

## Labrador Retriever – Genetic predispositions

All creatures carry the genes of their ancestors - for good and bad. Sometimes there is no outward evidence of a particular physical trait, caused by a “recessive gene.” Other times, the gene is “dominant” and your pet will manifest the symptoms of that gene, sometime in his or her lifetime. Some of the diseases caused by those genes are listed below. Your Veterinarian will recommend checking your pet for genetically transmitted diseases, at specific times in your pet’s life. *Simple awareness can help prevent or postpone many of these diseases and improve the quality of your pet’s health.*



We highly recommend pet health insurance. Early detection is the key to effective treatment for diseases. Many animals may not exhibit symptoms until many diseases are in the more advanced stages. The screening tests recommended below are for the owners who want to prevent disease and detect it in the early stages.

### TESTS/RECOMMENDATIONS:

2 months & older	- Genetic testing for Cystinuria, Exercise Induced Collapse, Narcolepsy, Retinal Dysplasia/OculoSkeletal Dysplasia, & Progressive Retinal Atrophy
6-10 months of age	- Pre-surgical blood testing for Hemophilia & von Willebrand Disease - X-ray screening for Hip Dysplasia - Eye exam for Eyelid Ectropion & Entropion, & Progressive Retinal Atrophy -Optional Gastropexy of the stomach to prevent Gastric Dilatation and Volvulus
1 year of age	- X-rays for Hip & Elbow Dysplasia – OFA preliminary screening - X-ray knees if Patella Luxation is present - Blood & Urine tests - Portosystemic Shunt, Cystinuria, Fanconi Syndrome - recheck yearly - Eye exam for Eyelid Ectropion & Entropion, & Progressive Retinal Atrophy
2 year of age	- X-rays for Hip & Elbow Dysplasia - OFA certification - Blood & Urine tests - Portosystemic Shunt, Cystinuria, Fanconi Syndrome, & von Willebrand Disease. - Heart Murmur exam – for Tricuspid Valve Dysplasia - Skin exam and allergy evaluation for Atopy.
3 years of age	- Teeth Cleaning & Dental X-rays – repeat every 2-3 years - Blood & Urine tests – Diabetes, Portosystemic Shunt, Cystinuria, Fanconi Syndrome, & von Willebrand Disease
4 years of age	- Blood test for Hypothyroidism – recheck yearly - Blood & Urine tests - Diabetes, Portosystemic Shunt, Cystinuria, Fanconi Syndrome, & von Willebrand Disease.
5 years of age	- Skin Pre-Cancer screening – Skin Cancers – repeat every 6 months - Blood & Urine tests - Hypothyroidism, Diabetes, Cystinuria, & Fanconi Syndrome
6 years of age	- Teeth Cleaning & Dental X-rays – repeat every 2-3 years - Blood & Urine tests - Hypothyroidism, Diabetes, Cystinuria, & Fanconi Syndrome
7 years of age	- Blood & Urine tests - Hypothyroidism, & Diabetes - Skin Pre-Cancer screening – Skin Cancers
8-10 years of age	- Blood test & abdominal X-ray – Hemangioma - recheck yearly - Blood & Urine tests - Hyperadrenocorticism, Hypothyroidism, Diabetes, Cystinuria - Skin Pre-Cancer screening – Skin Cancers

**Hip Dysplasia Age: 6 months and older -**

Resource: 1,2,3,4,6,7,11

**Hip Dysplasia Screening X-ray Age 6-10 months** For the owners who wish to assess the likelihood of, and potential severity of Hip Dysplasia in their dog. A surgery is available called a **TPO** that may be very beneficial as a treatment for hip dysplasia. A TPO surgery is most effective prior to your dog developing degenerative joint disease in the hips joints. Note: this X-ray can be done when your dog is under the anesthesia during an ovariohysterectomy or castration. **Test: X-ray of Hips**

**OFA X-ray Ages: 1 & 2 years** A second option for Hip Dysplasia diagnosis is an OFA (Orthopedic Foundation for Animals) hip certification x-ray. The first x-ray at 1 year of age, gives a preliminary evaluation of the hips. A second x-ray at 2 years of age enables breeding certification of your dog to have “normal hips.”  
**Test: Anesthesia and X-ray.**

**Cleft Lip/Palate Age: Birth** The incomplete fusion of the upper lip and/or the roof of the mouth (palate). A severe cleft palate results in poor growth, chronic nasal discharge, and pneumonia, and requires surgical repair. Reference: 4, 7

**Leukodystrophy - Age: 1-2 months** - a rare disease caused by loss of the insulation (myelin) around nerves in the body. Symptoms are a loss of coordination and abnormal walking pattern progressing to inability to walk.  
**Test: nerve biopsy** Reference: 2,4,5

**Muscular Dystrophy Age: 2-4 months** An inherited lack of a specific protein necessary for muscle development and function. Symptoms are difficulty in suckling and swallowing with progressive muscle weakness and generalized inactivity. **Tests: Muscle biopsy and blood enzyme testing.** Reference: 2,3,4

**Centronuclear Myopathy Age: 3-12 months** A muscular genetic disorder that results in missing muscle fibers in varying locations in the body. The most common sites are in the esophagus and skeletal muscles resulting in difficulty swallowing and/or walking. Pneumonia commonly occurs as a result of inhaling food when the esophagus fails to function normally. Symptoms of stumbling when walking or difficulty swallowing may start as early as 3 months of age.  
**Test: 1) Muscle biopsy.** Reference: 4,11,13,14

**Exercise Induced Collapse Age: 6 months – 4 years** 5-15 minutes of strenuous exercise triggers the symptoms of rear leg weakness followed by foreleg weakness and then collapse. The body temperature is often elevated to as high as 108F. All exercise should be stopped if any incoordination or wobbliness is seen and symptoms will stop with 15-30 minutes of rest. **Tests: 1. DNA Genetic testing (Univ. of Minnesota Diagnostic Lab) 2. Blood and urine tests and blood pressure measurements.** Reference: 2,4,11

**Narcolepsy Age: 2-24 months** Abnormal sleep attacks with sudden onset of sleep, with or without flaccid paralysis, lasting from a few seconds to a few minutes. This condition is sometimes confused with epileptic seizures. Different drugs are used to treat narcolepsy versus epilepsy. **Tests: 1) DNA Genetic testing (Optigen or Healthgene) or 2) Electromyogram** (muscle testing) and **Electroencephalogram** (brain wave testing) are needed to differentiate from epilepsy. Reference: 2,3,4,7

**Epilepsy Age: Anytime** Seizures can be caused by multiple diseases. Epilepsy is diagnosed after other causes have been ruled out. If the seizures are confirmed as epilepsy, they can be controlled with medications, in most cases. **Tests: Blood and Urine tests, X-rays, Blood pressure, sometimes MRI or CT scan.** Reference: 1,2,3,4,6,7

**Malignant Hyperthermia Age: Anytime** An abnormal increase of body temperature following severe stress from excitement or exercise or from exposure to a specific anesthetic called Halothane. Core body temperature can exceed 107 degrees and can lead to death. Reference 3,4,5,7

**Osteochondrodysplasia Age: 3 – 12 months** A hereditary bone and joint abnormality resulting in “dwarfism,” with short, bowed legs, and deformed joints. Symptoms are lameness and exercise intolerance with arthritis as the dog ages.  
**Tests: X-rays** Reference: 1,4,7

**Hemophilia Age: 4 months–5 years** An inherited bleeding disorder – usually this is not detected until an injury or surgery occurs, resulting in severe bleeding. Reference: 1,2,3,4,6,7

**Tests: 1. Bleeding profile and CBC Blood tests** prior to any surgery.

**von Willebrand Disease Age: 4 months – 5 years** A bleeding disorder caused by a lack of “von Willebrand factor”, an essential part in the blood clotting process. Symptoms are prolonged bleeding times with surgery, or trauma (.gum or nose bleeds, heat cycles, whelping). Look for blood in the stool or urine or on bedding.. Recommendation: Test for von Willebrand Disease prior to a surgery. This disease cannot be cured but it can be successfully managed.

**Tests: Three tests- 1) von Willebrand factor (genetic or blood level), 2) Buccal Mucosal Bleeding Time test or Bleeding profile tests, 3) Thyroid test - Repeat yearly** Reference: 3,4,7

**Portosystemic Shunt Age: 4 months-5 years** A blood vessel abnormality that leads to a portion of the blood bypassing the liver and not being cleansed of metabolic toxins, prior to being re-circulated. The build-up of toxins leads to bladder stones and, in severe cases, neurologic symptoms like seizures. The poor blood supply to the liver causes typical signs of liver disease like decreased appetite, vomiting, diarrhea, and drug sensitivity. Because this problem is usually present from birth, the dog is much smaller than his littermates. Many male dogs with a liver shunt are also cryptorchid (one or both testicles fail to descend from the abdomen to the scrotum). While this disease is usually serious, about 20% of affected dogs have no symptoms.

**Tests: Blood testing, Urinalysis, Abdominal Ultrasound, Colorectal Scintigraphy** to confirm. . Reference: 1,2,3,7

**Myopathy Age: 5 – 7 months** A hereditary condition resulting in the lack of a specific type of muscle fibers. The symptoms begin around 5 months of age with generalized weakness and growth stunting. Many dogs will stabilize at 6-8 months of age and improve with time. **Test: Muscle Biopsy** Reference: 2,5,7

**Lymphedema Age: 4 months–1 year** An abnormal lymph fluid build up in the skin of the legs due to malformations of the lymph drainage systems. Sometimes the fluid will also be seen in the skin of the abdomen, ears, and tail. The skin has a thickened, spongy feel; dents remain after the skin is pressed with the finger. Reference: 1,4,7

**Test: Skin biopsy**

**Hypertrophic Osteodystrophy Age: 6-12 months** A lameness disorder that occurs, clears, and then reoccurs within days or weeks of each episode. Symptoms are lameness, fever, and a decreased appetite and weight loss that is a result of the pain. **Test: X-rays of the long bones.** Reference: 3 4,7

**Panosteitis Age: 6-18 months** A painful inflammation of the outer membrane of the long leg bones. The symptoms are recurring lameness, as if shifting from one leg to another. This can be very responsive to treatment.

**Tests: X-rays and blood tests.**

Reference: 1,4,7

**Elbow Dysplasia Age: 7-10 months** The term elbow dysplasia refers to several developmental conditions that affect the elbow joint, causing lameness and eventually arthritis. Over-feeding, with fast weight gain and growth, can contribute to the development of this condition. The best treatment results are seen with early diagnosis and intervention, before joint damage begins. Reference: 1,2,4,7,9,11

**Tests: X-ray both elbows – possible CT scan.**

**Osteochondritis Dessicans Age: 8-12 months** A developmental joint disease in which there is a portion of the cartilage in the joint surface that does not adhere properly to the bone below it. That portion gets torn with exercise and results in severe lameness, requiring surgery to remove the damaged piece of cartilage. Gaining weight too rapidly is a predisposing factor - avoid over-feeding your dog. It is better to be thinner, as a puppy, than being overweight.

**Test: X-ray of painful joint.**

Reference: 2,3,4,6

**Patellar Luxation Age: 1 year** The patella is the same as the “knee cap.” It slides in a groove on the front of the thigh bone, aiding in normal knee joint function. If the patella pops out of the groove, this is called a luxation. When this happens day after day, over time the cartilage lining of the patella erodes away, resulting in arthritis and pain with each step. This is usually detected around 6-12 months of age. The permanent solution to this problem is surgery.

**Test: X-Ray.**

Reference: 2,4,7

**Cystinuria & Urolithiasis** **Age: 1-8 years** A chemical called cystine is created due to an inborn error of metabolism in the kidneys. Cystine forms small crystals in the urine that crystallizes into stones that are invisible to survey x-rays, but evident with ultrasound or double contrast x-rays. Prevention is the goal, with testing, special diets and/or specific drugs for preventing stone formation. Symptoms: frequent or difficult urination or blood in urine. Reference: 2,4,7  
**Test: 1. DNA Genetic testing** (PennGen), **2. Urinalysis or Urine Nitroprusside Test, Ultrasound if a positive urine test.**

**Neuroaxonal Dystrophy** **Age: 1-2 years** A progressive disorder of the brain and spinal cord. Symptoms are a high-stepping gait, lack of coordination, and development of a head tremor, all of which gradually worsen over several years. **Tests: Blood tests, Spinal tap.** Reference: 1,4,5

**Fanconi's Syndrome – Age: 1-8 years** – defective kidneys resulting in loss of Potassium and other body chemicals - Symptoms: increased water drinking and urination, muscle weakness due to potassium loss, bone density loss due to calcium and phosphorus losses. Early diagnosis enables treatment to prolong the quality of life. Reference: 1,2,4,7  
**Tests: - Blood and Urine tests, X-ray or Ultrasound of Kidneys – recheck blood and urine yearly.**

**Laryngeal Paralysis** **Age: 1-12 years** One or sometimes both vocal cords become paralyzed and interfere with normal breathing. Symptoms are noisy breathing, especially with exercise, and with greater intensity in hot and humid weather; change in the sound of the bark. With severe cases, dogs can collapse due to lack of oxygen. Pneumonia can develop because of accidental aspiration of food material. Reference: 4,7  
**Tests: Anesthesia & Endoscopy. Recommendation: Surgery.**

**ACL Knee Injury (Anterior Cruciate Ligament)** **Age: 1 year and older** A sudden, severe twisting injury, or chronic tearing of ligament fibers in the knee. It is painful to bear weight. The danger is “waiting for it to get better with rest,” without surgically repairing the injury. The other knee now carries the entire body weight, causing the ligament in the other knee to also rupture, usually within 6 months of the first knee injury. This is more common in over-weight dogs.  
**Tests: X-rays and an instability test called “Tibial Thrust.”** Reference: 4,6,9

**Wobbler's Syndrome (Cervical Vertebral Instability)** **Age: 1-9 years** Unstable vertebrae in the neck, causes spinal cord pressure resulting in weakness and incoordination of all 4 legs (hence the name “Wobbler”). Sometimes severe neck pain can also be a symptom. Unless diagnosed and treated, this is progressive, possibly leading to paralysis. Prevention: Avoid feeding a high calorie diet with extra mineral supplementation, in the first year of life. Too rapid of growth is thought to be a contributing factor in this spinal instability disease. Switching to an adult diet at 6 months of age has been suggested, rather than feeding a higher protein “puppy food”. **Tests: X-rays, Myelogram, CT scan.** Reference: 1,4,7,

**Hypoadrenocorticism (Addison's disease)** **Age: 2-10 years** Adrenal glands produce chemicals that are instrumental in regulating many body functions. This disease occurs when the adrenal glands stop the normal production of those chemicals. The symptoms may include weakness, loss of appetite, muscle shivering, vomiting, diarrhea, increased thirst and increased urination. Often the symptoms come and go for a while before they are noticed and diagnosed, because they are so vague. Addison's disease can result in death if not treated. **Tests: Blood tests and Urinalysis.** Reference: 3,7

**Tricuspid Valve Dysplasia** **Age: 2-6 Years & older** The right atrioventricular heart valve separates the right upper heart chamber from the right lower heart chamber. A dysplastic valve is one that developed abnormally; at some point in time it starts to leak blood back into the previous heart chamber. That leakage creates a sound called a “heart murmur.” The symptoms are a heart murmur, distended abdomen, cool limbs, &/or exercise intolerance.  
**Tests: Heart Murmur Detection, Chest X-ray, Electrocardiogram, & Heart Ultrasound.** Reference: 2,7,9

**Diabetes Mellitus** **Age: 3 years & older** The pancreas supplies insulin to the blood anytime the blood sugar level rises, when eating and digestion is occurring. When the pancreas can no longer supply the amount of insulin needed, “sugar diabetes” occurs. Symptoms are increased water drinking and increased urination with weight loss, in spite of a good appetite. Eye cataracts are a common result of diabetes in later stages. **Tests: Blood & Urinalysis. Repeat yearly.** Reference: 3,4,7

**Periodontal Disease** **Age: 3-15 years** The frequency of dental cleanings will depend upon your success in feeding a diet that helps decrease dental tartar and daily teeth brushing, but also on the shape of your dog's mouth, how he chews, and other factors you can't control. Animals and humans produce plaque, followed by tartar, on their teeth. Food particles often become trapped under the gums by the tartar buildup, leading to gum infection and tooth loss. The bacteria from gum infections can spread into the blood stream, sometimes causing kidney, liver, joint, and heart valve disease. Your pet's life expectancy may decrease by 1-3 years and the quality of life lessened, if the gum disease is left untreated.  
**Recommendation: Dental cleaning and X-rays every 1-3 years.**

**Hypothyroidism Age: 4 -12 years** A decreased secretion from the thyroid gland of the hormone that regulates the cell activities of the body. Symptoms are weight gain, dull hair coat, dry skin, hair loss, increased infections, and excessive sleeping. **Tests: Blood panel with CBC & Thyroid tests. - Repeat yearly.** Reference: 2,3,4,6,7

**Cerebellar Abiotrophy Age: 8-10 years** A rare degenerative disease of the part of the brain called the cerebellum that controls body movement. Symptoms: Poor coordination, head or body tremors, and decreasing lack of balance with a slow progression. **Test: Blood and urine tests to rule out other causes. MRI of brain.** Reference: 1,2,4,7

**Autoimmune Hemolytic Anemia Age: Occurs Anytime** This is a disease that results in severe anemia caused by an overactive immune system. There is no genetic test to predict if your pet will get this. Symptoms: weakness and lethargy due to the anemia. The gums are very pale instead of the normal pink color. Another symptom is bruise spots on the hairless areas of skin as a result of bleeding under the skin. If your pet shows any of these symptoms, see your veterinarian immediately. **Test: CBC Blood testing – Repeat yearly.** Reference: 3,4

**Gastric Dilation and Volvulus (“Bloat”) Age: Anytime** Usually occurs in dogs with deep and narrow chests. The stomach twists on itself, trapping the gas in the stomach, resulting in decreased blood flow to the stomach and spleen. Symptoms: severe abdominal pain, retching, restlessness, and bulging of the abdomen. This is an emergency requiring surgery. Death will ensue rapidly, if untreated. Gastropexy can be a life-saving preventive surgical procedure. “Pexy” means “to attach.” Gastropexy attaches the stomach to side of the abdominal wall to prevent it from twisting. This surgical procedure can be done at the same time as a female neutering or “spay.” It can be done in males too, but the incision site is not the same as for females when being “spayed.” Pet insurance is very valuable, if your dog has this problem. Reference: 1,4,7  
**Prevention: Gastropexy surgery. Test when “Bloat” is suspected: Abdominal X-ray.**

**Skin - Atopy Age: 2-10 years** An allergic response to inhaled pollens, mold, mildew, or mites. Symptoms include itchy face, ears, and feet or whole body itching. **Tests: Stool sample, Skin Scrapings, Skin Biopsy, Blood tests, Allergy Testing, Elimination Diets, or change of environment** (if contact allergies are suspected). Reference: 1,2,3,4,6,7

**Vitamin A-responsive Dermatitis -“Doggy Dandruff” Age: 3 years and older** Excess scaling and crusting of skin around the hair follicles. This is not a dietary deficiency, but a special need for greater amounts of vitamin A than present in the diet. **Tests: Skin Biopsy & Thyroid Blood Test.** Reference: 1,7

**Acral Lick Dermatitis Age: 1 year and older** Obsessive licking of a skin spot usually on the paw or upper leg, resulting in ulceration and infection of the skin. Boredom or anxiety is thought to be a contributing factor. **Tests: Cytology, Bacterial culture, &/or Skin Biopsy.** Reference: 1,3,4,7

**Sebaceous Adenitis Age: 1-8 years** Symmetrical partial hair loss with dull, brittle hair, often along the top-middle of the chest and back, usually with a strong “doggy” odor. Reference: 1,4,7  
**Tests: Skin biopsy, Skin scraping, Fungal culture.**

**Seborrhea Age: 3-18 years** A disorder of the oil glands of skin hair follicles. The symptoms come in two different forms: 1) dry, flaky, itchy or 2) oily, smelly, and itchy. This is common in blond Cocker spaniels. Causes: Thyroid deficiency, allergies, adrenal gland over-reactivity (Cushing’s Disease). Reference: 3,7  
**Tests: Blood panel with Thyroid screen & allergy testing.**

**Pododermatitis Age: Anytime** This disease is an inflammation of the skin between the toes and pads leading to blisters and ulcers. Symptoms – licking feet. This is common in pets with allergies, bacterial or fungal skin infections. **Tests: Allergy testing, Fungal culture, Bacterial culture.** Reference: 6,7

**Skin Cancers Age: 5 years & older** Anytime you feel a skin lump that does not go away, it should be checked. There are many different kinds of skin cancers, such as Mast Cell Tumors, Melanomas, and Hemangiomas. With early detection and removal, the survival rate is very high. Skin cancer is the most successfully treated form of cancer. Dark skin spots should be removed before they have a chance to become cancerous. Sun exposure causes skin cancer in dogs, so keep light skinned pets out of the sun. Keep your pets from becoming fat, as obese pets have higher cancer rates. Feed a high quality diet, high in anti-oxidants and fatty acids, to help prevent cancer. **Tests: Skin exam & Biopsy – Recheck every 6 months.** Reference: 2,3,4,7

## Skin (continued)

**Ear Infections Age: Anytime** Head shaking with reddened ear canal openings and dark brown ear wax discharge indicates the presence of bacteria or yeast infections. If there is a foul odor from the ears, an infection is brewing. Do not wait long before the veterinary exam, as this infection can damage the ear drum, causing permanent hearing loss. After a bath or swimming, use ear cleansing and drying products in the ears to remove water residue. Underlying allergies are often contributing factors. Reference: 6,7  
**Tests: Ear cytology, Bacterial culture, Allergy testing.**

**Eyes: Retinal Dysplasia/OculoSkeletal Dysplasia Age: 3-4 months** The eye retina transmits images thru the optic nerve to the brain. If the retina is missing some cellular elements or is detached or folded, the retina will not be functional, resulting in partial or complete blindness. If both mother and father are carriers of the gene, 25% of their puppies will have **OculoSkeletal Dysplasia** which manifests itself in “Dwarfism.” Symptoms: Puppy is less active and frequently bumps into objects and if Oculoskeletal Dysplasia is present, there is shortening of the legs with dwarfism. **Test: 1) DNA Genetic Testing (Optigen) or 2) Eye Retinal Exam.** Reference: 1,2,3,4,7,9

**Distichiasis Age: 4-12 months** Extra eyelashes that grow from abnormal follicles located on the inside edge of the eyelid. Ask your veterinarian to magnify the eyelid margins, as they are difficult to see. Chronic irritation from these eyelashes rubbing the corneal surface can lead to decreased vision, secondary to corneal inflammation and pigmentation. Reference: 3,4,7

**Corneal Dystrophy Age: 4 months & older** This is a condition in which cholesterol (fat) deposits occur inside the cornea (the clear, front surface of the eye). Vision is rarely affected and is similar to having a scratch on the lens of your eye glasses. **Tests: Tear Test, Eye Stain, and Eye Pressure testing.** Reference: 1,4

**Progressive Retinal Atrophy Age: 4 months–4 years** When the retina of the eye degenerates, it may progress to total blindness. The initial symptoms can be loss of night vision or peripheral vision. Complete eye retinal exam with pupil dilation, is recommended to be done by a veterinarian or veterinary specialist. Recheck retinal examinations are recommended yearly (unless ruled out by genetic testing). Genetic testing is also available to eliminate the possibility of genetic inheritance in your dog. Reference: 1,2,3,4,5,7  
**Test: 1.) One time only - prcd-PRA Genetic test – Optigen Laboratory – cost = \$130 – phone 607-257-0301 or 2.) Yearly Retinal eye exam.**

**Eyelid Ectropion Age: 6 months – 1 year** A lower eyelid that rolls outward, resulting in drying of corneal surface, resulting in discomfort and eye irritation which leads to other eye problems such as ulcers and decreased tearing. **Recommendation: Surgical repair and Tear testing** Reference: 1,3,4,7

**Eyelid Entropion Age: 6 months - 1 year** An eyelid that rolls inward, with eyelashes rubbing on the corneal surface, often creating a corneal ulcer. **Recommendation: Surgical repair** Reference: 1,3,4,7

**Cataracts Age: 1-5 years** A cataract is a progressive blockage of vision through the eye lens. It can occur from a physical injury or as a genetic cause. It may lead to total blindness, requiring surgery to remove the abnormal lens. Sometimes lens implants can be used, replacing the diseased lens, for better vision. **Tests: Eye exam – Repeat yearly.** Reference: 1,2,3,4,7,9



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