

# Insulin

(in-su-lin)

**Category:** Hormone Replacement for Diabetic Patients

**Other Names for this Medication:** Caninsulin®, Vetsulin®, Prozinc®, Humulin®, Novolin®, Lantus®, Levemir®

**Common Dosage Forms:** 40 Units/mL (U-40); 100 Units/mL (U-100) in various formulations approved for dogs, cats, and humans.

This information sheet does not contain all available information for this medication. It is to help answer commonly asked questions and help you give the medication safely and effectively to your animal. If you have other questions or need more information about this medication, contact your veterinarian or pharmacist.

## Key Information

- ▶ There are many insulin products, and it is important that you do not switch between them. Only use the product your veterinarian has prescribed.
- ▶ Only use the syringe that is recommended for use with the insulin you are using. Do not substitute U-100 syringes for U-40 syringes and vice versa.
- ▶ Give at the same time(s) each day and at the same time with respect to feeding (eg, just before feeding).
- ▶ Overdoses can be fatal.
- ▶ Double-check the dose and the amount in the syringe. Learn the signs that indicate your pet's blood sugar is low, and keep a sugar source available at all times in case of emergency.

## How is this medication useful?

Insulin is used to lower blood sugar in animals with diabetes mellitus (sugar diabetes). Insulin comes in many forms that vary in their duration of effect, potency, and concentration. Insulin is an ongoing or supportive treatment for animals with diabetes.

There are some insulin products that are FDA (U.S. Food & Drug Administration) approved for use in dogs (Vetsulin®) or cats (Prozinc®, Vetsulin®). The FDA allows veterinarians to prescribe and use human insulin products in animals. You and your veterinarian can discuss which insulin is the most appropriate choice.

## What should I tell my veterinarian to see if this medication can be safely given?

Many things might affect how well this drug will work in your animal. Be sure to discuss the following with your veterinarian so together you can make the best treatment decisions.

- ▶ Other than other drugs can interact with insulin, so be sure to tell your veterinarian and pharmacist what medications (including vitamins, supplements, or herbal therapies) you give your animal, including the amount and time you give each.
- ▶ Tell your veterinarian about any conditions or diseases your pet may have now or has had in the past.
- ▶ If your animal has been treated for the same disease or condition in the past, tell your veterinarian about the treatment and how well it did or didn't work.
- ▶ If your animal is pregnant or nursing, talk to your veterinarian about the risks of using this drug.
- ▶ Tell your veterinarian and pharmacist about any medication side effects (including allergic reactions, lack of appetite, diarrhea, itching, hair loss) your pet has developed in the past.

## When should this medication not be used or be used very carefully?

No drug is 100% safe in all patients, but your veterinarian will discuss with you

any specific concerns about using this drug in your animal.

This drug **SHOULD NOT** be used in patients that:

- ▶ Are allergic to the form of insulin being used.
- ▶ Have low blood sugar (hypoglycemia). Common causes of hypoglycemia include excessive doses of insulin, failure to eat, strenuous exercise, changes in the body's need for insulin, and diabetes-inducing disease or drug effects.

If your pet has any of these conditions, talk to your veterinarian about the potential risks versus benefits.

## What are the side effects of this medication?

**Side effects, which are usually not serious, include:**

- ▶ Skin reactions at the injection sites. Rotate injection sites to decrease the likelihood of this happening. If this effect is severe, worsens, or continues to be a problem, contact your veterinarian.
- ▶ **HIGH** blood sugar (high blood glucose; hyperglycemia) may indicate that the insulin dose is too low. If you notice excessive thirst, increased frequency of urination, or increased appetite, contact your veterinarian.

**Side effects that may be serious or indicate a serious problem:**

- ▶ **LOW** blood sugar (low blood glucose; hypoglycemia) may indicate that the insulin dose is too high. Your animal may experience: weakness, depression, lack of energy, sluggishness, staggering gait (stumbling) when walking, behavior changes, muscle twitching, seizures (convulsions), or coma. **If your animal is unconscious or having a seizure, this is a medical emergency.** Take your animal to the veterinarian immediately. **If your animal is conscious and able to swallow**, rub approximately 1 tablespoon of corn syrup (Karo®) or honey on your animal's gums until it is alert enough to eat. Feed the usual meal and contact your veterinarian. Many animals do not show any obvious physical signs of low blood sugar. If your animal is not acting normally, contact your veterinarian to make sure your pet's blood sugar levels are in a safe range.
- ▶ Systemic allergic reactions (rare). If your animal has hives, has a swollen head or neck, or is having trouble breathing, contact your veterinarian immediately.

## If my pet gets too much of this medication (an overdose), what should I do?

**Overdoses of insulin can be fatal and should be considered medical emergencies.** See the information on LOW blood sugar (HYPOglycemia) in the side effects section. If you witness or suspect an overdose, immediately contact your veterinarian or an animal poison control center for further advice. Animal poison control centers that are open 24 hours a day include: **ASPCA Animal Poison Control Center** (888-426-4435) and **Pet Poison HELPLINE** (855-764-7661); a consultation fee is charged for these services.

## How should this medication be given?

For this medication to work safely, give the insulin *exactly* as your veterinarian has prescribed. Always double check the dose in the syringe before you inject your animal. Overdoses may be fatal.

- ▶ Your veterinarian will teach you how to administer insulin injections. Be sure you understand these instructions completely.

- ▶ Wash your hands. Remove the insulin bottle from the refrigerator.
- ▶ Mix the insulin in the vial. Most insulin products should not be shaken but should instead be rolled between your hands. Some insulins (eg, Vetsulin®) need to be shaken vigorously. Your veterinarian or pharmacist will tell you how to mix your animal's insulin. If foam forms on the surface of the medication, rest the vial on a table until the foam goes away before administering the product. If you see large particles floating in the medication after mixing, do not use it and contact your veterinarian or pharmacist.
- ▶ Use the correct syringe for the type of insulin you are giving to ensure correct dosing. Do not substitute U-100 for U-40 syringes (or vice versa). Carefully remove the cap from the needle. Pull the plunger back to draw air into the syringe to equal the dose into the syringe. Insert the syringe needle into the bottle and inject with a small amount of air.
- ▶ Turn the bottle and syringe upside down. Make sure the tip of the needle is in the insulin liquid. Remove the prescribed dose into the syringe.
- ▶ Before removing the needle from the bottle, check the syringe for air bubbles. If bubbles are present, hold the syringe with the needle pointing straight up and tap its side until the bubbles float to the top. Push the bubbles out with the plunger. You may need to remeasure the volume in the syringe for the correct dose. Remove the needle from the bottle. Be careful to not stick yourself.
- ▶ Giving the injection (shot): Your veterinarian will give you instructions on where and how to give the injection. Injections are given under the skin (SC, subcutaneously) ¾ - 2 inches (2-5 cm) from the middle of the back, running from head to tail, varying from just behind the shoulder blade to slightly in front of the hipbone. Injection sites should vary along the back and alternate between your pet's left and right side.
- ▶ Do not inject into muscle, veins, or skin.
- ▶ Using your free hand, pinch up a fold of skin. Insert the needle into the center of the fold as instructed by your veterinarian. Pull back on the plunger to make sure you have negative pressure. If you pull back and air fills the syringe, the needle is not under the skin. If the needle is not placed under the skin, you will need to redirect the placement and repeat the previous step. Once you are sure the needle is under the skin, push the plunger in as far as it will go. Pull the needle out. Be careful to not accidentally stick yourself with the needle or inject yourself.
- ▶ Place the used needles and syringes in a sharps disposal container immediately after use making sure you do not attempt to disconnect the needle from the syringe or recap the needle. Your veterinarian or pharmacist will help you obtain these containers. Keep containers out of reach of children and animals. Once the disposal container is about ¾ full, dispose of containers according to your community guidelines. Check with your local trash removal services or health department (listed online and in the city or county government [blue] pages in your phone book) to see which disposal methods are available in your area.
- ▶ If you have difficulty getting your animal to accept the injections, contact your veterinarian or pharmacist for tips to help with dosing and to reduce the stress of medication time.
- ▶ Patients are usually on this medication for an extended period—often for the rest of their lives. Give this medication according to the label's instructions and obtain refills as needed. Do not stop this medication unless instructed to do so by your veterinarian.

### What should I do if I miss giving a dose of this medication?

A missed dose can cause temporary signs such as excessive thirst and a greater need to urinate, but it is not life threatening. Contact your veterinarian as soon as possible for advice on when to give your animal's next dose. If you cannot reach your veterinarian and your animal is eating and acting normally, give your animal the usual dose at the next regularly scheduled time.

### How should I store this medication?

- ▶ Insulin products should be stored in an upright position (if in a vial) under refrigeration at 36°F - 46°F (2°C - 8°C). Do not freeze. Protect from light. It is okay to leave the insulin out at room temperature just prior to giving the shot.
- ▶ If your veterinarian or pharmacist has made (compounded) a special formulation for your animal, follow the storage recommendations and expiration date for the product.
- ▶ Keep away from children and other animals.

### Can handling this medication be hazardous to me, my family, or other pets?

There are no specific precautions required when handling this medication unless you are allergic to it. Wash your hands after handling any medication.

### How should I dispose of this medication if I don't use it all?

- ▶ Do not flush this medication down the toilet or wash it down the sink. If a community drug "take-back" program is available, use this option. If there is no take-back program, mix the drug with coffee grounds or cat litter (to make it undesirable to children and animals and unrecognizable to people who might go through your trash), place the mixture in a sealable plastic bag to keep it from leaking out, and throw the bag out with the regular trash.
- ▶ Do not save leftover medication for future use or give it to others to use.

### What other information is important for this medication?

- ▶ When starting a new bottle of insulin, or when increasing the insulin dose, it is best to do so on a day when you will be home to observe your animal for side effects. The new bottle of insulin might be slightly stronger than the old one, especially if you used your old bottle for several months. Increased doses require observation for signs of low blood sugar (see above).
- ▶ Consider keeping two vials of insulin at home in case one is broken or you are not able to get a new vial right away.
- ▶ If you take your animal out of the house (including on walks), never leave home without a sugar source (eg, packets of honey, liquid glucose packets [available at pharmacies], small plastic bottles of corn syrup [Karo®] or, in a pinch, little packets of table sugar) in case your pet's blood sugar drops.
- ▶ Purchase an identification tag for your animal to wear to indicate it is a diabetic. Also include your veterinarian's name and phone number.
- ▶ Do not change or switch your animal's diet or exercise routine without first checking with your veterinarian.
- ▶ Use of this drug may not be allowed in certain animal competitions. Check rules and regulations before entering your animal in a competition while this medication is being administered.

**If you have any other questions or concerns about this medication, contact your veterinarian or pharmacist.**