



# OAK BAY ANIMAL HOSPITAL

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## VACCINATION FAILURES

One of our greatest frustrations occurs when a dog develops a disease against which it has been vaccinated. There are four possible reasons for this.

### 1) **INEFFECTIVE VACCINE**

Vaccines made by FDA-licensed manufacturers are potent at the time they leave the factory; however, several things may happen to inactivate them. The most common cause of vaccine inactivation is that the vaccine has been allowed to become too warm. Temperature is critical to maintaining potency. If the vaccine becomes too warm during shipment to the distributor or while being stored at the distributor, it is inactivated. *This is a common problem associated with vaccines purchased by mail or from feed stores.* The buyer has no way to determine whether the vaccines were handled properly during shipment to non-veterinary suppliers. Veterinarians routinely refuse to accept shipments of vaccine if the vaccine is warm at the time of arrival.

### 2) **INHERENT CHARACTERISTICS OF THE VACCINE**

Although most of our vaccines have a very high success rate in dogs, none produce immunity in 100% of the dogs being vaccinated.

### 3) **THE DOG IS NOT HEALTHY**

It is mandatory for the patient's immune system to function properly in order to respond to vaccine challenge. If the immune system is very immature, it cannot do so. If the patient has a disease that suppresses the immune system, it will not respond. If the patient has fever, the immune system will be so "occupied" with the fever that it will respond only poorly to vaccine.

### 4) **BREED DIFFERENCES**

Certain breeds of dogs have been found to be especially susceptible to certain viruses. This has been observed for years, but recently it has been most obvious in Rottweiler dogs and the canine parvovirus. A disproportionate number of Rottweilers that have been properly vaccinated will develop parvo anyway.

### 5) **INTERFERENCE DUE TO MATERNAL ANTIBODIES**

When a puppy is born, it receives immunity-producing proteins from its mother. These are called maternal antibodies. Maternal antibodies protect the newborn from the diseases against which the mother was protected. Maternal antibodies only last a few weeks in the puppy; their duration is directly proportional to the level of immunity the mother has. If her immunity level against rabies, for example, is very high, the maternal antibodies for rabies may last up to three months. If her level is low, they may persist only five or six weeks. As long as they are present, the puppy is protected; however, those antibodies also block a vaccine challenge. If a puppy receives a vaccination for rabies before the rabies antibodies are gone, the vaccine's effect is blocked, and no immunity develops. The same holds true for the other components of

the vaccines; temporary immunity received from the mother can interfere with all of the vaccinations. Parvo virus seems to provide maternal immunity which lasts for quite a long time; up to four months in some dogs.

For this reason, some situations are best handled if a single booster to parvo is given after the puppy series of vaccinations has been completed. This is usually done at about 20 weeks.

Ideally, a vaccination should be given just after the maternal antibodies are gone but before the puppy is exposed to the disease-causing virus or bacterium. However, it is not practical to determine just when the maternal antibodies are gone for each of the possible diseases. It can be done, but the expense would be tremendous. A vaccination schedule consists of a series of vaccinations given at regular intervals. The timing of this plan is successful in the vast majority of situations. However, if the maternal antibodies are gone and the puppy is exposed to the disease-causing virus or bacterium before the next vaccination occurs, the patient will usually develop the disease.

The solution to this dilemma would be to give several vaccinations on a pre-determined schedule. If the premise is known to be infected with a particular disease causing agent, we may recommend vaccinating every 10 to 14 days from age six weeks to 20 weeks. The disadvantage for such a plan is the expense. Instead of giving three vaccinations in the series, we would be giving six or eight, thus the cost would be considerably greater. The potential benefits and risks of extra vaccinations can be discussed with your veterinarian.