

Noisy Breathing

(Stertor and Stridor)

Basics

OVERVIEW

- Unusually loud breathing sounds that result from air passing through abnormally narrowed back of the throat (known as the “nasopharynx”), the throat (known as the “pharynx”), the voice box (known as the “larynx”), or the windpipe (known as the “trachea”)
- Abnormal breathing sounds can be heard without using a stethoscope
- “Stertor” is noisy breathing when inhaling; it is a low-pitched, snoring sound that usually arises from the vibration of relaxed or flabby tissue or fluid; usually arises from airway blockage in the nose or throat (pharynx)
- “Stridor” is high-pitched, noisy breathing; the higher-pitched sounds result when relatively rigid tissues vibrate with the passage of air; result of partial or complete blockage of the voice box (larynx) or upper part of the windpipe (known as “cervical tracheal collapse”)
- “Upper respiratory tract” or “upper airways” includes the nose, nasal passages, throat (nasopharynx, pharynx, larynx), and windpipe (trachea)



GENETICS

- Partial upper obstruction in short-nosed, flat-faced breeds (known as “brachycephalic” breeds) of dogs and cats (condition known as “brachycephalic airway syndrome”)—inherited in many breeds
- Paralysis of the voice box or larynx (known as “laryngeal paralysis”)—identified as a genetic problem in the Bouvier des Flandres, rottweiler, Siberian husky, and Dalmatian

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predilections

- Common in short-nosed, flat-faced (brachycephalic) dogs or cats
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box (laryngeal paralysis)—more common in certain giant-breed dogs (such as Saint Bernards and Newfoundlands) and large-breed dogs (such as Irish setters, Labrador retrievers, and golden retrievers)

Mean Age and Range

- Affected short-nosed, flat-faced (brachycephalic) pets and dogs or cats with inherited paralysis of the voice box

- (laryngeal paralysis) typically are younger than 1 year of age when breathing problems are detected
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box (laryngeal paralysis) typically occurs in older dogs and cats
 - Cats—diagnosed less commonly than are dogs; no obvious age pattern

Predominant Sex

- Inherited paralysis of the voice box (laryngeal paralysis) has a 3:1 male-to-female ratio

SIGNS/OBSERVED CHANGES IN THE PET

- Change or loss of voice
- Partial blockage of the upper airways produces an increase in airway sounds, before producing an obvious change in breathing pattern
- Unusually loud breathing sounds may have existed for as long as several years
- Breath sounds can be heard from a distance, without the use of a stethoscope
- Nature of the sound—ranges from abnormally loud to obvious fluttering to high-pitched squeaking, depending on the degree of airway narrowing
- May note increased breathing effort; breathing often accompanied by obvious body changes (such as abdominal push, elbows held out from body, extended head and neck and open-mouth breathing)

CAUSES

- Condition of brachycephalic pets (condition known as “brachycephalic airway syndrome”), characterized by any combination of the following conditions: narrowed nostrils (known as “stenotic nares”); overly long soft palate; turning inside-out of a portion of the voice box or larynx (known as “everted laryngeal sacculles”), such that the space for air to pass through the larynx is decreased; and collapse of the voice box or larynx (known as “laryngeal collapse”)
- Paralysis of the voice box or larynx (laryngeal paralysis)—inherited or acquired later in life/after birth
- Tumors of the voice box or larynx—benign or malignant (cancer)
- Nodular, inflammatory lesions of the voice box or larynx (known as “granulomatous laryngitis”) or inflammation of the voice box or larynx (known as “inflammatory laryngitis”)
- Reduction in the diameter of the lumen of the windpipe (trachea) during breathing (known as “tracheal collapse”)
- Narrowing of the windpipe (trachea; condition known as “tracheal stenosis”)
- Blockage of the windpipe (trachea; condition known as “tracheal obstruction”)
- Tumors of the windpipe (trachea)
- Foreign bodies in the windpipe (trachea) or other parts of the airway
- Inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”)
- Narrowing of the back of the nose and throat (known as “nasopharyngeal stenosis”)
- Condition caused by excessive levels of growth hormone, leading to enlargement of bone and soft-tissues in the body (known as “acromegaly”)
- Nervous system and/or muscular dysfunction or trauma
- Anesthesia or sedation—if certain anatomy exists (such as a long soft palate) that increases susceptibility to abnormal, loud breathing sounds
- Abnormalities or tumors of the soft palate (the soft portion of the roof of the mouth, located between the hard palate and the throat)
- Excessive lining tissue of the throat (known as “redundant pharyngeal mucosal fold”)
- Tumor in the back of the throat (pharynx)
- Fluid buildup (edema) or inflammation of the palate, throat (pharynx), and voice box (larynx)—secondary to coughing, vomiting or regurgitation, turbulent airflow, upper respiratory infection, and bleeding
- Discharges (such as pus, mucus, and blood) in the airway lumen—suddenly (acutely) after surgery; a normal conscious pet would cough out or swallow them

RISK FACTORS

- High environmental temperature or humidity
- Fever
- High metabolic rate—as occurs with increased levels of thyroid hormone (known as “hyperthyroidism”) or a generalized bacterial infection (known as “sepsis”)
- Exercise
- Anxiety or excitement
- Any breathing or heart disease that increases movement of air into and out of the lungs (known as “ventilation”)
- Turbulence caused by the increased airflow may lead to swelling and worsen the airway obstruction

Treatment

HEALTH CARE

- Inpatient management required for surgical treatment
- Treatment requires removal of blockage (obstruction) to air flow
- Supplemental oxygen may be helpful
- Intravenous (IV) fluids may be necessary, especially if increased body temperature (known as “hyperthermia”) develops secondary to increased work of breathing; active cooling measures such as cooled fluids may be required to bring body temperature down
- Closely monitor effects of sedatives; sedatives may relax the upper airway muscles and worsen the blockage to airflow; the veterinarian will be prepared for emergency treatment if complete obstruction occurs

ACTIVITY

- Activity determined by underlying cause
- Keep the pet cool, quiet, and calm if having a sudden obstruction—anxiety, exertion, and pain lead to increased movement of air into and out of the lungs (ventilation), potentially worsening the blockage to airflow
- Exercise is a risk factor; therefore, limited exercise may be necessary, as directed by your pet's veterinarian

DIET

- Weight control diet may be necessary; avoid obesity which worsens breathing effort

SURGERY

- Extreme airway blockage or obstruction—the veterinarian will attempt an emergency intubation (that is, passage of an endotracheal tube through the mouth and into the windpipe [trachea] to allow oxygen to reach the lungs); if obstruction prevents intubation, emergency tracheotomy (surgical opening into the windpipe [trachea]) or passage of a tracheal catheter to administer oxygen may be the only available means for sustaining life; a tracheal catheter can sustain oxygenation briefly while a more permanent solution is sought
- Examination of the airways using a special lighted instrument called a “laryngoscope” for examining the voice box or a “bronchoscope” for examining the windpipe (trachea) and larger bronchi followed by foreign body removal or biopsy; utilization of small balloon catheters may be useful in removing some foreign bodies
- Surgery—biopsy to determine type of mass in the airways; surgical treatment (such as surgical removal of mass, correction of airway defects, or removal of foreign bodies)

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

- Medical approaches—appropriate only if the underlying cause is infection, fluid buildup (edema), inflammation, or bleeding; structural/anatomic abnormalities or nervous system causes are not responsive to medical treatment
- Steroids—may be indicated if fluid buildup (edema) or inflammation is thought to be an important contributor to the abnormal, loud breathing sounds

Follow-Up Care

PATIENT MONITORING

- Breathing rate and effort need to be monitored closely—complete blockage or obstruction could occur when an apparently stable pet is taken home or if continual observation is not feasible

PREVENTIONS AND AVOIDANCE

- Avoid exercise, high ambient temperatures, and extreme excitement

POSSIBLE COMPLICATIONS

- Serious complications may occur without treatment to relieve the airway blockage or obstruction; these include fluid buildup in the airways (airway edema) and/or lungs (known as “pulmonary edema,” which may progress to life-threatening lung injury), and decreased movement of air into and out of the lungs (hypoventilation); may require tracheotomy (surgical opening into the windpipe [trachea]) and/or artificial ventilation (such as use of a mechanical respirator)

EXPECTED COURSE AND PROGNOSIS

- Varies with underlying cause
- Even with surgical treatment, some degree of obstruction may remain for 7–10 days due to post-operative swelling

Key Points

- “Stertor” is noisy breathing when inhaling; it is a low-pitched, snoring sound that usually arises from the vibration of relaxed or flabby tissue or fluid; usually arises from airway blockage in the nose or throat (pharynx)
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- The pet can transition from being a noisy breather to having a blocked or obstructed airway in a few minutes or even seconds
- Serious complications may occur without treatment to relieve the airway blockage or obstruction