Find Out Why Once Every Three Years is the Trend in Vaccinations

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After speaking with hundreds of practicing veterinarians over the past two years about vaccines and vaccination protocols, Richard Ford, DVM, has found that practitioners are slowly trending away from all vaccines to all pets every year.

"I believe it is fair to say that some trends are emerging," said Dr. Ford, a co-author on both the American Animal Hospital Association canine vaccination task force and the American Association of Feline Practitioners feline vaccination advisory panel.

He has noted a growing the tendency to incorporate triennial boosters for core vaccines in dogs (distemper, parvovirus, adenovirus-2) and cats (panleukopenia, herpesvirus, calicivirus).

"In speaking with vaccine sales representatives from around the country, I would estimate about half of the practices today routinely incorporate the three-year recommendation for core vaccines," Ford said.

Ford sees this largely as a good thing.

"The science is abundantly clear on this point," Ford said. "While some vaccines must be administered annually to sustain a reasonable level of protective immunity, others – namely the core vaccines – provide years of protective immunity in the majority of dogs/cats that are vaccinated. There is simply no medical justification that warrants administering core vaccines to all pets annually."

You'll get no argument there from W. Jean Dodds, DVM, founder of Hemopet in Garden Grove, Calif., a full-service facility including an animal blood bank, greyhound rescue and adoption and a specialty veterinary diagnostic laboratory. Dr. Dodds is well known for her stance on minimum vaccine protocols.

"Clearly, dogs and cats that have received appropriate puppy and kitten vaccine series do not need annual boosters thereafter, except for an additional booster a year later or serum vaccine titer measurements for the clinically significant viral disease, such as canine distemper and parvovirus for dogs, and feline panleukopenia virus for cats," Dodds said.

"After that, booster intervals should be every three years, or serum vaccine titers can be

rechecked every three years."

For these three clinically important viral diseases, plus adenovirus-2 for protection against hepatitis in dogs, if a dog or cat has been immunized by the vaccination, immune memory immunity persists for life, Dodds said.

Therefore giving booster vaccines is not only unnecessary, it can also be unsafe, she said, because it introduces elements like vaccine antigens, tissue culture remnants, fetal calf serum, preservatives like gentamicin, adjuvants like thimerosol and other extraneous materials into the pet.

When the first version of the American Association of Feline Practitioners Guidelines was published in 1996, AAFP recommended reducing the frequency of vaccinating with FVRCP vaccines from one a year to every three years. The vaccines protect against feline rhinotracheitis virus, calicivirus and panleukopenia

"There was a lot of pushback from veterinarians who were concerned that they wouldn't have the chance to see the cats and examine them once a year," said Margie Scherk, DVM, Dipl. ABVP (feline practice).

Some practitioners, however, saw this recommendation as an opportunity to shift the focus of an annual recall to other aspects of preventive health care, Dr. Scherk said.

"In fact, it was a chance to shift from vaccines as the financial backbone to practicing medicine and use our education and training," Scherk added.

Over time, she said, and through revisions to the guidelines in 2000, 2006 and 2013, more clinicians began to see that there are still plenty of vaccines that cats still need.

Among these are feline leukemia virus for all kittens and a booster at 1 year, and rabies if a patient is in endemic areas or where it's mandated by law, Scherk said. "So, in fact, most cats need at least one dose of some antigen every year."

She noted that FeLV should be continued annually or every second year in cats who are considered at risk for exposure.

AAFP encourages practitioners to focus on the following goals, namely to vaccinate:

- Each cat only against infectious agents to which it has a realistic risk of exposure.
- Against infectious agents that cause significant disease.
- Only when the potential benefits outweigh the potential risks.
- Each cat no more frequently than necessary.
- The greatest number of cats possible in population at risk.
- Appropriately to protect human/public health.

Bottom line is that it's all about risk assessment.

That's the view of Link Welborn, DVM, former president of the American Animal Hospital Association and chair of the AAHA Canine Vaccination Guidelines Task Force.

"Progressive veterinary practices now commonly administer core vaccines, those recommended for all dogs and cats, every three years," Dr. Welborn said. "However, as stated in the 2013 AAFP feline vaccination guidelines, veterinarians should reassess risk factors for exposure to infectious disease at least once a year, as changes in the health of the animal or its lifestyle may dictate modifications in vaccinations needed."

Additionally, recommendations for non-core vaccinations, typically administered yearly, should be based on risk factors that vary by the prevalence of a specific diseases in a given area and the lifestyle-related potential for exposure to the infectious agents for each individual pet, Welborn added.

The debate over one- or three-year vaccinations schedules recently came into the spotlight in a study by Kansas State University professors, "Comparison of anamnestic responses to rabies vaccination in dogs and cats with current and out-of-date vaccination status," published in January in AVMA Journals.

The results indicated that dogs with out-of-date vaccination status were not inferior in their antibody response following booster rabies vaccination compared with dogs with current vaccinations. The findings supported an immediate booster vaccination followed by observation for 45 days of dogs and cats with an out-of-date vaccination status that are exposed to rabies, which is the current practice for dogs and cats with current vaccination status.

A part of the study seemed to cast doubt on whether drug manufacturer Merial Ltd.'s one- and three-year formulations for the vaccine were different.

"A cutoff of three years since the last vaccination was used regardless of whether the last vaccine administered had been licensed for a one-year or three-year duration, because the antigenic mass, carrier, adjuvant and other characteristics of one-year and three-year vaccines from two companies, were reportedly identical," the study states. "One animal that received a one-year vaccine was excluded from the data analysis because the company that manufactured the vaccine would neither confirm nor deny that their one-year and three-year formulations were identical."

The study identified Merial as the company that wouldn't confirm or deny its formulations were identical.

Bob Menardi, DVM, the company's director of technical veterinary services, declined to elaborate, noting that the company's formulations are proprietary.

Breakthroughs and Developments

Ford said the shift in thinking toward three-year protocols for core vaccines started in the mid-2000s after updated guidelines were issued for dogs and cats.

He believes that more veterinarians haven't gotten on board with the triennial protocol for several reasons.

One is "Because, 'This is what I've always done and it works, so I'm going to keep doing it that way.' It's sort of a practice preference," Ford said.

He also said some practices are driven by financial incentives to stick with annual core vaccinations, as annual "boosters" get pet owners into clinics at least once a year.

Some lack faith in vaccines' lasting longer than a year.

"They aren't trusting the protocols," he said.

Some pet owners may also be taking a cue from the human anti-vaccination movement, which health professionals blame for a measles outbreak in Southern California. Ford said he's also noticed a number of pet anti-vaccination websites springing up lately.

"There are elements out there that think that vaccines are harmful for pets, so it is kind of following what's happening in human medicine," Ford said.

Some of that skepticism stems from distrust, or ignorance. But one positive Ford has seen emerge is a growing interest from veterinarians who want to know for themselves whether every three years for core vaccines is right for their clients.

He recently gave a presentation in Orlando, Fla., at the North American Veterinary Community conference on titer kits that enable veterinarians to test whether previously immunized dogs and cats still have antibodies present in their systems.

"It was 6:30 in the morning and the room was packed," Ford said, estimating the crowd to be well in excess of 300.

At the conference, Ford discussed two products on the market, TiterCHEK from Zoetis and VacciCheck, distributed by Spectrum Labs.

"This is a brand new market that's emerging and it's going to get a lot of attention in veterinary medicine," Ford said. "It's going to happen. People want to know that if they vaccinate every three years, it's working."

Aside from any potential controversy from the study, one are of vaccinations Ford thinks will be getting national attention are vaccinations for rabies vaccinations.

The vaccine is the only one legally mandated for dogs, cats or ferrets in most states today.

However, because rabies law is determined at the state or local level, there is some

confusion regarding rabies immunization requirements and the implications for a pet that either bites a human or is exposed to rabies, Ford said.

“Over the coming year, we’ll be working to level that playing field for the profession through educational materials being developed on a state by state basis,” he said.

Ford also expects emerging vaccine technologies to be talked about more.

Ford sees exponential advances being made toward the production of novel vaccines, such as recombinant technology, not just for the prevention of existing and emergent infections, but for the treatment of disease--in particular to treat cancer.

“The ability to develop vaccines capable of using highly select genes that express proteins capable of influencing the growth of cancer is phenomenal,” he said.

Merial’s Oncept is the first vaccine licensed for the treatment of oral melanoma in dogs, and serious research efforts are underway to assess vaccines capable of augmenting treatment of some of the most serious cancers that impact dogs, like B-cell lymphoma and osteosarcoma, Ford said.

“The prospect that technology will, at some point in the future, allow us to utilize vaccine to actually treat animal disease is a truly new, significant dimension in veterinary immunology and vaccine development,” Ford said.

Scherk noted that advancements in vaccine technology as well as vaccinology have been made due to industry response to the concerns the veterinary profession began to express in 1996 with the formation of the Vaccine-Associated Feline Sarcoma Task Force and the first AAFP Vaccination Guidelines.

“The first change, one we take for granted now, was having peel-off labels on vaccine vials, allowing us to stick them into our patients' medical records, rather than record information by hand,” she said.

Scherk is also encouraged by one group that has performed a pilot study to investigate whether cats would tolerate being vaccinated in the tail and whether a meaningful immunologic response was induced via this route.

The study’s purpose was to improve outcome for cats that develop a sarcoma, she said.

“The results of this study were promising; the authors caution practitioners that results over many years of repeatedly administering vaccines in the tail are not known,” she added.

However, Scherk said, after all this time it still appears that the best way to prevent a cat from developing an injection site sarcoma is to reduce the number and frequency of vaccines the cat receives over its life.

"This also reduces the chance of any other adverse effect," Scherk said. "However, it is critical to not decrease the population immunity, and that means that we need to vaccinate more cats, but each cat only as frequently as is appropriate for its individual risk of exposure to infectious agents."

For Welborn, the best recent breakthrough might be that more professionals are taking guidelines to heart.

"Increased utilization of the information in the AAHA and AAFP vaccination guidelines due to broad support from the vaccine manufacturers, continuing education seminars, and education provided within the veterinary schools is encouraging," Welborn said.

To vaccinate or not? Patient risk variables for cats

- Age of cat
- Health of cat
- Magnitude of exposure to agent
- Agent pathogenicity
- Geographic prevalence of the disease
- History
- Maternally derived antibody interference
- Congenital or acquired immunodeficiency
- Immunosuppressive therapy
- Concurrent disease
- Nutritional status
- Chronic stress
- Aging immune response

Source: 2013 AAFP Feline Vaccination Advisory Panel Report

Vaccine adverse events for dogs

A vaccine adverse event is generally defined as any undesirable side effect or unintended effect – including lack of desired result – associated with the administration of a vaccine.

For vaccines administered to dogs, AEs are those involving the health of the treated dog and include failure to protect against a disease. An AE includes any injury, toxicity, or sensitivity reaction associated with the use of a vaccine, whether or not the event can be directly attributed to the vaccine.

It is appropriate to report any known or suspected negative event associated with vaccination. The incidence of vaccine AEs is unknown and causality cannot always be confirmed. ??Report to whom?? This list includes categories of adverse reactions that have been attributed to vaccine administration, though the list is not comprehensive.

- **Injection-site reactions:** lumps (abscess, granuloma, seroma), pain, swelling, hair loss associated with ischemic vasculitis
- **Transient postvaccinal nonspecific illness:** lethargy, anorexia, fever, regional lymphadenomegaly, soreness, abortion, encephalitis, polyneuritis, arthritis, seizures, behavioral changes, hair loss or color change at the injection site, respiratory disease
- **Allergic (hypersensitivity) and immune-mediated reactions:**
  - Type 1 (acute anaphylaxis): angioedema (especially the head), anaphylaxis (shock), and death
  - Type 2 (cytolytic): immune-mediated hemolytic anemia, immune-mediated thrombocytopenia (suspected only; causality has not been confirmed)
  - Type 3 (immune-complex): cutaneous ischemic vasculopathy associated with rabies vaccine, corneal edema ("blue-eye") associated with CAV-1 vaccine, immune-mediated disease
- **Failure to immunize:** Maternal antibody interference with vaccination is considered the most common cause; administration of vaccine at a volume and/or dose less than that prescribed by the manufacturer; "nonresponder" (genetic predisposition?); inactivation of vaccine antigen (e.g., allowing reconstituted infectious [attenuated, avirulent, modified live, recombinant viral vectored] vaccine to stand at room temperature for .2 hr), mixing of incompatible vaccines in the same syringe
- **Tumorigenesis:** vaccine-associated sarcoma or other tumors
- **Multisystemic infectious/inflammatory disorder of young Weimaraner dogs:** May be genetically linked to both a poorly characterized immunodeficiency and to autoimmune disorders (e.g., hypothyroidism and hypertrophic osteodystrophy [HOD] that are detected shortly after vaccination
- **Vaccine-induced immunosuppression:** Associated with first or second dose of combination MLV vaccines containing CDV and CAV-1 or CAV-2 with or without other vaccines (e.g., CPV-2, CPI). Immunosuppression begins three days after vaccination and persists for seven to 10 days. The suppression may be associated with increased susceptibility to other diseases.
- **Reactions caused by the incorrect or inappropriate administration of vaccine:** Fatalities have been reported after subcutaneous administration of an avirulent-live Bb bacterin (intended for intranasal administration); inadvertent or intentional administration of vaccine by the intravenous route.
- **Reactions associated with residual virulence attenuated vaccine:** Postvaccinal sneezing associated with IN administration of attenuated vaccine (e.g., Bb 1 parainfluenza virus.
- **Vaccine-induced interference with diagnostic tests:** False positive polymerase chain reaction test results for parvovirus antigen in feces in dogs recently receiving a MLV parvovirus vaccine. Not an adverse reaction.
- **Reversion of vaccine virus to a virulent pathogen:** Generally considered rare to nonexistent among currently licensed canine vaccines when vaccines are used in the species for which they were licensed. This can become a significant problem when vaccine is used in the wild and/or exotic animals.

Source: 2011 AAHA Canine Vaccination Guidelines