

CONSULT THE EXPERTS

IMPROVING OWNER COMPLIANCE WITH PET MEDICATION REGIMENS

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Successful treatment of medical conditions in veterinary patients typically requires pet owner adherence to and compliance with prescribed therapeutic regimens. Owner adherence is described as when the owner obtains the prescribed medications and initiates and continues administration as prescribed.¹ Compliance is the consistency and accuracy with which the owner follows the prescribed regimen, including dose, frequency, duration, and timing of administration.¹



Consequences of Lack of Adherence & Compliance

In human medicine, the average rate of patient adherence is ≈50%.² In veterinary medicine, study results indicate that compliance and adherence are similarly low; in studies of dogs receiving short-term antimicrobial therapy, 56% to 59% of owners administered the incorrect number of doses per day, with most underdosing their pet.^{3,4} Adherence failure and lack of compliance can result in lack of patient improvement, disease progression, or even death of the patient. Lack of compliance can also have more subtle adverse effects; for example, incomplete treatment of infection can promote antimicrobial resistance.³ Withdrawal signs can occur with abrupt discontinuation of some drugs, and overdosing can result in toxicity or extra costs. Decisions regarding treatment efficacy can be adversely influenced by unidentified poor compliance, and lack of improvement can increase the frustration of the pet owner and/or veterinary staff.^{1,3}

Factors that Affect Adherence & Compliance

Factors that affect adherence to and compliance with therapeutic regimens include cost and accessibility of medications, number of drugs administered, frequency and duration of drug administration, complexity of the treatment regimen, and abilities of those administering the drug (eg, able to administer eye drops to pets, able to administer oral medications to cats).^{2,3,5,6} Patient behavior and owner

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lifestyle (eg, long working hours or travel) can also preclude drug administration that is required more than once a day.

Some therapeutic regimens are inherently complex. For example, a 5-minute interval between eye drops is typically advised to prevent washout of the previous medication and, in some cases, to increase the combined effects of the drugs.⁷ A longer interval may be necessary between oral administration of some drugs (eg, oral sucralfate suspension administration is delayed for 2 hours after doxycycline administration) to decrease negative effects on bioavailability.⁸ Such necessary but complex instructions are likely to reduce pet owner compliance.

Improving Compliance

Simplifying dose regimens can help improve owner compliance.⁹ In a study of canine otitis externa, owner compliance with the therapeutic regimen increased from 21% to 79% when the topical medication was only administered once a day rather than twice a day and as a single volume rather than as multiple drops.¹⁰ Similar findings were noted in another study when antibiotics were prescribed for once- or twice-daily administration rather than every 8 hours.⁹

Clinicians can also improve pet owner compliance with complex therapeutic regimens by building a relationship with the owner, eliciting the owner's perspective on treatment, demonstrating empathy, and investing the owner in the outcome by sharing information regarding the condition and treatment options and involving the owner in the decision-making process.¹ Follow-up telephone calls and coaching from staff can also be helpful.¹¹ Some owners may be hesitant to discuss technical difficulties with clinicians; however, if staff provide demonstrations and observe treatments, owners may be more confident in the treatment plan and therefore more compliant.^{1,2,5,12}

Compliance can be verified by examining the amount of medication that remains during a

follow-up visit.^{2,13} If residual medication counts are unexpectedly high or low, the staff should determine the cause and ways to assist the owner in improving compliance.

Tools for improving compliance include written instructions, videos, charts, checklists, calendars, and special packaging that explain, organize, and streamline treatments.^{1,2,5,12}

Compartment Organizers

In human medicine, division of daily or weekly doses into a multicompartment pill box can help increase patient compliance.² However, such a technique is usually not possible with topical or oral liquid medications. In addition, removing medications from labeled containers may be risky if the medications appear similar, as in the case of omeprazole and cyclophosphamide capsules, acepromazine and chlorpheniramine tablets, and grapiprant and metronidazole caplets.

A safer method may be the use of a compartmentalized tray that can be labeled with times and medications (eg, name, color, number) and hold the medication containers (*Figure 1*). The owner can place the medications in a row at the beginning of the day and move each drug to the next row once administered; this allows the person administering a complex medication regimen to keep track of the drugs that have been administered. Additional labels can be added to indicate which medications should be stored in the refrigerator.

Checklists

Examples of medication logs are available (see *Suggested Reading*, page 32). Clinicians and staff may be able to devise medication sheets that are more readily adaptable to the patient or type of treatment (*Figures 2*, next page, and *3*, page 31).

Checklists should be adjusted for each patient. Rows can be added for headings or special instructions (eg, rest periods between treatments); these headings can later be filled in with treatment times once the best scheduling options have been discussed

with the owner. Medications should be entered on the checklist in the order of administration, and rows should be left empty as needed for additional instructions between treatments. Maintaining a document of pretyped instructions with blank spaces to add the dose, frequency, or other medication directions can be beneficial. The details of each medication should be entered after each instruction is added to the checklist to tailor the treatment to the patient. Including a box for additional instructions or information (eg, next appointment time or clinician signature line) at the bottom of the document can also be helpful. To improve visual recognition, color-coding each treatment and placing a sticker of similar color on the checklist may help the owner adhere to the schedule.

The medication checklist can be copied and printed for daily use; as a more environmentally sound practice, the checklist can be laminated or placed in a clear plastic document folder. The owner can use an erasable marker to check off each medication once administered.

Continues ►



▲ **FIGURE 1** For complex medication regimens, a compartmentalized tray can be labeled with administration times and other information. In addition, medications and compartments can be color-coded to provide visual cues. In this example, each medication has its own column and each row represents a different treatment time. The owner moves the medication to the next labeled compartment in the column after it is administered and moves the medications back to the top row after the final dose of the day.

FIGURE 2

DATE: _____ PATIENT NAME: _____
 AGE: _____ SEX: _____ BREED: _____ WEIGHT: _____

Right Eye	Prescription	Left Eye
Treatment Time		Treatment Time
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/>
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> </div>	<ol style="list-style-type: none"> Eye wash <ul style="list-style-type: none"> Rinse both eyes of mucus ≥2 times per day. Use a water-soaked cotton ball to wipe debris from eyelids. Use separate cotton for each eye and discard. 	
	Wait 1 to 2 minutes	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> </div>	<ol style="list-style-type: none"> Betadine solution (1:5 dilution) <ul style="list-style-type: none"> Mix 5 mL of water with 0.1 mL of betadine. Using a saturated cotton ball, instill a few drops in the right eye. Cleanse lids 2 times per day. Mix fresh solution for each administration. Solution can stain. 	
	Wait 5 to 10 minutes	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> </div>	<ol style="list-style-type: none"> Tobramycin 0.3% ophthalmologic solution (antibiotic) <ul style="list-style-type: none"> Instill 1 drop in right eye 4 times per day. 	
	Wait 5 to 10 minutes	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> </div>	<ol style="list-style-type: none"> Autologous serum <ul style="list-style-type: none"> Keep refrigerated. Instill 1 drop in the right eye 4 times per day. Discard after 5 days. Refill as needed. 	
	Wait 5 to 10 minutes	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> <div style="text-align: center;">↓</div> </div>	<ol style="list-style-type: none"> Ofloxacin 0.3% ophthalmologic solution (antibiotic) <ul style="list-style-type: none"> Instill 1 drop in right eye 4 times per day. 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
<input type="checkbox"/> <input type="checkbox"/>	<ol style="list-style-type: none"> Doxycycline (100-mg chews) <ul style="list-style-type: none"> Give chew orally 2 times per day with plenty of water. Do not give with cheese or calcium-containing products. 	

Follow chart carefully. Wait between medication administrations as indicated. Keep Elizabethan collar on at all times. Offer food and water, and monitor eating. Use a soft, water-moistened paper towel to wipe the inside of the Elizabethan collar as needed to keep clean of food and drool. If you think the eye(s) is getting worse or observe any change (eg, more painful, more discharge, squinting, restless, loss of appetite), contact your veterinarian immediately.

Please bring all medications and checklists to your next appointment. NEXT APPOINTMENT: _____

▲ **FIGURE 2** For complicated medication regimens, a well-designed daily medication log can help improve owner compliance. In this example, each column represents a different administration time and each row a different treatment. Administration times are filled in at the top by the clinician or staff using times tailored to the patient's condition and the owner's lifestyle. Different checkbox shapes can be used to help owners distinguish different administration methods; in this example, squares represent eye drops and circles represent oral tablets. Owners can copy the instructions to make daily checklists, or the instructions can be sealed in plastic so that an erasable marker can be used to check off treatments.

Additional Safety Measures

If a medication must be refrigerated between each administration, medication management options should be discussed with the owner. Some owners may prefer to leave an empty container in the appropriate compartment as a reminder, whereas others may wish to retrieve the medication from the refrigerator immediately before administration and place it in the appropriate compartment. If several medications must be refrigerated, incorporating a separate compartmentalized organizer that fits on a refrigerator shelf may be helpful.

Conclusion

Successful resolution of some veterinary conditions may rely on complex treatment regimens. Owner compliance with these regimens can be improved by simplifying the dose schedule and providing clear, concise written instructions, charts, or checklists. Use of compartmentalized, labeled medication trays or color-coded medication containers and instructions can provide additional visual cues to help the owner deliver the treatments appropriately. ■

See next page for references.

FIGURE 3

DATE: _____

WEIGHT: _____

PATIENT: _____

OWNER: _____

Medication	Strength	Route	Frequency	7 AM	12 PM	6 PM	10 PM
Eye-irrigating solution		Both eyes	2 times per day				
Betadine (wait 1-2 minutes before administering next medication)	1:5 dilution	Right eye	2 times per day				
Tobramycin (wait 5-10 minutes before administering next medication)	0.3%	Right eye	4 times per day				
Autologous serum (wait 5-10 minutes before administering next medication)		Right eye	4 times per day				
Ofloxacin	0.3%	Right eye	4 times per day				
Doxycycline	100 mg	Oral	2 times per day				

■ 2 times per day ■ 4 times per day

▲ **FIGURE 3** Medication sheet in a tabular format. Shaded boxes indicate the medication was administered at that time.

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Suggested Reading

The New York City Department of Health and Mental Hygiene. My medication log – keep it handy. The Graduate Center, City University of New York. https://www.gc.cuny.edu/CUNY_GC/media/CUNY-Graduate-Center/PDF/Health/My-Medication-Log.pdf. Accessed January 7, 2020.

Topical Solution

profender[®]
(emodepside/praziquantel)

For the treatment and control of hookworm, roundworm, and tapeworm infections in cats and kittens that are at least 8 weeks of age and weigh at least 2.2 pounds (1 kg).

Brief Summary:

Before using PROFENDER Topical Solution, please consult the product insert, a summary of which follows:

CAUTION:

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

Product Description:

PROFENDER Topical Solution is a ready-to-use solution, packaged in single unit dosing applicator tubes for topical treatment of cats. Emodepside, a semi-synthetic molecule is a cyclic depsipeptide. Praziquantel is an isoquinoline cestocide.

INDICATIONS:

PROFENDER Topical Solution is indicated for the treatment and control of hookworm infections caused by *Ancylostoma tubaeforme* (adults, immature adults, and fourth stage larvae), roundworm infections caused by *Toxocara cati* (adults and fourth stage larvae), and tapeworm infections caused by *Dipylidium caninum* (adults) and *Taenia taeniaeformis* (adults) in cats.

HUMAN WARNINGS:

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

To prevent accidental ingestion of the product, children should not come in contact with the application site for twenty-four (24) hours while the product is being absorbed. Pregnant women, or women who may become pregnant, should avoid direct contact with, or wear disposable gloves when applying, this product. Studies performed in rats and rabbits suggest that emodepside may interfere with fetal development in those species.

PROFENDER Topical Solution may be irritating to skin and eyes. Reactions such as facial, tongue and hand swelling have been reported in humans in rare instances. Avoid contact with the application area while it is wet and wash hands thoroughly with soap and warm water after handling. People with known hypersensitivity to butylhydroxyanisole, emodepside or praziquantel should administer the product with caution. If the product accidentally gets into eyes, flush thoroughly with water. May be harmful if swallowed. In case of accidental ingestion or if skin or eye irritation occurs, call a poison control center or physician for treatment advice. For customer service or to obtain product information, including the MSDS, call 1-800-633-3796. For medical emergencies or to report an adverse reaction, call 1-800-422-9874.

PRECAUTIONS:

Safe use of this product has not been evaluated in cats less than 8 weeks of age or weighing less than 2.2 lbs (1 kg), in cats used for breeding, during pregnancy or in lactating queens. The effectiveness of this product when used before bathing has not been evaluated.

Use with caution in sick or debilitated cats. Oral ingestion or exposure should be avoided. Use with caution in heartworm positive cats.

ADVERSE REACTIONS:

In a controlled, double-masked field safety study in which owners administered PROFENDER Topical Solution, the most common adverse reactions reported by the cat owners included licking, excessive grooming, scratching treatment site, salivation, lethargy, alopecia, agitation/nervousness and vomiting.

POST APPROVAL:

The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse events are reported to FDA CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using this data. The following adverse events are listed in decreasing order of reporting frequency in cats: Application site reaction (hair loss, dermatitis, pyoderma, edema, and erythema), hypersalivation, lethargy/depression, vomiting, ataxia, anorexia, trembling/twitching, diarrhea, mydriasis, fever, hyperactivity/nervousness. In some cases, death has been reported as an outcome of the adverse events listed. For a complete listing of adverse reactions for Profender Topical Solution reported to the CVM see: <http://www.fda.gov/ADREports>.

The listing includes Adverse Events reported to CVM for products, such as Profender, that contain the combined active ingredients emodepside and praziquantel. Listings by active ingredient may represent more than one brand name.

ANIMAL SAFETY:

In a field study, PROFENDER Topical Solution was used in cats receiving other frequently used products including: analgesics, anti-fungal, non-steroidal anti-inflammatories, anthelmintics, antimicrobials, flea and tick products, sedatives, anesthetics, cardiac medications, anxiolytics, hormonal treatments, steroids, otic and ophthalmic preparations, and vaccines.

General Safety Study in Kittens: PROFENDER Topical Solution was topically applied at 0X (vehicle control), 1X, 3X and 5X the maximum dose to 48 healthy 8-week-old kittens every two weeks for six doses. One 5X kitten experienced salivation and tremors and another 5X kitten experienced salivation on the day of dosing. A third 5X kitten experienced tremors the day after dosing. Three cats vomited within 24 hours of dosing, one each in vehicle control, 3X and 5X groups.

Profender is protected by the following U.S. Patents: 5 514 773 and other patents pending.

Made in Germany

NADA 141-275, Approved by FDA

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