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A multimodal approach to feline house-soiling

To correct this frustrating behavior, veterinary teams need to work closely with clients to forge a comprehensive management strategy.
Owners should increase mental stimulation during crate confinement.

—Melissa Bain, DVM, MS, DACVIM, DACAWM

Crate expectations: Realistic strategies for postoperative confinement

Practice management: Making a list and checking it twice

Tips for success with forward-booking

Communication: Preparing clients for unexpected pet care costs
Tips for forward-booking success

It’s easier than you think.

By Emily Shiver, CVPM, CCFP

Our team at dvm360.com and Firstline® magazine asked practice manager Emily Shiver to answer your questions about life in practice for managers, technicians, assistants, client service receptionists, and more. Have a question for her? Email firstline@mmhgroup.com.

Q: How can I start forward-booking at my clinic?

Patients who have a scheduled appointment and receive a reminder a few days beforehand are more likely to keep the appointment. To keep your appointment calendar full, it is more than appropriate to forward-book whenever a client visits your practice. Here are some tips for incorporating forward-booking at your clinic.

The first step is to make sure your team members can confidently discuss your practice’s services and benefits. This will make it much easier for staff to schedule clients for future visits—and may lead to breaking the habit of asking if they can schedule future appointments and instead just doing it! Consider the following suggestions for timing and language to use:

- “Thank you for stopping in to pick up Jackson’s heartworm prevention. I scheduled an appointment for his upcoming preventive care. We will see you in May!”
- “Dr. Sims wants to see Jackson back in 2 weeks. I have Tuesday at 9 AM or Thursday at 2 PM.”
- “We loved having Jackson stay with us. We’re quite booked throughout the year. Let’s go over any future dates that he needs to stay with us and get him booked now.”
- “Jackson’s haircut looks amazing! I went ahead and scheduled his grooming for the rest of the year:”
- “Jackson is a healthy boy. I scheduled your next preventive care visit so we can keep up with this trend. See you in May!”

Tips for forward-booking success

It’s easier than you think.

By Emily Shiver, CVPM, CCFP

As you probably noticed, you can use forward-booking strategies for more than just medical appointments. Every time your client visits your practice is an opportunity to secure a return visit. To get your team excited about forward-booking, try putting together a forward-booking “don’t ask, just do” 90-day challenge. You can even involve your drug representatives, who can help with challenge reward ideas.

Skeptics may be concerned that scheduling all these appointments will only result in a ton of no-shows. From my practice’s experience, this has not been the case because the staff always conveys the value of booking each appointment. It is very attainable to achieve a 50% to 60% forward-booking rate after your 90-day challenge. Good luck!

Emily Shiver, CVPM, CCFP, is practice manager at Cleveland Heights Animal Hospital in Lakeland, Florida.

Forward-booking opportunities

We forward-book these types of appointments at our practice, categorized by initial visit type.

Dental: Preventive care, dental assessment in 6 months

Grooming: Grooming for the entire year, preventive care, lodging

Prescription or food pickup: Future preventive care, grooming or bathing, lodging/day care

Rechecks: Future preventive care, grooming or bathing, lodging/day care

Sick visits: Rechecks for a primary problem, preventive care

Surgery: Recheck/suture/staple removal, preventive care

Wellness (preventive) care visits: Lodging/day care, future preventive care, grooming or bathing
What is the best gift you can give your pet?

The gift of Comfort and Joy

ellevetsciences.com
If you want to advance veterinary nursing on both a personal and a professional level, Megan Brashear, CVT, VTS (ECC), a small animal hospital veterinary nursing manager at Purdue University College of Veterinary Medicine in West Lafayette, Indiana, has a word of advice for you (OK, 4 words): Don’t be a sheep. Sheep are known for being mindless followers, Brashear said at this year’s American Veterinary Medical Association Virtual Convention. “That’s fine for sheep but not for veterinary technicians.”

Brashear’s solution? Critical thinking. It’s what will take you from simply following directions to fully understanding what your patient needs and how what you’re doing best meets those needs. It’s the difference between saying, “I’m giving the patient this medication because I was told to,” and “I’m giving the patient this medication because I know what’s wrong and how it’s going to help. I know how to calculate what the patient needs and how to administer it, and I know the adverse effects to watch for after administration.”

A crash course in critical thinking
Brashear explained that critical thinking encompasses more than just the knowledge you gain from lectures, books, and journals. It also includes the knowledge you get through experience (via your patients and your own pets) and by asking questions.

“Critical thinking is the ability to take what you’ve learned and adapt it to what’s happening,” she said. “We all know that medicine, for the most part, follows a kind of pattern: This animal has this disease process so this is how we’re going to treat it. But not every animal reads the textbook. Not every disease is going to show up in the same way in every patient.” The critical thinker can look at such situations, recognize that the usual checklist won’t work, and apply their collective knowledge and experience to respond appropriately.

“Critical thinking means triaging each and every patient,” Brashear said. “Get to the point where you have a baseline expectation for what a patient should look like, and when he doesn’t meet that expectation, figure out why.” Don’t just look at your treatment sheet, complete the bare minimum, and walk away. Approach your patient thinking about what his heart and respiratory rates should be, what his blood pressure should be, what his gums should look like, etc. And if something is outside the norm, do something. “Younger technicians are often afraid to get a temperature or a blood pressure because it wasn’t ordered by the veterinarian,” she continued. “But those types of things—that’s what we’re entrusted to do.”

If this sounds a bit out of your scope—especially if you’re new to the profession—that’s OK. “Critical thinking is a skill, like drawing blood and placing catheters,” Brashear said. “We have to practice getting into the mode of thinking about what’s happening, asking questions, and learning more so we can continue to progress in our careers and help our patients.”

Applying critical thinking to the nursing process
“The nursing process is utilized much more frequently in human medicine, but there’s no reason we shouldn’t use it in veterinary medicine as well, especially with critically ill patients,” said Brashear, explaining that the process breaks down into 5 steps.

Step 1: Assess
This step involves data collection. Assessment is when you put your hands on the patient and perform a physical exam. This is when you’re looking at the big picture and gathering as much information as you can. “This step also encompasses rounds,” she added.

“Yes, we’re going to discuss a little bit about the disease process, but we’re not going to go through every blood chemistry result and how...
many lymphocytes the animal has unless it directly pertains to what’s wrong.” What’s more helpful, said Brashear, is to ask questions that will help you achieve continuity of care. For example, does the dog prefer to be hand-fed? Is he more comfortable urinating on pebbles or grass? Is this normal breathing or grass? Is this normal breathing for him?

**Step 2: Analyze**

Because Brashear is a technician, she can’t make a diagnosis. However, she can contribute to it. “I can put my hand on that cat’s giant bladder and say, ‘I’m concerned. This cat has a history and physical exam that support urinary tract obstruction. I think we should probably take a look at him quickly.’ And I may not be able to diagnose a dog with a pneumothorax by looking at its lateral chest radiograph…but I can definitely take note that the heart is floating up in the chest instead of sitting in the sternum like it should be. I can then take that dog off the table, knock on the exam room door, and say, ‘I think we need to look at this dog before things get significantly worse,’” she explained. The analysis step is about more than just writing down your patient’s stats and then walking away. Think through what you’re seeing, and bring any concerns to the veterinarian’s attention.

**Step 3: Plan and prioritize**

Brashear has worked in emergency veterinary medicine for over 20 years, so she knows all too well what it’s like to receive a long list of orders from the doctor in no particular order. Determining the best way to tackle that list is what this step is all about. “Let’s say you have 4 patients and they all need treatments,” Brashear posited. “A cat needs Lasix, a dog needs blood drawn, another cat needs radiographs, etc. What’s the most important thing? I’m going to argue that the poor cat that needs a Lasix injection should go first.” Once again, she stressed, this kind of critical thinking isn’t innate. If you’re new to nursing, just ask the doctor if there’s an order in which they’d like the list completed.

**Step 4: Implement**

This step is Brashear’s favorite because it’s when you get to perform nursing care by following the prioritized plan you just developed. However, she noted that you may need to run your plan by someone else first. For example, you might need to get your team of technicians together and make sure everyone knows their respective roles in completing the to-do list.

**Step 5: Evaluate**

“We want to make sure we’re evaluating how things went,” said Brashear. “Did everything go according to plan? Did everything that needed to get done get done? Did our patients respond the way we needed them to? How is my team doing?” It’s important to assess and communicate about how both your patients and your team members are doing, she noted. For example, perhaps one of your coworkers bonded with a patient that has to be euthanized. The rest of the team may need to rally around that technician and provide extra support for the rest of the day.

At the end of this process, you have more experience to put to use for the next patient when you start back at the beginning.

**Be a flight attendant**

Sheep may be poor role models for veterinary technicians, but according to Brashear, flight attendants are worthy of emulating. “Think about the stress you project at work. We need to remember that our patients really feed off of what we’re doing and how we’re behaving,” she explained. “I’m sure everyone knows a technician who gets a cat bite 4 or 5 times a year and you know when that technician has worked because every kennel has a ‘will bite!’ or ‘caution’ sign.” As they try to get everything done at once, these technicians tend to exhibit anxious, fast movements and little patience, which is then reflected in the emotional state of the animals around them.

What the treatment area needs, said Brashear, is flight attendants. “Like anyone, I get nervous during turbulence,” she continued. “Any time it happens, I look for flight attendants. If they’re walking up and down the aisles with their beverage carts, pouring drinks, I’m fine because they’re fine. But if I see the flight attendants running down the aisle and clicking themselves into their 5-point harnesses, I’m going to be a little more nervous and grip the armrests tighter.”

The moral of this story? “Be the flight attendant who’s calmly passing out Diet Coke to all of your patients and helping them realize that all is OK,” Brashear said. “If you’re constantly running from one thing to another and visibly exhausted and overwhelmed, you’ll pass that anxiety over to your patients. Critical thinking isn’t just about understanding medicine. It includes understanding the behavior patterns of your patients, understanding what your clients need, and understanding what your teammates need.”

Sarah Mouton Dowdy is a freelance writer and editor in Kansas City, Missouri.
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Traditional Chinese veterinary medicine 101

The age-old practices of acupuncture and herbal medicine can work well with modern medicine to improve your patients’ health. Here are the basics.

By Christopher W. Shapley, DVM, CVA

Veterinary medicine has made, and continues to make, extraordinary advancements, with bold new diagnostic and treatment protocols becoming reality every day. Should modern or foundational diagnostics or treatments fail, however, traditional Chinese veterinary medicine (TCVM), including acupuncture and herbals, can offer an established, recognized alternative.

TCVM can benefit veterinary patients with a wide range of conditions, such as musculoskeletal disorders, skin and ear problems, vomiting and diarrhea, seizures, urinary conditions, behavioral problems, and more. TCVM can be used alone or in conjunction with Western medicine protocols.

The pattern diagnosis
As in Western medicine, every visit to a TCVM veterinarian starts with a patient history and snout-to-tail physical examination. But TCVM practitioners also look for a few slightly different and often very subtle cues to develop what is known as a pattern diagnosis, which involves the following principles:

• **Yin-yang theory:** The concept of dualism—that all things exist as inseparable and contradictory opposites

• **The 5 elements theory:** Describes the interactions and relationships between things—
  - wood (liver), fire (heart), earth (spleen), metal (lungs), and water (kidneys)
  - **The 5 vital/fundamental substances:** “Qi” and “xue” (blood), “jinge” (body fluids), “jing” (essence), “shen” (spirit)
  - **The 6 common pathogens:** The items that cause illness—wind, cold, dampness, dryness, fire, and summer heat

**The tongue**
The patient's tongue can yield a great deal of information. In TCVM, the tongue is divided into regions, each representing an organ system, with the color of each section providing information to the practitioner (Figure). Pallor, redness, and deep purple represent deficiency, excess, and stagnation, respectively. Dryness, cracking, or the presence of film on the tongue helps determine whether any TCVM pathogens have invaded the body.

**The skin and haircoat**
When examining the coat, the TCVM veterinarian is assessing its overall quality and checking for dryness or greasiness. Assessment of the skin can help determine whether there are any deficiencies or excesses.

**The femoral pulses**
Much like the tongue, the femoral pulses are divided into regions linked...
In TCVM, the tongue is divided into regions, each representing an organ system.

- **Dry needling** is the technique of placing sterile needles into predetermined acupoints.
- **Aquapuncture** is similar to dry needling but involves infusing sterile saline or vitamin B₁₂ directly into the acupoints.
- **Moxibustion** is the burning of moxa (mugwort) and safe use of heat to dissipate cold patterns and return heat to yang-deficient patients.
- **Electroacupuncture** stimulates nerves in patients with neuropathic deficiency patterns (eg, degenerative myelopathy).

### Herbal medicine

Chinese herbs are most effective when used in conjunction with acupuncture. Herbal formulations from licensed distributors have been researched thoroughly and documented through clinical studies to be safe and effective. Most modern-day herbal formulations are derived from age-old formulas used for generations by physicians practicing traditional Chinese medicine.

### Working as one

Acupuncture and herbal medicine go hand in hand with conventional modern medicine. These TCVM methods can be integrated seamlessly into any practice to help diagnose and treat a wide range of ailments and are an invaluable addition to any general or specialty practice. Patients will benefit from the multimodal diagnostic techniques and therapies, and clients will be appreciative of the benefits of alternative medicine in the care of their pets.

Christopher Shapley, DVM, CVA, is a specialist in veterinary acupuncture and herbal medicine at Brick Town Veterinary Hospital in Brick Township, New Jersey. He lives with his Shar-Pei Carrie and koi fish. In his spare time, Shapley enjoys kung fu, tai chi surfing, camping, and archery.

### Want more info?

Check out these resources to learn more about TCVM:

A multimodal approach to feline house-soiling

To correct this frustrating behavior, veterinary teams need to work closely with clients to forge a comprehensive management strategy.

By Karen Todd-Jenkins, VMD
Feline house-soiling is a complex matter. According to Tammy Sadek, DVM, DABVP (Feline), CEO of Cat Hyperthyroid Radioactive Iodine Services, LLC, in Grand Rapids, Michigan, and a member of the American Association of Feline Practitioners board of directors, the condition places a tremendous strain on the human-animal bond. “Unfortunately, sometimes the first time we hear about a cat house-soiling is when someone schedules a euthanasia appointment. This is something we want to avoid,” said Sadek, who offered diagnostic and treatment recommendations for house-soiling during a session at the American Veterinary Medical Association Virtual Convention.

Drilling down on this subject can be difficult, Sadek warned. Clients may be too embarrassed to mention it, and some cats aren’t overtly sick. However, the issue can still be identified during regular wellness visits. That means the veterinary team needs to work closely with clients to recognize this issue and initiate successful management strategies.

Managing client expectations
Help clients understand from the outset the commitment needed to manage a cat with this issue. Certain cases can be resolved quickly by making simple adjustments, such as increasing the number of litter boxes, cleaning/scooping the boxes more frequently, changing the type of litter, or addressing a mobility limitation (eg, arthritis). However, a quick fix isn’t always possible. In these cases, the veterinary team can help set and manage expectations so the client doesn’t lose confidence in the process.

Multiple office visits may be required to address the issue, but telemedicine consults can be an attractive alternative once a medical evaluation has been performed, including a physical exam, urinalysis, urine culture, and sometimes imaging. Instruct the client to use video, webcams, and photographs to capture episodes and information.

House-soiling is frustrating and stressful, but helping clients understand the process can keep them motivated to help correct this problem.

Approaching a diagnosis
Accurate diagnosis starts with asking the right questions. To open the conversation, simply ask at the beginning of each visit whether the cat is urinating or defecating outside the litter box. An affirmative answer allows for follow-up questions:

- When did the problem start?
- Have there been any changes in the home (eg, relocation, someone moving in or leaving)?
- How many other pets are in the home? What is their relationship to the affected cat?
- Where are the incidents happening? What types of materials are being used (carpeting, porcelain, clothing, etc)? Are they in frequently trafficked areas?
- Do the episodes involve horizontal or vertical surfaces?
- Are the “accidents” small volume or larger volume?
- How many litter boxes are available, and where are they? How often are they scooped? How large are they? What type of litter is being used, and has it changed? What products are used for cleaning the box and the soiled areas?
- Does the cat strain in the litter box?

Keep in mind that everyone involved with this matter is under stress. Owner frustration about the situation, conflict among family members, and concerns about medical costs are likely. The cat is also probably stressed by the car ride and office visit, but anxiety may actually be at the root of the whole problem. “Many of these cats have a high baseline level of stress at home,” Sadek said.

Technicians can help alleviate this stress and reinforce the bond between the client and the practice. Communicating to the client that they are partners in the effort to resolve the situation encourages their participation. “If we don’t bond with the client, the cat is much less likely to receive the care it needs, and we won’t be able to help them,” Sadek cautioned.

When conducting physical examinations, use cat-friendly techniques that don’t contribute to further anxiety.1 Check →
the bladder for pain and size, but perform a complete exam that doesn’t focus just on the urinary tract. Look for other causes of pain, including dental disease, joint disease, and constipation. Certain cats may need analgesics or sedation to complete an assessment and obtain laboratory samples. Verbalizing exam findings to the client is helpful, as it keeps them engaged and reinforces the value of the exam.

Diagnostic testing should include a chemistry panel and complete blood count as well as a urinalysis. Sadek also recommends obtaining baseline thyroid level for cats older than 6 years. If diarrhea or constipation is part of the problem, check a fecal sample. For the urinalysis, Sadek advises collecting a sterile urine sample via cystocentesis, so that a culture, which requires a sterile sample, can also be performed.

Use imaging studies, such as radiographs or an abdominal ultrasound, to identify bladder stones, bladder thickening, renal disease, bladder cancer, or constipation. Arthritis is also sometimes found on radiographs.

**Is the cat marking, eliminating, or both?**

Noting the cat’s posture can help answer this question. Squatting implies elimination, but the upright position is more consistent with urine marking. Marking is usually done on vertical surfaces, and elimination is more common on horizontal surfaces. Marking normally involves depositing small volumes of urine (or, less commonly, stool), and most cats that mark still use the litter box.

Cats use marking as a form of communication, so they often mark repeatedly in the same places to denote travel routes or areas where encounters with other cats are likely. Anxious cats may mark to boost their confidence and reduce anxiety by making the area smell like them. Sexually intact cats use marking to attract a mate.

Noting the location of the marking can offer clues to the cause. Marking near a window or exterior door suggests that the cat perceives something outside (perhaps another cat) as a threat. Marking near interior doors may indicate conflict among cats in the home. Some cats mark new items brought into the house, and heat-producing objects (eg, toasters, computers) can become targets as well.

**Potential causes**

Aside from urinary tract disease, a variety of medical, environmental, and behavioral issues can contribute to house-soiling. Urinary tract diseases include bacterial cystitis, urine crystals, and bladder stones. Some cats that present with signs of cystitis have a type of idiopathic or sterile cystitis that is sometimes referred to as Pandora syndrome, in which stress experienced by that cat’s mother when pregnant results in the developing kittens exhibiting exaggerated stress reactions later in life. These cats may be nervous and startle more easily, and some develop urinary tract disease.

Other rule-outs include urinary incontinence and any condition that can cause polyuria, such as kidney disease, hyperthyroidism, and diabetes. Conditions unrelated to the urinary tract can also be involved. Cats with arthritis may experience pain when posturing to eliminate or can have difficulty accessing the litter box, especially when it is located in the basement, and may therefore select an alternate location for elimination. Cognitive dysfunction syndrome, diarrhea, and constipation can be components too.

Environmental factors can involve other pets, humans in the home, and litter box management. To meet their general needs, cats must have the following:

- Safe places for resting, eating/drinking, and eliminating
- Key resources (eg, food, litter box) located in multiple, separated areas of the home
- Opportunities for play and predatory behavior

Many cats prefer softer, sandy, unscented, clumping litter, and some do not like scoop-free litter systems or litter box mats or liners.
FELINE HOUSE-SOILING

Predictable and positive interactions with humans
An environment that respects the cat’s sense of smell

Some cats, in both single and multipet households, do not always have these needs adequately met. The resulting anxiety can lead to house-soiling. Cats need places to hide and rest, as well as a way to escape from other pets and humans when necessary. They also need to access a litter box from a “safe” resting place without having to encounter another pet.

Social stressors include children or other pets chasing the cat, loud noises, and visitors. Even boredom or lack of positive attention can contribute to anxiety. “In busy families with kids and other pets, the cat may be at the bottom of the totem pole as far as who gets attention,” Sadek said.

The litter box itself may be to blame. Cats may avoid using a litter box that’s too small. The box should measure 1.5 times the length of the cat, from nose to tail base. The total number of litter boxes in the home should be 1 more than the number of cats. So, a home with 1 cat should have 2 litter boxes. Sadek also recommends that homes with multiple levels have a litter box on each level. She noted that many cats prefer softer, sandy, unscented, clumping litter, and some do not like scoop-free litter systems or litter box mats or liners. Encourage clients to try different kinds of litter boxes (eg, covered and uncovered) and related products to see what their cat likes.

“Respect the cat’s sense of smell and texture preference,” Sadek said.

Keeping litter boxes clean can also help, so make sure your clients know to scoop the litter box twice a day and wash with a mild soap weekly.

Multimodal management
Feline house-soiling is a multifactorial problem. As such, multimodal management can resolve it effectively in many cases. The steps involve identifying and addressing medical issues, optimizing litter box maintenance and accessibility, optimizing access to other resources (including food, safe spaces, and human interactions), providing environmental enrichment, and reducing conflict and stress, and include the following:

- Treat medical issues.
- Spay or neuter sexually intact cats.
- Incorporate more vertical spaces, hiding and resting places, scratching substrates, and food puzzles to enhance environmental enrichment.
- Determine whether behavior-modifying medications (eg, fluoxetine, clomipramine) are needed in addition to environmental modifications. In multicat households, more than 1 cat may require medication.
- Provide separate resources, which helps reduce conflict between cats by minimizing forced interactions. In some homes, permanent segregation is a viable solution.
- Increase play time.
- Use pheromone sprays around the home and (if necessary) on new items entering the home.
- Clean soiled areas around the home as well as outdoor siding (if stray cats are spraying outside) to eliminate odors.

Sadek also encourages rewarding positive behaviors. “Don’t punish a cat for house-soiling. Instead, find the cat using the litter box and give it a reward, like canned food,” she said. “And make sure you’re interacting in a positive way with the cat.” Client follow-up visits are important opportunities to assess and adjust treatment strategies. Multimodal therapy can yield a good prognosis, but it’s best to intervene early and for the client to be motivated to make the necessary changes.

For more information, Sadek directed attendees to the American Association of Feline Practitioners and International Society of Feline Medicine guidelines for diagnosing and solving house-soiling behavior in cats.2

Karen Todd-Jenkins, VMD, is a medical writer and has remained in clinical practice for over 20 years. She is a member of the American Medical Writers Association and One Health Initiative.

REFERENCES
Classifying tooth resorption in cats and dogs

Understanding how tooth resorption is diagnosed and classified enables you to provide better patient care and to increase patient comfort.

By Amanda Carrozza

Tooth resorption is a centuries-old disease that continues to puzzle the veterinary profession. Although its development may seem unpredictable at times, resorption is a common condition that veterinarians and technicians must understand to provide optimal care. At a recent Fetch dvm360® conference, Benita Altier, LVT, VTS (Dentistry), detailed the diagnosis and classification of tooth resorption in cats and dogs.

The word resorb, by definition, means to break down and assimilate (absorb) something, Altier said. The tooth and alveolar bone are 2 distinct structures held together by periodontal ligament fibers. Tooth structures resorb via several mechanisms, progressing from internal or external locations on the tooth. Resorption can be inflammatory or noninflammatory in nature.

Altier, who owns the veterinary dentistry consultancy Pawsitive Dental Education in Easton, Washington, and is president-elect of the Academy of Veterinary Dental Technicians, noted that the pathologic process involved in tooth resorption is not fully understood. Even without a concise understanding of genetic or environmental factors that make an animal susceptible to tooth resorption, researchers do have a clear image of what occurs once the disease is initiated. Classification systems have been established for cats and dogs to map the locations of lesions, the severity of disease, and treatment options.

“Unfortunately, we know that not all pets presented to the veterinary hospital receive diagnosis and treatment, so many, many cats and dogs are suffering with tooth resorption left untreated and painful.”

—BENITA ALTIER, LVT, VTS (DENTISTRY)

The most critical component of diagnosis

Altier was adamant that the best—and often only—way to diagnose tooth resorption is through a comprehensive dental evaluation that includes intraoral radiographs. She added that full-mouth dental radiographs should be obtained every time a pet is anesthetized for dentistry as things can change rapidly from year to year.

“We cannot clinically evaluate a pet until it is under anesthesia,” she said, adding that the rates of pets anesthetized annually for dentistry are extremely low. “Unfortunately, we know that not all pets presented to the veterinary hospital receive diagnosis and treatment, so many, many cats and dogs are suffering with tooth resorption left untreated and painful.”

In addition to radiographs, Altier recommends that each tooth be examined with a dental explorer for signs of mobility, red gingival mounds, and broken crowns. From a strictly visual standpoint, tooth resorption may present as gingival redness focal to a single tooth. This is a red flag, she warned, and in these cases the client should be informed that tooth resorption is likely. However, you don’t need direct evidence of resorption to anesthetize a patient. “Just like we don’t need evidence of disease to decide to recommend routine blood testing, in dentistry, we are screening for everything,” she said.

Classifying tooth resorption

Cats

The overall incidence of feline tooth resorption varies widely among published studies, from 20% to 75%, Altier explained. Despite the wide range, she feels strongly that if you own 2 cats, it is very likely that 1 of them will develop tooth resorption.
“It might seem like semantics to classify tooth resorption individually, but it is important,” Altier noted. During a dental examination, veterinary professionals should record a diagnosis for each tooth based on clinical and radiographic evidence. When assessing a feline patient, both type and classification of the disease should be documented.¹

Treatment is dictated by the type of resorption present. Three types of tooth resorption are recognized in cats:

- **Type 1 (T1):** The tooth retains normal density and the periodontal ligament space is unchanged. Resorption tends to originate at the cemento enamel junction and will destroy the tooth in a coronal direction, an apical direction, or both.

- **Type 2 (T2):** Radiography will show some narrowing of the periodontal ligament space and decreased radiopacity. It is also common for the root structure to transform into a bone substance that has the same density as the adjacent bone.

- **Type 3 (T3):** T3 resorption occurs in multirooted teeth and presents as a combination of T1 and T2.

Stages indicate the progressive nature of the disease and also the location and extent of the lesions. Five stages of tooth resorption are recognized in cats:

- **Stage 1 (TR1):** Stage 1 resorption presents with only mild clinical evidence of hard tissue loss and is rarely detected, especially if the lesion is hidden behind soft tissue.

- **Stage 2 (TR2):** Some radiographic evidence is detectable, such as a change in the dentin. Granulation tissue may be seen creeping into even a pinpoint-sized hole. The pulp is not affected, but the tooth is painful.

- **Stage 3 (TR3):** Lesions become recognizable. The pulp has been invaded and the tooth is extremely painful. The integrity of the tooth is intact, and the crown has not broken off.
**Stage 4 (TR4):** Stage 4 is divided into 3 subcategories. In stage TR4a, the crown and root are equally affected, there is extensive damage to the cementoenamel pulp, and much of the tooth’s integrity is lost. In TR4b, most of the damage is present in the crown, and in TR4c the root is affected more severely than the crown.

**Stage 5 (TR5):** Total resorption results in loss of the crown, with roots muddled into the bone.

Altier is not familiar with any studies that provide a definitive answer on how long it takes to advance from stage 1 to stage 5. “The progression is most likely specific to that patient and that tooth,” she said, “but in my experience it takes months to years for a tooth to go from beginning to end-stage resorption.”

**Dogs**

Because much of the veterinary research on tooth resorption has focused on cats, less is known about the pathogenesis of the condition in dogs (in which it is sometimes called idiopathic root resorption). However, a 2010 study from the University of California, Davis (UC Davis) provided an unprecedented look into how the disease progresses in dogs. The 2 most common types of tooth resorption were detected in 120 of the 224 (53.6%) study dogs and in 943 of 8478 (11.1%) teeth studied. External replacement resorption was found in 34.4% of dogs and external inflammatory resorption in which inflammation is thought to be the initiating factor. Radiographs may show areas of periapical lucency around resorbing tooth roots.

**REFERENCES**

Preparing clients for unexpected pet care expenses

Head off client stress and anxiety about paying for emergency pet care by outlining the available payment options before their pet needs that care.

By Erika Petrosino, MBA, CVPM, CVT

For some veterinary clients, paying for unexpected pet medical care has always been challenging. The coronavirus disease 2019 has exacerbated that situation for some pet parents and created a dire situation for others. But regardless of their particular financial situation, paying for unexpected expenses can put many clients in a real bind.

While we can advise our clients about the approximate costs of annual wellness care, we cannot foresee accidents or illnesses. Ultimately, veterinary practices must collect payments for their services in order to remain in business. But we should do everything we can to help clients properly budget for pet care costs. Communication is key; by our words and actions we should be showing clients that we want to partner with them to meet all of their pets’ health care needs.

One way to show we care is by discussing veterinary care payment options with them before an emergency situation puts them in a tailspin. Broach the topic during new patient visits and annual wellness check appointments. Consider writing a blog for your practice website, or create a client handout that explains the various avenues clients can take when they can’t afford a large veterinary bill.

Pet insurance

One way to help reduce money-related anxiety is to educate clients about pet insurance. Unfortunately, many clients opt to forgo pet insurance, instead planning to pay out of pocket for all of their pet care needs and hoping their veterinary bills will remain manageable.

These owners may not have a full understanding of the benefits of pet insurance, so bring it up at every visit, even if the pet is not a puppy or kitten. If owners are not interested in insurance, recommend that they start a pet savings account or emergency pet fund for unexpected costs.

Third-party payment options

Clients can pursue third-party payment options such as CareCredit and ScratchPay. These companies take on the liability of the charge, and the hospital is paid in full for the services. Although these companies typically charge a service fee to the hospital, many practices believe it is a small price to pay if they help clients accept a treatment plan.

Also consider looking into local “angel fund” options. These funds are usually associated with a 501c3 nonprofit organization. To tap into this funding source, clients need to complete an application. Then, a board of directors makes a decision based on each case. The American Veterinary Medical Association website offers details about current national angel funds.

Payment plans

For nonurgent procedures or treatments, such as routine dental cleaning, offer clients a chance to make payments ahead of time. They simply make a “payment on account” using your practice management software, and the payment remains as a credit on their account. Additionally, use the recommended treatment plan as a guide for procedure cost and find a way to help clients best budget for the care their pet needs.

The take-away

Let’s face it. Talking about finances with clients is never easy, but discussing payment options before a medical emergency occurs will ameliorate the stress and anxiety that will already be high. So, incorporate financial conversations into every new patient visit. Help your clients think about future pet care needs now so they can provide the best possible care for their furry family members for years to come.

Erika Petrosino, MBA, CVPM, CVT, is an area manager for VCA Inc in New Jersey.

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Crate expectations: Realistic strategies for postoperative confinement

When your patient requires crate rest to heal from surgery or injury, be sure to educate owners about the challenges—and be ready with strategies to make the process manageable for both the pet and the caregivers.

By Natalie Stilwell, DVM, PhD, MS

Mandatory crate rest is a critical component of recovery for patients with orthopedic conditions (eg, intervertebral disk disease) or those who have undergone surgery. However, several weeks to months of strict confinement can quickly become frustrating for pets and daunting for their owners.

Melissa Bain, DVM, MS, DACVB, DACAW, says various strategies can assist patients through the stress of strict confinement. Bain, a professor of clinical animal behavior at the University of California, Davis, School of Veterinary Medicine, notes that it’s not unusual to encounter behavioral issues during mandatory rest. While this article focuses primarily on canine surgical patients, many of her concepts apply to other species and long-term medical conditions, such as arthritis and neurologic dysfunction.

Confining the “out-of-control” patient

Patients are exposed to a variety of potential stressors during hospitalization, including pain, illness, separation from their owner, and the unpredictable clinic environment. Many patients return home with great relief, only to quickly become bored due to mandatory strict confinement.

Bain describes the case of a 2-year-old Labrador retriever mix that underwent surgical repair of a ruptured cranial cruciate ligament. The otherwise healthy dog primarily lives outdoors because her owners admit that she is destructive in the house. While friendly, the dog has never undergone leash, crate, or general obedience training and receives no exercise other than free roam of the yard.

After 6 weeks of mandated crate rest, the dog returns to the clinic for a follow-up examination. At this point, the owners are frustrated and angry that the dog has not healed despite the financial burden of surgery. Furthermore, they say crate training has been a failure because their dog “can’t be confined.”

Bain uses this example to highlight several common mistakes. “Whose fault is it that this dog is not better?” she asks. In fact, the owner and veterinarian share responsibility for treatment failure, Bain says. The veterinarian has a duty to discuss the reality of difficult treatments with the owner and gauge whether the owner is willing and able to adhere to recommendations.

Begin preventive training early

Bain urges veterinarians to utilize a combination of prevention, behavior management, and medication to address potential complications associated with...
confinement. She explains that the best candidates for crate rest are trained preventively for handling and restraint before treatment is even needed. Although not always realistic, she urges all of her clients to incorporate positive reinforcement training into the pet’s normal routine.

Training should begin when pets are first acquired and should include crate training, medication administration, and quiet leash walking, as well as the acceptance of handling and restraint. Bain discusses with clients any underlying behavioral issues that can potentially cause injury, such as aggression and foreign body ingestion, so that behavior modification can be used to minimize risk.

Effective client education
What should you do when a poor candidate for confinement needs surgery? Bain says to discuss recovery procedures openly with the client before surgery occurs, as some clients are reluctant to adhere with confinement and may prefer alternative treatment. At this time, determine whether the pet is crate-trained and has any underlying issues that may complicate crate rest, such as separation anxiety. Then, work closely with the client to devise an individualized recovery plan.

“At focusing on the overall goals of confinement will be less stressful for owners,” Bain says, adding that clients tend to be more optimistic when the veterinarian emphasizes permitted activities rather than restrictions. Provide several forms of communication, including handouts and follow-up conversations, and ensure that all veterinary team members—from doctors to technicians to client service representatives—deliver the same information.

At-home management
With invariably limited physical activity and environmental stimulation during crate confinement, owners should increase mental enrichment to fend off boredom and destructive activities. Bain advocates providing all meals and treats in enrichment devices and adding stationary or tethered toys to the crate.

Bain advises clients to closely supervise all time spent outside the crate. If allowable, owners can attach a 1-foot lead from their wrist or waist to the dog’s collar and limit interaction to the floor rather than allowing the pet on the furniture. Many dogs thrive by learning new behaviors during this time, such as hand targeting or handshakes, while others enjoy going for “walks” in a stroller or bicycle carrier. For patients averse to wearing a hard Elizabethan collar, commercial and homemade alternatives, such as a cloth cone or duct-taped towel around the neck, may be more comfortable if appropriate to the case.

Once the pet has recovered enough to resume mild activity, it’s crucial to keep the pet calm to prevent reinjury. Bain recommends that clients add barriers (such as baby gates) and use rugs or rubber toenail covers to increase traction on slippery floors. She urges the use of either a front-attach harness or a head collar on walks and keeping pets tethered to the owner or a piece of furniture under supervision. Mental enrichment is still essential during this period. Enrichment can include stationary behaviors, such as down-stay, tracking, and hand targeting, as well as tethered food toys.

Bain recommends discussing litter box management with cat owners, as elimination can be difficult and painful for confined or geriatric cats. Address the availability of litter boxes, pee pads, and other opportunities for elimination, as well as the importance of keeping food and elimination areas separate. If conventional clay litter cannot be used, clumping or pelleted paper litter tends to be accepted more readily than shredded newspaper. Clients may also choose supervised litter box access throughout the day.

Medical therapy
Medication is likely necessary for dogs that cannot be crated safely due to anxiety or pain. A veterinarian for 25 years, Bain admits that her early mentors taught her that a certain amount of pain was acceptable to keep recovering patients quiet, but she warns that this mentality is outdated and that pets deserve effective pain management throughout the postoperative period.
Bain advises hiding medications in tasty treats to get pets excited about receiving them. Her clients have had success hiding pills in bits of chicken, cheese or butter. Marshmallows are usually a safe option for allergic pets. She also advises owners to switch up medication routines often, as some pets pick up on owner habits and locations of stored medications.

“Know why you’re medicating the patient,” Bain says. “Is it for the benefit of the pet, the owner, or both?” She explains that some owners are more adherent with crate rest if the pet is quieter and less anxious.

**Short-term medications**

Quick-acting anxiolytic medications are best for animals that need to be crated on short notice. Although many options are available, effectiveness varies among medications and finding the right one may require trial and error, Bain says. Short-term options include gabapentin, trazodone, clonidine, benzodiazepines, nutraceuticals, and synthetic pheromones.

Trazodone, a serotonin antagonist/reuptake inhibitor, is an antidepressant commonly used to reduce anxiety and phobias. One study evaluating postoperative use of this drug in dogs after orthopedic surgery found it was well tolerated and had anxiolytic effects, although it did cause some sedation. As discussed above, other common drugs for short-term use include clonidine, a central alpha-2 agonist, and gabapentin, which is effective in dogs and cats for pain management as well as anxiety. While benzodiazepine drugs offer potent anti-anxiety effects, they also often cause increased appetite and sedation, which may be desirable for certain patients. However, advise clients to use caution with cats because benzodiazepines can cause paradoxical excitation due to potential hepatotoxic effects.

According to Bain, there’s limited evidence that nutraceuticals and synthetic pheromones offer potent anti-anxiety effects on their own, but they may be useful when added to other therapies. Examples used for their calming effects in pets include Solliquin (Nutramax), Anxitane (Virbac), Adaptil (Ceva Animal Health), and Feliway (Ceva Animal Health).

**Long-term medications**

Long-onset drugs are not appropriate for immediate postoperative use, as they require 4 to 6 weeks for full effect; however, they are effective for other behavioral issues. Bain advises against the use of acepromazine, as it causes sedation rather than reduced anxiety and several side effects are associated with long-term use. She also mentions that tramadol, which is commonly used for postoperative pain, should be used with extreme caution as it adversely reacts with several drugs, including SAMe, tricyclic antidepressants, and selective serotonin reuptake inhibitors, and can cause serotonin toxicity.

**Key takeaway**

Crate rest is an overwhelming prospect for many owners, particularly those with high-energy or anxious pets. However, patients needing strict confinement can be managed successfully with a combination of preventive training, behavior management, and anti-anxiety medication.

**REFERENCE**


Natalie Stilwell, DVM, PhD, MS, provides freelance medical writing services through Seastar Communications and Consulting.
Making a list and checking it twice

Cross these items off your end-of-year checklist to start 2021 on the right foot.

By Emily Shiver, CVPM, CCFP

By all accounts, 2020 was a doozy of a year personally and professionally. As these tumultuous 12 months finally come to an end, your mind is probably swimming with the many things you to accomplish before New Year’s Eve. To keep myself on track, I create several year-end practice checklists so that I don’t forget anything important. Use my checklist as a starting point for your own to-do list so you can end the year on a high note.

Holiday checklist
- Plan holiday party (or maybe not, if social distancing is not possible)
- Buy gift for practice owner
- Finalize gifts for staff
- Send holiday cards to top 500 clients
- Put together thank-you gifts for the pets lodging during the holiday season

Client checklist
- Clean up accounts receivable:
  - Call outstanding accounts
  - Send account statements
  - Write off accounts by 12/31
- Prepare to purge records (if you still have paper charts)

Employee checklist
- Review vacation time and sick time; provide updates
- Evaluate whether the practice can give out bonuses
- Map out team member evaluations for the first quarter of 2021
- Collect payments for any outstanding team member bills
- Confirm mailing addresses for W-2s

Inventory checklist
- Count everything in the practice and make adjustments as needed in practice management system
- Evaluate every revenue center to see if you are within the goals you set for 2020
- Create a goal for each revenue center for 2021
- Evaluate the allowances you set for every zone in the hospital to determine whether you need to make adjustments for 2021 (treats, candles, gloves, lodging food, cat litter, inpatient food for hospitalized pets, etc.)
- Place orders to get you through to the end of the year. Don’t be tempted by end-of-year promotions unless you can negotiate delayed billing
- Check every item in the hospital for expiration dates and discard and reorder as necessary
- Run final sales histories and create new reorder points
- Return any overstock items that you can
- Order rabies tags
- Audit redundant items to lower cost of goods sold
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). NexGard has the chemical composition 1-Naphthalenecarboxamido, 4-[5-[3-(chloro-5-(trifluoromethyl))-phenyl]-4-(5-dihydro-5-(trifluoromethyl)-3-isoxazolyl)]-N-[2-oxo-2-(2,2,2-trifluoroethyl)amino]ethy)

Indications: NexGard kills adult fleas and is indicated for the treatment and prevention of flea infestations (Ctenocephalides felis), and the treatment and control of Black-legged tick (Ixodes scapularis), American Dog tick (Dermacentor variabilis), Lone Star tick (Amblyomma americanum), and Brown dog tick (Rhipicephalus sanguineus) infestations in dogs and puppies 8 weeks of age and older. The minimum dosage of NexGard per body weight is 1.14 mg/lb (2.5 mg/kg).

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:

<table>
<thead>
<tr>
<th>Body Weight</th>
<th>Afoxolaner Per Chewable (mg)</th>
<th>Chewables Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 to 10.0 lbs.</td>
<td>11.3</td>
<td>One</td>
</tr>
<tr>
<td>10.1 to 24 lbs.</td>
<td>28.3</td>
<td>One</td>
</tr>
<tr>
<td>24.1 to 60 lbs.</td>
<td>68.1</td>
<td>One</td>
</tr>
<tr>
<td>60.1 to 121 lbs.</td>
<td>136</td>
<td>One</td>
</tr>
<tr>
<td>Over 121 lbs.</td>
<td>Administer the appropriate combination of chewables</td>
<td></td>
</tr>
</tbody>
</table>

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.

Tick 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 reinfection, 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: Afoxolaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving isoxazoline class drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders. The safe use of NexGard in breeding, pregnant or lactating dogs has not been evaluated.

Adverse Reactions: In a well-controlled US field study, which included a total of 333 households and 815 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.

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Afoxolaner</th>
<th>Oral active control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (%) (n=701)</td>
<td>N (%) (n=235)</td>
<td></td>
</tr>
<tr>
<td>Vomiting (with and without blood)</td>
<td>17 (2%)</td>
<td>17 (7%)</td>
</tr>
<tr>
<td>Dry/Foamy Skin</td>
<td>13 (2%)</td>
<td>3 (1%)</td>
</tr>
<tr>
<td>Diarrhea (with and without blood)</td>
<td>13 (2%)</td>
<td>7 (3%)</td>
</tr>
<tr>
<td>Lethargy</td>
<td>7 (1%)</td>
<td>4 (2%)</td>
</tr>
<tr>
<td>Anorexia</td>
<td>5 (1%)</td>
<td>9 (4%)</td>
</tr>
</tbody>
</table>

Number of dogs in the afoxolaner treatment group with the identified abnormality. 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.

Post-Approval Experience (July 2018): 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 causative relationship to product use, based on these data. The following adverse events reported for dogs are listed in descending order of reporting frequency for NexGard:

- Vomiting, pruritus, lethargy, diarrhea (with and without blood), anorexia, seizures, hyperactivity/restlessness, panting, erythema, ataxia, dermatitis (including rash, papules), allergic reactions (including hives, swelling), and tremors.

Contact Information: For a copy of the Safety Data Sheet (SDS) or to report suspected adverse drug events, contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251 or www.nexgardogs.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or www.fda.gov/reportanimalae.

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 began to kill fleas four hours after initial administration and demonstrated >98% effectiveness at eight hours. In a separate well-controlled laboratory study, NexGard demonstrated 100% effectiveness against adult fleas 24 hours post-infection for 35 days, and was >93% effective at 12 hours post-infection through Day 21, and on Day 35. On Day 28, NexGard was 81.1% effective 12 hours post-infection. 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 4-40 eggs and 0-118 eggs in the control dogs, at 12- and 24-hours, respectively. At subsequent evaluations post-infection, 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 99.0%, 99.7%, and 99.9%, respectively. Collectively, the data from the three studies (two 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 >99% effectiveness against Dermacentor variabilis, >94% effectiveness against Ixodes scapularis, and >93% effectiveness against Rhipicephalus sanguineus, 48 hours post-infection for 30 days. At 72 hours post-infection, NexGard demonstrated >97% effectiveness against Amblyomma americanum for 30 days. In two separate, well-controlled laboratory studies, NexGard was effective at preventing Borrelia burgdorferi infections after dogs were infested with Ixodes scapularis vector ticks 28 days post-treatment.

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 (8.3 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, in 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 antiinflammatories. 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 1, 3 or 6 chewables.

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1050-4933-09 Rev. 11/2019
A million thanks.

Actually, over 220 million—that’s how many times NexGard® (afoxolaner) has been prescribed.¹

The only flea & tick control product indicated for the prevention of *Borrelia burgdorferi* infections as a direct result of killing black-legged ticks

Gentle protection in a bite-sized monthly dose

Proven safety for puppies as young as 8 weeks, weighing 4 pounds or more

The savory beef-flavored chew that makes compliance a treat

NexGard® (afoxolaner) Chewables

IMPORTANT SAFETY INFORMATION: NexGard® is for use in dogs only. The most frequently reported adverse reactions include vomiting, pruritus, lethargy, diarrhea, and lack of appetite. The safe use of NexGard® in pregnant, breeding, or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures or neurologic disorders. For more information, see the full prescribing information or visit NexGardClinic.com.

¹ Data on file at Boehringer Ingelheim.