

## TOP

CONDITIONS  
DIAGNOSED  
ON PHYSICAL  
EXAMINATION

Veterinarians increasingly rely on the most advanced technology and equipment to make diagnoses. One thing that will always be necessary, however, is the physical examination. Certainly, many diseases cannot be found on examination alone, but the ability to touch, feel, look, and listen are irreplaceable skills that will keep professionals at the forefront of veterinary medicine. Here are 5 conditions that can be diagnosed using the hands, eyes, and mind:

**1 Oral Disease**

Studies have shown the connection between periodontal disease and systemic health,<sup>1,2</sup> so recognizing and treating dental, periodontal, and other oral diseases appropriately has a positive effect on patient health and longevity. A dental cleaning can go far beyond merely helping a patient's bad breath.

Malocclusions, neoplasia, stomatitis, trauma, and eosinophilic granuloma complex are other important diseases that can be recognized on a physical examination. Be sure to *always* take a quick look under the tongue. During the examination, grade tartar buildup and chart any potential extractions before scheduling dental procedures. You can follow the traditional 4-point scale or establish a number system for potential extractions. Receptionists can then properly schedule surgeries so that hospital flow is maintained. Most practices can handle several simple cleanings a day, but extra time must be allotted for a patient needing multiple extractions.

**2 Otitis**

An otoscopic examination should be performed on every patient. Otitis is a sign that generally denotes an underlying cause, most commonly allergic disease, with parasites (*Demodex*, *Otodectes*, *Sarcoptes* spp), foreign bodies, neoplasia, and autoimmune diseases all distant rule-outs. Note in the medical record whether swelling and pain prevent visualization of the tympanic membrane, and palpate the canal externally to check for canal thickening or ossification.

In acute cases, the inner ear pinna and ear canal are usually erythematous and swollen, and ulcerations, excoriations, and crusts may be present. In chronic cases, pinnal hyperkeratosis, hyperpigmentation, and lichenification, as well as ear canal stenosis from fibrosis or ossification, are common.





### Certain Ocular Disorders

Several structural components of the eye should be evaluated on physical examination, including both external (conjunctiva, eyelid) and internal (anterior chamber, lens, fundus) areas.

Ocular diseases can be divided into primary ocular disease and secondary ocular manifestations of systemic disease. The most common primary disorders that can be diagnosed during a physical examination include conjunctivitis, anterior uveitis, cataracts (not to be confused with lenticular sclerosis), entropion, distichiasis, corneal ulcers, and fundic abnormalities.

Secondary systemic diseases range from systemic hypertension to infectious agents to neoplasia. Recognizing fundic abnormalities requires special skill, so it is important to examine every patient's fundus and know what is normal. Then, when an abnormality is present, the next step is to identify the disease process.

## Top 5 Conditions Diagnosed on Physical Examination

- Oral Disease
- Otitis
- Certain Ocular Disorders
- Heart Murmurs & Arrhythmias
- Anemia



### Heart Murmurs & Arrhythmias

Clients will not pick up their pet's heart murmur or arrhythmia at home, making the physical examination even more critical. Heart murmurs are caused by the vibration of cardiac structures or turbulent blood flow, which may originate from structural heart disease or normal physiological phenomena. Arrhythmias are caused by abnormalities in the electrical conduction of the heart. It is also important to differentiate a sinus arrhythmia from a pathologic arrhythmia, as a patient with enough vagal tone for a sinus arrhythmia is *not* in congestive heart failure.

Several studies have shown a correlation in dogs between murmur intensity and severity of heart disease<sup>3,4</sup>; a soft murmur likely indicates mild disease and a higher grade murmur severe disease. Younger dogs with persistent murmurs may have con-

genital heart disease and require more careful tracking. A thoracic radiograph to show any enlarged cardiac structures is the best follow-up test.

A diagnosis is often more complicated in cats: Many may have heart disease but no murmur, and many others (especially older cats) have murmurs with no apparent heart disease. Studies have reported the prevalence of murmurs in healthy cats as high as 21%, but reports on the specificity and sensitivity of a heart disease diagnosis in cats based on the presence, location, and intensity of a murmur have varied greatly.<sup>5,6</sup> Unfortunately, no follow-up test has proved reliable except an echocardiogram, and commencing therapy before the onset of signs has not proved beneficial. Follow-up with an echocardiogram for feline patients should be based on veterinarian choice and client preference.



**Anemia**

Anemic patients can be recognized by the presence of pale to white mucous membranes. On physical examination, all the areas that represent the patient's ability to perfuse his or her body's periphery should be checked, including the mucous membranes, sclerae, and any thin areas of skin (eg, inner pinnae).

Normal gums should be pink with a quick capillary refill time, and different colors represent different disease states. Anemia, the most common detectable condition, is represented by membranes that are pale pink to white; dark purple to brown membranes can represent intracardiac shunting of blood, methemoglobinemia, or lung disease; gray membranes may indicate cyanosis; and yellowish or icteric membranes may indicate liver disease or hemolysis. Other diseases, such as hemodynamic disorders, may also cause the mucous membranes to remain pale.

Anemia can be divided into 3 broad categories: blood loss, lack of red blood cell production, or destruction of red blood cells. The primary differentials for blood loss include external or internal bleeding, including GI bleeding. Clients are often unaware of chronic GI blood loss, so it should not be ruled out based simply on history. Lack of red blood cell production is generally related to chronic diseases such as renal disease or neoplasia. Destruction, or hemolysis, generally leads to icterus and pallor; causes include primary immune-mediated or secondary hemolytic anemia, infectious diseases, drug reactions, septicemia, and poisonous snake bites. The prognosis and treatment of all these conditions vary greatly, and further diagnostic work-up is indicated.

See Aids & Resources, back page, for references & suggested reading.

**NexGard™**  
(afoxolaner) Chewables

**CAUTION:** Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

**Description:** NEXGARD™ (afoxolaner) is available in four sizes of beef-flavored, soft chewables for oral administration to dogs and puppies according to their weight. Each chewable is formulated to provide a minimum afoxolaner dosage of 1.14 mg/lb (2.5 mg/kg). Afoxolaner has the chemical composition 1-Naphthalenecarboxamide, 4-[5-[3-chloro-5-(trifluoromethyl)phenyl]-4,5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-N-[2-oxo-2-[(2,2,2-trifluoroethyl)amino]ethyl].

**Indications:** NEXGARD kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*) and the treatment and control of American Dog tick (*Dermacentor variabilis*) infestations in dogs and puppies 8 weeks of age and older, weighing 4 pounds of body weight or greater, for one month.

**Dosage and Administration:** NEXGARD is given orally once a month, at the minimum dosage of 1.14 mg/lb (2.5 mg/kg).

**Dosing Schedule:**

Body Weight	Afoxolaner Per Chewable (mg)	Chewables Administered
4.0 to 10.0 lbs.	11.3	One
10.1 to 24.0 lbs.	28.3	One
24.1 to 60.0 lbs.	68	One
60.1 to 121.0 lbs.	136	One
Over 121.0 lbs.	Administer the appropriate combination of chewables	

NEXGARD can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or if vomiting occurs within two hours of administration, redose with another full dose. If a dose is missed, administer NEXGARD and resume a monthly dosing schedule.

**Flea Treatment and Prevention:** Treatment with NEXGARD may begin at any time of the year. In areas where fleas are common year-round, monthly treatment with NEXGARD should continue the entire year without interruption. To minimize the likelihood of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

**Tick Treatment and Control:** Treatment with NEXGARD may begin at any time of the year (see **Effectiveness**).

**Contraindications:** There are no known contraindications for the use of NEXGARD.

**Warnings:** Not for use in humans. Keep this and all drugs out of the reach of children. In case of accidental ingestion, contact a physician immediately.

**Precautions:** The safe use of NEXGARD in breeding, pregnant or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures (see **Adverse Reactions**).

**Adverse Reactions:** In a well-controlled US field study, which included a total of 333 households and 615 treated dogs (415 administered afoxolaner, 200 administered active control), no serious adverse reactions were observed with NEXGARD.

Over the 90-day study period, all observations of potential adverse reactions were recorded. The most frequent reactions reported at an incidence of > 1% within any of the three months of observations are presented in the following table. The most frequently reported adverse reaction was vomiting. The occurrence of vomiting was generally self-limiting and of short duration and tended to decrease with subsequent doses in both groups. Five treated dogs experienced anorexia during the study, and two of those dogs experienced anorexia with the first dose but not subsequent doses.

**Table 1: Dogs With Adverse Reactions.**

	Treatment Group			
	Afoxolaner		Oral active control	
	N <sup>1</sup>	% (n=415)	N <sup>2</sup>	% (n=200)
Vomiting (with and without blood)	17	4.1	25	12.5
Dry/Flaky Skin	13	3.1	2	1.0
Diarrhea (with and without blood)	13	3.1	7	3.5
Lethargy	7	1.7	4	2.0
Anorexia	5	1.2	9	4.5

<sup>1</sup>Number of dogs in the afoxolaner treatment group with the identified abnormality.

<sup>2</sup>Number of dogs in the control group with the identified abnormality.

In the US field study, one dog with a history of seizures experienced a seizure on the same day after receiving the first dose and on the same day after receiving the second dose of NEXGARD. This dog experienced a third seizure one week after receiving the third dose. The dog remained enrolled and completed the study. Another dog with a history of seizures had a seizure 19 days after the third dose of NEXGARD. The dog remained enrolled and completed the study. A third dog with a history of seizures received NEXGARD and experienced no seizures throughout the study.

To report suspected adverse events, for technical assistance or to obtain a copy of the MSDS, contact Merial at 1-888-637-4251 or [www.merial.com/nexgard](http://www.merial.com/nexgard). For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VEITS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth/ProductSafetyInformation>.

**Mode of Action:** Afoxolaner is a member of the isoxazoline family, shown to bind at a binding site to inhibit insect and acarine ligand-gated chloride channels, in particular those gated by the neurotransmitter gamma-aminobutyric acid (GABA), thereby blocking pre- and post-synaptic transfer of chloride ions across cell membranes. Prolonged afoxolaner-induced hyperexcitation results in uncontrolled activity of the central nervous system and death of insects and acarines. The selective toxicity of afoxolaner between insects and acarines and mammals may be inferred by the differential sensitivity of the insects and acarines GABA receptors versus mammalian GABA receptors.

**Effectiveness:** In a well-controlled laboratory study, NEXGARD demonstrated 100% effectiveness against adult fleas 24 hours post-infestation for 35 days, and was > 93% effective at 12 hours post-infestation through Day 21, and on Day 35. On Day 28, NEXGARD was 81.1% effective 12 hours post-infestation. Dogs in both the treated and control groups that were infested with fleas on Day -1 generated flea eggs at 12- and 24-hours post-treatment (0-11 eggs and 1-17 eggs in the NEXGARD treated dogs, and 4-90 eggs and 0-118 eggs in the control dogs, at 12- and 24-hours, respectively). At subsequent evaluations post-infestation, fleas from dogs in the treated group were essentially unable to produce any eggs (0-1 eggs) while fleas from dogs in the control group continued to produce eggs (1-141 eggs).

In a 90-day US field study conducted in households with existing flea infestations of varying severity, the effectiveness of NEXGARD against fleas on the Day 30, 60 and 90 visits compared with baseline was 98.0%, 99.7%, and 99.9%, respectively. Collectively, the data from the two studies (one laboratory and one field) demonstrate that NEXGARD kills fleas before they can lay eggs, thus preventing subsequent flea infestations after the start of treatment of existing flea infestations.

In well-controlled laboratory studies, NEXGARD demonstrated >97% effectiveness against *Dermacentor variabilis* 48 hours post-infestation for 30 days.

**Animal Safety:** In a margin of safety study, NEXGARD was administered orally to 8- to 9-week-old Beagle puppies at 1, 3, and 5 times the maximum exposure dose (6.3 mg/kg) for three treatments every 28 days, followed by three treatments every 14 days, for a total of six treatments. Dogs in the control group were sham-dosed. There were no clinically-relevant effects related to treatment on physical examination, body weight, food consumption, clinical pathology (hematology, clinical chemistries, or coagulation tests), gross pathology, histopathology or organ weights. Vomiting occurred throughout the study, with a similar incidence in the treated and control groups, including one dog in the 5x group that vomited four hours after treatment.

In a well-controlled field study, NEXGARD was used concomitantly with other medications, such as vaccines, anthelmintics, antibiotics (including topicals), steroids, NSAIDs, anesthetics, and antihistamines. No adverse reactions were observed from the concomitant use of NEXGARD with other medications.

**Storage Information:** Store at or below 30°C (86°F) with excursions permitted up to 40°C (104°F).

**How Supplied:** NEXGARD is available in four sizes of beef-flavored soft chewables: 11.3, 28.3, 68 or 136 mg afoxolaner. Each chewable size is available in color-coded packages of 3 or 6 beef-flavored chewables.

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