

Insulin - Main

Insulin - Injectable Solution (Cats)

Insulin - Injectable Solution (Dogs)

Trade Names:

ProZinc® (protamine zinc recombinant human insulin) for Cats and Dogs, Vetsulin®

## INSULIN

**GENERAL DESCRIPTION:** Diabetes mellitus is a common disease affecting blood sugar levels in dogs and cats. Insulin is a hormone that is naturally produced by the pancreas and helps to regulate blood sugar. When the body doesn't produce enough insulin or when it is produced but not effective, the result is diabetes. There is no cure for diabetes but several treatment options are available to help control blood sugar levels and alleviate clinical signs. Insulin injections are often the initial treatment of choice for diabetes and preferred over oral anti-diabetic treatments. Administration of commercial insulin when injected will slowly release insulin into your pet's body tissue. Your veterinarian has chosen this product to most closely match your pet's natural insulin. Special insulin syringes will be necessary to administer this product. Review the material below now and each time you refill this prescription.

### WHAT IS THIS DRUG?

Insulin is a simple molecule, but they do vary slightly between species. Your veterinarian will choose the best insulin for your pet.

Insulin is not a cure for diabetes, but a tool to control blood sugars and alleviate clinical signs

Insulin is given by injection under the skin

### REASONS FOR PRESCRIBING:

Used to control hyperglycemia in dogs and cats with diabetes mellitus

This medication will cause the blood sugar to go down

### WHAT DOGS/CATS SHOULD NOT TAKE THIS MEDICATION?

The safety and effectiveness in puppies and kittens, as well as breeding, pregnant and nursing dogs and cats has not been evaluated

Pets who have stopped eating, are anorexic, vomiting, showing signs of extreme drowsiness or fatigue and/or showing signs of severe ketoacidosis

Pets known to have had an allergic reaction to Insulin

Pets allergic to pork or beef should not use Insulin from either of these sources

### DIRECTIONS:

Read and follow the prescription label carefully.

Give the exact amount prescribed and only as often as directed.

Give this medication for as long as your veterinarian directs.

Do not skip doses or stop giving the medication without consulting your veterinarian. If you have difficulty giving Insulin, discuss this with your veterinarian. Missed doses reduce the effectiveness of therapy. This medication may be a lifelong medication.

Baseline blood work is recommended to assess your pet's general health before starting this medication. Diabetic management requires diligent monitoring and periodic checking of physical exam status, body weight, blood glucose, blood work and urinalysis. These will likely be recommended to monitor your pet's diabetes as well as this medication's effects on the body.

Veterinary Insulin products should be given subcutaneously (under the skin) using a U-40 insulin syringe only. Most human products are 100 units per milliliter, therefore would use a U-100 syringe. Some syringes are marked in units and milliliters. Be sure to use the unit scale.

Consult with your veterinarian to ensure you are using the correct syringe for the product prescribed. Ensure you use the correct syringe or you will likely cause incorrect dosing. Accurate dosing/measuring is critical.

Insulin syringes bought at the drugstore may require a prescription.

Feed your pet, make sure that a reasonable amount has been eaten and then give the Insulin. If you think your pet is off food or not eating well, do not give the insulin and notify your vet.

Meals should be approximately equal and fed ~12 hours apart.

Giving the injection:

Your veterinary hospital will demonstrate and educate you on the process of giving an injection.

Just prior to use, gently roll the vial between the palms of your hands ~10 times. Do not shake.

When drawing up the Insulin, always hold the bottle vertically to avoid unnecessary bubbles in the syringe. If you get bubbles in the syringe, flick the syringe with fingers until the bubble rises to the top and simply push the air out of the syringe with the plunger.

Before injecting Insulin, allow it to come to room temperature in the syringe. Pull up a handful of your pet's scruff. A triangle of skin is formed. Aim your needle for the center of this triangle and stick in the needle. Do not be shy or the needle will not penetrate the thick skin. Pull back slightly on the syringe plunger to ensure you do not get blood back in the syringe. If you see blood, pull the syringe and start over in a slightly different location. If you do not see blood, press the plunger forward and deliver the insulin dose. Reward your pet!

Remember to rotate the injection sites with each injection.

If there is struggling or your pet escapes and you are not sure if your pet got the entire dose of Insulin, do not give more, but wait until the next scheduled dose.

Dosage regimens vary greatly among patients. The goal is to maintain blood sugar levels in an acceptable range over the course of the day, by giving injections once or twice a day (usually twice).

Peak effect is ~4-10 hours after dose is given.

Keeping the blood glucose in proper range will control your pet's excessive urination and appetite. Trial and error with dosing is often necessary. Dose adjustments will be based upon your pet's blood glucose levels and an assessment of how your pet is improving and responding clinically.

Further adjustments may be necessary to the pet's diet (high protein/low carbohydrate - cats; high fiber - dogs), body weight or other medications. Follow any diet and exercise plan developed for your pet by your veterinarian. Do not change your pet's food, feeding schedule or level of activity once regulated. Unscheduled treats should be avoided.

Do not give a dose of Insulin if the pet is experiencing low blood glucose (hypoglycemia). Common causes for hypoglycemia include: excessive doses of Insulin, failure to eat, accidental doubling of Insulin dose, strenuous exercise, drug effects.

Do not give Insulin if the pet has not eaten for 12-24 hours.

Lantus is a clear liquid; the other insulins are cloudy when gently mixed. Discard opened bottles after 4 weeks.

Ensure you always have at least two bottles of Insulin on hand.

Ensure your pet has fresh, clean drinking water at all times. Monitoring water consumption and urination amount is a good indication of glucose control.

This medication should take effect within 1 to 2 hours. Effects may not be visibly obvious and therefore laboratory tests may need to be done to evaluate this medication's effectiveness.

**WHAT IF DOSE IS MISSED?**

If you miss a dose, 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. Occasional missed doses are easily tolerated; overdoses can be fatal.

**WHAT TO TELL/ASK YOUR VETERINARIAN BEFORE GIVING THIS MEDICATION?**

Talk to your veterinarian about:

The signs of diabetes mellitus that you've noticed

When will your pet need to be rechecked. Frequent blood glucose tests will need to be done initially to determine the type of insulin to use and the correct dose required. After this has been determined, follow up blood checks will need to be done according to your veterinarian's advice.

It is not uncommon for a pet's Insulin requirement to change over time. Watch for weight loss, excessive appetite, thirst and urination. An adjustment to the Insulin dose may be necessary.

The importance of consistent daily injections, consistent weight, diet and exercise and home monitoring

Risks and benefits of using this drug

Tell your veterinarian about:

If your pet has experienced side effects on other drugs/products

If your pet has experienced digestive upset now or ever

If your pet has experienced liver, pancreas, thyroid, adrenal gland or kidney disease now or ever

If your pet has experienced any other medical problems or allergies now or ever

All medicines and supplements that you are giving your pet or plan to give your pet, including those you can get without a prescription. Your veterinarian may want to check that all of your pet's medicines can be given together.

If your pet is pregnant or nursing. Spaying your intact pet will likely be necessary.

#### STORAGE AND WARNINGS:

Some insulins need to be refrigerated and others do not. Follow the manufacturer's recommendations. Do not freeze. Protect from light.

Just prior to use, gently roll the vial between the palms of your hands ~10 times. Do not shake.

Do not re-use a syringe. Dispose of all syringes in a 'Sharps' container or another appropriate puncture-resistant disposal container. Discuss disposal options for this container with your veterinarian.

Do not use any Insulin product after the labeled expiration date.

Do not use any Insulin that has been frozen or exposed to direct heat or light.

Do not use the Insulin if the product has become discolored, has particles in it or looks different than previous vials.

Do not confuse different Insulin types, different Insulin strengths and different Insulin syringes.

Refer to the package's product insert when to discard opened bottles after their first puncture.

Keep this and all medication out of reach of children and pets. Call your physician immediately if you accidentally take this product.

Pet owners allergic to Insulin and/or other antibiotics should avoid handling this drug.

#### POTENTIAL SIDE EFFECTS:

Pets allergic to pork or beef should not use insulin from either of these sources

Allergies are rare, but an allergic reaction would show as difficult breathing, hives, scratching, swollen lips, tongue or face, sudden onset of diarrhea, vomiting, shock, seizures, pale gums, cold limbs or coma. If you observe any of these symptoms, contact your veterinarian immediately.

Low blood sugar (hypoglycemia) is the most common side effect. It is caused by giving too much Insulin, missing or delaying food, changing the food or amount fed, increasing exercise, an infection or illness or a drug interaction.

Symptoms include disorientation, weakness, hunger, nausea, rapid heartbeat, lethargy, staggering, cold, possibly seizures and coma. Hypoglycemic cats may simply be inactive. Offer the pet food. If s/he won't eat, give the pet sugar (e.g. light Karo syrup) rubbed carefully onto the pet's gums. Swallowing is not necessary as the sugars are absorbed directly through the mucous membranes of the mouth. This should revive the pet within 1-2 minutes. Once your pet has responded and is sitting up, feed s/he a high-protein meal. Contact your veterinarian for the next step(s).

High blood sugar (hyperglycemia): notify your veterinarian immediately if the pet experiences drowsiness, dry mouth, flushed dry skin, increased urination, loss of appetite, nausea, vomiting, trouble breathing or unusual thirst.

Contact your veterinarian if you notice excessive water consumption for more than 3 days, excessive urination, loss of appetite, weakness, seizures, behavior change, muscle twitching, anxiety, constipation, vomiting, diarrhea, signs of a bladder infection (small, frequent urinations, straining, blood in the urine) or swelling of the head or neck

Dogs who are poorly regulated have a greater risk of developing cataracts

Females should be spayed as estrus will change Insulin requirements

If you notice anything unusual, contact your veterinarian

This short-acting medication should stop working within 24 hours, although effects may last longer in pets with liver or kidney disease

#### CAN THIS DRUG BE GIVEN WITH OTHER MEDICATIONS?

Yes, but the dose may need to be adjusted. These drugs may interact with Insulin: ACE inhibitors (benazepril, enalapril), anabolic steroids, alcohol, aspirin and other salicylates, beta-adrenergic blockers (propranolol), beta-agonists (albuterol, terbutaline), cardiac glycosides, calcium channel blockers (diltiazem), clonidine, corticosteroids, danazol, diazoxide, dextrothyroxine, digoxin, disopyramide, diuretics, dobutamine, epinephrine, estrogen/progesterone combinations, fluoxetine, fluroquinolone (ciprofloxacin), furosemide, glucocorticoids, guanethidine, isoniazid, monoamine oxidase inhibitors, niacin, oral hypoglycemics (acarbose, glipizide, metformin), pentoxifylline, phenylbutazone, phenothiazines (chlorpromazine), reserpine, sulfonamides, sulfapyrazone, telmisartan, tetracycline, thiazide diuretics and thyroid medications.

Drugs other than those listed may also interact with Insulin

Do not give any other prescription or over-the-counter drugs, including vitamins, minerals and herbal products, without first talking to your veterinarian.

If your pet experiences any unusual reactions when taking multiple medications, contact your veterinarian

#### WHAT SHOULD I DO IF I KNOW OF OR SUSPECT THERE HAS BEEN AN OVERDOSE?

Contact your veterinarian immediately if you inject more than the prescribed amount.

#### WHAT ELSE SHOULD I KNOW?

Have your pet wear an identification tag that indicates it is a diabetic. Perhaps include your veterinarian's name and phone number.

Never leave home without sugar or corn syrup. Liquid glucose packets can be bought at your pharmacy. Become very aware of your pet's 'normal' behavior in order to determine when something is wrong.

There are urine dipstick tests that can help you measure urine glucose. If you detect ketones in the urine, this can be a very bad sign. Contact your veterinarian if urine ketones persist more than a couple of days.

Litter additives that detect glucose in urine are also available.

Notify your veterinarian if your animal's condition does not improve or worsens despite this treatment.

As with all prescribed medicines, Insulin should only be given to the dog/cat for which it was prescribed.

This is just a summary of information about Insulin. If you have any questions or concerns about Insulin or diabetes, contact your veterinarian.