Important FAQ's WSAVA Guidelines 2015

4. I know that maternally derived antibodies (MDA) can prevent active immunization with MLV vaccines - but can they also block immunity to killed vaccines?
Yes. MDA can block certain killed vaccines. If the killed product requires two doses, as is often the case, and the first dose is blocked by MDA, then the second dose will not immunize. In this circumstance, the second dose will prime (if not blocked), and a third dose is required to immunize and boost. This is not true for MLV vaccines, where in the absence of MDA it only takes a single dose to prime, immunize, and boost. Nevertheless two doses are often recommended, particularly in young animals, to be sure one is given when MDA has waned and cannot block. That is why in the puppy or kitten series, the last dose should be given at 16 weeks of age or older.

7. How long after vaccination does it take for the dog to develop immunity that will prevent severe disease when the core vaccines are used? This is dependent on the animal, the vaccine and the disease. The fastest immunity is provided by MLV and recombinant canarypox virus vectored CDV vaccines. The immune response starts within minutes to hours and provides protection within a day to animals without interfering levels of MDA and in dogs that are not severely immunosuppressed. Immunity to CPV-2 and FPV develops after as few as 3 days and is usually present by 5 days when an effective MLV vaccine is used. In contrast, the killed CPV-2 and FPV vaccines often take 2 to 3 weeks or longer to provide protective immunity. CAV-2 MLV given parenterally would provide immunity against CAV-1 in 5–7 days. However, when given intranasally, the same level of immunity to CAV-1 is not present until after 2 or more weeks and in some dogs it doesn't develop. Thus parenteral CAV-2 is recommended for immunity to CAV-1. Time from vaccination to immunity is difficult to determine for FCV and FHV-1 because some animals will not develop protective immunity. However, when it does develop, it takes 7–14 days (Lappin 2012).

51. If a puppy has no MDA when should you start vaccination?
In a practical setting it would be difficult to prove that a pup had no MDA. This would necessitate knowing definitively that the pup did not take in colostrum. However, if this was known then core vaccination may be given from 4–6 weeks of age. Certain MLV vaccines must not be given any earlier than 4 weeks of age as they may cause pathology in the pup. If this pup definitively had no MDA, it may respond adequately to a single dose of vaccine at 6 weeks of age; however, it may be pragmatic to give a second dose at 16 weeks of age.

52. Can we vaccinate puppies at less than 4 weeks of age?
No. Puppies at this age will have MDA that blocks the ability of MLV vaccines to prime the immune system. Moreover, vaccine datasheets do not support this practice and there may be safety issues with giving MLV vaccine to such young animals. One exception is the use of intranasal vaccines against CIRDC. These can be used safely from 3 weeks of age.

69. Where should I inject vaccine into a cat?
Feline vaccines (particularly adjuvanted products) should not be given into the inter-scapular region. In the USA the practice of giving separate injections of rabies vaccine into the distal right hind limb, FeLV vaccine into the distal left hind limb and core FPV/FCV/ FHV-1 vaccines into a distal forelimb is practiced. Alternative sites for subcutaneous injection are into the distal tail or over the lateral thoracic or abdominal wall. These options are discussed further in the main text of this document. Whichever site is chosen, the vaccine must be administered subcutaneously and not intramuscularly. Importantly, the anatomical site of feline vaccination should be rotated so that vaccines are not given repeatedly to one location. This may be achieved by recording the site of vaccination for each individual on each occasion and rotating between these, or by adopting a practice policy to use one anatomical location each year.

71. If a puppy or kitten fails to receive colostrum will it have any passive antibody protection from the dam?
Depending on the antibody titre of the dam they will have little or, most likely, no protection as approximately 95% or more of the passive antibody for the newborn puppy and kitten is obtained from the colostrum which is absorbed via the intestine into systemic circulation for up to 24 hours after birth.

72. Should a puppy or kitten that fails to receive colostrum be vaccinated during the first few weeks of life since they will not have maternally derived antibody to block active immunization?
No. Puppies and kittens less than 4–6 weeks of age should not be vaccinated with the MLV core vaccines. Certain of the modified live vaccine viruses when given to puppies/kittens less than 2 weeks of age and without MDA can infect the central nervous system and/or cause disease and possibly death of the animal. This occurs because there is little or no thermoregulatory c

74. At what age can one stop vaccinating dogs? For core vaccines, the current recommendation is for lifelong revaccination no more frequently than every 3 years and if non-core vaccines are chosen for use, these are generally given annually. One can use serological testing in any adult dog to confirm protection against core diseases (i.e. CDV, CAV and CPV-2) and elect not to revaccinate that animal. Current advice is that serological assessment is performed every 3 years, but in dogs older than 10 years, this should be done annually. In many countries there is also a legal requirement to vaccinate against rabies at particular intervals.

75. What protocol is recommended for an unvaccinated adult dog?
Core vaccination with a single dose of MLV vaccine (CDV, CAV-2, CPV-2) plus rabies in endemic areas. There is no need to give two doses. Revaccination (or serological testing for CDV, CAV and CPV-2) no more frequently than every 3 years thereafter. Non-core vaccines should be selected based on a risk:benefit analysis for that individual animal. Non-core vaccines would require two doses given 2–4 weeks apart and then an annual booster.

QUESTIONS ABOUT THE USE OF SEROLOGICAL TESTING
80. Are serum antibody titres useful in determining vaccine-induced immunity?
Yes. This is particularly the case for CDV, CPV-2 and CAV-1 in the dog, FPV in the cat and (for legal purposes) rabies virus in the cat and dog. Serum antibody titres are of limited or no value for the other vaccines. Assays for CMI are of little or no value for any of the vaccines for various technical and biological reasons. Such factors are less of an issue for serological tests where it is much easier to control many of the variables. However, discrepant results are still obtained, depending on the quality assurance program of the given laboratory.

81. How long after CPV-2/CDV vaccination should you wait before measuring protective antibody concentrations using inclinic tests?
This question is most relevant for puppies, because adult dogs are likely already to have serum antibodies present at the time of booster vaccination, regardless of how long an interval there has been since they were last vaccinated. If a puppy receives its final primary vaccine at 16 weeks of age, then it may be tested from 20 weeks of age onwards. Any antibody present at that stage cannot be of passive, maternal origin and therefore indicates that the puppy is actively protected.

82. Why don't the VGG recommend routine rabies antibody testing? For many veterinarians, this question may be of little practical consequence, as regular rabies vaccination of dogs and cats is a legal requirement in many countries, irrespective of any titre results. Rabies antibody testing is only required in certain situations related to international pet travel. The international rabies vaccines are highly efficacious and it is generally considered that there is no need to demonstrate immunity post vaccination.

83. Can we use antibody tests (CDV, CPV-2 and CAV) to test the MDA in order to decide the first vaccination time?
Theoretically this would be possible and years ago a 'nomogram' was often used to estimate when pups might best respond to vaccination on the basis of the titre of antibody in the serum of the bitch. In practice, it would be very difficult and expensive to repeatedly sample and test young puppies in order to monitor the decline of MDA.

84. What happens to the antibody titre over the 3-year period post-vaccination?
For CDV, CAV-2, CPV-2 and FPV the antibody titre will be consistently present at similar titre. This has been shown in numerous field serological surveys of dogs last vaccinated up to 9 years previously and in experimental studies for dogs last vaccinated up to 14 years previously. For Leptospira the titres will decline rapidly after vaccination and in any case are not well correlated with protection. Serum antibody titres are less relevant for FCV and FHV-1 where the most important type of immunity is mucosal or cell-mediated, respectively.

85. In an animal that has completed its puppy/kitten shots, is a higher antibody titre required to protect against heavy disease challenge?
For CDV, CAV-2, CPV-2 and FPV the answer is no. The presence of antibody (no matter what the titre) indicates protective immunity and immunological memory is present in that animal. Giving more frequent vaccines to animals in an attempt to increase antibody titre is a pointless exercise. It is impossible to create 'greater immunity' by attempting to increase an antibody titre.

86. Can we test dogs as an alternative to annual vaccination? We are concerned about the advice to only boost every 3 years.
Yes, certainly. There are now well-validated in-practice serological test kits that permit determination of the presence of protective serum antibody specific for CDV, CAV, CPV-2 and FPV. In other countries, these kits are used to confirm protection at 3-yearly intervals (instead of automatic revaccination for core diseases). You could perform serology annually, but if you were to collect and analyze the data that you generated within your practice, you will quickly find that annual testing is unjustified.

88. Some owners may be reluctant to come back just for an annual health check. What advice can be provided to promote the health check concept in order to improve owner compliance?
This is all a matter of education. Clients should realize that the health check examines all aspects of the health and wellbeing of their pet and may pick up the early stages of clinical problems. In terms of vaccination, the health check examination might include serology (every 3 years for core vaccine antigens) or the annual administration of non-core vaccine if such vaccines are required.

90. Is there a risk of over-vaccinating a pet (e.g. injecting too often, or using vaccines that are not required for the specific pet)?
Yes. Vaccines should not be given needlessly, as they may cause adverse reactions. Vaccines are medical products that should be tailored to the needs of the individual animal.

92. Should dogs and cats with a history of adverse reaction or immune-mediated diseases (e.g. hives, facial oedema, anaphylaxis, injection site sarcoma, autoimmune disease etc.) be vaccinated?
If the vaccine suggested to cause the adverse reaction is a core vaccine, a serological test can be performed and if the animal is found to be seropositive (antibody to CDV, CAV, CPV-2, FPV) revaccination is not necessary.

96. Are there dogs and cats that cannot develop an immune response to vaccines?
Yes. This is a genetic characteristic seen particularly in some breeds, and these animals are called 'non-responders'. Genetically related (same family or same breed) animals will often share this non

responsiveness. If the animal is a non-responder to a highly pathogenic agent, like canine parvovirus or feline panleukopenia virus, the infected animal may die if infected. If it is a non-responder to a pathogen that rarely causes death, it may become sick but will survive (e.g. after a Bordetella bronchiseptica infection).

101. Is there evidence that cutaneous vasculitis can be caused by vaccination?
Yes, this is a very rare, but recognized, adverse reaction following vaccination, particularly rabies vaccination.

103. How do we know that a feline sarcoma was caused by a vaccine? How do we deal with this type of sarcoma?
A feline injection site sarcoma (FISS) arises at an anatomical location into which injectable product has been delivered previously. It is suspected that a wide range of injectables, including vaccines, may potentially trigger these tumours. It is important to record the site of vaccination in cats in the medial record of the animal and the WSAVA guidelines give advice on suggested best locations for vaccinating cats. Non-adjuvanted vaccines should be chosen for cats wherever possible. Unfortunately, these sarcomas are very aggressive. They infiltrate widely and around 20% may metastasize. They require significant surgical resection that is often best performed by a specialist and adjunct radiotherapy and immunotherapy may be used.

109. Some dogs are genetically poor responders (e.g. Rottweilers). How should one vaccinate these breeds?
The WSAVA guidelines contain a useful flow diagram that helps you to identify non-responder dogs. All puppies should be vaccinated in the same way (with a final vaccination at 16 weeks of age or older) and if you are concerned about the breed and the potential for lack of response, you should serologically test at 20 weeks of age. Most non-responders will fail to seroconvert to just one of the core vaccine antigens (i.e. CDV, CAV or CPV-2). You may attempt to revaccinate and retest that dog, but a true non-responder (or low-responder) may still not respond to revaccination. Such animals simply lack the immunological ability to make an immune response to that particular antigen and will never respond to that vaccine component. Owners should be made aware that these dogs will be at risk, and ideally they should not be used for breeding.