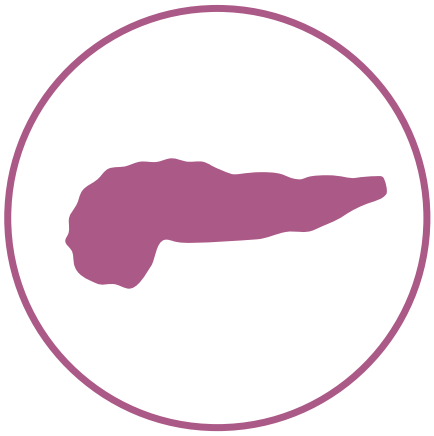
Pancreatic Disorders

DIABETES MELLITUS IN CATS



Dietary modifications along with insulin are integral to the management of diabetic cats. Unlike dogs, which have type 1 diabetes and remain insulin dependent, most cats typically have type 2 diabetes and may achieve diabetic remission.[1,2]

Diabetic remission means blood glucose levels can be managed by diet alone without exogenous insulin or other glucose-regulating medications in cats that previously required treatment to control diabetic signs.[1]

Obesity, indoor lifestyle, physical inactivity, advancing age, and male gender are significant risk factors for diabetes mellitus in cats.[1,3,4] Obesity is recognized as the most important manageable risk factor, with overweight cats having a 4-times greater risk for diabetes than cats in ideal body condition.[1,5] Each 1-kilogram increase in body weight in healthy cats leads to a 30% decrease in insulin sensitivity.[6]

The goals of dietary management are to:

- help regulate glycemic control to manage clinical signs of diabetes, including polyuria, polydipsia, polyphagia, and weight loss
- achieve and/or maintain healthy body condition and muscle mass

Key Messages

- Nutritional management of diabetic cats is different than for diabetic dogs because of the underlying disease etiologies.
- In newly diagnosed cats, the first goal of management is to gain glycemic control through diet and medication, including insulin as needed.
- The most important complication associated with insulin therapy is excessively low blood glucose level. Signs of hypoglycemia may occur suddenly and can include:
  - weakness
  - lethargy
  - restlessness
  - disorientation
  - incoordination
  - changes in behavior
  - muscle twitching
  - seizures
  - coma

DID YOU KNOW?

In diabetic cats, protein normalizes fat metabolism and provides a consistent source of glucose energy. Arginine, an essential amino acid, stimulates insulin secretion.[7]

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Key Messages (continued)

- Nutritional recommendations include:[4,8]
  - A high-protein diet (defined as dietary protein ≥ 40% of metabolizable energy [ME] calories) is preferred for diabetic cats because it can help stabilize glucose levels, maximize metabolic rate, avoid protein malnutrition, prevent muscle mass loss, and improve satiety.[7]
  - Dietary carbohydrates should be restricted. A suggested target is ≤ 12% of ME calories or 3 grams (g) of carbohydrates/100 kilocalories (kcal).[4,9,10]
    - Studies suggest the amount and type of dietary carbohydrate strongly influence postprandial insulin and glucose concentrations in cats.[4]
    - Multiple studies support the efficacy of high-protein, low-carbohydrate diets to improve insulin sensitivity, decrease insulin needs, and enhance glycemic control.[9,11–14]
- Once glycemic control is established, managed weight loss in obese cats can help decrease insulin resistance, improve insulin control, and increase chances for diabetic remission.
  - Overweight or obese cats who are regulated, have stable body weight, and still need to lose weight may benefit from a high-protein (> 40% ME calories, > 10 g protein/100 kcal), lower-calorie diet fed at 80% of resting energy requirement for ideal weight.[8]
    - Target weight loss is 0.5% to 1% of body weight per week. Rapid weight loss should be avoided due to the risk for hepatic lipidosis and excessive loss of lean body mass.[8]
    - A high-protein, low-carbohydrate diet helps maintain insulin sensitivity, which can help increase fat loss and preserve lean body mass during weight loss.[6]
    - A higher-fiber, high-protein weight management diet may be useful in some obese, diabetic cats to facilitate weight loss. Digestible carbohydrates should be limited to 12% to 26% of ME calories in these diets.[4,8,15]
- Feeding ad libitum or multiple small meals each day may optimize glucose management.
  - Research shows diabetic cats can be allowed to follow a typical feline food ingestion pattern of many small meals since they tend to have small changes in blood glucose and minimal postprandial hyperglycemia. Consequently, insulin injections do not need to coincide with meal feeding in diabetic cats that are naturally eating many small meals daily.[16]
  - Overweight or obese diabetic cats will still benefit from a portion-controlled amount of food as part of a weight loss program.
- Checking for clinical signs is important to effective diabetes monitoring. Useful, practical indicators of diabetes control in cats are water intake or urine output over a 24-hour period, as well as assessment of the cat's activities, appetite, and demeanor.[4] Other parameters owners can monitor at home include body weight and body condition.
  - Pet owners may want to buy a baby or small animal scale so they can monitor body weight at home. They can also learn how to perform body condition scoring at home.
  - Weight loss in obese patients often reduces the amount of insulin needed to maintain healthy blood glucose levels.
  - Rapid and/or unplanned weight loss is an indication of poorly controlled diabetes.
- Adjust dietary recommendations, as needed, when concurrent diseases are present (e.g., pancreatitis, renal disease, or intestinal disease).

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