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HOSPITAL FOR CATS

## UPPER RESPIRATORY INFECTIONS

Upper respiratory viral infections are the feline equivalent to the human cold. There are many similarities but also some important differences. The term “upper respiratory” refers to the eyes, nose, mouth, throat, and trachea (windpipe), but not the bronchi or lungs, which constitute the lower respiratory tract. In humans, there are about 200 different viruses that cause cold symptoms. Infection with one of them results in symptoms lasting a week or two, followed by an immune response that eliminates the virus from the body and provides lifelong immunity against that same virus. Since there are so many different viruses, however, people continue to get colds. As we get older, we tend to get fewer colds as we gradually run out of viruses.

In cats, 80% of all upper respiratory disease is caused by only two viruses. One is **feline herpesvirus**, which causes the disease referred to as **Feline Viral Rhinotracheitis (FVR)**, the most common infectious respiratory disease in cats. The other is feline **calicivirus**. Most of the remaining cases of upper respiratory infections are caused by Chlamydia psittaci variety felis (now called Chlamydophylia), which causes the disease referred to a **Pneumonitis**. Chlamydia often occurs in conjunction with herpesvirus or calicivirus, and is a bacteria rather than a virus. Another bacteria that can cause respiratory disease is Mycoplasma, but it is usually a secondary infection.

The most important difference between human and feline respiratory agents is that, unlike the temporary infections cold viruses cause in man, the cat viruses result in a life-long carrier state in many infected cats. Almost all cats infected with herpesvirus will remain infected for life. Most have no symptoms, some have recurrent episodes of disease, often activated by stress, and some have symptoms all the time. About 30% of cats infected with calicivirus will become life-long carriers.

Even Chlamydia and Mycoplasma infections result in a carrier state, but they can be treated with appropriate long-term antibiotics. Herpesvirus and calicivirus, however, are incurable with antibiotics. Medical science has yet to come up with antiviral drugs capable of eliminating viruses from the body. If we had such drugs, we would be able to cure viral diseases from the common cold to AIDS.

### SYMPTOMS:

All three of these infectious agents cause symptoms similar to cold viruses in man, with a few differences. In cats, conjunctivitis (eye infection) is common with respiratory infections, especially Chlamydia and herpesvirus. Calicivirus can cause ulcers on the tongue and other mouth lesions, and an immune response to calicivirus has been proven to be the cause of a severe form of oral inflammation occasionally seen in the back of the mouth, behind the teeth, in cats.

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Acute cases rarely last more than a few weeks. It is the chronic cases that are more of a problem. Chronic conjunctivitis (eye inflammation, watery eyes) or rhinitis (sneezing and runny nose) is common. An immune response to calicivirus has been proven to be the cause of “lymphoplasmacytic gingivitis/stomatitis” in a few unfortunate adult cats, usually middle-aged. It is a severe inflammatory reaction in the back of the mouth, behind the teeth, that spreads forward along the gums.

Calicivirus has also been incriminated in cases of chronic gingivitis and periodontal disease in cats, although this has not been experimentally proven. Both viruses appear to be capable, in some cats, of inducing the immune system to attack the gums, causing “juvenile onset gingivitis” which, if it occurs, is usually apparent by six months of age. It is usually chronic and can lead to the premature onset of periodontal disease and early tooth loss.

Feline herpesvirus can on occasion attack the cornea of the eye, causing ulcerations and cloudiness. This is a very serious complication as it can lead to blindness or even loss of the eye.

Otherwise, symptoms are similar to human colds. Sneezing, runny nose, and nasal congestion are common, especially with herpesvirus. Laryngitis, sore throat, drooling, and coughing can occur, especially with herpesvirus and calicivirus. There is such a degree of overlapping in the symptoms caused by the three feline respiratory agents that it is not possible to distinguish one from another on the basis of clinical signs alone. There is a tendency, however, for Chlamydia to involve primarily the eyes, herpesvirus to involve the nose, eyes, or windpipe, and calicivirus to involve the mouth and tongue.

Cats who sneeze from time to time, or have runny eyes either intermittently or all the time, are rarely suffering from allergies, as many owners assume, but are instead usually victims of the chronic carrier state of herpesvirus or calicivirus. Both these viruses are extremely common. It is known that 20 to 40 percent of all cats are infected with calicivirus, and 80% or more of all cats are carriers of feline herpesvirus. It is generally safe to assume that any cat with chronic conjunctivitis has herpesvirus until proven otherwise.

The tears that are produced by cats with chronic conjunctivitis are often stained reddish-brown. The source of the color is not blood; it is a pigment thought to be produced by glands in the area. The tears typically dry to a dark reddish-brown to black crust at the inner corner of the eye.

Cats with compressed faces and bulgy eyes, such as Persians and Himalayans, suffer a high incidence of chronic eye infections because of the relative dryness of their central cornea and excessive tear spillage from abnormal anatomy of the tear collecting apparatus. Persians and Himalayans tend to be immunodeficient relative to other breeds, some say due to inbreeding, which is another reason why certain infectious diseases are more common in these breeds. For these reasons most Persians and Himalayans with flat faces have chronically “runny” eyes.

The extremely short nose of the Persian and related breeds also predisposes these cats to chronic nasal infections with herpesvirus and other agents. This tendency, combined with the abnormally small nostrils seen in some individuals of these breeds, can make breathing through the nose

difficult.

## **TRANSMISSION:**

Feline upper respiratory infections are extremely common in catteries, multi-cat households, boarding kennels, animal shelters, pet shops, and any situation in which large numbers of cats are housed together. Nasal secretions, saliva, and tears are infectious to other cats by direct cat-to-cat contact or indirectly via your hands, clothing, or utensils. Feline herpesvirus and calicivirus only live a few days outside the host cat. This is long enough to be carried indoors on your shoes, clothing, or hands and is the rationale behind vaccinating indoor cats. But the persistence of viral upper respiratory disease within a population depends heavily on the ability of these viruses to survive inside the living cat. Chronic carrier cats are the major source of infection for susceptible cats and kittens.

Young kittens are particularly susceptible to infection. They may acquire a virus from exposure to any acutely infected cat, but usually are infected from their carrier mothers long before they are even old enough to vaccinate. Their mothers often show no symptoms to suggest that they are infected.

The herpesvirus carrier state is a true latent infection characterized by only intermittent periods of viral shedding, usually activated by stress. In other words, infected cats are only occasionally contagious to other cats. The closest analogy in human medicine is herpes simplex, the cold sore virus. It is said that 90% of all humans carry herpes simplex, yet only some people have cold sores, and even then, only intermittently, often during times of stress. On the other hand, cats infected with calicivirus excrete virus continually in their saliva.

Carrier cats may or may not show any symptoms, and if they do, symptoms may be intermittent or constant.

## **TREATMENT:**

Treatment of upper respiratory infections in cats is primarily symptomatic, although oral antibiotics are used if secondary bacterial infection occurs (which is common) or in the case of suspected chlamydial infections. Antibiotic eye ointment is used to treat conjunctivitis. Tetracycline is the drug of choice for chlamydia and is also effective against most other bacteria, so it is usually the best choice for eye infections. It is important not to use any product containing cortisone because it can actually delay recovery and increases the risk that herpesvirus will attack the cornea.

In cases of herpesvirus eye infections that cause persistent conjunctivitis symptoms or corneal damage, antiviral ophthalmic medications available for human use can be used in cats to bring the viral infection under control. Even these medications will not eliminate the virus carrier state, so recurrent disease may still occur.

Interferon, an immune stimulant, can be helpful in treating chronic viral infections. It is given

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orally, usually once daily or every other day. Oral lysine (250 to 500 mg twice daily) is often used for chronic herpesvirus infections; it interferes with herpesvirus replication.

If nasal congestion is severe, human pediatric decongestant nose drops can be used. They should be used in alternate nostrils on alternate days to avoid the rebound congestion effect they cause in cats just as they do in humans. Steam therapy is also helpful if the nostrils are clogged with mucus. Shutting the cat in the bathroom with the hot water on in the shower for 20 minutes helps to loosen mucus.

If the cat is too ill to eat, it may have to be hospitalized and given fluid therapy, as dehydration will occur if the cat goes more than a day or two without eating or drinking.

Although its use is controversial, “topical vaccination” can be effective in bringing about resolution of conjunctivitis symptoms for up to six months. It consists of using conventional intranasal respiratory vaccine in the eyes and nose, just the nose. It may also be effective in the treatment of chronic rhinitis (nasal discharge).

## **PREVENTION:**

Vaccinations are available to protect against all three feline respiratory agents. So-called “4 in 1” vaccines protect against all three agents plus feline distemper, while “3 in 1” vaccines leave out chlamydia. Vaccines offer only partial protection, however, against respiratory infection. They do not actually prevent infection from occurring, nor do they prevent or eradicate the carrier state. They do, however, usually prevent symptoms from occurring if a vaccinated cat does become infected, or if symptoms occur, they are usually mild and transient, lasting only a day to a week. Intranasal vaccines are capable of blocking infection but can cause transient sneezing as a side effect.

Respiratory vaccines should be given initially in a series of two doses three to four weeks apart, followed by an annual booster. Kittens should begin vaccinations at six to eight weeks of age and receive boosters every three to four weeks until they are sixteen weeks old.

In catteries and multi-cat households, it is important to begin vaccinations as early as possible, at six weeks of age, in an effort to protect kittens before they become infected. In catteries where respiratory disease is endemic, it may be necessary to take extraordinary measures such as beginning vaccinations as early as two weeks of age with intranasal vaccines (which offer quicker protection and at a younger age than the more commonly used injectable vaccines and are capable of actually blocking infection) and separate the kittens from the mother at five to six weeks of age.