

FEATURES OF SPECIFIC PREVENTION OF INFECTIOUS DISEASES IN SERVICE DOGS

T. Suprovych, T. Karchevska, V. Trach

Podillia State University

Preventive vaccinations is the most important in the system of specific prevention of infectious diseases in dogs. Vaccination of puppies begins at the age of 8-10 weeks, when the effect of maternal antibodies on the components of the vaccine is minimal. Deworming should be carried out 10 days before vaccination. Nobivac KC vaccine can be used to vaccinate puppies from 3 weeks of age. From the age of 4 weeks, special vaccines are used, such as: Nobivac Puppy DP, Nobivac Puppy DP. Nobivac Rabies vaccine is used to prevent rabies from 8 weeks of age. Vaccination of puppies with Vanguard vaccines can be started from 6 weeks of age. Veterinary specialists of canine units for prophylactic vaccinations recommend the use of the Eurican DHPPI2 + L and DHPPI2 + LR vaccine, manufactured by "Merial", France, when using this vaccine a long-term intense immunity develops in dogs.

Key words: dogs, vaccination, Nobivac, Eurican, infectious diseases.

Introduction. The quality of the assigned tasks depends on the health of service dogs. According to order No 597 of the Ministry of Justice of Ukraine dated 11.07.2018, Chapter X on "Veterinary care of service dogs and disease prevention" it is stated that service dogs of canine units should be vaccinated once a year against rabies, plague of carnivores, parvovirus enteritis, infectious hepatitis, adenovirus, and canine leptospirosis. If necessary and depending on the epizootic situation, service dogs are additionally vaccinated against other infectious diseases (zakon.rada.gov.ua/laws/show/z1544-1). Only clinically healthy animals should be vaccinated. Vaccination of puppies is carried out from two months of age with revaccination on day 21-28 (Greene, CE. 2006).

Materials and methods of research. The work was performed within the research work of the Department of Animal Hygiene and Veterinary Support of *Cynological Service* of the National Police of Ukraine "Study and development of methods for assessing the impact of a set of genetic and anthropogenically altered environmental factors on the functional state of animals and poultry (No DR 0121U110773) Podilya State Agrarian Engineering University "Creation of a database and a bank of biological material of service dogs of the National Police of Ukraine". The paper uses generally accepted methods of collecting, analyzing and synthesizing information on vaccine prevention of infectious diseases in service dogs.

Research results. Immunoprophylaxis of infectious diseases is the prevention of certain infectious diseases by immunizing dogs to create artificial immunity in them (Ford R, et al., 2017). Immunization of animals (preventive vaccinations) is the most important in the system of specific prevention of infectious diseases in dogs. Active immunization causes the formation in the body of dogs of secretory, humoral and cellular protective substances. There are several approaches to vaccinating puppies. This is due to the fact that in the first months of life the success of vaccination is significantly affected by maternal immunity, which is formed by antibodies received by puppies from the mother in the first days of life. However, maternal antibodies can not only neutralize dangerous bacteria and viruses, but also block the components of the vaccine (Tizard, 2021). Therefore, vaccination of puppies begins at the age of 8-10 weeks, when the effect of maternal antibodies on the components of the vaccine is minimal. At the age of 8-10 weeks, diseases such as carnivorous plague (marked D), infectious hepatitis (H), parvovirus enteritis (P), parainfluenza (Pi), leptospirosis (L, Lepto) are vaccinated. Nobivac DHPPi can be used for this purpose in combination with Nobivac Lepto. After 3-4 weeks (3 weeks are considered optimal) it is necessary to repeat the vaccination using the same combination of vaccines and the addition of rabies vaccine (R, Rabies). This is a common approach to vaccinating puppies (Spibey N, et al., 2008; Woma T, et al., 2010).

However, a puppy can be infected with carnivorous plague and parvovirus enteritis much earlier, starting at 4 weeks of age. By this time, maternal antibodies are no longer able to protect the puppy from plague and parvovirus, but are still able to suppress the vaccine. The solution is seen in the use of special

vaccines, such as: Nobivac Puppy DP. Nobivac Puppy DP can be used from 4-6 weeks of age. Vaccination of Nobivac Puppy DP puppies at 4-6 weeks of age should be performed in regions prone to carnivorous plague and parvovirus enteritis (Klaasen H, et al., 2003; Andre - Fontaine et al., 2003; Minke J, et al. , 2009; Rikula, U., Nuotio, L., & Sihvonen, L. 2000

Respiratory infections of dogs, which are united under the name "kennel cough", are also an urgent problem. *Bordetella bronchiseptica* has been shown to be the trigger that causes the initial damage to the airway epithelium. This bacterium, by paralyzing the cilia of the bronchial epithelium, creates conditions for the fixation on the surface of the bronchi of dangerous bacteria and viruses, which, in turn, can cause severe respiratory diseases, up to pneumonia with unpredictable results (Sowman & Cave, 2018).

Of course, vaccination should be the main factor of protection against the pathogens of " kennel cough". From 3 weeks of age, you can use Nobivac KC (parainfluenza and Bordetellosis) (Table 1). It is introduced into one nostril only once. Subsequent vaccination with Nobivac COP is carried out at the age of one year (Vila Nova B, et al., 2018).

Table 1. Vaccination schedule using Nobivac vaccine

<i>Possible early infection</i>	
3 week	Nobivac KC
4 week	Nobivac Puppy DP
8-10 weeks	Nobivac DHP (DHPPi) + Nobivac Lepto
11-13 weeks (in 3-4 weeks after the previous vaccination)	Nobivac DHP (DHPPi) + Nobivac Lepto + Nobivac Rabies
<i>High risk infection</i>	
3 week	Nobivac KC
6 weeks	Nobivac Puppy DP
8-10 weeks	Nobivac DHP (DHPPi) + Nobivac Lepto
11-13 weeks (in 3-4 weeks after the previous vaccination)	Nobivac DHP (DHPPi) + Nobivac Lepto + Nobivac Rabies
<i>No risk of early infection</i>	
8-10 weeks	Nobivac DHP (DHPPi) + Nobivac Lepto
11-13 weeks (in 3-4 weeks after the previous vaccination))	Nobivac DHP (DHPPi) + Nobivac Lepto + Nobivac Rabies

Rabies vaccination has a special place in the vaccination process. And, above all, this is due to the fact that rabies affects all mammals, including humans. Therefore, by vaccinating a dog against rabies, we protect not only the dog but also the person. In Ukraine, rabies vaccination is a mandatory annual event. The age at which rabies vaccination can be carried out depends on the vaccine chosen. In the case of Nobivac Rabies, this vaccine can be given to puppies from 8 weeks of age, with revaccination after 3-4 weeks. If the puppy has reached the age of 11-12 weeks, the vaccination with Nobivac Rabies is performed once. Adult animals, according to the law, must be vaccinated against rabies at least once a year. There is still an opinion that dogs under 6 months of age should not be vaccinated against rabies until their teeth have formed. To date, this view has lost relevance, as modern vaccines do not contain substances that can prevent the development of teeth and the formation of proper occlusion (Minke J, et al., 2009).

Revaccination should be performed annually using the Nobivac DHP (DHPPi) + Nobivac Lepto + Nobivac Rabies + Nobivac KC vaccine package. In the first 2 years, it is desirable to repeat the Nobivac Lepto vaccine after 3 weeks. Dogs should be vaccinated every year for the rest of their lives. In some cases, it is possible to cancel annual vaccinations (except rabies) in older dogs (Spibey N, et al., 2008).

In addition to the above, there are other vaccination schemes, such as vaccination against hepatitis, coronavirus infection and parvovirus enteritis are done at 1.5 months. Vaccination is repeated in 10-14 days and in a year. At the age of 2.5 months, puppies are vaccinated against plague. Re-

vaccination of dogs against plague is carried out in 7-8 months, when the change of teeth is over. Then vaccination is carried out once a year. Vaccination against leptospirosis is given to dogs after 4 months, and then - once a year. Vaccination against rabies is performed at 8 months. Vaccination against rabies is recommended from 3 months of age, at 1 year, and then annually.

Vacuum vaccines Vanguard 5 / L, Vanguard 7 (from Pfizer) (Marconi R, et al., 2020) have proved themselves well for vaccination. Vaccines Vanguard 5 / L and Vanguard 7 have the same antigenic composition. These are vaccines for the prevention of the following diseases: canine distemper, parvovirus enteritis, infectious hepatitis, parainfluenza, adenoviral respiratory infection (CAV-2) and leptospirosis (serovars of canicola and ichterohaemorrhagiae). The difference between these vaccines is the concentration of parvovirus antigen contained in each dose. Vanguard 7 contains 100 times more antigen, which allows you to vaccinate animals in a shorter time, which is why at higher concentrations of antigen, the vaccine is easier to overcome the neutralizing effect of colostral antibodies.

Vaccination of puppies with Vanguard vaccines can be started from 6 weeks of age. Only healthy puppies are vaccinated, this also applies to the presence of helminths and ectoparasites, the presence of which can significantly reduce the immune response to vaccination.

Primary vaccination: puppies are immunized twice with an interval of 3-4 weeks.

It is important to remember that when performing revaccination of adult service dogs for 10 - 14 days after vaccination, it is necessary to maintain quarantine: the dog should not be used for service tasks to prevent its fatigue, which can adversely affect the formation of a full immune response. Deworming should be carried out 10 days before vaccination. As an anthelmintic, we recommend the use of broad-spectrum drugs BAYER Drontal or Cestal. The interval between vaccinations should be at least three weeks (Taweethavonsawat, P., et al., 2010). The vaccination schedule is usually agreed with the timing of plague vaccinations. Particular attention should be paid to the quality, dosage and compliance with the rules of storage of vaccines. Most practitioners recommend administering catozal to animals during the first vaccination to stimulate a better immune response.

When planning prophylactic vaccination, keep in mind the so-called refractory period to determine vaccination. It lasts much longer than protection by maternal antibodies against the corresponding spontaneous infection. This creates a period during which animals, although prone to spontaneous disease, can not yet be immunized. This dangerous, individually highly variable period for carnivorous plague lasts for about 6-10 weeks, for parvovirus - about 14-18 weeks. Determining antibody titers to plan the ideal vaccination time is possible, but impractical. In that case, if the risk of delaying vaccinations is too high, for example, in cases of epizootics of parvovirus and plague in dog kennels, then you can:

- vaccinate with a combined vaccine (plague, hepatitis, leptospirosis, parvovirus) every 3-4 weeks, starting from 5-6 and ending at 18 weeks (if the puppies did not receive colostrum, then starting with 3-4 weeks) and in addition to this at 8 and 12 weeks to carry out monovalent vaccinations against parvovirus.

- vaccinate with the adapted human measles virus against plague at the age of 4-6 weeks. (antibodies to plague virus do not neutralize measles virus, but protect antibodies to measles against plague virus) or:

- enter weekly stimulant of paraimmunity starting from the 6th week.

In dog kennels that are unfavorable for parvovirus, it is also recommended to vaccinate puppies aged 6-7 weeks 4 times with inactivated vaccine, namely at intervals of 1, 3 and 7 days after the first vaccination. Bitches in the 4th week of pregnancy should also be given an inactivated vaccine.

Specialists in veterinary medicine. who serve dog training centers, should also keep in mind the possibility of existing contraindications for vaccination: if the dog is exhausted, it has a fever, one could do better to postpone vaccination, If the dog has helminths, acute or chronic diseases, acquired immunodeficiency, vaccination is also not carried out. If the dog has been given hyperimmune serum for three weeks prior to the intended vaccination, the vaccine should also be postponed. Adverse conditions on the part of the vaccinated animal should also be borne in mind: congenital or acquired defects of the immune system (plague, leukemia, parasitosis, deficient conditions, high ambient temperature, which contributes to fever; maternal antibodies are stored too long; insufficient formation of antibodies in puppies younger than 3 weeks (even when they did not receive any colostrum), the risk of developing

diseases when using live vaccines in puppies younger than 3-4 weeks, decreased antibody production in older dogs, one should avoid the use of live vaccines during pregnancy, the first vaccination after treatment with glucocorticoids impairs immunity.

According to the recommendation of veterinary specialists who vaccinate service dogs in one of the Cynological Units of the Main Directorate of the National Police in Khmelnytskyi region (Kamianets-Podilskyi), Eurican DHPPI2 + L and DHPPI2 + LR (Table 2). vaccine, manufactured by "Merial", France, is suggested for preventive vaccinations according to the following scheme:

Table 2. Scheme of vaccination of dogs with Eurican vaccine

Week 8	Eurican DHPPI2 +L
Week 11	Eurican DHPPI2 +LR
At the age of 1 year, then annually	Eurican DHPPI2 +LR

As practice has shown, when using this vaccine in dogs, a long-term intense immunity is formed, it is well tolerated by animals and does not produce side effects. (Minke J, et al, 2009; Harrus S, 2020).

Conclusions. Therefore, only with properly organized preventive vaccination, with strict observance of certain principles and timing of routine vaccinations, and the use of effective modern vaccines, sustainable epizootic well-being and health of service dogs can be achieved which is so important for their full service and quality performance of all tasks.

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ОСОБЛИВОСТІ СПЕЦИФІЧНОЇ ПРОФІЛАКТИКИ ІНФЕКЦІЙНИХ ХВОРОБ СЛУЖБОВИХ СОБАК

Т. Супрович, Т. Карчевська, В. Трач

Проведення профілактичних щеплень має найбільш важливе значення в системі специфічної профілактики інфекційних хвороб собак. Вакцинацію цуценят починають у віці 8-10 тижнів, коли вплив материнських антитіл на компоненти вакцини вже мінімальний. За 10 днів до щеплення слід провести дегельмінтизацію. З 3-х тижневого віку для вакцинації цуценят можна використовувати вакцину Nobivac KC. Починаючи з 4-х тижневого віку застосовують спеціальні вакцини, такі, як: Nobivac Puppy DP, Nobivac Puppy DP. Для профілактики сказу починаючи з 8-ми тижневого віку застосовують вакцину Nobivac Rabies. Вакцинацію цуценят вакцинами Vanguard можна починати з 6-тижневого віку. Ветеринарні спеціалісти кінологічних підрозділів для профілактичних щеплень рекомендують використовувати вакцину Euriscan DHPPI2 +L и DHPPI2 +LR, виробник «Меріал», Франція, при застосуванні даної вакцини у собак формується тривалий напружений імунітет.

Ключові слова: *собаки, вакцинація, Nobivac, Euriscan, інфекційні хвороби.*