

Update on the Management of Cats with Upper Respiratory Infections

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Abstract. There are many causes of bacterial, viral, and fungal causes of upper respiratory infections (URI) in cats. The primary purpose of this presentation is to update attendees on management of cats with acute and chronic bacterial and viral causes.

Please see the ISCAID respiratory treatment guidelines for further information on this very important topic.

Lappin MR, Blondeau J, Boothe D, Breitschwerdt EB, Guardabassi L, Lloyd DH, Papich MG, Rankin SC, Sykes JE, Turnidge J, Weese JS. Antimicrobial use Guidelines for Treatment of Respiratory Tract Disease in Dogs and Cats: Antimicrobial Guidelines Working Group of the International Society for Companion Animal Infectious Diseases. *J Vet Intern Med.* 2017;31:279-294.

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Bacterial causes. Almost all cats with chronic mucopurulent or purulent nasal discharge have a bacterial component to their disease. Diagnosis and treatment was reviewed by the International Society for Companion Animal Infectious Diseases.¹ Primary bacterial disease is rare but may be associated with *Bordetella bronchiseptica*, *Mycoplasma* spp., *Chlamydia felis*, and some *Pasteurella* spp.. Recently it was shown that *Bartonella* spp. are not a causes of chronic rhinitis in cats.²

Most cases of chronic or recurrent bacterial rhinitis are secondary to other diseases including trauma, neoplasia, inflammation induced by viral infection, foreign bodies, inflammatory polyps, and tooth root abscess. Thus, if routine antibiotic therapy fails with doxycycline or amoxicillin, a diagnostic workup should be performed. If the diagnostic workup fails to find a primary disease and neutrophilic or mixed inflammation is noted, other antibiotics could be considered. Pradofloxacin has been evaluated as a treatment of feline rhinitis and conjunctivitis in several studies and can be considered as a rescue drug for cats with suspected bacterial disease. This fluoroquinolone is known to be safe for the use in cats.

Since bacterial rhinitis leads to chondritis and osteomyelitis, antibiotic therapy may need to be continued for weeks in cats with chronic disease. Drugs with an anaerobic spectrum that also penetrate bone and cartilage well are often effective. Clindamycin or amoxicillin-clavulanate are frequently used. Amoxicillin-clavulanate has the advantage of killing most *B. bronchiseptica* isolates. Clindamycin has the advantage of effective against *Mycoplasma* spp. and is effective against many anaerobes. After being administered twice daily on the first day, azithromycin can be administered every third day. Cefovecin can be used in cats that are difficult to treat orally, but since it is a beta-lactam, there is no effect against *Mycoplasma* spp.. Topical administration of antibiotics by drops or nebulization may be beneficial for some cats but controlled studies are

generally lacking. Lessening stress and immune stimulants as discussed for viral disease may be of benefit.

Viral diseases. Herpesvirus 1 (rhinotracheitis; FHV-1) and calicivirus (FCV) are the most common viral causes of sneezing and nasal discharge in the cat. If oral ulcers are present, calicivirus is most likely. If corneal ulcers are present, herpesvirus 1 is most likely. FHV-1 has now also been associated with chronic stomatitis, facial dermatitis, and endogenous uveitis. Viral rhinitis with or without secondary bacterial infection can be recurrent. FHV-1 can be documented by direct fluorescent staining of conjunctival scrapings, virus isolation, or polymerase chain reaction. Since FHV-1 DNA can be amplified in conjunctival cells of approximately 25% of healthy cats, the positive predictive value of these tests in diseased cats is low. Quantitative PCR may ultimately prove to correlate to the presence or absence of disease but some cats with chronic FHV-1 infections do not have high values. Currently used PCR assays also detect vaccine strains of FHV-1. RT-PCR assays can be used to amplify the RNA of FCV. However, these assays have the same problems with predictive value as those to detect DNA of FHV-1.

Feline viral rhinitis with or without secondary bacterial infection can be recurrent. There are no consistently effective primary therapies. For FHV-1, lysine at 250-500 mg, PO, once or twice may be helpful in some cats lessening recurrent disease and has been shown to be safe but should be given as a dose, not fed with food and is not a treatment for active disease. Lysine has been shown to be ineffective for prevention of upper respiratory tract infections in shelter studies and so should not be used for this purpose.

Administration of human alpha 2b interferon at 50 U, PO, daily may help some cats with suspected chronic calicivirus or FHV-1 infection. This can now be formulated for practitioners by prescription at some pharmacies (www.roadrunnerpharmacy.com/) in the USA. In Europe, feline interferon may be beneficial in the management of some cats. Intranasal administration of modified live, intranasal FHV-1 and FCV vaccines may lessen disease in some chronically infected cats. If there is a positive response to intranasal vaccination in a cat with chronic disease, I will use this form of immunotherapy up to 3 times per year.

Famciclovir is currently the orally administered drug of choice for management of acute (and possibly chronic) FHV-1 infections in cats. The drug has been prescribed mostly at 40 or 90 mg/kg and is safe at up to 90 mg/kg, PO, q8hrs and so the dose should be increased if lower doses were used and the initial response is suboptimal and FHV-1 is still suspected. Administration of one dose of famciclovir (125 or 500 mg) on admission to an animal shelter was ineffective in lessening clinical signs of disease.

Topical cidofovir (product for humans) can be used for the treatment of FHV-1 conjunctivitis twice daily and was effective in a controlled research project. The drug is easier to administer (twice daily) than idoxuridine or other anti-FHV-1 ocular therapies and does not cause as much irritation. This drug is available in some compounding pharmacies (www.rxfixer.com). In a recent research study, raltegravir was effective for the management of FHV-1 associated clinical signs in a model.

Immune modulation with a the probiotic *Enterococcus faecium* strain SF68 (FortiFlora®, Purina Pet Care) was effective in lessening stress reactivated FHV-1 signs in a model. Field studies with this probiotic are in progress. Recently, the use of an intranasal product containing 2 Toll-like receptor agonists was beneficial in lessening signs and shedding of FHV-1 in a model. Field studies with this compound are in progress.

Stress relief. Many of the cats with chronic recurrent signs of upper respiratory disease are likely to be infected by FHV-1 or FCV. Stress reactivation of feline viral infections is thought to be common, in particular for FHV-1. All the principles of stress relief for management of feline interstitial cystitis also apply to cats with recurrent signs of URI. In a recent study, use of a facial pheromone diffuser could lessen recurrent signs of FHV-1 in a mild stress model in experimentally inoculated cats.