

Your Pet's



Guide to Managing & Living With Diabetes

Table of Contents

Page 3...Diabetes Mellitus in Dogs
Page 12...Instructions for your Diabetic Pet
Page 15...Summary of Instructions
Page 16...Insulin

Diabetes in Dogs

Affected Animals:

Diabetes can occur at any age, but it is most likely to begin at seven to nine years of age. Female dogs are twice as likely to be affected by the diabetes, compared to males. Diabetes is more common in a number of dog breeds, including Keeshond, Pulik, Cairn terrier, miniature pinscher, dachshund, miniature schnauzer, poodle, and beagle. However, any dog can develop diabetes mellitus, or “sugar diabetes.”

Overview:

Why is insulin so important? The role of insulin is much like that of a gatekeeper: it stands at the surface of body cells and opens the door, allowing glucose to leave the blood stream and pass inside the cells. Glucose is a vital substance that provides much of the energy needed for life, and it must work inside the cells. Without an adequate amount of insulin, glucose is unable to get into the cells. It accumulates in the blood, setting in motion a series of events that can ultimately prove fatal.

When insulin is deficient, the cells become starved for a source of energy. In response to this, the body starts breaking down stores of fat and protein to use as alternative energy sources. As a consequence, the dog eats more; thus, we have weight loss in a dog with a ravenous appetite. The body tries to eliminate the excess glucose by excreting it in the urine. However, glucose (blood sugar) attracts water resulting in the production of a large amount of urine. To avoid dehydration, the dog drinks more and more water.

Characterized by high concentrations of sugar (glucose) in the blood and urine, diabetes mellitus is one of the more common hormonal disorders of the dog, and the disease almost always requires lifelong insulin treatment. Chronic high glucose in the blood and urine can cause severe complications including infections, cataracts, nervous system disorders, pancreatitis, kidney disease, and even diabetic coma. If left untreated, diabetic dogs will suffer from complications and an early death. The good news is that when monitored and treated properly, most diabetics can do well for long periods of time (many years), and can enjoy an excellent quality of life.

Diabetic dogs are treated with insulin injections, dietary modification and exercise. Some people with diabetes can use oral hypoglycemic drugs (pills), but these medications typically are not helpful in dogs. In order to regulate their blood glucose levels, diabetic dogs require frequent veterinary office visits in the initial stages of treatment, followed by periodic examinations for proper maintenance thereafter.

Initially, it may seem difficult for some owners to imagine give daily insulin injections, but the majority of dog owners have no trouble learning to do this, once they decide to do so. The needles we use to give insulin injections are tiny, and many pets seem to barely feel them. Giving insulin injections while the pet is distracted by eating seems to work very well for many pets – most hardly notice it. With a little careful instruction from the veterinary staff, most owners become “insulin injection experts” in short order.

Clinical Signs (Symptoms):

Commonly reported symptoms of diabetes include drinking large amounts of water (polydipsia), urinating large volumes (polyuria), increased appetite (polyphagia), and weight loss (often despite eating more). Depending on the stage of the disease, physical findings may also include weight gain/obesity, cataracts, dehydration, tiredness, weakness, and acetone-like smell of the breath (ketone halitosis). Other complaints that can be caused by underlying diabetes mellitus include frequent infections (especially urinary tract infections), non-healing wounds, urination accidents in the house, hair loss, weakness in the joints, etc.

The normal level of glucose in the blood is 80-120 mg/dl (4.4-6.6 mmol/L). However, diabetes is the only common disease that will cause the blood glucose level to rise above 400 mg/dl. Some diabetic dogs will have a glucose level as high as 800 mg/dl, although most will be in the range of 400-600 mg/dl when diagnosed.

What Causes Diabetes Mellitus:

Diabetes usually results from decreased production of insulin by the pancreas, impaired insulin function within the body tissues, or both. With either lack of insulin production or lack of insulin effectiveness (or both), the dog's system becomes unable to regulate the glucose that is circulating in the bloodstream, and blood sugar becomes very, very high. If the condition is left undiagnosed and untreated, it can progress to severe illness and possibly death.

A list of things that can cause diabetes mellitus includes:

1. *Pancreatitis* – inflammation in the pancreas, causing vomiting, diarrhea, abdominal pain, possibly diabetes mellitus and other problems. Inflammation in the pancreas can shut down production of insulin, and cause diabetes mellitus. Sometimes the diabetes is temporary, resolving when the pancreas heals. And sometimes diabetes after pancreatitis (especially chronic pancreatitis) is permanent – it all depends on how much damage is done to the pancreas.
2. *Degeneration of the pancreas*. We do not yet understand very well what causes this, but think that genetics play a role. This type of diabetes is usually not reversible.
3. *Female hormonal imbalance*. Diabetes mellitus sometimes can be reversible when noted in the intact female dog, when she is spayed.
4. *Drugs* – there are a few drugs (including cortisone) which can make borderline diabetics require insulin.
5. *Obesity* – can make borderline diabetics require insulin, just as in people.
6. *Low thyroid function (hypothyroidism)* – usually won't cause diabetes by itself, but if present and undiagnosed and untreated, can make diabetes very hard to regulate.
7. *Cushing's Disease* – another hormonal disease, of overactive adrenal glands, which also can make diabetes difficult to regulate, if present, undiagnosed, and untreated.

No matter the cause, there are two types of diabetes mellitus in dogs: insulin-dependent and non-insulin-dependent (the latter occurs exceedingly rarely). This discussion is limited to insulin-dependent diabetes mellitus (IDDM). Just like humans with IDDM, dogs affected by this form of the disease will usually require lifelong administration of insulin in order to keep their blood glucose levels under control.

Diagnosis:

Diabetes is usually diagnosed by finding very high levels of glucose in the blood and in the urine. A more advanced and critical stage of diabetes is sometimes denoted by the presence of ketones in the urine. This complicated form of diabetes is called diabetic ketoacidosis (DKA). If DKA is untreated, it can lead to diabetic coma.

Your veterinarian may run tests, including:

4. *CBC (complete blood count)* – too look for evidence of infection or anemia, which can be associated with untreated diabetes.
5. *serum biochemical profile* – to look for problems with the liver, kidneys and blood lipids (cholesterol and triglycerides) which can be related to diabetes; and to rule out other disease which can look like diabetes.

1. *Electrolytes* – many diabetics lose potassium, and it may need to be supplemented until the proper insulin dose is determined. Occasionally potassium needs to be supplemented long term in diabetics.
2. *Urinalysis* – to look for urinary tract infection, which is present in about 50% of all untreated diabetics. Your vet also may want to do a urine culture, to completely rule out urinary tract infection.
3. *Abdominal ultrasound* – this may be suggested if your diabetic pet is seriously ill, to look for problems such as pancreatitis, kidney infection, etc., which will need to be treated if your pet is to get well as soon as possible.
4. In some cases, the initial test results may indicate the need to do more specific tests.

The veterinarian also may schedule in-hospital stays for the dog to allow for serial blood glucose checks every one to two hours over a 12 to 24 hour period. This series of tests is called a blood glucose curve, and ideally will provide information about the effectiveness of the insulin dose, and how long each injection remains active. Depending upon the results of the glucose curve, the veterinarian will adjust the insulin type, dose, and frequency of administration so that the dog's blood glucose level remains within a close-to-normal range.

Once your pet is relatively “well regulated,” glucose curves may no longer be necessary. There is a test called fructosamine which provides an average of blood glucose over the past 10-14 days. If fructosamine is in normal range, then we know insulin therapy is ideal, and no glucose curves are necessary. If fructosamine is high, it may mean that insulin dose is too high or too low, or that we are using the wrong kind of insulin. When fructosamine is high, it means we need to schedule a glucose curve, to find out how to adjust insulin therapy.

If you are willing, it can help a great deal to learn to check your own pet's blood sugar at home. This may sound intimidating at first, but many owners learn to do with this with a little practice, and a little help from us. You certainly don't need to do this daily, and probably won't need to do it on a regular basis as long as everything is going well. However, having the ability to check blood sugar at home can be extremely valuable if and when your diabetic pet becomes ill. You can know within a few minutes whether you need to decrease insulin dose and feed (low blood sugar), or whether you need to see your veterinarian for control of high blood sugar. Because ill diabetic dogs can be ill either because they are not getting enough insulin or they are getting too much, it can be difficult to tell the difference at home, if you can't check blood sugar. Having a blood glucose meter at home to use can sometimes allow your veterinarian to give advice over the phone or in the office, which might prevent any problems your diabetic has from becoming worse. Because stress can increase blood sugar, testing blood sugar at home is considered more accurate than testing at the clinic, as blood glucose values may be falsely high at the clinic, causing us to overdose insulin in some cases. If you are interested in learning to test blood sugar at home please let us know – we are happy to spend as much time as is necessary to teach you.

Treatment:

The goals of treatment are to return the dog to normal health and to prevent complications that can arise from a high blood glucose level. Some possible complications which need treatment include infections of the urinary tract, respiratory system, and skin; ketoacidosis or severe metabolic disturbance; cataracts which result in vision loss; pancreatitis or inflammation of the pancreas; and other less common disorders. Treatment protocols include proper insulin administration, diet and exercise plans, and control of concurrent disease. Intact female patients need to be spayed as soon as their diabetes is stable to prevent disruption of diabetic control due to fluctuating reproductive hormones. Some unspayed diabetic dogs will have complete resolution of their diabetes after being spayed.

Some dogs accept and respond to treatment successfully, and are doing very well within a few days to weeks of starting insulin. Others will not respond with even the most aggressive treatment, especially if

multiple disorders are present, which make treatment of the diabetes more complicated. And there are many possibilities in between.

Your veterinarian will choose the appropriate type of insulin for your dog. The dose of insulin the veterinarian selects will be based on several factors, including body weight and type of insulin. The goal is not to achieve perfect control from the outset, but rather to allow the dog and owner to get used to the new routine of insulin injections and dietary changes, while the body adjusts to introduction of insulin. Arriving at the proper dose of insulin (called "regulation") will occur over weeks to months.

- *Lente insulin* – is the insulin needed by most dogs. Years ago, it was available over the counter at human pharmacies, but the manufacturer stopped production of this insulin. More recently, veterinary Lente insulin available through veterinarians and veterinary pharmacies, called "Vetsulin." Vetsulin is a U-40 insulin, which means it has 40 units per cc or ml of fluid. U-40 *red* capped syringes must be used to deliver Vetsulin. If U-100 *orange* capped syringes are used, insulin will be underdosed by 60%.
- *NPH insulin* – is still available over the counter at human pharmacies, and while probably a second choice to Vetsulin, is often used in diabetic dogs. One of the trade names is "Humulin N" and another "Novolin." NPH is a shorter acting insulin than Lente. NPH is a U-100 insulin, which means it has 100 units per cc or ml of fluid. U-100 *orange* capped syringes must be used to deliver NPH. If U-40 *red* capped syringes are used, insulin will be overdosed by 2.5 times.
- *Lantus (glargine) insulin* – is fast becoming the most popular insulin for both people and cats. However, dogs often don't absorb this insulin in a consistent manner, making it difficult to arrive at a proper dose. For this reason, Lantus is not ideal for most dogs. Some of the other long acting insulins are being experimented with in dogs, but none is commonly used.
- *Detemir insulin* – as another long acting insulin that seems to work much better in dogs than Lantus. It is at least 4x the cost per vial as compared to NPH, but the lower dose used sometimes offsets this.

There are three phases of treatment of diabetes mellitus.

Regulation. The initial period of weeks to months that is required to reach the proper insulin dose is called "regulation." During this time, the dog usually is rechecked weekly, if all is going reasonably well. If your pet becomes ill, more frequent checks or even hospitalization can be required. It is common for the veterinarian to make adjustments in the insulin protocol during these visits. Insulin doses should not be adjusted at home unless the veterinarian has instructed the change. Blood glucose curves and other tests are required throughout treatment to accurately assess the animal's response to treatment.

Some dogs can become regulated with relative ease if they respond well to therapy. Other dogs can take much longer, or never respond, especially if they have a concurrent disease. A "honeymoon period" is noted in some dogs in which they appear to respond initially to the insulin but then lose control within the first six months of therapy.

Maintenance. Once regulated, some diabetics remain at the same dose for years, without need for change. Others have changing insulin demands, and need the insulin dose or type adjusted frequently.

Signs of low blood sugar that indicate that insulin dose is too high include lethargy, weakness, incoordination, vomiting, or even seizures or coma if blood sugar becomes dangerously low. Signs of high blood sugar include weight loss, increased appetite, increased thirst, increased urination, etc. Severely high blood sugar for long periods of time can cause severe illness and even diabetic coma. Over time, you will learn to recognize early and subtle signs that your pet needs to consult a veterinarian for insulin adjustment.

Many diabetic dogs are overweight. For optimal glucose control, obesity should be corrected slowly in diabetic patients; it should take several months for the dog to reach the ideal weight recommended by the veterinarian. In addition, the veterinarian may suggest a specific diet type. Commercial diets containing higher amounts of fiber and digestible complex carbohydrates usually are advised for diabetic dogs, because they help decrease the fluctuations in blood glucose levels after a meal is consumed. The total daily caloric intake should be divided into at least two daily meals.

Exercise is highly encouraged due to its beneficial effects on blood glucose control and weight loss. If the dog has not had a structured routine, then it is recommended to start with short walks and slowly increase to a tolerable level.

Remission. In some cases, diabetic dogs can go through short or long periods of not needing insulin, called "remission." Remissions are much more common in cats than in dogs. Remissions in dogs can be brought about by healing pancreatitis, or spaying a female dog with hormonal diabetes.

During maintenance and remission, regular rechecks will help keep your pet in the best health possible. Regular rechecks when your pet is doing well may seem expensive and unnecessary. However, regular rechecks are very effective at preventing illness severe enough to cause hospitalization. In the long run, regular rechecks are usually more cost effective than allowing undetected problems to result in illness requiring treatment and possible hospitalization. We recommend that diabetics be seen at least every 6 months, and often up to every 3-4 months, depending on the case. We will send you a post-card reminder when your pet's recheck is due.

Prognosis:

How your diabetic pet will do long term is dependent on a number of factors, including your willingness to properly monitor and treat the disease, the dog's ability to respond to the insulin, the presence of other concurrent diseases which must also be treated, and the development of complications of diabetes. With dedicated care from the owner, regular recheck appointments with the veterinarian, and a teamwork approach between the owner and the doctor, many diabetic dogs can live healthy lives for many years. For those pets that fail to respond to therapy, or whose owners decline treatment, a shortened life span is expected.

Prevention:

It may not be possible to prevent diabetes mellitus. However, maintaining a dog's ideal weight and initiating regular exercise into its routine may be beneficial. Owners also should pay close attention to the dog's drinking, eating, and elimination habits. If any abnormalities are noted, the owner should seek veterinary care. Early detection may lead to easier control or, at least, avoidance of severe disease complications.

References:

- <http://vetcentric.com>
- HomeCare Handouts
- Ward, Ernest. Lifelearn Handouts.

INSTRUCTIONS FOR YOUR DIABETIC PET

Insulin is a hormone that will lose its effectiveness if exposed to direct sunlight or high temperatures. It should be kept in the refrigerator, but it should not be frozen. If you have any doubt about your pet's insulin and how it was stored, it is safer to replacing it instead of risking using ineffective insulin. Insulin is safe as long as it is used as directed, but it should be kept out of the reach of children. If you leave the insulin out by accident overnight, just put it back in the fridge and it should be fine, as long as it has remained at room temperature and has not gotten hot to the touch, sitting in the sun.

How should I draw up the Insulin?

Have the needle and syringe, insulin bottle, and dog ready. Then, follow these steps:

1. Before using the insulin, mix the contents. Be sure to roll it gently between your hands, not shake it. The reason for this is to prevent foam formation, which will make accurate measuring difficult. Some types of insulin used in dogs have a strong tendency to settle out of suspension. If it is not shaken properly, it will not mix well and dosing will be inaccurate. Therefore, the trick is to shake it vigorously enough to mix it without creating foam. When you have finished mixing the insulin, turn the bottle upside down to see if any white powder adheres to the bottom of the bottle. If so, more mixing is needed.
2. Remove the cap from the needle, and draw back the plunger to the appropriate dose level. Carefully insert the needle into the insulin bottle.
3. Inject air into the bottle. This prevents a vacuum from forming within the bottle.
4. Withdraw the correct amount of insulin into the syringe.
5. Before injecting your dog with the insulin, check that there are no air bubbles in the syringe. If you get an air bubble, draw twice as much insulin into the syringe as you need. Then withdraw the needle from the insulin bottle and tap the barrel of the syringe with your fingernail to make the air bubble rise to the tip of the syringe. Gently and slowly expel the air bubble by moving the plunger upward.
6. When this has been done, check that you have the correct amount of insulin in the syringe. The correct dose of insulin can be assured if you measure from the needle end, or "0" on the syringe barrel, to the end of the plunger nearest the needle.

How do I inject the Insulin?

The steps to follow for injecting insulin are:

8. Hold the syringe in your right hand (switch hands if you are left-handed).
9. Have someone hold your dog while you pick up a fold of skin from somewhere along your dog's back in the "scruff" region with your free hand. Try to pick up a slightly different spot each day.



3. Quickly push the very sharp, very thin needle through your dog's skin, all the way to the hub. It should be easy and painless to do this. Take care not to push the needle all the way out through the other side of the skin, so that injecting pushes the insulin onto your dog's haircoat or onto the floor. The needle should be directed slightly downward toward the dog.
6. To inject the insulin, place your thumb on the plunger and push it all the way into the syringe barrel. Do not have your thumb on the plunger as you place the needle into the skin, as you can easily inject prematurely by mistake, and then you may not know if the insulin went into your pet.
7. Withdraw the needle from your dog's skin. Immediately place the needle guard over the needle and discard the needle and syringe.
8. Stroke and praise your dog to reward it for sitting quietly. Some owners like to give the insulin injection while the pet is eating – they often hardly notice it.

It is neither necessary nor desirable to swab the skin with alcohol to "sterilize" it. Due to the nature of the thick hair coat and the type of bacteria that live near the skin of dogs, brief swabbing with alcohol or any other antiseptic is not effective. Because a small amount of alcohol can be carried through the skin by the needle, it may actually carry bacteria with it into the skin. The sting caused by the alcohol can make your dog dislike the injections. If you have accidentally injected the insulin on the surface of the skin, you will not know it.

Although the above procedures may at first seem complicated and somewhat overwhelming, they will very quickly become second nature. Your dog will soon learn that once or twice each day it has to sit still for a few minutes. In most cases, a reward of stroking results in a fully cooperative dog that eventually may not even need to be held. Many diabetic pets learn to ask for their insulin, because they learn that it makes them feel better, and it is given when they eat a meal.

Disposal of Needles

Be aware that some communities have strict rules about disposal of medical waste material so don't throw the needle and syringe into the trash until you know if this is permissible. It is usually preferable to take the used needles and syringes to your veterinary clinic or local pharmacy for disposal. The UltiMed syringes have a built in sharps disposal receptacle.

What if I give too much insulin by mistake?

This can occur because the insulin was not properly measured in the syringe or because two doses were given. You may forget that you gave it and repeat it, or two people in the family may

each give a dose. A chart to record insulin administration will help to prevent the dog being treated twice.

The most likely time that a dog will become hypoglycemic is the time of peak insulin effect (5-8 hours after an insulin injection). When the blood glucose is only mildly low, the dog will act very tired and weak. If this happens, encourage your dog to eat a snack. Most of the time, within a few hours, the blood glucose will rise, and your dog will return to normal. Since many dogs sleep a lot during the day, this important sign is easily missed. Watch for any subtle signs of hypoglycemia. It is the first sign of impending problems. If you see it, please bring your dog in for blood glucose testing.

If your dog is slow to recover from this period of lethargy, you should give it corn syrup (one tablespoon by mouth). If there is no response within fifteen minutes, repeat administration of the corn syrup. If there is still no response, contact your veterinarian immediately for further instructions.

If severe hypoglycemia occurs, a dog may have seizures or lose consciousness. Ultimately, untreated hypoglycemia will lead to coma and death. This is an emergency that can only be reversed with intravenous administration of glucose. If it occurs during office hours, take your dog to the veterinarian's office immediately. If it occurs at night or on the weekend, call your veterinarian's emergency phone number for instructions.

SUMMARY OF INSTRUCTIONS

Read and reread your handouts so that you understand the specifics of proper regulation and how to recognize and treat hypoglycemia.

Purchase the supplies for treatment. Your prescription will specify the type of insulin and syringes.

Insulin should be given twice daily, when the dog is fed. Ideally, it should be given no more often than every 10 hours and no longer than every 14 hours. If more than 14 hours passes since the last dose, it is sometimes easier to just skip that dose and get back on track when the next dose is due. Skipping 1 dose of insulin once or twice a month will almost never cause any serious problems other than increased water drinking. However, you should never skip two doses in a row – that could result in serious illness.

Feeding Plan:

Recommended Diet: _____ Amount to Feed: _____

Permitted Snacks: _____

Your insulin dose to be given twice daily: _____ units. Your insulin: _____

Your Syringes are: _____ U40 red capped _____ U100 orange capped

_____ Return for a glucose curve, no later than 9:00 a.m., on _____. Feed your dog that morning, give insulin and then immediately bring it to the hospital. Bring the insulin with you. Your pet will likely need to stay for the day.

_____ Return for regular recheck on _____(date). A routine appointment should be fine for this recheck.

References:

5. Ward, Ernest. Lifelearn Handouts.

Insulin

Humilin®, Iletin®, Novolin®, Vetsulin®, ProZinc®, Detemir, Levemir®, glargine and Lantus® are other names for this medication. Insulin is available in different forms according to its potency and length of effect.

How Is This Medication Useful?

6. Insulin is a protein (a chain of amino acids) produced by the pancreas that helps regulate blood sugar. Different kinds of insulin can be injected to control the blood sugar levels of diabetic animals.
 7. Because insulin drives potassium back into the blood cells, it is sometimes given to non-diabetic animals that have high potassium levels, for emergency treatment of that condition.
 8. Forms of insulin in increasing length of action are:
 - Regular (Lispro®)
 - NPH (Novolin®, Humulin-N®)
 - Lente (Vetsulin®)
 - ProZinc® (protamine zinc insulin)
 - Glargine insulin (Lantus®), Detemir (Levemir®)
- Insulin is slightly different depending on its source (cattle, pigs, human). Your veterinarian will select the most appropriate insulin available for your pet.

Are There Times When Its Use Might Cause More Harm Than Good?

- If your pet's blood sugar is less than 100mg/dl then you should not administer insulin.
- If you check your pet's blood sugar at home, and it falls below 100, please call your vet to ask whether to skip a dose or use a reduced dose of insulin.

What Side Effects Can Be Seen With Its Use?

- Hypoglycemia (low blood sugar) is the most common side effect of insulin. Hypoglycemia can be life-threatening if severe enough. If your pet shows signs of weakness, wobbling, head tilting, shivering, sleepiness, glassy eyes, hunger or confusion, you should check blood sugar at home if possible, and call your vet if below 100. If below 50, immediately administer Karo syrup to the gums and get your pet to a veterinarian for emergency treatment. If your pet is having seizures from hypoglycemia, you should not stick Karo syrup or your fingers into its mouth and get it to a veterinary clinic as fast as possible.
- Sometimes animals can develop a skin reaction to the insulin at the injection site. Rotating the injection site should decrease the likelihood of this adverse effect.

How Should It Be Given?

- Not only is each insulin different, but the onset, peak and duration times will be different for individual animals. There are many different types of insulin available and if a pet is not responding well to one type of insulin, there are others to choose from. It may take a few tries before a veterinarian finds the one that is best for a particular animal.
- It may take even longer to reach the ideal dose. For some animals, ideal dose changes frequently. Your vet will supervise adjustments in dose as needed.
- Ideally, animals are started on an insulin that has about a 12 hour duration. This allows the owner to administer two injections daily and not have the activity from the first dose overlap the activity of the second dose. During each of these 12-hour cycles, the insulin will have an onset, peak, and duration. All these times depend on the individual pet and on the type of insulin being used.
- with some pets, the insulin duration is close to 24 hours, so only one shot is given each day.
- How fast and how well insulin is absorbed into the blood depends upon where it is injected. Insulin should be injected subcutaneously (under the skin) and into the fatty layer that lies beneath the skin to obtain the best results. Injections into muscle, skin or vein may adversely affect your pet's blood sugar control.
- Always double-check the dose in the syringe before you inject your pet. Overdoses can usually be managed, but may be potentially fatal if undetected and untreated.
- When starting a new bottle of insulin, or when changing the insulin dose as instructed by your veterinarian, it's best to do it on a day when you can be home to observe your pet. The new bottle of

insulin might be slightly stronger than the old one - especially if you used your old bottle for several months. And an increased dose requires observation for signs of hypoglycemia.

- Keep two vials of insulin in your house. You may break one, or you may run out over a holiday weekend and not be able to get a new vial right away. You may ask your pharmacist to divide your insulin refill into two separate vials.
- If you have two diabetic pets that use different types of insulin, double check to be sure you are giving each pet the correct insulin.
- The successful outcome of your animal's treatment with this medication depends upon your commitment and ability to administer it exactly as the veterinarian has prescribed. Please do not skip doses or stop giving the medication. If you have difficulty giving doses consult your veterinarian or pharmacist who can offer administration techniques or change the dosage form to a type of medication that may be more acceptable to you and your animal.
- If you miss a dose of this medication you should give it as soon as you remember it, but if it is within a few hours of the regularly scheduled dose, wait and give it at the regular time. Do not double a dose as this can be very toxic to your pet.
- If you are not sure whether an injection actually went into your pet, do not re-dose. It is much better to occasionally skip a dose of insulin than to double dose. Not more than one dose per week should be missed.
- Some other drugs can interact with this medication so tell your veterinarian about any drugs or foods that you currently give your animal. Do not give new foods or medications without first asking your veterinarian.
- Dogs and Cats: Dogs and cats usually receive insulin injections twice daily just after meals.

What Other Information Is Important About This Medication?

- Always store insulin in the refrigerator, as its shelf life will be much longer.
- Never let it be exposed to freezing or high temperatures. Insulin is not ruined by being left out of the refrigerator for a day or two, as long as it is not frozen or overheated.
- It is okay to leave the insulin out at room temperature just prior to injection, or for short periods of time.
- Never shake Vetsulin® or NPH Insulin. This can destroy the fragile insulin molecule as well as introduce air bubbles into the insulin which will break it down. Air bubbles also make it more difficult to measure an accurate dose in the syringe. Always roll the vial gently between the palms of the hand. This prevents the formation of bubbles and also slightly warms the insulin making it more comfortable for your pet when injected. The manufacturer of ProZinc® insulin recommends shaking the insulin vigorously before administration. Lantus® and Detemir insulins are clear and do not settle out, so they do not need to be shaken or rolled prior to administration.
- Have your pet wear an identification tag that indicates it is a diabetic. You can add more information like the veterinarian's name and phone number.
- Know whom to contact in case of emergencies.
- If you take your pet out of the house, never leave home without sugar. This means when you're out on walks, going to the store, groomer, veterinarian, anywhere. Some people keep packets of honey or a small plastic bottle of corn syrup (Karo) in their purse or in the glove box of the car. You can also purchase liquid glucose packets at the pharmacy. It's better to have a liquid sugar, but even little packets of table sugar would work. In an emergency, you don't want to spend valuable time trying to find some sugar.
- Many pets do not show any physical signs of hypoglycemia (low blood sugar). So, suspect hypoglycemia whenever your pet is not acting normally. Become very aware of your pet's "normal" behaviors. Knowing how your pet acts when it is healthy may help you determine when something is wrong.
- A significant number of newly diagnosed diabetic cats will decrease insulin dose or even come off insulin altogether if fed a high protein, low carbohydrate diet. Always look for signs of hypoglycemia.
- Your diabetic pet will need regular check-ups in order to stay healthy. They may seem expensive at first, but they are usually much more cost effective than allowing illness which needs to be treated by hospitalization.