

Helping Your Dog Live With Canine Lou Gehrig's Disease

Researchers have recently confirmed that canine degenerative myelopathy, or DM, may be the doggy equivalent of human ALS, or Lou Gehrig's disease. Know the breeds most affected and the early red flags to watch for to help your pet live through this irreversible and incurable disease.

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Mar 3, 2023 • 8 min read

STORY AT-A-GLANCE

- A 2020 study provides evidence that dogs with canine degenerative myelopathy (DM) are best served by an integrative multimodal treatment protocol started as early as possible
- Laser therapy, coupled with underwater treadmill therapy and other types of physical rehabilitation, can be tremendously beneficial for dogs with DM
- The primary symptom of DM is loss of coordination in the hind limbs, with eventual complete paralysis; large breed dogs from 7 to 14 years of age are at highest risk
- Unfortunately, DM is irreversible and incurable; the treatment goal is to proactively manage the characteristics of the disease and preserve good quality of life for as long as possible
- Regular exercise, a fresh food diet, appropriate nutritional supplements, low-dose Naltrexone, and a customized physical rehabilitation protocol, including acupuncture, can greatly enhance both quality of life and lifespan for dogs with degenerative myelopathy

A retrospective study published in 2020 by a team of researchers from LiteCure, a medical device company that manufactures class IV lasers, and a physical rehabilitation facility for animals, suggests that adding laser treatments to rehabilitation therapy can help dogs with canine degenerative myelopathy (DM) have longer, healthier lives.¹

The study results showed significantly slower disease progression and longer survival times for dogs treated with a combination of physical rehabilitation and laser therapy vs. physical therapy alone.

Among integrative veterinarians and animal rehabilitation specialists, it's common knowledge that a multimodal treatment protocol — including hydrotherapy (on an underwater treadmill) and laser therapy, started as early as possible — can slow, halt, or in some cases, temporarily reverse the progression of this awful disease.

Degenerative Myelopathy Symptoms and Dogs at Highest Risk

DM is a progressive degenerative disease of the white matter of the spinal cord. The myelin sheath that protects the spinal neurons begins to disintegrate, which exposes the underlying nerve fibers and disrupts the communication pathways between the brain and the spinal cord.

The myelin coating around the spinal cord is crucial for healthy brain-body communication. When myelin degenerates, so does the ability of the brain to send commands to the limbs, and for sensory information to travel from the limbs to the brain.

The first sign of degenerative myelopathy is a wobbly gait (ataxia) in the hind limbs that causes affected dogs to sway, cross over, knuckle, drag their feet, and stumble up curbs and steps. DM often begins in one hind limb and eventually affects the other as well.

The disease typically grows progressively worse over six months to a year. The limbs grow weaker, with buckling that ultimately leads to complete paralysis of the back legs (paraplegia). Over time, urinary and fecal incontinence often occur, and the disease moves to the front limbs. The good news, such as it is, is that dogs with DM aren't in pain.

The disease primarily strikes large breeds, including the German Shepherd, Belgian Sheepdog, Bernese Mountain Dog, Boxer, Chesapeake Bay Retriever, Great Pyrenees, Labrador Retriever, Old English Sheepdog, Rhodesian Ridgeback, Siberian Husky, and the Weimaraner. Onset of symptoms typically occurs between 7 and 14 years of age but can affect dogs as young as 4.

Potential Causes and Diagnosis of Canine DM

Back in the 1980s/1990s, scientists suspected canine degenerative myelopathy was an autoimmune disease that affected the spinal cord similar to multiple sclerosis in humans. However, recent research suggests DM is more closely related to amyotrophic lateral sclerosis (ALS, aka Lou Gehrig's disease) in dogs² than MS:

"The lesions invariably start between T3 and L3, presumably because this [spinal] cord segment is supplied by smaller arteries, making it more subject to ischemia and oxidative stress," according to integrative veterinarians Dr. Thomas Pfafman, Dr. Alexandra Mittner, and Dr. Angela Casey in an article for Innovative Veterinary Care.

"Super oxide dismutase (SOD-1) is a free radical scavenger, abundantly present in the CNS cytoplasm. Dogs affected with DM have a mutation in the SOD-1 enzyme. Oxidative stress upregulates the synthesis of the mutated SOD-1 enzyme.

The mutation results in the mis-folding of proteins, which potentially alters cellular function, substrate selection, and ultimately results in an accumulation of toxic by-products in the axon.

It is these toxic by-products that lead to the disruption of axoplasmic flow – "excitotoxicity". Destruction of myelin and replacement of normal axons with astrogliosis (sclerosis) follows later (Coates and Winger, 2010)."³

Degenerative myelopathy is a diagnosis of elimination, meaning many other diseases must be ruled out before concluding a dog has DM. These include a herniated disc or intervertebral disc disease, infections, injuries, cysts, tumors, and stroke. Since many of the diseases with similar symptoms to those seen in DM can be successfully treated, it's important to rule them out first with diagnostic tests such as a myelography and an MRI.

Once a presumptive diagnosis of DM is made, the only way to absolutely confirm it is to examine the spinal cord during autopsy to check for degenerative changes that are normally seen in DM but are not seen in other spinal cord diseases.

Managing DM Requires a Multimodal Approach

Unfortunately, there's no cure for DM, nor are there drug protocols that have consistently worked to slow the degeneration, save one: low-dose Naltrexone (LDN).

Functional medicine doctors have found LDN to be instrumental in slowing down neurodegenerative progression in both pets and people, and my own clinical experience using LDN for DM has been positive.

In some cases, I've had patients maintain excellent quality of life for years past a DM diagnosis using LDN, in conjunction with aggressive physical therapy, especially early on in the disease process. The treatment goals also involve managing the consequences of the disease and maintain each dog's quality of life for as long as possible.

It's important to be aware that dogs with degenerative myelopathy can experience several secondary problems resulting from the disease, including urine retention, urinary tract infections, weight gain and muscle loss from inactivity, skin lesions from incontinence, toe trauma and bedsores as well. Dogs with DM require scrupulous nursing care for the duration of their lives.

That said, the very best approach to managing this condition is with an integrative multimodal protocol instituted at the earliest onset of clinical signs. My longest-lived DM patients belong to astute guardians who recognized very early on that the rear toenails were wearing down faster than the front nails.

This can often be your first clue there are slight changes in your dog's gait and proprioception you need to address. If you see or hear your dog's rear feet knuckle or scrape, make an appointment with an animal physiotherapist because something is wrong.

Crucial to maintaining a DM dog's quality of life and slowing the progression of the disease is preserving rear limb muscle tone. Daily exercise such as walking for as long as the dog is able, in addition to range of motion exercises, laser therapy, and other forms of physical therapy and muscle strengthening exercises can delay muscle atrophy and maintain mobility and muscle strength for as long as possible. I can't stress the importance of this enough.

Short but very frequent strength training sessions are paramount to preserving remaining muscle tone and healthy lymphatic circulation.

Hydrotherapy (walking on an underwater treadmill, along with swimming, if possible) and targeted exercises to maintain rear limb strength will also slow the progression of this disease and help dogs with DM maintain strength, balance, and mobility for a much longer period of time. This is my favorite form of exercise for any animal with a neurodegenerative disease.

Acupuncture and pulsed electromagnetic field therapy (PEMF) can also be very beneficial in stimulating the nervous system of these dogs, along with chiropractic adjustments, massage, and stretching. Because each of these treatments affects the body differently, using them together provides the most benefit in delaying disease progression and maintaining quality of life.

As the disease progresses, there are a variety of harnesses, wheelchairs (or carts, as they're called for dogs), boots and slings that can also help to improve quality of life and maintain mobility. If you are willing and able to use these support devices, I recommend getting them before your dog requires them so he or she can be trained to use them in a way that doesn't cause acute stress.

Diet and Supplement Protocols

I recommend minimizing the consumption of advanced glycation end products (AGEs) by dramatically reducing or eliminating ultraprocessed foods, including all kibble and canned foods. A balanced fresh food diet (including medicinal mushrooms) provides the most wholly absorbable nutrition and the fewest unnecessary additives such as starch, flavors, emulsifiers, colors, and preservatives.

Look for single ingredient treats (one meat source as the only ingredient), and remove chemicals found in city water by filtering your dog's water. Giving hydrogen water to dogs with DM may help them clear reactive oxygen species (ROS) that occur as normal toxic byproducts of cell metabolism. Dogs with DM can't clear these toxins efficiently due to superoxide dismutase (SOD) dysfunction.

Because dogs with DM may have a genetic defect that predisposes them to a functional SOD deficiency, supplementation is a wise choice. Without adequate innate SOD production, these dogs have a secondary inability to clear ROS.

There are some cofactors I suggest providing, via supplementation, to reduce the accumulation of endogenously created free radicals, including hydrogen peroxide, hydroxyl radicals and peroxynitrite, all of which can be cleared with adequate SOD production.

Vitamin E (with selenium) and large doses of vitamin C assist with clearing peroxynitrite; B-complex vitamins and NAD⁺ support normal Krebs cycle function; ubiquinol improves mitochondrial health; bromelain reduces inflammation; and N-acetylcysteine (NAC) and glutathione assist in detoxification.

Adding omega-3 fatty acids such as salmon or **krill oil**, as well as a source of GLA (gamma-linolenic acids like blackcurrant seed oil), are also suggested to support myelin repair.⁴ In addition, I recommend phosphatidylserine to slow axonal degeneration in these dogs.⁵ Adding a source of choline (I use phosphatidylcholine) to support the myelin sheath can also be helpful.

Also consider adding a potent antioxidant such as resveratrol (from knotweed), grape seed or pine bark extract, along with curcumin (turmeric), milk thistle (which helps remove environmental toxins, including those linked to neurodegenerative diseases), and appropriate anti-inflammatory essential oils (helichrysum).

As always, it's important to work with an integrative or functional medicine veterinarian to determine what supplements and amounts will be most beneficial for your dog's individual situation.

Most importantly, if your dog is developing rear limb weakness — even if you're not sure which leg is involved or why his gait has changed — I strongly encourage you to visit your rehab veterinarian and/or animal physiotherapist as soon as possible.

The earlier a presumptive diagnosis is made, the faster you can begin aggressively supporting your dog with targeted muscle-building exercises, physical therapy, a fresh food diet, and an excellent nutritional supplement protocol.

Finally, there's no harm in assuming your dog has DM and beginning a robust physical therapy protocol; the benefits of starting muscle building protocols early for many neurodegenerative diseases are profound and if by chance your dog does not have DM, the musculoskeletal benefits of a focused physiotherapy program is "money in bank" when it comes to slowing age-related physical decline, so please don't wait to address the slightest changes you see.

Dog physiotherapist Sarah MacKeigan focuses much of her client education around dogs with disabilities, including DM, and has a **dedicated Facebook group**.

Sources and References

[Veterinary Practice News May 7, 2020](#)

¹ [Lisa A. Miller, Debbie \(Gross\) Torraca, and Luis De Taboada. Photobiomodulation, Photomedicine, and Laser Surgery. Apr 2020. 195-205](#)

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³ [Innovative Veterinary Care, February 10, 2017](#)

⁴ [Siegert, E. et al. BMC Neurosci. 2017; 18: 19](#)

⁵ [Naftelberg, S. et al. Neural Generation Research. 2017 Apr; 12\(4\): 534-537](#)

⁶ [Special Issue "The Cyanobacterial Neurotoxin BMAA". Toxins](#)
