Wobbly Hedgehog Syndrome:
A progressive lower motor neuronopathy

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The following is an abstract of a paper presented at the 44th annual meeting of the American Association of Veterinary Diagnosticians. The presentation was given on November 4, 2001 in Hershey, Pennsylvania. It is a great privilege for me to collaborate with so many dedicated and selfless owners of WHS hedgehogs, and also with Dr. Terry Spraker. Dr. Spraker is a veterinary pathologist who has taken on the task of describing in more detail many of the early WHS cases that were submitted to us at Yale University, as well as new cases of WHS submitted at Colorado State University. Dr. Spraker was brought into the WHS research effort through Standing Bear, Pat and Pinyon Storm, Jennifer Plombon, and especially Norma Plombon. His expertise, and collaborative spirit, has been invaluable to the hedgehog community.

The seminar was given as “tag-team” by Dr. Spraker and myself. Several of the attending veterinary pathologists were very interested in the disease, and offered valuable feedback. This report is significant, in that is the first published case-study of WHS, and also because the term “Wobbly Hedgehog Syndrome” is now coined in the veterinary literature. The following is excerpted from the published proceedings of the meeting, and should not be reproduced without proper permission from myself and citation.

Abstract:
A novel syndrome characterized by severe progressive ataxia that results in paralysis has been identified in African hedgehogs. (Continues on page 3…)

How to Litter Train your Hedgehog

JENNIFER PLOMBON,
with advice from Norma and Skeezix

Set reasonable goals
If your goal is to never find poop or urine anywhere but in a litter pan, you will most likely not succeed. The majority of hedgehogs do eliminate while running on their wheel, or when first awakened for a cuddle. The wheel elimination makes perfect sense – since it seems to the hedgehog as if they are running away from what’s behind them, it would also seem that the poop and urine would be left far behind – who needs a litterpan if you are running away from it? The newly awakened in-your-lap elimination also makes perfect sense – when your hedgehog is first awakened, their metabolism gears up, and peristalsis and muscle action increase – thus bowels and bladder start to do their jobs of elimination.

While some rare hedgehogs will actually stop running on their wheel and hang their little butts over the edge to catch the litter


**Hedgie Hero:**

**Jennifer Plombon**

**Donnasue Graesser**

In this forum we would like to recognize devoted individuals who are very active in hedgehog health research, rescue and/or disseminating information about hedgehogs to veterinarians and new owners. This is a fabulous society of mutual respect, admiration, and a common bond in our love for animals. It is our opinion that these people are nothing short of Hedgie Heroes.

We have had scores of nominations by members of the hedgie community – evidence of the many hedgie heroes in our community – and hope that you will let us know of your favorite Hedgie Hero.

I decided to devote this Hedgie Hero column to a person that we are all grateful to know and associate with. Jennifer Plombon was an obvious choice, simply due to the sheer number of nominations she received. Jennifer’s influence on the hedgehog community is so widespread – so many of us have been touched by her wisdom, generosity, and genuine, unconditional love for hedgehogs and all animals. Besides her involvement as chair of the USDA/Pet Store Liaison Committee of the Hedgehog Welfare Society, Jennifer is a member of the Carolina Hedgehog Society and a constant presence on the Internet hedgehog lists.

**Nurse Jennifer**

Hedgie folks in both Washington State and South Carolina consider themselves fortunate that Jennifer is a transcontinental jet-setter! In the summer months, she spends her time cavorting with the hedgie-crowd in Washington State. During the rest of the year, she lives – begrudgingly – in South Carolina, where she works as a registered nurse, specializing in Operating Room nursing. The medical profession is all in the family, as Jennifer’s husband Steve is a talented neurosurgeon. Jennifer admits that sometimes she doesn’t recognize her co-workers in ‘real-life’ when she bumps into them outside of the hospital. Her colleagues are behind surgical masks and caps all day, so that she cannot recognize their faces!

**Litter-Training...**

(Continued from page 1)

poop and urine will be either on the wheel (it’s usually easier to wash the wheel than wash the cage liner, or change the bedding), or in the litter pan provided under the wheel. Outside the cage, poop and urine should be in the litter pan you take your hedgehog to after they are awakened, or should be in litter pan(s) provided in the room where they free roam.

**Work with natural instincts**

Very, very few healthy animals, given any room at all, will choose to eliminate where they eat or sleep. Not only is the smell of waste unpleasant, but it can attract insects (not necessarily bad from the hedgehog’s point of view, perhaps!) and predators, as well as harm the animal’s skin if they sleep in it or are covered in it. Observations of pets, in confined areas such as a cage or kennel, will show that almost all choose a particular place to eliminate, and use that spot fairly routinely.

Furthermore, most animals, when encountering their own or another animal’s waste, will add their own to the spot; either because it’s familiar, because they are telling others they have been there, or to mark a spot as ‘theirs’.

Use these traits, they are useful! Since almost all hedgehogs eliminate on or under their wheel, place a litter pan under the wheel. The waste will fly off as the wheel turns, landing in the litter pan, in an area they already associate with waste, and they will then associate the use of litter in that area with waste, a double benefit. As they associate litter with a place to eliminate, you can place litter pans in other areas, re-enforcing the use of litter, and providing quick access for a hedgie running free (or on your lap), suddenly stricken with the urge to go. Seed the litter pan(s) with used litter, soiled paper towel or bedding, and pieces of poop, to take advantage of the ‘marking’ trait. If you use the hedgehog’s own waste, they will use the pan because it’s familiar; if you use another hedgehog’s waste, they will usually feel compelled to mark the pan. I had very good success, when I had 2 hedgehogs, with placing used litter from the ‘senior’ hedgehog who was litter trained, in a pan for the ‘junior’ hedgehog. The junior hedgehog immediately used this pan, probably because she was responding to the intruder she sensed. This use of used litter is a very great incentive; the few times one of my hedges “missed” the litter pan when free roaming, I had just changed the litter in the pan, so it was completely fresh and had no waste in it; I now reserve a bit of used litter to sprinkle over a fresh pan.

**Use the correct litter**

Never, ever, use clumping type litter with your hedgehogs! When wet, this litter forms hard balls of litter that stick to things; with cats, who often use this litter, the balls stick to the pan, or possibly the cat’s feet; but with hedgehogs, whose private parts are approximately 1/4 - 1/2 inch above the pan’s surface, these balls of compacted litter stick

(Continues on page 5...)
Bach Flower Essences

JENNIFER PLOMBON

What are they?

Bach flower essences were discovered and created by Dr. Edward Bach, MB, BS, MRCS, LRCP, DPH, in the 1930s. Dr Bach left his practice as a medical doctor and bacteriologist to study the causes and treatments of ill health. He believed that the body’s natural ability to fight illness was enhanced when a person’s – or animal’s – nature was in harmony, and emotionally balanced.

He discovered plant essences, homoeopathically prepared from plants near his home in Oxfordshire, England, and codified the use of each essence to correct a specific negative emotional and mental state.

The essences are distilled into brandy. If the “wrong” essence (ie, one which will not correct the negative emotional state) is taken, there will be no effects whatsoever, even if one were to drink an entire bottle. As a homoeopathic remedy, however, very small doses are to be used. In small animals, an entire bottle could provide a bit more alcohol than would be wise!

There are 38 essences, plus one composite essence called Rescue Remedy, which is comprised of 5 individual essences.

Over time, Bach Flower Essences have begun to be prescribed for animals as well as for people, even by veterinarians in the US. Rescue Remedy, formulated by Dr. Bach himself, is the most commonly prescribed essence.

How are they used?

Before choosing from the essences available, the negative state to be treated must be identified, them matched to an essence. Stores which sell Bach Flower Essences will have a questionnaire, pamphlet, guide, or other reading material available, and this should be carefully studied to determine the best essence(s) for the condition. Up to 6 or 7 separate essences may be used at one time, though generally fewer are needed. If an essence is chosen which is not needed, there will be no effects, either negative or positive. If the correct essence(s) are chosen and used, one should expect results within days.

For persistent conditions, particularly those related to stress, some veterinarians recommend long term use; a veterinarian should always be consulted for ANY serious or persistent medical problem, rather than relying on essences alone.

The most common method of use is to put 4 drops of Rescue Remedy, or 2 drops of each individual essence, into your pet’s drinking water. You may also offer the drops directly to your pet from the dropper, or sprinkle it onto their food; some seem to really like the flavor. Change the water every day, and place fresh essence(s) in the water each time.

What are the commonly used essences?

The most commonly used is Rescue Remedy. Rescue Remedy is comprised of Cherry Plum, Clematis, Impatiens, Rock Rose and Star of Bethlehem, and is used for its calming effects in any stressful situation, to help your pet cope with the anxiety associated with:

- Vet visits
- Loss of a person or companion animal
- Being left alone
- Moving to a new home
- Adoption by a new person
- Shock, trauma, mistreatment
- Noisy, malodorous, cramped or overwhelming surroundings

It is wise to carry Rescue Remedy when you travel with your pet, and to use it while they are in new and unfamiliar surroundings, to ease their fear. I suggest that you use it, as well!

Other remedies often used include:

- Holly, used to ease hatred or envy, such as when a new animal is brought into the house
- Cherry Plum, used when there is loss of control or unexplained fits of rage
- Mimulus, used when there is great fear, such as of illness, pain, or death
- Oak, used when there is a tendency to struggle on, to refuse to rest or give in against all odds, such as an incurable illness
- Star of Bethlehem, used to treat a sudden shock, recent trauma, or extreme grief or loss
- Walnut, used to cope with change, such as a new home, or to help in breaking from attachments that are no longer helpful

Where can I find more information?

As mentioned above, there should be pamphlets and questionnaires available where the essences are sold. One of the best sources of information is the Bach website www.bachcentre.com (note the spelling of centre). I HIGHLY recommend a visit to this website, if you are considering the use of Bach Essences for your pet or yourself, as there is much more detail on each essence and its use.

Classes are also offered in the use of Bach Flower Essences, and one may attain several levels of knowledge and practice. Classes are offered in the UK and the US – information is available on the website.

Do they work?

As a health care provider, I keep an open mind towards the use of ‘Non-Western’ medicine, particularly for conditions or problems for which there is no easy, clear, standard medical treatment. I have seen calming and ease in pets to whom I have given Rescue Remedy and other essences, and have felt positive effects on myself, when I have used them. I would suggest that you keep an open mind as well; visit the website and read the case studies and reports. If your pet is in emotional or mental disharmony, or faced with difficult, unbearable or traumatic situations, try Rescue Remedy or the individual essences you determine would be helpful, and observe the effects. You know your pet best, and can best determine if the essences have helped.

WHS…

(...Continued from page 1)

The term Wobbly Hedgehog Syndrome (WHS) has been coined for this condition. This syndrome usually is first observed in younger animals 1-3 years of age. The animals usually become ataxic especially in the rear limbs; however, a few are reported to have become ataxic in the front limbs first. The ataxia is progressive and leads to complete paralysis.

At necropsy, gross lesions are not observed. The primary histological lesions include large, pale, swollen, chromatolytic and necrotic motor neurons of the spinal cord. Affected neurons are limited to the ventral horn of the spinal gray matter. Motor neurons of the brain stem do not seem to be involved. Axonal degeneration and demyelination are present in the ventral funiculi of the spinal cord, ventral rootlets, and white matter tracts of the brain. Degenerated axons can be found in peripheral nerves. Dorsal root ganglia and peripheral ganglia appear to be spared. Degeneration and angulation of myocytes consistent with nerve damage are found.

WHS may be placed in the group of neurodegenerative diseases characterized by progressive motor neuronopathy.
HEDGIE HERO...

(...)Continued from page 2)

had past lives as a Starbucks’s employee (I’m told she makes a mean espresso) and a telephone operator. While she worked as a telephone operator, she once put through a call between Dennis Banks and Russell Means of the American Indian Movement. At the time, the FBI was searching for them, but Jennifer kept quiet. She is part Lakota Sioux herself, and we all know that loyalty is part of her nature.

Jennifer also likes to hike, read, learn about animals, visit cool places, and sew. Anyone who is lucky enough to have one of her super vellux-lined hedgie-bags can attest to her sewing skills! No one would guess it from her sweet phone voice, but she fits my hedgie-owner/tattoo stereotype! In fact, Jennifer is the first person I’ve met with a hedgie tattoo (on one of her hips). Be sure to ask her to flash her tattoos at the next show!

**JENNIFER MEETS NORMA AND SKEEZIX**

Jennifer first became interested in hedgehogs through reading about British hedgehogs, and how people in Britain enjoyed and fed them in their gardens. She began researching the possibility of getting a pet hedgehog. She wanted a pet that her husband would not be allergic to. At that time she had in her mind a picture of a larger Euro-hedgehog. She found Dawn Wrobel’s web-site, contacted her at the Ain’t No Creek Ranch, and Dawn chose the perfect little girl for her. Ain’t No Creek Norma

**A QUESTION FOR THE VET?**

Do you have a question you would like to ask the vet? Please send it to us either electronically at newsletter@hedgehogwelfare.org or via snail-mail to HWS Newsletter c/o Kathleen Knudsen PO Box 70408, Seattle WA 98107

Lillemor & baby Odin – Thanx Aunt Jenn! was born on July 11, 1999, and came to live with Jennifer and Steve the following September.

Usually, I put myself at risk for carpal-tunnel syndrome when typing out the names of all the hedgehogs that have enslaved the monthly hedgie-hero. This month, my typing fingers have a bit of a break, as Jennifer is slave to only two hedgehogs (so far). Both Norma and her sister, Skeezeix, are exceptional hedgehogs. Jennifer says “Norma is special because she came to teach me about total love and care for a sick pet, and to teach all of us more about WHS. Skeezeix is special because she came to bring joy and comfort to me and others.” Sadly, Norma developed and succumbed to WHS. Now Skeezeix shares Jennifer’s attention with various assorted lizards who come to stay for a while, and many insects, who she wishes would not stay for a while.

**Norma the pioneer**

Norma was a special hedgehog, not just to Jennifer, but to all hedgehogs and hedgehog-people. When Norma developed WHS, Jennifer was adamant about learning more about this heartbreaking illness through her experience. Her efforts were not just for the benefit of Norma, but for all WHS hedgehogs. Jennifer was able to obtain Avonex (with the help of Stasi Kanyuck), a drug that has had positive results with Multiple Sclerosis patients. She painstakingly divided it up into itty-bitty hedgehog-sized doses. Jennifer brought her brother-in-law into the picture, who is currently experimenting to discover the gene defect responsible for WHS. When this gene is found, it will be called the Norma Gene. When Norma crossed the Rainbow Bridge, she was the first hedgehog case that was necropsied by Dr. Terry Spraker, the expert veterinary pathologist who has now taken an active role in WHS research.

Other hedgie-slaves who have shared in the battle against WHS are quick to praise Jennifer and Norma’s ground-breaking efforts, and concern for WHS hedgehogs. Teresa Johnson comments that, “Jennifer is generous in sparing no expense of time, money or effort to try any possible aid to a sick hedge. This could not have been made any more prominent than her seeking out a possible treatment for her beloved Norma’s battle with WHS. Jennifer convinced several in the medical field to help supply, then regulate the dosage, of Avonex in an attempt to give Norma a longer life of quality existence. Jennifer helped break new ground in WHS treatment and shared the journey with all of us in regular updates and reports of Norma’s condition. Her unselfish compassion shines through in all her work and deeds.” Pat Storm adds, “Words cannot describe the admiration I have for Jennifer and her fight to help us find a cure for WHS. We have both gone through it, and know how horrible it is, but neither of us would turn one away that needed care. Jennifer, for hedgies everywhere, they send their love and thank you.”

**MORE THANKSGIVING**

When members of the hedgehog community submitted comments for this article, the words that were used over-and-over again to characterize Jennifer were generous, giving, compassionate, and dedicated. To finish up this article, here are some words of admiration from several hedge-folks who are overwhelmingly grateful for Jennifer’s kind spirit. I apologize in advance that I could not use all the quotes submitted to me (I do have some space limitations to deal with!). [Note: At least two of these writers share the sentiment of many list-members in that they want to be reincarnated as one of Jennifer’s Hedgehogs!]

“Jennifer can best be described as wonderfully caring and generous. As a nurse, she has access to various items that can be helpful for hedgeg care and, while these items may not cost her any money to acquire, she absorbs the cost of postage to send them to any and all in need… syringes for feeding, plastic pans to use under wheels for litter. She has absorbed a good amount of mailing expenses to distribute ‘swabbing kits’ for WHS research studies and given of her time to keep us updated on the progression of the work being done. Jennifer has also turned to giving of her time and talent as a seamstress creating vellux hedgie-bags and vellux or fleece-lined hedge ‘hats’. Generosity must be a family trait. When Uncle Sam announced a rebate this year, both Jennifer and hubby Steve decided they would make a donation of such monies to the IHA Rescue Fund targeting several rescuers to receive a portion. I know some of these rescue people have never met Jennifer in person yet – I as one of them.” – Teresa Johnson

“Jennifer is one of the most dedicated and caring hedgeg people I know. I don’t believe there are many things in life that are more important to Jennifer than the care and wel-
Litter-Training...

(...Continued from page 2)

...to the hedgehog, causing blockage of poop and urine, and in the case of male hedgehogs, getting pulled up into the penile sheath, where they can trap the penis, block the bladder, and cause infertility. 

Harmony Kingdom's Care Fresh “Sunnyside Up” figurine for the litter pan?

Loki – “I like poop boots!”

Hedgehog welfare.org

...Shopping?

Shopping for your hedgehog Secret Pal?
Come browse thru the HWS Store!

(Continues on page 6…)

Hedgehog Syndrome has led to significant improvement in our level of knowledge about the disease. Seeing her care for Norma as she was suffering, as a true mother would, while still maintaining a focus on using this experience to help other hedgehogs, was truly inspirational. I can’t imagine anyone more worthy to be a Hedgehog Hero.” – Heather Johnson

...against the use of this product. I have seen the occasional hedgehog nibble on Yesterday’s News litter – usually when the pan has been cleaned and filled with fresh litter. The hedgehog will often anoint with this fresh litter, possibly because it is ‘new’ to them or because they need to incorporate fresh new litter into their world, and can then use it. Both of these litter types are very absorbent, and in my opinion remain odor free for a long period of time; you may be able to scoop out pieces and wet litter for a few days, and extend the use of the litter for several days. Let your nose be your guide, remembering that your hedgehog’s nose is much more sensitive – if it smells at all strong to you, it must be overwhelming to them.

Yesterday’s News comes in several varieties, for several different types of animals; the only difference I can see, however, is in the size of the pieces of litter. The cat size, which is most readily available, seems to be used by hedgehogs without difficulty. I have heard that there are versions of this litter that are scented… do not buy those – the gases given off may be dangerous, and they are not needed.

Newspaper and paper towels are used by many hedgehogs, and work well if they are changed often. Newspaper may stain your hedgehog black from the ink, particularly their white tummies and feet, and you may find this unacceptable. Some newspaper offices and printers sell the ends of bolts of newsprint, which are undyed and not printed; shredded, this makes a very good litter. Paper towels may be laid in a pan or under the wheel, and have the advantage of being cheap, easily available, and light-colored to observe any health problems (blood, color changes, mucous, etc.) that may first appear in poop or urine. I have seen some hedgehogs spend hours shredding paper towels and using the shreds to make a little nest, so its use as a litter is supplemented by its use as a nighttime project!
**LITTER-TRAINING...**

_(Continued from page 5)_

**ALWAYS REWARD, NEVER PUNISH**

With animals, as with people, positive reinforcement lasts longer, is more effective, and can only enhance the relationship between trainer and trainee. It may not be possible to catch your hedgehog using the litter pan in their cage; though if you do, offer them a mealworm, cricket, or other favorite treat if you can, with copious soft words of praise. A litter pan placed in a free roam room is easier to observe. Always have a favorite treat quickly available when you are observing your hedgehog roaming free; every time they use the litter pan, wait until they are finished (at a distance, and averting your eyes, please, we all need our privacy), and offer the treat, again with copious soft words of praise.

I can testify that both of my hedgehogs use(d) the litter pan in their free roam room every evening, running across a very large room to do so. And every time I see that, I am ready with a mealworm and a thank you. Skeezix will often use the pan when I am not immediately in the room; when I enter the room, she will run up to me and circle me, head up and eyes fixed on mine, until I check the pan for fresh waste and give her a mealworm. Other people have observed this routine use of the pan, not just myself, so do believe it can happen.

**Will this work with older hedgehogs or those who have not used a pan?**

In my experience, these tips will usually work, even in the most set-in-their-ways hedgehog. After all, you are not doing anything against their nature; you are providing a litter pan, in an area where they routinely eliminate, in a form they can easily use (for this reason I recommend a flat pan instead of a corner-type or enclosed pan that may require climbing to get inside), and rewarding them for using it. Always be patient, be loving, be consistent in where you place the pan and in providing a treat, and never punish your hedgehog if they slip up or seem disinclined to learn. Punishment will only cause resentment and hatred and will not accomplish any other goals, and if your hedgehog has a different agenda with regards to litter training than you do, accept this and find the best way to keep them, their home, and your home clean. You may never be able to use a litter pan, and may have to wash the wheel, the blanket, the floor, the carpet; this is part of having a loved pet.

**A note on critter balls**

Many hedgehogs eliminate while running in their balls, and this may be an insolvable problem. First, they are often placed in the balls shortly after being awakened; if they have not been offered or used a pan first, the running will certainly cause them to eliminate, and you will rarely be able to see it coming in time, and remove them from the ball and to the litter pan. Secondly, while in the ball, they may know where their pan is, and may even roll over to it; but they cannot get out to use it! I know several hedgehogs who always use the pan in their cage or when roaming free, who have “accidents” in their balls, so I do not think that eliminating in the ball breaks the litter training habit at all; it is simply not possible for the hedgehog to do what you or they may wish they could do.

**What to use for a pan?**

A cookie sheet or flat sheetcake pan work very well under the wheel or in a corner of the room. You may also try a pizza pan, a Styrofoam pan such as you would get at a grocery store (observe your hedgehog to make sure they do not chew on or eat the Styrofoam), or a Rubbermaid or Sterilite container with the sides cut down to __”high. While the corner type litter pans are not my first recommendation, as they require some effort on the hedgehog’s part to get into, they may be a good choice in the corner of the room where your hedgehog roams; they are not large enough to place under a wheel, however.

**Conclusion**

Remember, this is not a battle or a contest between you and your hedgehog. You are encouraging the use of a litter pan, and gratefully rewarding and accepting any progress in that direction. Your hedgehog wants a clean place to live, just as you do, but your views of what that entails may diverge; offer, reward, encourage, accept, and good luck.