

SNOT SNUFFLES AND SNEEZES; THE LOW DOWN ON 'CAT FLU'

WHAT IT ISN'T: It's not 'Flu' like humans get. It is not an 'influenza' virus at all.

WHAT IT IS: There are a whole host of bugs which would like to have the title of 'Cause of Cat Flu' but the two main contenders are:-

FELINE HERPESVIRUS 1 (FHV), and FELINE CALICIVIRUS (FCV).

They can infect one cat at the same time (co-infection), and certain bacteria can jump on the bandwagon while the cat's immune system is weakened, causing secondary bacterial infections; common ones being *Pasteurella*, *Bordatella*, *Mycoplasma* and *Chlamydia* (a cat version – don't worry – not the same as human chlamydia!!).

WHAT THE CLINICAL SIGNS ARE: Focusing on the viruses; they cause some similar signs and some signs specific to each one.

	HERPES	CALICI
SIMILAR SIGNS	Malaise, high temperature, inappetence, sneezing, nasal discharges, enlarged sub-mandibular lymph nodes , occasionally coughing, very rarely pneumonia	
SPECIFIC SIGNS	<p>Initial infection: Sore eyes and eye discharges. Rarely skin infections on the face.</p> <p>As a result of chronic infection or recurrence: chronic rhinitis (constant snots and sneezes), corneal ulcers, corneal sequestra, eosinophilic keratitis (basically lots of nasty sore eye issues).</p>	<p>Initial infection: Ulcerations on the tongue, limping due to sore joints. <i>(NB: There is a super strong strain called Virulent Systemic FCV (VSFCV), but it is rare thankfully. It can cause fever, oedema, skin lesions and multi-organ failure, it is highly infectious and has a high mortality rate.)</i></p> <p>Chronic infection: there is a strong association between calicivirus and stomatitis/gingivitis (sore mouth and gums) but it is unclear whether it is causative or resultant.</p>

Once a cat of any age has been infected with FHV it is INCREDIBLY UNLIKELY to ever get rid of it. They remain **LATENTLY INFECTED**; a bit like humans with herpes simplex virus cold sores - the virus can lurk in the trigeminal ganglia (connection points in a nerve in the head). The virus may just sit there forever and never cause any problems, but there are other potential scenarios:

- The virus can become **REACTIVATED**, this is usually associated with periods of **STRESS**. The cat may remain well, but it can be actively shedding virus (**ASYMPTOMATIC CARRIER**)

- Reactivated virus may cause **RECRUDESCENCE** of 'flu' like signs.

After infection with **FCV**, cats continue shedding virus for about 30 days on average, despite any clinical signs only lasting a few days. A minority of cats can remain persistently infected, with virus lurking in the **tonsils**, usually as an **ASYMPTOMATIC CARRIER**.

HOW CATS CATCH IT:

1. **DIRECT CONTACT** with an unwell, infected cat – passed on in their **oronasal** and **ocular** secretions (on average a cat's sneeze can travel 20 centimetres!);
2. Transmission via human carers carrying virus on their clothing or hands or on contaminated surfaces in the environment (this is called transmission via **FOMITES**);
3. From 'The Silent Assassin' **ASYMPTOMATIC CARRIERS** – these cats can look healthy and behave healthy but are shedding virus that can infect other cats.

Where virus load is high, and vaccination status is low, cats will get infected. Rescue shelters, therefore, can be very susceptible, as they are often taking in unvaccinated cats, cats with weak immune systems as a result of neglect or malnourishment, and cats with high levels of stress (increased risk of reactivating FHV). Shelters and catteries must maintain high standards of hygiene and isolation policies where required to reduce the risk of spread.

Kittens are particularly vulnerable to infection, most often infected by their mothers if they are shedding virus, often as an Asymptomatic Carrier. See under **VACCINATION** below.

HOW TO TREAT CATS WITH 'CAT FLU'?: The mainstay of treatment for 'cat flu' is supportive therapy,

- ensuring adequate fluid intake – which may need to be given by a drip if the cat is very sick;
- supported feeding – using warm aromatic foods (with a bunged-up nose the cat can't smell its food very well – which is a strong drive for appetite);
- keeping the face clean of discharges;
- nebulisation with saline can help clear the mucous.

There are some medications which may help, which must only be given if directed by a vet:

- Antibiotics – systemic ones (injections, tablets or liquids) or topical eye drops IF you vet feels secondary bacterial infections are also present.
- Non-steroidal anti-inflammatory drugs – if there is a high temperature, or significantly inflamed lesions – this must **ONLY** be given if the cat is and remains adequately hydrated, they should **NEVER** be given in a dehydrated, anorexic cat as this could lead to acute kidney injury.
- Anti-virals (Herpes) – There are topical eye anti-virals available such as acyclovir, which may be useful for certain ocular presentations of herpesvirus. They only reduce viral replication, so don't fully 'kill' the virus. A systemic form, famciclovir, may also be used for some ocular or dermatological presentations of herpesvirus. Generally, these drugs are of limited use for acute upper respiratory infection.
- Mucolytics – Bromhexine can help loosen the mucous to clear it a bit quicker.

Treatment of the other complications associated with FHV and FCV, such as gingivostomatitis, chronic rhinitis and herpes-related ocular diseases is beyond the scope of this article. Ocular problems often require the attention of specialist veterinary ophthalmologists for the best outcome of saving the eye.

HOW TO MANAGE THESE VIRUSES: This boils down to vaccination, isolation, disinfection and hygiene and minimising stress as far as one possibly can.

VACCINATION: To begin with, let me tell you about **MATERNALLY DERIVED ANTIBODIES -MDA.**

Any mammalian infant should suckle milk from its mum. The very first milk produced is really special – its called **COLOSTRUM** and is packed with **ANTIBODIES (MDA)** – these are proteins which help fight off infections. The mother would have made these in response to either natural infection or from vaccinations she received. There is a limited window in which the infants can absorb these antibodies across the gut wall; in kittens it is only for 16 to 24hours after birth.

How long MDA lasts in each individual kitten varies; affected by how much colostrum they ingested and the timing of ingestion. MDA against FHV generally lasts between 6-10 weeks, but MDA against FCV can have a longer duration – up to 16, or even 20, weeks. In some cases, MDA however only lasts as little as 2 weeks, and kittens that did not ingest any colostrum will have no protective MDA.

So, let's say a litter of kittens has been born to a queen that is actively shedding virus – the kittens get infected with virus BUT they also have MDA on-board which fights against the virus... that is until it wears off. That is why it is common for kittens to be fine up to a certain age, then the whole litter comes down with 'cat flu', often from 6 weeks of age, or older.

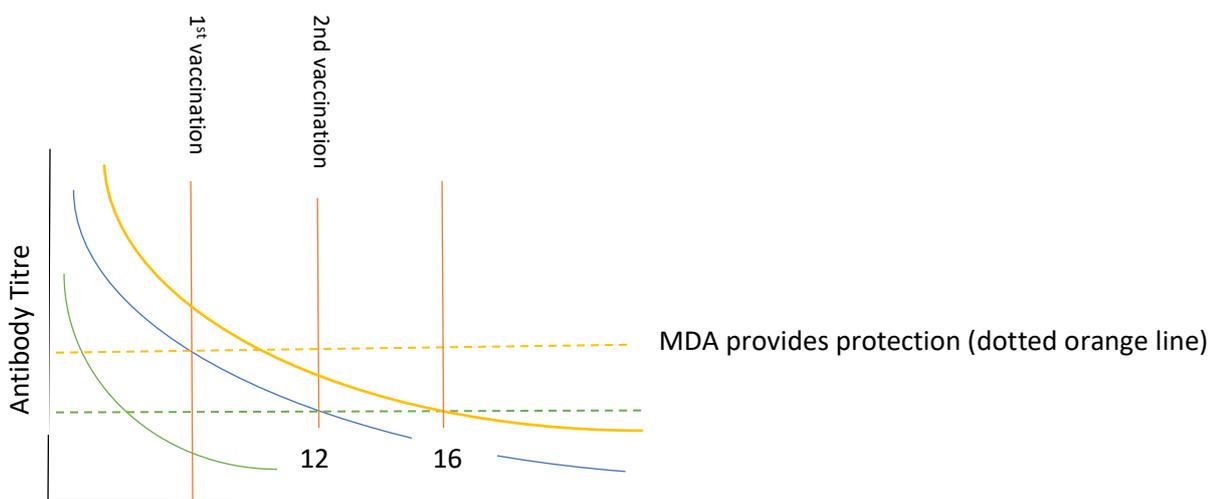
This varying duration of MDA is the reason why kittens should have at least two vaccinations given (usually 2-3 weeks apart), because **MDA INTERFERES WITH VACCINES.**

Let's look at some examples:

Kitten 1 has MDA which runs out at 7 weeks of age. The first vaccination given at 8 weeks would therefore begin to protect this kitten.

Kitten 2 has MDA lasting 12 weeks. Its first vaccination at 8 weeks of age would be 'blocked' by the MDA, but the second vaccination at 12 weeks will cover it. (see the graph below – blue curve).

Graph depicting MDA protection versus interference with vaccination:



ISOLATION: Ideally, newcomers to a shelter should be quarantined for 2 weeks and vaccinated before or on arrival, if they are well at the time. This works both to protect them if they are vulnerable, before the vaccination kicks in, and to reduce the risk of them spreading virus if they are pre-clinically infected. If a cat begins to show signs whilst in the shelter it should be moved to an area designated for 'cat flu' cats (this is separate to quarantine area).

DISINFECTION AND HYGIENE: FHV can survive in the environment for a month at 25 degrees Celsius, but is readily destroyed by normal disinfectants. FCV, on the other hand, can last much longer in the environment and is resistant to many disinfectants. It is more commonly FCV that is transmitted by the fomite route.

Within a shelter, having different staff working in different sections, eg some with the healthy cats and others with the 'flu' cats, will help prevent spread. Disinfection of hands between handling of any cats, even healthy ones is good practice. If this is not possible, eg there is only one carer, they should deal with the healthy cats before the sick cats, washing and disinfecting hands between cats, and ideally having separate protective clothing for each section.

To kill the pesky FCV, (also FPV is similarly resistant) after cleaning off organic matter (urine/faeces/discharges) all utensils and surfaces should be cleaned with either 5% bleach in a 1:32 dilution, or potassium peroxymonosulfate disinfectants (eg Virkon) following the dilution and contact time instructions.

MINIMISING STRESS: Within a shelter, this can be a very difficult thing to do. New cats have often been through traumatic experiences already. There are other more detailed sources giving advice on this topic; in essence, create a predictable routine that the cats can get used to; minimise excessive noise but maintaining a low background calm noise, such as playing classical music on a radio can help; spot-clean only on a daily basis – ie litter trays only need to be scooped out, not removed and cleaned daily, bedding does not need to be laundered daily unless soiled, and the pen does not need daily cleaning – all of that removes the cat's own scent from his environment, leaving him feeling like he's 'not at home'; providing hiding places and surfaces at heights increases cats' sense of security; providing an appropriate level of human contact – eg if a cat is extremely fearful, going in to try to stroke it all the time won't help! Other affectionate cats would benefit from regular contact, play and grooming; ensuring visitors to the shelter are respectful of the cats; minimising negative handling and experiences – this would include the administration of unnecessary medications – as is clear from above, there are limited treatments which can help with 'cat flu'; there are unfortunately a host of products marketed as treatments for 'cat flu' that are of unproven efficacy, or proven to be of no benefit; this includes but is not limited to – L-lysine, Interferon Omega, homeopathic remedies, and products available on the internet which do not even state what they contain! Bear in mind that if giving a treatment to the cat is stressful, one has to be very sure that the benefit of the treatment outweighs this negative impact.

For cats in a home environment, much of the above can still apply, such as predictable routines and not over-cleaning. Looking at the five pillars of a healthy feline environment can also help you see if you can make your cat's life any less stressful.

<https://www.catvets.com/public/PDFs/ClientBrochures/Environmental%20GuidelinesEViewFinal.pdf>

GLOSSARY (A-Z)

Corneal sequestra: (plural of sequestrum) a bit like scar tissue that forms on the cornea as a result of chronic damage to the cornea, such as a non-healing ulcer. Sequestra are usually a dark brown to black coloration, and made of tough hard tissue. They ultimately act as a foreign body, and should be surgically removed by a veterinary ophthalmologist.

Corneal ulcer: An injury to the cornea (the outer surface of the part of the eye that we see through), resulting in loss of the full depth of the cornea.

Chronic: This does not refer to severity as is commonly thought. 'Chronic' refers to a disease state that has been going on for longer than a few days.

Eosinophilic keratitis: An abnormal inflammatory reaction affecting the cornea.

Gingivitis: Inflammation of the gums.

Mortality rate: the number of affected individuals that die as a direct result of the disease.

Oedema: Swelling of tissues caused by fluid.

Ocular: Pertaining to the eye.

Oronasal: Pertaining to the mouth and nose.

Pneumonia: Infection or inflammation of the lung tissue.

Rhinitis: Inflammation of the nasal structures.

Stomatitis: Inflammation of the mouth.

Sub-mandibular lymph nodes: Often called 'glands' as well, lymph nodes are part of the body's immune system, and are located at various locations around the body, including inside the chest and abdomen. They are like filters in the blood system, picking out anything that is not 'self' (ie, not part of the individual's body), and alerting other parts of the immune system to the presence of these non-self components – that includes invading infections like viruses and bacteria, and particles like dust and pollens acting as allergens in some individuals. The sub-mandibular lymph nodes are located just under the lower jaw. If you get a head cold or sore throat, you can often feel that your 'glands are up' as your sub-mandibular lymph nodes are activated in response to the infection.

Tonsils: Small lymph nodes (see under Sub-mandibular lymph nodes) located inside the throat.