MEDICAL ALERT DOGS HELP DIABETICS MANAGE THEIR DISEASE

BY SHARON PFLAUMER

Everything happens for a reason. And sometimes good things happen because of bad experiences. That was the case for Mark Ruefenacht, a diabetic who had an acute low blood sugar episode in 1999. He was a volunteer puppy raiser for Guide Dogs for the Blind, Inc.© (GDB) and was working with a dog when the episode occurred. Although not trained to help, the dog instinctively tried to rouse him from the drowsiness symptomatic of low blood sugar. The dog's behavior was enough to make him aware he needed to get help.

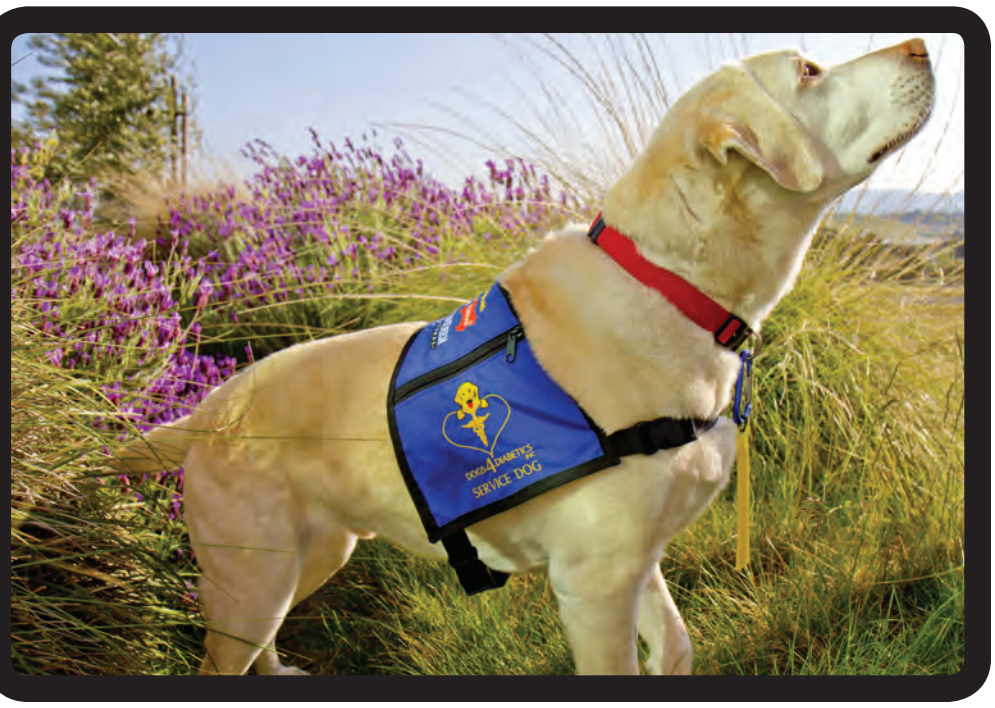
Odetta pictured above, and other specially trained dogs like her, save lives by Alerting to rapidly dropping blood sugar. Between two and six percent of Type 1 diabetics die from low blood sugar. © Yellow Neener Photography.

The episode left Ruefenacht wondering if dogs could be trained to assist diabetics. As a forensic metrologist by profession who works with blood and breath alcohol measurements, he wondered if there was something diabetics emit that dogs could detect. After learning no one was researching this, he launched an investigation.

In 2004 and using his own diabetes, Ruefenacht set out to train a Labrador retriever named Armstrong to Alert to, or indicate, drops in blood sugar.

"I needed to answer two questions." He says. "First, could I train a dog to detect changes in blood sugar? And second, if I could train a dog to detect the change in my blood sugar, would the dog be able to detect the same change in another diabetic's blood sugar? I found out the answer to both questions was yes."

In 2006, Ruefenacht founded Dogs4Diabetics® Inc. (D4D), a non-profit organization that primarily places Medical Alert Dogs with Type 1, insulin dependent diabetics.



Armstrong, the first dog trained by Mark Ruefenacht to Alert to low blood sugar, was released by the Guide Dogs for the Blind Program (GDB). Eighty-five percent of the dogs trained by Dogs4Diabetics, Inc. (D4D) are Labrador and golden retrievers released by GDB. The rest are released by the Canine Companions for Independence Assistance Dog Program (CCI). Dogs are released for some minor reason, i.e., they're too active. Medical Alert Dogs need to be very active, food motivated and eager to please. © Yellow Neener Photography.

It's difficult to be depressed when a warm, furry face greets you every morning when you wake up. © Yellow Neener Photography.

Specially trained dogs like Lawton pictured above are called Medical Alert Dogs because people sometimes mistakenly think Diabetic Alert Dogs diagnose diabetes. Photo by Cindy Nielson.

The 2011 D4D Spring Client Training Class on Graduation Day. © Yellow Neener Photography.

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HIGHS AND LOWS

When a diabetic's blood sugar drops rapidly, the liver responds by secreting a chemical. That chemical emission is put out in the breath and sweat and is very consistent from one diabetic to another. That's what the dogs smell.

"Breath and sweat are the same molecularly except breath content is about ten minutes ahead of what's put out in sweat. The dogs smell the chemical in both. The faster the blood sugar falls the more chemical is emitted and, therefore, the easier it is for the dogs to detect. For example, if blood sugar drops from 200 to 100 in an hour, it's not an acute reaction. Less chemical is emitted, so it's more difficult for the dogs to smell. But, if blood sugar drops from 200 to 100 in 15 minutes—it's an acute reaction and the body emits more chemical. Then, it's easier for the dogs to detect."

Diabetics also sometimes have high blood sugar. Typically, that isn't a critical situation and can be detected by the human nose, i.e., the breath smells like a popular brand of chewing gum. Whereas it takes several days for high blood sugar to cause unconsciousness, low blood sugar causes incapacitation in as little as an hour. Without intervention, a diabetic could die.

"Although we train the dogs to detect low blood sugar, about half of them also Alert to high blood sugar. We don't train the dogs to do that, they just figure out there's a window in which they need to keep their diabetic. High blood sugar is easy for the dogs to detect. So much so, it can extinguish their ability to pick up low blood sugar." Ruefenacht says.

Here's why. If the dogs have an easier job–detecting high blood sugar—versus a more difficult job—detecting low blood sugar--and the dogs are rewarded for both, the dogs do the easier job. To encourage the dogs to Alert to low blood sugar, they're given a higher value reward—cheese or premium dog treats--versus a lower value reward—regular dog food kibble--when they Alert to high blood sugar.

Thus far, D4D placed 85 dogs trained to Alert to blood sugar only. With the exception of dogs placed with youngsters that get a parent if the youngster's blood sugar drops, the dogs aren't trained to provide other assistance. Ruefenacht wants to cross train dogs, in the future, so they can assist in more ways.

"Interestingly, 40% of the recipients of Guide Dogs from GDB, lost their sight due to complications resulting from diabetes. We're looking at training dogs that would work as both Guide Dogs and Medical Alert Dogs through our partnership with that organization."

A SUPPLEMENT ONLY

While the rate of accurately Alerting to low blood sugar varies from dog to dog, D4D Medical Alert Dogs are between 80 and 100 percent accurate. Although the dogs are highly accurate, they only indicate blood sugar is dropping. The diabetic still needs to test with a glucometer and take appropriate action.

"In our experience, after diabetics get a Medical Alert Dog, they have the best blood sugar control they've ever had in their lives. That's because the dogs give them more opportunities to test. Depending upon the severity of the disease, blood sugar testing is recommended three to seven times daily. Most recipients of Medical Alert Dogs test seven to ten times daily which gives them exceptionally good control." Ruefenacht says.

Better blood sugar control means diabetics are less likely to develop severe symptoms such as neuropathy (numbness in the fingers or feet), blindness or require amputation. Other benefits derived from a Medical Alert Dog are more difficult to measure.

"We believe Medical Alert Dogs relieve the depression experienced by many diabetics because the dogs give them a sense of empowerment—They now have the ability to manage a disease they had difficulty managing in the past. The dogs are conversations starters as well, which benefits diabetics who often feel isolated."

Diabetics also get much needed exercise when walking their dog.

ALERTING WITH A BRINGSEL

The dogs are trained to Alert to low blood sugar with a bringsel, a device that hangs from the dog's neck. When the dogs smell the change in blood sugar, they pick up the bringsel and make physical contact with their diabetic. The diabetic then checks his

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blood sugar and rewards his dog if it Alerted correctly. The reward each dog receives depends upon what motivates it. While Armstrong was driven by toys, most labs are food motivated.

Scent discrimination is taught using sweat samples from actual diabetics, i.e., here's a normal diabetic scent, here's a low blood sugar scent and here's high blood sugar scent. Once scent discrimination training is complete, a client and a dog are matched.

After the client takes the dog home, the dog focuses exclusively on him and his blood sugar level for at least three months. During this period, no one else can play with the dog, feed it, etc. The process, called umbilical cording, develops a strong bond between the dog and client and causes the dog to understand it's only supposed to Alert to the client's blood sugar level.

DOG AND CLIENT MATCHING

Current clients are matched with dogs in training in terms of their energy level and personality.

"I travel constantly so I needed an active, outgoing dog that always wants to be doing things." Ruefenacht says. "Another diabetic, who travels infrequently, needs a dog with a lower energy level."

During a three-month client training program, clients learn how their dog Alerts, how to care for it, etc. At the training program's conclusion, clients check in daily with D4D initially; then, weekly; and, finally, monthly. Dogs are recertified annually to ensure they continue to Alert to hypoglycemia and meet the requirements of the American's with Disabilities Act. Client health is monitored with periodic updates from physicians.

D4D is based in the San Francisco Bay area and only places dogs with clients living within a three or four hour drive. Ruefenacht is beginning to work with other accredited assistance dog organizations across the country and around the world to develop partnerships and training programs enabling them to offer Medical Alert Dogs as well.

LIFE OR DEATH

To be eligible for the program, a person must be diabetic for one year, physically active and 12-years-of-age.

"We're looking for clients actively trying to manage their disease but, nonetheless, still having low blood sugar episodes. For example, some diabetics no longer experience the early symptoms of hypoglycemia: sweating, hunger, the shakes and drowsiness. Without symptom recognition, they fail to act and could lapse into a coma and die. The dogs Alert them before they become incapacitated."

Because low blood sugar can be a life or death matter, D4D does double blind studies with the dogs it trains to assure accurate Alerting behavior. It also follows a rigorous protocol, when training dogs to discriminate the low blood sugar scent.

Within the field of assistance dogs, Medical Alert Dogs detecting blood sugar drops are the most in demand. As a result, a multitude of organizations have arisen which provide Medical Alert Dogs or offer to train pets to Alert to low blood sugar. While some other organizations train pets, D4D does not.

"The early socialization that's part of the puppy raising programs conducted by organizations like GDB and CCI is critical. The dogs go on trains and buses and inside grocery stores and restaurants. Pets don't have the same socialization experience. It's not surprising the majority of problems reported with them arise because of it. For example, pets are likely to forage for food on the floor when taken in a restaurant." Ruefenacht says.

Those seeking to acquire a Medical Alert Dog should learn which organizations are accredited by Assistance Dog International to train diabetes/Medical Alert Dogs. The D4D website (http://www.Dogs4Diabetics.com/) also provides standards of performance for them as well as consumer awareness information.

HIS GUARDIAN ANGEL

"Before I got Celeste, my Medical Alert Dog, I had less freedom to do things by myself." Says fourteen-year-old Dylan Calamoneri. "My parents and I were afraid my blood sugar might drop very low suddenly. My worst fear was that would cause me to faint and my parents wouldn't be there to help me."

Dylan was diagnosed with Type 1 diabetes when he was 6-years-old. He spent five days in Children's Hospital Oakland upon diagnosis when he was in the first grade.

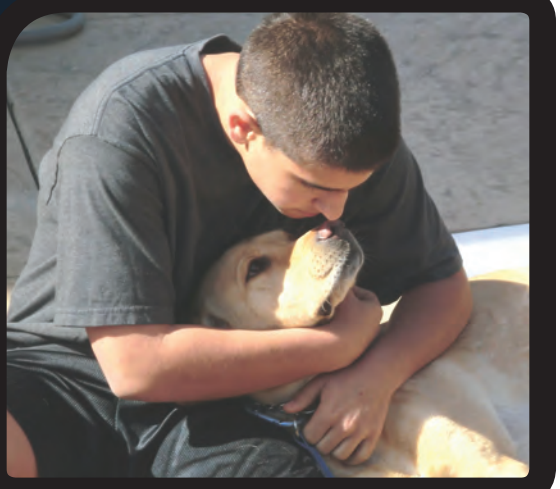
"Being the parent of a diabetic was very challenging for us and especially at night." Says Dylan's mother, Andrea. "Because Dylan participates in athletic activities during the day, his blood sugar often drops unpredictably low in the middle of the night as his body tries to restore itself after vigorous activity. Before he got Celeste, we had to check his blood sugar in the middle of the night for eight years!

"Since Celeste arrived, we worry less and sleep more. Bless her heart--that dog comes in at 3 am--or whenever he's low or dropping--and wakes us up. She jumps up on the bed with her front paws right by my face. If I don't respond quickly enough, she goes to my husband's side of the bed and wakes him! At first, it was difficult to believe but, time after time, she's proven her accuracy and skill. She truly is Dylan's Guardian Angel."

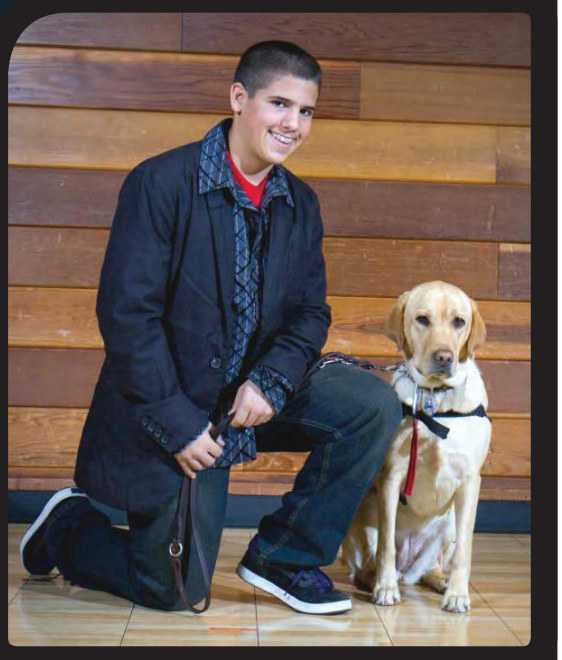
As Dylan neared adolescence, he wanted to be more independent. Celeste enables him do things by himself.

"She warns me if my blood sugar drops when I'm wrestling or playing baseball." So, I worry less." He says. "Because she alerts to my lows, she helps me keep my blood sugar more even during school. That's important because low blood sugar makes it more difficult to concentrate. Grades are important to me because I hope to go to a four-year university like Stanford."

"We decided to get a Medical Alert Dog because we knew Dylan would be driving soon and, eventually, going away to college. We wanted him to feel safe behind the wheel and have peace of mind during nights in a dorm." Andrea says.



This photo shows the deep bond between Dylan and his "Guardian Angel" otherwise known as Celeste, his Medical Alert Dog. Photo by Andrea Calamoneri.



Dylan Calamoneri and Celeste. © Yellow Neener Photography.