

Ettinger & Feldman – Textbook of Veterinary Internal Medicine

Client Information Sheet

Nutritional Management of Diabetes Mellitus

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The goals in treating your pet's diabetes mellitus are to keep your dog or cat happy and to provide as stable a life as possible. Nutrition is an integral part of the management of any diabetic patient. Diabetes mellitus is caused by an absence or a reduction in the activity of insulin, the substance that allows sugar to move into the body's cells for use as an energy source. One primary source of sugar and its building blocks is food.

To reach our overall objective of maintaining your pet's quality of life, we try to achieve several important goals with regard to diabetes nutritional management. These goals include the following: 1) maintenance of food intake to provide adequate calories, 2) maintenance of a healthy body weight and body condition, 3) weight loss or weight gain if indicated, 4) reduction or elimination of the clinical signs of diabetes, and 5) avoiding the common complications of the disease.

Maintaining blood glucose (or sugar) concentrations within an acceptable range is important in achieving these goals. This can be done using medication (usually insulin or an oral drug), nutrition, or a combination of both. The best approach varies from pet to pet, and it may take some time to determine which approach meets your pet's unique needs.

Prescription Diets

In some cases your veterinarian may suggest a special prescription diet to help manage your pet's diabetes. Fiber-enhanced foods have been used successfully in the management of diabetes in both dogs and cats. Fiber promotes slower digestion and absorption of dietary carbohydrates (the major provider of blood glucose or sugar in the food). Fiber may also reduce peaks in blood sugar after meals. Some types of fibers are also believed to form gels in aqueous solutions (such as found within the gastrointestinal tract), thereby binding glucose and water and preventing their transfer to the absorptive surface of the intestine. This action may contribute to reducing fluctuations in blood sugar concentrations following a meal. The overall effect is the maintenance of blood glucose concentrations within a more healthy range and a reduction in the side effects associated with poor blood sugar control.

Several studies support the feeding of low-carbohydrate diets for the management of cats with diabetes mellitus. These foods contain higher concentrations of both protein and fat to reduce the amount of carbohydrate in the diet. Cats are carnivores and their systems are designed to digest and metabolize foods high in protein. Because of the limited amount of carbohydrate in these diets, the consumption of such foods may reduce dramatic increases in blood sugar concentrations after a meal, or reduce the amount of insulin needed for the body's cells to be able to use circulating glucose. If they need additional sugar beyond what is supplied in these low-carbohydrate foods, the cat can take the protein and fat from the diet and turn it into glucose to

meet their body's needs. The use of low-carbohydrate diets for the management of canine diabetes has not been investigated. Low-carbohydrate diets are high in protein and fat. Diets high in fat may predispose animals to pancreatitis. If pancreatitis is a concern, see the section in this handout on pancreatitis.

Obesity

Obesity has been identified as a risk factor for the development of diabetes mellitus in cats, and in some cases, weight loss can lead to the resolution of the disease. In both dogs and cats with diabetes mellitus, the presence of obesity can make it more difficult to control blood sugar concentrations within a healthy range, predisposing them to additional complications. For these reasons, diabetic dogs and cats that are overweight should be started on a weight loss program once their diabetes is stabilized.

Many different approaches exist with regard to diets designed for weight loss. Fiber-enhanced foods and low-carbohydrate diets, which are often used in the nutritional management of diabetes mellitus, can also be used for weight loss. Fiber-enhanced foods may contribute to satiety (a feeling of fullness) and this characteristic can be beneficial to a successful weight loss program. Furthermore, fiber reduces the caloric density of a diet, permitting a larger volume of food to be fed to the animal. A diet with reduced carbohydrate content may alter the animal's metabolism to utilize more fat for energy and lead to weight loss. Although the use of low-carbohydrate diets for the management of diabetes mellitus is currently limited to cats, this type of food has been used for weight loss in both dogs and cats. It is interesting to note that in studies examining the efficacy of both fiber-enhanced and low carbohydrate diets for the management of diabetes mellitus, overweight animals that responded positively to both types of diets frequently lost weight as well. This certainly supports weight loss for the reversal or improved control of diabetes mellitus in both dogs and cats. For additional information about programs and foods designed for weight loss, please refer to the client handout on obesity.

If your animal is placed on a weight reduction plan, you must regularly re-check with your veterinarian while your animal is on the program. As your animal loses weight, it will often need less insulin or other medication to maintain its blood sugar levels within a healthy range. Failure to see your veterinarian and have the medication adjusted appropriately can lead to an episode of hypoglycemia, which in some cases can be fatal.

Pancreatitis

Pancreatitis is a common complication of diabetes mellitus in dogs and cats. Pancreatitis may or may not be accompanied by a simultaneous increase in blood fat levels, often referred to as *hyperlipidemia*. In cases in which only blood triglycerides are increased, it is called *hypertriglyceridemia*. In many, if not all cases, a dietary change is necessary to prevent recurrence of the pancreatitis, and if indicated, reduce blood lipid concentrations. Usually this is accomplished by reducing, or in some cases severely restricting fat in your pet's diet. In many cases, to prevent future episodes of pancreatitis or to reduce blood lipid levels, your pet will need to remain on a low-fat diet for the rest of its life. To prescribe a diet with lower fat levels than your pet is currently eating, your veterinarian will need a thorough and extensive diet history on

your animal. This information will be vital to assist them in selecting your pet's new diet, so it is important that your report be as accurate as possible.

Nutritional Management at Home

Your veterinarian may choose to place your pet on a veterinary prescription diet to aid with the management of the diabetes mellitus. However, in some cases they may choose to keep your pet on its regular diet. Many factors influence the decision whether to change diets and the appropriate time to do so. Every diabetic patient is different and has unique needs, and your veterinarian will advise you with regard to what they think is the best choice for your animal. They will also provide detailed instructions regarding how to feed the diet, and when to administer insulin or oral hypoglycemic drugs in relation to meals if indicated.

However, no diet can be of benefit unless your animal eats it. Some medications, especially insulin, can be harmful or deadly when given to an animal that is not eating. It is imperative that you monitor your pet's food consumption daily. Animals with diabetes mellitus may reduce their food intake or stop eating for many reasons. Some may be as simple as they don't like the diet, or more serious such as the development of a concurrent disease process. If you notice a reduction or cessation in your animal's food intake, contact your veterinarian immediately for further guidance and advice.

Contacts for Further Information



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