Common Ectoparasites and Treatment Modalities in Dogs and Cats

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> VPIN,LLC Veterinary Pharmacy Information Network

Disclosures

Spencer Tally and Heather Lindell "declare no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria."

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Learning Objectives

At the conclusion of this program, the participating pharmacist or technician will be able to:

- Describe treatment options available for ectoparasitic infections of dogs and cats.
- List two common ectoparasites of dogs and cats with potential to transmit zoonotic diseases.
- Counsel animal care givers regarding treatment protocols for ectoparasitic infections in dogs and cats.

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Common Ectoparasites and Treatment Modalities in Dogs and Cats

Common Ectoparasites to be reviewed

- Fleas
- Ticks
- Demodex Mange Mites
- Sarcoptic Mange Mite
- Otodectic Mite

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Ectoparasites - Fleas

Two common Species of fleas affecting dogs and cats include: Ctenocephalides felis (cat flea) Ctenocephalides canis (dog flea)

Ctenocephalides felis is the most common ectoparasite of dogs and cats in North America.¹

Fleas are uncommon where relative humidity remains below 50% (desert southwest and Rocky Mountain states).^1 $\,$

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Ectoparasites - Fleas

Life Stages of the Flea

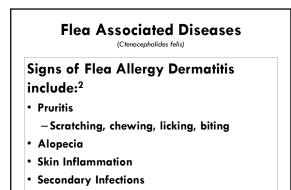
- Eggs
- Larvae
- Pupae
- Adults

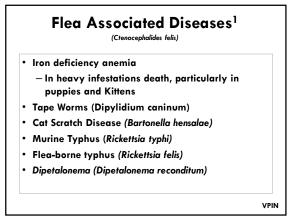
Flea Associated Diseases (Ctenocephalides felis)

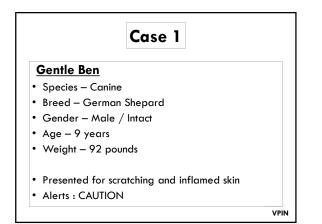
Flea allergy dermatitis (FAD) is the most common veterinary dermatologic condition in the world.¹

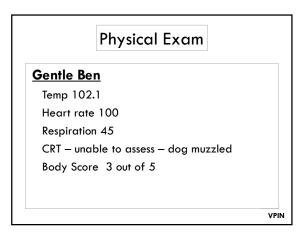
 Related to bite of flea and flea saliva²

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Case 1 – Gentle Ben

Diagnosis – Flea Allergy Dermatitis

<u>Plan:</u>

Depo-Medrol (methylprednisolone acetate) 40 mg SC Nexgard® (afoxolaner) 60-121# Dose Chew Tab

Rx: Cephalexin 500mg

#60 Sig: Give 2 capsules orally every 8 hours until gone for skin infection.

Recheck in 2 weeks.

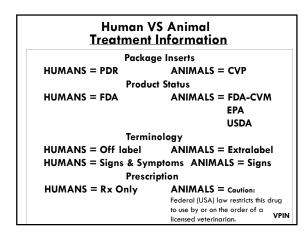
 $\underline{Comment}$ it is not uncommon for an owner not to observe fleas on an animal with flea allergy dermatitis.

Ectoparasites - Fleas <u>Public Health Considerations</u> Zoonotic Agents Transmitted by Ctenocephalides felis¹ • Cat Scratch Disease (Bartonella henselare) • Tapeworms (Dipylidium caninum) • Murine typhus (Rickettsia typhi) • Flea-borne typhus (Rickettsia felis) Rodent fleas may be acquired by dogs and cats may be vectors for bubonic plague (Y. pestis)¹

Humans can be bitten by newly emerging fleas

Potential allergic response

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Comprehensive flea-control <u>programs</u> should¹ Eliminate fleas on pets Eliminate existing environmental infestations Prevent subsequent re-infestation

Remember:

Only approximately 1% of the flea population are present as adults.²

Ectoparasites - Fleas <u>Treatment</u>

Flea treatment <u>products</u> include: Flea adulticides Insect growth regulators (IGRs)

Insect development inhibitors (IDIs)

IGRs and IDIs examples include: lufenuron methoprene

pyriproxyfen

Ectoparasites - Fleas <u>Treatment</u>

Flea adulticides Oral products Spot-on or spray products Flea collars

The newer flea control products Less potential toxicity than Dips that were used in the past More efficacious than flea shampoos

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Ectoparasites - Fleas <u>Treatment</u>

Oral Products Nexgard [®] (afoxolaner) Simparica [®] (sarolaner) Bravecto [®] (fluralaner) Comfortis [®] (spinosad) Capstar [®] (nitenpyram)	dogs dogs dogs dogs d	ecies und cats und cats	month	y y 3 months	
Spot-on Produc	t <u>s</u>	<u>Spec</u>		Interval monthly	
Frontline [®] (fipronil) Advantage [®] (imidaclop Activyl [®] (indoxacarb)		dogs a dogs a	nd cats nd cats	monthly monthly	
Vectra® (dinotefuran) Bravecto® (fluralaner)		dogs a	nd cats nd cats nd cats	monthly monthly every 3 months	
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Ectoparasites - Fleas <u>Treatment</u>			
Flea Collars Seresto® (imidacloprid/flumethrin) Scalibor ® (deltamethrin)	Species dogs and cats dogs	Interval 8-month collar 6-month collar	
Synthetic pyrethrins*	(various for	mulations)	
cyphenothrin permethrin deltamethrin flumethrin *Note: Synthetic pyrethrins can l possible death.	Species dogs dogs dogs dogs and cats see <u>toxic to cats</u> res		
			۷

Comment.....

Ticks wait for a host, resting on the tips of grasses and shrubs.4

Comment.....

When a host brushes the spot where a tick is waiting, it quickly climbs aboard.⁴

Ectoparasites - Ticks

<u>Hard tick species</u> common on dogs and cats in North America are all 'three-host' ticks.⁴

Meaning.....

Each developing stage often feeds on a different host

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Ectoparasites - Ticks

Hard tick species common on dogs and cats in North America

Life stages include⁴

-Larva

-Nymph

-Adult

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Ectoparasites - Ticks

Life cycle

The eight-legged adults

-Find a third host on which to feed

Species of Ticks Infesting Dogs and Cats in North America⁴

Lone Star Tick (Amblyomma americanum)	Dog and Cat
American Dog Tick (Dermacentor variabilis)	Dog and Cat
Black-legged Tick (Ixodes scapularis)	Dog and Cat
Spinose Ear Tick (Otobius megnini)	Dog and Cat
Gulf Coast Tick (Amblyomma maculatum)	Dog
Rocky Mountain Wood Tick (Dermacentor andersoni)	Dog
Western Black-legged Tick (Ixodes pacificus)	Dog
Brown Dog Tick (Rhipicephalus sanguineus)	Dog

Common Species of Ticks Found In Georgia⁵ Three Species of ticks common in Georgia that transmit zoonotic diseases:¹

Lone Star Tick (*Amblyomma americanum*) - Most Common in Georgia • Human Monocyte Ehrlichiosis (HME)

Southern Tick-Associated Rash Illness (STARI)

American Dog Tick (Dermacentor variabilis) – Second Most Common • Rocky Mountain Spotted Fever

Black-legged Tick (Ixodes scapularis)

Lyme DiseaseHuman Granulocytic Anaplasmosis (HGA)

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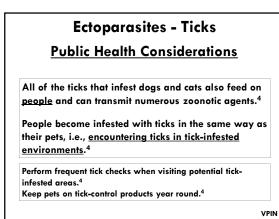
Direct Disease Associated with Ticks

Direct Disease⁴

- Irritation and pruritus at attachment site
- Anemia from blood loss
- Secondary infections at attachment site
- Allergic hypersensitivity
- Tick paralysis

Zoonotic Pathogens Transmitted by Ticks³ • Anaplasmosis Babesiosis . Borrelia mayonii . • Borrelia miyamotoi . Colorado tick fever . Ehrlichiosis Heartland virus Lyme disease Powassan disease Rickettsia parkeri rickettsiosis • Rocky Mountain spotted fever (RMSF) STARI (Southern tick-associated rash illness) . . Tickborne relapsing fever (TBRF) . Tularemia 364D rickettsiosis VPIN

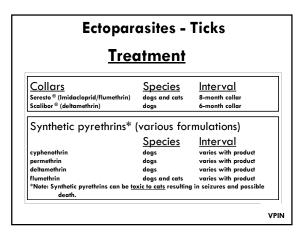




Ectoparasites - Ticks					
Ī	rea	tm	<u>ent</u>		
Oral Products	Spe	<u>cies</u>	Inte	rval	
Nexgard [©] (afoxolaner) Simparica [©] (sarolaner) Bravecto [©] (fluralaner)	dogs dogs dogs		monthl monthl every 2		
Spot-on Products Revolution® (selamectin)* Frontline® (fipronil) Sergeant's Silver (etofenprox *American Dog tick only	-	Spec dogs dogs ar cats		Interval monthly monthly monthly	
					V

Ectoparasites - Ticks <u>Treatment</u>			
Spot-on Products Combinations	<u>Species</u>	<u>Interval</u>	
Activyl [®] Tick Plus (indoxacarb/ permethrin)	dogs	monthly	
Vectra® 3D (dinotefuran/pyriproxyfen/permethrir	dogs n)	monthly	
Catego [™] (dinotefuran/pyriproxyfen/fipronil)	cats	monthly	





Ectoparasites – Mites Demodex (Mange Mite)

Most Demodex spp. are considered normal mammalian fauna.⁶

Overgrowth of mites is secondary to systemic disease or immune defect.⁶

Ectoparasites – Mites Demodex (Mange Mite)

Demodex mites infest hair follicles and sebaceous glands.⁶

Canine demodicosis⁶

• Demodex canis Feline demodicosis⁶

• Demodex cati & Demodex gatoi

Canine demodicosis is <u>common</u>⁶ Feline demodicosis is <u>rare⁶</u>

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Ectoparasites – Mites <u>Demodex (Mange Mite)</u> <u>Canine demodicosis</u> • Localized • Generalized May present in either juvenile or adult dogs.

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Ectoparasites – Mites

Demodex (Mange Mite)

Localized Canine demodicosis Clinical Signs⁶

- Mild, Nonpruritic
- Patchy alopecia on the head or limbs
- Usually in puppies less than 6 months of age
- Most cases resolve spontaneously without treatment

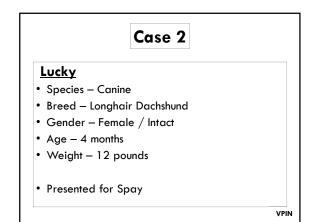
Ectoparasites – Mites Demodex (Mange Mite)

<u>Generalized Canine demodicosis</u> <u>Clinical Signs</u>⁶

- Moderate to severe disease
- May develop anywhere on the body
- Alopecia
- Erythema
- Secondary superficial or deep pyoderma

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Ectoparasites – Mites <u>Demodex (Mange Mite)</u> <u>Diagnosis</u> Microscopic examination of deep skin scrapes from affected areas of alopecia.



Physical Exam

<u>Lucky</u>

demodicosis.

Temp 100.2 Heart rate 160 Respiration 48 CRT – <2 Body Score 3 out of 5 Alopecia noted on dorsal head area

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Case 2 – Lucky Diagnosis – Localized Demodex <u>Plan:</u> Apply Neosporin[®] to skin scrape area twice daily until healed. Rx: Bravecto[®] (fluralaner) 250 mg tablet Dispense 1 tablet Sig: Give one tablet orally. Recheck in 30 days Comment: Bravecto® (fluralaner) chew tablet is approved to prevent fleas and ticks in dogs and given orally every 3 months. It can be used <u>extralabel</u> to treat

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Ectoparasites - Demodex Public Health Considerations

Demodex mites are host-adapted.⁶

There is no zoonotic potential in either canine or feline demodicosis.⁶

Ectoparasites – Demodex Treatment in Dogs

Approved miticidal treatment for generalized demodicosis Amitraz dip (Mitaban®)

Extralabel treatment for localized demodicosis Rotenone-based insecticide ointment (Goodwinol)

*Extralabel treatment of Demodex Ivermectin Milbemycin oxime Moxidectin Doramectin Fluralaner

> Ectoparasites – Demodex Treatment in Dogs

*Herding breeds such as Collies, Shetland Sheepdogs, Border Collies, Australian Shepherds, and Old English Sheepdogs, as well as other canines may have mutations in their MDR1 genes which predisposes to an increased risk of toxicity to macrocyclic lactones.

*Extralabel treatment of Demodex lvermectin Milbemycin oxime Moxidectin Doramectin Fluralaner

> Ectoparasites – Demodex Treatment in Cats

No products are labeled for demodicosis in cats.¹

Extralabel treatment of Demodex Lime Sulfur Dip – treat Demodex gatoi Ivermectin – Side effects may occur Doramectin – treat follicular demodicosis Amitraz – Side effects may occur

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Ectoparasites – Canine Scabies

- Canine scabies is caused by Sarcoptes scabiei
- Superficial skin mite^{7,8}
- Mites tunnel in the skin^{7,8}
 Female glues eggs to the tunnel walls⁷
- Secrete allergic substances that produce intense pruritic dermatitis^{7,8}

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Ectoparasites – Canine Scabies

Signs of infection

- Hyperkeratosis and alopecia⁷
- Initially dry crusted lesions that become puritic⁷
- Excoriation often develops a serous exudate⁷

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Ectoparasites – Canine Scabies

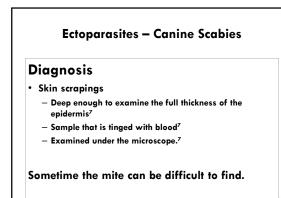
Signs of infection

- <u>Highly pruritic</u> lesions are often the cause of self-mutilation.⁷
- Lesions may become bloody secondary to scratching⁷
- Secondary skin infections can occur

Ectoparasites – Canine Scabies

- Lesions typically noted on
- Margins of the ears^{7,8}
- Lateral elbows^{7,8}
- Lateral hocks^{7,8}
- Ventral abdomen and chest^{7,8}

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Ectoparasites – Canine Scabies

Public Health Considerations

People can develop a self-limiting infestation with S. scabiei from dogs.¹

- Highly pruritic lesions⁷
- Usually clear without the need for specific treatment for the mite infestation.⁷
- If lesions persist or are particularly uncomfortable, a dermatologist should be consulted.⁷

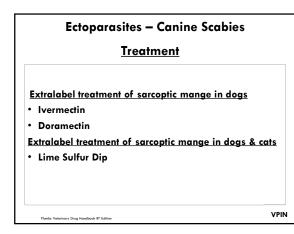
Ectoparasites – Canine Scabies <u>Treatment</u>

Label approved for treatment and control of sarcoptic mange on dogs

Revolution[®] (selamectin) Advantage Multi[®] (moxidectin/imidacloprid) Seresto[®] collars (flumethrin/imidacloprid)

Label approved as "aids in control of sarcoptic mange"¹ Frontline[®] (fipronil)

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Ectoparasites – Otodectic Mite

Otodectes cynotis (ear mite)

A cause of otitis externa in dogs and cats.

- Mites <u>primarily</u> infect the ear canal
 Can live on adjacent skin
- Cats can have more than 1,000 mites per ear⁹

Ectoparasites – Otodectic Mite

Otodectes cynotis (ear mite)

A cause of otitis externa in dogs and cats.

- Marked accumulation of dark brown to black waxy or crusty exudate in the ear canals.
- Secondary bacterial otitis can develop

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Ectoparasites – Otodectic Mite

<u>Clinical signs</u>

- Shaking of the head
- Scratching at the ears
- Inflammation of the ear canals
- Accumulation of copious dark crusty cerumen
- Serous to purulent exudates.⁹

Ectoparasites – Otodectic Mite Diagnosis Examining swabs of the <u>ear canal exudate</u> under the microscope.

Ectoparasites - Otodectic Mite <u>Public Health Considerations</u>

On very rare occasions, people have been infested with ear mites.⁹

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Ectoparasites – Otodectic Mite Treatment in Cats

Approved products include:¹

Advantage Multi[®] for cats (moxidectin/imidacloprid)

• Revolution[®] for cats (selamectin)

• Acarexx[®] (ivermectin)

Combination Product

 TRESADERM[®] solution (thiabendazoledexamethasone-neomycin sulfate)

Cleaning of the ear canal is always recommended prior to administration.¹

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Ectoparasites – Otodectic Mite Treatment in Dogs

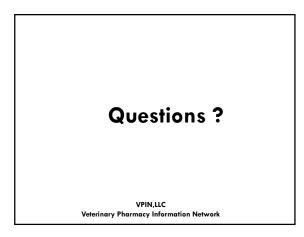
Labeled products include:

• Revolution[®] for dogs (selamectin)

Combination Product

 TRESADERM[®] (thiabendazole-dexamethasoneneomycin sulfate solution)

Cleaning of the ear canal is always recommended prior to administration.¹



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