Canine Distemper-Adenovirus Type 2-Parainfluenza Vaccine
Modified Live Virus
For use in dogs only

PRODUCT DESCRIPTION: Vanguard DAP is for vaccination of healthy dogs as an aid in preventing canine distemper caused by canine distemper (CD) virus, infectious canine hepatitis (ICH) caused by canine adenovirus type 1 (CAV-1), respiratory disease caused by canine adenovirus type 2 (CAV-2), and canine parainfluenza caused by canine parainfluenza (CPI) virus. Vanguard DAP contains attenuated strains of CD virus, CAV-2, and CPI virus propagated on an established canine cell line and freeze-dried to preserve stability.

SAFETY AND EFFICACY: Safety of Vanguard DAP was confirmed in laboratory and field tests. In more than 15,000 vaccinated dogs, no significant postvaccination reactions attributable to the vaccine were reported. These findings are particularly important since adverse side effects sometimes follow vaccination with...
modified live CDV vaccine. After vaccination with CDV vaccine, persistent kidney infections may occur, causing virus shedding in urine. Uveitis and corneal opacity also are occasionally observed 1–2 weeks after vaccination. Vaccination with the CAV-2 fraction in Vanguard DAP, however, produced no such lesions. Challenge virus was not recovered from vaccinated dogs, and was not isolated from tissues taken at necropsy. Ocular lesions were not observed in any of 112 dogs inoculated intravenously with multiple doses of CAV-2 vaccine virus, while intravenous inoculation of 22 dogs with CDV vaccine produced ocular lesions in 27%. Additionally, the strain of CAV-2 in this product has been shown free of oncogenic properties characteristic of canine adenoviruses.

Efficacy of Vanguard DAP was demonstrated in challenge-of-immunity studies. Dogs vaccinated with the CAV-2 vaccine were completely protected against challenge with virulent CDV virus that produced clinical disease in 100% of nonvaccinated control dogs. Vaccinates were also protected against challenge with virulent CAV-2 that caused severe respiratory syndromes in susceptible controls. After challenge with virulent CD virus, 95% of dogs vaccinated with the CD vaccine remained healthy. In contrast, all nonvaccinated control dogs developed clinical signs of CD, and 80% died. After challenge with virulent CPI virus, no clinical signs of disease were observed among dogs vaccinated.
with CPI vaccine, while all nonvaccinated controls revealed clinical signs and severe lung lesions typical of CPI.

DURATION OF SEROLOGIC RESPONSE: In dogs vaccinated and boosted as puppies, and then vaccinated again approximately 1 year later, revaccination with Vanguard DAP has been demonstrated (under field conditions) to result in serum antibody titers that persist for 12–48 months against CD virus (serum neutralization (SN) titer ≥ 1:32), CAV-1 (SN ≥ 1:16), CAV-2 (SN ≥ 1:16) and CPI virus (SN ≥ 1:16).

Protection against infectious agents involves a complex interplay between humoral immunity, cellular immunity, or a combination of both. The purpose of vaccination is to induce effector cells in both these arms of the immune system. During the process, long-term memory in the form of memory T and B lymphocytes is produced. Memory cells and antibodies interact to provide protection to an animal challenged with the same pathogen at a later date. Depending on the vaccine and the disease, antibodies may be produced that provide complete protection from disease and prevent or reduce shedding. In other cases, antibodies may play a minor or ineffective role and protection from disease relies on systemic, local cellular immunity and/or local antibody production. The role of sustained serological titers in the prevention of disease has not been confirmed.
In companion animals, immunological response to infection or vaccination has generally been evaluated by measuring the level of antibodies in serum and correlating these with protection or susceptibility. For the diseases caused by canine distemper virus, canine parvovirus, canine adenovirus and leptospirosis, evaluation of antibody titers may be a valuable diagnostic indicator to determine when revaccination may be needed. For other diseases, a serological response has not been identified that correlates with protection. Practical knowledge of the disease, the vaccine and the patient, along with serologic test results when appropriate, is paramount in making the best recommendation for a vaccination protocol for a specific animal.

The duration and character of the immune response to the viral antigens of Vanguard and/or Vanguard Plus were determined in a multi-center serology study involving 47 small animal veterinary clinics located in the United States (44) and Canada (3). Three hundred twenty-two male and female (intact and neutered) dogs of various ages, breeds, weights, lifestyles and time since last vaccination were enrolled in the study. Dogs were required to be healthy, greater than 2 years old with no history of disease due to CDV, CPV, CAV-1, CAV-2, or CPI and must not have been vaccinated for 12–48 months or longer. Additionally, dogs must have received at least a priming vaccination series approximately 2–7 months apart as a puppy and a
The evaluation of antibody titers may be a valuable diagnostic indicator. All previously administered vaccines were Vanguard products. A blood sample was collected from each dog and serum submitted to Cornell Veterinary Diagnostic Laboratory for determination of CDV (SN), CPV (HAI) titers, CAV-1 (SN), CAV-2 (SN), and CPI (SN). The samples were sent to a single diagnostic laboratory, thus ensuring a standardized test and methodology. As shown in the table below, elevated geometric mean titers were sustained for 12 to 48 months after the last booster. Since the study was conducted under field conditions with client-owned animals, it is possible that natural exposure to infectious agents could have occurred without clinical signs of infection. In such cases, the titers measured in the study could be the result of exposure to the disease in addition to vaccinations during the course of the study.

Table 1. Geometric mean titer/number of dogs

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<tbody>
<tr>
<td>CPV</td>
<td>601/119</td>
<td>465/62</td>
<td>415/47</td>
<td>295/42</td>
<td>462/21</td>
<td>170/11</td>
<td>238/19</td>
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<tr>
<td>CAV-1</td>
<td>218/119</td>
<td>206/58</td>
<td>213/46</td>
<td>149/39</td>
<td>164/21</td>
<td>157/11</td>
<td>95/19</td>
</tr>
<tr>
<td>CAV-2</td>
<td>190/119</td>
<td>181/58</td>
<td>210/46</td>
<td>200/39</td>
<td>139/21</td>
<td>138/11</td>
<td>103/19</td>
</tr>
<tr>
<td>CPI</td>
<td>206/101</td>
<td>119/48</td>
<td>110/32</td>
<td>101/34</td>
<td>98/18</td>
<td>59/10</td>
<td>65/17</td>
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DIRECTIONS:
1. General Directions: Vaccination of healthy dogs is recommended. Aseptically rehydrate the freeze-dried vaccine with the sterile diluent provided, shaken well, and administer 1 mL subcutaneously or intramuscularly.

2. Primary Vaccination: Healthy dogs should receive 2 doses administered 3–4 weeks apart. If dogs are vaccinated before the age of 4 months, they should be revaccinated upon reaching 4 months of age. (Maternal antibodies may interfere with development of an adequate immune response in puppies less than 4 months old.)

3. Revaccination: Annual revaccination with a single dose is recommended, although, as recommended by the American Veterinary Medical Association and its Council on Biologic and Therapeutic Agents, the attending veterinarian should determine the frequency of revaccination based on the animal’s lifestyle and risk of exposure.

PRECAUTIONS:
1. Store at 2°–7°C. Prolonged exposure to higher temperatures and/or direct sunlight may adversely affect potency. Do not freeze.
2. Use entire contents when first opened.
3. Sterilized syringes and needles should be used to administer this vaccine. Do not sterilize with chemicals because traces of
disinfectant may inactivate the vaccine.
4. Burn containers and all unused contents.
5. Contains gentamicin as preservative.
6. Vaccination of pregnant bitches should be avoided.
7. As with many vaccines, anaphylaxis may occur after use. Initial antidote of epinephrine is recommended and should be followed with appropriate supportive therapy.
8. This product has been shown to be efficacious in healthy animals. A protective immune response may not be elicited if animals are incubating an infectious disease, are malnourished or parasitized, are stressed due to shipment or environmental conditions, are otherwise immunocompromised, or the vaccine is not administered in accordance with label directions.

REFERENCES:
5. Study 21491-01-004, Pfizer Animal Health
Technical inquiries should be directed to Pfizer Animal Health Technical Services, (800) 366-5288 (USA),
(866) 461-0917 (Canada).

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