

Vaccination Best Practices

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Immunization against infectious diseases helps dogs and cats live longer, healthier lives. Diseases such as canine distemper, parvovirus, feline herpesvirus, and panleukopenia are seen in the United States, but not at the levels seen in Asia, where those

diseases are regularly reported by more than 75% of practicing veterinarians. Almost two-thirds of veterinarians in India have seen cases of rabies.¹

Vaccinations are also important because they offer other protections, including indirect

protection for people from zoonotic diseases (eg, rabies) that might otherwise be transmitted from infected wildlife to pets to pet owners, and herd immunity to groups of animals even when some animals remain unvaccinated.²

How and when vaccines are administered are important factors as well as which specific vaccines are chosen for each patient. To be most effective, vaccines should be administered according to manufacturer guidelines and American Animal Hospital Association (AAHA) or American Association of Feline Practitioners (AAFP) recommendations.^{3,4} Recording each administered vaccine in a pet's medical record helps prevent lapses in immunization coverage.

Core & Noncore Vaccinations

Healthy dogs and cats should receive the core immunizations recommended by AAHA³ and AAFP.⁴ Noncore immunizations may be recommended depending on the animal's lifestyle and risk factors. Core immunizations are those that provide protection against highly contagious or life-threatening diseases or that pose a threat to human health. It is recommended that all dogs and cats receive core vaccines unless an individual animal has another medical problem precluding immunization. Noncore vaccines should be given to individual animals based on their specific risk factors.^{3,4} Always check state regulations to know who has permission to administer vaccinations. (See **State Practice Regulations**.)

State Practice Regulations

- In many states, only licensed veterinarians are permitted to administer vaccines to domesticated animals.
- Some states do allow veterinary nurses and other trained personnel to vaccinate animals, usually under direct supervision.
- Refer to each state's practice act for specific guidelines.

Documentation

Documentation is essential so that the practice has a record of a patient's lifetime vaccinations and to prevent lapses. When documenting a vaccination, include the following:

- Patient's name, age, breed, sex, and other identifying information (eg, microchip number)
- Date and route of administration and anatomic site of the injection
- The manufacturer and the lot/serial number—this information will be needed in the event of a vaccine recall or advisory
- Any medications the patient is receiving—knowing which medications the patient is receiving (eg, immunosuppressive or cytotoxic drugs) is important because this could potentially interfere with the animal's response to the vaccination.³

Preparation

To ensure maximum potency, reconstitute each vaccine immediately before administration according to manufacturer recommendations using the provided diluents. Vaccines reconstituted more than 1 hour before administration will lose potency.^{1,5} It is important that vaccines be stored at 2° to 8°C. Domestic refrigerators are maintained at 4°C. Temperatures that are warmer or cooler will cause the vaccine to breakdown and become ineffective.¹ Do not use a disinfectant to clean the skin before administering a modified-live vaccine, as the disinfectant may inactivate the vaccine.^{1,3}

Injection Sites & Routes of Administration

Vaccines must be administered using the manufacturer labeled administration route in the appropriate injection site to confer maximum protection while minimizing side effects and adverse events. Injection site reactions, which include injection-site sarcomas, a type of high-grade malignant tumor, are not common. Dogs are less likely to develop injection site sarcomas than cats, although both dogs and cats

may experience local or systemic adverse effects (eg, lethargy, anorexia, fever, localized inflammation at the injection site).^{3,4}

Currently, no official guidelines that recommend specific anatomical locations and routes for administering vaccines to dogs are available, so it is important to follow manufacturer recommendations with regard to administration routes. If a vaccine that is meant to be given systemically is given locally (eg, intranasally), the vaccine may cause disease. Conversely, a local vaccine given systemically will not provide protection against the intended disease and may cause cellulitis, abscess formation, or even death from bacteremia or hepatic necrosis.³

Cats are more susceptible to injection-site sarcomas (FISS) than dogs.⁶ Early studies suggested that injection-site sarcomas were caused by vaccines,⁶ but current research indicates that any injectable drug can cause a sarcoma.⁷ When an injection-site sarcoma occurs, radical resection of the mass and surrounding tissue is required.⁸ Resection of tissue in the interscapular area, a common injection site in the past, is difficult, limiting surgical control of a sarcoma.⁹ As a result, in 1999 the AAFP published new recommendations for administering vaccines as distally as possible on the limbs, specifically⁴:

- **Rabies:** Right pelvic limb, between stifle and hock
- **Feline leukemia virus:** Left pelvic limb, between stifle and hock
- **Feline viral rhinotracheitis, calicivirus, and panleukopenia (FVRCP):** Right thoracic limb, between elbow and carpus

Using these locations makes radical resection via limb amputation easier to perform and more likely to lead to a positive therapeutic outcome in the event of an injection-site sarcoma.^{4,7,9} The AAFP guidelines further suggest that all injectable vaccines be administered subcutaneously instead of intramuscularly

because it is easier to detect an unusual mass in a superficial location than a deeper site.⁷

The tail is an alternative injection site in cats that has not yet gained widespread acceptance in the veterinary community. In a study of 60 cats published in 2014, 50% received vaccinations in the distal limbs and 50% received injections in the tail. In both study groups, no significant difference in injection site response was noted at the time of administration or at a follow-up examination.¹⁰

Using the distal limbs or tail as vaccine administration sites has not been widely adopted outside North America.¹¹ The WSAVA 2010 Vaccination Guidelines recommend vaccine administration in the skin of the lateral thorax or the lateral abdomen and further recommend rotating vaccine sites annually (eg, the rabies vaccine on the right side and the FVRCP vaccine on the left side one year and the rabies vaccine on the left side and the FVRCP vaccine on the right side the following year).¹¹ To adhere to these guidelines, immunization sites must be documented in the medical record.

Concurrent Vaccine Administration

Many pets typically receive their annual vaccines at the same appointment, but that does come with some risks. Smaller dogs may be more susceptible than larger dogs to adverse reactions when multiple vaccines are administered concurrently.⁵ AAHA recommends that immunizations be limited at each visit for small dogs (<20 lbs), and additional



BENCHMARKS

Vaccination Revenue

Vaccinations represent 7.5% of medical revenue in Well-Managed Practices.

SOURCE: *Benchmarks 2017: A Study of Well-Managed Practices*. Columbus, OH: WMPB; 2017:63.

vaccinations be administered 2 weeks apart to decrease the risk of adverse reactions.^{3,5} AAHA also recommends that the core vaccination series for a small dog be completed before administering noncore vaccines.⁵ A minimum vaccine interval of 2 weeks is necessary because there is a transient post-vaccination down-regulation of the immune response that may compromise the effect of another vaccine dose administered within 10 to 12 days of the first.³

There are no published studies that can objectively state methods for reducing the risk of FISS in individual cats. Certainly, overvaccination should be avoided and the vaccines to be administered should be chosen based on the cat's lifestyle and risk of exposure to a particular pathogen.⁴

Conclusion

To ensure safe and effective vaccination in dogs and cats, choose appropriate immunizations based on each patient's age and lifestyle, thoroughly document vaccine information and injection sites in the medical record, check state regulations to know who has permission to administer vaccinations, follow manufacturer and AAHA and AAFP guidelines, and reconstitute vaccines less than 1 hour before injection. Excellent patient care includes routine vaccinations, but the practice must follow correct protocols. ■

TAKE ACTION

- 1 Follow manufacturer, AAHA, and AAFP guidelines to ensure safe, effective, and appropriate vaccinations for every patient.
- 2 Document every vaccination and injection site of every patient in the medical record.
- 3 Always check state regulations to make sure the practice adheres to regulations about who (ie, veterinarian, veterinary nurse) can administer vaccinations.

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FUN FACT: Lori and her husband love to travel to places where they can explore new things by day and enjoy great wine and food by night. She is a sucker for chocolate chip cookies, corny jokes, and puppy breath.