



Getting to Know the Six Major Components

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Special to VETERINARY FORUM

The Companion Animal Parasite Council (CAPC) has as its goal a mission to foster animal and human health while preserving the human–animal bond through recommendations for the diagnosis, treatment, prevention, and control of parasitic infections. This mission is supported in part by six basic CAPC recommendations for practitioners (see box).

To convince clients of the value of complying with these guidelines, veterinarians need to be in fairly good agreement with the principles — but doing so requires some buy-in to what they represent.

In the Southeast where heartworm disease is common and hookworms are prevalent, the use of year-round prevention and the need for compliance are easy-to-understand concepts for both practitioners and clients.¹ However, in the North, where heartworms are considered to be transmitted seasonally, and in many of the western states, where heartworm transmission is often considered rare or nonexistent, annual prevention is not always embraced by practitioners, thereby making client compliance difficult.²

The upper midwestern states have been one of the major centers for lack of compliance with respect to administration of preventatives, and the occurrence of infection in dogs on preventive therapy is, therefore, likely because of the lack of certainty as to when to start and stop heartworm prevention.^{2,3} In addition, some western states refuse to admit that there is local transmission of heartworms, although veteri-

CAPC Recommendations

1. Putting dogs and cats on year-round treatment with broad-spectrum heartworm anthelmintics that have activity against parasites with zoonotic potential
2. Placing dogs and cats on preventive flea and/or tick products as soon after birth as possible
3. Performing annual physical examinations
4. Providing pets with cooked food and fresh, potable water
5. Annually retesting the heartworm status of dogs and cats
6. Conducting fecal examinations once or twice a year in adult pets

narians in almost every western state claim that it occurs.⁴ The unwillingness to accept the possibility of heartworm transmission in certain areas has allowed it to spread throughout the United States ever since its first appearance in Hennepin County, Minnesota, in 1937.^{5,6}

Zoonotic potential

The transmission of roundworms can occur all winter long; as soon as the egg is ingested, the infective larva remains capable of hatching and caus-

Protecting Pets and People from Parasites

The Companion Animal Parasite Council (CAPC) is an independent council of veterinarians and other animal health care professionals established to create guidelines for the optimal control of internal and external parasites that threaten the health of pets and people. It brings together broad expertise in parasitology, internal medicine, public health, veterinary law, private practice, and association leadership. Initially convened in 2002, the CAPC was formed with the expressed purpose of changing the way veterinary professionals and pet owners approach parasite management. The CAPC advocates best practices for protecting pets from parasitic infections and reducing the risk for zoonotic parasite transmission. Sponsoring the peer-reviewed Parasite 101 column is one more avenue for reaching veterinarians on important topics and issues related to the prevention of parasitic transmission and disease.



revolution[®] (selamectin)

Topical Parasiticide for Dogs and Cats

CAUTION

U.S. Federal law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS

REVOLUTION is recommended for use in dogs 6 weeks of age and older and in cats 8 weeks of age and older for the following parasites and indications:

Dogs: REVOLUTION kills adult fleas and prevents flea eggs from hatching for one month and is indicated for the prevention and control of flea infestations (*Ctenocephalides felis*), prevention of heartworm disease caused by *Dirofilaria immitis*, and the treatment and control of ear mite (*Otodectes cynotis*) infestations. REVOLUTION also is indicated for the treatment and control of sarcoptic mange (*Sarcoptes scabiei*) and for the control of tick infestations due to *Dermacentor variabilis*.

Cats: REVOLUTION kills adult fleas and prevents flea eggs from hatching for one month and is indicated for the prevention and control of flea infestations (*Ctenocephalides felis*), prevention of heartworm disease caused by *Dirofilaria immitis*, and the treatment and control of ear mite (*Otodectes cynotis*) infestations. REVOLUTION is also indicated for the treatment and control of roundworm (*Toxocara cati*) and intestinal hookworm (*Ancylostoma tubaeforme*) infections in cats.

WARNINGS

Not for human use. Keep out of the reach of children.

In humans, REVOLUTION may be irritating to skin and eyes. Reactions such as hives, itching and skin redness have been reported in humans in rare instances. Individuals with known hypersensitivity to REVOLUTION should use the product with caution or consult a health care professional. REVOLUTION contains isopropyl alcohol and the preservatives butylated hydroxytoluene (BHT). Wash hands after use and wash off any product in contact with the skin immediately with soap and water. If contact with eyes occurs, then flush eyes copiously with water. In case of ingestion by a human, contact a physician immediately. The material safety data sheet (MSDS) provides more detailed occupational safety information. For a copy of the MSDS or to report adverse reactions attributable to exposure to this product, call 1-800-366-5288.

Flammable—Keep away from heat, sparks, open flames or other sources of ignition.

Do not use in sick, debilitated or underweight animals (see SAFETY).

PRECAUTIONS

Prior to administration of REVOLUTION, dogs should be tested for existing heartworm infections. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms. REVOLUTION is not effective against adult *D. immitis* and, while the number of circulating microfilariae may decrease following treatment, REVOLUTION is not effective for microfilariae clearance. Hypersensitivity reactions have not been observed in dogs with patent heartworm infections administered three times the recommended dose of REVOLUTION. Higher doses were not tested.

ADVERSE REACTIONS

Pre-approval clinical trials: Following treatment with REVOLUTION, transient localized alopecia with or without inflammation at or near the site of application was observed in approximately 1% of 691 treated cats. Other signs observed rarely ($\leq 0.5\%$ of 1743 treated cats and dogs) included vomiting, loose stool or diarrhea with or without blood, anorexia, lethargy, salivation, tachypnea, and muscle tremors.

Post-approval experience: In addition to the aforementioned clinical signs that were reported in pre-approval clinical trials, there have been reports of pruritus, urticaria, erythema, alopecia, liver and rare reports of death. There have also been rare reports of seizures in dogs (see WARNINGS).

DOSEAGE

The recommended minimum dose is 2.7 mg selamectin per pound (6 mg/kg) of body weight. Administer the entire contents of a single dose tube (or two tubes used in combination for dogs weighing over 130 pounds) of REVOLUTION topically in accordance with label directions. (See ADMINISTRATION for the recommended treatment intervals.) For cats over 15 pounds use the appropriate combination of tubes. Recommended for use in dogs 6 weeks of age and older and in cats 8 weeks of age and older.

ADMINISTRATION

A veterinarian or veterinary technician should demonstrate or instruct the pet owner regarding the appropriate technique for applying REVOLUTION topically to dogs and cats prior to first use.

Firmly depress the cap to puncture the seal on the REVOLUTION tube; then remove the cap to administer the product. Part the hair on the back of the animal at the base of the neck in front of the shoulder blades until the skin is visible. Place the tip of the tube on the skin, release the hair and squeeze the tube to empty its entire contents directly onto the skin in one spot. Do not massage the product into the skin. Due to alcohol content, do not apply to broken skin. Avoid contact between the product and fingers. Do not apply when the hair coat is wet. Bathing or shampooing the animal 2 or more hours after treatment will not reduce the effectiveness of REVOLUTION. Staff hair, clumping of hair, hair discoloration, or a slight powdery residue may be observed at the treatment site in some animals. These effects are temporary and do not affect the safety or effectiveness of the product. Discard empty tubes in your ordinary household refuse.

SAFETY

REVOLUTION has been tested safely in over 100 different pure and mixed breeds of healthy dogs and over 15 different pure and mixed breeds of healthy cats, including pregnant and lactating females, breeding males and females, puppies six weeks of age and older, kittens eight weeks of age and older, and avermectin-sensitive collies. A kitten, estimated to be 5–6 weeks old (0.3 kg), died 8 1/2 hours after receiving a single treatment of REVOLUTION at the recommended dosage. The kitten displayed clinical signs which included muscle spasms, salivation and neurological signs. The kitten was a stray with an unknown history and was malnourished and underweight (see PRECAUTIONS).

Dogs

In safety studies, REVOLUTION was administered at 1, 3, 5, and 10 times the recommended dose to six-week-old puppies, and no adverse reactions were observed. The safety of REVOLUTION administered orally also was tested in case of accidental oral ingestion. Oral administration of REVOLUTION at the recommended topical dose in 5- to 8-month-old beagles did not cause any adverse reactions. In a pre-clinical study selamectin was dosed orally to avermectin-sensitive collies. Oral administration of 2.5, 10, and 15 mg/kg in this dose escalating study did not cause any adverse reactions; however, eight hours after receiving 5 mg/kg orally, one avermectin-sensitive collie became ataxic. For several hours, but did not show any other adverse reactions after receiving subsequent doses of 10 and 15 mg/kg orally. In a topical safety study conducted with avermectin-sensitive collies at 1, 3, and 5 times the recommended dose of REVOLUTION, salivation was observed in all treatment groups, including the vehicle control. REVOLUTION also was administered at 3 times the recommended dose to heartworm infected dogs, and no adverse effects were observed.

Cats

In safety studies, REVOLUTION was applied at 1, 3, 5, and 10 times the recommended dose to six-week-old kittens. No adverse reactions were observed. The safety of REVOLUTION administered orally also was tested in case of accidental oral ingestion. Oral administration of the recommended topical dose of REVOLUTION to cats caused salivation and intermittent vomiting. REVOLUTION also was applied at 4 times the recommended dose to patent heartworm infected cats, and no adverse reactions were observed. In well-monitored clinical studies, REVOLUTION was used safely in animals receiving other frequently used veterinary products such as vaccines, antimicrobials, antiparasitics, antibiotics, steroids, collars, shampoos and dips.



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ing disease. A national survey involving dogs in US shelters showed that adult dogs can be commonly infected with *Toxocara canis* and shed eggs into the environment.⁷ However, because academic parasitologists were unable to experimentally infect dogs with *T. canis*

In the upper midwestern states and some western states, there is a lack of certainty about or refusal to admit the necessity for heartworm prevention.

until fairly recently, there was the continued misconception that adult dogs do not get roundworms. It happens and is not that uncommon — in the national survey, more than 15% of the shelter dogs that were older than 3 years of age had roundworms.

The eggs of *T. canis* are potential zoonotic agents, and recent work shows that about 17% of the population of the United States is infected with the larval stage of this worm.⁸ These infections are acquired by the ingestion of the eggs in contaminated soil or on soil-contaminated objects. About the only way to minimize the risk for infection is to reduce the number of dogs — both puppies and adults — that are shedding eggs.⁹ The way to accomplish this is to work harder at compliance and to follow regular deworming and fecal examinations to prevent dogs from shedding eggs into the environment.

Along this same line of thought, it is often forgotten that cats serve as hosts for *Toxocara cati*, which some now also consider to be a cause of larval toxocarosis in hu-

mans. In addition, cats are perhaps even better hosts than dogs for the hookworm *Ancylostoma braziliense*, the causative agent of cutaneous larval migrans in the southeastern United States. Cats also should be given year-round treatments with broad-spectrum heartworm an-

thelmintics that have activity against parasites with zoonotic potential, even if people refuse to believe in feline heartworm disease — despite all we know about the association of lung disease in cats and juvenile heartworms.¹⁰

Intervention is key

There are good reasons for complying with the other five major components of these short guidelines, too, but the prevention of heartworm and routine internal parasites is a good place to start.

Flea and tick control is critical for protection of the human-animal bond. Nothing can destroy a relationship between a pet and its owner faster than a member of the owner's family developing a fleabite allergy. Ticks need to be controlled — if for no other reason than their presence is typically met with fear and disgust.

Raw food and contaminated water are sources of many different parasite infections. Finally, the only way to determine whether a prevention program is working is to monitor the success of the intervention — and for this we have fecal exami-

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the client. This face-to-face posture might be perceived as confrontational. Instead, stand at the end of the exam table, forming an "L" shape between you and the client. Even better: Stand on the same side of the exam table, shoulder-to-shoulder with the client. This body language is collaborative. The technician should say, "I want to go over the treatment plan the doctor recommends for your pet." Standing across the table can be awkward because you have to read the information you're presenting upside down.

Explain each item, pointing to the left column that lists medical services. Don't point to the right column — it has prices. If you focus on money, the client will too. If the client has questions about fees, he or she will ask.

Offer solutions

Using your computer, create picture books or slide shows about common procedures, such as dental cleanings, spays and neuters. Put photos in the same order as your treatment plan template, showing images as you describe each service. While explaining preanesthetic testing, flip to a photo of a technician in your in-clinic lab. When describing monitoring for surgical patients, point to a picture of a pulse oximeter and ECG unit. Images help clients understand your standard of care. An educated client is more likely to comply with the doctor's recommendation.

When the technician has finished presenting the treatment plan, he or she should ask, "Is this the level of care you'd like for your pet?"

If the client responds, "Yes," the technician should then say, "To get your permission to schedule and proceed with treatment, I need your signature on the treatment plan." Keep the signed treatment plan in the medical record, and give a copy to the client.

If the client cannot afford that level of care, the technician should offer, "Let me get the doctor so he (or she) can recommend options for a treatment plan that fits your budget."

Offer solutions to clients' economic limitations with third-party financing, such as CareCredit. During a recent consultation, I shadowed a wellness exam with a client and her four cats. Each cat needed a professional dental cleaning, averaging \$300 per procedure for a total of \$1,200. When the technician presented the cats' treatment plans, she provided a CareCredit brochure. The client was approved and scheduled her cats' dental cleanings the following week. Financing the care was a win-win solution for both the client and practice.

To polish your communication skills, print a treatment plan template from your veterinary software. Prac-

tice conversations with staff, asking for feedback on your body language and phrases. With training, you'll become a confident communicator and can provide more patients with the care they need. **vF**

Wendy Myers owns Communication Solutions for Veterinarians in Denver and provides consulting services on client service, hospital management and marketing. She is the author of three books and five videos. You can reach Wendy at 720-344-2347 or subscribe to her monthly e-newsletter at www.csvets.com.

peer reviewed

Parasite 101 (continued from page 68)

nations and heartworm antigen detection.

In subsequent Parasite 101 columns from the CAPC, we hope to convince more practitioners of the value of these recommendations and some of our more finely tuned guidelines. **vF**

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