

Q¹ - what medical procedures can shelter staff legally perform on shelter animal.
- ownership

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Infectious Diseases of Dogs and Cats

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INTRODUCTION

Infectious diseases are common in shelters and contribute to death by direct causes, euthanasia to manage infections, and reduced adoptions from the shelter due to public and local veterinarians' lack of confidence in the shelter animals' health. In addition to several almost universal infectious problems in shelters (kennel cough, feline respiratory infections, diarrhea), there are dozens of commonly and hundreds of rarely involved pathogenic bacteria, fungi, protozoa, arthropods, and other infectious agents targeting dogs and cats in the high turnover, densely housed environments characteristic of shelters. This chapter is intended as a companion medical guide for assessing and managing infections in shelters. It is meant to be used in a fully integrated management plan, utilizing concepts from the other chapters in this text extensively. This chapter is organized according to clinical syndromes, because that is how individual and population infectious problems present to the shelter medical staff. One goal is to briefly overview the possible contributing agents and give mention to noninfectious contributors where warranted, allowing the user to generate a "rule-out list" for possible etiological agents involved in a given clinical presentation. The next section under each syndrome is diagnosis; this information is presented with the full realization that extensive diagnostic testing may be beyond the practical or budgetary constraints of many shelters. Therefore clinical diagnoses are emphasized along with practical and possible diagnostic possibilities, as well as interpretations for when it becomes strongly advisable to incorporate diagnostic tests (for example, for ringworm surveillance). The last sections in each syndrome are herd and individual management of the syndrome, emphasizing preventive measures.

Again, rather than give treatment options for each different infection (information that is available in several other resources), We have tried to give a balanced, whole herd or whole animal treatment and management approach, recognizing that precise diagnoses often are not available. The final introductory word of caution: herd management comes before individual management always and prevention is cheaper, easier, and kinder to the animals than having to manage them after they become infected.

RESPIRATORY DISEASE

Overview

Respiratory tract disease represents the most prevalent, visible, and difficult to manage infectious problem in animal shelters. In dogs and cats, respectively, the major syndromes are kennel cough and upper respiratory tract infection. Less obviously (and less commonly), animals in shelters may develop lower respiratory tract infection. The upper respiratory diseases typically are due to infectious agents, while lower respiratory disease occurs due to some of the same pathogens, as infectious exacerbation of noninfectious medical problems, or due to extension of unique systemic or primary respiratory pathogens. Typically, epidemic spread and management difficulty are greater problems for the upper respiratory tract syndromes, with lower respiratory disease more typically incidental individual animal problems.

Feline Upper Respiratory Infections

BORDETELLA BRONCHISEPTICA

Bordetella bronchiseptica is ^(B3) a nonenteric Gram-negative rod-shaped bacterium which resides on the

Q² - URI vs. LRI - difference

Q4 - what are the infection agent of the

mucosa of infected animals and contributes to mild (cats) or more severe (dogs) respiratory tract infections, often in association with respiratory viruses (Wright et al., 1973; Bemis, Greisen, and Appel, 1977; Willoughby et al., 1991; Coutts et al., 1996; Welsh, 1996). *B. bronchiseptica* occurs commonly in pigs and rabbits, and sporadic bordetellosis has been reported in people, horses, and seals (Cross and Clafin, 1962; Goodnow, 1980; Magyar et al., 1988; Woolfrey and Moody, 1991). *B. bronchiseptica* is a zoonosis, causing disease primarily in immunosuppressed people. Cross-species transmission of *B. bronchiseptica* has been described, although genetic investigations document some host-species fidelity (Gueirard et al., 1995; Binns et al., 1998; Dawson et al., 2000; Foley et al., in press). If protected and kept moist, the bacterium can survive in the environment for weeks.

Bordetella bronchiseptica has virulence determinants that it shares with its more serious human pathogens, *B. pertussis* and *B. parapertussis*, including an adenyl cyclase that reduces the phagocytic competence of neutrophils and a cytotoxin which is damaging to ciliated epithelia. In cats, there are three forms of bordetellosis: very mild primary infection with conjunctivitis and mild ocular discharge, *Bordetella pneumonia* secondary to viral (caliciviral or herpesviral) upper respiratory tract infection and immunosuppression, and primary *Bordetella pneumonia* in young kittens (Jacobs et al., 1993; Coutts et al., 1996; Welsh, 1996). In dogs, the same strains of *B. bronchiseptica* can target the trachea, destroy the superficial epithelium, promote inflammatory infiltration and result clinically in a harsh honking cough that is refractory to treatment.

Squamous metoplasia - dogs
CALICIVIRUS

Feline calicivirus is an RNA virus that infects cats only. It is characterized by high rates of mutation and high antigenic and genetic diversity. The infection is acquired when a cat inhales or ingests calicivirus particles in the air, on fomites, or on other cats. The infection is transmitted by aerosol, and introduction of the virus into a cat is via the oral and nasal routes. Subsequently, the virus spreads systemically with viremia and high levels of virus secretion from many sites, including respiratory secretions, feces, and urine. At a minimum, shedding

occurs for 10 days to 2 weeks and commonly in shelters or in kittens, for months, during which time cats may have clinical URI or be asymptomatic. There are several disease conditions that can occur with calicivirus infection, including conjunctivitis and rhinitis with serous ocular discharge, vesicular stomatitis/ faucitis (aphthous stomatitis), and pneumonia (Pedersen et al., 2000). Often on about the second day of infection there is a transient fever and limping with detectable polyarthritis, but starting about 10 days after infection there may be immune complex disease with polyarthritis and gingivitis. Immune-complex polyarthritis has been reported as a sequel to calicivirus vaccination. Recently, a very pathogenic series of calicivirus infections were reported, in which cats developed facial and limb edema, apparently due to vasculitis secondary to calicivirus, comparable to the hemorrhagic fever syndrome observed in rabbit hemorrhagic calicivirus infection.

Clearly, the effects of infection are both directly due to the virus and immune-mediated. Maternal immunity to protect the kittens can be short-lived, lasting from 3-9 weeks. Even cats that have recovered from earlier infections with calicivirus may not be protected if the challenge is with an antigenically dissimilar virus. However, as cats mature to about 3 years of age, their innate protective mechanisms appear to finally develop the capability to defend the cat against calicivirus, and many kittens that appeared chronically infected will finally stop showing clinical signs. Other cats, particularly those with immune-mediated gingivitis, may continue to have severe disease and may eventually be euthanized.

HERPESVIRUS

Feline herpesvirus is an enveloped DNA virus infecting felids only, but typical biologically of other herpesviruses in dogs, humans, and other species. The genome is double-stranded DNA coding for 6 proteins. Herpesvirus particles may be seen within host cell nuclei, cytoplasm, and extracellularly. The virus does not persist in the environment and usually is spread by close contact with an infected cat. Often, kittens acquire the infection very early in life, because the stress and hormones upregulated during parturition efficiently induce recrudescence of the virus. Later in life, transmission of the feline herpesvirus requires intimate contact among cats

QS "Killer cat" - joint inflammation, hind swelling, bruising

Q5

Ab for URI

4ft

Q6 asymptomatic carrier

Q7

