

Veterinary Medicine Needs Checklists

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In the Literature

Oxtoby C, Mossop L.
Implementing checklists in practice. *In Pract.* 2016;38(9):463-464.

FROM THE PAGE ...

In this review of the practical implications of checklists in the veterinary setting, the authors make the case for checklists from a patient safety perspective and offer tips for getting started, such as where to source checklists. The article also proposes a potential framework for checklist implementation, broken down into stages, and a summary of the barriers practices should prepare to face during implementation.

... TO YOUR PATIENTS

Key pearls to put into practice:

Checklists in healthcare (modeled after the preflight safety checklists of the airline industry and popularized by Atul Gawande's *Checklist Manifesto*) have become widely adopted in the human medical industry but anecdotally remain

CHOOSE THE CHEW WITH
MORE PROTECTION
THAN HEARTGARD® PLUS
(ivermectin/pyrantel)*



Heartworm disease



Hookworm (*A. caninum*)



Roundworm

INDICATIONS

Interceptor® Plus (milbemycin oxime/praziquantel) is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis* and for the treatment and control of adult roundworm (*Toxocara canis*, *Toxascaris leonina*), adult hookworm (*Ancylostoma caninum*), adult whipworm (*Trichuris vulpis*) and adult tapeworm (*Taenia pisiformis*, *Echinococcus multilocularis*, *Echinococcus granulosus*) in dogs and puppies 6 weeks of age and older and 2 pounds of body weight or greater.

in their infancy in the veterinary setting.¹ Checklists can be leveraged for many clinical scenarios, including surgery, anesthesia, dentistry, emergency cases (eg, trauma,² toxin ingestion), or routine appointments (eg, senior wellness, vaccinations).

1 Be able to articulate the “why” with veterinary teams by knowing and being able to explain the facts. Medical errors may be more widespread than realized, especially without formal adverse event reporting. Checklists are a simple, free, easy, and proven way to save lives and prevent patient suffering, and they make veterinary teams more efficient through better communication and morale, improved preparation, and reduced equipment breakdowns. Checklists prevent medical errors and thus preserve the veterinary team’s financial and emotional well-being.

2 Do not reinvent the checklist wheel. Checklist design can be a formidable process, but several reputable organizations provide templates that are built to be modified, including checklists for human medical settings that can be applied to veterinary practice. Some organizations that freely publish clinical checklists include *Clinician’s Brief*, the World Health Organization, the Association of Veterinary Anaesthetists, the Animal Health Trust, and the Institute for Healthcare Improvement (see **Suggested Reading**, next page).

3 Follow a process. Workflow changes should be implemented carefully with an outline of steps to implementation. Start with a practice meeting explaining the reason for the initiative, appoint a medical supervisor to oversee the checklist project, and try the checklist in one area of the practice first. The final stage of any checklist implementation project should include scheduled time to reassess, modify, and discuss results.

Continues on page 62



Checklists prevent medical errors and thus preserve the veterinary team’s financial and emotional well-being.



Whipworm



Tapeworm**

INTERCEPTOR[®]
PLUS
(milbemycin oxime/praziquantel)

Recommend a monthly chew that protects against more dangerous parasites **including whipworm and tapeworm** — Interceptor Plus. Talk to your Elanco sales representative today.

IMPORTANT SAFETY INFORMATION

Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention. Prior to administration of Interceptor Plus, dogs should be tested for existing heartworm infections. The safety of Interceptor Plus has not been evaluated in dogs used for breeding or in lactating females. The following adverse reactions have been reported in dogs after administration of milbemycin oxime or praziquantel: vomiting, diarrhea, depression/lethargy, ataxia, anorexia, convulsions, weakness, and salivation. Please see full product information on page 62.

*Heartgard Plus hookworm species: *Ancylostoma caninum*, *Uncinaria stenocephala*, *Ancylostoma braziliense*.
**(*Taenia pisiformis*, *Echinococcus multilocularis* and *Echinococcus granulosus*).

INTERCEPTOR[™] PLUS (milbemycin oxime/praziquantel)

Caution

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

Before using this product, please consult the product insert, a summary of which follows:

Indications

INTERCEPTOR PLUS is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*, and for the treatment and control of adult roundworm (*Toxocara canis*, *Toxascaris leonina*), adult hookworm (*Ancylostoma caninum*), adult whipworm (*Trichuris vulpis*), and adult tapeworm (*Taenia pisiformis*, *Echinococcus multilocularis* and *Echinococcus granulosus*) infections in dogs and puppies two pounds of body weight or greater and six weeks of age and older.

Dosage and Administration

INTERCEPTOR PLUS should be administered orally, once every month, at the minimum dosage of 0.23 mg/lb (0.5 mg/kg) milbemycin oxime, and 2.28 mg/lb (5 mg/kg) praziquantel. For heartworm prevention, give once monthly for at least 6 months after exposure to mosquitoes (see **EFFECTIVENESS**).

See product insert for complete dosing and administration information.

Contraindications

There are no known contraindications to the use of INTERCEPTOR PLUS.

Warnings

Not for use in humans. Keep this and all drugs out of the reach of children.

Precautions

Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention (see **EFFECTIVENESS**).

Prior to administration of INTERCEPTOR PLUS, dogs should be tested for existing heartworm infections. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms.

INTERCEPTOR PLUS is not effective against adult *D. immitis*.

Mild, transient hypersensitivity reactions, such as labored breathing, vomiting, hypersalivation, and lethargy, have been noted in some dogs treated with milbemycin oxime carrying a high number of circulating microfilariae. These reactions are presumably caused by release of protein from dead or dying microfilariae.

Do not use in puppies less than six weeks of age.

Do not use in dogs or puppies less than two pounds of body weight.

The safety of INTERCEPTOR PLUS has not been evaluated in dogs used for breeding or in lactating females. Studies have been performed with milbemycin oxime alone.

Adverse Reactions

The following adverse reactions have been reported in dogs after administration of milbemycin oxime or praziquantel: vomiting, diarrhea, depression/lethargy, ataxia, anorexia, convulsions, weakness, and salivation.

To report suspected adverse drug events, contact Elanco US Inc. at 1-888-545-5973 or the FDA at 1-888-FDA-VETS.

For technical assistance call Elanco US Inc. at 1-888-545-5973.

Information for Owner or Person Treating Animal:

Echinococcus multilocularis and *Echinococcus granulosus* are tapeworms found in wild canids and domestic dogs. *E. multilocularis* and *E. granulosus* can infect humans and cause serious disease (alveolar hydatid disease and hydatid disease, respectively). Owners of dogs living in areas where *E. multilocularis* or *E. granulosus* are endemic should be instructed on how to minimize their risk of exposure to these parasites, as well as their dog's risk of exposure. Although INTERCEPTOR PLUS was 100% effective in laboratory studies in dogs against *E. multilocularis* and *E. granulosus*, no studies have been conducted to show that the use of this product will decrease the incidence of alveolar hydatid disease or hydatid disease in humans. Because the prepatent period for *E. multilocularis* may be as short as 26 days, dogs treated at the labeled monthly intervals may become reinfected and shed eggs between treatments.

Effectiveness

Heartworm Prevention:

In a well-controlled laboratory study, INTERCEPTOR PLUS was 100% effective against induced heartworm infections when administered once monthly for 6 consecutive months. In well-controlled laboratory studies, neither one dose nor two consecutive doses of INTERCEPTOR PLUS provided 100% effectiveness against induced heartworm infections.

Intestinal Nematodes and Cestodes Treatment and Control:

Elimination of the adult stage of hookworm (*Ancylostoma caninum*), roundworm (*Toxocara canis*, *Toxascaris leonina*), whipworm (*Trichuris vulpis*) and tapeworm (*Echinococcus multilocularis*, *Echinococcus granulosus*, *Taenia pisiformis*) infections in dogs was demonstrated in well-controlled laboratory studies.

Palatability

In a field study of 115 dogs offered INTERCEPTOR PLUS, 108 dogs (94.0%) accepted the product when offered from the hand as if a treat, 1 dog (0.9%) accepted it from the bowl with food, 2 dogs (1.7%) accepted it when it was placed in the dog's mouth, and 4 dogs (3.5%) refused it.

Storage Information

Store at room temperature, between 59° and 77°F (15-25°C).

How Supplied

INTERCEPTOR PLUS is available in four strengths, formulated according to the weight of the dog. Each strength is available in color-coded packages of six chewable tablets each. The tablets containing 2.3 mg milbemycin oxime/22.8 mg praziquantel or 5.75 mg milbemycin oxime/57 mg praziquantel are also available in color coded packages of one chewable tablet each.

Manufactured for: Elanco US Inc.
Greenfield, IN 46140, USA
Product of Japan

NADA #141-338, Approved by FDA

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Elanco

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References

1. Gawande A. *The Checklist Manifesto: How to Get Things Right*. New York, NY: Metropolitan Books; 2010.
2. World Health Organization. Trauma care checklist. <http://www.who.int/patientsafety/implementation/checklists/trauma/en/>. Accessed December 12, 2016.

Suggested Reading

Animal Health Trust. Patient safety first. <http://www.aht.org.uk/patientsafetyfirst>. Accessed December 12, 2016.

Association of Veterinary Anaesthetists. Anaesthesia records and checklists. <https://www.ava.eu.com/resources/checklists/>. Accessed December 12, 2016.

Institute for Healthcare Improvement. Lists that work: the healthcare leader's role in implementation. <http://www.ihl.org/resources/Pages/Publications/ListsThatWorkLeadersRoleImplementation.aspx>. Accessed December 12, 2016.

Mankin, KT. Checklists: an answer to avoiding mistakes. *Clinician's Brief*. 2016;14(5):24-29.

World Health Organization. Patient safety checklists. <http://www.who.int/patientsafety/implementation/checklists/en/>. Accessed December 12, 2016.

Therapeutics Research Note: GC-7101

Flos Lonicerae Japonicae is an herb used in Chinese medicine for heat-clearing, detoxification, anti-inflammation, throat pain, and GI motility disorder. GC-7101, the standardized extract of the herb, has a prokinetic effect on GI motility. This prokinetic effect has been demonstrated in laboratory studies by enhanced contractile response of feline esophageal smooth muscle, enhanced contractility of the feline lower esophageal sphincter, and accelerated gastric emptying and GI transit in rats.

The authors suggested that there is potential for use of GC-7101 in developing new prokinetic drugs; however, further studies are needed.

Source

Nam Y, Lee JM, Wang Y, Ha HS, Sohn UD. The effect of *Flos Lonicerae Japonicae* extract on gastrointestinal motility function. *J Ethnopharmacol*. 2016;179:280-290.