



## VACCINATIONS IN CATS

Recent advances in veterinary medical science have resulted in an increase in the number and type of vaccines that are available for use in cats, and improvements are continuously being made in safety and efficacy. Some vaccines are more or less routinely advocated for all cats ('core' vaccines) whereas others are used more selectively according to circumstances. However, in all cases the selection of the correct vaccination program for each individual cat, including the frequency of repeat, booster, vaccinations, requires professional advice.

Currently cats can be vaccinated against several different diseases:

### **'Core' Vaccines:**

- Feline panleukopenia, FPL (feline infectious enteritis) caused by FPL virus or feline parvovirus.
- Feline viral rhinotracheitis, FVR caused by FVR virus or herpes virus type 1, FHV-1.
- Feline caliciviral disease caused by various strains of Feline caliciviruses, FCV.
- Rabies caused by Rabies virus



### **Non-core, discretionary vaccines:**

- Feline chlamydial infection
- Feline leukemia disease complex caused by Feline leukemia virus, FeLV
- Giardiasis caused by the protozoal parasite *Giardia*
- Bordetellosis caused by the bacterium *Bordetella bronchiseptica*

### ***How do vaccines work?***

Vaccines work by stimulating the body's defense mechanisms (the immune system) to a particular microorganism or microorganisms (virus, bacteria, or other). The animal's immune system is then prepared to react to a future infection with that microorganism(s) and either prevent infection or respond and eliminate the microorganism and give rapid recovery. Thus, vaccination mimics or simulates the protection or immunity that a pet has once it has recovered from natural infection with a particular infectious agent.

The immune system is a complex interaction of various cells and tissues and organs in an animal but the cells mainly involved are the white blood cells and main tissues are the lymphoid tissues such as the lymph nodes or lymph glands.

One of the most important components of the immune system is the production of specific protein molecules called antibodies. A specific microorganism, such as Feline Panleukopenia Virus, has

components called antigens that induce the immune system to produce antibody that specifically binds and neutralizes that organism and no other.

Antibodies work together with other white blood cells (lymphocytes) that are able to identify and kill, within the body, those cells that have become infected by the microorganism. The involvement of lymphocytes and other immune system cells in immunity is called cell-mediated immunity.

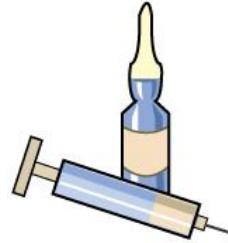
After vaccination, just as after recovery from natural infection, the body 'remembers' the particular antigens so that when they are encountered again it can mount a rapid and strong immune response preventing the cat from developing the disease. The duration of this response varies with the disease, the type of vaccine and other variables. The likely duration will determine the recommended revaccination date.

It is important to realize that most vaccines work by preventing your cat from becoming ill during a subsequent exposure to specific disease-causing organisms, but vaccination may not prevent the cat from becoming infected. In such cases the cat, while itself protected against disease, may shed the organism for a period of time after exposure and be capable of infecting susceptible animals with which it is in contact. This is not a major consideration in the pet cat but may be important in the breeding colony.

### ***What is the difference between the various types of vaccine?***

Three major types of vaccine are produced for use in cats.

1. ***Modified live vaccines*** - these vaccines contain live organisms that are weakened (attenuated) or genetically modified so that they do not produce disease but will multiply in the cat's body. Live vaccines are generally considered to cause a stronger, longer lasting immunity than inactivated vaccines, but there is continuous improvement in all vaccines. It is not advisable to use modified live vaccines in pregnant queens or cats whose immune system is not working properly (cats infected by *feline immunodeficiency virus* (FIV), etc.).
2. ***Killed (inactivated) vaccines*** - these vaccines are prepared using fully virulent organisms or genetically modified organisms that have been killed by various treatments. Because, on their own, they do not give such a high level of protection as the live, replicating type of vaccine, killed vaccines may have an 'adjuvant' added to enhance immune stimulation.
3. ***Subunit vaccines*** - these are vaccines in which the infectious organism has been broken apart and only certain parts are included in the vaccine. In some cases this is achieved by using genetic engineering techniques prior to the fragmentation.



Also vaccines come in various combinations, so that protection against more than one disease is achieved in a single injection or administration (some vaccines are given by drops into the nose rather than by needle). Your veterinarian will advise you on the most appropriate vaccines for your cat.

### ***When should my kitten be vaccinated?***

Generally kittens are vaccinated for the first time at between 8 and 10 weeks and a second dose is given at 12 weeks. A kitten will not be fully protected until 7-10 days after the second vaccination. Under specific circumstances your veterinarian may advise an alternative regime.

### **How often should booster vaccinations be given?**

Booster vaccination has generally been carried out yearly, but as vaccines and knowledge change, recommendations for frequency of boosters vary with individual circumstances. Your veterinarian will discuss this with you. All cats should be examined and appropriate vaccines administered regularly. Senior cats are particularly susceptible to these infections as they grow old and their immune system becomes less efficient.

### **Will vaccination always protect my cat?**

Vaccination will protect the vast majority of cats but under some circumstance vaccine breakdowns will occur. Reasons for such breakdowns or apparent 'vaccine failure' includes:



1. **Variations between different strains of viruses:** This is particularly a problem for example with FCV infections, where, like the "common cold" in people, there are a large number of different strains. Some of these strains are not covered or only partially cross-protected by available vaccines.
2. **Maternally derived antibodies:** When a kitten is born and after it suckles its mother, it acquires a proportion of antibodies from the mother. A well vaccinated queen cat will pass on some antibodies to the diseases she has been vaccinated against, and any others she has acquired naturally. Such antibodies protect the kitten against those diseases for the first two or three months of life, arguably the most critical period. However, during this same period, the maternally-derived antibodies can block the effects of vaccination of the kitten. This blocking effect decreases as the maternal antibodies gradually disappear over those two to three months. A point in time is reached when vaccination can be successfully given. Unfortunately, this point varies between kittens, mainly because the amount of maternal antibodies that each kitten receives is variable. This is part of the reason that two vaccinations are usually given two to four weeks apart in the kitten vaccination program.
3. **The cat was stressed or not completely healthy at the time of vaccination:** 'Stress' can prevent a good response to vaccination. For this reason it is better to let a kitten settle in its new home for 5-7 days before a vaccination is given, and the physical examination before vaccinating helps ensure the cat is healthy at that time.
4. **The cat has been exposed to an excessive challenge dose** of virus or bacteria in its environment and this has been sufficient to overwhelm the immunity.
5. **The immune system of the cat is under-performing** because of some other disease, or complications associated with advanced age.

These are not the only reasons for vaccination failure but they are the most likely explanations.

If you feel your cat has contracted an infection for which it has been vaccinated then let your veterinarian know so tests can be undertaken to try and establish why vaccination has failed to be protective.

### ***What are the risks of vaccination?***

There are very few risks to vaccination. Your veterinarian will be able to advise you on specific details concerning your pet. You may notice your cat has a temporary loss of appetite or is less lively a day or two after a vaccination, but this should resolve within 24 to 48 hours. In a very few cats, they may be allergic to one or more components of the vaccine and have more serious side effects such as difficulty in breathing, vomiting or diarrhea. If these signs occur, let your veterinarian know immediately. A rare form of soft tissue sarcoma has been associated with a reaction to vaccine or vaccine components in a very small number of cats. Studies are in progress on this, but the benefits of vaccination greatly outweigh these small risks for most situations.

### ***Which are the most important vaccinations to have?***

This is a difficult question and will depend on individual circumstances including the area you live in and the lifestyle of your cat. As mentioned before, certain vaccines are more routinely given and are regarded as 'core' vaccines. Others may or may not be advised depending on the particular situation of your cat.

Your veterinarian will be able to advise you of the most appropriate vaccinations to give your cat.



#### ***Feline panleukopenia infection***

This is an uncommon disease today because of widespread vaccination, but the risk remains widespread. When disease occurs it is a severe and often fatal gastroenteritis, with profound depression, dehydration and collapse. It is very contagious to other cats. Vaccination provides a high level of long lasting protection.

#### ***Feline respiratory virus infection***

Disease is caused by FVR virus (FHV-1) or the caliciviruses (FCV) - sometimes together. The syndrome is commonly termed Upper Respiratory Infection (URI) or sometimes, erroneously, "Cat Flu". While not usually very serious (except in young kittens) it is a very common infection in unvaccinated

cats and can cause long-term problems. Vaccination is only moderately effective as solid immunity to these viruses is not long term, and may be overcome by a high dose of virus in the immediate environment. Vaccination does significantly reduce the severity and duration of URI. Cats at high risk may require twice yearly vaccination, at least initially, to provide better protection.

#### ***Feline chlamydial infection***

This tends to be a particular problem in colony cats. Chlamydiosis is a bacterial infection causing a painful inflammation and swelling of the conjunctiva (the membrane around the eye) and has been associated with infertility in queens. Infection in colonies of cats can last for long periods because protection against re-infection (immunity) is relatively short lived. Vaccination can help to prevent infection becoming established in a colony and can be used in conjunction with treatment where infection is already present.

### ***Feline leukemia virus (FeLV) infection***

This virus is widespread and infection of outdoor cats or cats in infected catteries is common. The vast majority of persistently infected cats will die either from tumors or as a consequence of the immunosuppression caused by the viral infection. Current vaccines provide a good level of protection and do not interfere with routine testing for the virus in breeding colonies. Because the virus tends to take many months before it causes disease, infected cats can appear completely normal and healthy. For this reason your veterinarian may suggest your cat have a blood test to make sure it is not infected before vaccination. Despite vaccination, a few cats will still become infected with the virus.

### ***Rabies***

This is such an important disease because of the almost 100% fatality rate of cases once symptoms occur, and because of its potential transmission to people by bites from infected animals. Rabies vaccination is an essential part of the vaccination program for all cats. Your veterinarian will discuss the frequency of booster vaccinations needed for your cat.

**REGULAR VACCINATION IS AN IMPORTANT PART OF ROUTINE HEALTH CARE FOR YOUR CAT AND HELPS TO ENSURE YOUR CAT REMAINS FIT AND WELL.**