Vaccination and Antibody Tests:
2018 Update

Throughout the current discussions about vaccination, whether it be human or veterinary-related, some recent statements in the veterinary press questioned the use and the relevance of antibody titer tests. In this matter, it is useful to refer to official guidelines from recognized experts and to update the available scientific data to better understand what is at stake and avoid any confusion.

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The WSAVA official recommendations

The WSAVA (World Small Animal Veterinary Association) stands for more than 200,000 veterinarians around the world. This association is composed of several specialized groups and expert committees who work on different fields, including vaccination. The VGG (Vaccination Guidelines Group) is a group devoted to this specific topic. It has been working and issuing official guidelines about vaccination for pets for more than 10 years. These guidelines are available in several languages, including French [1].

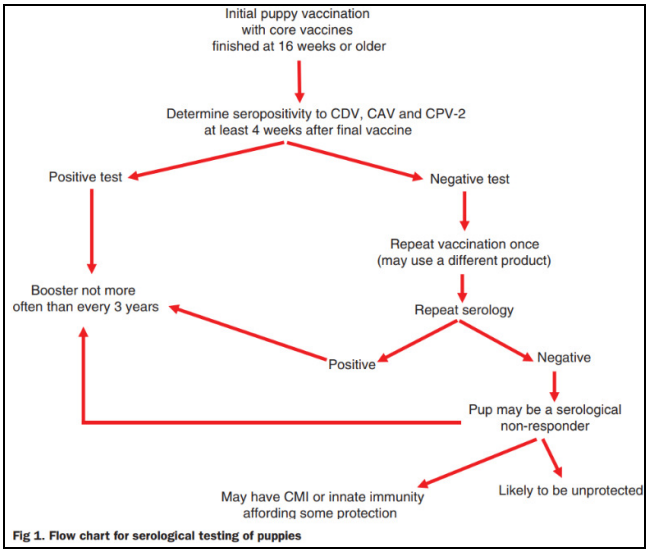
According to the latest version of Vaccination Guidelines issued on January 2016, the following statements can be read [1]:

- Regarding passive immunization:

Although virus infections trigger both cellular and humoral immunity, it is mainly the antibody response that contributes to both decrease in viral load and patient recovery. In many virus infections, antibody levels are therefore considered as correlated to protection.

- The presence of IgG antibodies for the "Core" diseases such as Canine Distemper, Rubarth Hepatitis, Canine and Feline Parvovirus is directly correlated to protective immunity for the pets. Among the different FAQs available in the document, it is stated (Cf. FAQ 84) that the antibody presence alone accounts for immunological memory and for protection against these diseases.

These statements are scientifically confirmed for the core diseases, but they are not valid as far as other diseases are concerned i.e. Leptospirosis or Influenza. Considering all the diseases as a whole and stating that presence of antibodies is not correlated to protective immunity is a misleading argumentation which may contribute to some misunderstanding among veterinary practitioners.



Source : WSAVA Vaccination Guidelines 2015

- Regarding the remaining guidelines for the Core diseases, it is stated that once the first annual booster following the primary vaccination is done, additional boosters shall not be administered more frequently than every 3 years.

Besides, Core vaccine manufacturers, have recently adopted these guidelines *minimally* by extending booster frequency from one to three years. According to the guidelines, it is clearly stated that the three-year booster for Core vaccines is neither automatic nor mandatory, and that antibody titer-testing alone can tell if a Core-vaccine booster is necessary or not. Consequently, the VGG

advocates the use of serological tests to check animal immunity against the Core diseases. Even though serological tests are more expensive than vaccines, the VGG suggests that testing for antibody status should be a better practice than simply administering a vaccine booster while thinking it would be safer and less-costly.
Given the high number of available studies about serological tests and protection, it is practical to only quote a few. A recent press report indeed limited its reference to one study in 2004 and pointed out this study had involved laboratory dogs only, thus concealing many of more recent publications about animals admitted to routine consultations.

Among these plentiful available studies[2], a very recent publication in JSAP in September 2017 [3] highlights long-term assessment of dog immunity against the Core diseases. This study was performed on 486 dogs admitted for routine consultation at several clinics in the United-Kingdom between 2009 and 2016; the results showed protective immunity lasting far beyond 4 years for most of the involved pets.

In-clinic antibody titer-test: VacciCheck®

The VacciCheck® test is one of the tests referenced in the WSAVA Guidelines as a convenient tool to monitor pet protection against the Core diseases.

It consists of a manual ELISA antibody test for these diseases which does not require any equipment. It can be used in every veterinary practice and gives results that are correlated to reference methods (hemagglutination, viral neutralisation) within only 30 minutes.

This test not only permits confirmation of the immunity of adult animals on an annual check-up visit, but it also allows optimizing the primary vaccination protocol for puppies -- while ensuring on the one hand there is no more interference with maternal antibodies and confirming on the other hand the immune response of the vaccinated animal. It is also suitable for deciding whether to vaccinate aged or weakened animals, identifying non-respondent animals, and for better management of epidemic outbreaks in shelters (avoiding euthanizing protected animals).

The Vaccicheck® test is approved by various official organizations around the world: FDA (USA), FIA (Canada) or Ministry of Agriculture and Fisheries (Japan).

Dr Dodds

VacciCheck Tooth

References

1 www.wsava.org/WSAVA/media/Documents/Guidelines/Vaccination-Guidelines-French.pdf

2 • *Trevor Waner, Shlomit Mazar, Ephraim Keren-Kornblatt (2006) Application of a dot enzyme-linked immunosorbent assay for evaluation of the immune status to canine parvovirus and distemper virus in adult dogs before revaccination- J Vet Diagn Invest 18:267–270*

• *Bohm, M., Thompson, H., Weir, A. et al. (2004) Serum antibody titres to canine parvovirus, adenovirus and distemper virus in dogs in the UK which had not been vaccinated for at least three years. Veterinary Record 154, 457-463*

• *Gray, L. K., Crawford, P. C., Levy, J. K. et al. (2012) Comparison of two assays for detection of antibodies against canine parvovirus and canine distemper virus in dogs admitted to a Florida animal shelter. Journal of the American Veterinary Medical Association 240, 1084-1087*

• *Mouzin, D. E., Lorenzen, M. J., Haworth, J. D. & King, V. L. (2004) Duration of serologic response to five viral antigens in dogs. Journal of the American Veterinary Medical Association 224, 55-60*

• *Schultz, R. D. (2006) Duration of immunity for canine and feline vaccines: a review. Veterinary Microbiology 117, 75-79*

• *Mitchell, S. A., Zwijnenberg, R. J., Huang, J. et al. (2012) Duration of serological response to canine parvovirus-type 2, canine distemper virus, canine adenovirus-type 1 and canine parainfluenza virus in client-owned dogs in Australia. Australian Veterinary Journal 90, 468-473*

• *Jørgen Damkjer Lund, Merete Prior and Lars Madsen. Testing dogs for immunity against Canine Parvovirus, Canine Distemper Virus and Infectious Canine Hepatitis" - Easy Raw – Selsøvej 31, 4050 Skibby, Denmark, 2012*

• *Katherina Mende, Bianca Stuetzer, Uwe Truyen and Katrin Hartmann- "Evaluation of an in-house dot enzyme-linked immunosorbent assay to detect antibodies against feline panleukopenia virus" - Journal of Feline Medicine and Surgery 1–6 © ISFM and AAFP 2014*

• *DiGangi, B. A., Gray, L. K., Levy, J. K. et al. (2011) Detection of protective antibody titers against feline panleukopenia virus, feline herpesvirus-1, and feline calicivirus in shelter cats using a point-of-care ELISA. Journal of Feline Medicine and Surgery 13, 912-918*

[3] *Killey, Mynors, Pearce, Nell, Prentis, Day M. (2017) Long-lived immunity to canine core vaccine antigens in UK dogs as assessed by an in-practice test kit.. Journal of Small Animal Practice, 59(1):27-3159: 27–31. doi:10.1111/jsap.12775*