

## Companion Animal Disease Prevention in South Africa



### The Law

Many people are not aware that in South Africa, the Animal Health Act places responsibility on the owners of animals to protect their animals from parasites or any pathogens likely to cause disease:

#### **No. 7 of 2002: Animal Health Act, 2002**

##### **Duties of owners and users regarding health of animals**

**17.** (1) Any owner or user, as the case may be, of land on which there are animals and any owner of animals must -

(a) take, with due observance of the provisions of this Act, **all reasonable steps that are necessary-**

(i) **to prevent the infection of his or her animals with any animal disease or parasite**

(ii) to prevent the spreading of any animal disease or parasite from the relevant land or animal;  
and

(iii) for the eradication of any animal disease and parasite on the relevant land or in respect of the animal in question; and

(b) whenever such animal -

(i) **has become or can reasonably be suspected of having become infected with any animal disease or parasite, apply in respect of such animal the prescribed treatment or any other treatment that may be deemed suitable and customary in the particular circumstances;** and

(ii) has become or can reasonably be suspected of having become infected with a controlled animal disease, immediately report such incidence in the prescribed manner to the national executive officer and provincial executive officer;

**20.** (2) Any person found guilty of an offence under this Act is -

(a) in the case of a first conviction, liable to a fine or to imprisonment for a period not exceeding two years or to both such fine and such imprisonment;

(b) in the case of a second or subsequent conviction, whether the same or any other offence referred to in subsection (1), liable to a fine or to imprisonment for a period not exceeding four years, or to both such fine and such imprisonment.

**Zoonotic Diseases** are those diseases or infections that have the potential to spread from pets to their owners and in some cases vice versa and present another good reason to protect your animals from parasites and pathogens.

The most common zoonotic diseases in South Africa are Ringworm, Rabies, Sarcoptic Mange, Giardia, Cat scratch disease, Worms, Tick bite fever, and Psittacosis (birds).

The best actions for preventing such infections include appropriate vaccinations, monthly flea and tick prevention and regular deworming.

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## The Science

In veterinary medicine, vaccination has proven to be a boon for animal health. Diseases such as canine parvovirus and canine distemper, feline leukemia, or equine tetanus, have been greatly reduced and in some cases, nearly eliminated, by vaccination. And, as in human medicine, a small, but vocal, anti-vaccination movement has developed, regaling fearful listeners with tales of acute harm, or chronic, low-grade disease (sometimes termed “vaccinosis”).

Historically, many animal vaccinations have been given annually. These recommendations were based on the best available knowledge at the time. As research has continued, it appears that some vaccines may protect animals from disease for longer than was previously felt. This information has been incorporated into some vaccine guidelines, e.g., many rabies vaccinations are now given every three years, instead of annually.

Unfortunately, some people have claimed that practitioners resist giving vaccinations less frequently simply due to a profit motive; this assertion is outrageous, and obscures the many difficulties veterinarians face in coming up with an “ideal” program to fit every animal. As such, it is essentially impossible to make firm, science-based guidelines when it comes to animal vaccination. It is almost without question that “some” vaccination helps prevent animals from disease; it is also almost without question that “no” vaccination puts animals at risk for disease, especially when such animals have contact with other animals; it is fortunate that if animals are vaccinated more frequently than needed to provide protection from disease, there is, in general, little apparent harm.

The current hysteria around vaccines originated with a 1998 study published by a grossly incompetent and unethical researcher named Andrew Wakefield. The study claimed, based on a sample of 12 children, that there was a link between administration of the measles, mumps, and rubella vaccine -- known as MMR -- and development of regressive autism. Not only was Wakefield's sample tiny, but much of the data that he did collect was fraudulent. Although he claimed that nine of the children in the study developed regressive autism after receiving the MMR vaccine, later investigations revealed that only one of the subjects was actually diagnosed with the disorder, and three of them definitively did not have regressive autism. Other children had pre-existing medical issues that Wakefield reported as having first presented *after* the vaccine. The results could not be replicated by other scientists, and it was later revealed that Wakefield was being paid to testify in a lawsuit against vaccine manufacturers at the same time that he conducted the study.

The majority of arguments against vaccination are based not on long-term research, nor on broad-based studies that are subjected to peer review, but anecdotal accounts of individuals. In most cases, these are due to adverse effects occurring shortly after the vaccination. This is little more than *post hoc ergo propter hoc* reasoning and it's illogical and invalid.

"Abnormal responses occur so infrequently, and more unvaccinated animals die from the diseases

the vaccines prevent, that the benefit of vaccination outweighs the minimal risk of the abnormal immune response." ~ Kate Berger, School of Veterinary Medicine at the University of Pennsylvania.

Despite explaining to pet owners that the vaccines recommended are based on lifestyle and regional risk assessment, and each vaccine protocol for a given patient is based on scientifically and ethically established guidelines, there remains the small percentage of people that prefer to dismiss what professionals say. They choose to instead take their groomer's word or the word of some person they never met on an internet forum who recommended they avoid vaccination for preventable, endemic and deadly diseases.

We are subsequently seeing a resurgence of deadly disease like canine parvo, feline panleukopenia, canine distemper, canine infectious hepatitis and leptospirosis. What's more, for patients that legitimately have medical reasons why they should not receive vaccines, they consequently are at greater risk when pets in the majority that can and should receive vaccines, fail to receive them due to the owner's refusal to allow it. Thus, pet owners that refuse vaccines for their pets do not only stand to put their own pets in harm's way, but by decreasing herd immunity, put other innocents in danger who have medical restrictions that preclude their ability to receive vaccines.

"In small animal medicine, we have been slow to grasp the concept of 'herd immunity'—that vaccination of individual pet animals is important, not only to protect the individual, but to reduce the number of susceptible animals in the regional population, and thus the prevalence of disease. Herd immunity with the core vaccines that provide a long (many years) DOI is highly dependent on the percentage of animals in the population vaccinated and not the number of vaccinations that occur annually. Therefore, every effort should be made to vaccinate a higher percentage of cats and dogs with the core vaccines." ~ **Guidelines for the vaccination of dogs and cats** compiled by the **Vaccination Guidelines Group (VGG) of the World Small Animal Veterinary (WSAVA)**.

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## **Precautions**

### **5 in 1 DHPP, and 6 in 1 - DHLPP**

The **5 in 1** vaccination provides protection from Distemper, Hepatitis (Adenovirus type 2), Parainfluenza, & Parvovirus. The **6 in 1** vaccination provides protection against the aforementioned diseases, as well as against Leptospirosis.

Vaccines used for the protection of pets are currently divided into core vaccines and non-core vaccines. The former are vaccines that should be given to all pets in all regions because they protect against diseases that are widespread and have serious effects. Non-core vaccines are only given strategically when a particular disease is prevalent in an area or when circumstances predispose to the appearance of the disease. Non-core vaccines are only administered after discussion with your veterinarian to evaluate the risks.

**Core vaccines for dogs:** Canine distemper, Canine adenovirus infections, Canine parvovirus infection, Rabies

**Non-core vaccines for dogs:** Leptospirosis, Kennel cough, Canine coronavirus, Canine herpesvirus

**Core vaccines for cats:** Feline panleukopenia, Feline herpesvirus infection, Feline calicivirus infection, Rabies

**None-core vaccines for cats:** Chlamydiosis, Feline leukaemia, Feline immunodeficiency virus

"Core vaccines should not be given any more frequently than **every three years** after the 12

month booster injection following the puppy/kitten series, because the duration of immunity (DOI) is many years and may be up to the lifetime of the pet.” ~ **Guidelines for the vaccination of dogs and cats** compiled by the **Vaccination Guidelines Group (VGG) of the World Small Animal Veterinary (WSAVA)**.

The **SAVA (South African Veterinary Association)** recommendation is the same.

People should be more concerned with the source of animals rather than the risk in itself. New pet owners should be advised to be selective about the source of their new pets. Puppy and kitten mills, like any high intensity animal operation, carry more risks. When adopting from these operations as well as rescues it may be advisable to visit your veterinarian with your new pet prior to taking them to your home so that they can be checked and/or treated for ectoparasites and endoparasites if not done already. The risk of becoming infected with zoonotic diseases when purchasing animals that have come from puppy mills is increased because of their poor facilities and processes.

“A growing trend appears to be for breeders to vaccinate their puppies before selling them – presumably to save on veterinary fees. This “saving” may be very short-sighted. Breeders are not adequately trained in the proper handling and administration of vaccines, nor are they trained to diagnose disease in its early stages. Vaccinating a puppy that is not completely healthy renders the vaccine ineffective and may actually exacerbate illness. There is also the dilemma that the veterinarian faces with the rest of the vaccination programme for the puppy viz. to ignore the first vaccine done by the breeder and start again, or to trust and hope that the first vaccine was done properly. Over-vaccinating can also be harmful.” ~ Dr Steve Wimberley, Chairperson, Ethics Committee of the SAVA

Most noninfectious (killed) vaccines require at least two initial doses to immunize, regardless of the dog’s age. The first dose of a noninfectious vaccine generally primes the immune response and the second dose, which should be administered 2–6 wks later, provides the protective immune response. Immunity typically develops approximately 7 days after the second dose. Therefore, the minimum time for onset of immunity is approximately 3 wks after administration of the first dose of a non-infectious vaccine. When the interval between the initial two doses of a non-infectious vaccine exceeds 6 wks, it is recommended the dog be revaccinated, administering two doses, 2–6 wks apart, to ensure protective immunity has developed.

Rabies vaccine is the obvious exception. The Rabies vaccine antigen is highly immunogenic. A single dose, administered at 12 wks of age, is considered to induce protective immunity and the WSAVA guideline for booster vaccination is 3 years. In South Africa, Rabies is a legally-required vaccination because Rabies is a controlled disease. If there is an outbreak, and you do not have a legitimately signed record of Rabies vaccination, authorities will have the right to remove your animal and may put the animal to sleep.

A dog that has been vaccinated by a veterinarian will have a legitimate vaccine book or certificate showing proof of vaccination. This book or certificate will be a **printed** document with the veterinary practice details on the front cover and the veterinarian’s signature and practice stamp in the appropriate place inside. It will **NOT** be a photocopied or type written document on cheap paper or card.

MLV (Modified Live Virus) vaccinations provide longer DOI than killed vaccines. Dogs that have responded to vaccination with MLV core vaccines maintain a solid immunity (immunological memory) for many years in the absence of any repeat vaccination. Following the 12 month booster, subsequent revaccinations are given at intervals of 3 years or longer, unless special conditions apply. It should be emphasized that the considerations given above do not generally

apply to killed core vaccines nor to the optional vaccines, and particularly not to vaccines containing bacterial antigens.

### **Mechanisms and Duration of Immunity (DOI)**

- DOI after natural infection/disease is life-long.
- DOI after vaccination with MLV vaccines is 9 years or longer, based on challenge and serological studies.
- DOI after vaccination with killed vaccines is unknown; a killed feline parvovirus (panleukopenia) vaccine was demonstrated in challenge studies to provide a DOI of 7.5 years in the cat.
- Systemic immunity from vaccination with MLV products is mediated by IgG and IgM neutralizing antibodies. An antibody titre correlated with protective immunity is stimulated only after multiple doses of the parenterally administered, killed, non-adjuvanted vaccines.
- MDA (maternally-derived antibody) interferes with active immunization for varying periods of time in the puppy, depending on the titre of colostral antibody and the amount of antibody absorbed after birth, as well as the specific vaccine.
- The 'window of susceptibility' is defined as the period of time during which a pup can be infected by field virus, but vaccines cannot immunize. For highly effective MLV vaccines the 'window of susceptibility' is as short as two weeks or less, whereas for less effective vaccines, the window of susceptibility is as long as 10–12 weeks.
- After completing the puppy series at around 16 weeks and vaccinating again at 1 year of age, revaccination need not be done more often than every 3 years. (SAVA)
- In the absence of MDA, MLV vaccines provide immunity as early as 3 days after vaccination.
- The presence of serum antibody, regardless of titre, in an actively immunized dog over the age of 16 weeks is correlated with protection.

Bottom line: You need to know which vaccine was administered by your vet, and you need to know whether, in the case of killed vaccine, whether a dual dose was given. This process is best left to professionals who understand the schedule requirements.

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In the case of **Vector-borne diseases**, such as *babesiosis* (biliary) and *ehrlichiosis* (tick bite fever), it is necessary to focus on the tick by using insecticide sprays or spots, having different modes of operation but the same effect, namely that of killing the ticks. Ticks can carry either of the pathogens or both, and it is necessary to prevent the tick from biting the dog and causing the pathogen to enter the animal's bloodstream.

Removing ticks from the dog will not help. If the tick is fat, if it is a carrier of the pathogen then the dog will already be infected – not all ticks are carriers but playing roulette with a dog's life is both unfair and unethical.

There is a common myth that the tick needs to be on the dog for a long period of time, sometimes stated as 24 hours, for infection to occur, but it only requires one tick and a relatively short period of time for the animal to be infected and the pathogen to start multiplying, resulting 9 days later in a life-threatening disease. I have had many cases where we did not even see the tick responsible. While both can be treated if caught early enough, there are no guarantees due to differing immune system effectiveness, the volume of pathogens, and the age and general health of the animal. Prevention is far better, not to mention far cheaper, than cure – treatment for either can cost thousands, not to mention enormous pain for your companion and high levels of anxiety for you.

There is now a vaccination for biliary, but it is very expensive and it's effectiveness has not been

sufficiently tested locally. Another method for preventing tick-borne disease is to control rodents, since the ticks do not carry the pathogens from birth but get them from rodents while the ticks are still in the larval or nymphal stage, but one would have to ensure that no rodents whatsoever exist within your environment, an impossible task.

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Multiple other threats include:

**Hookworms, Roundworms, Stomach worm, Tapeworms, Threadworms, and Whipworms**, all of which can be prevented through a dewormer given every 6 months to adult dogs and cats and puppies and kittens every three months.

***Spirocera lupi*** can cause considerable damage, resulting in rupture of large blood vessels, inflammation of the lining structures of the lungs and infection. Preventative therapy is not yet proven beyond a doubt but evidence shows that you will decrease your chances of re-infection by 80% if you deworm your dogs monthly with a dewormer containing milbemycin oxime or use a cattle dewormer doramectin. These anti-parasiticide agents are the only proven drugs to cure and decrease the infection with *Spirocera lupi*. Spot-on preparations containing these drugs do exist, but there is no evidence that they are effective in treating spirocercosis. Worms that are exposed to these drugs also lay fewer eggs, even before they die, thus decreasing environmental contamination. Deworming your dog monthly is the preferred method of controlling all other worms (round and tapeworm) as their lifecycles are about 21 days long and monthly deworming prevents them from maturing and laying eggs, contaminating your environment.

**Mange** comes in three varieties: Demodectic, Cheyletiella and Sarcoptic. It is caused by different species of mites, tiny eight-legged critters related to spiders. The best prevention is a happy animal with a strong immune system, and to reduce the risk by keeping your dog away from dogs or people that are infested with this highly contagious external parasite.

In summary, the old adage still applies: 'An ounce of prevention is worth a pound of cure' ~ Benjamin Franklin. Being aware of the risks and taking the necessary precautions will avoid a lot of heartache and expense. Besides, it is both a legal and ethical obligation.

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