

## When Your Pet Needs Antibiotics

Antibiotics are the most frequently prescribed medications for pets. They are also the most frequently misused drugs. Most dogs and cats will need them for an infection somewhere, sooner or later in their life. This article should help you to better understand their proper use, for better and safer health care for your pet.

Principles of antibiotic usage:

- 1) Most antibiotics only affect bacteria. They have no effect against diseases caused by viruses, parasites or metabolic problems.
- 2) There are about a dozen different classes or groups of antibiotics. For instance the penicillin group includes penicillin and amoxicillin. Each class works against bacteria in a different way. Related drugs in the same class are similar but vary in the way in which they are administered, e.g. tablet versus injection. They also vary in how effective they are against particular bacteria. Not all antibiotics work by killing the bacteria. Some, such as the sulfa antibiotics (Albon, Primor, Tribissen, SMZ-TMP), only suppress the bacteria, allowing the body's own disease fighting mechanisms to do the rest.
- 3) Not all bacteria are sensitive to the same antibiotics. Different infections will be affected by different antibiotics. For instance, penicillin works by destroying the bacteria's ability to make a cell wall. Hence penicillin works only on those bacteria that have a cell wall. We must choose an appropriate antibiotic for the disease problem your pet has.

Bacterial cultures and other laboratory tests allow us to determine the type of bacteria involved in a particular infection, and also the most effective remedies.

- 4) You must give the antibiotic in the proper amount. The goal with most medications is to keep a fairly constant level of the drug in the body at all times. This level must be high enough to ensure that the drug is effective, but not so high as to cause toxicity. Label directions should always be followed.

Bacteria that are exposed to a level of antibiotic that is not high enough to kill them can develop mechanisms to resist the antibiotic, so that it is no longer effective, even at a higher dosage. This antibiotic resistance is the primary reason for the ongoing need to produce newer, stronger (and usually more expensive) antibiotics. It is also the reason that an amount of penicillin that was effective 40 years ago would not be enough today. On the other hand, if too much medication is given, the excess will be wasted, and is potentially harmful. For instance, overdosing gentamicin can cause kidney failure.

- 5) It is also important to give the antibiotic at the proper interval. All medications are metabolized (broken down) by the body and excreted. The rate at which this occurs varies from drug to drug and animal to animal. Again, the goal is to keep a constant amount of the antibiotic in the body. If the medication is given too frequently, toxic levels may build up, since the animal cannot get rid of the drug as fast as it is being administered. If the medication is not given often enough, the amount of drug in the

body will drop below the effective level. This again leads to the development of resistant bacteria.

6) You must use antibiotics for a sufficient length of time. Resistance can occur when an antibiotic is stopped too soon. Relapses may also result. If the animal is running a fever, the rule of thumb is to treat for 3 full days after the temperature returns to normal. It is usually necessary to use antibiotics for a longer time if there has been damage to the body's disease fighting systems. For instance, with diarrhea the lining of the intestine is often badly eroded. The animal must remain on antibiotics until the intestinal lining has healed enough to defend itself from further infection.

Never use systemic antibiotics for fewer than 3 days in a row. Systemic antibiotics are all those given orally or by injection. (Topicals, such as ointments and powders, are not always used according to this rule.)

Conversely, using antibiotics for prolonged periods of time, even at the proper dosage, can cause problems such as fungal infection or toxicity. Always follow the label or a veterinarian's instructions as to length of treatment.

7) Throw away outdated, contaminated or off-color drugs. Keep all bottles and jars clean and dry. Refrigerate all medications that need to be kept cold. Label all bottles and pills properly.

8) Understand each medication that you use. Make sure you know any side effects you might need to watch for and whether they should be given with or without food.