

Diabetes Management

Understanding and Organization

-What is Diabetes Mellitus?

History

The term “diabetes” is typically used to describe the condition Diabetes Mellitus. Diabetes mellitus is literally translated into “sweet urine.”

Thousands of years ago, a disease was found to effect humans that caused rapid weight loss, excessive urination/thirst, and eventual death. The common finding with this condition was that the patient’s urine had a sweet flavor. The sweet flavor was due to the overflow of sugars into the urine. These sugars were not able to be utilized by the body due to the lack of insulin production. To simplify the understanding of diabetes mellitus, imagine insulin as a key to a door found on all of our cells. Insulin is able to unlock the door, the sugars then go into the cells and are used for energy. Due to the advances of modern medicine, no one has to taste urine (thank goodness!), and diabetics are able to be treated with daily doses of insulin.



Type 1 and Type 2

Modern medicine has become a little more complicated over the years. Type I and Type II categories were formed to help organize these complications. Type I is a basic form of diabetes in

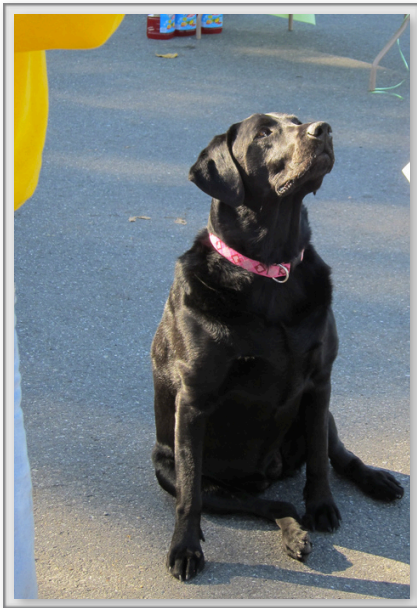
which insulin is not produced in the body. Type II is a form of diabetes in which insulin is produced but the cells are resistant to its presence. Think of the locks on the cell doors being blocked.

- The cause

Dogs

There are many causes of Diabetes Mellitus in canines. Pancreatitis is the most common cause of Type I diabetes. Pancreatitis is a painful inflammatory process that can destroy the portion of the pancreas that secretes insulin. Pancreatitis is often caused or worsened by feeding high fat content food and treats. A high amount of fat in the bloodstream will cause the pancreas to become overstimulated. When the pancreas becomes overstimulated it produces excessive digestive

enzymes that are meant to be carefully transported to the intestines to aid in digestion. This excess material is misplaced back into the pancreas and surrounding organs, such as the liver. The intestines have a specialized defense systems that protects the animal's intestinal tract from being harmed. Other organs in the body do not have these specific safety factors. When exposed to digestive enzymes, they can become permanently damaged. Therefore, diabetes is an incurable condition.



Cats

There are also many causes of Diabetes Mellitus in the feline. The most common cause of Diabetes Mellitus is Type 2, secondary to obesity. The steroid hormones that are naturally released from fat cells cause the insulin to become ineffective. Many cats can “self cure” with proper diet and weight loss.

- Insulin

Care of insulin

Insulin is a very sensitive protein and must be handled with care, so not to be destroyed. Insulin must be kept cold at all times and it has a limited shelf-life. Do not take chances; if the bottle of insulin has been possibly miss-handled or is out of date, buy a new one. Insulin must be injected subcutaneously due to its delicate structure.

Dose

To ease the volume that a diabetic must inject, insulin has been made very concentrated. The measurement for insulin is in units. Each type of insulin will have either a U-100 or a U-40 measurement. It is very important to dose your pet with the proper syringe. Your bottle of insulin and syringe box will clearly say whether it is the U-100 or U-40 type. The insulin and the syringes must match or the dose will be incorrect. *Do not shake insulin! Insulin will settle out and need to be mixed. To mix insulin, gently roll it between your hands. *Shaking the jar will cause micro-bubble formation. These bubbles may not be visible but can cause serious alterations in dose.

Insulin dosing is very much an art rather than an exact science. The amount of insulin needed will be vastly determined by many contributing factors. The most important factors that regulate dose are what the animal is being fed, weight loss or gain (cats only), other current infections or disease processes, and worsening or chronic pancreatitis. Some patients insulin doses are simple and do not change often, or can be very complicated and need continual alterations. Please work carefully and frequently with your veterinarian to ensure the best dosage is being used. Careful adherence to your veterinarian's recommendations is the only way to help your pet have uncomplicated diabetes.

Timing

Insulin is a very time-specific medication and must be regulated on a daily basis. For example, a twice daily dosage **MUST** be given in 12 hour intervals. Being off schedule by even a few hours will cause miss-regulation and potential complications.

– Giving the injection

We will show you

No need to worry. You and your pet will quickly become pros. Insulin needles are super small, so your pet will barely notice, and after time, they usually do not notice at all. The injections are given into the fatty, connective tissue layer under the skin. The easiest location is in the scruff at the back of the neck. This area has less nerve endings and plenty of extra space.

Please ask!

Never feel silly about asking us if you are giving the injection correctly. We are happy to help you. Initially you will feel like all thumbs when giving the injection, but will become easier with practice.

– Food

Prescription diets

Diabetic diets are aimed at decreasing the amount of sugar that an animal consumes. This will allow for a decreased amount of insulin needed. For dogs, these diets also contain a decreased amount of fat to reduce the risk of pancreatitis. In cats, the diets are aimed at weight loss.

Same Same Same

Every time an animal without diabetes eats, the pancreas senses this and delivers the proper amount of insulin needed. This perfect response pattern is no longer functioning properly in a



diabetic. Therefore, to properly regulate diabetes, care must be taken to feed the exact same amount and type of food every day. During the management of your pet's diabetes, your veterinarian will be attempting to find the exact amount of insulin your pet will need to keep them balanced. The amount needed will be dependent upon many factors. One very important factor that you control, is the amount and type of food being fed. This amount can be vastly different from day to day if a consistent diet is not performed. Meals need to be fed just prior to or during the insulin injection. This will help decrease any anxiety about the injections as well. Most pets will be focused on eating and not care about their injection.

Not eating or vomiting

If your pet is not eating or vomiting, DO NOT GIVE THE INSULIN!!! If he/she skips more than two meals and you have not been able to give him/her the insulin, please consult with your veterinarian. If he/she does not eat and receives insulin, a dangerous overdose can occur. If your pet has a decreased appetite, but is still eating, go ahead and give the insulin at a 1/2 dose. If this occurs for more than two doses, please consult with your veterinarian.

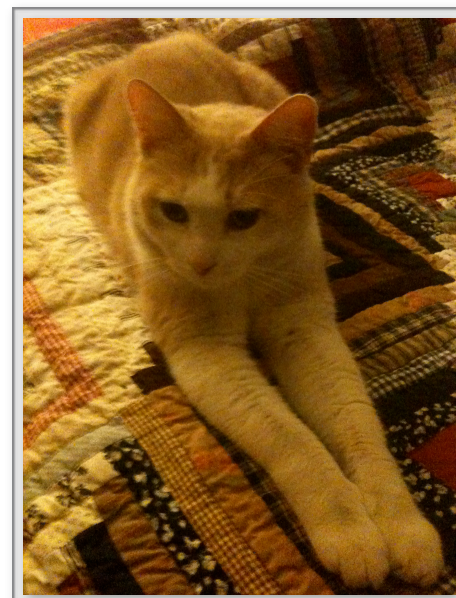
– Treats

Dogs

Low fat, low sugar treats are fine for dogs. Please ensure that these treats are the same time every day just as with his/her feeding times. Canned green beans or other pre-made diabetic dog treats can be a very enjoyable part of a good diabetic management plan.

Cats

Cats, like dogs, can have low fat, low sugar treats. Surprisingly, some cats really enjoy canned pumpkin (not pumpkin pie filling, just plain pumpkin) for a treat. Please ensure that any treats are the same every day just as with feeding times. Most cats are diabetic due to obesity, but cats can become, “cured” of diabetes if they loose weight. The secret to weight loss in cats is actually water intake. More cats will loose weight on canned diets than dry due to their increased water intake. The increased water intake will also help their overall health in many other ways.



– Secondary Problems

Other illnesses

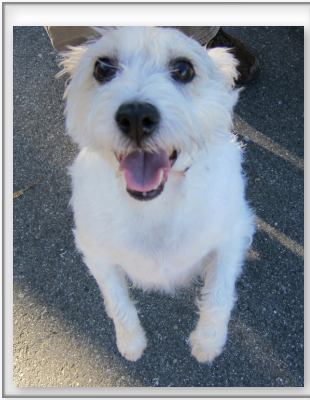
Illnesses can cause your pet's body to need more insulin. The illnesses may not appear to be a big problem, but they can make it very difficult to regulate your pet's diabetes. An excellent example of this is dental disease. Please monitor your pet for any other symptom of illness and discuss them with your veterinarian.

Urinary tract infections

Urinary tract infections are very common with diabetics. The reason for this is the excessive sugar that is in their urine. Sugar is an excellent food source for bacteria. The smallest infection can thrive in this abnormal environment.

Sudden cataract formation in Dogs

Although uncommon, if diabetes is not well controlled, sudden cataract formation can occur. The cataracts and total blindness can occur in less than 24 hours. The only correction for cataracts is surgery. Luckily, dogs live very happy lives with blindness. Dog's do not have great vision normally. They depend heavily upon their senses of hearing and smell much more than vision. We can compare their loss of vision with our loss of smell. It would be undesirable to live without a sense of



smell, but we could still live a very happy life. Dogs adjust so well to blindness that many owners will not know that their pet is blind until they move the furniture or take their pet to a new environment.

– Checkups

Non-complicated

For a pet with non-complicated diabetes regular check-ups every 3-6 months is needed regardless of symptoms, to ensure proper management of your pet's condition. Some problems, such as urinary tract infections, may not show symptoms until they have advanced and caused permanent damage.

Complicated

The frequency of visits will be dependent upon the problems. Your veterinarian will guide you through what will be needed as the problems are noted.

– Diagnostics

Blood work

Blood work will help your veterinarian decide if the insulin dose is correct or needs adjustments. It will also assess overall health and any other disease processes that may occur.

Urinalysis

Urinalysis will evaluate if your pet has a concurrent urinary tract infection. Urinalysis will also help your veterinarian evaluate the current severity of the diabetes.

– What to watch for

Not enough

As discussed, many factors can cause alterations in the necessary insulin dose. Symptoms of this can include the following: weight loss, increased urination, increased thirst, vomiting, decreased appetite, sudden cataract formation causing blindness, etc... These symptoms can be due to other disease conditions as well. Please consult your veterinarian if any of these symptoms are noted.

Too much

Insulin overdose is a very serious complication. The symptoms can include lethargy(tired), seizures, coma, and even death. If you think your pet may be having an insulin overdose by accidental administration of an increased dosage or insulin being given without him/her having eaten, please seek veterinary assistance immediately. If Chester Valley Veterinary Hospital is not open, please call Pet Emergency Treatment at 907-274-5636. If your pet is conscious and willing to eat, feeding him/her an excessive amount of food will help lessen the severity. If your pet is not conscious or unwilling to eat, rubbing karo syrup on his/her gums can also help a little. Some sugars can be absorbed through the gums. Long term concerns with feeding outside of our strict schedule can be dealt with later. Insulin overdose is a very concerning short term problem that takes priority.

– Cost

You will spend money

Even uncomplicated diabetics cost money. Many of the maintenance diagnostics can be skipped or forgotten. This can set your pet up for a much bigger expense if he/she becomes sick from diabetes. The best way to decrease cost is to closely follow all of the feeding and maintenance diagnostic schedules. This is not a process that can be done half way. If you are not able to properly treat your pet due to cost or time/schedule concerns, you may need to consider humane euthanasia or relinquishment of ownership. Without treatment, this is a fatal disease that can cause great suffering.

– Prognosis

It depends...

As with many things in medicine, prognosis can be challenging to predict. Time is the only way to know how things will turn out for you and your pet. Many very happy diabetics live for years with no problems. The goal of this overview is to help you identify the things that CAN occur. There are many pets that never experience many of the concerns listed in this overview. One generalization that may or may not become true for your pet is that dogs can be more difficult to regulate while cats tend to be easier. Cats can often “self-cure” or be easily regulated with diet.

No need to worry about one thing!

One easy prediction is that you and your pet will adjust well to the insulin shots. In the beginning, many people are scared of the injections. They quickly realize that the needles are small and virtually painless. This is especially true if the injections are given with a treat or while they are eating their meal. Many people feel very awkward when they first learn to give injections. This quickly resolves with practice.

– Questions

We are always happy to help!

No question is stupid. We are happy to help you understand. That is our job and we are here for you!



CHESTER VALLEY VETERINARY HOSPITAL
helping pets enjoy every adventure

Diabetes Management Weekly log

E=Excessive, N=Normal, V=Vomiting, D=Decreased

Date	Weight (lbs)	Urine	Eating	Drinking	Other
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