what's the take-home?

INSIGHTS FROM CLINICAL CASES . PRESENTATION

Nutritional Management of Feline Heart Disease

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A 5-year-old, castrated, male domestic shorthair was presented for acute onset of dyspnea.

This indoor cat was previously healthy and up-to-date on vaccinations. The usual food was a commercial canned food. On physical examination, the cat weighed 12 pounds (body condition score, 6/9) and heart rate was 200 beats/min, respiratory rate 54 breaths/min, and rectal temperature 99.2º F. Mucous membranes were pale, and capillary refill time was slow. No jugular vein distension was noted. A II/VI systolic murmur at the left sternal border and pulmonary crackles were noted on auscultation. The leading differential diagnosis was CHF—thus, the cat was given furosemide (12 mg IV) and placed in an oxygen cage. After 2 hours, the cat was stable enough for thoracic radiographs and blood collection.

Radiographs showed a diffuse interstitial and focal alveolar pattern, distended pulmonary vessels, and moderate cardiomegaly, all of which are consistent with cardiogenic pulmonary edema (**Figures 1A and 1B**). A serum biochemistry profile was within normal limits. Intravenous furosemide was continued (10 mg IV Q 12 H), and the cat was maintained in an oxygen cage. The next day, echocardiography was done and showed severe concentric left ventricular hypertrophy, small left ventricular chamber size, and moderate left atrial enlargement, consistent with hypertrophic cardiomyopathy. Blood pressure was 155/90 mm Hg. Enalapril (2.5 mg PO Q 24 H) was started at this time. The cat was removed from the oxygen cage 36 hours after admission, and the furosemide dose was reduced to 5 mg PO Q 24 H. The patient began to eat small amounts of food in the hospital and was discharged 4 days after admission.

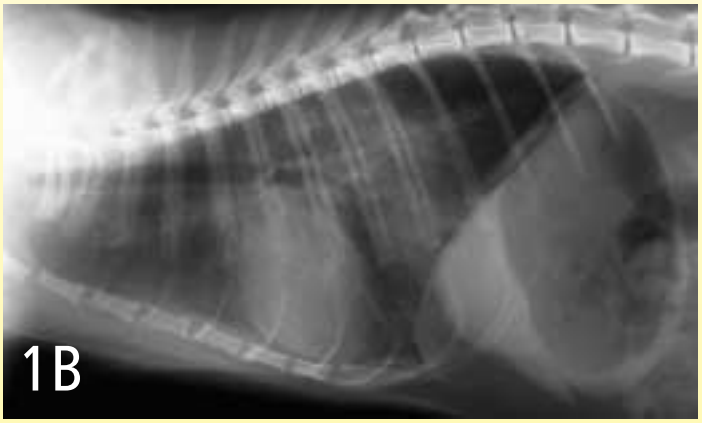
CHF = congestive heart failure

ASK YOURSELF ...

Which of the following should be given after discharge, when the patient has stabilized?

	Sodium content (mg/100 kcal)
A. The cat's usual canned food	145
B. Science Diet Feline Senior 7+ ocean fish (canned)	115
C. Eukanuba Optimum Weight Control Feline (dry)	104
D. Purina ONE Feline chicken and rice formula (dry)	62
E. Purina Feline CV (canned)	40

continues



Dorsoventral (A) and right lateral (B) views of a 5-year-old cat with dyspnea and a cardiac murmur

Correct Answer: A

The cat's usual canned food

Typically, in cats with an acute episode of CHF, changes in diet should be avoided until the patient is stabilized (unless the usual food is very high in sodium). Dietary changes when the animal is sick or starting new medications may induce food aversions. Once the animal is home and stabilized on medications, a gradual change to a new food can be made. Therefore, when the cat returned for a recheck visit *7 days after discharge* (at which time blood pressure was measured and a renal profile was done), a new, lower-sodium food was recommended. Since the cat had always eaten canned food, several reduced-sodium canned foods were recommended for this patient so that the owner could determine which one the cat preferred.* These foods included:

- Science Diet Feline Adult (beef or turkey)
- Pro Plan beef & liver entrée, ground
- Friskies Senior lamb & rice
- Purina CV

(Note that the recommendations are specifically for these flavors; other flavors of the same brand may have significantly more sodium)

*Control of chloride, which may also be important, has yet to be explored in dogs and cats.

There is no single "best" food for managing cats with heart disease. It is important to match the nutritional needs of an individual patient to the food or foods that best suit those needs. Patients with heart disease vary in terms of clinical signs,

1. Reduced Sodium Foods for Cats (in Order of Decreasing Sodium Content)*

Product†	Energy content (kcal)	Sodium (mg/100 kcal)	Potassium (mg/100 kcal)	Magnesium (mg/100 kcal)	Protein (g/100 kcal)
Eukanuba Low-Residue Adult/Feline (dry)	369/cup	75	234	25	8.5
Hill's Prescription Diet Feline x/d (canned)	187/can (5.5 oz)	75	184	17	8.8
Science Diet Feline Adult (canned)—beef	171/can (5.5 oz)	73	164	15	10.1
Science Diet Feline Adult (canned)—turkey	174/can (5.5 oz)	72	170	17	9.3
Pro Plan beef & liver entrée, ground (canned)	84/can (3 oz)	71	303	20	14.5
Purina Feline EN (soft-moist)	118/pouch (1.5 oz)	70	180	30	9.5
Hill's Prescription Diet Feline g/d (canned)	165/can (5.5 oz)	66	161	15	7.6
Friskies Senior lamb & rice (canned)	124/can (5.5 oz)	63	238	25	11.6
Science Diet Adult ocean fish & rice (dry)	488/cup	62	159	15	7.9
Purina ONE Feline chicken & rice (dry)	452/cup	62	197	17	8.5
Hill's Prescription Diet Feline l/d (dry)	505/cup	60	204	19	7.1
Purina Feline UR (dry)	366/cup	60	200	20	8.3
Purina Feline UR (soft-moist)	120/pouch (1.5 oz)	60	190	30	9.7
Eukanuba Maximum-Calorie Feline (canned)	340/can (6 oz)	55	180	13	7.5
Purina Feline CV (canned)	223/can (5.5 oz)	40	270	10	8.8
AAFCO minimum	**—**	**50**	**150**	**10**	**6.5**

* Data obtained from manufacturers. These lists are not exhaustive and other foods may also be appropriate. They were updated in June 2004 and nutrient content of diets change frequently, so these data may become outdated quickly. Check with the manufacturers for up-to-date information.

† Do not assume that the canned and dry versions of the same food will have a similar nutrient content. Different flavors of the same food can vary greatly in nutrient content. If a specific flavor is mentioned, the nutrient content applies only to that flavor.

laboratory variables, and food preferences, all of which affect food selection. For example, cats with asymptomatic heart disease require less severe sodium restriction than cats with CHF, such as this one. Overweight cats require a lower-calorie food than would a thin cat. Laboratory results and concurrent diseases also influence food choice; if this cat also had a history of struvite urolithiasis, it would need a sodium-restricted food with nutritional modifications to reduce risk for struvite urolith formation. The most important consideration is that the food is palatable enough for the animal to eat it willingly. **Table 1** lists several commercially available, reduced-sodium cat foods. It includes those specifically designed for animals with cardiac disease, therapeutic diets for other diseases, and certain over-the-counter foods that have appropriate properties for a cat with CHF. Treats that are acceptable to the cat should be included in the diet regimen if the owner desires (**Table 2**), and a satisfactory method for administering medications that does not involve a high-sodium food should also be devised (**Table 3**).

TAKE-HOME MESSAGES

- **There is no single "best" food for managing cats with heart disease. The food should meet the requirements of and be palatable to the individual patient.**
- **Making dietary changes when the animal is sick or starting new medications may induce food aversions. Unless the usual food is very high in sodium, it should not be changed until the cat has been stabilized.**
- **There are many choices of reduced-sodium commercial foods that may meet the other requirements of cats with CHF.**

See Aids & Resources, back page, for references, contacts, and appendices.

2. Reduced-Sodium Treats for Cats

Product	kcal/treat	mg sodium/treat
Purina Whisker Lickin's Brand Crunchy Cat Treats (Tartar Control)	2	2
Stewart Fiber Formula Cat Treats	1	1

3. Methods for Medication Administration in Cats

- Teach owner to pill cat without using foods
- Use a Pet Piller or Pet Pill Gun (Jorgensen Laboratories, Loveland, CO)
- Use compounded, flavored liquid medication instead of a pill (note that the pharmacokinetics of a drug may be altered when compounded)
- Insert medications in appropriate foods:
  - Low-sodium cheese
  - Low-sodium canned cat food
  - Home-cooked meat (without salt—not lunch meats)