

## Management of the cat with acute dyspnea

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1

I am honoured to work with  
many companies!



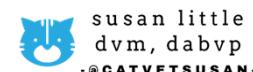
Boehringer  
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CatHealthy.ca



- Merck
- Zoetis
- Hill's Pet Nutrition
- IDEXX Laboratories



2



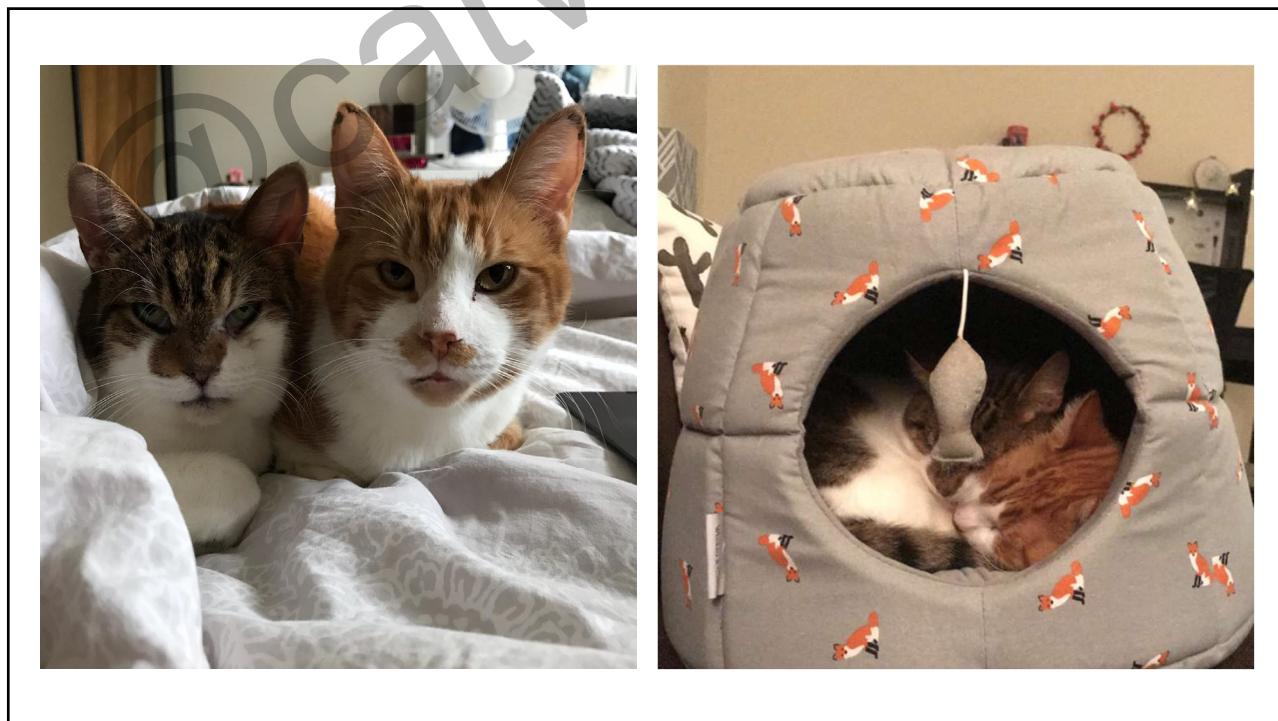
The banner features three circular photos of cats in the top left corner. To the right, the text "6 evenings all about cats" is written in a large, bold, pink font. Below it, "Feline Inspiration Days - Webinar Series" is in a smaller, dark font, followed by "Join us in March and April 2021". To the right of the text is a brown cat silhouette sitting next to the "Feline Inspiration Days" logo, which includes the word "Feline" in a stylized font and "Inspiration Days" in a smaller font below it.



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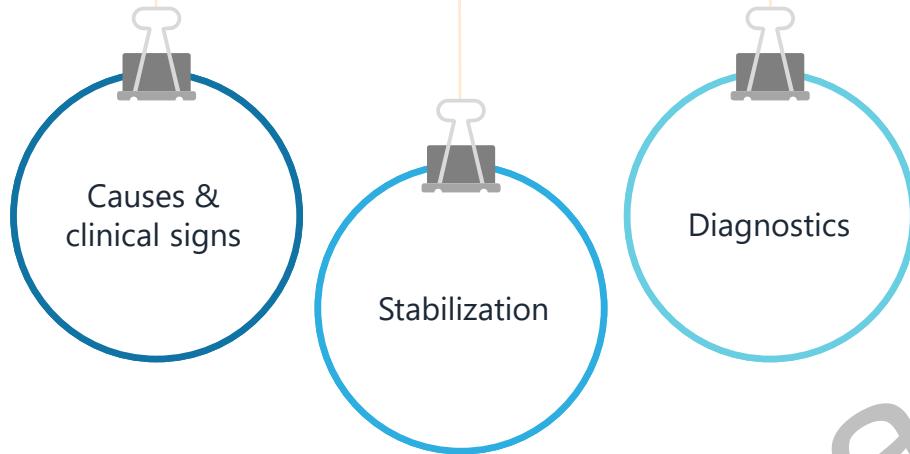
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The image contains two side-by-side photographs. The left photo shows two cats lying close together on a bed; one is a dark brown tabby and the other is a white cat with orange patches. The right photo shows a calico cat sleeping inside a grey, donut-shaped cat bed decorated with a pattern of orange and white fish.

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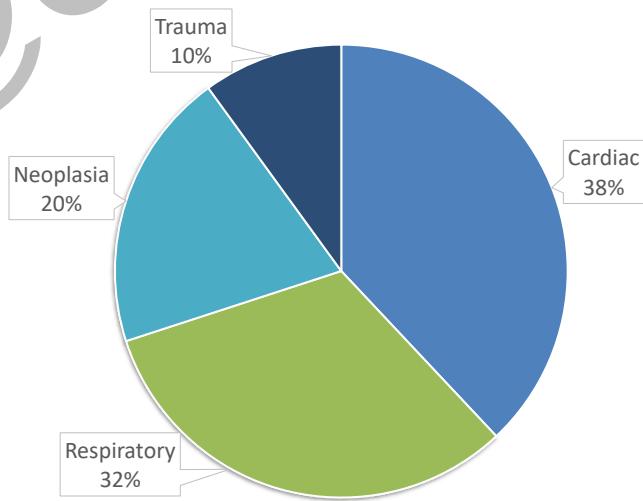
## Management of the cat with acute dyspnea



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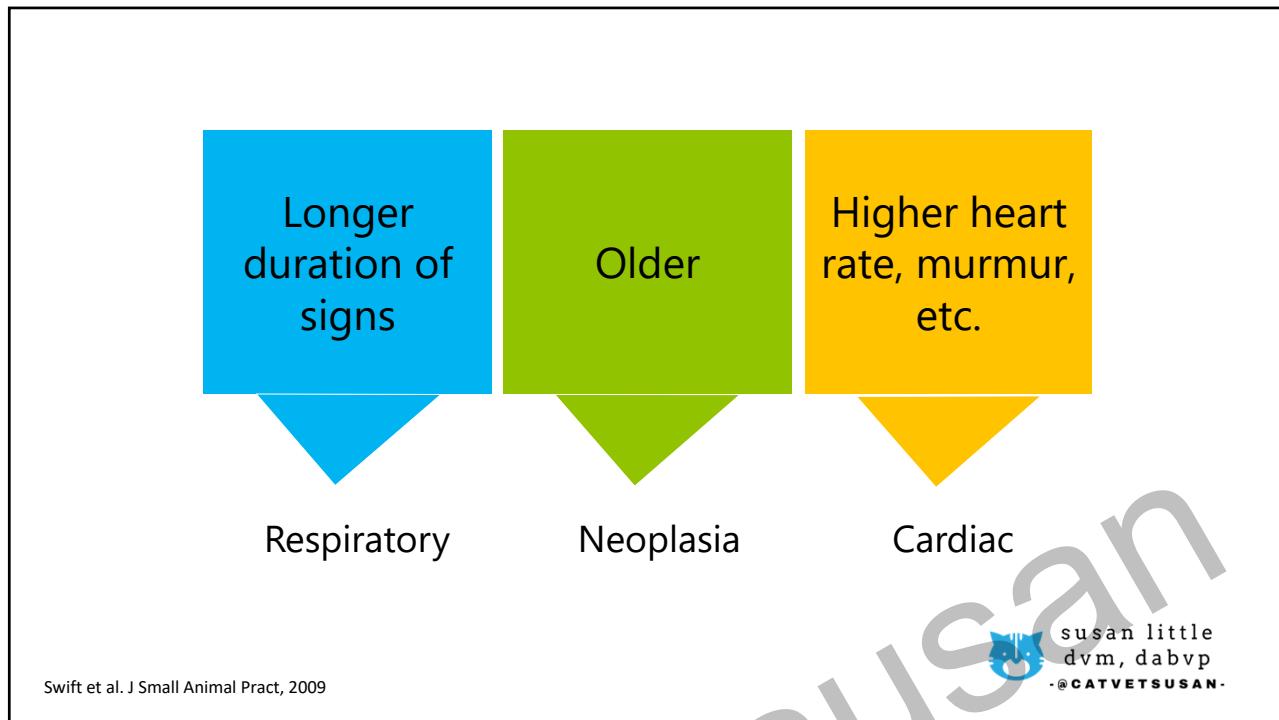
## Causes of dyspnea in cats



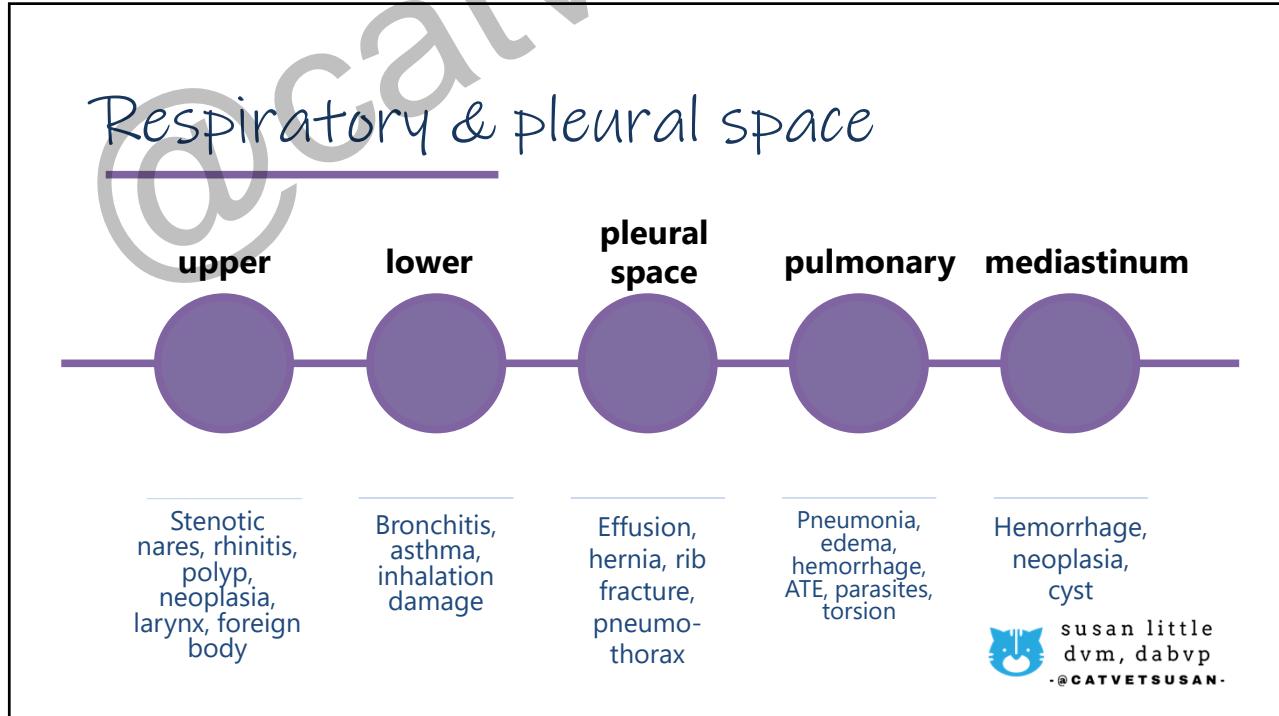
Swift et al. J Small Animal Pract, 2009

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## The challenges



- Most common differentials
  - Respiratory/pleural space disease
  - Cardiac disease
  - Trauma
- Physical exam & radiographs may not be enough for diagnosis



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Don't rush to  
get a diagnosis –  
stabilize first.

Stress kills dyspneic  
cats!



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## Triage! Get a brief, focused history



- Is trauma possible?
- Duration of dyspnea?
- Hairballs, coughing?
- Pre-existing problems?



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## Initial approach



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Consider sedation for very distressed cats

- Butorphanol
  - 0.2-0.4 mg/kg IM, SC
- 'Homeopathic' dose of acepromazine - anxiolytic



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If it could be trauma, provide analgesia promptly  
Opioids may be the safest choice

| <b>Drug</b>   | <b>Dose (IM) avoid IV</b>                                    |
|---------------|--|
| Methadone     | 0.2-0.3 mg/kg, every 4 hours                                 |
| Buprenorphine | 0.01-0.02 mg/kg, every 6-8 hours<br>Slower onset (15-30 min) |
| Morphine      | 0.2-0.4 mg/kg, every 3-4 hours<br>May cause vomiting         |

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## Watch for the decompensating cat!

01

Respiratory fatigue, slowing respiratory rate

02

Orthopnea: sternal recumbency, extended neck

03

Persistent open-mouth breathing

04

Dyspneic while lying down



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## Rapid induction & intubation

- Propofol
- Alfaxalone



v-gel supraglottic airway



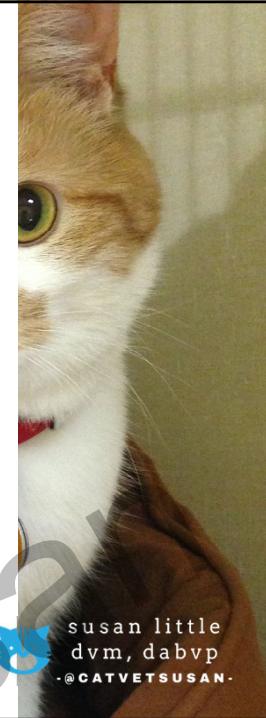
[docsinnovent.com](http://docsinnovent.com)  
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# Respiratory patterns & sounds

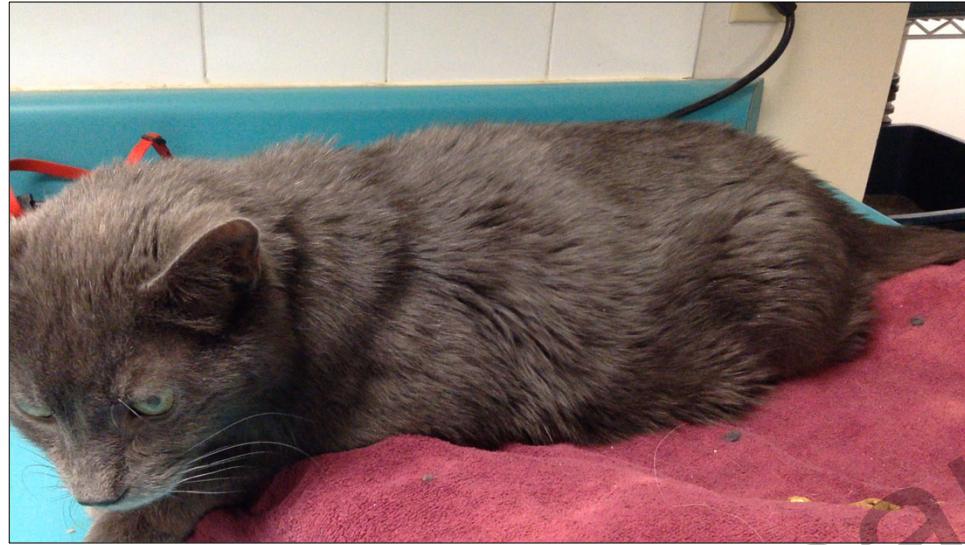


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## Respiratory patterns

|                    | Description   | Localization   | Differentials  |
|--------------------|---|--|--|
| <b>Inspiratory</b> | Long, slow inspiratory phase<br><br>May be accompanied by stridor                           | Upper respiratory tract  | Nasopharyngeal obstruction (poly, foreign body)<br><br>Laryngeal obstruction (mass, paralysis) |
| <b>Restrictive</b> | Rapid, shallow<br>Even inspiration & expiration phases                                      | Pleural space, pulmonary alveoli or interstitium                             | Pleural fluid<br>Pneumothorax<br>Pulmonary edema   |
| <b>Obstructive</b> | Near normal rate but expiratory abdominal push  | Lower airway disease   | Chronic bronchitis<br>Asthma   |
| <b>Paradoxical</b> | Caudal thorax & cranial abdomen move in opposite directions in both phases, rate often fast | Non-specific<br><br>Often seen in pleural space disease, respiratory fatigue | Pleural space disease, pulmonary edema, lower respiratory tract disease, diaphragmatic rupture |

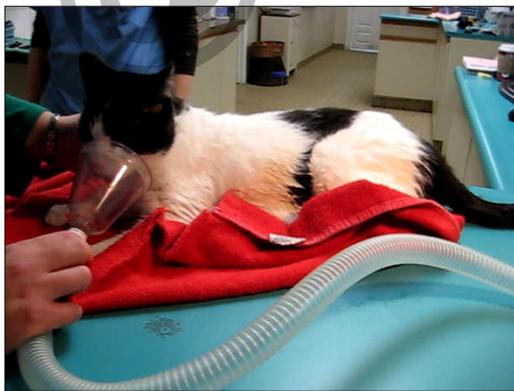
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M/N, 6 years old, indoor cat



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## Respiratory sounds

### PLEURAL SPACE

Dull lung sounds,  
muffled heart sounds  
+ Short & shallow  
breaths,  
↑ Respiratory effort

- Pleural effusion
- Pneumothorax
- Hernia

### LOWER AIRWAYS

Cough, wheeze, ↑  
bronchovesicular  
sounds  
+ ↑ Expiratory effort

- Asthma
- Chronic bronchitis
- Heartworm

### UPPER AIRWAYS

Stertor, stridor  
+ ↑ Inspiratory effort

- BOAS
- Laryngeal paralysis
- Foreign body
- Polyp

### PULMONARY

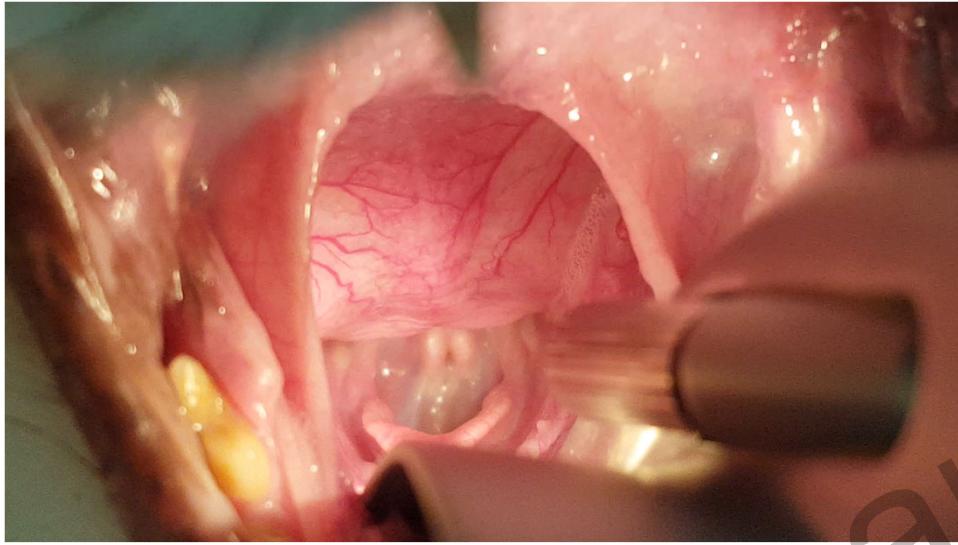
Crackles, increased  
bronchovesicular  
sounds  
+ ↑ Inspiratory and/or  
expiratory effort

- Pneumonia
- Edema
- Neoplasia

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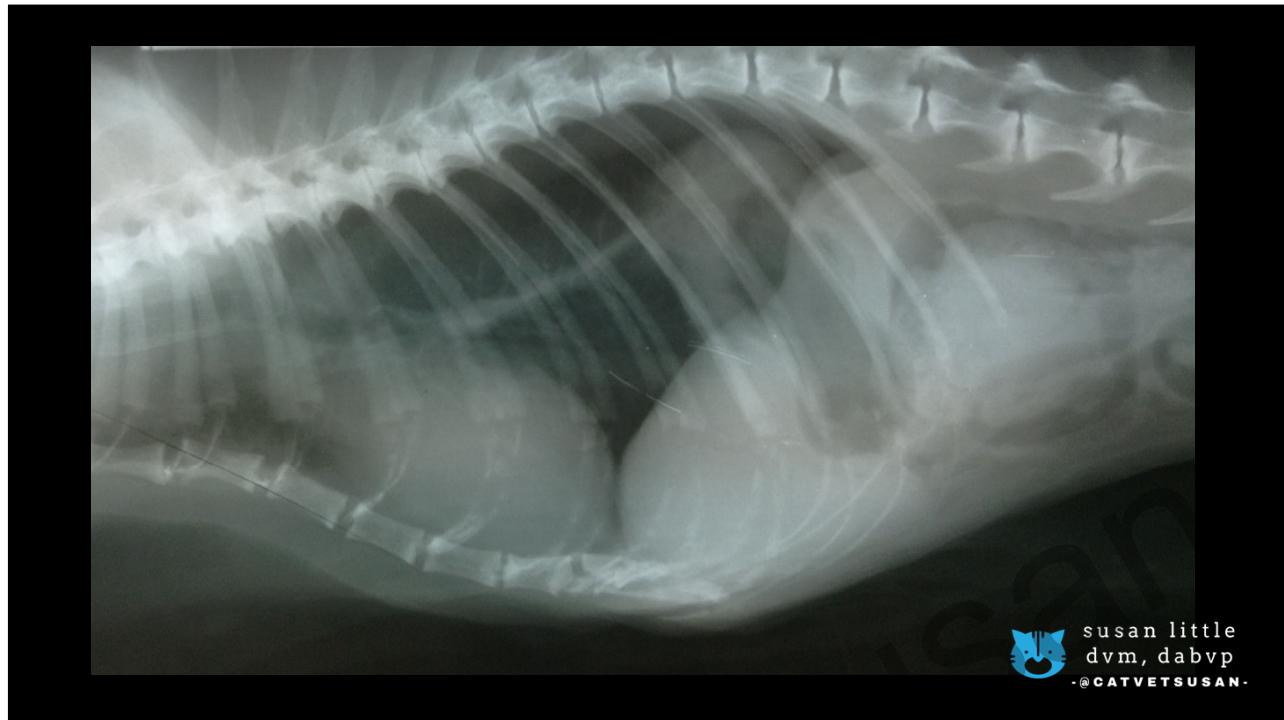
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M/N, 19 years old



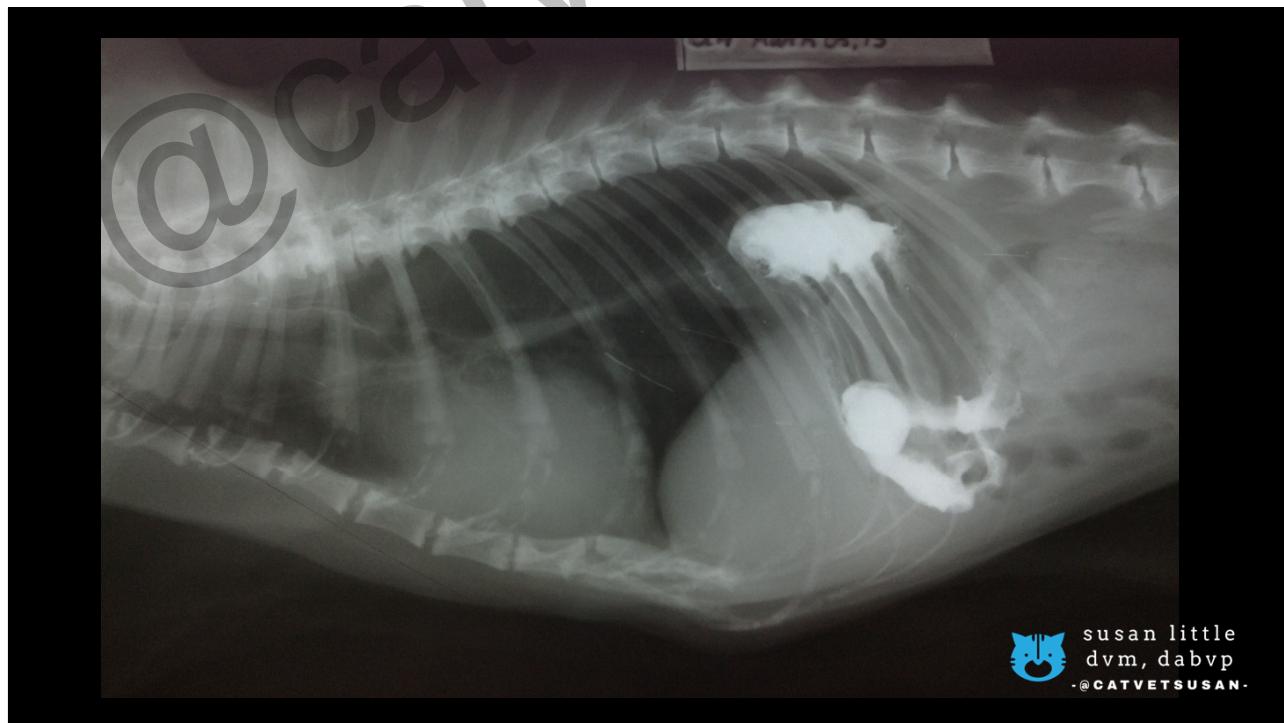
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## Physical exam & diagnostics



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### Brief physical examination

Respiratory  
rate & pattern

Mucous  
membranes &  
capillary refill  
pattern

Heart rate,  
rhythm,  
sounds

Lung sounds

**Careful!** thoracic  
compression,  
percussion

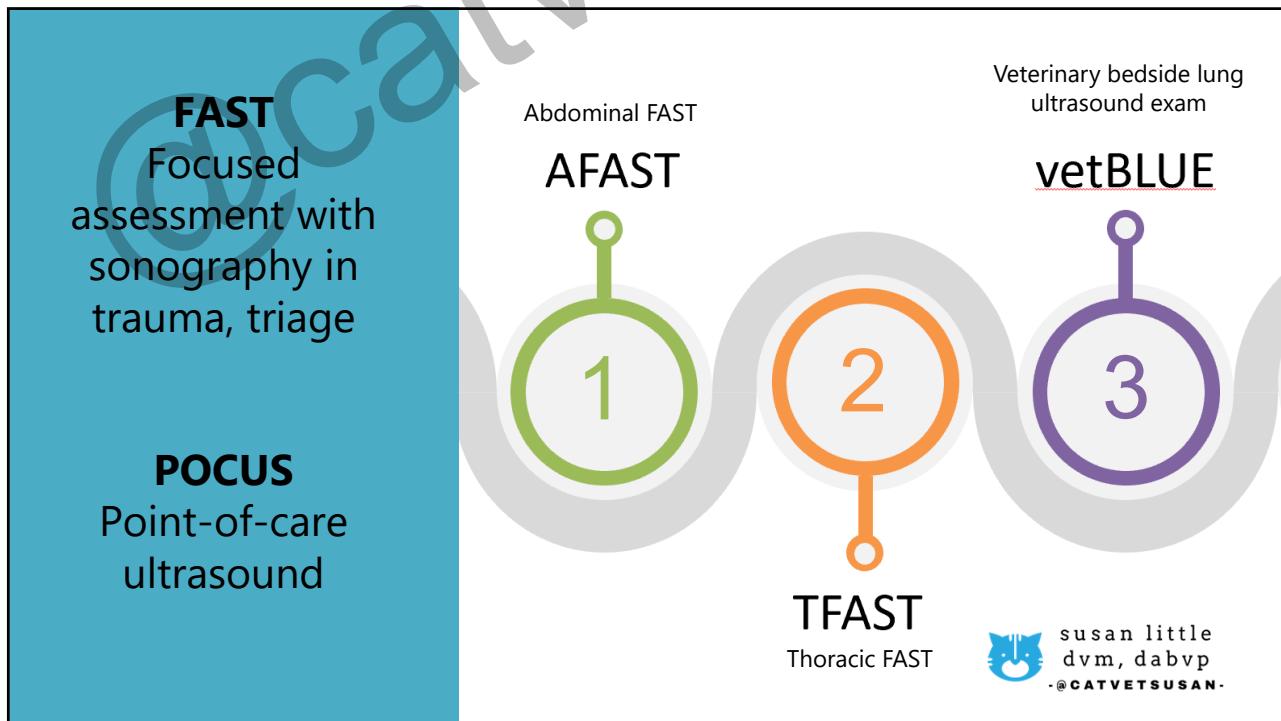
**Careful!**  
Abdominal  
palpation



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- Pneumothorax
- Pleural or pericardial effusion
- Pulmonary edema



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## Radiography

- Only when cat can tolerate
- Sedation may help
- Try dorsoventral, standing lateral views



Courtesy Dr. Martha Cannon

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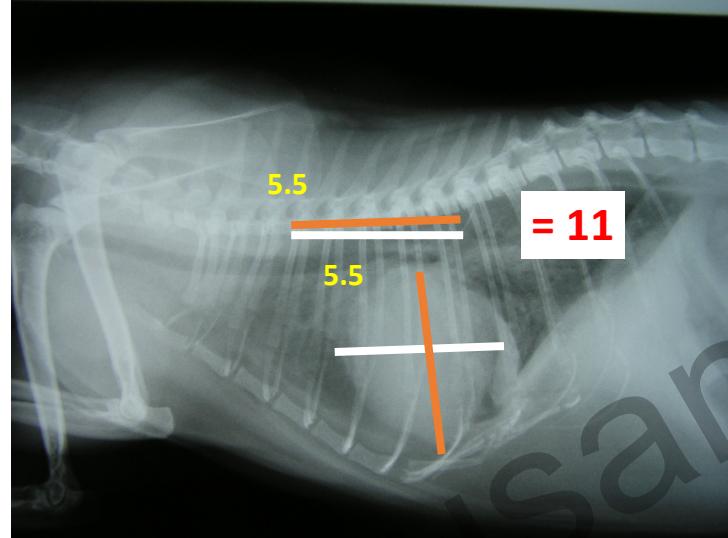
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## Vertebral heart score (normal <8)

First line at the widest spot

Second line from carina to heart apex

Line up at cranial edge of T4 & add up # of vertebrae



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Let's do something!



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## When lower airway disease is suspected

Rapid-acting glucocorticoid

- Dexamethasone  
0.25-0.5 mg/kg IM

Bronchodilator

- Inhaled albuterol (salbutamol)
- Terbutaline  
0.015 mg/kg IM



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## Acute treatment for pulmonary edema



Oxygen & minimal handling



Furosemide  
2-4 mg/kg IM, every 2-4 hours



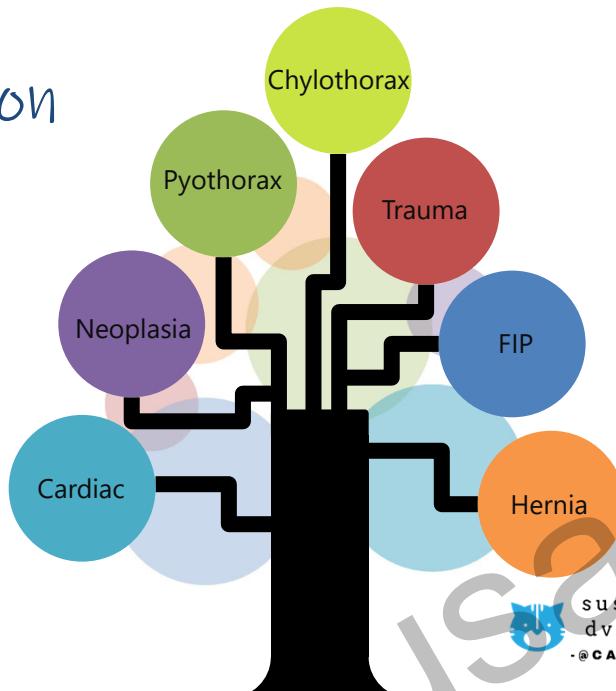
NO fluid therapy even if azotemic!

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## Pleural effusion



Ruiz et al. J Am Vet Med Assoc, 2018  
König et al. J Feline Med Surg, 2018

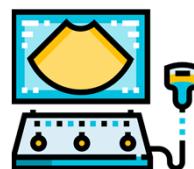
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Thoracocentesis is not a specialist procedure!  
It's diagnostic & therapeutic



**With or without sedation**



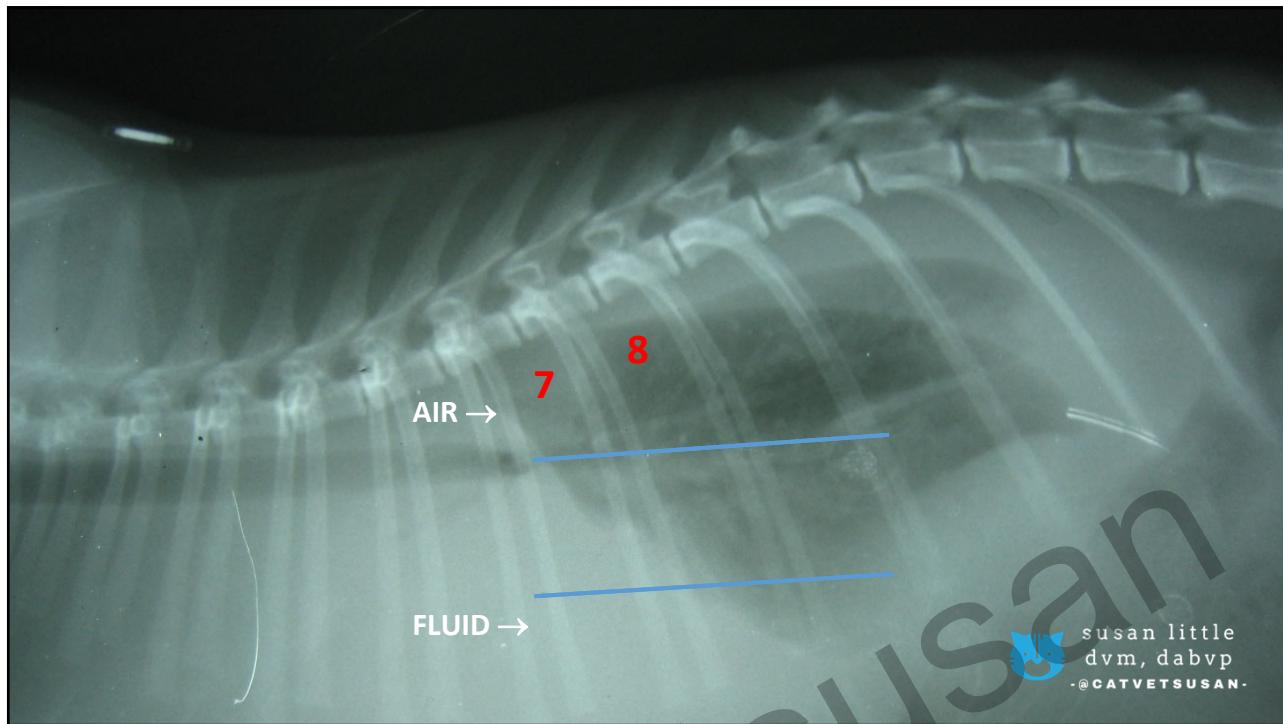
**Ultrasound is not always needed**



**Before radiographs**

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The image contains two photographs. The left photograph shows a close-up of a cat's front leg with a catheter and a syringe connected by tubing. The right photograph shows a yellow cat lying on its back on a metal examination table, with a person's hands visible near its head and a syringe being held.

Butorphanol  
0.2-0.4 mg/kg IM  
  
+/-  
  
Midazolam  
0.1-0.3 mg/kg IM

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The dreaded 3-way stopcock!

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SmartY centesis device  
[www.practicvet.com](http://www.practicvet.com)

**Green** = pump syringe (10-20 mL)

**Red** = collection syringe (60 mL) or IV line & bag



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## Analysis of pleural effusion samples

- Cytology
  - EDTA tube and smear
- Biochemistry (triglycerides, cholesterol, protein, specific gravity)
  - Plain tube
- Culture
  - Plain tube



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## Characteristics of pleural effusion

| Class               | Total protein (g/dL) | Nucleated cells (#/ $\mu$ L) | Differential diagnoses                                  |
|---------------------|----------------------|------------------------------|---|
| Transudate          | <2.5                 | <1,000                       | CHF, intravascular fluid overload, low oncotic pressure |
| Modified transudate | 2.5 to 3.5           | <5,000                       | CHF, neoplasia, chylothorax                             |
| Exudate             | >3.5                 | >5,000                       | FIP, neoplasia, chylothorax, pyothorax                  |

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## Final thoughts ...

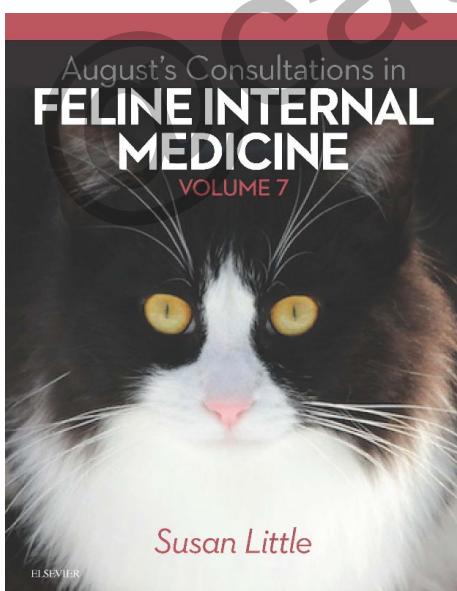
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- Acutely dyspneic cats need careful handling
- Prioritize care & diagnostics in a logical manner
- Make use of focused ultrasound techniques if available
- Use thoracocentesis for diagnostic & therapeutic purposes



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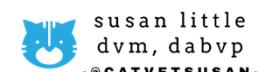
### CHAPTER 76

## Emergency Approach to Respiratory Distress

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### Heart Versus Lung

*Elisa Mazzaferro*



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## Useful links

Triage of the dyspnoeic cat (Feline Update Online):

<https://www.langfordvets.co.uk/media/1250/triage-of-the-dyspnoeic-cat.pdf>

Approaching the dyspnoeic cat in the middle of the night (Veterinary Journal Ireland):

[http://www.veterinaryirelandjournal.com/images/pdf/small/sa\\_jan\\_2016.pdf](http://www.veterinaryirelandjournal.com/images/pdf/small/sa_jan_2016.pdf)

Differentiating types of respiratory distress in cats (YouTube video by Dr. Elizabeth Thomovsky): [https://youtu.be/Vvw\\_GUSNJJM](https://youtu.be/Vvw_GUSNJJM)



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Images courtesy of

- My patients
- Dr. Mark Peterson
- Dr. Martha Cannon



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