

Canine Distemper in Ferrets: Cause, Prevention, and Vaccines

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Clinical disease caused by canine distemper

Ferrets and their close biologic relatives, including the wild black-footed ferret and both wild and domestic mink, are very susceptible to the canine distemper virus. A ferret that begins to show signs of distemper will almost surely die despite any kind of treatment. Ferrets with distemper look very sick right from the start. They have runny, crusted noses and eyes. Their eyes are painful so they keep them closed. They run a high fever and are sleepy and quiet. Their feet often swell and the pads become hard and crusty. The area around the anal opening becomes swollen and red. Some animals will have diarrhea which causes dehydration. The virus eventually infects the brain and causes convulsions, coma, and death.

Prevention of distemper

Canine distemper virus is carried and shed in the urine of dogs that have had the disease and recovered, and those that are protected by vaccination but have contacted the virus. Wild animals, such as raccoons, foxes, coyotes, and wolves may also be infected with canine distemper virus and shed it in their urine. The virus may be carried on the shoes of people walking where the carrier animal has urinated. A ferret that never leaves the house can have distemper virus inadvertently brought to him by his owner. All ferrets should be vaccinated, even if they will never step foot outside.

Jills that are protected by vaccination will pass some of their immunity to their babies in the colostrum, the milk produced for the first day or 2 after the kits' birth. This passive immunity lasts about 9 weeks, and prevents vaccination being fully effective in these young animals. Vaccines given during the first 6 or 7 weeks may give little or no protection. A series of vaccinations given at 9, 12, and 14 to 16 weeks confers good protection. If the last vaccination is given at 12 weeks, some ferrets with an unusually large amount of passive immunity will not respond strongly enough to vaccination. These ferrets may die of distemper if heavily exposed to the virus.

If you raise kits from your own jills, the jills should be vaccinated before they are bred, so that the young kits will have strong maternal immunity provided to them in the colostrum. Vaccinating pregnant jills with live vaccines is risky, especially in the first 2 weeks after breeding, and may be associated with a high incidence of congenital malformations in the kits. If it is absolutely necessary to booster a pregnant jill, vaccinate her approximately 35 days after breeding, so that the unborn kits are unlikely to be affected, and the jill will have time to make an immune response before she whelps.

If you acquire a young kit and have no history of vaccination for the mother, the kit should be vaccinated as soon as possible. Although passive immunity interferes with successful vaccination, there is no easy way to tell what the kit's status is. Vaccinating a kit with strong maternal immunity will do it no harm, but an unvaccinated kit with no passive immunity will be susceptible to distemper.

Distemper vaccines for ferrets

Editor's Note: Since this article was written, the common distemper vaccine used in ferrets (Fervac-D® United Vaccines) is no longer available. The only currently FDA approved canine distemper vaccine for ferrets is Purevax-D by Merial. Galaxy-D made by Schering-Plough has been used for years to vaccinate ferrets, but is not FDA approved since the company has not completed the necessary FDA/USDA testing to obtain the indication for use in ferrets.

Regardless of the vaccine used, the risk of an anaphylactic (sudden allergic) reaction to canine distemper vaccine is higher in ferrets than in dogs. For that reason, the following guidelines should be followed:

- Be aware of the signs of an anaphylactic reaction in ferrets: sudden onset of vomiting, diarrhea, weakness (ferret becomes limp), pale or bluish gums.
- Remain at your veterinarian's office at least 30-60 minutes after the vaccination so your ferret can be monitored for any reaction. These reactions can be life-threatening, and need to be treated immediately.
- Since there could be a delayed reaction, monitor your ferret closely for 24 hours after the vaccination. Schedule the vaccination so that you or someone else will be able to monitor your ferret during this time.
- Be sure veterinary care will be available to you for 24 hours after the vaccination. Know the emergency phone number for your veterinarian and/or emergency clinic in the event your ferret would have a reaction and need immediate attention.

Vaccinations may cause severe reactions in ferrets. Discuss the risk with your veterinarian, and remain at your veterinarian's office at least 30-60 minutes after the vaccination.

Why distemper vaccines for dogs are dangerous for ferrets

Most distemper vaccines made for dogs are grown on mammalian cells, are not safe in ferrets, and should be avoided. Many ferrets have died of distemper after vaccination with dog vaccines.

Modified live vaccines contain live distemper virus, modified so that is safe for the animal for which it is intended. The

vaccine induces immunity by causing an infection but not an illness. The virus is modified (attenuated) by being passed from one set of tissue culture cells to another for several passages. The more times it is passaged, the less able the virus is to cause disease in the susceptible animal - it has learned how to grow in tissue culture, and has 'forgotten' how to grow in the live animal. If it is passaged too often, it may not even infect the animal, and produces no protective immunity. If it is not attenuated enough, it will cause distemper in the most susceptible animals. Previously vaccinated animals will probably be safe, because they have some immunity and can rapidly respond to the infection and eliminate the vaccinal virus.

Distemper virus grown on egg embryo tissue culture, rather than mammalian cells, is more attenuated and less effective in dogs, and has not been used in dog vaccines since the early '90's, when the last one, Fromm DÖ (Solvay), was taken off the market.

Ferrets are more susceptible to distemper virus than dogs, and virus modified for dogs is not necessarily sufficiently attenuated to be safe for ferrets. Companies that make dog distemper vaccines passage the virus as infrequently as possible, because dogs will be better protected. Some vaccine companies test their vaccines in ferrets, and although these vaccines are not labelled for ferrets, these companies know whether or not their vaccine ever causes distemper in susceptible ferrets.

Many modified live dog vaccines will cause distemper in susceptible ferrets.

Black-footed ferrets, the only wild relatives of domestic ferrets in North America, are so susceptible to canine distemper virus that they cannot even be vaccinated with egg embryo-type vaccines, and indeed, most of the last wild black-footed ferrets were inadvertently killed in 1971 when they were vaccinated with mink vaccine.

A second problem with dog vaccines is that most of them are multivalent - that is, they contain several other live viruses (e.g., canine adenovirus and [canine parvovirus](#)) that may cause other, undefined problems in ferrets. It is much safer to let a knowledgeable veterinarian administer the proper vaccine than take a chance on a cheaper and possibly lethal product not produced for ferrets.

Recombinant canine distemper vaccines are now available for dogs. These products are safe for ferrets in that they do not contain live virus, and cannot cause distemper. However, they have not been tested for efficacy (effectiveness) in ferrets, and may not stimulate a strong enough immunity to protect them. If this type of vaccine is eventually found to be effective in ferrets and licensed for them, it will reduce the number of reactions to vaccination, and will eliminate the possibility that the vaccine will cause disease. In the meantime, these vaccines should be avoided.