

# CHRONIC BRONCHITIS

## (CHRONIC OBSTRUCTIVE PULMONARY DISEASE OR “COPD”)

### BASICS

#### OVERVIEW

- The respiratory tract consists of the “upper respiratory tract” (the nose, nasal passages, throat, and windpipe [trachea]) and the “lower respiratory tract” (the bronchi, bronchioles, and alveoli [the terminal portion of the airways, in which oxygen and carbon dioxide are exchanged])
- The bronchi and bronchioles are considered to be “small airways”
- “Chronic bronchitis” is long-term (chronic) coughing for 2 consecutive months that is not related to another cause (such as cancer; congestive heart failure [CHF], a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs; or infection of the lower respiratory tract)
- Non-reversible and often slowly progressive
- Also known as “chronic obstructive pulmonary disease” or “COPD”

#### SIGNALMENT/DESCRIPTION of ANIMAL

##### *Species*

- Dogs and cats

##### *Breed Predispositions*

- Dogs—small- and toy-breed dogs common; also observed in large-breed dogs
- West Highland white terriers—develop a progressive disorder characterized by long-term (chronic) coughing, breathing distress, and short, rough snapping sounds (known as “crackles”) heard when listening to the chest with a stethoscope; also may have “pulmonary fibrosis,” characterized by excessive fibrous or scar-type tissue as part of a reactive process in the lungs
- Cocker spaniels—dilation of bronchi or bronchioles, as a consequence of inflammation or blockage of the airway (known as “bronchiectasis”), common after a history of long-term (chronic) inflammation of the bronchi (bronchitis)
- Cats—Siamese and domestic shorthair

##### *Mean Age and Range*

- Most often affects middle-aged and old animals

#### SIGNS/OBSERVED CHANGES in the ANIMAL

- Coughing—hallmark of irritation of the windpipe (trachea) and bronchi (known as “tracheobronchial irritation”); usually “dry” cough; gagging common after coughing (gagging response often misinterpreted as vomiting)
- Exercise intolerance
- Bluish discoloration of the skin and moist tissues (mucous membranes) of the body caused by inadequate oxygen levels in the red-blood cells (known as “cyanosis”) and even fainting (known as “syncope”) may be noted
- Patients usually are bright and alert with normal body temperature (that is, animal does not have a fever)
- Feeling or applying pressure on the windpipe (trachea) typically results in coughing, because of tracheal sensitivity
- Small airway disease—assumed when an abdominal “push” (during quiet breathing) is noted when the animal breathes out (expiration) or squeaking or whistling sounds (known as “wheezing”) are detected at the end of breathing out
- Heart—heart murmurs common, but not always associated with congestive heart failure; chronic bronchitis usually results in a normal or slower than normal resting heart rate and pronounced irregular heart beat
- Obesity—common; important complicating factor
- Severe dental disease may increase the likelihood of lower airway infection and potential generalized bacterial infection (sepsis)

#### CAUSES

- Long-term (chronic) airway inflammation initiated by multiple causes

#### RISK FACTORS

- Recurrent bacterial infection
- Long-term exposure to inhaled irritants
- Obesity
- Dental disease and disease of the voice box (larynx) disease—result in bacterial showering of the lower airways

### TREATMENT

#### HEALTH CARE

- Usually outpatient—oxygen can be set-up to be given at home in some cases

- Inpatient—if patient requires oxygen therapy, injectable medication, or administration of medication in a fine spray or mist that is breathed in (known as “aerosol therapy”); patients that owners cannot keep calm at home during recovery

#### **ACTIVITY**

- Exercise—moderate (not forced); useful in clearing secretions from the airways; assists with weight loss
- Limit if exertion causes excessive coughing
- Use a harness instead of a collar

#### **DIET**

- Weight loss is critical—improves oxygen levels in the blood, attitude, and exercise tolerance and decreases cough frequency in obese patients

#### **SURGERY**

- Treat severe dental disease to minimize secondary bacterial complications

### **MEDICATIONS**

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

#### **Steroids**

- Decrease airway inflammation and coughing, regardless of the underlying cause
- Indicated for noninfectious causes of long-term inflammation of the bronchi and bronchioles (chronic bronchitis)
- With allergic or hypersensitivity reactions—require long-term administration; attempt to wean off steroids or determine lowest effective dosage

#### **Medications to Enlarge or Dilate the Bronchi (known as “bronchodilators”)**

- Beneficial effects (depends on the particular medication)—enlargement or dilation of the bronchi (known as “bronchodilation”); improved secretion clearance mechanism of the lungs (known as “mucociliary clearance”); improvement in function of the diaphragm, the muscle between the chest and abdomen; lowered blood pressure in the pulmonary artery
- $\beta$ -agonists—terbutaline and albuterol
- Sustained-release theophylline—oral administration
- Aminophylline—immediate-release tablets or injectable formulations are not recommended

#### **Antibiotics**

- Select on the basis of bacterial culture and sensitivity test results
- While waiting for bacterial culture and sensitivity results—antibiotic that is effective against gram-negative bacteria (antibiotics such as potentiated sulfa/trimethoprim, amoxicillin/clavulanic acid, or enrofloxacin)
- Associated long-term (chronic) aspiration pneumonia or dental disease—may prefer an antibiotic that is effective against bacteria that can live and grow in the absence of oxygen (known as “anaerobic bacteria”) and gram-positive bacteria

#### **Medications to Control Coughing (known as “antitussives”)**

- Indicated for cough that is nonproductive (that is, a “dry” cough in which no sputum [secretion or material] is coughed up); paroxysmal (that is, coughing episodes occur suddenly at fairly regular intervals); continuous (that is, the coughing goes on without letting up); or debilitating (that is, the cough is severe enough to affect the animal in general, even leading to lack of sleep and to weakness)
- Dogs—butorphanol; hydrocodone; codeine
- Metered dose inhalers (steroids—Flovent®; medications to enlarge or dilate the bronchi [bronchodilators]—albuterol) and aerosolized antibiotics (gentocin) may be administered via face mask
- Serotonin blockade (but *not* leukotriene blockers)—may block airway “hyper-responsiveness” in cats with airway disease
- Cyclosporine-induced immune suppression—cyclosporine is a medication that decreases the immune response; may block structural changes in airways associated with asthma in cats

### **FOLLOW-UP CARE**

#### **PATIENT MONITORING**

- Follow abnormalities revealed by physical examination and selected diagnostic tests—determine response to treatment
- Monitor weight and arterial blood gases (measurements of oxygen and carbon dioxide levels in arterial blood)—usually improve after significant weight loss

#### **PREVENTIONS AND AVOIDANCE**

- Avoid and address/correct risk factors

#### **POSSIBLE COMPLICATIONS**

- Fainting (syncope)—frequent complication of long-term (chronic) coughing, particularly in toy-breed dogs
- Increased blood pressure in the lungs (known as “pulmonary hypertension”) and heart disease secondary to lung disease (known as “cor pulmonale”)—most serious complications

#### **EXPECTED COURSE AND PROGNOSIS**

- Progressive airway changes—fainting (syncopal) episodes; long-term (chronic) low levels of oxygen in the blood and body tissues (known as “hypoxia”); enlargement of the right ventricle (a chamber of the heart; condition known as “right ventricular hypertrophy”); and increased blood pressure in the lungs (pulmonary hypertension)
- Sudden (acute) worsening of signs—common with seasonal changes, air quality changes, worsened inflammation, and potentially the development of secondary infection

#### **KEY POINTS**

- Chronic bronchitis is an incurable disease and complete suppression of all coughing is an unattainable goal
- Aggressive treatment—including weight control, avoiding risk factors, and medical treatment—minimizes the severity of the coughing and slows disease progression in most patients

