



"Dr Wader's
Deep Water
Column"



Kennel Cough

Causes of the disease

Kennel Cough is the colloquial name for Canine Infectious Tracheobronchitis which is an acute or chronic inflammation of the trachea and bronchial airways within the lungs. Kennel Cough is actually a syndrome rather than an individual disease. Within the syndrome are a number of different viruses and bacteria involved. Canine infectious tracheobronchitis is often secondary to viral infection of the respiratory system. Canine parainfluenza virus, canine adenovirus 2 (CAV-2), or canine distemper virus can be the primary or sole pathogen involved. Canine reoviruses (types 1, 2, and 3), canine herpes virus, and canine adenovirus 1 (CAV-1) are of questionable significance in this syndrome. *Bordetella bronchiseptica* may act as a primary pathogen (in dogs and cats), especially in dogs less than 6 months old; however, it and other bacteria (such as *Pseudomonas* sp, *Escherichia coli*, and *Klebsiella pneumoniae*) may cause secondary infections after viral injury to the respiratory tract. Concurrent infections with several of these agents are common.

The role of *Mycoplasma* sp has not been clearly established. Stress and extremes of ventilation, temperature, and humidity apparently increase susceptibility to, and severity of, the disease. Inflammation of the large airways (bronchitis) may extend to the smaller airways (bronchioles) and into the actual lung tissue to cause a life-threatening pneumonia.

A critical point to consider is that inflammation of the trachea may be secondary either to diseases of the mouth and pharynx or to chronic coughing related to heart disease, as well as lung disease unrelated to the heart. Other causes include smoke aspiration, exposure to noxious chemical fumes, and lung worms e.g. *Aelurostrongylus abstrusus* (also in cats), *Capillaria aerophila*, *Crenosoma vulpis*, and *Oslerus osleri*.

Symptoms



Spasms of coughing are the outstanding sign, with the most severe being after rest or a change of environment or at the beginning of exercise. Examination of the chest using a stethoscope is a basic tool used by most veterinarians, however, breathing sounds may be essentially normal. In advanced cases, breathing in gives rise to sounds described as crackles and breathing out creates wheezing sounds as often heard by the examining clinician using a stethoscope. The temperature may be slightly increased. The initial stage of bronchitis passes in 2 - 3 days. The coughing, however, may persist for 2 - 3 weeks. Severe bronchitis and pneumonia are difficult to differentiate; the former often extends into the lung tissue and results in pneumonia. Feline bronchial asthma may result in cyanosis (blue discolouration of the mucous membranes and tongue) and laboured breathing.

Exacerbation of a chronic bronchitis affecting middle-aged and older animals may follow sudden changes in the weather or other environmental stresses.

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Bronchial asthma (allergic bronchitis) is a syndrome in cats with similarities to asthma in humans. Young cats and Siamese and Himalayan breeds are most affected. Foreign bodies in the airway and developmental abnormalities such as laryngeal deformities may predispose to bronchitis. Chronic bronchitis most often affects small breeds of dogs, although it is also seen in large breeds. It is characterised by persistent cough for at least two months in the absence of specific pulmonary disease. Dilatation of the lower airways (bronchiectasis) may occur as the end stage of chronic bronchitis in dogs.



Diagnosis

The diagnosis is made from the history and clinical signs and by elimination of other causes of coughing. Chest radiographs (X-rays) may be helpful, while bronchoscopy (the placement of a small direct visualizing scope or camera into the air passages, under heavy sedation or full anaesthesia) may reveal an inflamed airway lining as well as inflammatory fluids which can be sampled and analysed. Bronchial washing and biopsy are additional diagnostic aids that may demonstrate causative agents or yield significant supportive clinical data.

Treatment

In mild or early cases, supportive therapy may be effective, but treatment of concurrent disease is also indicated.

Rest, warmth, and proper hygiene are important. Broad-spectrum antibiotics are indicated for treatment of cough. Persistent, non-productive coughing in dogs is best controlled by antitussive medication that contains codeine (contra-indicated in cats). If conservative medical management is unsuccessful, radiographs should be taken of the chest and trachea, and laboratory tests evaluated to eliminate other differential diagnoses.

Additional diagnostic procedures such as bronchoalveolar lavage or transtracheal wash may be indicated in more complicated cases to identify the causative agent and to determine appropriate and specific antimicrobial therapy. Pulmonary physiotherapy consisting of sodium chloride nebulisation and gentle coughage for hospitalized patients has been employed before and may loosen secretions and stimulate expectoration. A bathroom environment with steam from a hot shower may be substituted for nebulisation.

Vaccination

Immunization of your pet is the best protection that can be provided and has proven very effective in reducing the severity of clinical signs, as well as in reducing subsequent shedding of the parainfluenza virus (in dogs) for many years. Many boarding kennels and catteries require vaccination against *Bordetella bronchiseptica* for all dogs and cats admitted to their facilities. In addition, vaccination against *Bordetella bronchiseptica* may be recommended for animals which frequently visit grooming parlours, dogs that take part in obedience or puppy socialization classes or are otherwise at risk for being exposed to canine kennel cough.

Kennel cough vaccines for dogs and *Bordetella bronchiseptica* vaccines for cats are readily available and affordable.

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Once we have determined that vaccination is appropriate for our cat/dog we need to make sure that the correct product is used. The major consideration involves using an intranasal vaccine or a parenteral (given subcutaneously) vaccine. Ideally, the vaccine should contain the Parainfluenza virus and *Bordetella bronchiseptica* fractions and be an intranasal vaccine. Research has repeatedly demonstrated that intranasal vaccines (Nobivac® KC and IntraTrac® II ADT) have a faster onset of immunity/protection (within 72 hours), can be used in animals from three weeks of age (safe), will not interfere with maternal antibodies and do not require a booster 2 - 4 weeks later (injectable vaccines require that animals return for a booster vaccine after the first inoculation).



The vast majority of animals that have been successfully vaccinated may still become infected, however, the symptoms experienced will be milder and shorter lived than for those animals not vaccinated. The main reason why animals may still develop clinical signs of respiratory disease is that vaccines protect against the Parainfluenza virus and/or the *Bordetella bronchiseptica* bacteria (depending on which vaccine is used) in dogs, and *Bordetella bronchiseptica* only in cats. All the other inciting causes of kennel cough in dogs (and respiratory disease in cats) are not covered by the vaccination. Respiratory disease in cats can also be caused by feline rhinotracheitis virus, calici virus and Chlamydiosis.

Canine kennel cough should not be confused with canine influenza, which produces similar symptoms but is actually a totally different disease.

Vaccinations against *Bordetella bronchiseptica* do not protect dogs against canine influenza and the vaccine against canine influenza does not protect dogs against canine kennel cough. A new vaccine from Intervet Schering-Plough Animal Health was released on the 23rd of June 2009 in the U.S.A. and is the first of its kind in veterinary science. No studies have been done locally to determine the importance of canine influenza in South Africa, which most likely means that we have no reason to be concerned about the welfare of our pets. Finally, it is important to understand the role of emerging diseases.

New diseases will obviously affect our pets from a welfare perspective, but will also cause us to question the efficacy of our current immunization protocols and vaccines. An example of the latter would be Canine respiratory coronavirus (CRCoV) which is a new coronavirus of dogs, widespread in North America, Japan, and several European countries. CRCoV has been associated with respiratory disease, particularly in kennel dog populations. The virus is genetically distinct from canine coronavirus associated with diarrhoea, vomiting, dehydration and gastrointestinal disease in dogs; therefore, specific tests are required for diagnosis. CRVoV has also been identified as one of the causative agents associated with kennel cough. 🐾

Dr Mats Abatzidis

The advertisement for Clarens Brewery features a central logo with the text "HAND CRAFTED BEER AND CIDER" above "CLARENS BREWERY". Below the logo is a scenic illustration of a brewery with tall chimneys. Text below the illustration states: "Clarens Brewery brews hand crafted beers and cider and is the only microbrewery in the Free State. All beers and cider are available on tap or in bottles to take home. We are proud to offer you the following Beers & Cider:". At the bottom, there are four circular logos for "CLARENS BLONDE", "CLARENS ENGLISH ALE", "CLARENS STOUT", and "CLARENS BREWERY". At the very bottom, it says "Located at the Clarens Info Centre, just off the Square. 082 901 4700 or visit www.clarensbrewery.co.za".