Dechra



# Congestive Heart Failure

## Breaking it down Piece by Piece

Cardisure®
Pimobendan

CARING ABOUT CARDIOLOGY

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# Agenda

1. Differentiating Cardiac from Respiratory Disease
2. Staging and Treatment of Canine Heart Failure
3. Monitoring Heart Failure Treatment

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# Cardiac vs Respiratory

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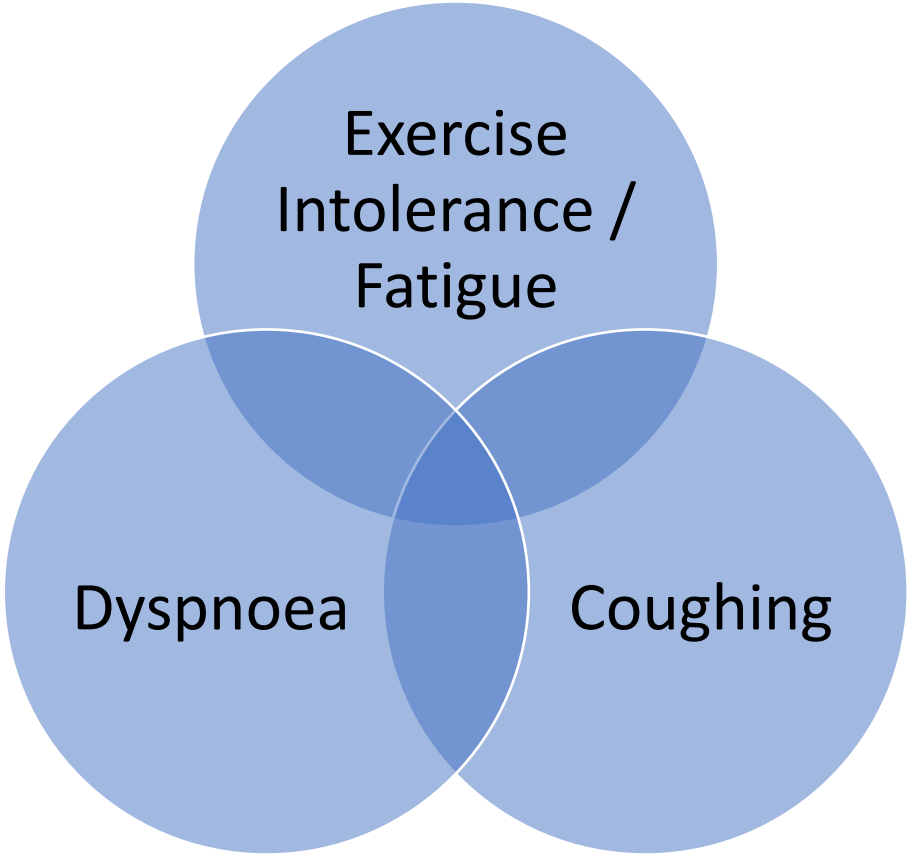
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# What are the common symptoms of congestive heart failure in dogs?

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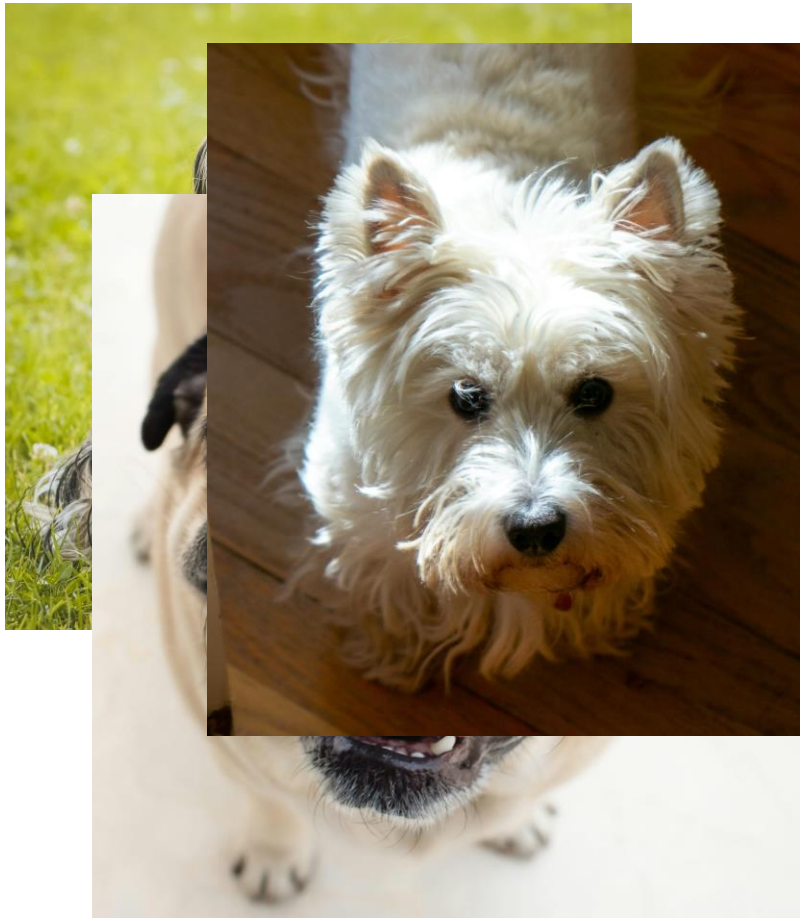
# What *symptoms* do we have?



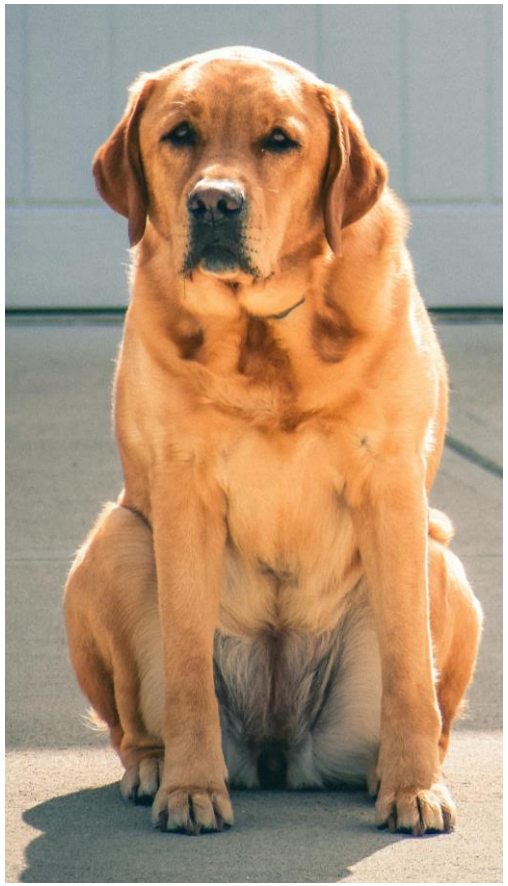
# What clues do we have?



Mitral Valve Disease



Respiratory Disease



Dilated Cardiomyopathy

# What clinical signs do we have?

Pale mucous membranes

Jugular Distention

Tachycardia

Gallop Sound

Expiratory wheeze

## Congestive Heart Failure:

## Respiratory disease:

*If ascites is due to R CHF there should be jugular distention, enlarged vena cava, hepatic venous congestions
SG is 1.018-1.036

# What clinical signs do we have?

Congestive Heart Failure:

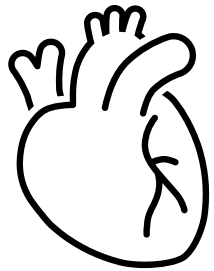
Pallor often on exertion
Sinus Tachycardia
Jugular Distention
Increased Apex Beat
Gallop sound
Ascites

Respiratory disease:

Cyanosis due to lack of oxygen
Resp sinus arrythmia
Inspiratory crackles
Expiratory wheeze

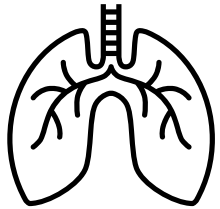
# Do we have a LOUD murmur?

YES



NO

If you have a small breed dog, with symptoms of congestive heart failure but NO murmur then it is not MVD



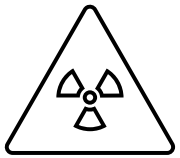
If the murmur is quiet, it is not in heart failure and therefore the heart disease is not causing the clinical signs

# Diagnostic tests



- Pro-BNP

Sensitivity 85.5% Specificity 81.3%



- Thoracic Radiographs

Inspiratory timed, avoidance of motion blur, good catch all test



- Echocardiography

Look for a dilated left atrium




**Haematology (PCV as minimum)**

Check for aneamia

**Biochemistry**

Assess urea/creatinine

Electrolytes

**Urinalysis**

Specific gravity to assess kidney function

**Blood pressure measurement**

Rule out concurrent systemic hypertension

# Take Home Tips

- Small breed with symptoms, if it is heart failure causing the symptoms, there should be a loud murmur
- MVD & DCM primarily cause left CHF ie pulmonary oedema
- If symptoms are due to heart disease there should be a big LA on echo and/or x-ray
- Crackles and wheezes are more often due to airway disease than oedema

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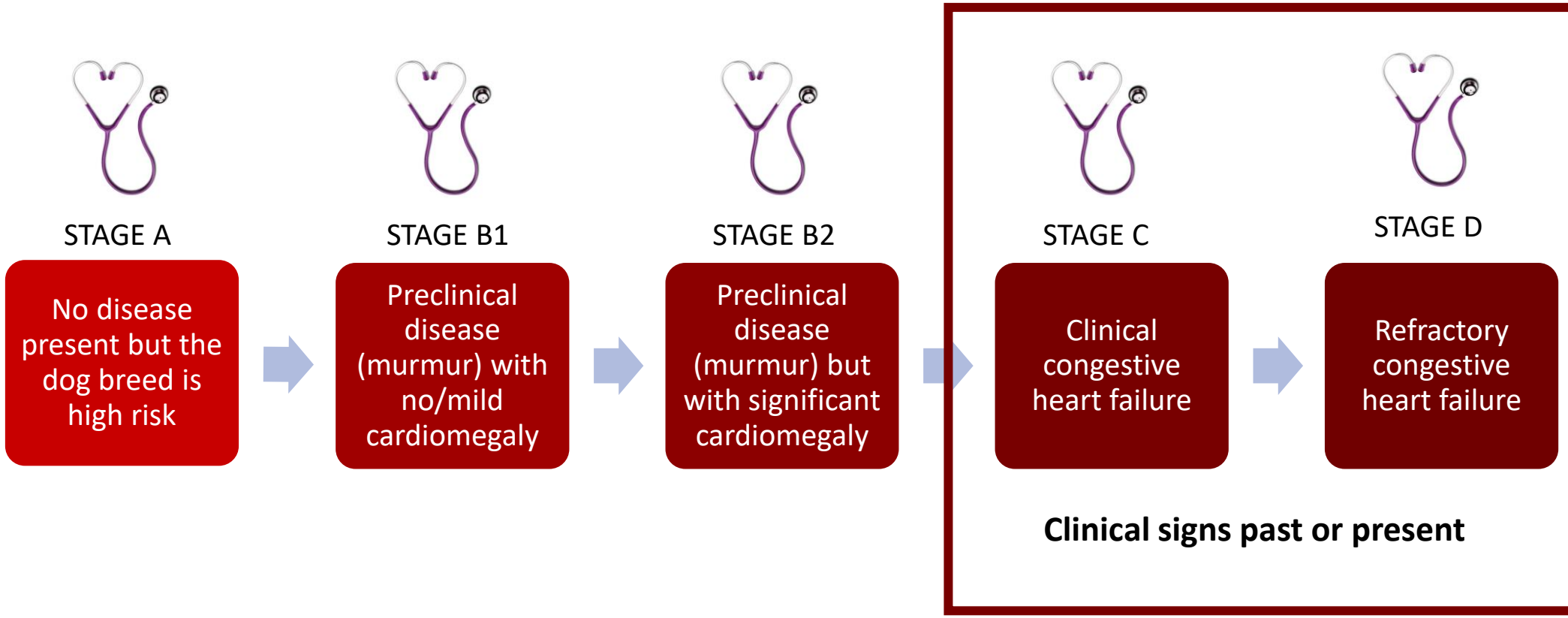


# Cardiac Disease Staging and Treatment

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# Cardiac Disease Staging




**Reference**
Atkins C, Bonagura J, Ettinger S, *et al*. (2009) Guidelines for the diagnosis and treatment of canine chronic valvular heart disease. *J Vet Intern Med.* **23**(6):1142–1150

# What are the goals of treatment of Stage C congestive heart failure?



slido



# What are the goals of treatment of stage C congestive heart failure?

ⓘ Start presenting to display the poll results on this slide.

# What are the goals of treatment of Stage C congestive heart failure?



1. Relief of clinical signs
= improved quality of life

1. Slowing disease progression
= prolonging survival time

# How can we achieve this with our medical treatments?

Clinical signs come from:

1. Low cardiac output

2. Increased venous pressure
resulting in congestion = pulmonary oedema / ascites

3. Compression of airways from enlarged left atrium = coughing

Pharmaceuticals aim to:

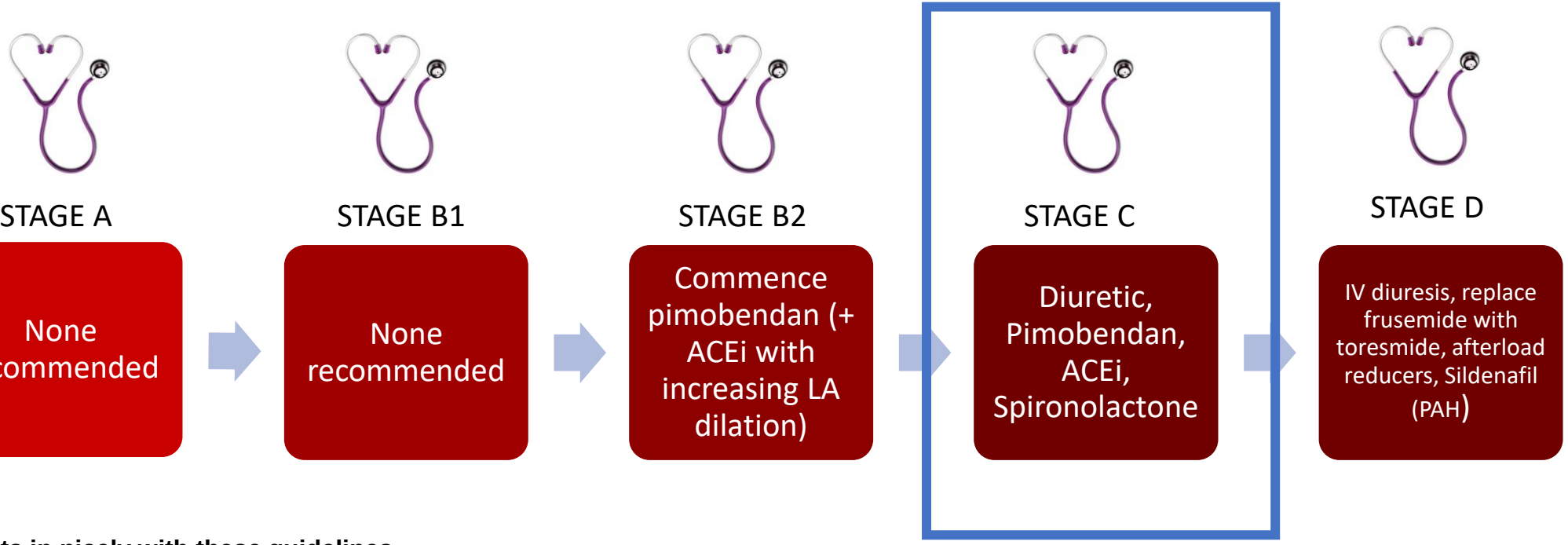
1. Increase cardiac output (Inotrope)

2. Decrease venous pressure (Vasodilator)

3. Relieve congestion = pulmonary oedema / ascites (Diuretic)

4. Relieve cough (anti-tussives)

# ACVIM Consensus Guidelines for treatment of Mitral Valve Disease




**Treatment of DCM also fits in nicely with these guidelines**

**Reference**
2019 B.W. Keene *et al.* ACVIM consensus guidelines for the diagnosis and treatment of Myxomatous mitral valve disease in dogs. *J Vet Intern Med* **33**(3): 1127-1140

# Diuretic treatment of Congestive Heart Failure

1. **Initial treatment dose**
(excess fluid retention such as pulmonary oedema)
1-3 mg/kg BID

2. **Maintenance dose**
(once dog is normovoleamic – after 1-2 weeks)
0.5-2mg/kg BID

Monitor regularly



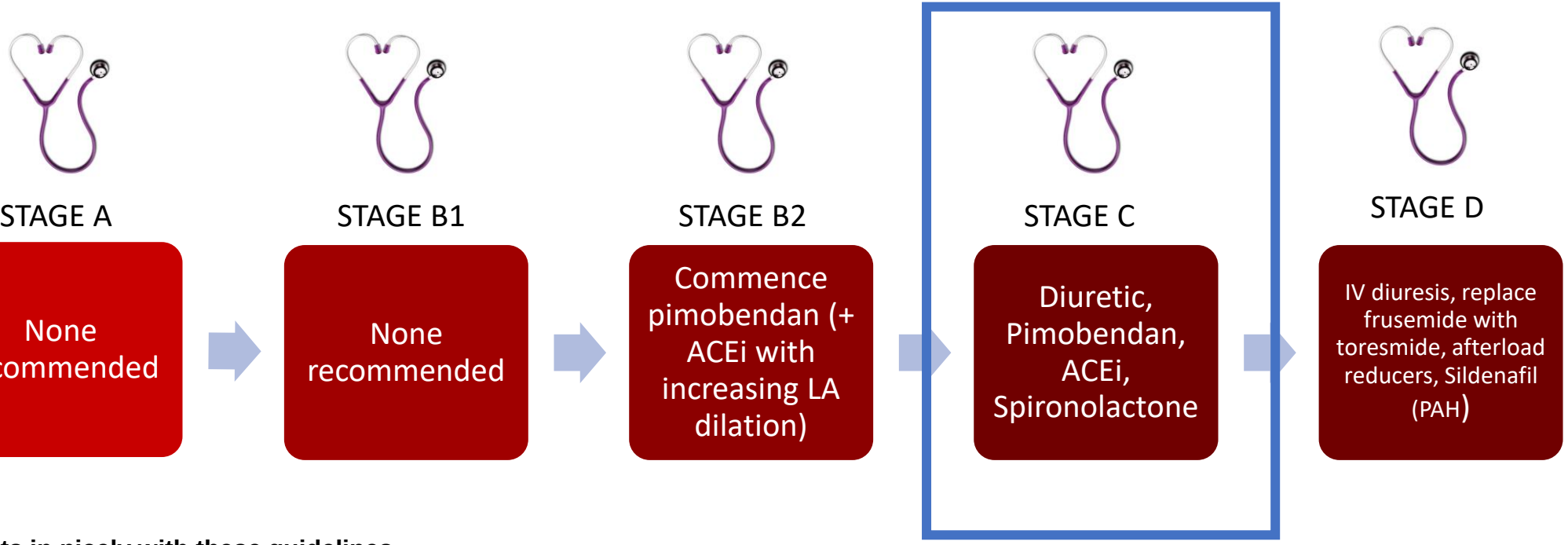


Renal function and electrolytes

Resting respiratory rate



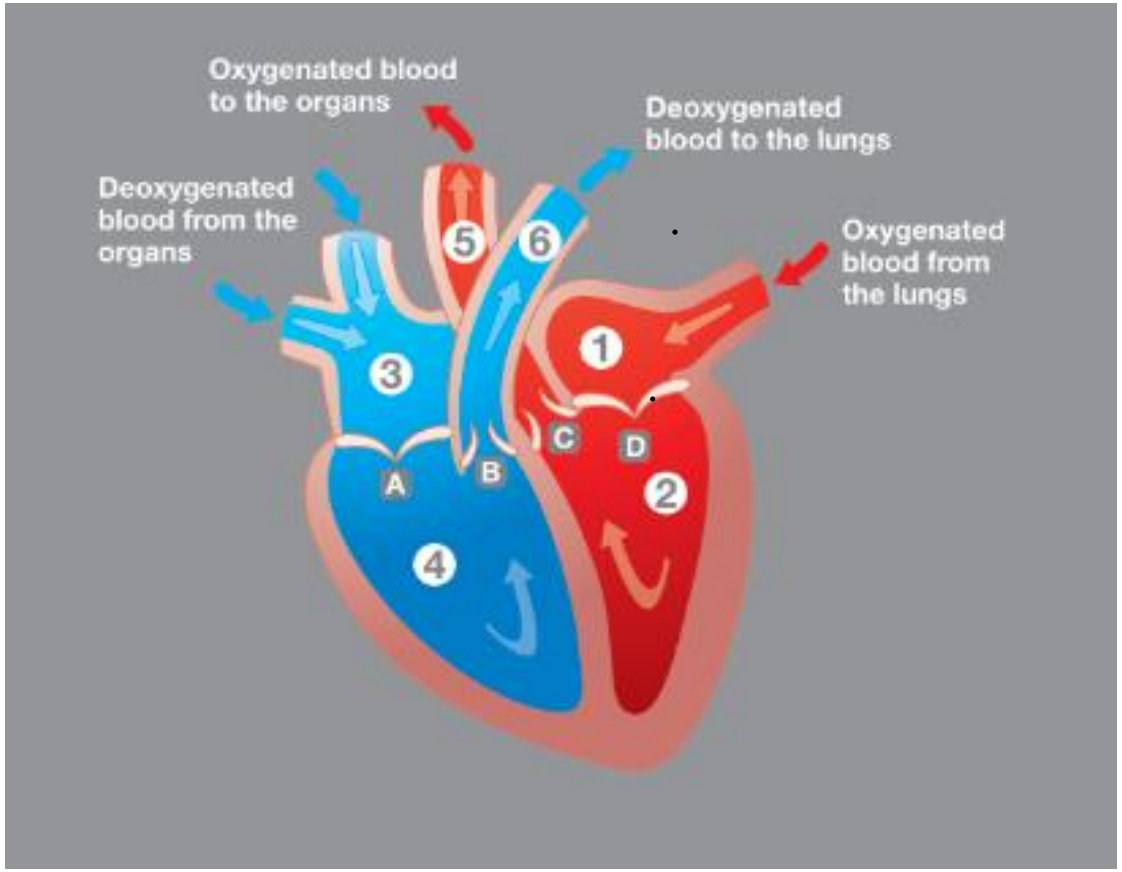
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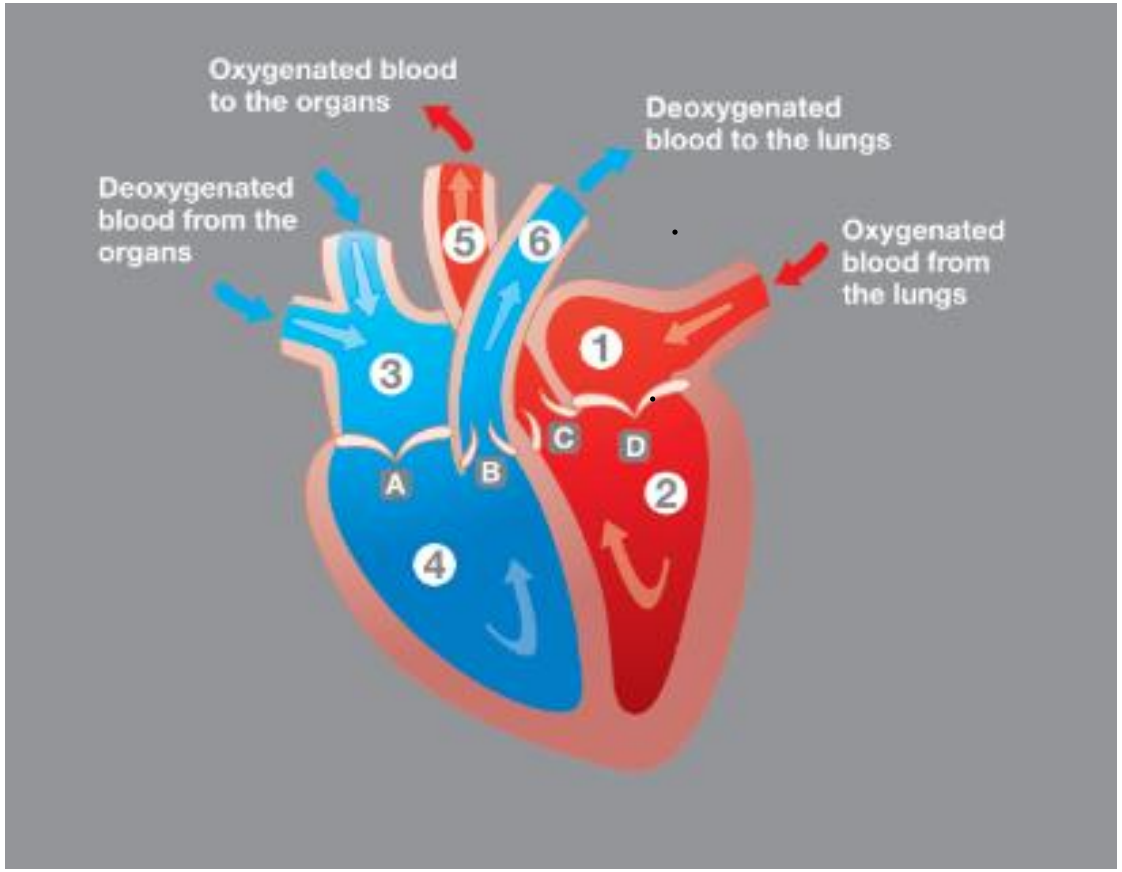
# Pimobendan for treatment of Heart Failure




1) Calcium Sensitising and phosphodiesterase 2 inhibiting drug

Positive inotrope = improved contractility and therefore cardiac output

# Pimobendan for treatment of Heart Failure




2) Vasodilation decreases both preload and afterload (venous and arteriolar)

Reducing afterload = reducing the resistance = reduce the regurgitant fraction to the left atrium

Therefore, decreasing left atrial pressures, decreasing the likelihood of pulmonary oedema forming

# Where is the evidence strongest?
# Pimobendan – The QUEST Study 2008

**Pimobendan vs Benazepril**
in **Stage C** heart failure dogs.

The dogs in the Pimobendan group had significantly longer survival times than those receiving the ACE inhibitor.

| | Median Time to Primary Endpoint |
|---|---|
| Pimobendan Group | 267 days |
| Benazepril Group | 140 days |

**Reference**
J. Häggström *et al.* (2008) The effect of Pimobendan or Benazepril Hydrochloride on Survival Times in Dogs with Congestive Heart Failure Cause by Naturally Occurring Myxomatous Mitral Valve Disease: The QUEST Study J Vet Intern Med **22**: 1124-1135

# Where is the evidence strongest?
# Pimobendan – The QUEST Study 2013

**Pimobendan vs Benazepril**
in **Stage C** heart failure dogs.

Pimobendan group showed increased time before intensification of CHF treatment.

Leading to a lower proportion of dogs receiving additional treatment

| | Time before intensification of treatment |
|---|---|
| Pimobendan Group | 98 days |
| Benazepril Group | 59 days |

Dogs receiving benazepril
were 1.69 times more likely to undergo intensification of their treatment first

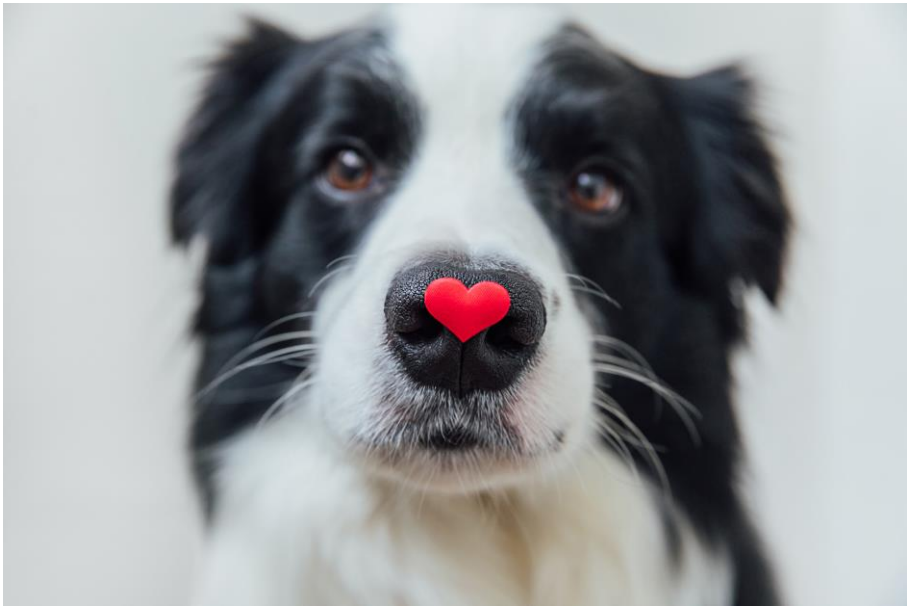
**Reference**
Häggström et al 2013 . Longitudinal analysis of quality of life, clinical, radiographic, echocardiographic, and laboratory variables in dogs with myxomatous mitral valve disease receiving pimobendan or benazepril: the QUEST study. J Vet Intern Med. 2013 Nov-Dec;27(6):1441-51. doi: 10.1111/jvim.12181. Epub 2013 Sep 6. PMID: 24010489.

# Where is the evidence strongest?
# Pimobendan – The QUEST Study 2013

**Pimobendan vs Benazepril**
in **Stage C** heart failure dogs.

Pimobendan group:

- Smaller heart size (left ventricular diastolic and systolic measurements)
- Higher serum sodium (less free water retention)




**Reference**

Häggström et al 2013 . Longitudinal analysis of quality of life, clinical, radiographic, echocardiographic, and laboratory variables in dogs with myxomatous mitral valve disease receiving pimobendan or benazepril: the QUEST study. J Vet Intern Med. 2013 Nov-Dec;27(6):1441-51. doi: 10.1111/jvim.12181. Epub 2013 Sep 6. PMID: 24010489.

# Cardisure for treatment of Heart Failure

**Indication:**

For the treatment of canine congestive heart failure originating from valvular insufficiency (mitral and/or tricuspid regurgitation) or dilated cardiomyopathy.



# Cardisure for treatment of Heart Failure

**Dosage:**
0.1-0.3 mg/kg BID

**Good prognosis + less severe clinical signs = middle to lower end of dose range**

**Dogs poor prognosis (DCM) = middle to high end of dose range**

Adjusted accordingly.







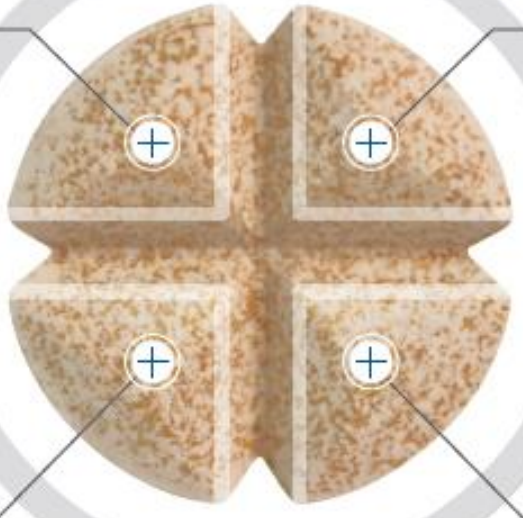
## Divisible tablets

Cardisure's easily divisible tablets enable accurate and flexible dosing.

## Blister packs

Cardisure comes in blister packs which are quick and easy to dispense.

Each box holds 10 strips of 10 tablets and divided tablets can be used up to three days after first opening the blister pack.



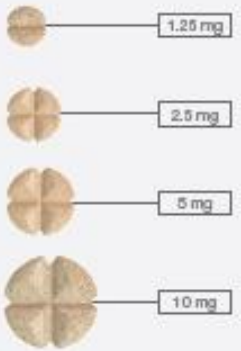


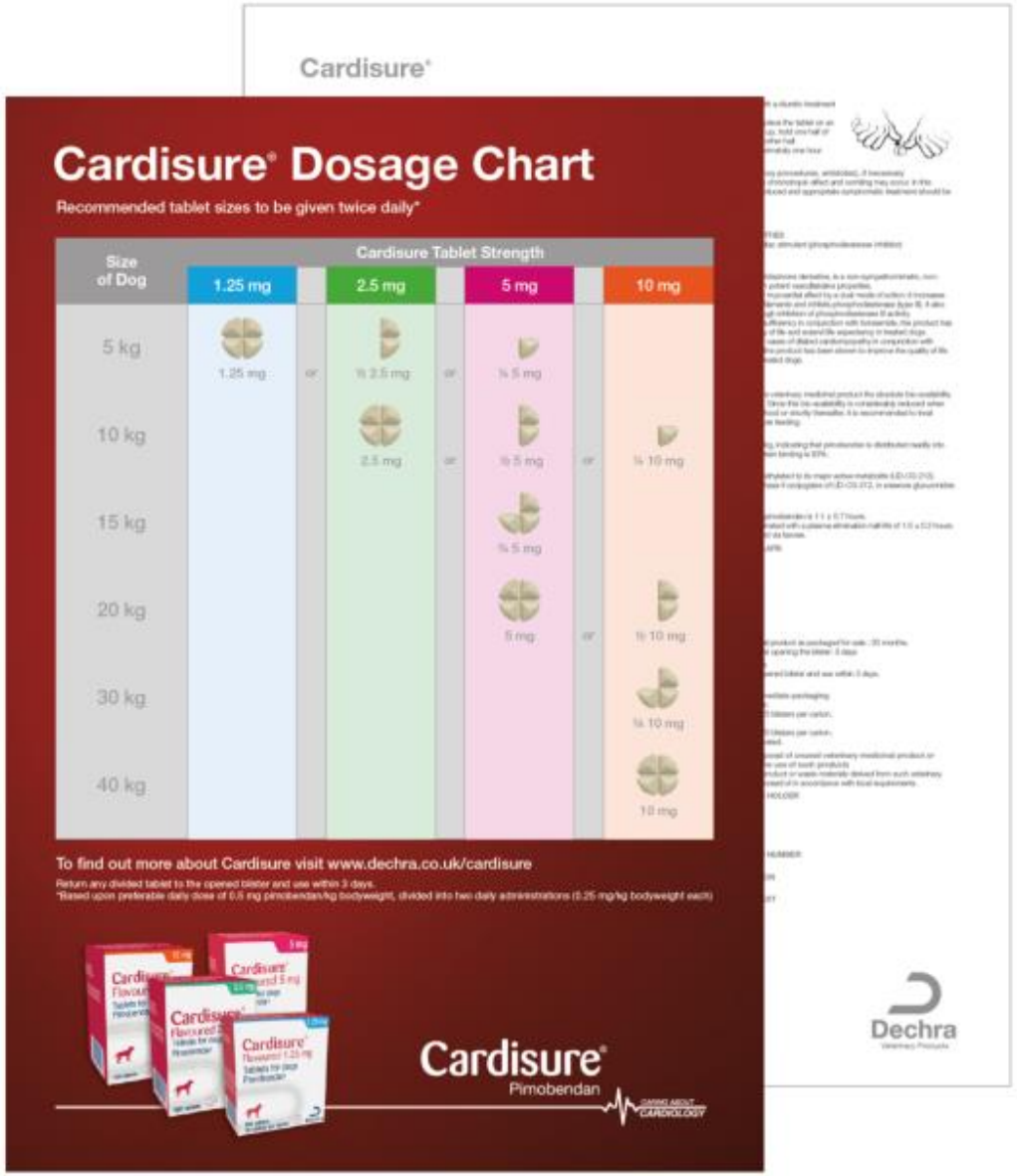
## Flavoured tablets

Cardisure tablets have a natural meat flavouring to encourage acceptance.

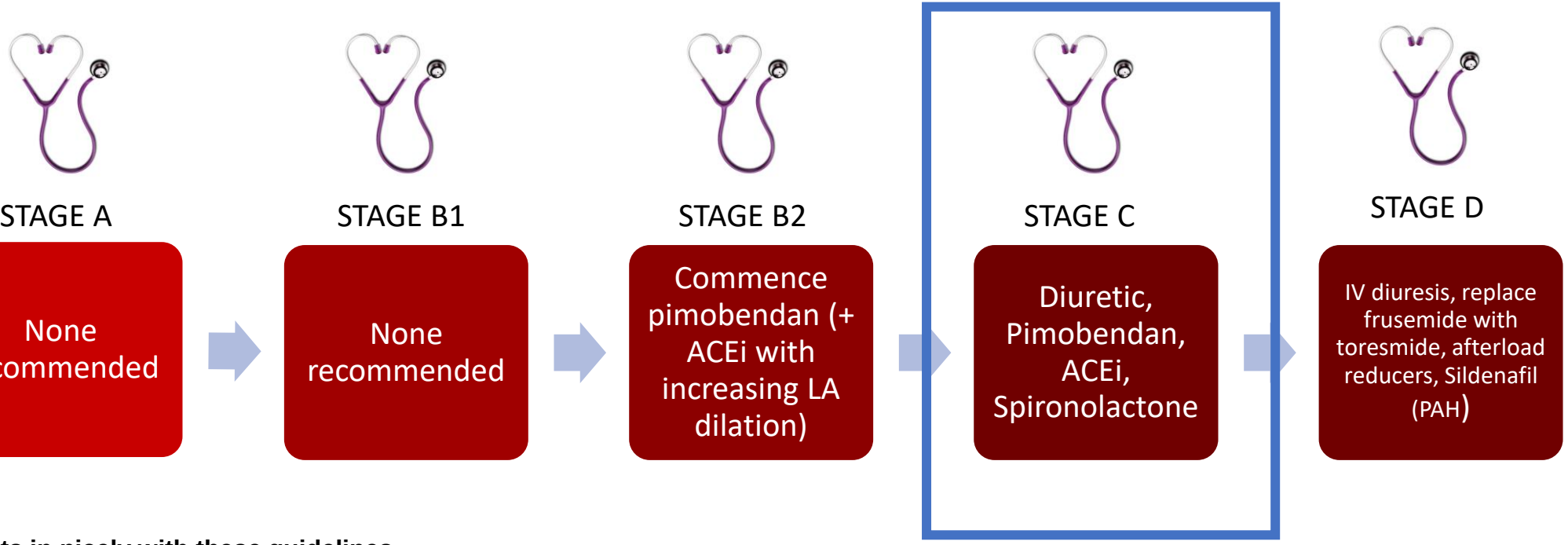
## 4 strengths

Flexible dosing for dogs of all sizes.




Cardisure®
Cardisure® Dosage Chart
Recommended tablet sizes to be given twice daily*
Size of Dog
Cardisure Tablet Strength
1.25 mg
2.5 mg
5 mg
10 mg
5 kg
10 kg
15 kg
20 kg
30 kg
40 kg
1.25 mg
or
½ 2.5 mg
2.5 mg
½ 5 mg
¼ 10 mg
To find out more about Cardisure visit www.dechra.co.uk/cardisure
Return any divided tablet to the opened blister and use within 3 days.
*Based upon preferable daily dose of 0.5 mg pimobendan/kg bodyweight, divided into two daily administrations (0.25 mg/kg bodyweight each)
Cardisure®
Pimobendan
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# ACVIM Consensus Guidelines for treatment of Mitral Valve Disease




**Treatment of DCM also fits in nicely with these guidelines**

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# ACE inhibitors in heart failure treatment

- ACE Inhibitors prevent the production of angiotensin II
- Reducing blood volume  = reduce the work of the heart
- Blocking vasoconstriction decreases cardiac afterload and reduces pulmonary venous pressures
- BENCH study 1999 demonstrated benazepril increased survival times in comparison to a placebo in dogs with congestive heart failure

| | Mean Survival Time |
|---|---|
| Placebo Group | 158 days |
| Benazepril Group | 428 days |

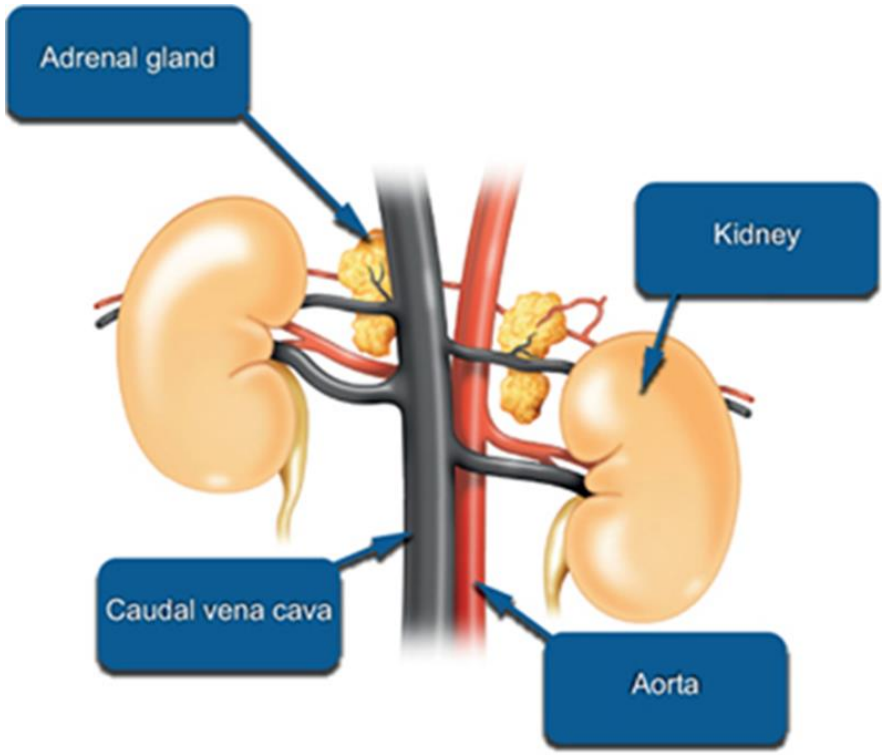
**Reference**
The BENCH (BENazepril in Canine Heart disease) Study Group (1999) The Effect of Benazepril on Survival Times and Clinical Signs of Dogs With Congestive Heart Failure: Results of a Multicenter, Prospective, Randomized, Double-Blinded, Placebo-Controlled, Long-Term Clinical Trial. *J Vet Cardiol* 1(1): 7-18

# Spironolactone for the treatment of heart failure

Spironolactone is an aldosterone antagonist (blocker).

By **blocking aldosterone**, spironolactone causes the kidneys to excrete salt and fluids, but retain potassium.

Evidence base for use in congestive heart failure.




Kidneys and adrenal glands in the dog (ventral view)

**Reference**

F. Bernay *et al* (2010) Efficacy of Spironolactone on Survival in Dogs with Naturally Occurring Mitral Regurgitation Caused by Myxomatous Mitral Valve Disease *J Vet Intern Med* 24 (2): 331-41

# Summary: Treatment for Stage C Heart Failure

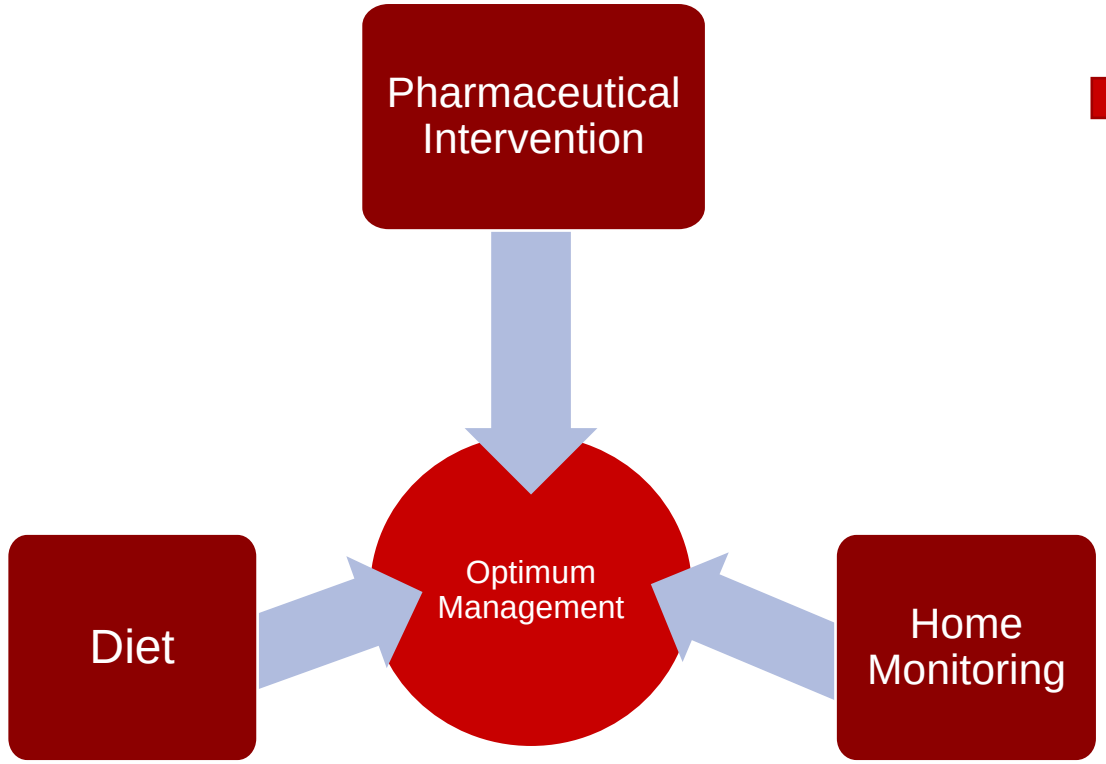



**Pimobendan**
Cardisure
Inotrope and vasodilator

**ACE inhibitor**
Inhibits activation of the RAAS

**Diuretic**
Control excess fluid

**Spironolactone**
Aldosterone inhibitor



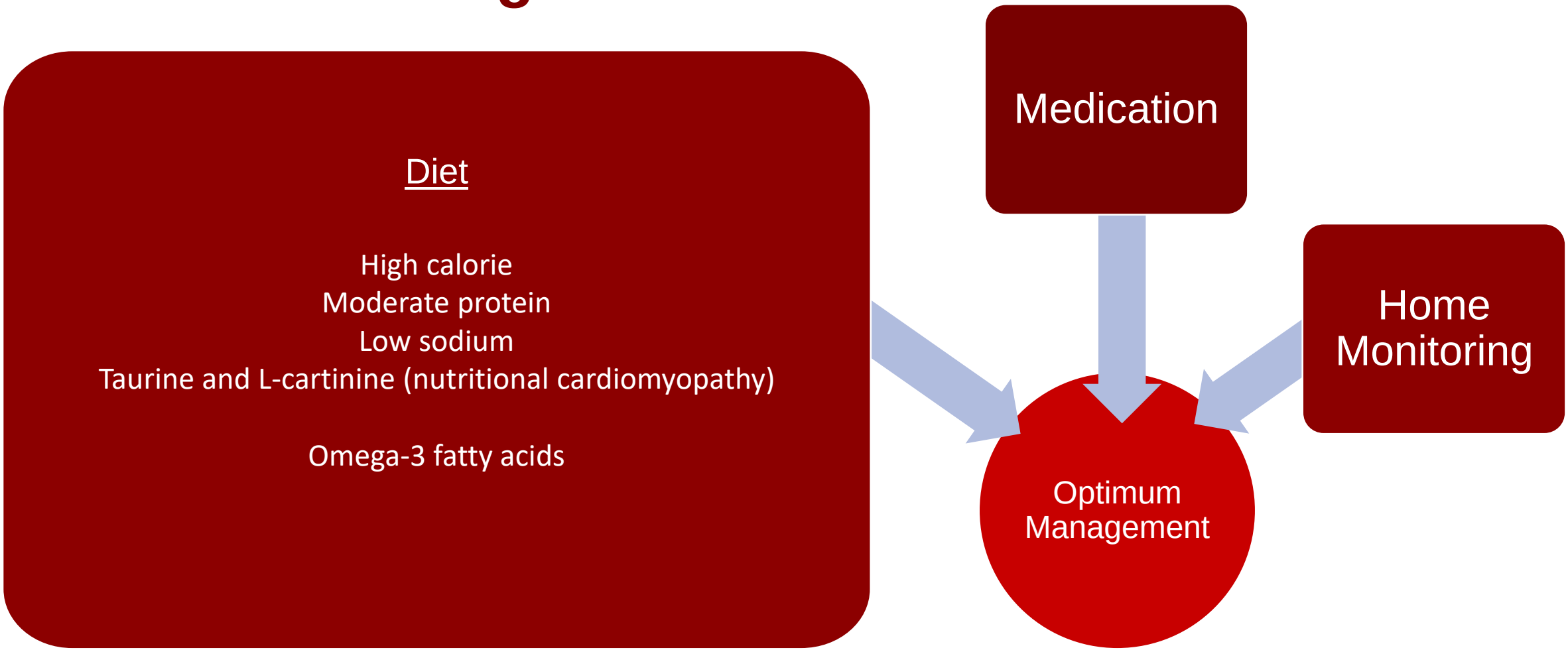
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# What do we want from a cardiac diet?

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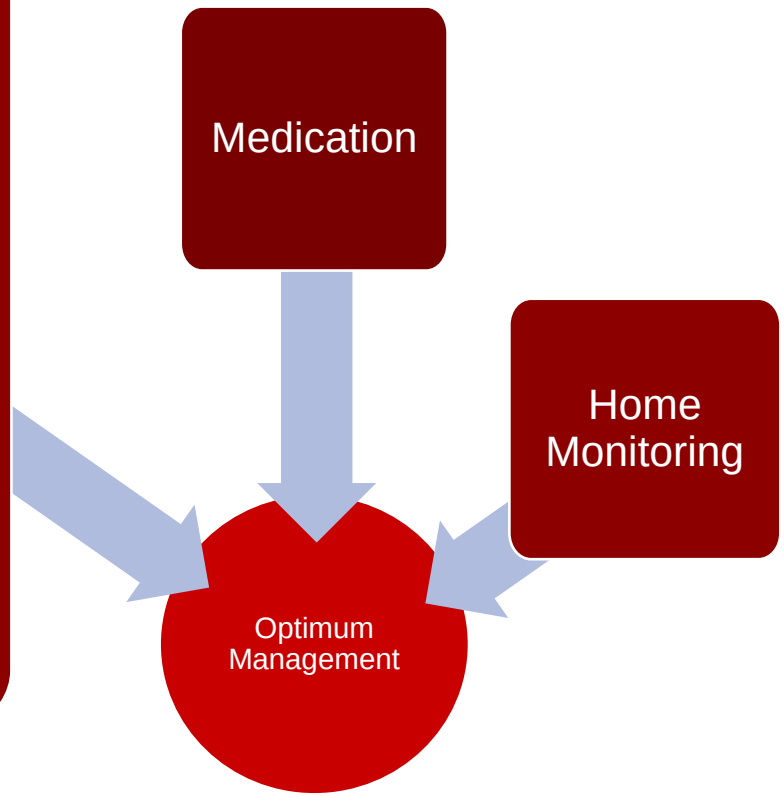
# Treatment for Stage C Heart Failure



# Treatment for Stage C Heart Failure

## Benefits of dietary fish oil in heart diseases

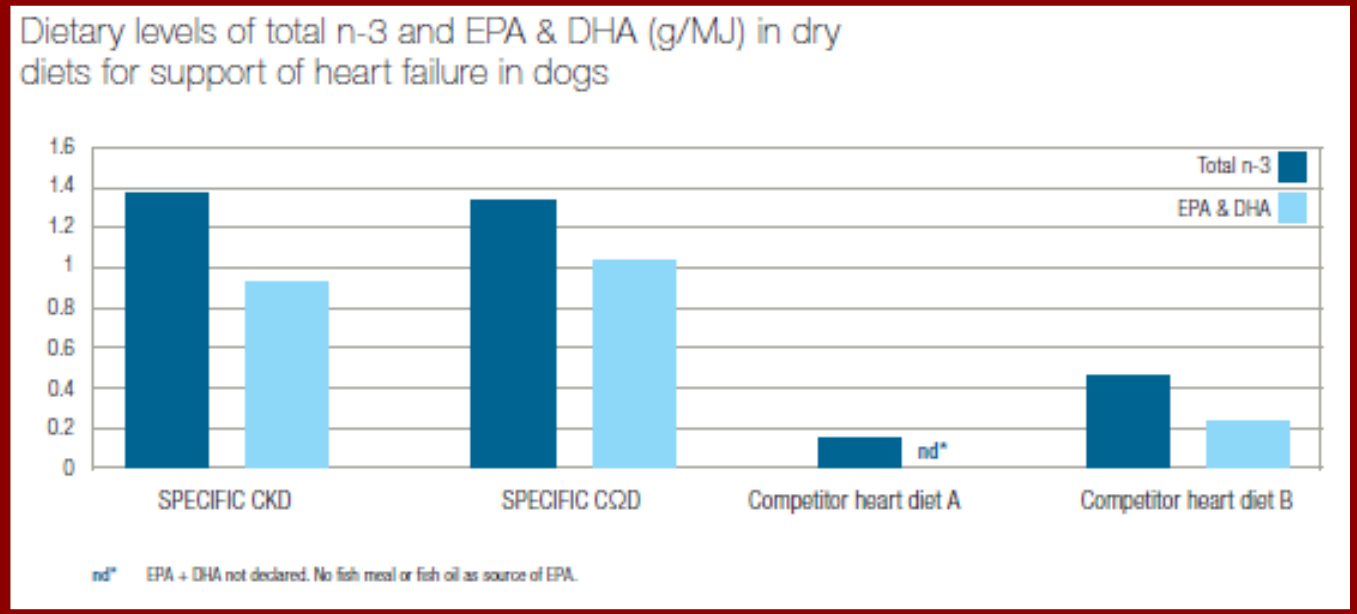
- Reduce cachexia
- Is associated with longer survival time

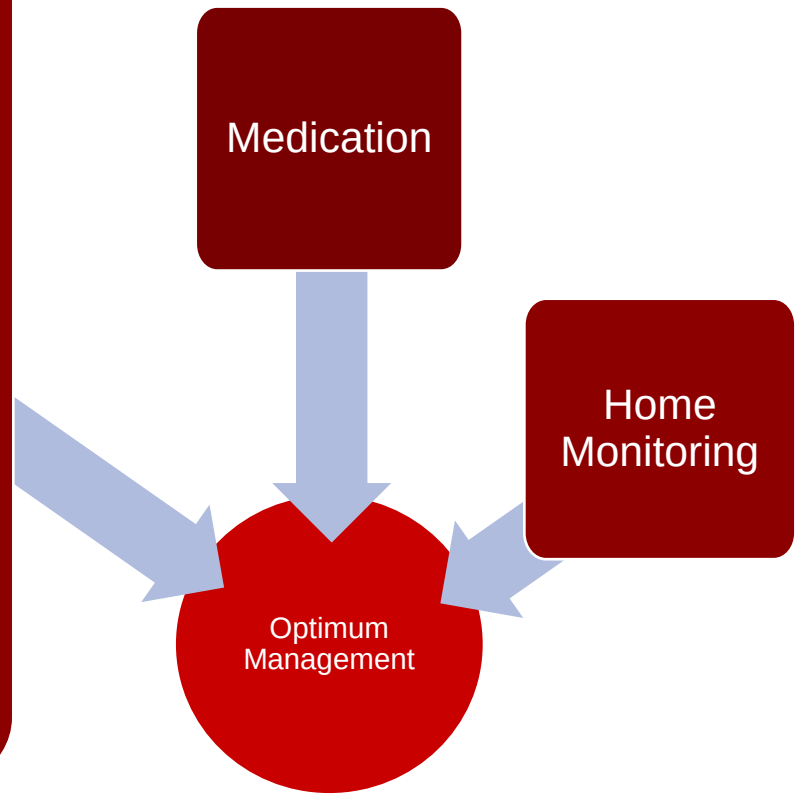



**References**
Freeman LM *et al*. (1998) Nutritional alterations and the effect of fish oil supplementation in dogs with heart failure. J Vet Med Intern Med **12**: 440-448.
Slupe JL *et al*. (2008) Association of body weight and body condition with survival in dogs with heart failure. J Vet Intern Med **22**: 561-565.

# Treatment for Stage C Heart Failure

**SPECIFIC™ CKD Heart & Kidney Support and SPECIFIC™ CΩD Skin Function Support have uniquely high levels of EPA and DHA from fish oil to support dogs with heart failure**





**References**

Freeman LM *et al*. (1998) Nutritional alterations and the effect of fish oil supplementation in dogs with heart failure. J Vet Med Intern Med **12**: 440-448.

Slupe JL *et al*. (2008) Association of body weight and body condition with survival in dogs with heart failure. J Vet Intern Med **22**: 561-565.

# Treatment for Stage C Heart Failure

## Diet

For dogs with cardiac failure but normal kidney function, Dechra recommends **SPECIFIC™ CΩD Skin Function Support**

CΩD has a low sodium level, high energy density, high level of n-3 fatty acids (as EPA & DHA from fish), and added taurine and L-carnitine




Medication

Home Monitoring

Optimum Management

# Treatment for Stage C Heart Failure

## Diet

For dogs with cardiac failure and concurrent kidney insufficiency: **SPECIFIC™ CKD Heart & Kidney Support**

CKD has a low protein, phosphorus and sodium level, high energy density, high level of n-3 fatty acids (as EPA & DHA from fish), and added taurine and L-carnitine




Medication

Home Monitoring

Optimum Management

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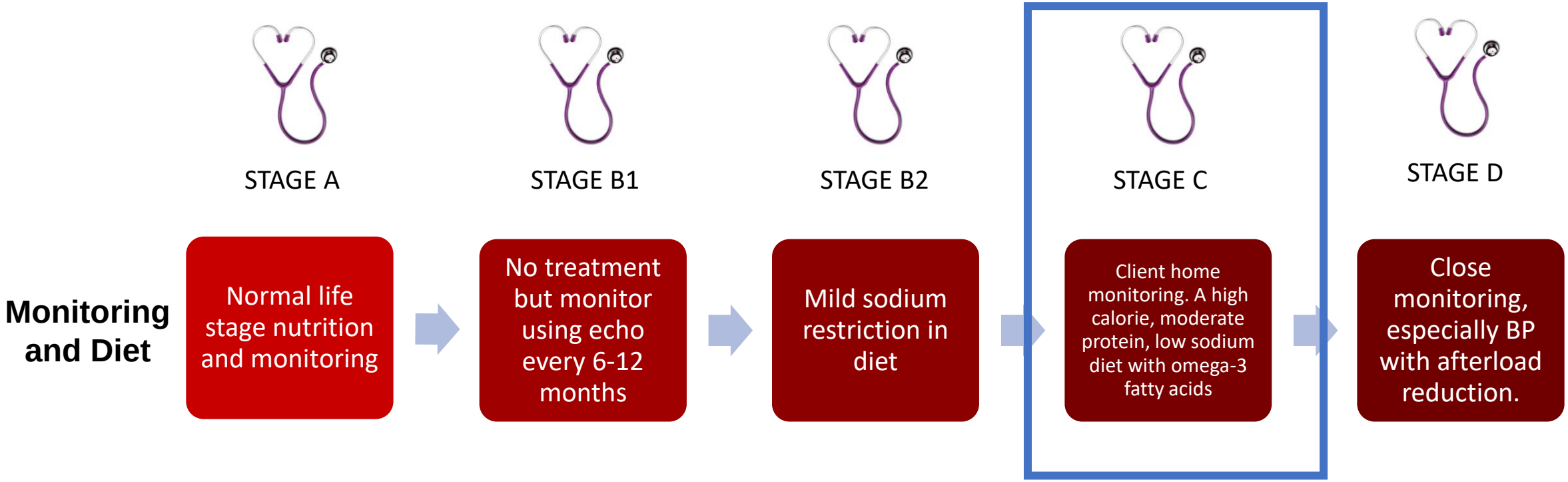


# Monitoring Heart Failure

Cardisure®
Pimobendan

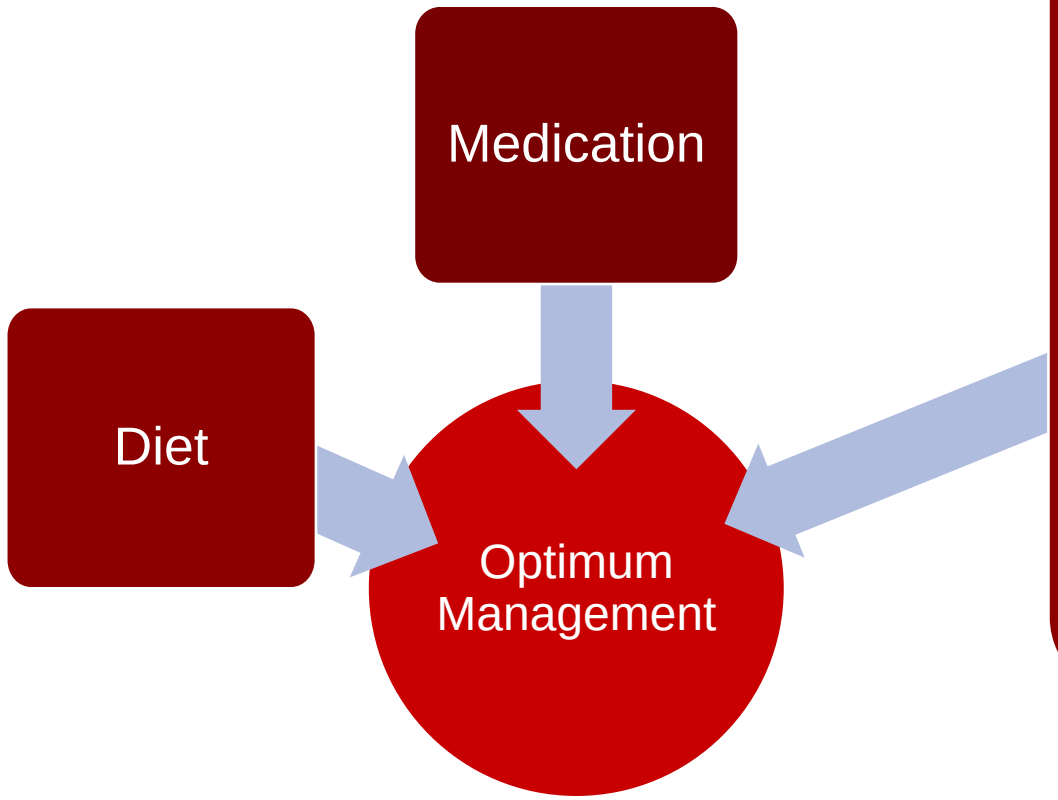
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# Treatment for Stage C Heart Failure




## Home Monitoring

To help with this, Dechra have developed a logbook which encourages owners to monitor:

Appetite
Exercise Levels
Happiness
Coughing
Respiration Rate

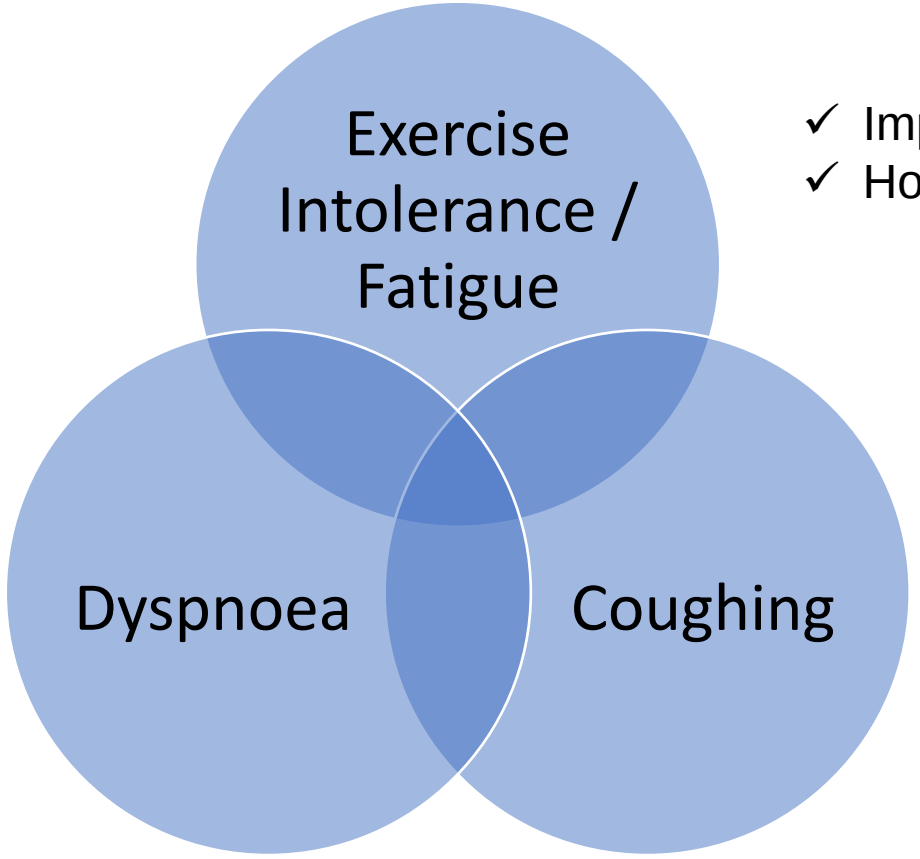
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# Do you recommend measurement of resting respiratory rate to owners?

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# Owner assessment of their dog




- ✓ Improvement in ability on walks
- ✓ How much exercise can they do?

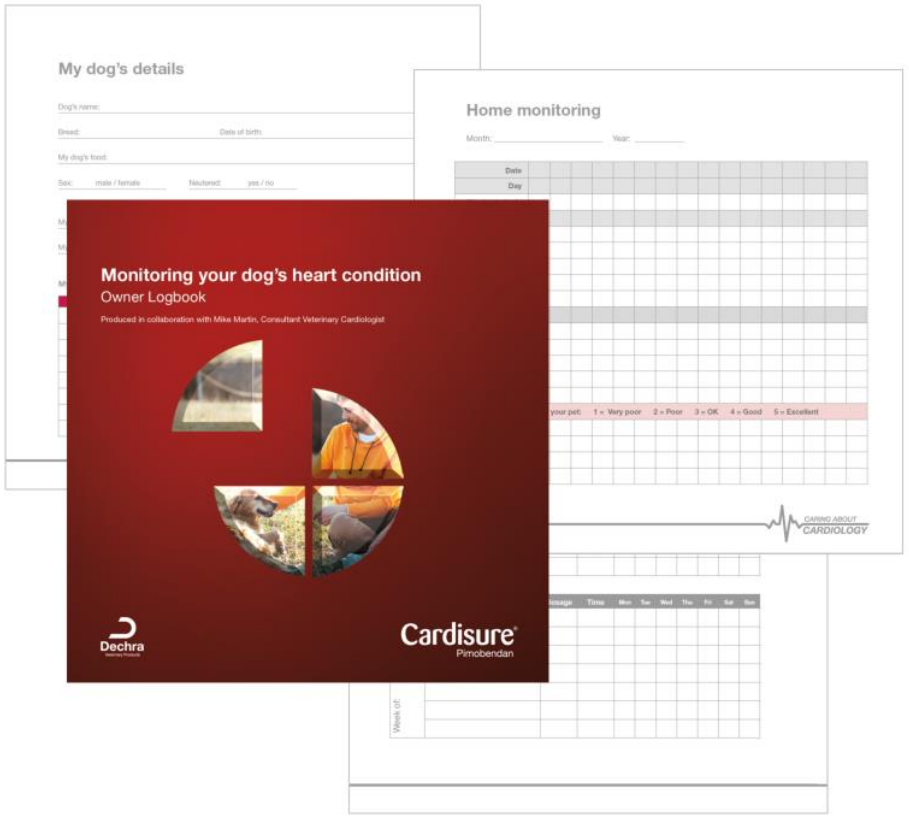
- ✓ Record resting respiratory rate
- ✓ Note degree of respiratory effort

- ✓ Beware do not expect this to go away completely as some may be caused by bronchial compression

- ✓ Improvement in demeanour, happiness factor and appetite

Owner will perceive these as important factors of Quality of Life for the dog

# Owner assessment of their dog



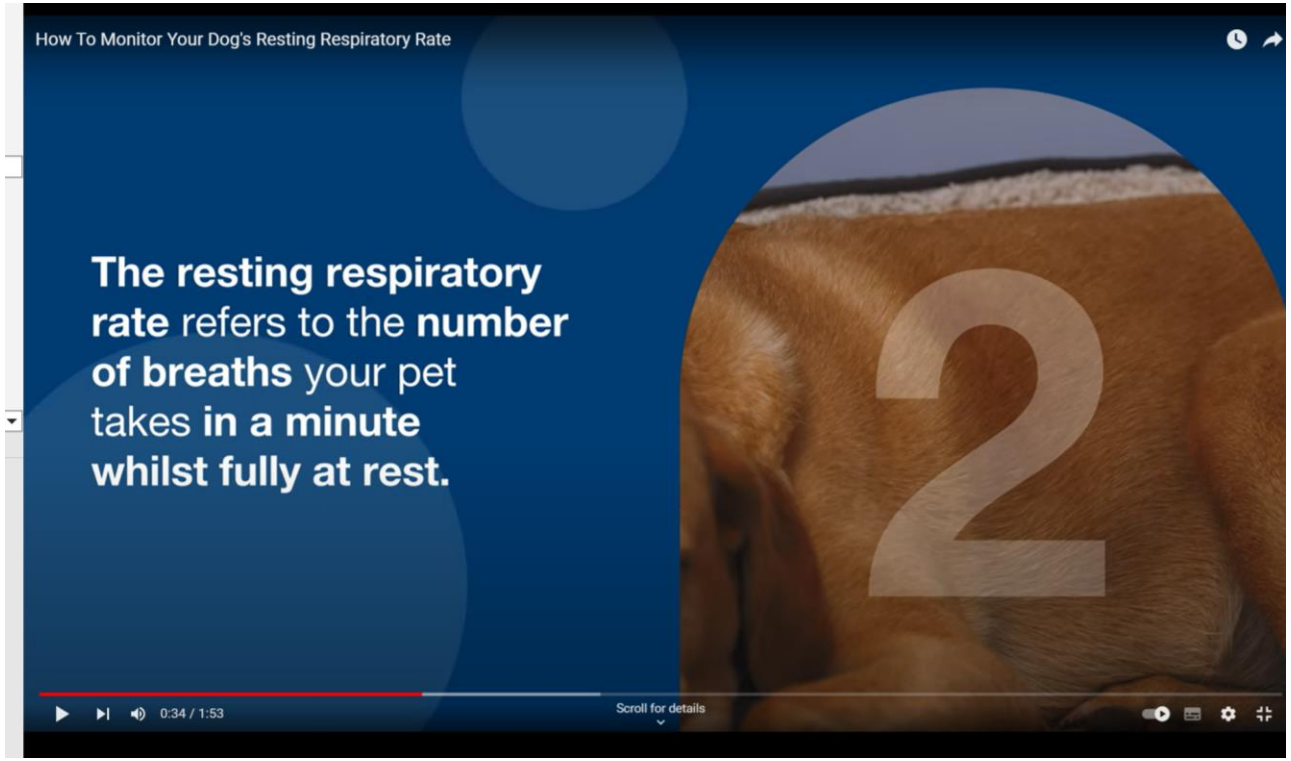

## Home monitoring

Month: _____ Year: _____

| Date | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | | | | | | | | | | | | | | |
| Heart rate / min | | | | | | | | | | | | | | | |
| Respiration rate | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| Please score your pet: 1 = Very poor 2 = Poor 3 = OK 4 = Good 5 = Excellent | | | | | | | | | | | | | | | |
| Appetite | | | | | | | | | | | | | | | |
| Exercise level | | | | | | | | | | | | | | | |
| Happiness | | | | | | | | | | | | | | | |
| Cough | | | | | | | | | | | | | | | |

# Video for resting respiratory rate in dogs

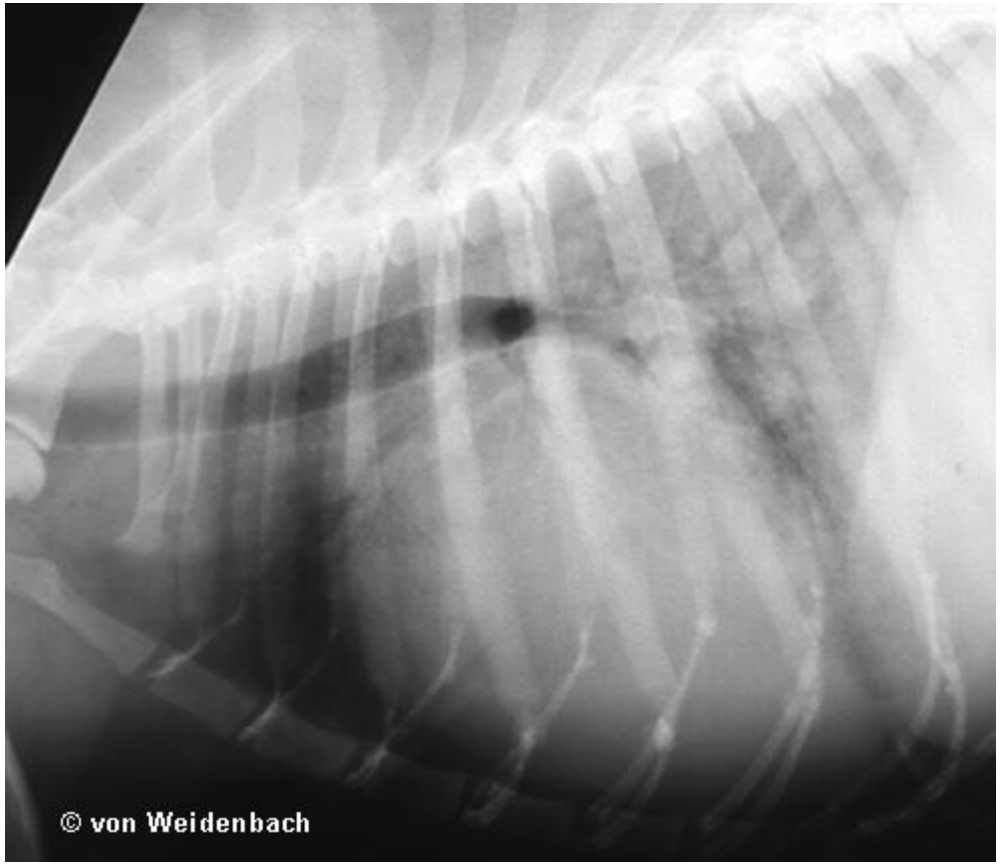
SCAN ME




Search YouTube:
“how to monitor your dog's resting respiratory rate Dechra”

# Veterinary assessment of Heart Failure Dog

- ✓ Review owner records
- ✓ Chest x-ray to check for pulmonary oedema resolution
- ✓ Monitor bloods for pre-renal azotaemia
- ✓ Minimise the dose of furosemide, give owner new dose range – highlight monitoring
- ✓ Consider dose increase for Cardisure as the animal progresses



# Treatment tips

- Use diuretics with care – adjust dosage to find the correct balance for each dog
- Monitor frequently, include blood pressure, make use of owners records.
- 5-10 days for first recheck
- Gradually stretch to longer intervals depending upon stability
- Run bloods regularly

# Can I give Cardisure after rather than before food?

- The **bioavailability** of Pimobendan within an **aqueous solution** is **reduced** in the presence of **food**. It has not, at time of writing, been shown to definitively decrease the bioavailability of any oral medications of pimobendan in dogs.

- Having said that it would be best to avoid this administration to ensure efficacy. It would appear that the guidance to administer one hour before food is in order to administer on an empty stomach allowing time for the drug to be absorbed before food.

- Taking into account the gastric emptying time in dogs, waiting a **minimum of 7 hours after feeding** would be advisable, where this is not possible waiting as long as is reasonably possible would be best.
-

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# Questions?

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# Thank you for Listening!

INSERT QR
CODE

# Your feedback is valuable

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# Questions?

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# Frequently asked questions

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# Can the meat flavour in Cardisure cause allergic reactions?

- The natural meat flavouring is provided by a yeast extract.
- This is a low salt extract with a pleasant and intensive meat character.
- It has low allergenic potential. Although there is no quantifiable data to substantiate the latter.

# Are there any contraindications for giving Cardisure?

- Contraindications:
  - HCM
  - Aortic stenosis
  - (pregnancy and lactation)

- Special warnings:
  - Diabetes
  - Severe hepatic insufficiency

- Monitoring of cardiac function and morphology is recommended

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**Divisible**
**Flavoured**
**Affordable**

**Break it down and Cardisure is the answer.**

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