 12.5 mg twice a day, <b>AND</b> give an additional 5 mg mid-day for 3 days, then return to 12.5 mg PO q12h. Administer the minimum dose effective in controlling clinical signs, including a cough. <ul style="list-style-type: none"> <li>Doses does not have to be given every 8 hours if not conducive with client's schedule. For example, morning soon after waking up, upon returning from work in the afternoon and again approximately ½ hour to 1 hour before bed (not too close to bedtime to avoid having to wake up during the night to urinate).</li> </ul> </li> </ul>
Canine	
<b>BREED</b>	
Terrier Mix	
<b>SEX</b>	<ul style="list-style-type: none"> <li><i>In 4 to 5 days, consider increasing the dose of Cardalis:</i></li> </ul>
Neutered male	<ul style="list-style-type: none"> <li>Cardalis 10 mg spironolactone/1.25 mg benazepril PO every 24 hours (1.9 mg/kg and 0.23 mg/kg PO q24h, respectively). The dose may be increased to <u>every 12 hours</u>, however, monitor the potassium to ensure hyperkalemia does not develop (usually does not cause clinical signs if does develop). If necessary, administer both drugs separately to titrate the drug dosages more easily.</li> </ul> <p><i>If respiratory rate does not improve with the above changes, or if any of the following are not possible, i.e. increasing Cardalis, administering the two drugs separately, or eventually dividing the total dose of furosemide into 3 daily doses, one could administer pimobendan at 1.25 mg 3 times a day.</i></p>
<b>AGE</b>	
15 years	
<b>WEIGHT</b>	<ul style="list-style-type: none"> <li>An antitussive, codeine or hydrocodone, may help control the cough if the latter is not associated with pulmonary edema</li> </ul>
11.8 lbs	
<b>INTERPRETED BY</b>	<ul style="list-style-type: none"> <li>Monitoring of the resting (sleeping) respiratory rate (RRR) is highly recommended once to twice a day. The RRR should <b>NOT EXCEED 30 breaths per minute (bpm)</b>. If the respiratory rate is greater than 30 bpm, <u>or</u> if there is a gradual increase (over a day or two) toward 30 bpm, the patient should be evaluated immediately for congestive heart failure and the appropriate treatment initiated.</li> </ul>
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<b>IMAGING PERFORMED BY</b>	<ul style="list-style-type: none"> <li>Other clinical signs clients should monitor for include coughing (particularly at night), fatigue, lethargy, decreased exercise tolerance (i.e., not being able to walk for as long before becoming tired, or “running out of breath” while playing, or going up and down stairs, as well as syncope (collapsing or fainting spells). Restlessness, or agitation during the night, or being unable to find a comfortable position to sleep are also very common clinical signs.</li> </ul>
Dr. Green	
<b>HOSPITAL NAME</b>	<ul style="list-style-type: none"> <li>Moderate salt restriction is suggested (between 0.4-0.5 grams/1000 kcal of food). Monitor salt content in treats.</li> </ul>
Healing Spirit	
<b>REFERRING VET</b>	<ul style="list-style-type: none"> <li>Blood work PCV/TS, renal profile, SDMA and arterial blood pressure, are recommended 10-14 days after increasing the dose of Cardalis.</li> </ul>
Dr. Green	
<b>INVOICE</b>	<ul style="list-style-type: none"> <li>Blood work, CBC, serum biochemical profile, including a SDMA, and arterial blood pressure, are recommended at least twice a year to monitor renal parameters. If cost prohibitive, a PCV/TS may be performed instead of a full CBC.</li> </ul>
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<b>DATE</b>	<ul style="list-style-type: none"> <li>Re-evaluation of an echocardiogram is suggested in 3-6 months, or sooner depending on clinical signs.</li> </ul>
6/23/22	



**PATIENT**

Maxwell Demers

**SPECIES**

Canine

**BREED**

Terrier Mix

**SEX**

Neutered male

**AGE**

15 years

**WEIGHT**

11.8 lbs

**INTERPRETED BY**

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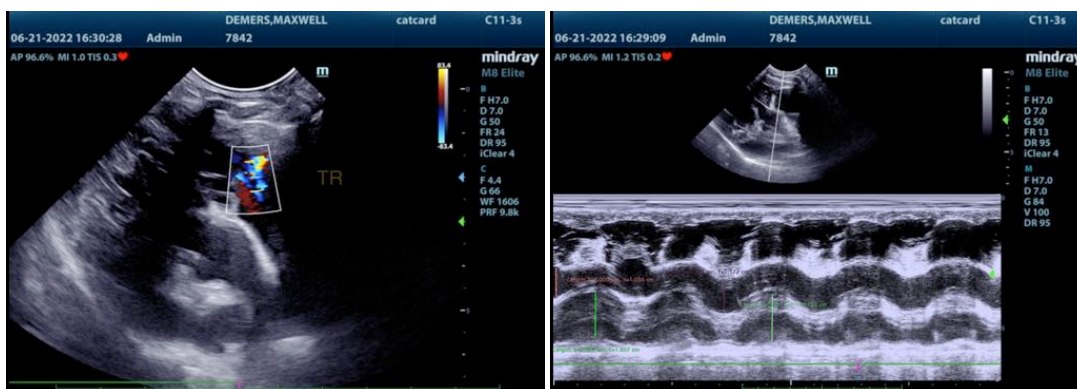
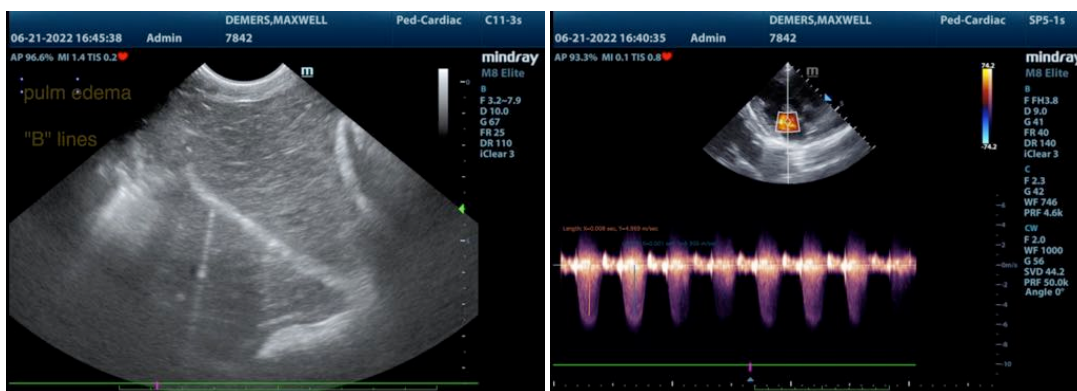
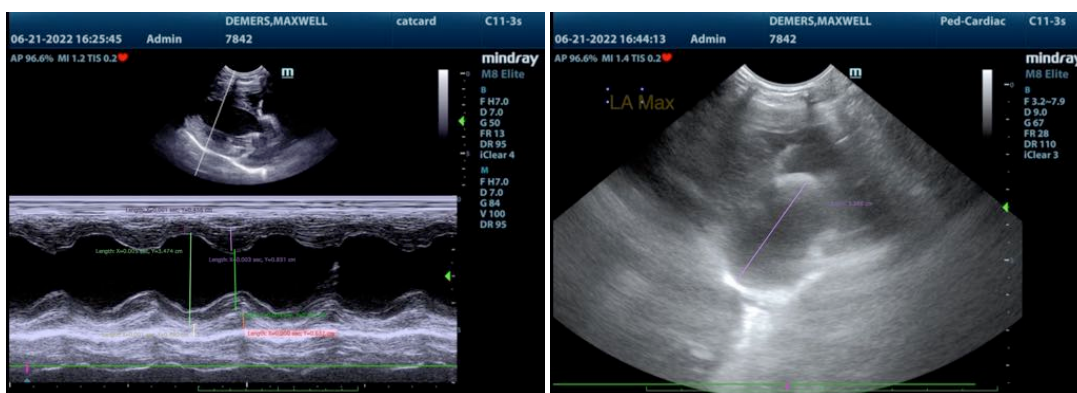
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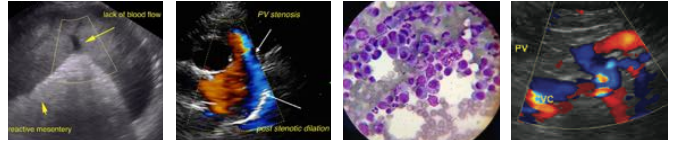
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- Unfortunately, general anesthesia is not recommended.
- If Maxwell is painful as a result of his periodontal disease, analgesics may be administered. Although not ideal, if a specific tooth is very loose, one could give Maxwell gabapentin orally at home 1-2 hours before the veterinary appointment, +/- low dose butorphanol at time of appointment, place topical anesthesia on the gums and remove the affected tooth. Have endotracheal tube, propofol or alfaxalone available in case excessive bleeding occurs and the trachea needs to be protected. The latter has never happened to me, but it is safer to be prepared. I also discuss the "theoretical" risk of requiring intubation.





**PATIENT**

Maxwell Demers

**SPECIES**

Canine

**BREED**

Terrier Mix

**SEX**

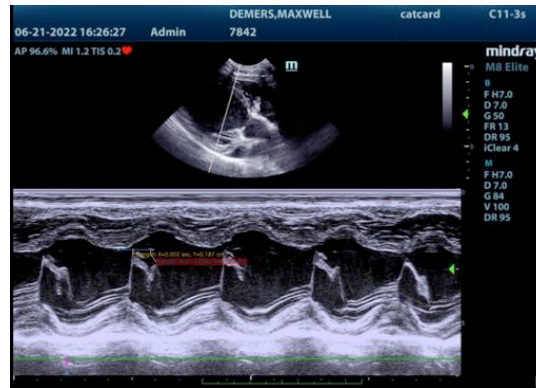
Neutered male

**AGE**

15 years

**WEIGHT**

11.8 lbs



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

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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Dr. Green

**HOSPITAL NAME**

Healing Spirit

**REFERRING VET**

Dr. Green

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