Making the Change to Vetsulin®
(porcine insulin zinc suspension) for Your Feline Patients

Is cat adequately regulated on current insulin?

Veterinarian/owner wants to try Vetsulin®

Due to Human Factor?
- Is the insulin injected correctly? (recommend observing owner injecting)
- Is someone new giving the insulin?
- Is the correct syringe being used?
- Is the insulin mixed properly?
- Is the correct dose being drawn into the syringe?
- Is the injection site being located correctly?
- Is diet appropriate for a cat with diabetes?
- Are tests being performed correctly?
- Does the cat eat other pet’s food?

Determine Reason for Poor Glycemic Control

Due to Human Factor?
- Is the insulin injected correctly? (recommend observing owner injecting)
- Is someone new giving the insulin?
- Is the correct syringe being used?
- Is the insulin mixed properly?
- Is the correct dose being drawn into the syringe?
- Is the injection site being located correctly?
- Is diet appropriate for a cat with diabetes?
- Are tests being performed correctly?
- Does the cat eat other pet’s food?

Due to Storage?
- Has the insulin vial been used longer than the usage period?
- Has the insulin been stored at an improper temperature?

Due to Insulin Therapy?
- Has the cat been on insulin an adequate amount of time (2–4 weeks)?
- Is the cat under- or overdosed? (clinical signs can be similar: PU/PD)
- Is current dosing interval (SID vs. BID) appropriate?

Due to Concurrent Disorder?
- Inflammation (eg, dental, pancreatitis)
- Infection (eg, skin, urinary tract, dental)
- Severe obesity
- Renal insufficiency
- Hyperthyroidism
- Concurrent medications (eg, steroids, megestrol acetate)
- Acrseasony
- Hypersensitiveness

Yes to any confounding factor: Identify any resolvable issues and rule out possible concurrent disorders that may be contributing to inadequate regulation before initiating Vetsulin® treatment.

No to all factors: Begin Vetsulin® therapy to reduce hyperglycemia and related clinical signs in diabetic cats.

Switching cat from current insulin to Vetsulin®

- Discontinue the other insulin.
- Immediately start Vetsulin at 1 to 2 IU per cat SID (no washout period required).

Switching inadequately regulated cat from other insulin to Vetsulin®

- Discontinue the other insulin.
- Immediately start Vetsulin at 1 to 2 IU per cat BID (no washout period required).

Evaluate cat 2–4 weeks after starting Vetsulin—Ask owner about changes in clinical signs and weight cat

- Has the cat’s water drinking increased, decreased, or stayed the same since your last visit?
- Has the frequency of urination changed since your last visit?
- How is your cat’s activity level? Does his/her activity seem normal? Or does he/she seem sluggish or fat active?

Generate serial blood glucose curve (samples taken every 2 hours)

Values that suggest hypoglycemia
- Nadir <120 mg/dL
- If current dose is >1 IU BID and <1.5 IU/kg BID, go back to the recommended starting dose of 1–2 IU BID
- If current dose is >2 IU BID and <1.5 IU/kg BID, and the cat was poorly regulated clinically at its last check, go back to the recommended starting dose of 1–2 IU BID
- And the cat was well regulated clinically at its last check, reduce the dose to the previous dose increment
- If current dose is ≤2 IU BID, decrease to 1 IU BID
- If current dose is ≤1 IU BID, skip the next insulin dose and reassess 12 hours later

With any change in dose, reevaluate in 2–4 weeks

Values that suggest good regulation
- Majority of blood glucose curve values ranging between 120 and 300 mg/dL
- Nadir between 120 and 200 mg/dL
- Fructosamine <50 μmol/L
- Continue with current dose if clinical signs have improved
- If clinical signs have not improved, continue at current dose and recheck in 2–4 weeks

Values that suggest poor regulation
- Majority of blood glucose curve values >300 mg/dL
- Nadir <120 mg/dL, or >200 mg/dL
- Fructosamine >50 μmol/L
- Continue with current dose if clinical signs have improved
- If clinical signs have not improved, continue at current dose and recheck in 2–4 weeks

If Yes
- Consider possibility of stress-induced hyperglycemia
- Continue at current dose and monitor fructosamine and weight every 1–3 months
- Recheck blood glucose curve sooner if clinical signs (PU/PD, weight loss, etc.) return and/or fructosamine is consistently high (>1550 μmol/L)
- If Yes
- Strongly consider Somogyi overshwing

If No
- Consider possibility of stress-induced hyperglycemia
- Continue at current dose and monitor fructosamine and weight every 1–3 months
- Recheck blood glucose curve sooner if clinical signs (PU/PD, weight loss, etc.) return and/or fructosamine is consistently high (>1550 μmol/L)

Feeding Plan:
- Feed ad libitum or two meals daily (provide food just prior to administering insulin)
- A diet suitable for a diabetic cat may encourage remission:
  - High protein, low carbohydrate (preferably canned)

BID=twice daily, SID=once daily.

Chart was developed in collaboration with Edward C. Feldman, DVM, DACVIM


General Recommendations:
1. Ideally, the blood glucose values will range between 120 and 300 mg/dL for the majority of the curve in a well regulated diabetic cat.
2. The dose will most likely need to be adjusted until adequate regulation is achieved and may require future adjustments based on changes in weight or medical history.
3. Dose adjustments should be based on clinical signs and evaluation of a serial blood glucose curve. Increases in dose should be made in 1 IU per injection increments (BID).
4. Allow at least 2–4 weeks between dose changes (unless evidence of hypoglycemia).
5. Educate the client on the need for and importance of using U-40 syringes with Vetsulin.
6. Discard open Vetsulin 42 days after first vial puncture.

Important Safety Information:
Vetsulin® should not be used in dogs or cats known to have a systemic allergy to pork or pork products. Vetsulin® is contraindicated during periods of hypoglycemia. Keep out of reach of children. As with all insulin products, careful patient monitoring for hyperglycemia and hyperglycemia is essential to attain and maintain adequate glycemic control and prevent associated complications. Overdose can result in profound hypoglycemia and death. The safety and effectiveness of Vetsulin® in puppies and kittens, breeding, pregnant, and lactating dogs and cats has not been evaluated. See package insert for full information regarding contraindications, warnings, and precautions.
Vetsulin®

DESCRIPTION

Vetsulin® is a sterile solution in a suspension of porcine insulin.

Each mL contains:

- Sodium chloride 7.0 mg
- Sodium acetate trihydrate 1.36 mg
- Insulin zinc suspension (porcine insulin zinc suspension)

USAGE AND ADMINISTRATION

For the effective treatment of diabetes mellitus in dogs and cats. Vetsulin® is indicated in dogs with insulin-dependent diabetes mellitus (IDDM) or clinical signs of hypoglycemia (ketosis, weakness, lethargy) associated with non-insulin-dependent diabetes mellitus (NIDDM) or as an additional treatment in NIDDM to improve glycemic control and control of clinical signs of hypoglycemia. Vetsulin® is indicated in cats for the treatment of IDDM.

DOSAGE AND ADMINISTRATION

For Subcutaneous Injection in Dogs and Cats

STUDY

Use of vetsulin® either alone or in combination with oral hypoglycemic agents in dogs and cats has been evaluated through clinical trials, field safety and field effectiveness studies. Vetsulin® was treated in two dose groups: a) 3.3 IU/kg once daily, and b) 3.3 IU/kg twice daily. Vetsulin® was also treated in four pretreatment periods: baseline, 12 weeks, 24 weeks, and 48 weeks.

Deep subcutaneous injection is the preferred route of administration. The injection site should be chosen so that the injection can be given subcutaneously without discomfort (e.g. in the perineal or the lateral aspect of the body).

Calculating the dose: VETSULIN CARTRIDGES SHOULD BE CONFIRMED WITH A U-40 SYRINGE AND 26G OR 27G NORDIC NEEDLES. Prior to using any syringe set, make sure the cartilage is uninjured, or firmly subcutaneous and appears as a mound of skin. Do not cut the product if visible clumps or white particles persist after shaking thoroughly.

The detailed instructions for use provided with Vetsulin® must be strictly followed.

The injection should be administered subcutaneously; 2 to 3 mL (from the vial) is slowly injected from the subcutaneous to the muscle layer and soft tissue.

Always provide the Owner Information Sheet with each prescription.

The dogs in the study required a daily dose of 5.61 IU/kg body weight. In the study group, the dogs should be given daily subcutaneous insulin injections in an acceptable way, e.g. by using 20-gauge, 1.25-inch needles. The dogs should be injected in the same area of the body at each administration.

Twice daily therapy should be initiated at the duration of insulin action is determined to be inadequate. Twice daily therapy is initiated in the remaining 55% of the cats. The first dose should be given at the end of the insulin action period of the previous dose, e.g. 8 hours after the previous dose. The duration of daily therapy may need to be changed in the cats that were previously receiving twice daily therapy. The injection should be given twice daily, at the end of the dose interval which is determined to be inadequate for the cats or dogs.

Cats

The recommended initial dose is 1 to 2 IU injection. The injection should give twice daily subcutaneously every time of 12 hours intervals.

For cats, the daily dose should be increased to ensure the correct daily dose, e.g. by giving twice daily, or a similar treatment schedule. In cats, the dose should be increased to ensure the correct daily dose for the cat, and the dose should be increased to ensure the correct daily dose for the cat.

The duration of daily therapy may need to be changed in the cats that were previously receiving twice daily therapy. The injection should be given twice daily, at the end of the dose interval which is determined to be inadequate for the cats or dogs.

CONTRAINDICATIONS

Use in puppies and kittens: Vetsulin® should not be used in cats with severe neurological disease and in cats with signs of sedation.

STORAGE CONDITIONS

Stable at room temperature. Store at 15°C to 30°C (59°F to 86°F) protected from light. Store at room temperature. Store at 15°C to 30°C (59°F to 86°F) protected from light. Store at room temperature. Store at 15°C to 30°C (59°F to 86°F) protected from light. Store at room temperature. Store at 15°C to 30°C (59°F to 86°F) protected from light. Store at room temperature. Store at 15°C to 30°C (59°F to 86°F) protected from light.

Adverse reactions in dogs included a single report of a local hypersensitivity reaction occurring following i.v. administration of the insulin. Three dogs were reported to have a generalized allergic reaction to the insulin suspension. Two dogs were reported to have an anaphylactic reaction to the insulin suspension. One dog was reported to have a generalized anaphylactic reaction to the insulin suspension.

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