



Upper respiratory infection (cat flu) procedures

What is cat flu?

Cat flu is the generic term applied to upper respiratory infection in cats. It can be caused by infection with agents such as feline herpes virus (FHV), feline calicivirus (FCV), *Chlamydia felis*, *Bordetella bronchiseptica* and mycoplasma species. FHV and FCV are the most common causes of flu in cats, accounting for about 90% of cases of flu. In some cases, more than one agent may be involved.

Vaccinations against FHV and FCV are commonly given as part of a core vaccination programme for cats. Although vaccination does not completely prevent disease it does reduce the severity of clinical signs. A vaccine is available for *Chlamydia felis*, but it is not used for Cats Protection cats as *Chlamydia felis* is less common than FCV or FHV and if suspected can be treated with a course of antibiotics.

Once a cat develops cat flu and the upper respiratory tract is compromised, secondary bacterial infections can sometimes occur, making the clinical signs worse.

How are cats infected with cat flu?

Infection spreads via contact with a cat who is shedding one of the infectious agents in ocular, nasal or salivary discharges (these cats may or may not be showing signs of flu), by inhaling infected sneeze droplets or by transmission on bowls, bedding and people (also known as 'fomite' transmission). The incubation period for flu is up to 14 days.

FCV can survive in the environment and on objects for about 10 days if not adequately disinfected, whereas FHV is not as hardy and may survive for only a day or two. For this reason, effective cleaning and disinfection of the cat's environment and objects within it can greatly reduce the spread of flu within a multi-cat environment where cats are housed individually.

Cats that have been infected with FHV will remain carriers for life. Many will never shed the virus again, but periods of stress may trigger them to start shedding the virus with or without showing mild clinical signs. They usually shed within seven days of a stressful experience and the shedding may last for 14 days. Cats that have been recently infected with FCV or *Bordetella bronchiseptica* or *Chlamydia felis* may continue to shed organisms for several weeks or even months after they have clinically recovered, but eventually they eliminate the organism(s) and are no longer a source of infection to other cats. Mycoplasma can be a normal finding in healthy cats.

In summary this means that any cat, no matter how healthy they look, could be shedding organisms that have been implicated in cat flu.

Which cats are vulnerable to cat flu?

All cats are potentially vulnerable to cat flu. Vaccination provides some but not complete protection. Very old or very young cats and cats with an already compromised immune system are more susceptible and may show more severe clinical signs.



What are the signs of cat flu?

Signs of cat flu can vary with the agent(s) involved. There will normally be a nasal discharge often with eye discharge although some cases may only have signs related to the eyes. This discharge will typically be clear in the case of a viral infection, but if secondary bacterial infection occurs it may become green, yellow or blood tinged.

In some cases there may be severe eye ulceration or mouth ulceration which may cause excessive salivation. With *Chlamydia felis*, the only sign may be eye inflammation and discharge. In some cases, the cat will have a fever and a loss of appetite due either to the mouth ulceration or to nasal congestion and an impaired sense of smell.

The presence of clinical signs and the type of clinical signs will be the most important indicators of how to manage flu cases in Cats Protection care.

To prevent disease spread and to guide management, cats with flu-like symptoms can be divided into two categories:

Category 1 – The cat is well and eating, with sneezing and/or a clear eye or nasal discharge. At least three sneezes are recorded within a 24-hour period.

Category 2 – The cat is unwell in themselves, with either a clear nasal or eye discharge, or any cat (well or unwell) with a mucopurulent (greenie-yellow) or blood-tinged eye or nasal discharge.

How is cat flu diagnosed?

Cat flu is diagnosed on the basis of the clinical signs.

It is rarely appropriate to test in order to find a specific agent. No matter what the agent, the management of the illness remains similar and the agents can be very difficult to grow in a lab, so a swab taken for identification of the specific cat flu agent is unlikely to change the prognosis or treatment plan.

How is cat flu treated?

If cats are bright and well with a clear discharge (eye or nasal), then no specific treatment is indicated. However, unwell cats or those cats with signs of secondary bacterial infection will require treatment.

The exact treatment will obviously vary from case to case, and will be at the vet's discretion. However, as a first line antibiotic we would recommend considering five days of doxycycline. If *Chlamydia felis* is suspected, then this course should be extended to three weeks. In anorexic cats or severely affected cats, hospitalisation for nursing care and injectable treatment may be more appropriate.

Adequate nutritional intake is essential for the speedy recovery of cats, so anorexic cats should be seen as a matter of urgency.



Methods of tempting cats to eat include:

- offering strong smelling food
- warming food
- offering soft food
- offer only small quantities of food with only one option at a time
- do not force food into the cat's lips in an effort to make them eat
- clean the cat's nose and eyes just before offering food
- give the cat peace and quiet in order to eat – resist the urge to keep checking if any of the food has gone

Record how much food has been offered so it can be ascertained how much, if any, has been eaten.

As well as using different methods of tempting cats to eat, the use of appetite stimulants such as mirtazapine (Mirataz transdermal ointment®) should be considered early on. If these are ineffective, then hospitalisation and the placement of an oesophageal tube may be required. Force feeding by syringe should be avoided.

Cats should stay in isolation until completely ready for homing. In some situations, at the discretion of the vet, it may be considered appropriate to move cats from isolation to other areas of the centre, however these cats should continue to be barrier nursed.

Once a cat has been free of clinical signs for three days the cat may be considered 'fit to home' (if otherwise fit for homing) and in an adoption centre, may be moved to the homing section.

How can cat flu be prevented?

It is impossible to prevent cat flu completely, however vaccination offers good protection against FHV and some protection against FCV. Good biosecurity (barrier care and minimal movement of cats) and good facility design also reduce spread of infectious agents in a multi-cat environment.

Keeping cats in good general health, feeding a good diet, not mixing unfamiliar cats, low housing density and low stress can all reduce the chances of the FHV flaring up in carrier cats and improve recovery time. If these conditions are replicated in the home environment, it will reduce the chances of the virus flaring up in the future.

What action could be taken if a cat is showing signs of cat flu?

There are two different management scenarios related to cats showing signs of flu and each would be addressed slightly differently. This is illustrated in a flow chart in Appendix 1.



Category 1 cats

The definition of a category 1 cat is: the cat is well and eating, with sneezing and/or a clear ocular (eye) or nasal discharge. At least three sneezes are recorded within a 24-hour period.

- These cats should remain in their current pen, but should be cleaned last as they could be infectious. They should be cleaned as per the standard cleaning regime for their area. Barrier care should be used in order to reduce the risk of spread within the section. The 'Cat Flu Monitoring Chart' should be started (see Appendix 2)
- During this monitoring period, they should not be considered fit for homing (even if they have previously been declared fit for homing), and should not be shown to members of the public
- If the cats stop sneezing and remain sneeze-free for three days, they can be put back up for homing. This category of cats does not need to see the vet if they remain bright and are eating, drinking, defecating and urinating normally. The sneezing will not be noted on the medical record or medical summary unless the cat has been seen by the vet
- If a cat remains well, but is still sneezing after seven days, the cat should be examined by the vet
- Any category 1 cats that are already reserved can be homed, but only if there are no other cats in the new home. In this situation, the new owner must be made aware that there has been some sneezing and that this cat has shown mild signs of flu not requiring treatment. Owners should be made aware that the cat could develop more severe signs and they should be asked whether they are happy to deal with that should it occur. Owners should be offered the option of the cats remaining in Cats Protection's care for a few days, to allow the cat to be monitored for any deterioration. Alternatively, the cats can be kept at the centre until all sneezing has stopped. However, in mild cases a full recovery is likely to be achieved more quickly in a home environment than in a rescue setting. They should be asked to notify the Cats Protection branch or adoption centre if clinical signs worsen within the first two weeks of homing. Owners should be encouraged to accept responsibility for treatment costs in these cases. In a few cases, at the manager's discretion, a one-off treatment agreement could be used.
- If at any time a category 1 cat becomes unwell, develops sore eyes, excessive salivation or a mucopurulent or blood-tinged ocular or nasal discharge, they would be considered a category 2 cat and should be managed as described below

Category 2 cats

The definition of a category 2 cat is: the cat is unwell in themselves with either a clear nasal or ocular discharge, or any cat (well or unwell) with a mucopurulent (green/yellow) or blood-tinged ocular or nasal discharge.

- These cats should be moved to isolation and the 'Cat Flu Monitoring Chart' should be started (See Appendix 2). If isolation is full or isolation facilities are not available, the cats should stay in their current pen, and the pen should be cleaned and disinfected with either Anigene or bleach (as if it is an isolation pen). These cats should be examined by the vet as soon as possible
- These cats will need nursing care. Offer warm smelly food, as they may be less willing to eat if their nose is blocked. If there is ulceration on the tongue, then consider soft food (see section 6). Cats that do not eat for 48 hours should be seen by the vet urgently, even if they have recently seen the vet. Try to clear away any discharge from the eyes and nose, in order to try and keep the cat as comfortable as possible



- For some cats the vet may prescribe antibiotics. Remember that it is good practice to give food immediately after an antibiotic tablet to ensure the tablet has passed down fully into the stomach. For some antibiotics such as doxycycline this is essential. If a cat isn't eating, other treatment options should be discussed with your vet
- Category 2 cats should remain in isolation until any course of treatment is finished according to the vet, or the cat has been free of clinical signs for three days and the vet is happy that the cat has recovered. If the cat needs other procedures such as neutering, then the cat should remain in isolation and only be moved to homing after the appropriate time post-surgery. In exceptional cases, such as young kittens, pregnant mums or mums with young kittens, cats may (at the attending vet's discretion) be moved out of isolation, to areas of the centre other than directly to homing. However, they should be strictly barrier nursed to reduce the risk of spread within the unit.
- Some cats with a mucopurulent or bloody discharge may always remain systemically well. These cats are probably suffering from chronic rhinitis (see later section for more information on other conditions) and could present a low risk to other cats. However, they should be isolated in the first instance until assessed by the vet
- Once the vet has declared the cat fit for homing, category 2 cats can be homed as normal. It will be noted on their medical record that they had flu, and the new owner must be made aware of this in writing by them receiving a copy of the cat's medical records or by the vet completing a Cats Protection Medical Summary form. The owner should be aware that as cat flu has arisen prior to the creation of their insurance cover, it is unlikely that their insurance policy will cover any future flu-related problems

What counts as an outbreak of cat flu?

Flu outbreaks can occur in centres or in branch facilities that have multiple pens at the same location.

For cat flu, if more than 30% of any pens in a specific housing area have been affected, then this should be considered an outbreak situation. This includes category 1 cats and any cats that have been moved from that area to isolation. At this point the area should be treated as an isolation area. Members of the public and volunteers should not be allowed into that area. If the outbreak occurs in the homing section of an adoption centre, then healthy cats and category 1 cats who are already reserved can go to their new homes, but only if there are no other cats in the new home. No other cats should be moved in or out of the affected housing area.

If more than 30% of the entire bank of fosterer pens or adoption centre is affected, or if 30% of one section is affected and cases are also present in other sections, then the entire area or adoption centre should be closed and treated as an isolation area. Members of the public should be asked not to come in and adoption centre volunteers should also be stood down temporarily.

What is barrier care?

Principles of cleaning and handling/barrier care.

Category 1 cats

- These cats should be cleaned as per the cleaning regime in their section ie full clean in admissions, spot clean in homing
- The standard disinfectant can be used for cleaning, generally this will be Anigene (Byotrol)



- These cats' pens should be cleaned last and full personal protective equipment (PPE) should be worn (if housed in a centre, this should be worn no matter what section of an adoption centre the cats are housed in)
- Full PPE should be worn whenever entering their pen. Full PPE includes:
 - disposable overalls
 - disposable aprons
 - gloves
 - over-sleeves
 - over-shoes
- Use new disposable clothing for each pen. Change apron, gloves, over-sleeves and over-shoes between each pen
- The person dealing with cat flu cases should not have contact with more vulnerable cats such as mums and kittens. Where this is not possible, strict barrier protocols must be adhered to
- Particular attention should be given to make sure all trays, bowls and bedding are washed thoroughly
- There is no need to change bedding on a daily basis, instead only change bedding if it is soiled
- Because contaminated objects ('fomites') are the principal way in which cat flu is transferred between cats, all bowls and litter trays must be disinfected with either bleach or Anigene
- When a cat leaves the pen, clean it thoroughly with Anigene.

Category 2 cats

- These cats should be moved to isolation. If isolation facilities are not available or are full, these cats' pens should be cleaned last (after healthy and category 1 cats)
- As is standard in isolation, full PPE should be worn and a full clean carried out daily. Full PPE includes:
 - disposable overalls
 - disposable aprons
 - gloves
 - over-sleeves
 - over-shoes
- Use new disposable clothing for each pen
- A suitable disinfectant such as Anigene or bleach should be used
- Ensure the disinfectant instructions are followed carefully, ensuring appropriate concentration and contact time
- Make sure the cat is in a separate part of the pen, such as the sleep area, while cleaning is taking place. Once the area has dried it will be safe for the cat to return



- Anigene is Cats Protection's recommended disinfectant. First, remove organic material from the pen and clean any soiled areas. Then apply Anigene diluted to 1:50 (e.g., 20ml in 1 litre of water) to all surfaces and leave for 30 minutes. Rinse with water then dry with a cloth.
- If Anigene is not available, bleach can be used. Bleach should be used at a 1:32 dilution if a cat is housed in the pen. When using bleach, the pen must be cleaned first using a detergent. The bleach is then applied and left for a contact time of 15 minutes and then rinsed off thoroughly with water. A 1:10 dilution of bleach can be used when there is no cat housed in the pen. The bleach solution should be prepared daily.

If any queries arise regarding the best course of action, contact your Field Vet or the Cats Protection Veterinary Department on 01825 741 991 or veterinary@cats.org.uk for advice.

Other cat flu-related conditions to be aware of

Virulent systemic calicivirus infection

On rare occasions a nasty mutation of FCV can occur. This causes an extremely serious disease that can affect even adult vaccinated cats; in fact, often adult cats are affected more severely than kittens. Initially, the cats show normal signs associated with FCV, but the disease then progresses to more severe systemic signs. There may be facial swelling and crusting, hair loss and scabbing on the face and feet.

Many (>50%) cats do not survive. Due to the resistant nature of the virus and the fact that vaccination does not offer protection against this strain, virulent systemic calicivirus can potentially cause a high degree of illness and death if it spreads through a multi-cat environment such as an adoption centre. In severe cases euthanasia should be considered early on due to the poor prognosis and the risk to other cats in the centre.

Suspect cats should be isolated and barrier nursed. Staff should be warned about the potential risk to their own cats due to fomite transmission on clothing.

As we don't know how long a cat can shed this virus, cats that survive infection with virulent systemic calicivirus should be homed to a home with no other cats. In these circumstances, the cat can be released for homing seven days after recovery.

This disease is rare, but if it is suspected contact your Field Vet or the Cats Protection Veterinary Department on 01825 741 991 or veterinary@cats.org.uk immediately and they will advise on what further action to take.

Chronic rhinitis

Some cats that have had a severe cat flu infection will be left with permanent damage to the structures in the nasal cavity. These cats can suffer with continuous or recurring nasal discharge. They are more susceptible to bacterial infections in the nasal cavity and often produce abnormal amounts of a mucopurulent ('snotty') discharge. This condition is called chronic rhinitis. The key difference between these cats and cats suffering from an active flu infection is that cats with chronic rhinitis are not unwell. They are bright, alert, eat and drink normally and don't have a high temperature, but because of the nasal discharge they may sneeze more often than normal cats.

These cats should be seen by the vet and treated according to their recommendations. Cats that are otherwise well, yet have a snotty discharge will be moved to isolation when they are first identified until the vet can examine them and until we know more about their condition.

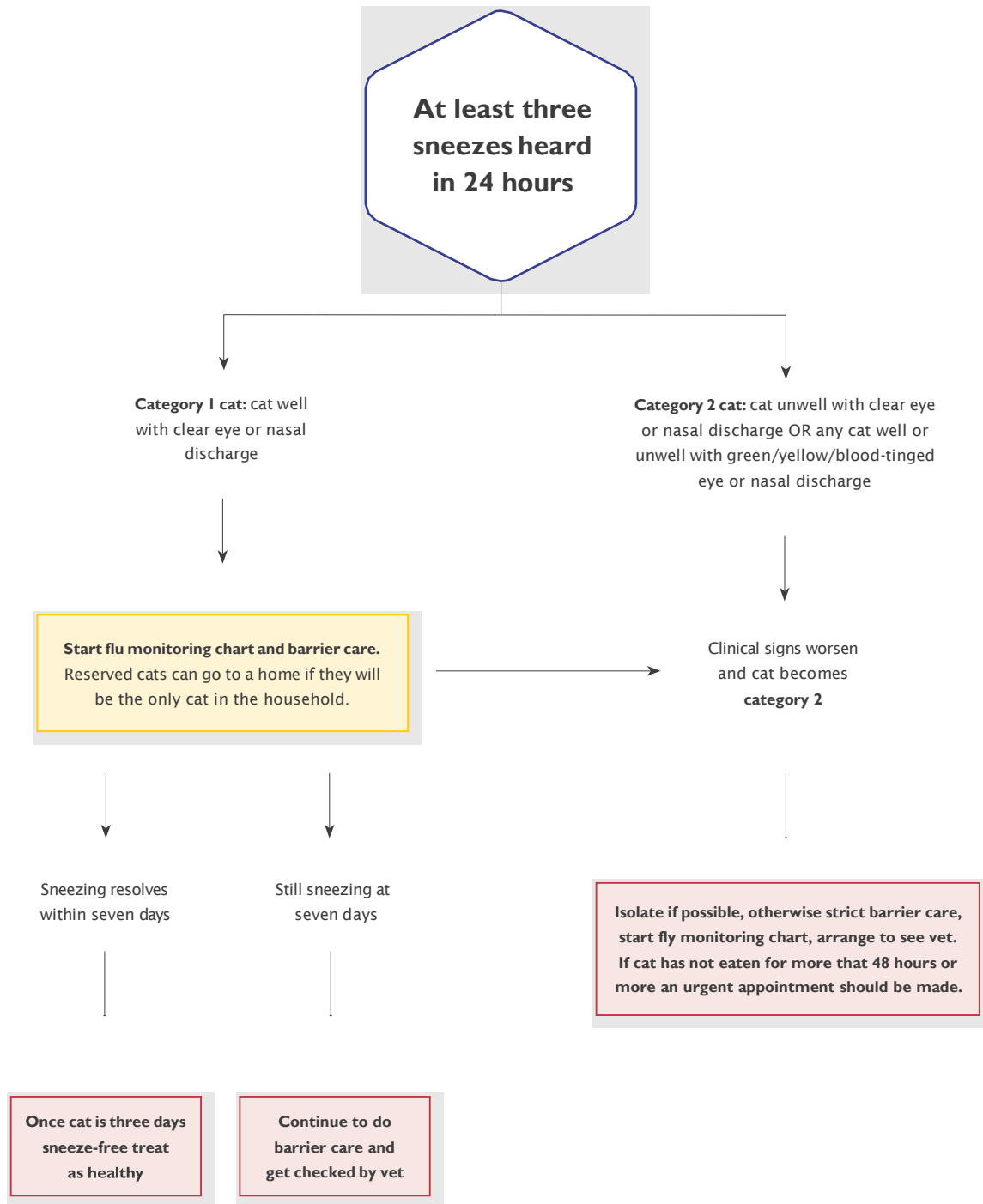


Often a course of antibiotics will significantly reduce or eliminate the snotty discharge, but these cats may require periodic treatment for the rest of their life if the snotty discharge re-occurs. This information must be disclosed to any potential new owner in writing by providing a copy of the cat's medical records or by the vet completing a Cats Protection Medical Summary form.

If any queries arise regarding the best course of action, contact your Field Vet or the Cats Protection Veterinary Department on 01825 741 991 or veterinary@cats.org.uk for advice.



Appendix 1 - Cat flu flow chart





Appendix 2 - Cat flu monitoring chart

- Start this chart after three sneezes are noted (or nasal discharge +/- eye discharge is noted)
- If the cat is on medication for another condition, please contact your vet
- Contact your vet if the cat progresses from just sneezing clear discharge and being well in itself to being unwell; and/or green discharge from eyes/nose; and/or sore eyes; and/or excessive salivation
- If the cat is still well but sneezing at the end of the chart, please get the cat seen by your vet

Cat's name: _____

Cat-a-log number: _____

Date of arrival at centre: _____

Age: _____

Vaccination status: _____

Any medical conditions: _____

Medication: _____

Day	Nasal description		Eye description		Weight (kg)	General demeanor (normal, quiet, depressed)	Eaten (Y/N)	Excessive salivation (Y/N)	Urinating (Y/N)	Grade of faeces (1-6)
	Sneezes per day (-no sneezes) (+ minimal) (++ moderate) (+++ frequent)	Colour of discharge (none, clear, green, bloody)	Eye discharge (none, clear, green)	Comfort of eye (normal, squinting, red)						
1										
2										
3										
4										
5										
6										
7										