

# ***Info shared by Pitbull SA.***

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## ***Cognitive dysfunction syndrome.***

[https://indoorpet.osu.edu/dogs/aging\\_pets/cds](https://indoorpet.osu.edu/dogs/aging_pets/cds)

Cognitive decline (aka dementia) is not considered a normal aging change, although its occurrence does increase with advanced age. Dogs with decline in multiple cognitive aspects, in the absence of medical disease to explain this decline, are considered to have cognitive dysfunction syndrome (CDS).

### **Prevalence.**

Dogs – A study by the *Animal Behavior Clinic at the University of California, Davis* revealed that 28% of dogs aged 11-12 years and 68% of dogs aged 15-16 years showed one or more signs of cognitive impairment.

### **Human correlations = Alzheimer's disease.**

This disorder affects approximately 10% of people over 65 and 50% of people over 85.

Degenerative changes may be found in multiple brain areas of affected patients.

### **The primary disease process includes:**

Amyloid plaques are an accumulation of  $\beta$ -amyloid ( $A\beta$ ) as a result of the defective precursor proteins (APP).

Neurofibrillary tangles form from abnormal APP as well as from abnormal tau protein accumulation.

Tau proteins are a normal part of cell transport mechanisms.

Alzheimer's disease the abnormal tau proteins can lead to death of brain cells and a "tangle" of protein filaments.

### **Disease process in dogs.**

Diffuse amyloid plaques are found to start in the front part of the brain of affected dogs as early as around the age of 9 years.

This is associated with:

The ability to voluntarily control elimination may also be affected, leading to house soiling problems.

With time the plaques progress to other brain structures which may lead to problems with spatial disorientation, wandering, and decreased vision and hearing capabilities.

Decreased neurotransmitter availability, perhaps due to increased enzymatic breakdown and increased free-radical may lead to decreased brain signaling and cell damage.

Neurofibrillary tangles have not been identified in the brains of CDS dogs as they have been in humans.

## **Diagnosis.**

Your veterinarian will make a diagnosis of CDS in your dog based on the presence of 1 or more of the following "DISHA" signs which cannot be explained by a medical disease:

"Disorientation" – changes in spatial awareness, loss of ability to navigate around familiar obstacles, wandering behavior.

"Interaction changes" – decreased interest in social interactions, petting, greetings, depended or "clingy" behaviors.

"Sleep/Wake cycle changes" – restlessness or frequent waking during the night, increased sleep during daytime hours.

"House soiling" – no longer lets owner know when it needs to go outside, indoor elimination, incontinence.

"Activity level changes" – decreased exploration and response to things, people, sounds around the house, decreased grooming, decreased appetite; increased anxiety, including restlessness, agitation, and/or separation distress.

## **Diagnosis of exclusion.**

Medical causes for the above behavioral changes must be ruled out in order to make a definitive diagnosis of cognitive dysfunction syndrome.

### **Medical problems may include, but are not limited to:**

Cushing's disease.

Parathyroid disorders

Thyroid disorders

Diabetes mellitus

Chronic kidney disease

Cancer

Cardiovascular disease

Incontinence

Liver disease

Musculoskeletal disease

Dental disease  
Prostatic disease  
and sensory loss.

Behavioral problems that look like CDS may include;  
Generalized anxiety.  
Separation anxiety  
Fear-related aggression  
Pain-related aggression  
Noise or storm phobias  
Lack of housetraining  
Attention-seeking behaviors  
and compulsive disorders.

Often there will be concurrent behavioral and medical illness as medical and cognitive disorders may exacerbate existing, previously undiagnosed, behavior problems.

### **Treatment.**

There is no cure for cognitive dysfunction and the disease is progressive;

However

Therapies in the form of environmental enrichment

Dietary change

Supplements

and psychoactive drugs have been shown to delay progression and improve the associated behavioral signs.

Any therapy found to be effective should be continued for life as long as there are no problems (liver or kidney disease, drug interactions, dietary intolerance, etc.)

**Environmental enrichment** in the form of;

Exercise

New and interactive toys

and learning new tasks – “teach an old dog new tricks” – has been shown to improve learning and memory.

### **Diet change.**

Hill’s Prescription Diet b/d contains Vitamins E and C, the antioxidants beta carotene, selenium, alpha-lipoic acid, flavonoids and carotenoids from fruits and vegetables, L-carnitine to enhance mitochondrial function, and omega-3 fatty acids to promote cell membrane health.

In clinical trials this diet alone significantly improved learning in dogs with CDS.

When combined with environmental enrichment these results were even greater. B/d is available for dogs only.

**Dietary supplements** are now available:

Senilife™,

Proneurozone™,

Denosyl® /Denamarin® (SAME) are a few examples of those available for dogs.

Your veterinarian will be able to recommend the appropriate supplement if one is right for your dog.

### **Psychoactive drugs:**

Anipryl® (selegiline) is the only drug approved for use in dogs with CDS diagnosed by a veterinarian.

Anipryl® has several drug interactions.

Please discuss ALL medications and supplements, including flea and tick products with your veterinarian so that Vet can determine if it is safe for your pet to take this medication concurrently.

Your veterinarian will perform blood and urine testing before starting this medication to ensure your dog is healthy enough to take it.

**Prognosis.**

Forty-eight percent of dogs 11-14 years old showing signs of impairment in one behavioral category develop impairment in two or more categories within 6-18 months without treatment.

Clinical trials have shown improvement in existing behavioral signs of CDS and delay of onset of additional signs in several of the treatment modalities discussed here.

Please consult your veterinarian to determine if your dog has signs consistent with CDS and to select an appropriate treatment plan.