### TABLE 1
Categories of Canine Vaccines Based on Physical Type of Immunizing Antigen

<table>
<thead>
<tr>
<th>TYPE</th>
<th>ALTERNATIVE NAMES</th>
<th>DESCRIPTION</th>
<th>EXAMPLES*</th>
</tr>
</thead>
</table>
| Attenuated | • Live  
             • Modified live  
             • Live attenuated     | • Immunogenic with long duration of immunity; induces both cellular and humoral immunity  
             • More likely to prevent both infection and disease  
             • Certain vaccines may result in a transient period of viral shedding of the attenuated/modified virus  
             • Reversion to virulence theoretically possible but unlikely in appropriately tested and licensed vaccines  
             • Requires careful storage (usually refrigeration) and handling (administer promptly after reconstitution) | • Most canine distemper virus and parainfluenza virus vaccines  
             • All canine parvovirus and adenovirus-2 vaccines                                                 |
| Inactivated | • Killed  | • Stable products that cannot induce disease in the animals  
             • Less immunogenic and with shorter duration of immunity than attenuated products  
             • Generally require an adjuvant to induce sufficient immunity; may require more frequent administration  
             • May be more associated with adverse reactions  
             • May not protect against infection (instead protect against disease) | • Canine rabies and influenza vaccines  
             • Whole cell bacterin vaccines  
             • Some canine Lyme disease vaccines  
             • Some canine leptospriosis vaccines  
             • Parenteral Bordetella bronchiseptica vaccine |
| Recombinant | • Subunit  
             • Polysaccharide  
             • Conjugate  
             • Chimeric  
             • Viral-vectored | • Uses a gene of the pathogen inserted into a virus or bacterial plasmid, or a single protein, alone or in combination with other antigens  
             • Significant variability in this category in terms of immunogenicity and frequency of booster doses | • Canarypox virus-vectored canine distemper vaccine  
             • Some canine Lyme disease vaccines  
             • Plasmid-expressed or engineered antigens |
| Toxoid     |                     | • Creates immunity to the toxin produced by the organism rather than the organism itself  
             • Generally the shortest duration of immunity of vaccine types | • Western diamondback rattlesnake (Crotalus atrox) toxoid vaccine |


The 2022 AAHA Canine Vaccination Guidelines are available at aaha.org/canine-vaccinations.

These guidelines were prepared by a Task Force of experts convened by the American Animal Hospital Association (AAHA) and were subjected to a formal peer-review process. This document is intended as a guideline only, not an AAHA standard of care. These guidelines and recommendations should not be construed as dictating an exclusive protocol, course of treatment, or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to each individual practice setting. ©2022 AAHA.