Vetsulin® (porcine insulin zinc suspension): 40 IU/mL concentration

Vetsulin®, from Merck Animal Health, is the first registered veterinary insulin for the treatment of diabetes mellitus in both dogs and cats. Vetsulin® is presented in a 10 mL glass vial at a concentration of 40 IU per mL of suspension. To avoid drawing errors when summing Vetsulin® for cats, it is important to use a U-40 syringe. Vetsulin® may be used as a U-40 syringe alternative that accurately doses in 0.5 IU per injection.

At home, have the cat owner:

• Monitor fructosamine prior to and 2–3 weeks after dose changes in stressed cats.
• Allow at least 2–4 weeks between dose changes (unless there’s evidence of hypoglycemia).
• Adjust dose in increments of 0.5–1 IU per injection (twice daily), if necessary, based on the glucose curve evaluation.
• Ideally, the blood glucose values will range between 120 and 300 mg/dL in a well-regulated diabetic cat.
• Ideally, perform a serial blood glucose curve, with samples taken every 2 hours for the course of the day, for 3 days. If regulation has been achieved, keep in mind that cats often present with stress-induced hyperglycemia.
• Monitor fasting and postprandial blood glucose values for trends.
• Observe and record any signs of ketosis.
• Monitor and record urine glucose and/or ketone bodies.
• Maintain starting dose and frequency of administration for 2–4 weeks (unless there’s evidence of hypoglycemia).
• Return for evaluation 2–4 weeks after starting Vetsulin®.

At the return visit:

• Diagnose the cat.
• Obtain the owner’s overall impression of the cat’s progress, especially with regard to PU and PD.
• Evaluate how the cat is eating, drinking, and urinating, and assess for signs of ketosis.
• Observe and record any signs of PU and PD.
• Monitor fasting and postprandial blood glucose values for trends.
• Monitor fructosamine prior to and 2–3 weeks after dose changes in stressed cats.
• Once regulated on Vetsulin®, cats should be rechecked every 2–4 months. It’s important to keep in mind that cats, unlike dogs, can go into remission.

Vetsulin®, like many other insulin preparations, is a suspension. The active ingredient in Vetsulin® is present in the precipitate and in the clear supernatant. Shake the vial thoroughly until a homogenous, uniformly milky suspension is obtained. Foam on the surface of the suspension formed during shaking should be allowed to disperse before the product is used. If required, the product should be gently mixed to maintain a homogeneous, uniformly milky suspension before use. Opaque or white particles can form in insulin suspensions: do not use the product if visible clumps or white particles persist after shaking thoroughly.

In cats, stress can induce transient hyperglycemia that makes it harder to diagnose and manage diabetes. Because stress-induced hyperglycemia can result in blood glucose concentrations of 300 mg/dL to 400 mg/dL, it can confound the interpretation of blood glucose results. Persistent hyperglycemia and glycosuria should therefore be present to definitively establish the diagnosis of diabetes. It is also useful to measure serum fructosamine concentrations, since levels of fructosamine are normal in stress-induced hyperglycemia and elevated in sustained hyperglycemia.

Vetsulin® and Feline Diabetes Mellitus WITH YOU FOR LIFE

Diagnosing feline diabetes mellitus

Diagnosing feline diabetes can be challenging. The diagnosis should be based on the presence of classic clinical signs that have been present for several weeks or months, such as polyuria (PU), polydipsia (PD), and weight loss despite a good appetite, coupled with comorbidity laboratory tests showing hyperglycemia (>300 mg/dL) and glycosuria. A characteristic clinical sign of advanced feline diabetes is a plantigrade stance.

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Evaluating glucose accumulation in urine is a useful diagnostic tool in making a definitive diagnosis of diabetes in cats. Since it takes several hours of stress to detectable glucose to accumulate in the urine, glycosuria may not be present in cats with stress-induced hyperglycemia. In addition to the absence of glycosuria, none of the typical clinical signs of diabetes are present in cats with stress-induced hyperglycemia.

At the return visit:

• Diagnose the cat.
• Observe and record any signs of ketosis.
• Monitor fasting and postprandial blood glucose values for trends.
• Monitor fructosamine prior to and 2–3 weeks after dose changes in stressed cats.
• Once regulated on Vetsulin®, cats should be rechecked every 2–4 months. It’s important to keep in mind that cats, unlike dogs, can go into remission.

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Starting Vetsulin®

Vetsulin® therapy is ideally prescribed for newly diagnosed diabetic cats or in cases where a change in insulin is indicated. Caution should be exercised when changing from one insulin product to another.

In clinic:
- Weigh the cat to obtain a benchmark for future weight gain or loss.
- Start the cat on an injection of Vetsulin® 1 to 2 IU twice daily, at approximately 12-hour intervals.
- The initial dose should be given concomitantly with or right after a meal for cats fed twice daily.
- Keep the cat hospitalized for the first day to verify that the starting dosage does not cause hypoglycemia.
- Instruct the cat owner about:
  - Injection technique
  - How to identify and treat hypoglycemia
  - Parameters to monitor at home
  - Preferred diet
- Discharge: Schedule follow-up appointment in 2-4 weeks. This allows the patient and its owner to get used to injections.

**Conclusion:**

During consultation:
- Perform a thorough physical examination and weigh the patient.
- Conduct laboratory testing including complete blood count, urinalysis (including sediment examination), and serum biochemical profile (including BUN, creatinine, total protein, albumin, globulin, cholesterol, triglycerides, alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, total bilirubin, and specific gravity of urine).
- Rule out hypertension, renal failure, inflammatory bowel disease, pancreatitis, eosinophilic pancreatic insufficiency, hyperadrenocorticism, growth hormone excess or acromegaly, neoplasia, and hepatic disease.
- Photograph the cat (head and entire body); optional, but often the only way to diagnose subsequent anomalies.

When health status is known and diabetes mellitus confirmed:

- Explain thoroughly to the cat owner what diabetes mellitus is, that achieving optimal regulation may take up to 2 months, and what the implications are for the family. Make sure the cat owner understands the treatment involved, and that the cat should be able to live a happy, healthy life with consistent treatment. This is crucial, as complete cooperation of the cat owner is essential to treatment success.
- Treat existing infections or other medical conditions. Many diseases may affect insulin metabolism.
- Introduce appropriate diet.
- Begin treatment with Vetsulin® (porcine zinc suspension).

Additional information about insulin dosage requirements for smaller animals can be found at www.webvet.com.

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