



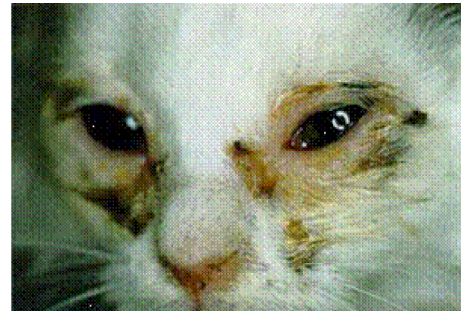
Published on *international cat care* (<http://www.icatcare.org:8080>)

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Cat flu – upper respiratory infection ^[1]

Cat flu, or upper respiratory infection (URI) is a very common disease that can vary considerably in severity, and on occasions can even be life-threatening.

In the vast majority of cases, disease results from infection with feline calicivirus (FCV) ^[2] or feline herpes virus (FHV, or FHV-1) ^[3]. Clinical signs include sneezing, nasal discharge, conjunctivitis (inflammation of the lining of the eyes), ocular discharge, loss of appetite, fever and depression. Mouth ulcers, coughing, excessive drooling of saliva and eye ulcers may also be seen. Very young, very old and immunosuppressed cats are more likely to develop severe disease and possibly die as a result of their URI, usually due to secondary infections (such as pneumonia), lack of nutrition and dehydration.

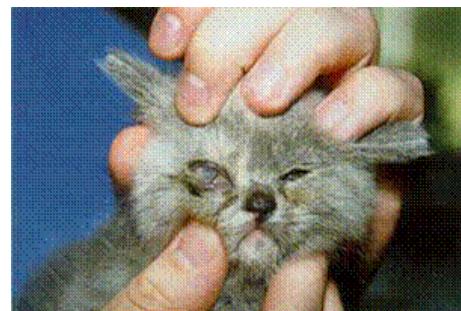


Typical ocular and nasal discharges of cat flu

What cats are at risk of URIs?

URIs are common, as the causative viruses are widespread in cat populations. Typical risk factors include:

- Cats kept in large groups or colonies such as breeding catteries, rescue centres and feral cat colonies – in these situations the viruses are able to spread easily
- Unvaccinated cats
- Kittens
- Elderly and immunosuppressed cats (e.g., cats with FeLV ^[4] or FIV ^[5] infection, or cats receiving immunosuppressive therapy) are more vulnerable to developing severe disease



Infection with feline herpes virus can cause serious eye damage

Causes of URIs in cats

Most cat URIs are caused by infection with one or both of the cat flu viruses:

- Feline herpes virus [3] (FHV or FHV-1, formerly known as feline rhinotracheitis virus)
- Feline calicivirus [2] (FCV)

These two viruses are thought to be responsible for more than 90% of URIs in cats. Other important organisms that may be involved in some cases include:

- Bordetella bronchiseptica [6] (may be a cause of sneezing, nasal discharge and sometimes coughing – important in some colony situations)
- Chlamydomydia felis [7] (this is mainly a cause of ocular disease – conjunctivitis)

Clinical signs of URI

The incubation period following infection with FCV or FHV is usually just a few days (2-10 days). After this, typical clinical signs develop which include:

- Sneezing
- Nasal discharge
- Ocular discharge
- Lethargy
- Inappetence
- Fever

The severity of these signs varies considerably – in some cats the signs are very mild and transient, in others they may be very marked and severe. There are some differences in clinical presentation between the two viruses, but these are not sufficient to be able to distinguish them simply from clinical signs:

- FHV infection tends to be more severe, often causing more marked conjunctivitis (eye infection and ocular discharge), and some ulceration of the cornea (the clear part at the front of the eye). FHV may also cause: severe pharyngitis leading to anorexia; inflammation in the trachea; and coughing.
- FCV infection is often milder, with inapparent or less severe ocular signs, but FCV often causes ulceration of the tongue (and sometimes the palate or the lips). FCV may cause a transient arthritis ('limping syndrome'), usually seen in young kittens, and in very young kittens can cause severe viral pneumonia.

Although FCV and FHV are viral infections, secondary infection with bacteria is common and can contribute to rhinitis (infection in the nose) conjunctivitis, and even lung infections. While most cats will recover from URIs, on occasions they can be life-threatening, and with severe infections the recovery may take several weeks. Some cats may also be left with permanent damage within the nose and may have persistent or recurrent nasal discharge (so-called 'chronic rhinitis').

In rare cases, a much more severe and often fatal form of FCV infection may occur. This is associated with particular strains of the virus that are highly virulent and termed 'virulent systemic FCV' (vsFCV) infection. Fortunately such infections are very rare (see: Feline calicivirus (FCV) infection [2]).

Diagnosis

Diagnosis by your vet is usually based on the typical signs associated with URIs, and exclusion of other causes. It is possible to confirm a diagnosis and to investigate which virus(es) are involved, but this is often not necessary.

Testing for FCV or FHV involves collecting a mouth or eye swab which is then sent to a specialised veterinary laboratory. Here the virus can be identified through culturing or by a PCR test (a molecular test to show the presence of the viral genes).

Treatment

Treatment of URIs is largely symptomatic and supportive. Your vet may want to do some additional tests if they are concerned about the extent of disease (e.g., the possibility of pneumonia) or if they are worried about complications (such as infection with FIV [5] or FeLV [4]).

Antibiotics are indicated to treat secondary bacterial infections and to try to reduce the damage the infection causes. If nasal congestion is severe and breathing is difficult your vet may also suggest steam inhalation or nebulisation make discharges more liquid and more easily relieved by sneezing.

Affected cats are often reluctant to eat – they will have a poor sense of smell and eating may also be uncomfortable. Using soft, highly aromatic foods (for example kitten foods, fish in oil) that are gently warmed will help to tempt an inappetent cat. However, if anorexia is severe your cat may require hospitalisation for your vet to provide food via a feeding tube. This can be important, as poor nutrition will significantly contribute to disease and slow down healing. Intravenous fluids may also be needed if your cat is not drinking properly, to avoid dehydration. Analgesics may also be required.

Interferons are proteins that are produced in the body, in part to help fight viral infections. Injectable interferons may be used as a supportive treatment (either high doses of recombinant human interferons or recombinant feline interferon) – there is some evidence that this may be of benefit, but it probably needs to be given early in the course of disease for best effect.

There are a number of topical antiviral agents that can help to manage FHV-associated ocular disease (such as trifluoridine, idoxuridine and cidofovir). More recently a drug used to treat human herpes virus infections – famciclovir – has been shown to be safe and effective in cats when given orally. This is a major step forward in managing severe FHV infection in cats.

General nursing is also essential – discharges from the eyes and nose should be gently wiped away using damp cotton wool, and the cat should be kept warm and comfortable.

Carriers

Most cats that recover from infection with URI viruses will become ‘carriers’. Carrier cats usually show no sign of illness but, may shed virus in saliva, tears and nasal secretions, and can be a source of infection to other cats.

Although almost all cats infected with FHV will remain long-term carriers, many of these will never shed significant amounts of virus. Others may shed virus intermittently,

especially during times of stress. Some cats may show mild signs of URI again when they shed the virus, but most do not. Carrier cats in a breeding colony are a source of risk to their kittens, as the stress of kitting may induce shedding of FHV.

Most cats infected with FCV remain carriers of the virus, and continue to shed the virus for a period of weeks or months after infection, but the majority (although not all) will eventually eliminate the virus within a few months.

Spread of infection

The viruses associated with URIs are spread in three ways:

- Direct contact with an infected cat showing signs of URI
- Direct contact with a carrier cat shedding virus
- Contact with virus carried on clothing, food bowls and other objects. Large amounts of virus are present in the saliva, tears and nasal discharges and the viruses may be able to survive in the environment and on objects for up to 2 (FHV) to 10 (FCV) days.

Prevention

- **Vaccination** [8]: The risk of URIs can be dramatically reduced by vaccination against FHV and FCV. *These vaccines are important for all cats*, irrespective of how they are kept (even if kept totally indoors), as the diseases are so ubiquitous. Although vaccination usually prevents severe disease developing, it cannot always prevent infection occurring and so mild disease may still develop in some cats. FCV has many different strains, and this can cause further problems with vaccination as vaccines will not necessarily work against all these strains. Newer FCV vaccines contain more than one strain in the vaccine to help overcome this problem. This is not an issue with FHV as only one virus strain exists.
- **Barrier nursing and disinfection:** If there is more than one cat in a household, it is important to try to minimise the risk of infection being spread to the other cats. This is not always possible, but in addition to ensuring that all cats are vaccinated, where possible a cat showing clinical signs should be kept isolated from the other cats (e.g., confined to one room). Separate food bowls and litter trays should be used, and ideally the cat should be kept in a room that has very easy to disinfect surfaces (i.e., not soft furnishing and carpet). These viruses are susceptible to most disinfectants but make sure you check with your vet – some disinfectants (such as phenolic-based products) are not safe to use around cats. Hypochlorite (bleach-based) disinfectants (e.g., 5% bleach diluted 1:32) are effective against these viruses, but take care to use any disinfectant carefully – most are irritant to cats if they come into direct contact with the disinfectant.

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Links

- [1] <http://www.icatcare.org:8080/advice/cat-health/cat-flu-%E2%80%93-upper-respiratory-infection>
- [2] <http://www.icatcare.org:8080/advice/cat-health/feline-calicivirus-fcv-infection-0>
- [3] <http://www.icatcare.org:8080/advice/cat-health/feline-herpes-virus-fhv-infection>

[4] <http://www.icatcare.org:8080/advice/cat-health/feline-leukaemia-virus-felv>

[5] <http://www.icatcare.org:8080/advice/cat-health/feline-immunodeficiency-virus-fiv>

[6] <http://www.icatcare.org:8080/advice/cat-health/bordetella-bronchiseptica-infection-cats>

[7] <http://www.icatcare.org:8080/advice/cat-health/chlamydophila-felis-infection-feline-chlamydophilosis>

[8] <http://www.icatcare.org:8080/advice/keeping-your-cat-healthy/vaccinating-your-cat>