CCAH update

Center for Companion Animal Health, UC Davis School of Veterinary Medicine
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Developing Better Treatment Strategies for Diabetic Cats and Dogs

UC Davis professors Richard Nelson and Edward Feldman have been working together for almost 20 years to develop better therapies for diabetic companion animals.

"Diabetes is one of the most common diseases among people in the world," says Dr. Feldman (pictured right). "It's the most common cause of stroke, heart attack, kidney failure, people being put on dialysis, transplantation, limb amputation and blindness in the United States—it's not only a common disease, but also a potentially catastrophic disease."

Diabetes is also common among cats and dogs. "We see a large number of cases here at the Veterinary Medical Teaching Hospital (VMTH)—each of five students on my rotation has seen a diabetic case this week, and that's typical," says Dr. Feldman.

"Virtually 100 percent of dogs with diabetes have the type called 'juvenile onset' in humans—they must receive insulin injections each day to survive, says Dr. Feldman. "Some people give their dog one injection per day, some may give their dog two injections per day.

About 40 percent of diabetic cats have a disease similar to 'adult onset' diabetes in people—they have a relative deficiency of insulin; the other 60 percent are the same as dogs—they have an absolute deficiency and need to have insulin injections."

Classic signs of diabetes are "drinking a lot, urinating a lot, eating a lot and losing weight." While there are major side effects that develop over decades in people, almost none of these occur in cats and dogs because

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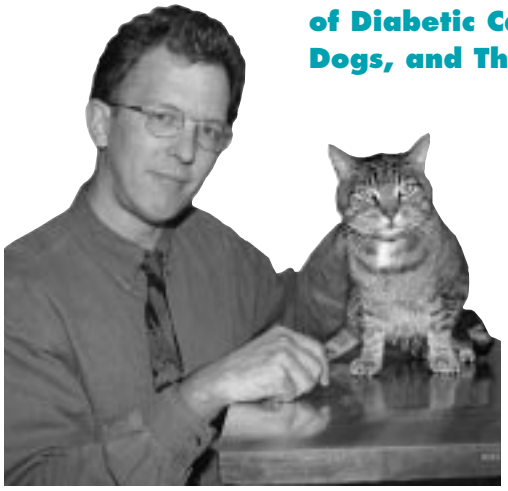
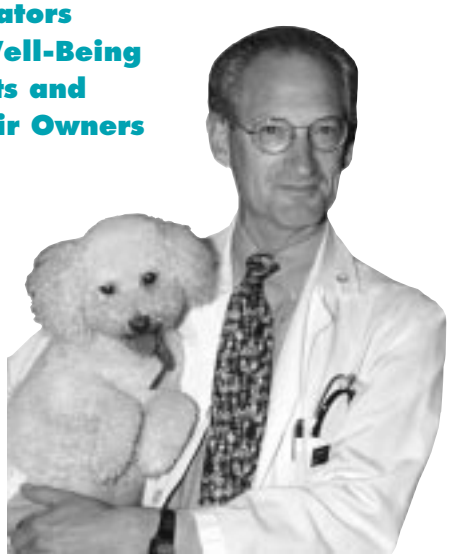
CCAH Collaborators Care for the Well-Being of Diabetic Cats and Dogs, and Their Owners





School of Veterinary Medicine UC DAVIS 50 ANNIVERSARY 1948-1998

Celebrating 50 years of accomplishments in veterinary medicine!

National Pet Week is May 3–9, 1998
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Keeping Avian Companions Healthy

Pet birds are very popular—they're curious, intelligent and bond strongly with humans. Many species have a long life span, and some birds live as beloved members of a human family for generations.

Don Preisler

"Cockatiels are nice little birds—they're very personable and animated," says Dr. Tell. "These good companions can live 25 years!"

CCAH faculty member Lisa Tell, who specializes in companion avian medicine, says, "Birds such as parakeets, cockatiels, cockatoos, Amazon parrots, African grays and macaws are very social and like a lot of attention. People getting into owning a bird are making a life-long commitment, since birds live a lot longer than cats or dogs—some birds, like parrots, can live to be 60–80 years old. They're not only very interactive, but they're also very smart. You can't fool them! It's like having a small child for life."

Don Preisler

Dr. Tell diverts a cockatoo's attention as she listens to the bird's heart during a routine examination. She is a School of Veterinary Medicine faculty member who specializes in companion avian medicine.

DMSA: All That Glitters May Be Toxic

Because of their curiosity, birds are attracted to bright, shiny objects—they tend to examine strange objects with their beak and tongue. Pet birds often ingest small bits of lead or other toxic heavy metals. Lead toxicity is often fatal in birds unless they receive immediate treatment and the exposure is small.

Pet birds are commonly poisoned by a wide variety of household objects including fishing sinkers and chips of lead-based paint.

Pet birds are commonly poisoned by a wide variety of household objects including weights from toys and curtains, lead bell clappers, fishing sinkers, champagne foils, lead-based paints, batteries and galvanized wire.

Treatment is based on removing the lead source from the environment, supportive care of the bird and treatment with a "chelating agent" that binds the lead so that it can be excreted from the body.

The chelator CaEDTA, now used to treat companion birds, has some disadvantages—it must be injected and may cause some toxicity of its own.

Dr. Tell is studying DMSA, an oral chelating agent used to treat children with chronic environmental lead toxicity. Dr. Tell will determine whether or not DMSA, which has fewer side effects, is an effective treatment for lead toxicity in cockatiels, a common pet species.

Lisa Tell is a member of the VMTH Zoological Medicine Service and of the CCAH. Her avian companion, Poco, is a bright blue hyacinth macaw.

Therapy for Respiratory Infections: Making the Most of Mist

When a bird develops a fungal infection such as "aspergillosis," in the respiratory tract—one of the most difficult and frequently encountered problems in avian medicine—it is difficult to get antifungal and antibiotic medications applied precisely to the areas where they are needed.

The respiratory system of birds is anatomically complex. Injected drugs aren't distributed effectively via the bloodstream because air sacs, one of the largest parts of the bird's respiratory tract, don't have much vascular supply. Even when liquid medications are aerosolized and inhaled, there is no guarantee that the mist will find its target.

Dr. Tell is studying how aerosolized antifungal treatments disperse so they may then be precisely delivered within the respiratory tract of birds. As a result of this investigation, avian practitioners may soon have a better understanding of aerosol therapy for treating respiratory infections in birds.

In order for birds to stay healthy and live a long life, owners need to interact with them and give them a balanced diet and good medical care. Dr. Tell encourages annual checkups rather than waiting until a problem arises. Some health problems in birds can be detected very early, before symptoms appear.

Companion Animals: Why Do Some Pets End Up at Animal Shelters?

Approximately 1 million companion animals are turned over to animal shelters each year in California—nearly 70 percent of those animals are ultimately euthanized. Why would anyone relinquish their cat or dog?

That's what veterinary epidemiologist Philip Kass aimed to find out as co-investigator of the National Shelter Study. Carried out in California and three other areas across the United States from April 1995 to April 1996, the study provided information on 6,929 dogs, cats or litters relinquished to shelters.

"It's not enough to look just at the dogs and cats. You have to look at the characteristics, lifestyles, beliefs and sentiments of the people who own the animals being turned in to shelters versus those who have developed successful relationships with their pets."

Conducted entirely by questionnaire, the study provided unbiased scientific data about factors leading to the surrender of pets. The goal was to learn as much as possible about animals that are relinquished to shelters as well as about the people who give up their pets to shelters, in order to learn the risk factors for unsuccessful relationships.

Companion border collie Huw is assured of his home with Dr. Kass.

Philip Kass, epidemiologist and member of the School of Veterinary Medicine faculty and Center for Companion Animal Health, works with hundreds of veterinarians to collect scientific data for solving problems.

These results may help in planning education and intervention programs to drastically reduce the number of animals surrendered to shelters, and the number of potentially adoptable companion animals that are euthanized each year.

"Because there are two components to the human-animal bond," says Dr. Kass, "it's not enough to look just at the dogs and cats. You have to look at the characteristics, lifestyles, beliefs and sentiments of the people who own the animals being turned in to shelters versus those who have developed successful relationships with their pets."

Results of the SOS Study

The California arm of the study, titled the Sacramento Overpopulation Study (SOS) and conducted by Dr. Kass, was supported in part by the CCAH. The SOS survey included 3,900 pet owners—those relinquishing their animals as well as a randomly selected control group of pet owners who have successful relationships with their companion animals.

The study revealed important differences between people who relinquish their pets to shelters and those who do not. In some cases, pets were given up to shelters if owners were losing a job, moving or getting divorced. But, in general, the relinquishing owners tended to be younger, poorer and less educated. Many of those who gave up pets seemed to have a poor understanding of what it really takes to be a pet owner. They knew little about the importance of vaccinations and neutering, or animal behavior and basic training techniques.

Dogs and cats that were fearful, hyperactive or noisy, soiled or damaged the house, or escaped frequently were much more likely to be turned in to shelters. Purebred and purchased animals were more likely to be kept than adopted animals. As animals matured, the risk of abandonment lessened, although as pets reached old age, the risk increased.

Pets that spent a portion of their day inside the house were much more likely to be kept than "outside" animals. Dr. Kass believes that a much stronger bond develops between the animals kept inside and their owners.

The trend was clear—the stronger the attachment, the less likely an owner would relinquish a dog or cat.

On virtually every question about the scale of pet attachment, the trend was clear—the stronger the attachment, the less likely an owner would relinquish a dog or cat. The study showed that once people have relinquished an animal to a shelter, they are more likely to do so again than someone who has never done so.

"There is a lot of interest in these studies across the United States," says Dr. Kass, who will soon present his SOS findings at the National Animal Control Directors annual meeting. "This new information is giving genesis to further studies, such as a Morris Animal Foundation investigation to see if owner training provided at the time of adoption will help decrease the risk of animals being relinquished. Other studies may determine whether establishing better criteria for adopting pets at shelters will result in more successful relationships."

Celebrating Animal Companions...

Sierra (1986–1997) and **Nevada**
El Dorado Hills CA

Buck El Cerrito CA

Jasper Vacaville CA
(1978–1997)

Jimmy Fair Oaks CA
(1987–1996)

Amy Campbell CA
(1985–1997)

Corky
Gold Run CA
(1986–1996)

"The best friend I ever did have."

—Robert Novak

Arno Concord CA

Reggie Ophir OR
(1986–1996)

National Pet Week
May 3–9, 1998

National Pet Week is a time to honor special human-animal relationships such as those described in this update. Each human-animal relationship starts with a story, and the story of how my wife and I obtained our newest cat, Yogi, is documented in a letter written to Cliff and Sara Saunders. The Saunders had a special cat named Reggie. Like so many pets, Reggie was treated as an equal member of the family, and his death after 19 years brought out many emotions and memories. Devotion of this type is also exemplified by the many clients of our Veterinary Medical Teaching Hospital who care for a diabetic dog or cat, even though many of these pets are already aged and suffering from other disorders.

Although cats and dogs are found in over one-half of the homes in the United States, people have an amazing ability to open their hearts to less traditional pets. Birds and so-called "pocket pets" and "exotics" have become increasingly more common, and the human-animal bond is just as great. Unfortunately, pet ownership does not always lead to such positive experiences. We are equally concerned with what happens when the human-pet bond does not develop, or weakens. Pet abandonment affects many homes, private and public agencies, and communities.

National Pet Week is one way of recognizing the special animal(s) in our lives. We at the Center for Companion Animal Health are proud of the contributions we have made to the health and welfare of all our small friends—dogs, cats, birds, pocket-pets and other exotics. The Center is also grateful for the support you have given us over the last six years. We wish you and your pets a happy and healthy National Pet Week.

—Niels C. Pedersen

Dear Dr. Pedersen,

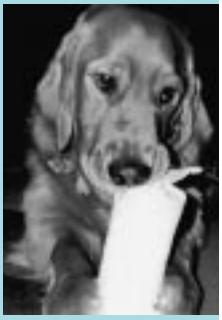
My shelties Scout and Bodie were both patients of the VMTH with unusual diseases. Bodie was diagnosed by Dr. Denise Elliott as having a tumor of the adrenal gland in 1994, and Scout was treated last year for superficial necrolytic dermatitis by Dr. Stan Marks. Sadly, both dogs succumbed to their illness.

The reason I feel compelled to donate to the CCAH is that in both instances when I was referred to the VMTH, I had little hope that anything more could be done than what my local veterinarian had tried. But although their diagnoses were grim, I went away with hope that there were methods and treatments that could prolong the quality of their lives even if only for a short while. This would not be possible, I believe, if it weren't for the studies being conducted at places such as the CCAH.

I am sure that every pet owner who arrives at the VMTH thinks of their pet as special; otherwise we would not seek treatment there. There are no words to describe to you the special relationship I was fortunate to have with Scout and Bodie, so I think it fitting to memorialize them in this way. I also think it an appropriate way to acknowledge the efforts made by Drs. Elliott and Marks. You may count on me as being a continued supporter of the CCAH and I welcome any news of events at the veterinary school.

—Helen M. Workman

Scout and **Bodie**



Teddy Oroville CA

Gummi was a kidney donor for a transplant in early 1991. She keeps busy grooming some of our other cats!
—Mary Wenzel

Gummi Goleta CA

Girlie Stockton CA

Oupen Annie
Newhall CA

Clipper & Skooner Riverbank CA

Duke Sacramento CA

Zak Sacramento CA

Daisy Santa Cruz CA

Whitsey Yorba Linda CA

Emma Laytonville CA

...In Our Hearts

Dear Dr. Pedersen,

Reggie

Reggie was born to a feral cat who inhabited a slough off the Elizabeth River in Norfolk, Virginia in April 1978. Neighborhood children took him from his mother before he was four weeks old. Since they were not allowed to keep him, we inherited the little guy.

Reggie was a very special cat in that he related and was affectionate, yet maintained his independence. He always spent a good deal of time outdoors—hunting, playing and exploring. At the same time he was very comfortable in the house. He also was an excellent traveler. When we moved from Norfolk to California we took a slow trip across the United States in a pickup and travel trailer—Reggie had an upholstered shelf in the cab so he could see out. He ate, he played, and he used the litter box as we traveled down the highway. When we camped, he explored each new campground. New situations never phased him. He was a fast learner, and he always insisted on doing things his way.

For 19 years and two months we enjoyed his antics and his companionship. We have two other cats, but we will always miss Reggie. In his memory we would like to add our small contribution to the Companion Animal Memorial Fund and plan to make a contribution each year in his memory.

—Cliff and Sara Saunders

Dear Mr. and Mrs. Saunders,

Thank you for your donation supporting studies in the Center for Companion Animal Health and for sharing Reggie's story. He seems like a truly amazing cat. His life parallels in many ways that of our newest cat, Yogi.

We found Yogi crossing a country road at midnight. I stopped to see what "it" was and found this little 5-week-old kitten with both eyes pasted shut with inflammation, pus pouring from his nose, badly dehydrated and with pneumonia. My wife and I took him home and nursed him back to health, although it was touch-and-go for two weeks. My wife, who really didn't like cats that much (although we had two others), bonded with him in the worst way. He is now one and a half years old and is the apple of her eye. He has to come in every night to sleep on her lap for an hour, even though he is way too big.

Please be assured that we will use your donation, and that of Reggie's veterinarian, Dr. Attix, for finding ways to study the cause of diseases of cats and dogs, and to improve diagnostic and treatment regimens. The CCAH is well known for research into feline health problems—infectious, endocrine, nutritional and immunologic—and the gift will be used for maximum benefit. Thank you both once again for your donation and for giving us an insight into the life of another exceptional cat.

—Niels C. Pedersen, Director, CCAH

Yogi

...and In Our Lives

Treatment Strategies for Diabetes

Continued from page 1

the disease occurs much later in their lives. There is only one major diabetic complication that occurs in dogs—they develop cataracts and go blind within the first 1–3 years of becoming diabetic, but this can be corrected with cataract surgery to restore their sight.

"The survival time of cats and dogs is directly related to how well the disease is controlled," says Dr. Feldman. "It's not a life-threatening disease like cancer or some infections, but it is a chronic and potentially debilitating disease. You don't cure the animals—you control the disease as well as you can."

Dr. Nelson says, "The average survival time of diabetic cats is two and a half years from the time a diagnosis is made. However, with good control of blood sugar levels and a committed owner, they can live more than five years beyond the initial diagnosis. Survival time is somewhat limited because most cats are already aged when they develop diabetes.

"Dogs usually become diabetic at age 8–10 and have 2–3 years average survival time, in part because of other problems they may have developed by that time, and because they are older when they develop the disease," he says.

"We've acquired a great deal of expertise in taking animals that have been referred to us with various problems and trying to read between the lines," says Dr. Feldman. "Our goal in therapy is to figure out what we need to make diabetic dogs and cats 'reasonable pets.' If they do not receive appropriate treatment, they produce so much urine that dogs may no longer be housebroken, and cats may no longer use a litter box. Owners simply do not tolerate these situations, and that's understandable.

"It's a serious emotional and financial commitment that owners of these animals must make to treat diabetes. Some people," says Dr. Feldman, "are unable to make either the financial commitment or the emotional commitment. Many people are scared to death of needles, for example. Some of these animals are put to sleep, not because they have a disease that's untreatable, but because the owners cannot treat them."

"The diagnosis is a piece of cake—you can do it in about two minutes… the treatment, though, can keep you awake at night!"

"We've evaluated just about every therapeutic area you can imagine in order to improve the overall health and well-being of diabetic dogs and cats," says Dr. Nelson. "We care about dogs, cats and their owners. Our goal is to develop treatments that are easy, with minimum impact on the owner's lifestyle, and that are effective in controlling the disease and minimizing its clinical signs."

"It takes a dedicated owner, a knowledgeable veterinarian, and more than a little luck to get these guys to do well," says Dr. Feldman. "I wouldn't want to minimize the importance of any of the three, although probably the veterinarian is in third place!

"Each dog or cat over time tells us what type of insulin and what dosage they need. If you line up 10 diabetic beagles, each will require a different insulin and dosage—every animal is unique. I think we have helped veterinarians tremendously by informing them about the different insulins and how best to determine the requirements for each animal."

Dr. Nelson says, "Seminars on diabetes are always full because attendees want to know what they can do to make it better, easier or less complicated and confusing.

"The reality is that veterinarians still have trouble treating diabetes—it's no different with physicians. Diabetes, with its complications, is still in the top five reasons for death in this country. Our whole approach for dogs and cats is to develop better techniques and treatment strategies.

"The diagnosis is a piece of cake—you can do it in about two minutes measuring blood sugar on a machine. The treatment, though, can keep you awake at night!"

Dr. Feldman and 4th-year veterinary student Kimberly Yeager evaluate Fletcher's blood work.

Fine-Tuning Fletcher's Insulin Therapy

Fletcher, a bichon frisé from Marin County, was diagnosed as a diabetic two years ago. He comes in to the Veterinary Medical Teaching Hospital at 7:30 a.m. for his periodic check and stays all day to be monitored.

The 4th-year student on endocrinology rotation checks his blood sugar, then makes sure his owners, who give the insulin injection, mix the insulin appropriately, draw up the correct dosage and administer it correctly. His owners pick him up at the end of the day.

"It's the kind of check that virtually all of our diabetics undergo about every three months, if all is well," says Dr. Feldman. "Sometimes the check will reveal problems before they become evident to the owners, perhaps when the symptoms are fine but the blood sugars are dropping a bit too low. We might say, 'He's getting 10 units of a particular insulin, let's give him nine—it'll be safer.' We're fine-tuning all the time."

In addition to his therapy for diabetes, Fletcher participates in CCAH-funded studies with oral drugs that complement insulin by slowing down glucose absorption from meals.

Continued on pages 7 and 8

Ongoing Studies and Beneficial Therapies

Which Insulin Works Best?

Among their many scientific investigations, Drs. Feldman and Nelson study different insulins—all made for human diabetics—to let the veterinary community know which ones are best for diabetic dogs and cats. There are several different insulins made in a variety of strengths and longevities. Dr. Feldman says, "We've found that some insulins definitely work better for one species than another."

Understanding Insulin Kinetics for the True Picture

Drs. Feldman and Nelson have educated the veterinary community about appropriate monitoring strategies to avoid serious problems. Their work revealed that an animal who is overdosed or underdosed with insulin in the morning will show blood sugar levels and symptoms during a late afternoon check that will look very similar to those of an untreated animal! When the data is misinterpreted, the tendency is to continue raising the dosage.

Dr. Feldman says, "We teach veterinarians and students to carefully monitor these animals from early in the morning until late in the afternoon in order to see if the animal is being treated with the correct dosage and with an insulin that lasts long enough. All of our work on insulin kinetics is shared with veterinarians through publications and seminars."

Improving the Treatment

Drs. Nelson and Feldman carried out the initial studies with fiber and its importance in the diets of diabetic dogs and cats, and they have done several other dietary studies with the pet food industry. "The idea," says Dr. Nelson, "is that if you can feed a certain kind of diet, it won't cure the disease, but it will improve the effectiveness of insulin that's being given."

Monitoring Diabetes—a Wide-Angle View

Dr. Nelson became interested in two products used successfully in humans for many years. "Fructosamine" and "glycosylated hemoglobin (GHb)" provide a way to monitor diabetic animals with a single blood sample, versus having them stay in the hospital all day to monitor blood sugars.

"Our goal is to try to decrease the hospitalization time," says Dr. Nelson. "If the clinical signs are good, the owners are happy, and the GHb or fructosamine results look ok, there shouldn't be long-term complications—which is what we're trying to accomplish. We're doing another study of all the variables as we continue to analyze this monitoring technique."

Transplantation of Islet Cells—a Potential "Cure"

Daily insulin shots for most diabetics—both human and animal—may someday be a thing of the past. Dr. Feldman and his colleagues found that transplanted pancreatic "islets of Langerhans" cells, which secrete insulin in response to rising blood sugar, successfully take over the job of regulating blood sugar in dogs.

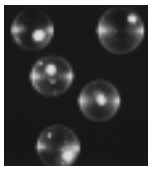
Federal approval was then given to try the technique in humans. In a pilot project with physician Patrick Soon-Shiong of the St. Vincent Medical Center in Los Angeles, Dr. Feldman transplanted islet cells to 12 diabetic dogs whose owners wanted to try the potential cure. The canine transplants were so successful that in 1994 Dr. Soon-Shiong carried out an FDA-approved trial with human patients, again showing that islet cell transplants offer a way for diabetics to live without the disease. The next step is to be able to produce enough islet cells on a commercial basis to make transplants available to diabetic humans and companion animals as needed.

"The first dog we ever transplanted was Punkster (right)," says Dr. Feldman. "Punky was diagnosed as having diabetes and referred to us at the VMTH. His owner and I went through all the things you go through in managing a diabetic dog—finding the right insulin, finding the right dosage. I asked his owner if she would be interested in a transplant. At the time, we didn't even know if it was going to work, but she was willing to take the chance. Punky's response was fantastic—in fact, he lived so long, he was transplanted three times! Each transplant allowed Punky to function normally for many months."

CCAH members Richard Nelson (left) and Edward Feldman (right) are School of Veterinary Medicine faculty members in small animal medicine whose scientific interests are virtually the same—they are clinical endocrinologists who deal with all hormonal diseases in cats and dogs.

"It's a natural collaboration," says Dr. Feldman.

In Dr. Nelson's Pancreatic Function Special Procedures Laboratory, staff research associate Larry Neal runs analyses of GHb, a month-long indicator of blood sugar levels, on blood samples from all over the country.



Tiny clusters of islet cells isolated from the pancreas are encapsulated (right) in semipermeable alginate, a product of seaweed used as a thickener in many foods. When transplanted under local anesthesia to the abdomen of a diabetic human or dog (such as Punkster, below), the cells continue to perform their life-giving function—they regulate blood sugar by secreting insulin. Encapsulation allows sugar and insulin to pass freely, but protects islet cells from antibodies that would reject them.

A Special Dog and a Committed Family—the Story of Lucy

Continued from page 6

All of our diabetes studies are clinical studies—the clients play an integral role in data collection and in letting us know how things are going," says Dr. Richard Nelson. "All the studies are designed to improve the health of the animal."

The client who's done the most with me is Lori Gregory, who, with her diabetic dog, Lucy, was always willing to get involved and help. Mrs. Gregory recognizes the importance of these studies in gaining new information."

Lucy, a golden retriever, was the Gregory family dog for 14 years. "She had a very sweet disposition," says Mrs. Gregory. "She was the sweetest dog I ever had."

After Lucy was about 6 years old, she began losing weight, drinking large amounts of liquid and urinating excessively. Although she had all the classic symptoms of a human diabetic, until her local veterinarian diagnosed Lucy's condition as diabetes, Mrs. Gregory had been unaware that dogs and cats also get the disease.

Her veterinarian, familiar with UC Davis studies on diabetes and the expertise of the school's endocrinologists, referred her to Dr. Nelson at the School of Veterinary Medicine.

Dr. Nelson gave Lucy a complete evaluation and began treatment for the disease, fine-tuning her therapy. Lucy regained her lost weight and resumed normal life. She turned out to be fairly easy to regulate at a very low level of insulin.

Mrs. Gregory says, "Lucy dealt with it really well, we dealt with it well, and she stayed in control. She got regular exercise, and we were very careful to feed her every 12 hours and, twice a day at feeding time, to give Lucy the prescribed shot of insulin."

Some of their friends wondered why the family was so committed, saying "Lucy's getting old, and now you've got to give her shots…" but, Mrs. Gregory asks, "Wouldn't you do it?"

Lucy, a special companion of the Gregory family, participated in several studies to help diabetic pets.

She says, "We got involved in studies knowing they could benefit Lucy, or if not her, could help other dogs. We felt very lucky to have Lucy in the studies. We were happy to participate and to have her participate. We came up to UC Davis every couple of months to do what we needed to do.

"The first study aimed to determine whether or not high-fiber foods were better for diabetic dogs. We didn't know which food she was on during the trial. But it proved to be true that high fiber was better, and from then on, we always gave her high-fiber dog food.

"In a few of the studies, Lucy got different pills—she'd be three months on a placebo and three months on the drug," Mrs. Gregory says. "We'd keep an eye on her and track any symptoms. During a study of 'acarbose,' an oral tablet designed to slow down glucose absorption from a meal, Lucy had no symptoms—you wouldn't have known she was on it."

Dr. Nelson says, "Lucy was unusual in that she developed diabetes earlier than most dogs, lived to be 14 years old—longer than is typical—and she had a dedicated owner who was able to do what it takes to keep the animal healthy. In such a case, and Mrs. Gregory and I talked about this many times, you tend to enter new frontiers," says Dr. Nelson. "I'd say, 'Mrs. Gregory, we're in a new frontier here because Lucy has had diabetes longer than any dog we've ever had.' You start to uncover things that wouldn't normally be seen with animals that have much shorter lives."

During her experience with UC Davis, "Lucy got the best medical care, and the studies possibly helped her—a lot was learned from them," says Mrs. Gregory. "Dr. Nelson was so nice, and he loved Lucy, too."

When she first took Lucy to UC Davis, Mrs. Gregory had no idea what went on at the Veterinary Medical Teaching Hospital or the Center for Companion Animal Health. She says, "It's just like the [human] hospital I work in—they do brain surgery, they do cancer surgery. I was very impressed. It amazed me to see what they could do with companion animals. Since then I've referred many people to UC Davis with their animals—they've all had great outcomes!"

CCAH update

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