VACCINATION GUIDELINES
UC DAVIS VETERINARY MEDICINE

The UC Davis veterinary hospital vaccination guidelines below have been based on published studies and recommendations made by task forces. These include the AAFP/AFM Advisory Panel on Feline Vaccines, AAHA Canine Vaccine Task Force, and World Small Animal Veterinary Association, which include representatives from academia, private practices, governmental regulatory bodies, and industry. These groups have evaluated the benefits versus risks of the vaccines currently available on the market. Interested readers are referred to documents published by these groups for further information (see References and Resources listed at the end of this document). The document below has been generated by a group of faculty and staff at UC Davis School of Veterinary Medicine for the purposes of veterinary student education and as a reference for referring veterinarians. These are only general guidelines. The vaccine types recommended, and the frequency of vaccination vary depending on the lifestyle of the pet being vaccinated (i.e. indoor vs outdoor pets, travel plans, kennel/boarding plans, and underlying disease conditions such as immune-mediated diseases or pre-existing infections such as FIV infection). Because these factors may change over time, we recommend the vaccination plan for each individual pet be decided by the owner at routine annual examinations, following a discussion between the veterinarian and the client regarding the animal's lifestyle in the year ahead. Guidelines for vaccination in shelter situations can be accessed at the UC Davis Center for Companion Animal Health's shelter medicine website. A previous history of vaccination reactions in an individual pet will also affect recommendations for vaccination. For all vaccines given, the product, expiration date, lot number, route and location of injection must be documented in the record.

It should also be noted that much research in the area of companion animal vaccinology is required to generate optimal recommendations for vaccination of dogs and cats. As further research is performed, and as new vaccines become available on the market, this document will be continuously updated and modified.

FELINE VACCINATION GUIDELINES

In general, guidelines for vaccination of cats have been strongly influenced by the appearance of vaccine-associated sarcomas in cats, and in particular their epidemiologic association with feline leukemia virus vaccines and killed rabies virus vaccines. Thus, there is clear evidence for minimizing frequency of vaccination in cats. The recommendations below have been made in light of the AVMA/AAHA/AAFP/VCS task force recommendations on vaccine-associated sarcomas in cats. Risk factors for sarcomas should be discussed with cat owners at the time of examination. If a cat develops a palpable granuloma at the site of previous vaccination, the benefits vs risks of future vaccinations should be carefully considered. All vaccine-associated sarcomas should be reported to the vaccine manufacturer.

FELINE CORE VACCINES

The definitions of core and non-core vaccines described in the canine vaccination guidelines above also apply to the feline vaccines. The core feline vaccines are those for feline herpesvirus 1 (FHV1), feline calicivirus (FCV), feline panleukopenia virus (FPV), feline leukemia virus (FeLV - kittens) and rabies.

HERPESVIRUS, CALICIVIRUS AND FELINE PANLEUKOPENIA VIRUS VACCINES

For initial kitten vaccination (< 16 weeks), one dose of parenteral vaccine containing modified live virus (MLV) FHV1, FCV, and FPV is recommended every 3-4 weeks from 6-8 weeks of age, with the final booster being given no sooner than 16 weeks of age. For cats older than 16 weeks of age, two doses of vaccine containing modified live virus (MLV) FHV1, FCV, and FPV given 3-4 weeks apart are recommended. After a booster at 6 months to one year, revaccination is suggested every 3 years thereafter for cats at low risk of exposure. It is recommended that these vaccines be administered on the right thoracic limb as distally as possible. Note that recommendations for killed and intranasal FHV1 and FCV vaccines are different from the above. Killed and intranasal varieties of these vaccines are not routinely used at the UC Davis veterinary hospital, but there may be some advantages to the use of non-adjuvanted vaccines that that include two inactivated FCV strains over those that contain one strain. The use of FPV MLV vaccines should be avoided in pregnant queens and kittens less than one month of age.

RABIES VIRUS VACCINES

Cats are important in the epidemiology of rabies in the United States. In general we recommend that kittens receive a single dose of killed or recombinant rabies vaccine at 12-16 weeks of age. Adult cats with unknown vaccination history should also receive a single dose of killed or recombinant rabies vaccine. For the recombinant vaccines, boosters are recommended at yearly intervals. We currently stock and suggest the use of the recombinant rabies vaccine, because there is some evidence that it is associated with a decreased risk of sarcoma formation (Srivastav et al, 2012). For the killed rabies vaccines, a booster is required at one year, and thereafter, rabies vaccination should be performed every 3 years using a vaccine approved for 3-year administration. According to recommendations of the vaccine-associated sarcoma task force, rabies vaccines are administered subcutaneously as distally as possible in the right rear limb.

LEUKEMIA VIRUS VACCINE

A number of FeLV vaccines are available on the market. The whole inactivated viral vaccines have recently been shown to be highly efficacious based on the results of molecular detection methods for FeLV, even producing sterilizing immunity, although this was not found to be the case for an inactivated mixed subunit vaccine (Torres et al, 2009). We recommend vaccination of all FeLV-negative kittens and any FeLV-negative adult cats allowed to go outdoors or cats having direct contact with other cats of unknown FeLV status. Vaccination is most likely to be useful in kittens and young adult cats, because acquired resistance to infection develops beyond 16 weeks of age. Vaccination is not recommended for FeLV-positive cats and indoor cats with no likelihood of exposure to FeLV.

Use of the recombinant FeLV vaccine offers the potential advantage of a decreased risk of sarcoma formation (Srivastav et al, 2012). However, there is some evidence that the inactivated vaccines may be more efficacious (Patel et al, 2015). Until further supporting evidence is available from independent investigators that supports improved efficacy of the inactivated over the recombinant vaccine, the UC Davis veterinary hospital does not have a preference over whether inactivated or recombinant vaccines are used, but we currently stock the recombinant vaccine.

Initially, two doses of FeLV vaccine are given at 2-4 week intervals, after which annual boosters (recombinant vaccine) or 3-yearly boosters (inactivated vaccine) are recommended depending on risk. According to recommendations of the vaccine-associated sarcoma task force, parenteral FeLV vaccines are administered subcutaneously as distally as possible in the left rear limb.

FELINE NON-CORE VACCINES

Optional or non-core vaccines for cats consist of the vaccines for feline immunodeficiency virus, Chlamydia felis, and Bordetella bronchiseptica.

IMMUNODEFICIENCY VIRUS VACCINE

The FIV vaccine was an inactivated, adjuvanted dual subtype vaccine that was released in July 2002. It is no longer being made or distributed in North America. Unfortunately, vaccination of FIV-negative cats rendered currently available serologic tests (ELISA and Western blot) positive for at least a year following vaccination, and polymerase chain reaction (PCR)-based tests do not reliably identify cats with natural infection. Previous vaccination does not prevent infection, and the significance of a positive test result in a vaccinated cat cannot be assessed. Questions remained regarding the vaccine's ability to protect against all of the FIV subtypes and strains to which cats might be exposed.

CHLAMYDIA FELIS VACCINE

Chlamydia felis causes conjunctivitis in cats that generally responds readily to antimicrobial treatment. Immunity induced by vaccination is probably of short duration and the vaccine provides only incomplete protection. The use of this vaccine could be considered for cats entering a population of cats where infection is known to be endemic. However, the vaccine has been associated with adverse reactions in 3% of vaccinated cats, and we do not recommend routine vaccination of low-risk cats with this vaccine.

BORDETELLA BRONCHISEPTICA VACCINE

This is a modified live intranasal vaccine. Bordetella bronchiseptica is primarily a problem of very young kittens, where it can cause severe lower respiratory tract disease. It appears to be uncommon in adult cats and pet cats in general. For these reasons, the UC Davis veterinary hospital does not recommend routine vaccination of pet cats for Bordetella bronchiseptica. The vaccine could be considered for young cats at high risk of exposure in large, multiple cat environments.

OTHER FELINE VACCINES

The feline infectious peritonitis (FIP) vaccine has been listed as 'Not Generally Recommended' by the AAFP.

FELINE INFECTIOUS PERITONITIS VACCINE

The FIP vaccine is an intranasal modified live virus product. The efficacy of this vaccine is controversial, and duration of immunity may be short, although the vaccine appears to be safe. Although exposure to feline coronaviruses in cat populations is high, the incidence of FIP is very low, especially in single-cat households (where it is 1 in 5000). Most cats in cattery situations where FIP is a problem become infected with coronaviruses prior to 16 weeks of age, which is the age at which vaccination is first recommended. Vaccination could be considered for seronegative cats entering a cattery where FIP is common. We do not routinely recommend vaccinating household cats with the FIP vaccine, and the vaccine is not stocked by our drug room.