Feline Vaccines: Benefits and Risks

Deciding which vaccines your cat should receive requires that you have a complete understanding of the benefits and risks of the procedure. For this reason, it is extremely important that you discuss vaccination with your veterinarian so he or she can help you decide which vaccines are most appropriate. Be sure to inform your veterinarian of your cat's lifestyle, environment, medical history, current medical problems, and medications your cat may be receiving. Remember, your veterinarian is more than willing to answer any questions you may have and will help you make the right vaccine choices.

Why does my cat need to be vaccinated?

The immune system plays a pivotal role in maintaining your cat's health. One of the most important functions of this complex system of specialized cells and molecules is to protect cats from disease and infection caused by viruses, bacteria, and a host of other microbes and parasites.

Vaccines help prepare your cat's immune system to fend off invasion by a particular disease-causing organism. Vaccines contain antigens, which to the immune system "look" like the organism but don't, ideally, cause disease. When a vaccine is administered, the immune system mounts a protective response. Then if your cat is subsequently exposed to the disease-causing organism, its immune system is prepared to either prevent infection or reduce the severity of disease.

Though vaccines play an important role in controlling infectious diseases, most do not induce complete protection from disease, nor do they induce the same degree of protection in all cats. For extra protection, you should make every effort to reduce your cat's exposure to infected cats or contaminated environments.

Why do kittens require a series of vaccinations?

During the first few hours after birth, kittens ingest maternal antibodies contained in their mother's milk. These antibodies help protect the kitten from infectious diseases until its own immune system is more mature.

Unfortunately, maternal antibody also interferes with a vaccine's ability to stimulate the kitten's immune system. To counteract this problem, veterinarians often administer a series of vaccines, usually beginning when the kitten is around six to eight weeks of age. Vaccination is then repeated at three- or four-week intervals until maternal antibody has waned, usually at around twelve weeks of age. In some cases (e.g., rabies vaccines) the initial vaccine is not given until maternal antibody has disappeared altogether.

Does my adult cat need to be vaccinated every year?

The answer depends in part on the vaccine. For example, certain feline rabies vaccines provide protection for longer than one year, so vaccination with a triennially approved rabies vaccine every three years (after the initial series is completed, and when consistent with local rabies vaccine requirements) is sufficient.

Recent research suggests that panleukopenia, rhinotracheitis, and calicivirus vaccines provide adequate protection for several years, so that many veterinarians are now recommending that this vaccine be boosted no more than once every three years.

Unfortunately, far less is known about the duration of protection provided by other vaccines. Until that information is known, annual vaccination with those products-when their administration is necessary-is a good idea.

Are vaccines dangerous?

Not usually. Unfortunately, a perfect, risk-free vaccine does not exist. Vaccines are indispensable in fighting feline infectious disease. But as with any medical procedure, there is a small chance that reactions may develop as a result of vaccination. To maximize the benefits of vaccination while minimizing the risks, it is important to vaccinate only against infectious agents to which your cat has a realistic risk of exposure, infection, and subsequent development of disease. Also, make sure to inform your veterinarian of any problems your cat is currently experiencing, medications your cat is receiving, or vaccine reactions experienced in the past before your cat is vaccinated again.

Reactions may be mild or (very rarely) severe.

Mild Reactions

The following reactions are fairly common and usually start within hours to several days after vaccination. They typically last no more than a few days.

- discomfort at the site where the vaccine was given
- mild fever
- diminished appetite and activity
- sneezing about four to seven days after administration of an intranasal vaccine
- temporarily sore joints and lameness following calicivirus vaccination
- Development of a small, firm, painless swelling under the skin at the site where the vaccine was given. The swelling usually goes away after several weeks, but if you notice such a swelling, contact your veterinarian.
- Lameness, loss of appetite, and fever beginning approximately one to three weeks after Chlamydia psittaci vaccination.

Serious Reactions

These reactions occur very rarely:

- a serious and potentially life-threatening allergic reaction within several minutes to an hour after vaccination
- a tumor called a sarcoma developing at the vaccine site several weeks, months, or even longer following vaccination

What should I do if I think my cat is having a reaction to a vaccine?

By all means, consult your veterinarian. Even though vaccine-related disease is uncommon, the consequences can be serious. Your veterinarian is the person most qualified to advise you if adverse side effects occur.

What vaccines are currently available for my cat?

Panleukopenia: Feline panleukopenia (also called feline distemper) is a highly contagious and deadly viral disease. Signs include extreme listlessness and loss of appetite. Fever, vomiting, and diarrhea are frequently seen, but some cats die suddenly with few clinical signs. A high percentage of cats with panleukopenia-especially kittens-die from the infection. Feline panleukopenia virus is shed in the feces of an infected cat and can survive extremes of temperature and humidity for months to years. The virus is resistant to most available disinfectants.

Until recent years panleukopenia was the most serious infectious disease of cats, killing thousands every year. Thanks to the highly effective vaccines currently available, panleukopenia is now considered an uncommon disease. Immunity induced by panleukopenia vaccines is excellent, and most vaccinated cats are completely protected from infection and disease. Vaccination is recommended for all cats.

Feline Herpesvirus and Feline Calicivirus: Feline herpesvirus (the cause of feline viral rhinotracheitis) and feline calicivirus are estimated to be responsible for 80-90 percent of infectious feline upper respiratory tract diseases. Although usually not serious in adult cats, disease caused by these viruses may be severe-and sometimes fatal-in kittens. Sneezing, runny eyes, runny nose, and fever are the most typical signs of infection. In addition to upper respiratory tract disease, lameness and chronic oral inflammatory disease have been linked to calicivirus infection. Both viruses are shed in secretions from the nose, eyes, and mouth of infected cats. Cats become infected by direct exposure to infected individuals, either from sneezed droplets, or from contaminated objects such as food and water dishes.

Most cats are exposed to either or both of these viruses at some time during their lives, usually during kittenhood. Once infected, many cats never completely rid themselves of viruses. These carrier cats shed viruses either continuously or intermittently for long periods of time-perhaps for life-and serve as a major source of infection to other cats. Protection induced by the currently available vaccines minimizes the severity of disease, but does not prevent disease in all cats. Nonetheless, vaccination is recommended for all cats.

Rabies: Rabies is an increasing threat to cats. At present, the number of reported feline rabies cases in the United States far exceeds that of dogs and all other domestic animals. Rabies is routinely fatal and is a major public health concern. Because of the potential for human exposure, rabies vaccination is recommended for all cats and is required by law in many parts of the country.

Feline Leukemia Virus: Feline leukemia virus (FeLV) is the leading viral killer of cats. The virus is spread in the saliva and nasal secretions of infected cats; infection is transmitted through prolonged contact with infected cats, bite wounds, and from an infected mother cat to her kittens. Disease caused by FeLV is very serious, and it is estimated that fewer than 20 percent of infected cats will survive more than three years after being infected. Anemia (a deficiency of oxygen-carrying red blood cells), cancer, and secondary infections resulting from immune deficiency are the most common consequences of infection.

Outdoor cats, indoor/outdoor cats, and cats exposed to such individuals are at greatest risk of exposure to FeLV. Cats living in households with FeLV-infected cats or with cats of unknown infection status are also at risk. Kittens younger than 4 months of age appear to be much more susceptible to infection than are adult cats. Indoor-only adult cats with little chance of exposure to potentially infected cats are not likely to be exposed or infected. Vaccination against FeLV is recommended for cats at risk of exposure, especially those younger than four months of age. Vaccination is not recommended for cats with minimal to no risk of exposure, especially those older than four months of age. Because FeLV vaccines do not induce protection in all cats, avoiding exposure to infected cats remains the single best way to prevent your cat from becoming infected.

Chlamydiosis: Chlamydiosis is caused by the bacteria, *Chlamydia psittaci*. Conjunctivitis (inflammation of the tissues lining the eyelids and covering part of the eyeball) is the most common sign, but sneezing and nasal discharge may also occur. The bacteria are transmitted through direct contact with an infected cat, and the highest rates of infection are in cats between five weeks and nine months of age, especially those residing in multiple-cat environments with a history of respiratory tract disease. Cats vaccinated against chlamydiosis are not protected from infection but are expected to experience less severe disease if infected. Adverse reactions associated with chlamydia vaccines are more common than with many other feline vaccines, but the reactions are usually mild and resolve completely with treatment. Vaccination is recommended if your cat resides in a multiple-cat environment where chlamydiosis has been confirmed in other cats.

Feline Infectious Peritonitis: Feline infectious peritonitis (FIP) results from infection with feline coronavirus. Many different strains of the virus can infect cats, but most do not produce serious disease: usually less than 1 to 5 percent of coronavirus-infected cats develop FIP.

Coronaviruses are shed primarily in the feces of infected cats. Most cats become infected by ingesting the virus, either as a result of direct contact with an infected cat or by exposure to virus-contaminated surfaces such as litter boxes, feeding bowls, bedding, clothing, or toys. A high percentage of cats residing in multiple-cat environments are exposed and ultimately infected with feline coronavirus, but exposure is far less common in households with fewer cats. Even though cats of all ages can develop the disease, most of those that develop FIP are younger than two years. Individuals with FIP rarely survive regardless of treatment. A vaccine to prevent FIP is available, but considerable controversy surrounds its ability to prevent disease.

Feline Immunodeficiency Virus: Feline immunodeficiency virus (FIV) is another viral killer of cats. The primary mode of virus spread is through bite wounds, so cats that get outdoors and fight are at greatest risk of infection. Cats in households with stable social structures where housemates get along well are at little risk.

Infected cats may appear normal for years. However, infection eventually leads to a state of immune deficiency that hinders the cat's ability to protect itself against other infections. The same bacteria, viruses, protozoa, and fungi that may be found in the everyday environment - where they usually do not affect healthy animals - are responsible for many of the diseases associated with FIV.

Keeping cats indoors and away from potentially infected cats that might bite them markedly reduces their likelihood of contracting FIV infection. Vaccines to help protect against FIV infection are available. Not all vaccinated cats will be protected, so preventing exposure will remain important even for vaccinated pets. In addition, vaccination may have an impact on future FIV test results. It is important that you discuss the advantages and disadvantages of vaccination with your veterinarian to help you decide whether FIV vaccines should be administered to your cat.

Bordetellosis: *Bordetella bronchiseptica* is a bacteria that can cause disease of the respiratory tract in cats. Cats with *bordetellosis* may cough, have a runny nose or runny eyes, sneeze, and occasionally have a fever. The signs of disease are very similar to those caused by feline herpesvirus and feline calicivirus. Cats are believed to become infected by breathing the bacteria into their noses. Cats residing in or entering rescue shelters and multiple-cat households have the highest risk of exposure, especially if respiratory tract disease has occurred in the environment.

A vaccine to prevent disease caused by *Bordetella bronchiseptica* is available. Studies conducted by the manufacturer indicate that the vaccine can reduce the severity of disease in infected cats. Your veterinarian may suggest vaccinating cats entering or residing in multiple-cat environments (for example, shelters, catteries, or boarding facilities) where disease associated with *Bordetella bronchiseptica* infection is suspected or has been confirmed.

Giardiasis: Infection with the single-celled parasite, *Giardia lamblia*, may be associated with gastrointestinal tract disease of either short or long duration. Diarrhea is the most commonly encountered sign of infection. The organism is shed in the feces of infected cats, and other cats become infected by drinking contaminated water, by direct exposure to an infected cat (such as through mutual grooming), by exposure to contaminated litter boxes, and from consuming prey. Giardiasis tends to be a greater problem in some multiple-cat households. Giardia vaccination can be part of a comprehensive control program in environments where exposure to the organism is associated with disease, although the vaccine has not been evaluated for its ability to hasten elimination of infection from multiple-cat environments.

Which vaccines should my cat receive?

The decision depends on the following factors:

- Your cat's risk of exposure to the disease-causing organism, in part dependent on the health of other cats to which yours is exposed, and the environment in which your cat lives.
- The consequences of infection
- The age and health of your cat
- The protective ability of the vaccine
- The frequency or severity of reactions associated with vaccination
- The risk an infected cat poses to human health (e.g., rabies virus)
- Vaccine reactions your cat may have experienced in the past

This brochure was prepared by the American Association of Feline Practitioners and the Cornell Feline Health Center, Cornell University, College of Veterinary Medicine, Ithaca, New York 14853-6401. The center is committed to improving the health of cats by developing methods to prevent or cure feline diseases and by providing continuing education to veterinarians and cat owners. Much of that work is made possible by the financial support of friends.