

Chronic Bronchitis and Asthma in Cats

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Chronic bronchial disease in cats occurs most commonly in two forms, including chronic bronchitis and asthma. *Chronic bronchitis* is defined as an inflammatory disorder of the lower airways that causes a daily cough, for which other causes of cough (including heart failure, pneumonia, neoplasia etc) have been excluded. *Asthma* is more loosely defined as that disorder of the lower airways that causes airflow limitation, and this may resolve spontaneously or in response to medical treatment. "Airflow limitation" is generally the result of some combination of airway inflammation, accumulated airway mucus, and airway smooth muscle contraction. The symptoms of asthma can be dramatic, including acute wheeze and respiratory distress. Sometimes however, the only symptom of asthma-induced airflow limitation is a daily cough, and in people this is referred to as "cough-variant" asthma.

Definitive diagnosis of asthma is usually based on specific pulmonary function studies that require patient cooperation. Because both disorders, bronchitis and asthma can cause a daily cough as the only clinical sign, there are many times when it is not possible to distinguish bronchitis from asthma in an individual feline patient. Nevertheless, the diagnosis, prognosis and treatment options for both diseases overlap with great frequency.

There are no specific tests in general practice that can be used to definitively diagnose asthma or bronchitis in cats. Therefore we rely upon clinical criteria, including:

1. A history of acute wheeze, tachypnea and respiratory distress including labored, open mouth breathing. This is usually quickly relieved with some combination of oxygen, bronchodilators, and steroids. In some cases, however, the only clinical problem is chronic cough. Importantly, because chronic bronchitis is defined on the basis of a chronic daily cough, cats that do not cough every day do not have chronic bronchitis.

2. Radiographic evidence of bronchial wall thickening, which is usually described as "doughnuts" and "tramlines." Radiographs may also demonstrate atelectasis, most commonly of the right middle lung lobe. It is usually easier to see this pattern on a DV or VD exposure because the right middle lung lobe silhouettes with the base of the heart on the lateral view. Atelectasis most commonly occurs in the right middle lung lobe because of mucus accumulation within the bronchus, and this airway is most commonly involved because it is the only airway that has a dorsal/ventral orientation within the bronchial tree, and therefore subject to the effects of gravity. Air trapping may also be demonstrated by hyperinflated airways. This is seen most prominently on the lateral view.

3. Clinicopathologic evidence of airway inflammation, including the finding of large numbers of eosinophils recovered from tracheobronchial secretions in asthmatic airways, and non-septic neutrophils in bronchitic airways.

4. Response to therapy is an important diagnostic measure. Cats with asthma may stop coughing or wheezing within 10 minutes after administration of a bronchodilator. The great majority of cats with bronchitis or asthma respond to high dose corticosteroid therapy within 5-7 days (see below under treatment). If your patient with bronchitis or asthma does not respond in this manner it is time to reevaluate the diagnosis.

PATHOPHYSIOLOGY

In the simplest terms, airways are tubes. They may be thought of as the plumbing system of the lung, and the primary purpose of the airway tree is to bring air from the environment into the lung for gas exchange. Although the potential causes of bronchitis and asthma are numerous, the airways are capable of responding to noxious stimuli in only a limited number of ways. Airway epithelium may hypertrophy, undergo metaplastic change, erode, or ulcerate. Airway goblet cells and submucosal glands may hypertrophy and produce excessive amounts of viscid mucus. Bronchial mucosa and submucosa are usually infiltrated with variable numbers and types of inflammatory cells and may become edematous. Bronchial smooth muscle may remain unaffected, become hypertrophied, or spasm. In almost all cases, the unifying and underlying problem is chronic inflammation, whereas the exact cause remains unproved.

The resulting clinical signs of cough, wheeze, and lethargy are due to limitation of air flow from excessive mucus secretions, airway edema and airway narrowing from cellular infiltrates. Cats with asthma may suffer acute airway narrowing from airway smooth muscle constriction. A 50% reduction in the luminal size of an airway results in a 16-fold reduction in the amount of air that flows through that airway. Clearly then, small changes in the size of the airway results in dramatic changes in air flow. The clinical implication of this finding is twofold. First, relatively small amounts of mucus, edema, or bronchoconstriction can partially occlude airways and cause a dramatic fall in air flow. Conversely, therapy that results in relatively small increases in airway size may cause a dramatic improvement in clinical signs.

Cough may also result from stimulation of mechanoreceptors located in inflamed and contracted airway smooth muscle. Inappropriate airway smooth muscle contraction, in turn, seems fundamentally linked to inflammation. Importantly, asthmatic human airways show evidence of chronic ongoing inflammation whether or not the patient is symptomatic. Although many inflammatory cell types are found within asthmatic airways of humans and cats, eosinophils appear to be primary effector cells in the development of asthmatic airway pathophysiology in both species.

Highly charged cationic proteins within eosinophil granules are released into airways and cause epithelial disruption and sloughing. Additionally, these granular proteins can make airway smooth muscle more "twitchy" and prone to contraction after exposure to low levels of stimulation (airway hyperreactivity).

WHAT DO WE KNOW NOW?

Although coughing and wheezing cats have been identified by owners and veterinarians for almost a century, it is only since 1993 that we have begun to study the disorder in earnest. Dye and associates at the University of Illinois School of Veterinary Medicine were the first to identify pulmonary function abnormalities in cats with signs of chronic lower airway inflammation (Dye et al, 1996). Some of these cats have increased pulmonary resistance that resolves after treatment with terbutaline, a beta₂-agonist, indicating the presence of reversible bronchoconstriction in these patients. Additionally, some of these cats experience dramatic bronchoconstriction after exposure to low levels of methacholine, a drug with minimal effects on pulmonary function when used in equivalent doses in nonasthmatic cats. This is important as the first demonstration of spontaneous, naturally occurring airway hyperreactivity in a nonhuman species. We also know that in cats, like humans, bronchoconstriction is reversible with beta-adrenergic agonists. Additionally, histologic changes in airways from asthmatic cats include epithelial erosion, goblet cell and submucosal gland hyperplasia and hypertrophy, and an increased mass of smooth muscle, which are all features of human asthmatic airways.

CLINICAL FINDINGS

INCIDENCE AND PREVALENCE

There are currently no reliable data regarding the incidence and prevalence of asthma and/or bronchitis in cats. The prevalence of lower airway disease in the general adult cat population is estimated to be approximately 1%; prevalence in the Siamese breed may be 5% or greater. In 2000 a web site (fritzthebrave.com) was developed to draw attention to the treatment of feline asthma. Around this same time, owners of cats with asthma independently found one another through the internet. These owners were all interested in alternatives to systemic corticosteroid treatment for their cats, and a *listserv* was created to allow them to contact each other via email. The current membership of this site exceeds 1000 owners of cats with asthma. Recently, a poll was initiated through this *listserv* to identify breed characteristics. Interestingly, more than 15% of the cats with asthma identified through this vehicle were of the Siamese breed.

CLINICAL SIGNS

Clinical signs are variable. Bronchitic cats have a daily cough, and may be absolutely symptom free in between episodes of cough. Alternatively, cats with bronchitis may be tachypneic at rest. Asthmatic cats may cough, wheeze, and struggle to breath on a daily basis. In mild cases, symptoms may be limited to occasional and brief coughing. Some cats with asthma may be asymptomatic between occasional episodes of acute airway obstruction. Severely affected cats may have a persistent daily cough and experience many episodes of life-threatening acute bronchoconstriction.

As previously outlined, a common problem for the practitioner is to distinguish between chronic bronchitis and asthma as the cause of a chronic cough in cats. Although these two disorders are frequently lumped together under the title of *chronic bronchial disease* or *lower airway disease*, the two disorders may require different therapeutic approaches and often have different prognoses. All cats with chronic bronchitis, by definition, have symptoms of cough on most days throughout the year. Some cats with asthma may be asymptomatic between occasional episodes of acute airway obstruction. Other asthmatic cats may cough occasionally and demonstrate frequent tachypnea. Importantly, asthmatic cats, but not bronchitic cats, may benefit from bronchodilator treatment (see the section on therapy).

DIAGNOSTIC TEST FINDINGS

PHYSICAL EXAMINATION

There are no physical examination findings that can be relied on to make the diagnosis of asthma or bronchitis. In fact, cats with bronchitis or asthma may have a normal physical examination at rest. Conversely, respiratory distress primarily during the expiratory phase of breathing is the hallmark of these disorders in cats. Adventitious sounds, including crackles are often heard. Wheezes are more characteristic of feline asthma.

THORACIC RADIOGRAPHS

Routine survey chest radiographs may be normal and should not cause the practitioner to abandon the diagnosis of asthma. Frequently, however, radiographs may demonstrate diffuse prominent bronchial markings consistent with inflammatory airways. Radiographic signs of increased lung lucency and flattening and caudal displacement of the diaphragm represent hyperinflation and suggest air trapping. In the author's experience, approximately 10% of asthmatic cat radiographs have increased density within the right middle lung lobe, this is often associated with a mediastinal shift to the right. It is worth recalling that the feline heart sits in the mid thorax because of the presence of inflated lungs on either side. When a lung lobe collapses and the lung volume decreases, the heart may shift its position

within the thorax to take over this new space. Thus, a mediastinal shift is evidence of atelectasis rather than consolidation.

In more extreme cases, you may appreciate fluffy ill defined heavy interstitial infiltrates in multiple lung lobes. The cause of these changes in cats with lower airway disease is apparently due to multiple small areas of atelectasis in multiple lung lobes resulting from multiple diffuse small mucus plugs. This presents a diagnostic challenge because this radiographic change is consistent with a number of disorders including neoplasia and diffuse interstitial pneumonitis.

TRACHEOBRONCHIAL CULTURE

The presence of a mixed population of aerobic bacteria in airways has previously been reported in cats with lower airway inflammation. However, neither the lower airway nor lung parenchyma of healthy cats are sterile. Organisms usually considered to be pathogens such as *Klebsiella* and *Pseudomonas* can be recovered from healthy feline airways. The clinical status of asthmatic and bronchitis cats has not generally been correlated with the presence or absence of bacteria within the airway, although it stands to reason that an acute bacterial infection within the bronchi will cause coughing. It is the author's opinion that bacteria isolated from the asthmatic feline airway most commonly reflect colonization rather than true infection. The role of *Mycoplasma* may be an exception to this. *Mycoplasma* (and certain viruses) can degrade neutral endopeptidase, which is an enzyme that is responsible for biodegradation of substance P, a protein capable of causing bronchoconstriction and edema in the feline airway. *Mycoplasma* might then indirectly prolong the effects of substance P on airway smooth muscle. It is tempting to speculate that *Mycoplasma* or viruses such as herpes, which can remain dormant in feline airways, might be responsible for increasing the levels of substance P in cat airways and contribute to spontaneous bronchoconstriction.

TRACHEOBRONCHIAL WASHINGS

Until the 1980s, it was generally assumed that eosinophils played only a beneficial role in the immune system by protecting against parasite infestation. Within the last 20 years, however, it has become clear that the presence of these cells in the wrong place at the wrong time can result in significant cellular and tissue damage. It is therefore of great interest that eosinophils can be recovered in large numbers from the tracheobronchial washings of many healthy cats. These cells seemingly cause no damage to the host or the local tissue environment and should not by themselves be viewed as markers of allergy or parasitism. Conversely, the *absence* of eosinophils in airway washings from a cat with cough or wheeze suggests that asthma is likely *not* the cause of the clinical signs.

NEW TREATMENT STRATEGIES

The primary signs of asthma include cough and wheeze, and these signs are frequently the result of some degree of airway smooth muscle contraction. It is tempting to treat these signs of asthma by using bronchodilators to relax the airway smooth muscle contraction. Although this is a central method of treatment when acute signs develop, it is critically important to understand that human (and likely feline) asthmatic airways show evidence of chronic ongoing inflammation whether or not the patient is symptomatic. Therefore, treatment strategies are most successful if they are directed toward decreasing the underlying inflammatory component of the disease in addition to the acute clinical signs of cough, wheeze, and increased respiratory effort.

The clinical course of bronchitic cats is sometimes even more problematic. In most species, there is a clear distinction between terminal airways and the beginning of alveoli. In the feline species, the very last airway branches merge histologically into alveoli, the functional units of oxygen exchange. This may explain why cats with chronic bronchitis suffer far more oxygen exchange abnormalities than other species including dogs and people. Because of this anatomic difference in cats, it is even more important to aggressively treat the inflammatory component of the disorder so that the disease remains static rather than progressive.

Having said that, there are no consistently reported or accepted strategies to treat cats with asthma. Additionally, there are few data to determine which treatments are most effective, in which setting, and for how long. The following approaches represent the author's suggested practical and theoretical strategies to treat cats with asthma.

HIGH-DOSE, LONG-TERM CORTICOSTEROIDS

The most effective long-term treatment of asthma and bronchitis in cats is oral corticosteroids. This class of drugs is most likely to reproducibly suppress asthmatic inflammation, a process orchestrated by a network of proteins (cytokines) that act on circulating and structural airway cells. An important effect of steroids is to inhibit the synthesis of genes for cytokines that are important in generating asthmatic airway inflammation. However, the side effects of these medications often preclude the routine use of these systemic drugs. Although the incidence of health-threatening side effects in cats from oral steroids is remarkably reduced compared with humans, the incidence of side effects in the feline species is not trivial. Nevertheless, *the most consistent, most reliable, and most effective treatment for feline asthma and bronchitis is high-dose, long-term oral corticosteroids*. The author begins treatment of asthmatic or bronchitic cats with prednisone, 1 to 2 mg/kg PO every 12 hours for 10 to 14 days. At this point, the majority of newly diagnosed cats have greatly diminished signs. The dose of steroids is then tapered slowly, over at least 2 to 3 months.

This approach is much more effective than low doses of prednisone given for short periods and in response to acute flare-ups. Continued treatment with oral corticosteroids is dependent on treatment response, side effects, and how low and infrequently these drugs can be given to maintain a relatively symptom free state.

Inhaled Steroids

A primary goal of veterinary clinicians everywhere is to minimize cost and increase owner convenience so that compliance in giving medications is increased. The goal in treating asthmatic and bronchitic cats is also to stop ongoing inflammatory responses and minimize clinical signs. For many patients this can be accomplished by lowering both the dose and frequency of oral prednisolone to a situation that is safe and effective for the long term. This may be in the range of 1.25 -5.0 mg prednisolone given once every other day. However, if giving oral medication on a long term basis is not practical for an owner, or if the dose/frequency of medications needed to control clinical signs is not safe, inhaled medications can be given that are equally effective and totally safe for use long term.

Corticosteroids and bronchodilators can now be given effectively by inhalation to cats with asthma and bronchitis. Both classes of drugs are available as metered dose inhalers (MDI's) for humans with asthma. The MDI is used with a "spacer" designed for used with infants and small children, and a face mask specifically made for cats. The spacer is a plastic chamber the size of a cardboard inner roll of toilet paper. The MDI fits into one end of the spacer, the other end of the spacer has an attachment for the face mask. The client first attaches the MDI and the face mask to the spacer, and then actuates (presses) the MDI to fill the spacer with medication. The mask is placed gently over the cats' mouth and nose. The cat is allowed to breathe in and out 7-10 times with the mask in place, and the treatment is completed. ***This specific approach will be demonstrated during lecture with additional video presentations***

Specific Treatment for Cats With Bronchitis and Asthma

(For purposes of this discussion, we will recall that all cats with bronchitis, by definition, have daily cough. Thus, all cats with bronchitis have daily symptoms.) People, dogs and cats with heart failure are treated based on the severity of their disease (stage 1-4). Similarly, infants, children and adults with asthma are also treated differently, based on the severity of their asthma. I propose a scheme for treating cats using a similar system:

To classify cats with asthma we decide,

- 1) *If the signs are intermittent or daily, and*
- 2) *(If signs are daily), if the symptoms are mild, moderate or severe.*

These two steps are the beginnings of a rational treatment plan.

1. Treatment of feline asthma if symptoms are intermittent (do not occur daily): (not applicable to bronchitis)

In these cases I prescribe an albuterol inhaler with instructions to use “as needed”. The assumption in these cases is that cats with symptoms that do not occur daily do not have significant chronic ongoing inflammation that requires daily anti-inflammatory therapy. This assumption is based on a similar assumption made by the advisers to the NIH who write the protocols for treating children with asthma. When acute signs do occur (cough, wheeze, difficulty breathing) they can usually be effectively and quickly treated with the inhaled bronchodilator. If signs become more frequent the cat should be re-evaluated to determine if more aggressive treatment should be initiated (see next step).

For patients with intermittent signs of asthma who are resistant to using inhaled medications, the best approach is to teach clients to give terbutaline subcutaneously to their asthmatic pets just as we teach them to give insulin to their diabetic pets. The indication for use of this drug in this clinical setting is acute respiratory difficulty at home. The dose I use is 0.01 mg/kg SC or IM. An obvious beneficial response occurs within 15 to 30 minutes. This may be repeated if a significant benefit is not observed after one dose. To determine if the drug has been absorbed and if a beneficial effect has occurred, heart rate and respiratory rate and effort are monitored before drug administration. A heart rate that approaches 240 beats per minute suggests that the drug has been absorbed. A respiratory rate or effort, or both, that drops by 50% or more suggests a beneficial effect.

2. Treatment of feline asthma if symptoms occur daily: (similar protocol for bronchitic cats except that albuterol is less likely to be helpful)

a. Mild daily symptoms: These cats have daily symptoms but in between the coughing, wheezing, etc they are generally ok. For these cats I prescribe flovent 110 mcg twice daily. I also prescribe an albuterol inhaler as needed for those times when symptoms are particularly troublesome. Because inhaled flovent takes about 7-10 days before its maximum effect is seen, these cats will continue to be symptomatic for an additional week or two. Clients should be supported through this time period and encouraged that their pet will begin to improve after the first week of therapy.

b. Moderate daily symptoms. These cats have daily symptoms that have a negative effect on their quality of life, but their cough, wheeze, dyspnea is not constant. For these cases I prescribe flovent 110 mcg twice daily, and albuterol as needed. I also prescribe prednisone 1 mg/kg PO BID for 7 days, and then SID for 7 additional days. After 14 days of combined oral and inhaled steroids the cat has generally shown great improvement, and the oral prednisone can be discontinued without taper. Oral prednisone is used in this setting because significant daily symptoms suggest the presence of a more aggressive inflammatory component that should be more aggressively treated.

c. Severe daily symptoms. These cats are symptomatic and continually uncomfortable at rest. They need aggressive early management. I begin with dexamethasone 2 mg/kg i.v. and inhaled albuterol every 30 minutes for up to four hours. This frequency of albuterol treatment generally does not cause side effects, or might cause slight muscle tremor. These cats are also given 40-100% oxygen either by nasal cannula or oxygen cage. Once these patients are stabilized (their symptoms are dramatically improved), they can be discharged with flovent 110 mcg twice daily and albuterol 4X daily as needed. Some of these cats with severe symptoms may also require intermittent lower doses of oral prednisone, but this is tailored for the individual patient.

ADDITIONAL TREATMENTS

Injectable Steroids

Uncomplicated bronchial disease in cats is very responsive to oral corticosteroid therapy. If clinical signs are not greatly improved within 7 days, the accuracy of the diagnosis should be reevaluated. If I am still reasonably certain of the diagnosis of asthma, I administer a long-acting repository steroid (methylprednisolone acetate [Depo-Medrol], 10 to 20 mg IM). The rationale for this approach is based on my assumption that the lack of clinical response is most likely because the owner is (1) unable to give the medication or (2) unaware that the patient is not ingesting the pills. A good response within 2 days of injection confirms my suspicions. At this point, I review with the owner the technique involved in "pilling" cats, and together we decide if this is a feasible approach. It should be emphasized however that injectable repository steroids carry the greatest potential risk for significant adverse side effects and should be avoided whenever possible.

Antibiotics

In general, antibiotics are rarely indicated for cats with asthma, and are appropriate only when there is good evidence of superimposed airway infection. A true infection may be assumed if the positive culture was obtained after

growing the organisms in culture without using an enrichment broth such as thioglycolate. (Your reference lab can tell you if they used enrichment broth and/or subcultured your samples). This is because the concentration of aerobic bacteria recovered from the airways of healthy cats rarely exceeds 5×10^3 organisms/ml. In contrast, growth of a single organism recovered without the use of enrichment broth implies $>10^5$ organisms/ml, and this is consistent with an "infected" airway. Antibiotic therapy is then based upon sensitivity data. Prophylactic or long term antibiotic therapy is not indicated unless there is documentation of a chronic airway infection. Documented chronic airway infection is extraordinarily uncommon in feline asthma.

BUT,,,,,, Mycoplasma species have been isolated from the airway of as many as 25% of cats with signs of lower airway disease. In contrast, Mycoplasma is not cultured from the airway of healthy cats. For this reason, and because Mycoplasma has the potential to cause significant structural damage to airway epithelium, it may be reasonable to treat any cat for Mycoplasma if they do not have an immediate positive response to corticosteroids (within 3-5 days). Fluoroquinolones including Baytril and Zenequin are safe, convenient and effective in this setting.

CYPROHEPTADINE

Cyproheptadine (Periactin) is marketed as an antihistamine; however, it has been used for years as an appetite stimulant for depressed or anorectic cats. This latter effect is actually due to its antiserotonin properties. As mentioned earlier, serotonin is a primary mediator released from activated mast cells into feline airways and causes acute smooth muscle contraction (bronchoconstriction) in cats but not in humans. The author has shown that the ability of cyproheptadine to block serotonin receptors in muscle cells is effective in preventing antigen-induced airway smooth muscle constriction in vitro. Limited clinical studies of asthmatic cats have supported these in vitro findings. The primary indication for this drug is the chronic symptomatic asthmatic cat on maximal doses of terbutaline and corticosteroids. Cyproheptadine comes in both pill and liquid form and is dosed at 2-4 mg PO every 12 hours. A beneficial therapeutic response may not be seen for 4 to 7 days, but depression, the primary side effect of this drug, may be seen 24 hours after administration. Depression is not life-threatening but may cause the owner to discontinue cyproheptadine therapy.

Anti-leukotriene (or receptor) inhibitors

There has been a great deal of recent interest in drugs that block production of leukotrienes (LTC₄,D₄) or ligation of these molecules to their receptor(s). In general, these drugs have limited but significant effectiveness in treating some human asthmatics with moderate to severe disease. Leukotrienes increase mucus production, induce

cellular edema and promote airway smooth muscle constriction in humans and other species, so it is reasonable to think that anti-leukotriene drugs might have a role in the therapy of feline asthma. Perhaps it is not surprising that Zylflo, Accolate and Singulair have all been used to treat cats with asthma even though there are no safety or efficacy studies of these drugs in the feline species

However, it is likely that increased leukotriene production, like prostaglandin production, is a clinically non-significant by-product of the general inflammation in feline asthma. There are no current data that suggest that anti-leukotriene drugs will have an important role in the treatment of cats with asthma. Most importantly, the author strongly believes that correct diagnosis and aggressive therapy of cats with asthma as outlined will minimize the need to explore untested human drugs in these feline patients.

CYCLOSPORINE

Evidence that activated T lymphocytes may play an important role in the generation of eosinophilic airway inflammation has revived interest in the use of CsA to treat human patients with asthma. In limited clinical trials in patients with moderate to severe asthma, CsA has improved lung function and acted as a steroid-sparing agent. For the small subpopulation of patients with chronic severe asthma who require large doses of corticosteroids or are steroid-resistant, CsA may be a useful adjunct to therapy. More widespread use of this drug to treat asthmatic patients is limited by the wide profile of side effects that results from administration of this agent. Because cats are relatively immune to the side effects of CsA reported in humans, veterinarians are not as limited in the doses they can prescribe for their asthmatic patients. In an experimental model of feline asthma, CsA was administered in high doses and was effective in preventing both histologic and clinical asthmatic changes. The indication for use of this drug is limited to the severe uncontrolled asthmatic cat, the kind of case in which euthanasia is being considered. The author uses an initial dose of 10 mg/kg PO every 12 hours. Oral absorption of CsA is unpredictable; therefore, blood levels must be checked at least weekly until a stable dose is achieved to maintain trough blood levels between 500 and 1,000 ng/ml. This blood test (radioimmunoassay) is available at most local and all referral human hospitals.

SUMMARY AND CONCLUSIONS

Human asthma is not a curable disease, although spontaneous resolution is common in adult asthmatics that developed asthma in childhood. We don't know if this is true or not for cats with asthma. We do know that some cats may be only mildly and intermittently symptomatic and others may suffer life threatening illness. An important new

development in our understanding of this disease is the occurrence of airway inflammation even when patients are symptom free. It is therefore helpful to treat the underlying chronic inflammation that causes the acute clinical signs of cough, wheeze and increased respiratory effort.

Chronic bronchitis has a somewhat different prognosis. In part, this is because the anatomic location of disease may involve terminal airway units. Additionally, while an asthmatic cat may be symptom free without medication for weeks to months, bronchitic cats have a chronic daily cough. For both conditions, client education is also critical so that our clients develop realistic expectations of the effectiveness of these treatments for their pets.