Feline Chronic Pain

The need to recognize and treat chronic pain in cats has received great attention in recent years. Margie Scherk, DVM, DABVP (Feline Practice), discussed the causes and management of feline chronic pain at the 2018 WVC Conference in Las Vegas, Nevada.

Cats often hide their pain, Dr. Scherk noted, so identifying its potential causes may require extrapolation from our own experiences. “If it might hurt you,” she said, “assume it hurts cats.”

A Review of Medical Cannabis

Although medical cannabis use has grown in popularity in both human and veterinary medicine, reservations remain among veterinarians about using it in pets. “Veterinary medicine tends to be very conservative,” said Stephen Cital, DVM, DACVAA (Anesthesia), at the 2018 ChicagoLand Veterinary Conference in May.

New Veterinary Oncology Therapeutics

The diverse expanse of specialized veterinary oncology therapeutics both on the market and on the horizon makes it challenging to remain up-to-date on the latest advances and technologies, yet this information is vital to practices interested in providing the newest cancer treatment options. Immunotherapy is leading the way in human oncology treatment development, and this trend is following in veterinary oncology.

This article briefly summarizes the science, supporting data, regulatory status, and clinical use of several new canine and feline oncology therapeutics, including supportive care therapies that may have a critical impact on our ability to improve quality of life for dogs and cats diagnosed with cancer. Although some of these drugs are in the earlier stages of development, they hold strong potential and are becoming clinically available for patient care. Veterinary oncology therapeutics of interest in the United States, regulated by either the FDA or the US Department of Agriculture (USDA), are summarized in the Table.

Why Clients Leave a Practice

There is no secret to retaining veterinary customers. Just do a few things right every time, and your practice will thrive.

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Acts of violence at veterinary clinics remain relatively rare, but owners and staff should be prepared.
They already have a lot to remember. Give them one less thing to forget.

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Prescription-only BRAVECTO provides up to 12 weeks* of extended protection against fleas & ticks with just one dose. Good for patients, good for compliance, good for your practice.

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*BRAVECTO kills fleas and prevents flea infestations for 12 weeks. BRAVECTO Chew kills ticks (black-legged tick, American dog tick, and brown dog tick) for 12 weeks and also kills lone star ticks for 8 weeks.

Important Safety Information

BRAVECTO Chews for Dogs: The most common adverse reactions recorded in clinical trials were vomiting, decreased appetite, diarrhea, lethargy, polydipsia, and flatulence. Bravecto has not been shown to be effective for 12-weeks’ duration in puppies less than 6 months of age. Bravecto is not effective against lone star ticks beyond 8 weeks after dosing. Please see Prescribing Information on following page.

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US/BRV/1017/0090a
Flavored chews for dogs.

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

Description:
Each chew is formulated to provide a minimum dose of 11.4 mg/lb (25 mg/kg) body weight.

The chemical name of fluralaner is (+)-4-[3-[(3,5-dichlorophenyl)-5-(trifluoromethyl)-4-[(4,5-dihydroisoxazol-3-yl)-2-methyl-N-[2-oxo-2-[2,2,2-trifluoroethylamino] ethyl]benzamide.

Indications:
Bravecto kills adult fleas and is indicated for the treatment and prevention of flea infestations (Ctenocephalides felis) and the treatment and control of tick infections (Ixodes scapularis (black-legged tick), Dermacentor variabilis (American dog tick), and Rhipicephalus sanguineus (brown dog tick)) for 12 weeks in dogs and puppies 6 months of age and older, and weighing 4.4 pounds or greater.

Bravecto is also indicated for the treatment and control of Amblyomma americanum (tongue star tick) infestations for 8 weeks in dogs and puppies 6 months of age and older, and weighing 4.4 pounds or greater.

Dosage and Administration:
Bravecto should be administered orally as a single dose every 12 weeks according to the Dosage Schedule below to provide a minimum dose of 11.4 mg/lb (25 mg/kg) body weight.

Bravecto may be administered every 8 weeks in case of potential exposure to Amblyomma americanum ticks (see Effectiveness).

Bravecto should be administered with food.

Dosage Schedule

<table>
<thead>
<tr>
<th>Body Weight Ranges (lb)</th>
<th>Fluralaner Content (mg)</th>
<th>Chews Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4 – 9.9</td>
<td>112.5</td>
<td>One</td>
</tr>
<tr>
<td>&gt;9.9 – 22.0</td>
<td>250</td>
<td>One</td>
</tr>
<tr>
<td>&gt;22.0 – 44.0</td>
<td>500</td>
<td>One</td>
</tr>
<tr>
<td>&gt;44.0 – 88.0</td>
<td>1000</td>
<td>One</td>
</tr>
<tr>
<td>&gt;88.0 – 123.0*</td>
<td>1400</td>
<td>One</td>
</tr>
</tbody>
</table>

*Dogs over 123.0 lb should be administered the appropriate combination of chews.

Treatment with Bravecto may begin at any time of the year and can continue year round without interruption.

Contraindications:
There are no known contraindications for the use of the product.

Warnings:
Not for human use. Keep this and all drugs out of the reach of children. Keep the product in the original packaging until use, in order to prevent children from getting direct access to the product.

Do not eat, drink or smoke while handling the product. Wash hands thoroughly with soap and water immediately after use of the product.

Precautions:
Bravecto has not been shown to be effective for 12-weeks duration in puppies less than 6 months of age. Bravecto is not effective against Amblyomma americanum ticks beyond 8 weeks after dosing (see Effectiveness).

Adverse Reactions:
In a well-controlled U.S. field study, which included 294 dogs (224 dogs were administered Bravecto every 12 weeks and 70 dogs were administered an oral active control every 4 weeks and were provided with a tick collar; there were no serious adverse reactions. All potential adverse reactions were recorded in dogs treated with Bravecto over a 182-day period and in dogs treated with the active control over an 84-day period. The most frequently reported adverse reaction in dogs in the Bravecto and active control groups was vomiting.

<table>
<thead>
<tr>
<th>Percentage of Dogs with Adverse Reactions in the Field Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Reaction (AR)</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Vomiting</td>
</tr>
<tr>
<td>Decreased Appetite</td>
</tr>
<tr>
<td>Diarrhea</td>
</tr>
<tr>
<td>Lethargy</td>
</tr>
<tr>
<td>Polydipsia</td>
</tr>
<tr>
<td>Flatulence</td>
</tr>
</tbody>
</table>

In a well-controlled laboratory dose confirmation study, one dog developed edema and hyperemia of the upper lips within one hour of receiving Bravecto. The edema improved progressively through the day and had resolved without medical intervention by the next morning.

For technical assistance or to report a suspected adverse drug reaction, contact Merck Animal Health at 1-800-224-5318. Additional information can be found at www.bravecto.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-METS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.
Addressing an Animal Welfare Crisis

According to the results of a national population survey conducted by the Access to Veterinary Care Coalition (AVCC), a group of for-profit and nonprofit veterinary service providers, animal welfare organizations, and social service professionals, nearly 28% of US households have experienced barriers to veterinary care in the past 2 years. The overwhelming obstacle for pet owners is financial.

The data gathered from the survey, which was conducted in collaboration with the University of Tennessee Knoxville College of Social Work and completed by 5652 respondents, are intended to serve as a guide for veterinarians, animal welfare organizations, legislators, community leaders, and other stakeholders as they seek to improve access to veterinary care. According to the survey report, an estimated 29 million dogs and cats live in families that participate in the Supplemental Nutrition Assistance Program, also known as food stamps. However, a significant segment of the middle class also struggles with having limited funds for veterinary care, especially when the need involves high-cost care.

The report points out that in many instances people will go without food and medicine for themselves to make sure their pet has what it needs. Furthermore, in addition to supporting mental, physical, and emotional health, pets provide their owners with unconditional love and a connection to the community.

“The paradox we face is that while it may be logical that someone should not have a pet if they cannot provide veterinary care, it is difficult to defend denying companionship with pets,” the report reads. “These families deserve companionship with pets and to enjoy all of the benefits that come through these relationships.”

Other key findings from the survey: Dogs and cats living in lower-income households and with younger pet owners are most at risk for not receiving recommended care. Of those pet owners surveyed, financial constraints prevented 80% from providing preventive care, 74% from providing sick care, and 56% from providing emergency care.

In addition to gathering insight about pet owners, the report confirmed that veterinary professionals increasingly recognize the barriers that exist and feel a commitment to explore ways to address them. The highest level of agreement expressed by veterinarians in the survey was in response to the following statement: “All pets deserve some level of veterinary care.” Almost all respondents (95%) either agreed or strongly agreed with the statement. Furthermore, nearly 90% of respondents indicated they agreed or strongly agreed that owned pets are a member of the family, and 87% agreed that not being able to obtain needed veterinary care has an impact on the owner’s mental and emotional health.

Organizations such as the American Veterinary Medical Foundation (AVMF) are helping to alleviate the financial burden of providing veterinary care that some owners face. Over the past 3 years, AVMF’s Veterinary Care Charitable Fund has reimbursed nearly 1200 veterinary practices throughout the United States for providing care to animals whose owners could not afford to pay. But more needs to be done. All pets deserve access to veterinary care. It is our hope that 2019 will bring more dialogue and more solutions among all stakeholders to achieve this goal.

Mike Hennessy, Sr
Chairman and CEO

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FDA Approves New Products

**REVOLUTION PLUS (SELMECTIN AND SAROLANER TOPICAL SOLUTION; ZOETIS)**
The 6-in-1 feline parasite preventive protects against fleas (*Ctenocephalides felis*), ticks (black-legged or deer ticks [*Ixodes scapularis*], Gulf Coast ticks [*Amblyomma maculatum*], and American dog ticks [*Dermacentor variabilis*]), ear mites (*Otodectes cynotis*), roundworms (*Toxocara cati*), hookworms (*Ancylostoma tubaeforme*), and heartworms (*Dirofilaria immitis*). The product can be used in cats and kittens as young as 8 weeks that weigh at least 2.8 lb.

**PEXION (IMEPITON TABLETS; BOEHRINGER INGELHEIM)**
Approved for the treatment of noise aversion in dogs, Pexion is dosed (according to weight) twice daily starting 2 days before an expected noise event and continued through the day of the event. The medication will be provided in 100- and 400-mg scored tablets. Due to “capacity constraints at the manufacturing site,” however, Pexion will likely not be available for sale until 2020, according to a Boehringer-Ingelheim spokesperson.

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**Finnish Scientists Develop First Insect Vaccine**

ALTHOUGH OFTEN OVERLOOKED as leaders in the food production industry, honeybees pollinate more than 80% of the world’s plant species and are considered essential for providing food for humans, production animals, and wildlife. However, a sharp decline in pollinator populations threatens current food production. By developing the first insect vaccine, a company called PrimeBEE aims to protect bees from disease.

One chief problem is emerging disease, including American foulbrood, the most widespread and destructive of the bee brood diseases. With no known cure, heavy infections can affect most of the brood, severely weakening and eventually killing the colony.

The PrimeBEE vaccine, developed by Dalia Freitak, PhD, and Heli Salmela, PhD, of the University of Helsinki, works through a simple innovation. When the queen bee eats something containing pathogens, the protein vitellogenin binds the pathogens’ signature molecules. Vitellogenin then carries the signature molecules into the queen’s eggs, where they work as inducers for future immune responses. Until now, it was believed that insect vaccination was not possible because the insect immune system lacks antibodies.

The company’s first goal is to develop a vaccine against American foulbrood. “We hope that we can also develop a vaccination against other infections, such as European foulbrood and fungal diseases,” Dr. Freitak said. “We have already started initial tests. The plan is to be able to vaccinate against any microbe.”

PrimeBEE is administered in 1 of 2 ways: A vaccine dose (10-15 g) can be delivered as a sugar pattie to be consumed by a single queen over 7 to 10 days, or a vaccinated queen can be delivered in a queen cage with 10 accompanying nurse bees to feed her.

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**AAFP Releases Consensus Statement on Feline Feeding**

THE AMERICAN ASSOCIATION OF FELINE PRACTITIONERS (AAFP) has released a consensus statement on feeding strategies that encourage natural behaviors and thus minimize the risk of issues related to stress or overeating in pet cats.

The problems: Normal feline hunting and foraging behaviors are often impaired in the indoor environment, with a negative effect on pet welfare, according to the AAFP. Furthermore, pets in multicat households often receive either large meals or an ad libitum food supply, which encourages overeating. Highly palatable, nutritionally dense kibble requires little effort for a high caloric intake. Finally, competition for food among family cats can lead to stress, territorial behavior, and aggression. In extreme cases, stress-related feeding behaviors can include gorging, which puts pets at risk for digestive upset and obesity-related disease.

Some solutions: Place puzzle feeders around the home and at different elevations to increase activity and mental enrichment during feeding. Both commercial and DIY options work well, including placing kibble inside a plastic bottle or an empty cardboard egg carton.

The AAFP also recommends providing multiple small meals per day, with treats making up no more than 10% of daily caloric intake. Veterinarians should educate owners about feline nutrition, including individualized dietary recommendations to maintain optimal body condition. The statement also emphasizes the importance of monitoring pet weight and behavior, as well as signs of illness or stress, during dietary changes.

Finally, owners of multiple cats should provide a separate feeding area for each cat, as well as multiple water bowls and litter boxes. A rule of thumb: Every cat should be able to eat in an area where it feels safe.
Dogs Dominate in US Homes, But Exotics Are Gaining Ground

NEARLY 57% OF US HOUSEHOLDS included a pet in 2016, and dogs reigned supreme. Of the 50,000 pet-owning households surveyed for the newly released 2017-2018 edition of the American Veterinary Medical Association’s (AVMA) Pet Ownership & Demographics Sourcebook, about 38% had a dog and 25% had a cat.

But the number of specialty and exotic animals owned as pets is growing. At the end of 2016, more than 13% of US households owned small mammals, reptiles, poultry, fish, livestock, and other specialty pets, a 25% increase from 2011. The largest growth in specialty pet ownership was seen in backyard poultry, with 1.1% of households owning pet poultry in 2016, an increase of 23% in 5 years.

Other findings: Pet ownership is higher in rural states than in urban ones. On average, 68.6% of homes in the top 10 rural states include pets, whereas pets can be found in just 48.8% of the top 10 urban pet-owning states. And the Sourcebook notes that dog owners are more likely than cat owners to take their pet to a veterinarian. On average, dog-owning veterinary clients made 3 visits to a practice in 2016, and dog-owning veterinary clients made 2.4 visits in 2016, and cat-owning clients made 2.4 visits.

The Sourcebook is available for free to AVMA members. Visit AVMA.org for more information.

2019 Pet Care Trends Focus on Tech

ACCORDING TO A SURVEY OF 1000 dog and cat owners conducted by the nonprofit Michelson Found Animals Foundation, 2019 will be the year of smart technology, alternative therapies, and diets that mimic human choices. The survey responses revealed that pet owners are motivated to give pet tech a try, especially if it will give them a better grasp of their pet’s health and wellness. For those who currently use pet health-related tech products, nutrition apps (47%), telemedicine (46%), and fitness trackers (31%) top the list. More than half of the respondents indicated interest in getting a pet-tracking device (53%) or microchip (52%), and 40% are interested in pet-monitoring cameras.

Of those surveyed who have tried alternative therapies themselves, 74% also have used them on their pets. Chief among these therapies are cannabinoid- and hemp-based products, which are used as part of a general health plan (45%), to care for an older pet (45%), for a specific behavioral condition (39%), or for temporary relief following surgery or on a flight (39%). In addition, respondents who have tried alternative therapies themselves are more likely than those who have not to treat their pets with aromatherapy (81%), reflexology (79%), or naturopathy (73%). More than a quarter of the respondents’ pets (26%) have experienced mobility-related therapies such as massage, physical therapy, chiropractic, and acupuncture.

Although the surveyed pet owners said they are not putting their pets on fad diets (eg, ketogenic diet, intermittent fasting), they appear to be cognizant of what they feed their pets. Seventy percent of those surveyed who follow a diet for themselves put their pet on a special diet, too. For instance, 47% of respondents who eat organic foods feed their pets organic diets. Similarly, 45% of pet owners on a protein-rich diet feed their pets protein-rich foods.

EIA Is Confirmed in Multiple Texas Counties

THE TEXAS ANIMAL HEALTH COMMISSION (TAHC) and the Equine Disease Communication Center confirmed multiple cases of equine infectious anemia (EIA) in Texas horses last year. The cases, initially diagnosed in March 2018, occurred in several counties throughout the state.

A viral disease with no vaccine or cure, EIA attacks a horse’s immune system. It can be transmitted from an infected animal to a noninfected animal via biting flies, through the use of unsterilized or contaminated medical instruments, or via a blood transfusion. The disease does not affect people.

Signs of EIA are nonspecific and include fever (>105°F), depression, edema, anorexia, fatigue, mucosal petechial hemorrhages, and rapid breathing. Horses that contract the disease die, are euthanized, or must be quarantined for the rest of their lives.

By law, EIA is a reportable disease. All positive cases must be filed with the state veterinarian and the federal Animal and Plant Health Inspection Service. TAHC staff is working with affected horse owners and veterinarians in Texas to monitor potentially exposed horses and implement biosecurity measures.

USDA Grants $2.4 Million to Address Rural Veterinarian Shortage

THROUGH ITS VETERINARY SERVICES Grant Program, the United States Department of Agriculture (USDA) National Institute of Food and Agriculture has awarded $2.4 million in grants to support rural veterinary services and relieve veterinarian shortages in parts of the United States. The 14 grants were awarded to universities, associations, and veterinary hospitals divided equally into 2 distinct categories: education/extension/training and rural veterinary practice enhancement.

The recipients: the American Association of Bovine Practitioners; Iowa State, Michigan State, Pennsylvania State, and Texas A&M Universities; University of Arkansas Cooperative Extension Service; University of Georgia; Bear Lake Animal Hospital in Montpelier, Idaho; Dutton Veterinary Services in Walton, New York; KN Veterinary Services in Clifton, Texas; Mountain Legacy Veterinary Services in Gunnison, Colorado; Southwest Veterinary Services in Española, New Mexico; Stonehouse Veterinary Service in Saint Clairsville, Ohio; and Uinta Veterinary Hospital in Fort Bridger, Wyoming.
Feline Chronic Pain

Addressing ongoing pain in cats can be tricky. Here are some tips for diagnosis and management of these patients.

By Laurie Anne Walden, DVM, ELS

TYPES OF PAIN

Pain Categories

Pain can be categorized broadly as nociceptive, inflammatory, and neuropathic. Nociceptive pain is caused by tissue damage such as traumatic injuries, surgical incisions, and burns. Neuropathic pain is related to nervous system lesions or dysfunction; a classic example is phantom limb pain after amputation. Many other conditions can also cause neuropathic pain.1

Inflammatory pain results from activation of the nociceptive pain pathway by a host of mediators released at the site of tissue inflammation.

Acute Versus Chronic Pain

Acute pain is typically caused by tissue injury. It is self-limiting and results in behavior changes that minimize damage to an animal’s body; this serves a beneficial biological purpose. Chronic pain is often related to inflammation, ongoing nociceptive stimulation, or neuropathic pain; continues longer than expected for a disease process; and adversely affects physical and, at least in humans, psychological health.1

Acute and chronic pain are clinically different. Treatment of acute pain focuses on removing the source of pain and blocking pain transmission, whereas management of chronic pain focuses on improving the patient’s quality of life, typically by employing more than 1 treatment modality (eg, medication plus environmental modification).1

These 2 types of pain also overlap. Uncontrolled acute pain can become chronic neuropathic pain, and patients with chronic pain can experience acute episodes of breakthrough pain. Prolonged or repeated pain sensitizes peripheral and central nociceptors, resulting in hyperalgesia, which is an exaggerated response to a painful stimulus, and allodynia, which is a pain response to a normally nonpainful stimulus.1

To prevent acute pain from becoming chronic, Dr. Scherk said, provide preemptive analgesia and continue to provide analgesia for a sufficient length of time. For surgical procedures, for example, administer analgesics in advance and continue them throughout the healing process until pain transmission has subsided.

SIGNS OF PAIN

Because cats are secretive about their pain, owners may not recognize the signs in their pet. Dr. Scherk recommended asking owners specific questions about potential signs of pain, including a personality change, reduced interaction with the family, decreased activity level, aggression, alteration in sleeping pattern, elimination outside the litter box, reluctance to jump up or down, and inappetence.

In addition, physical examination may reveal a poor haircoat, from reduced grooming, or a defensive reaction to being handled or touched. Dr. Scherk noted that fear and pain may produce similar signs in the clinic. Diagnostic imaging can be helpful.

Response to a treatment trial also can identify pain in cats, Dr. Scherk said. “It’s never wrong to do test doses of analgesia,” she added. A return to normal behavior during analgesic therapy indicates the presence of chronic pain.

The Feline Musculoskeletal Pain Index,2 a questionnaire developed at North Carolina State University to help veterinarians and cat owners identify musculoskeletal pain, may also be useful for nonmusculoskeletal pain, Dr. Scherk said. She suggested that practitioners refer to the 2015 American Animal Hospital Association/American Association of Feline Practitioners (AAFP) pain management guidelines for more information on recognizing and managing pain.3

CAUSES OF CHRONIC PAIN IN CATS

Neuropathic Pain

“Anything can become neuropathic pain,” Dr. Scherk emphasized. And any uncontrolled pain can result in hyperalgesia or allodynia. Amputation, including onychectomy, and insufficiently treated surgical
pain lead to neuropathic pain. Other causes are nerve compression (by a tumor, for example), diabetic neuropathy, and posttraumatic neuralgia. Idiopathic cystitis probably has a neuropathic component, she added. Repeated biting or scratching at the same area of the body, spontaneous crying, and an adverse reaction to touch may indicate neuropathic pain.

**Degenerative Joint Disease**

Degenerative joint disease is very common in older cats but occurs in cats of all ages, Dr. Scherk said. And unlike dogs, cats with degenerative joint disease are not usually lame. The signs in cats are often subtle, and owners may mistake them for normal aging changes.

**Other Causes**

Bacterial cystitis, sterile (idiopathic) cystitis, and pyelonephritis are all inflammatory and painful, Dr. Scherk said. Additional causes, which may elicit no or only subtle clinical signs, include oral conditions such as periodontal disease, stomatitis, oral tumors, and feline orofacial pain syndrome, a likely neuropathic condition that is seen most often in Burmese cats and causes licking and chewing movements and sometimes tongue mutilation. She also mentioned that dehydration causes headaches in people, so it may well cause similar pain in cats.

Dr. Scherk pointed out that common hospital procedures are uncomfortable for cats with chronic conditions such as osteoarthritis (OA). Palpation, restraint, extending a leg for venipuncture or catheterization, and environmental modification, in addition to the NSAID, also reduces the risk that a patient will develop neuropathic pain.

**TREATING CHRONIC PAIN**

Analgescic treatment should begin early, Dr. Scherk said. She emphasized that analgesia should be preemptive, multimodal, and of sufficient duration. Patients with chronic pain should be reassessed regularly because pain responses and treatment needs change over time. The underlying cause of pain should also be treated, if possible.

Dr. Scherk especially stressed the need for multimodal analgesia to prevent and treat chronic pain. Multimodal analgesia is safer than single-agent treatment because it allows for lower drug doses, she said.

The more points of the pain pathway that you hit, the better analgesia you’ll provide,” she said. Effectively blocking pain transmission with multimodal analgesia also reduces the risk that a patient will develop neuropathic pain.

**Preemptive Analgesia**

Adequate management of perioperative pain can prevent neuropathic pain, Dr. Scherk said. Local anesthetics and N-methyl-D-aspartate (NMDA) receptor antagonists, such as ketamine, are among the drugs used to block pain transmission.

**Nonsteroidal Anti-Inflammatory Agents**

Nonsteroidal anti-inflammatory drugs (NSAIDs) are more effective than opioids or steroids for managing OA pain, Dr. Scherk said. “NSAIDs are indicated for acute and chronic pain,” she added. Although NSAIDs are associated with serious adverse effects in cats, they can be administered safely if proper precautions are taken, she said.

The only NSAID currently approved in any country for long-term use in cats is meloxicam. In the United States, meloxicam is labeled for cats as a single subcutaneous injection to control postoperative pain. However, it also carries an FDA warning against use in cats with kidney dysfunction. In other countries, oral meloxicam is labeled for longer use in cats. Dr. Scherk cited 3 Australian studies in which long-term meloxicam administration did not adversely affect renal function or exacerbate renal disease in cats. She pointed out that the US label dose for subcutaneous meloxicam injection (0.3 mg/kg) is much higher than the oral doses used in these studies (0.01-0.03 mg/kg).

Rofecoxib is labeled in the United States for 3-day use for control of postoperative pain in cats. One study’s results showed no worsening of kidney disease in cats treated with rofecoxib for 1 month, Dr. Scherk said.9

She suggested that veterinarians considering off-label use of NSAIDs in cats refer to consensus guidelines for NSAID use published in 2010 by the AAFP and the International Society of Feline Medicine. The guidelines, as well as brochures for cat owners, are available on the AAFP website. Dr. Scherk discussed some precautions for NSAID use in cats (see the guidelines for complete recommendations):

- Choose patients that are well hydrated and do not have congestive heart failure or moderate to severe kidney disease.
- Dose on the basis of lean body weight, not the actual weight, of overweight cats.
- Use the lowest effective dose.
- Combine use with other modalities, such as environmental modification, in addition to the NSAID.
- Maintain ongoing communication with the cat owner, and discontinue the drug immediately if adverse events occur.
- Do not use NSAIDs concurrently with corticosteroids or other drugs that pose an interaction risk.
- Check bloodwork at least every 6 months, more often in high-risk patients.

**Opioids**

Opioids are the cornerstone of managing moderate to severe pain, Dr. Scherk said. They are safe to use in all ages, can be given concurrently with NSAIDs, and are useful for treating perioperative pain. They are not particularly effective as sole agents for OA pain. Opioids also can be used to treat breakthrough pain in cats taking NSAIDs and to manage short-term procedural pain, she said. Various potencies and durations are available.

**Other Agents**

Xylazine, dexmedetomidine, and other a1-adrenoceptor agonists may be helpful for supplemental analgesia in cats but should not be used in those with cardiovascular disease or other hemodynamic diseases, Dr. Scherk said. Ketamine and amantadine are both NMDA receptor antagonists. Ketamine is generally administered for a short time in the hospital, and amantadine can be given orally at home. Gabapentin may be helpful for neuropathic pain.

**Environmental modification is an important component of pain management.**

**New Possibilities**

Dr. Scherk discussed a few novel agents that are in development or available for other species. A monoclonal antibody against nerve growth factor, a substance involved in inflammatory pathways, is undergoing clinical trials in cats. Cannabinoids have not been investigated in cats, and Dr. Scherk warned the audience about the toxicity of products containing tetrahydrocannabinol.

**Home Care**

Environmental modification is an important component of pain management, Dr. Scherk said. The goal is to allow cats to return to normal activities. “If it’s super important that cats get to do catlike things and be happy doing them,” she said. Ramps and steps, padded bedding, and raised water and food bowls can make cats more comfortable, and litter box sides should be low enough for cats with arthritis to enter comfortably.

Additional suggestions include dietary joint supplements, which may be helpful for cats with OA; weight reduction for overweight cats; and trimming nails to keep them from snagging on carpet and to maintain correct joint alignment. Dr. Scherk said. Physical rehabilitation (therapeutic exercise) may also be of benefit.

**CONCLUSIONS**

“The experience of pain is different for every individual,” Dr. Scherk said. The analgesic plan should be tailored to each cat. She stressed following up with owners regularly to assess response to treatment and adjusting each cat’s management plan as needed.

References available at AmericanVeterinarian.com.

Dr. Walden received her DVM from North Carolina State University and completed an internship in small animal medicine and surgery at Auburn University. She is a board-certified editor in the life sciences and owner of Walden Medical Writing, LLC. Dr. Walden writes and edits materials dealing with most areas of human and veterinary medicine. She has also been a practicing primary care veterinarian for many years.
A Review of Medical Cannabis

Learn the facts about cannabis for pets so you’re prepared to educate your clients.

By JoAnna Pendergrass, DVM

(continued from front cover)

Despite this conservatism, he cautioned that “one of the worst things we can continue to do is talk or joke about animals getting high when we’re talking about cannabis products and using them as a form of medicine or supplementation.” Mr. Cital, who works at Silicon Valley Veterinary Specialists (SVVS) in San Jose, California, talked about medical cannabis, including its uses in both veterinary and human medicine as well as the legal complexities involved.

MARIJUANA VERSUS HEMP

To begin his presentation, Mr. Cital clarified the difference between marijuana and hemp. Although the marijuana and hemp plants are varieties of the cannabis plant and share the same gene pool, they differ in their concentrations of delta-9-tetrahydrocannabinol (THC), the psychoactive agent that generates a “high.” Marijuana has been bred selectively to contain high concentrations of THC (5%-20%), whereas the hemp plant has very low THC levels (≤0.3% per federal legal definitions) and traditionally has been used for industrial purposes, such as making textiles and rope.

PHYTOCANNABINOIDS AND THE ENDOCANNABINOID SYSTEM

The cannabis plant contains hundreds of compounds called phytocannabinoids, among which THC is the most well known. Cannabidiol (CBD) is the second most commonly extracted phytocannabinoid from the cannabis plant and has proven anti-anxiety, antipsychotic, anti-inflammatory (analgesic), and immunomodulatory effects. It also reportedly stimulates both osteoblasts and mesenchymal stem cells, facilitating quicker fracture healing.

Phytocannabinoids act on the endocannabinoid system, which is an extensive system of endogenous cannabinoids and cannabinoid receptors (CB1 and CB2 primarily). The endocannabinoid system, among its many functions, plays an important role in homeostatic mechanisms throughout the body. The most well-studied endocannabinoids are anandamide, a CB1 agonist discovered in the late 1960s, and 2-arachidonoylglycerol, which has a high affinity for CB2. CB2 has a relatively low sensitivity for phytocannabinoids and can be altered to increase this sensitivity.

Orphan receptors, which do not have an endogenous agonist, may be associated with the endocannabinoid system. Study results have shown that these orphan receptors respond to phytocannabinoids and CB1 and CB2 endogenous agonists. Terpenes and flavonoids are compounds that work synergistically with phytocannabinoids to produce an “entourage effect” that enhances the therapeutic benefits and attenuates adverse effects. In addition, these compounds can mitigate the psychoactive effects of THC and enhance the aroma and flavor of cannabis.

Examples of terpenes include linalool (common in lavender), beta-caryophyllene, and limonene, which has a CB1 affinity that is high enough to displace THC. Products containing phytocannabinoids and terpenes/flavonoids are called “full spectrum,” Mr. Cital explained.

TOXICITY

The rapid adoption of marijuana and hemp plant components in veterinary medicine has veterinarians struggling to keep pace with the scientific evaluation of these components. Results from pharmacokinetic and safety/efficacy studies conducted at Colorado State University and Cornell University and published last year showed that CBD-rich products are generally safe and effective for specific conditions such as pain related to osteoarthritis. Colorado State is continuing studies on the efficacy of CBD for epilepsy and chronic pain, and ElleVet Sciences is studying CBD use in cats, acute pain models, and anxiety. Preliminary data from these studies demonstrate that CBD and other nonpsychoactive phytocannabinoids have a wide safety margin and produce minimal adverse events.

Following the state-level legalization of medical marijuana, the Pet Poison Helpline has witnessed a 330% increase in reported THC toxicities in pets. Fortunately, no animal deaths have been attributed solely to the THC molecule. The suspected lethal dose of THC in pets is so high (>9 g/kg) that “a dog is likely to fall asleep before reaching that dose,” Mr. Cital said.

USES OF MEDICAL CANNABIS IN HUMANS AND ANIMALS

Medical cannabis is used commonly to reduce pain. It is also used to treat the signs and symptoms of several other conditions.

Autoimmune Disorders

Anecdotal reports indicate that dogs with shaker dog syndrome, a suspected autoimmune disease that causes a dog’s entire body to shake, have improved with CBD. At SVVS, Mr. Cital said, dogs with shaker dog syndrome that have received CBD have been taken off prednisone, a traditional medical therapy for this condition.

Neurologic Disease

CBD has proven efficacy for treating epilepsy in people, particularly for children with refractory seizures. Low THC doses have shown efficacy in treating Parkinson disease in humans.

Cancer

In vitro studies have shown the efficacy of CBD in stopping the growth of various cancer cell types, including gliomas and prostate cancer. Cannabinoids reportedly can enhance the therapeutic benefits of chemotherapy drugs and can even increase the efficacy of radiation therapy in animal models.

Inflammation

The abundance of cannabinoid receptors in the gut suggests that phytocannabinoids can reduce inflammation in such diseases as inflammatory bowel disease and Crohn’s disease in humans. At SVVS, Mr. Cital has observed improvement of inflammatory bowel diseases with medical cannabis therapy.

Kidney Disease

The CB1 agonist anandamide is present in the kidneys in dogs, cats, and people. Study results have demonstrated that increasing the levels of anandamide or other cannabinoid agonists in the kidneys can facilitate kidney healing and improve return to function following acute kidney injury.

SELECTING A MEDICAL CANNABIS PRODUCT

The certificate of analysis (COA) is an independent laboratory analysis and one of the most important factors to consider when selecting a medical cannabis product, Mr. Cital said. The COA includes the following:

• Phytocannabinoid profile. A high level of cannabidiol indicates phytocannabinoid degradation and suggests the product is old.
• Elemental analysis. This is important if the product is from another country.
• Product picture and batch number
• Pathologic examination report
• Pesticide/fungicide analysis
• Terpenoid profile
• Microbe report

“Most companies will not provide the COA unless you ask for it,” Mr. Cital said. Even if a veterinarian is not familiar with every ingredient listed on the COA, analysis of the other COA components can generally indicate a product’s safety.

Other factors to consider when choosing a medical cannabis product include the product’s pH and the presence of solubility enhancers. A low pH indicates a highly acidic environment that can convert CBD to THC, and solubility enhancers may increase the possibility of adverse effects. Notably, a high CBD concentration in a medical cannabis product does not necessarily make that product the best choice. Importantly, the company making the product should adhere to Good Manufacturing Practice regulations.

ADMINISTERING MEDICAL CANNABIS

Mr. Cital recommended a “start low and go slow” approach when treating patients with medical cannabis. He advised starting with a dose lower than 2 mg/kg, then gradually increasing the dose to achieve the desired effect.
Because cannabinoids are metabolized by cytochrome P450 enzymes in the liver, it is important to consider other drugs that will increase (induce) or decrease (inhibit) plasma cannabinoid concentrations. Phenobarbital will induce plasma cannabinoid concentration, and itraconazole, ketoconazole, clarithromycin, cimetidine, omeprazole, and fluoxetine will inhibit it. Veterinarians should be aware that no 2 medical cannabis products are alike and that each patient will respond differently.

LEGAL COMPLEXITIES

Human medical cannabis laws have led to dramatic decreases in the use of typical prescription medications. Instead, many human patients are opting for medical marijuana to relieve pain and reduce psychosis or depression. However, the legalities surrounding both human and animal use “change every single day,” Mr. Cital noted. The legal terminology can be convoluted and confusing, leaving many unanswered questions about how medical cannabis can be used legally.

One important legal change is that the federal government is now less likely to target small businesses that sell marijuana, particularly in states that have legalized recreational marijuana use, in part because targeting these businesses is not cost-effective. This change is important for veterinary practices, Mr. Cital noted, given that the government is generally less interested in the administration of medical cannabis to animals that are not entering the food supply.

Nevertheless, in some states veterinarians still cannot legally carry or sell medical cannabis in their practices as a matter of policy, not law. Despite restrictive policy, however, legal ramifications for veterinarians selling hemp-based cannabis products have not led to any loss of licensure to date and are highly dependent on individual state veterinary medical boards. Veterinarians also cannot “prescribe” or recommend these products. Interestingly, because hemp-based products are sold over the counter, veterinarians do not need to prescribe them and they are free to legally discuss with clients what the endocannabinoid system is and how it can be supplemented.

The newly passed US Farm Bill, which includes the Hemp Farming Act of 2018, removed hemp from the federal list of controlled substances and pushed regulation to the state level. The legislation also allows hemp researchers to apply for grants from the United States Department of Agriculture and makes hemp farmers eligible for crop insurance.

Veterinary practices can establish affiliate programs with companies that sell medical cannabis. For pet owners who would like to purchase medical cannabis, their veterinarian can provide them with a code (no prescription is needed) to make an online purchase from that affiliated company. The practice can then earn a commission from those sales.

How can CBD be used in a patient’s medical record?

One option, Mr. Cital noted, is to record the use in a separate medical record. “I only recommend doing this if you are in a state with strict cannabis laws,” he said. Another option is to write a statement such as “discussed endocannabinoid system supplementation” in the traditional medical record. Clients should keep their own records with regard to CBD use in their pets in the form of a journal. This way the practitioner can assess the efficacy or any concerns after a cannabis product is started.

Veterinary practitioners have an ethical duty to reduce harm to patients. “Regardless of whether we believe the evidence is sufficient, pet owners are very interested in these products,” he said. “With the current cannabis climate and growing number of vendors, we must educate ourselves and our clients to avoid an increase in THC toxicosis.”

For topical application in cats only. Not for oral or ophthalmic use.

CAUTION: Federal law (USA) 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:

INDICATION: Mirataz™ is indicated for the management of weight loss in cats.

DOSE AND ADMINISTRATION: Administer topically by applying a 1.5-inch ribbon of ointment (approximately 2 mg/cat) on the inner pinna of the cat’s ear once daily for 14 days. Wear disposable gloves when applying Mirataz™. Alternate the daily application of Mirataz™ between the left and right inner pinna of the ears. See Product Insert for complete dosing and administration information.

CONTRAINDICATIONS: Mirataz™ is contraindicated in cats with a known hypersensitivity to mirtazapine or to any of the excipients. Mirataz™ should not be given in combination, or within 14 days before or after treatment with a monoamine oxidase inhibitor (MAOI) [e.g. selegiline hydrochloride (L-deprenyl), amitraz], as there may be an increased risk of serotonin syndrome.

HUMAN WARNINGS: Not for human use. Keep out of reach of children. Wear disposable gloves when handling or applying Mirataz™ to prevent accidental topical exposure. After application, dispose of used gloves and wash hands with soap and water. After application, gloves should be cleaned. Avoid contact with eyes and broken skin. Do not apply near eyes or on the inner pinna of the ears. Do not allow cats to come in contact with the treated cat for 2 hours because mirtazapine can be absorbed transdermally and orally. However, negligible residues are present at the application site and the body of the cat at 2 hours after dosing. In case of accidental skin exposure, wash thoroughly with soap and warm water. In case of accidental eye exposure, flush eyes with water. If skin or eye irritation occurs seek medical attention. In case of accidental ingestion, or if skin or eye irritation occurs, seek medical attention.

PRECAUTIONS: Do not administer orally or to the eye. Use with caution in cats with hepatic disease. Mirtazapine may cause elevated serum liver enzymes (See Animal Safety in the product insert). Use with caution in cats with kidney disease. Kidney disease may cause reduced clearance of mirtazapine which may result in higher drug exposure. Upon discontinuation of Mirataz™, it is important to monitor the cat’s food intake. Food intake may lessen after discontinuation of mirtazapine transdermal ointment. If food intake diminishes dramatically (>75%) for several days, or if the cat stops eating for more than 48 hours, reevaluate the cat. Mirataz™ has not been evaluated in cats < 2 kg or less than 6 months of age. The safe use of Mirataz™ has not been evaluated in cats that are intended for breeding, pregnant or lactating cats.

ADVERSE REACTIONS: In a randomized, double-masked, vehicle-controlled field study to assess the effectiveness and safety of mirtazapine for the management of weight loss in cats, 115 cats treated with Mirataz™ and 115 cats treated with vehicle control were evaluated for safety. The vehicle control was an ointment containing the same inert ingredients as Mirataz™ without mirtazapine. The most common adverse reactions included application site reactions, behavioral abnormalities (vocalization and hyperactivity), and vomiting. See Product Insert for complete Adverse Reaction information. To report suspected adverse events, for technical assistance or to obtain a copy of the SDS, contact Kindred Biosciences, Inc. at 888-608-2542. For additional information about adverse drug experience reporting for animal health products, contact 888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth

ADVANCEDNESS: The effectiveness of Mirataz™ [mirtazapine transdermal ointment] was demonstrated in a randomized, double-masked, vehicle-controlled, multi-site field study involving client-owned cats of various breeds. Enrolled cats were ≥ 1 year of age and had existing documented medical history of ≥ 5% weight loss deemed clinically significant. The most common pre-existing conditions included renal insufficiency, vomiting, and hyperthyroidism. Some cats had more than one pre-existing condition. Cats were randomized to treatment groups in a 1:1 ratio of Mirataz™ group and 0.41% in the vehicle control group. In a total of 230 cats enrolled and received either Mirataz™ (115 cats) or a vehicle control (115 cats) containing the same inert ingredients without mirtazapine. The cats were 2.8–24.6 years of age and weighed 2.1–9.2 kg. The dosage was a 1.5-inch ribbon (approximately 2 mg/cat) mirtazapine or vehicle ointment administered topically to the inner pinna of the cat’s ear. A total of 177 cats were determined to be eligible for the effectiveness analysis; 83 cats were in the Mirataz™ group and 94 cats were in the vehicle control group. The primary effectiveness endpoint was the mean percent change in body weight from Day 1 to the Week 2 Visit. At Week 2, the mean percent increase in body weight from Day 1 was 3.94% in the mirtazapine group and 0.41% in the vehicle control group. The difference between the two groups was significant (p<0.0001) based on a two-sample t-test assuming equal variances. A 95% confidence interval on the mean percent change in body weight for the Mirataz™ group is (2.77, 5.11), demonstrating that the mean percent change is statistically different from and greater than 0.

STORAGE: Store below 25°C (77°F). Multi-use tube. Discard within 30 days of first use.

HOW SUPPLIED: Mirataz™ is supplied in a 5 gram aluminum tube.

MANUFACTURED FOR: Kindred Biosciences, Inc. 1555 Bayshore Highway, suite 200 Burlingame, CA 94010

NADA 141-481, Approved by FDA
Made in USA
NDC 86078-866-01
REG-MTZBS-008 Rev. 26Apr2018
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Acute Kidney Injury in Dogs and Cats

Timely recognition of this potentially severe disease and management of associated complications are critical for patient comfort and treatment success.

By Nicola M. Parry, BVSc, MRCVS, MSc, DACVP, FRSPH, ELS

According to Sarah Steinbach, DrMedVet, DACVIM, DECvim, an assistant professor and director of the Purdue Veterinary Hemodialysis Service at Purdue University College of Veterinary Medicine in West Lafayette, Indiana, acute kidney injury (AKI) can be a serious disease that may carry a poor prognosis.

Presenting at the 2018 Purdue Veterinary Conference, which was held on the Purdue University campus in September, Dr. Steinbach emphasized the need to “recognize that AKI represents a wide spectrum of disease,” ranging from mild (without azotemia) to severe (with high-grade azotemia and serious clinical manifestations). Additionally, animals can go back and forth on the spectrum of disease severity during an AKI event, depending on how the animal is being treated, she noted. “It is a very dynamic disease.”

DIAGNOSIS AND STAGING

In most cases, Dr. Steinbach said, veterinarians are unable to identify the cause of AKI, despite extensive laboratory testing. However, some of the most commonly reported causes of AKI in small animals have infectious, toxic, ischemic, or neoplastic origins (Box 1).

A staging system now exists for veterinary patients with AKI. Dr. Steinbach said, and this provides a mechanism to help identify animals with AKI and stage their disease. However, she noted, no treatment recommendations are currently available to help guide the management of these patients.

Dr. Steinbach stressed that AKI is a multiorgan disease because the kidney affects many body systems (Box 2). For example, about 80% of dogs with AKI develop hypertension, she said. So the treatment plan must also be wide ranging to address associated problems such as hypertension and gastrointestinal ulceration.

Indeed, the many complications that can arise in animals with AKI point to the intensive care needs of patients with this condition. This disease cannot typically be managed on an outpatient basis, she noted.

TREATMENT

Overall, timely recognition of AKI and management of its associated complications are critical for patient comfort and treatment success. Veterinarians should treat the primary cause of the AKI, if it is known, Dr. Steinbach said. Otherwise, treatment should aim to support the animal while its kidneys heal.

Although the goal is to restore and maintain hydration in animals with AKI, she cautioned veterinarians to take care to avoid fluid overload in these patients. “In 99.9% of [cases] when we have excessive edema in these patients, it’s our fault,” she emphasized, “because we give them too much fluid.”

Fluid overload is bad, she explained, adding that in dogs, “the odds ratio for death increases by 1.08 with each 1% increase in fluid overload.” In critically ill people with AKI, fluid overload is independently associated with mortality. Dr. Steinbach said, sharing the results of a study in which patients with fluid overload at the time of their peak level of serum creatinine were significantly less likely to recover kidney function.

“You cannot just ‘flush’ the kidneys,” she stressed. Fluid diuresis does not improve the animal’s glomerular filtration rate.

If fluid therapy fails to restore urine output in veterinary patients with AKI, diuretic therapy may be used. In human medicine, diuretic therapy is contraindicated in such cases, Dr. Steinbach said, and these patients undergo hemodialysis.

However, because hemodialysis is not always an option for small animal patients, she noted, diuretic therapy may be used. Nevertheless, because it is the best-practice treatment in these instances, the patient should undergo hemodialysis if an owner is able and willing to choose this option. In particular, in patients with AKI, insufficient urine output that results in either fluid retention and edema or hyperkalemia is an absolute indication for hemodialysis.

“The earlier we can intervene with dialysis, the better for the patient,” Dr. Steinbach stressed.

References available at AmericanVeterinarian.com.

Dr. Parry, a board-certified veterinary pathologist, graduated from the University of Liverpool in 1997. After 13 years in academia, she founded Midwest Veterinary Pathology, LLC, where she now works as a private consultant. Dr. Parry writes regularly for veterinary organizations and publications.
What’s New With Canine Cushing Disease?

Current options for diagnosing, treating, and monitoring hyperadrenocorticism.

By Kerry Lengyel

(continued from front cover)

At the 2018 Atlantic Coast Veterinary Conference®, held in October in Atlantic City, New Jersey, Peter S. Chapman, BVetMed, DECVM-CA, DACVIM, MRCVS, who practices at a large, multispecialty hospital in the Philadelphia, Pennsylvania, area, walked attendees through a rational approach for diagnosing and managing this relatively common disease. HAC is one of the most challenging endocrinopathies seen in dogs, he said, but with the right testing protocol and treatment options in place, these patients can live longer, happier, and healthier lives.

DIAGNOSIS DEMYSTIFIED

The most commonly used screening tests for HAC are the urine cortisol-to-creatinine ratio, the ACTH (adrenocorticotropic hormone) stimulation test, and the low-dose dexamethasone suppression (LDDS) test. The ACTH stimulation and LDDS tests each have advantages and disadvantages, Dr. Chapman said. The ACTH stimulation test has a sensitivity of approximately 65%, likely will not identify adrenal tumor-based HAC, and can yield false-positive results when concurrent illness, such as diabetes, is present. The cost of performing the ACTH stimulation test can present further challenges, although cost-cutting strategies (eg, using a lower cosyntropin dose of 5 mcg/kg, freezing aliquots of cosyntropin to extend the shelf life to 6 months) can offset some of these issues. “In general, the test cannot be recommended as a first-line test for diagnosis of HAC,” Dr. Chapman said, but it still has applications for initial diagnosis and for monitoring dogs being treated for HAC.

In contrast, the LDDS test is 95% sensitive, has good specificity, is less expensive to perform (compared with the ACTH stimulation test), and can identify dogs with adrenal tumors. But Dr. Chapman cautioned that the effects of short-term stress should be taken into consideration when performing this test.

“Basically, any kind of stress can potentially cause an adrenal response and increase production of corticosteroids,” Dr. Chapman said. So, the acute stress associated with hospitalization and drawing blood can affect the pet’s cortisol levels for the LDDS test, but will not alter the results of the ACTH stimulation test. Patients should be kept as quiet as possible to help reduce the effects of acute stress on LDDS test results.

Traditionally, the high-dose dexamethasone suppression (HDDS) test has been used to differentiate pituitary-dependent HAC from adrenal tumor. But Dr. Chapman rarely performs this test and instead prefers abdominal ultrasound for this purpose. “In pituitary-dependent HAC, both adrenals are expected to be normal or enlarged. In patients with an adrenal tumor, a mass or nodule may be identified, and the contralateral adrenal should be small,” he said.

HOW TO TREAT, OR NOT TO TREAT

Most dogs with HAC, Dr. Chapman said, are otherwise healthy. After testing the patient, the veterinarian needs to decide whether the benefits of treatment justify the risks for the patient and the expense for the owner. “The decision to treat should always be made based on the impact of the pet’s clinical signs on the quality of life of dog and owner,” he advised.

Surgical options (eg, adrenalectomy for adrenal tumors) are available, but Dr. Chapman noted that dogs with HAC usually have a high risk of complications when undergoing surgery and that it’s extremely important to make an accurate diagnosis prior to determining the optimal treatment plan.

Medical treatment is, by far, the most common approach to controlling HAC. Dr. Chapman discussed the two drug options, trilostane and mitotane, noting some of their risks and benefits. Trilostane is a reversible inhibitor of cortisol production given at a twice-daily dose of 1 to 2 mg/kg; it is less effective when given once daily, he said, because of its 6- to 12-hour duration of effect. Mitotane, which is cytotoxic to adrenal cortex cells but spares zona glomerulosa cells responsible for mineralocorticoid production, is initiated at a daily dose of 50 mg/kg and then maintained at a weekly dose of 50 mg/kg. It may be a good option for dogs that don’t respond to trilostane. The primary complications associated with these drugs are hypocortisolemia (trilostane) and hypoadrenocorticism (mitotane).

“No clear benefit of one medication over the other has been demonstrated for dogs with pituitary-dependent HAC,” Dr. Chapman said. He explained that prolonged median survival times (>2 years) have been reported with both medications, with most patients succumbing to problems other than the primary disease.
New Veterinary Oncology Therapeutics

Cancer research is advancing at an unprecedented pace, bringing a host of new treatment possibilities.

By Chad M. Johannes, DVM, DACVIM (SAIM, Oncology)

(continued from front cover)

CLINICALLY AVAILABLE ONCOLOGY IMMUNOTHERAPIES

Canine Osteosarcoma Vaccine, Live Listeria Vector (AT-014; Aratana Therapeutics)

What it is: A lyophilized formulation of a modified-live, attenuated, recombinant HER2/neu–expressing strain of Listeria that activates cytotoxic T cells.[1,2]

Approval: Conditionally licensed by the USDA in December 2017 for the treatment of dogs 1 year or older diagnosed with appendicular osteosarcoma[1]; administered in a series of 3 doses given 3 weeks apart, with boosters every 6 months.

Clinical data: The nonlyophilized form of this therapeutic (see next section) was administered to dogs with appendicular osteosarcoma[1]; administered in a series of 3 doses given 3 weeks apart, with boosters every 6 months.

A field safety study with AT-014 (submitted to the USDA for conditional licensure) revealed the most common adverse events to be lethargy, diarrhea, and fever. Four serious adverse events were observed.[2]

Aratana is now conducting an extended clinical field study as required by the USDA to progress to full licensure. The vaccine is currently available for purchase at approximately 2 dozen US veterinary oncology practice groups throughout the country that are participating in the extended field study.[2,4]

Canine Osteosarcoma Vaccine (ADXS31-164; Advaxis Immunotherapies/Aratana Therapeutics)

What it is: A nonlyophilized, frozen form of the USDA conditionally licensed therapeutic AT-014 (discussed above).

Approval: This product is available via clinical trial only and has not been licensed by USDA.

Clinical data: Although the role of HER2/neu expression and targeting has been debated, clinical investigator Nicola Mason, PhD, BVetMed, estimates that 70% to 80% of canine osteosarcoma samples evaluated in her laboratory at the University of Pennsylvania School of Veterinary Medicine stain positively via immunohistochemistry using a polyclonal anti-HER2/neu antibody.[3]

ADXS31-164 is also being employed in a separate multicenter clinical trial evaluating safety and efficacy in dogs with osteosarcoma (target enrollment is 100). This study is funded by Morris Animal Foundation and coordinated by the Comparative Oncology Trials Consortium (part of the National Institutes of Health), with 11 participating sites.[1,5]

Canine Lymphoma Vaccine, DNA (Merial/Boehringer Ingelheim)

What it is: Xenogeneic murine CD20 DNA therapeutic vaccine for use in dogs with B-cell lymphoma.

Approval: Conditionally licensed by the USDA in 2015 for the therapeutic immunization of dogs diagnosed with large B-cell lymphoma upon achieving remission through chemotherapy.

Clinical data (personal communication, Merial/Boehringer Ingelheim, May 2018): No peer-reviewed data have been published to date. A preclinical safety study was performed in 45 dogs, the results of which have not yet been published.
A multicenter international randomized controlled safety and efficacy study in dogs with large B-cell lymphoma was initiated in April 2014. In this study, remission was induced with a CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone)-based chemotherapy protocol and followed by vaccination (4 doses given at 2-week intervals). More than 60 dogs have been enrolled; results are pending.

Another multicenter randomized controlled study in dogs with large B-cell lymphoma concurrent with CHOP-based chemotherapy, which was started in April 2016, is evaluating humoral CD20 antibody response. Enrollment of 24 dogs is targeted; results are pending.

**Feline Interleukin-2 (IL-2) Immunomodulator Vaccine (Merial/Boehringer Ingelheim)**

**What it is:** Recombinant canarypox virus (ALVAC) expressing feline IL-2.

**Approval:** Approved by the European Medicines Agency in 2013 (Oncept IL-2); conditionally licensed by the USDA in 2015 to delay postsurgical recurrence of feline fibrosarcoma in adult cats with stage I disease.6

**Clinical data:** Adjuvant treatment of feline injection-site sarcomas with this immunotherapy in conjunction with surgery and brachytherapy has been described.7 Treatment was well tolerated, with adverse events limited to mild local reactions. The treatment (low dose) group had a significantly longer median time to relapse than did the reference group.7

A multicenter randomized controlled trial to further evaluate the efficacy and safety of this vaccine as an adjunct to surgical resection of primary (first occurrence) stage I feline fibrosarcoma was initiated in April 2015. The enrollment target is 75 cats; results are pending (personal communication, Merial/Boehringer Ingelheim, May 2018).

**CD52**

**What it is:** Documented therapeutic target in certain human T-cell lymphoid malignancies; target not yet identified on canine lymphoid cells.

**Clinical data:** Although an anti-CD52 monoclonal antibody is fully licensed (Tactress, Aratana), the drug manufacturer has stated that Tactress is not as specific to the CD52 target as expected.11 No peer-reviewed data are available on this therapeutic to date, and it is not commercially available.

**On the horizon:** Whether CD52 becomes an active target for future veterinary therapeutics remains to be determined.

**CYTOTOXIC CHEMOTHERAPEUTICS AND INTRATUMORAL THERAPIES**

**Rabacfosadine (Tanovea-CA1; VetDC)**

**What it is:** Prodrug of the nucleotide analogue 9-(2-phosphonylmethoxyethyl) guanine (PMEG); effectively loads lymphoid cells while reducing levels of PMEG in plasma and target organs of toxicity.

**Approval:** Conditionally approved by the FDA in January 2017 for the treatment of lymphoma in dogs; became available to veterinarians in spring 2017.14

**Clinical data:** Tanovea-CA1 has been or is being evaluated in clinical studies involving over 500 dogs (personal communication, VetDC, May 2018). For example, in a phase 1/2 trial in 38 dogs with non-Hodgkin lymphoma using different dose schedules, 30 (79%) dogs receiving Tanovea-CA1 monotherapy achieved clinical remission (23 [61%] complete remission [CR] and 7 [18%] partial remission [PR]). Median first remission duration for all dogs was 128 days.15 In other studies, the drug: »

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**Table. Approved or Licensed Veterinary Oncology Therapeutics in the United States**

<table>
<thead>
<tr>
<th>TRADE NAME</th>
<th>COMPOUND</th>
<th>COMPANY</th>
<th>INDICATION</th>
<th>US REGULATORY STATUS (YEAR)</th>
<th>SPECIES</th>
<th>COMMERCIAL AVAILABILITY</th>
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<td>Aratana Therapeutics</td>
<td>B-cell lymphoma</td>
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<td>Aratana Therapeutics</td>
<td>Osteosarcoma</td>
<td>USDA conditional license (2017)</td>
<td>Canine</td>
<td>Yes</td>
</tr>
<tr>
<td>Not available</td>
<td>Feline interleukin-2 immunomodulator</td>
<td>Aratana Therapeutics</td>
<td>Primary stage I fibrosarcoma</td>
<td>USDA conditional license (2015)</td>
<td>Feline</td>
<td>Yes</td>
</tr>
<tr>
<td>Immunocidin</td>
<td>Mycobacterium cell wall fraction</td>
<td>NovoVive</td>
<td>Mammary tumors</td>
<td>USDA licensed (2009)</td>
<td>Canine</td>
<td>Yes</td>
</tr>
<tr>
<td>Oncet</td>
<td>Canine melanoma vaccine, DNA</td>
<td>Merial/Boehringer Ingelheim</td>
<td>Melanoma</td>
<td>USDA licensed (2010)</td>
<td>Canine</td>
<td>Yes</td>
</tr>
<tr>
<td>Palladia</td>
<td>Toceranib phosphate</td>
<td>Zoetis</td>
<td>Grade 2/3 mast cell tumor</td>
<td>FDA approved (2009)</td>
<td>Canine</td>
<td>Yes</td>
</tr>
<tr>
<td>Tactress</td>
<td>Canine lymphoma monoclonal antibody, T-cell</td>
<td>Aratana Therapeutics</td>
<td>T-cell lymphoma</td>
<td>USDA licensed (2016)</td>
<td>Canine</td>
<td>No</td>
</tr>
<tr>
<td>Tanovea-CA1</td>
<td>Rabacfosadine for injection</td>
<td>VetDC</td>
<td>Lymphoma</td>
<td>FDA conditional approval (2017)</td>
<td>Canine</td>
<td>Yes</td>
</tr>
</tbody>
</table>

FDA indicates Food and Drug Administration; USDA, United States Department of Agriculture.
• Was used with prednisone in dogs with naïve and relapsed lymphoma \( (n = 74) \).
• Was administered at different doses in dogs with naïve and relapsed lymphoma \( (n = 63) \).
• Was alternated with doxorubicin in dogs with naïve lymphoma \( (n = 51) \).
• Was given at different doses in dogs with relapsed lymphoma that underwent 1 prior doxorubicin-containing regimen \( (n = 50) \).
• Was evaluated for efficacy in dogs with cutaneous T-cell lymphoma \( (n = 11) \) and multiple myeloma \( (n = 14) \).
• Is being evaluated for use in cats with lymphoma.

Assessing all studies that have been evaluated for reasonable expectation of efficacy as part of FDA conditional approval, the overall response rate in dogs with lymphoma is 77% (45% CR, 32% PR). Tanovea-CA1 has demonstrated reasonable expectation of efficacy in dogs with lymphoma that are naïve to chemotherapy, as well as in those that have relapsed or are refractory to conventional chemotherapy (personal communication, VetDC, May 2018).

VetDC has communicated that the pivotal efficacy study for Tanovea-CA1 was to be initiated in fall 2018, with expected enrollment of 135 dogs with naïve and relapsed lymphoma (100 treated, 35 placebo) (personal communication, VetDC, May 2018).

**On the horizon:** The best clinical use and fit for Tanovea-CA1 will be defined as more clinical experience and published data become available. Based on currently available information, Tanovea-CA1 is a potential option for clients who desire a single-agent treatment with fewer visits than conventional multi-agent CHOP requires. Additionally, it has potential use as a second or third line of therapy following CHOP and/or MOPP (methotrexate, vincristine, procarbazine, prednisone) multiagent protocols.

**Tigilanol Tigate (EBC-46; QBiotics)**

**What it is:** Novel anticancer pharmaceutical protein kinase C activator, isolated from the seeds of *Fontainea picrosperma* (blushwood tree)24,25 and used for intratumoral injection; proposed FDA Center for Veterinary Medicine and European Medicines Agency indication: nonmetastatic skin mast cell tumors in dogs (personal communication, QBiotics, May 2018).

**Approval:** FDA application was expected in August 2018; European Medicines Agency centralized submission was planned for September 2018.

**Clinical data:** In Australian clinical trials in which more than 100 dogs with mast cell tumors were treated with EBC-46, 79.7% had CR following a single injection, and 72.9% were tumor free in 12 to 24 months (data collection ongoing; personal communication, QBiotics, May 2018). Efficacy programs have been completed, including a pivotal clinical efficacy trial in the United States (11 sites, \( n = 122 \) dogs), the results of which have not yet been published.

**ONCOLOGY SUPPORTIVE THERAPEUTICS**

**Capromorelin Oral Solution**

**Capromorelin Oral Solution (Entyce; Aratana Therapeutics)**

**What it is:** An orally active small molecule that mimics the action of ghrelin, which causes growth hormone secretion and appetite stimulation; has significant potential to treat inappetence related to chemotherapy and/or underlying cancer in dogs and possibly cats.

**Approval:** Approved by the FDA in May 2016 for appetite stimulation in dogs; became available to veterinarians in fall 2017.

**Clinical data:** Capromorelin oral solution dosed at 3 mg/kg/day has been shown to increase food intake and weight gain in both healthy laboratory and inappetent client-owned dogs.20–23 The drug has demonstrated a wide margin of safety, being well tolerated at daily doses up to 40 mg/kg for 12 consecutive months.

When administered to healthy dogs for 7 days, capromorelin produced increased insulin-like growth factor 1 (IGF-1) concentrations on day 1 that were sustained through day 7.24 IGF-1 is an important anabolic growth factor for regulating muscle hypertrophy.25 Via this mechanism, capromorelin may be able to help reverse muscle atrophy/loss that occurs due to chronic medical conditions.

Anamorelin, a therapeutic with a similar mechanism, has been studied in the treatment of cancer-related cachexia in human non-small cell lung cancer. Results showed that anamorelin significantly increased lean body mass and may be a valid treatment option for human patients with cancer anorexia and cachexia.26 Capromorelin has been demonstrated to cause increases in IGF-1 and increased food intake and body weight in cats.22

**On the horizon:** Aratana is also developing a feline-specific formulation with additional studies pending.

**Mirtazapine Transdermal Ointment**

**Mirtzapine Transdermal Ointment (Mirataz; Kindred Biosciences, Inc)**

**What it is:** A generic tetracyclic antidepressant for humans with ancillary properties that include anxiolytic, sedative, antiemetic, and appetite stimulant effects.

**Approval:** Approved by the FDA in May 2018 for managing weight loss in cats.20 The transdermal ointment is administered topically at a dose of 2 mg/cat/day for 14 days via a 1.5-inch ribbon on the inner pinna.20 It is available commercially.

**Clinical data:** The pivotal efficacy study included 177 cats, 83 treated with Mirataz and 94 with vehicle control. The primary efficacy endpoint was percentage change in body weight at 14 days. At study end, the mean percentage increase in body weight from day 1 was 3.94% in the miratazpine group compared with 0.41% in the vehicle control group.

The difference between the 2 groups was significant \( (P < .0001) \).

The most common adverse events reported in cats (>10%) treated with Mirataz included vocalization (11.3%), vomiting (11.3%), and erythema at the application site (10.4%).24

**Immunotherapy is leading the way in human oncology treatment development, and this trend is following in veterinary oncology.**

**Canine-Specific Crofelemer (Canalevia, Jaguar Animal Health and Elanco)**

**What it is:** Active pharmaceutical ingredient isolated and purified from the *Croton lechleri* tree that contains antisercretry properties27; not absorbed systemically at the therapeutic dose but acts locally in the gastrointestinal tract.28

**Approval:** In February 2017, Jaguar announced an agreement to license, develop, and commercialize Canalevia jointly with Elanco. Jaguar has retained commercial responsibility for the chemotherapy-induced diarrhea indication of Canalevia in dogs, which has received minor use and minor species designation from the FDA and which the company expects will be the first indication available commercially (timeline not specified).29

**Clinical data:** None available.

**On the horizon:** Canalevia is an oral, enteric-coated, twice-daily formulation being developed for the treatment of acute and chemotherapy-induced diarrhea in dogs.25-30

**References available at Americanveterinarian.com.**

**Disclosures**

Within the past 3 years, Dr. Johannes has the following disclosures relevant to this article: Aratana Therapeutics (advisory board, paid consultant, clinical trial); Jaguar Animal Health (clinical trial); Merit/Boehringer Ingelheim (research grant); NovaVive (paid consultant, research grant); QBiotics (advisory board, paid consultant); VetDC (paid consultant); Zoetis (advisory board, research grant).

Dr. Johannes is an assistant professor of oncology at the Iowa State University College of Veterinary Medicine. His practice experience includes primary care, specialty care, and academic settings. His areas of research interest include oncology therapeutic development, immunotherapeutics, and effective management of treatment-related adverse effects.
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Reducing Stress in Hospitalized Patients

According to 2 recent article series, stress-management tools benefit patients, pet owners, and veterinary staff.

By Natalie Stilwell, DVM, MS, PhD

(continued from front cover)

RECOGNIZING SIGNS OF STRESS
In her article series, Dr. Hewson offered many physiologic and ethologic reasons for stress in small animal patients.1 Hospitalization involves removing the pet from its territory and social group, including the owner; housing it in an unfamiliar environment; and potentially exposing it to pain and fear during treatment.

Stress can elevate certain physiologic parameters, including heart rate, respiratory rate, body temperature, and blood pressure. Neutrophilia may reflect stress but is easily mistaken for an inflammatory response, particularly in an ill or injured patient.2 Results of several studies demonstrate that salivary cortisol level or urinary cortisol-to-creatinine ratio may increase during kenneling or hospitalization and correlate with anxious behavior.3-10

Ultimately, impaired immune function impedes the patient’s recovery.2

Both investigators emphasized the importance of recognizing behavioral indicators of stress that can complicate handling and treatment.1,4 In dogs, these include salivation, anorexia, shaking, pacing, digging, low tail carriage, hiding, increased aggression, and urination or defecation. Stressed cats often appear fearful and anxious and may attempt to hide in cage accessories, such as a blanket or litter box. If no cage accessories are available, cats may appear depressed and avoid routine behaviors such as feeding, grooming, and elimination. Patients that are unwilling to eat or eliminate may require hand feeding, appetite stimulants, or cystocentesis, potentially resulting in additional handling and distress for the patient. In extreme cases, stressed patients may self-mutilate and destroy bandages or sutures, further complicating and prolonging the recovery process.

METHODS TO ALLEVIATE STRESS

Environmental Enrichment
Dr. Hewson explained that many veterinary hospitals are designed purposely as “barren environments” to streamline procedures and reduce costs.3 Cages are typically devoid of environmental enrichment and offer no opportunities to retreat from stimuli, such as loud noises or nearby people and animals. Providing opportunities for normal behaviors can alleviate stress during hospitalization.11

Environmental enrichment encompasses multiple aspects of physical and mental well-being, including housing, feeding, sensory stimulation, exercise and occupation, and social interactions. The investigators recommended addressing as many of these components as possible for patients during hospitalization.13

Veterinary hospitals often consist of unnatural social environments that separate social dogs from each other and place solitary animals, such as cats and exotic species, uncomfortably close to dogs. When possible, Dr. Hewson recommended housing cats and exotics separately from dogs.12 She also advised placing feline patients in higher cages where they will feel more secure.

Providing a box for hiding and perching is also particularly useful for anxious cats. An object as simple as a cardboard box or the top or bottom half of a carrier allows for hiding, perching, and pheromone marking via facial rubbing. Results from shelter studies show that cats that are given access to a hiding box show reduced signs of stress; increases in sleep, relaxed body positions, and interest in visitors; and a significantly lower incidence of illnesses requiring isolation and euthanasia compared with control cats.13,14 If providing a hide box for feline patients is not feasible, Dr. Hewson advised partially covering the cage door with a towel for increased privacy.7

Canine patients with excess energy may exhibit signs of frustration, such as incessant barking, that disrupt the hospital environment and increase distress in other patients. Bored patients should be provided with items for play and occupation.2 Dogs often benefit from having a chew toy, preferably one from home, or a toy containing kibble or treats. Easy, disposable toys for restless feline patients include a paper bag or a ball of crumpled aluminum foil.15

Treat Each Patient as an Individual
Both investigators emphasized the powerful effect, whether positive or negative, the veterinary team has on a patient’s hospitalization experience. Each patient has a unique temperament and needs, and a few simple measures can encourage cooperation and bonding with veterinary staff.16 Taking a few minutes to brush, groom, or pet a hospitalized patient helps alleviate anxiety and foster trust.2 Results from one study showed that shelter dogs that received positive human interaction had lower salivary cortisol levels and demonstrated less anxious behavior compared with control dogs that received no human interaction.17

Dr. Hewson also mentioned that many nervous patients prefer being handled by a single staff member for treatments during hospitalization.18 Notes on patient handling and behavior should be included in the medical record to ensure that members of the veterinary team provide consistent care during subsequent visits. Providing an individualized approach to patient care helps alleviate owner anxiety and increases trust in the veterinary team.
Comparing with humans, dogs and cats have heightened senses of smell and hearing. In the hustle and bustle of a busy workday, it is easy to overlook potentially frightening stimuli, such as loud voices or quick movements. Both investigators recommended using gentle patient handling techniques rather than rough handling or rushing. Also avoid actions that may be perceived as confrontational, such as using direct eye contact or approaching the patient from above. Instead, crouch to the patient’s level and provide food and treats during handling to ease fear. Ms. Almond recommended approaching patient care using principles from the HAPPY mnemonic (Box).19

**Box. Keeping Hospitalized Patients HAPPY**

Caring for hospitalized patients may be easier and more effective when using principles from the HAPPY mnemonic:

**Health:** How is the patient feeling?

**Anticipation:** Allow the patient to process what is happening, and do not rush through procedures.

**Perception:** Be aware of how the patient perceives its surroundings, and minimize potentially frightening actions.

**Peace:** Provide opportunities for the patient to rest throughout its stay.

**You:** Your actions can significantly affect the patient’s hospitalization experience.

**HOLISTIC THERAPIES**

Dr. Hewson and Ms. Almond explained the increasing popularity of several holistic therapies in human medicine. Three methods in particular were discussed for their potential roles in veterinary care: aromatherapy, pheromones, and music.2,4

**Aromatherapy**

Although the use of essential oils is becoming increasingly popular, some study results suggest that their primary benefits are psychological rather than physiologic. Relatively few studies have examined essential oil use in animals. In one study, the use of lavender straw during transport of pigs reduced signs of motion sickness but did not affect salivary cortisol or stress-related behaviors.21

Another essential oil, valerian root, reportedly offers anxiolytic benefits by acting on the gamma-aminobutyric acid system. One study found that intraperitoneal dosing of valerian root and its active ingredient, valerencic acid, in rats resulted in significantly reduced anxious behavior compared with rats in the control group. However, another study found that the use of a valerian oil plug-in diffuser did not reduce anxious behavior in dogs that were placed in an unfamiliar room.21

**Pheromones**

Synthetic pheromones, which are commercially available in many forms, are used to mimic natural chemicals released to alter behavior and physiology among members of the same species. Examples include Feliway, a synthetic form of the feline F3 facial pheromone secreted by the vibrissae area and cheeks, and Adaptil, a synthetic form of the dog-appeasing pheromone (DAP) produced by lactating dogs in the first few days after whelping.

Two studies examining the use of Feliway spray for hospitalized cats offered insufficient evidence of the product’s efficacy, as multiple other variables existed that may have contributed to results.22,25 In one canine study, use of a DAP diffuser in a hospital setting produced relaxation but did not abate aggressive behavior;26 however, another study found that dogs exposed to DAP had fewer signs of separation anxiety, such as lip licking and pacing, compared with dogs that were not exposed to pheromone.27

Several studies have examined use of a DAP pheromone collar, with variable results. One study found that wearing a pheromone collar for 4 weeks did not reduce stress-related behavior in dogs transitioning from foster homes to a military training environment; however, another study determined that the use of pheromone collars significantly reduced fear and anxiety in dogs exposed to a simulated recording of a thunderstorm.28

Both investigators believed the existing data offer insufficient evidence of pheromone effectiveness. Instead, other tactics, such as environmental enrichment, are more likely to alleviate stress. As pheromone production is highly individualized, further research is needed to examine whether commercial formulations and concentrations of synthetic pheromones are adequate for therapeutic benefit.1-3

**Many veterinary hospitals are designed purposely as “barren environments” to streamline procedures and reduce costs.**

**Music**

Many human studies have demonstrated the use of music as a mediator of anxiety. In one study, students showed reduced anxiety, lowered heart rate and blood pressure, and increased academic performance while listening to music. Another study reported decreased pain, anxiety, blood pressure, and heart rate in human patients who listened to music compared with those who did not.29

In a shelter study, dogs barked less and rested more after being exposed to classical music; talk radio and pop music offered no perceived benefit.22 Another study reported that playing classical music in a kennel environment did not affect canine salivary cortisol levels but that study dogs showed decreased physiologic and psychological signs of stress. Many musical recordings are now marketed specifically for pets.

**SUMMARY**

Several methods of reducing stress in small animal patients, such as environmental enrichment and modified handling techniques, are supported by peer-reviewed data. Although the benefits of many holistic approaches, such as music and aromatherapy, are subjective, the investigators noted that they cause no apparent harm and, therefore, may be warranted for use especially in fearful or anxious patients.2,4

Both investigators emphasized the rewards gained by alleviating patient stress during hospitalization, including improved welfare, increased immune function, and an easier recovery process. Relaxed patients also tend to be less fearful during subsequent visits, making patient care more effective for the veterinary team and more enjoyable for the pet and owner.14,15,34,35

**References available at AmericanVeterinarian.com.**

Dr. Stilwell received her DVM from Auburn University, followed by an MS in fisheries and aquatic sciences and a PhD in veterinary medical sciences from the University of Florida. She provides freelance medical writing and aquatic veterinary consulting services through her business, Seastar Communications and Consulting.
pituitary tumors surgically from dogs and cats. Dr. Owen has performed transsphenoidal hypophysectomy on nearly 60 animals in the past 8 years.

Each year Cushing disease (hyperadrenocorticism) is diagnosed in approximately 100,000 dogs, about 85% of which have a pituitary tumor. Surgery is the gold standard for treating pituitary tumors in people—and in dogs and cats in some parts of Europe—but in the United States medication and radiation tend to be the recommended routes of treatment.

In addition to performing about 1 transsphenoidal hypophysectomy procedure per month, the group published 4 papers on the topic last year. American Veterinarian spoke with these pioneers about how they approach the surgical excision of pituitary tumors in dogs and cats and what they want the veterinary community to know about making surgery one of the first lines of treatment.

What factors come into play in selecting treatment for patients with pituitary tumors?

Tina Owen, DVM, DACVS: Three treatment options exist for these patients: medical management, radiation therapy, and surgery. Which option is chosen depends on the owner and the patient. The owner must be willing to move forward with surgery, and he or she must understand the risks and complications associated with the procedure.

Linda Martin, DVM, MS, DACVECC: Surgical treatment is more expensive than either medical therapy or radiation. We find owners who are really interested in trying to achieve that potential cure for their pet and are willing to take some of the risks that are involved with surgery. Because of the expense, it does select for a certain group of owners who are able to provide that type of care.

Annie Chen-Allen, DVM, MS, DACVIM: The other factor to consider is what the tumor is doing to the patient—whether it’s causing endocrine signs or not—for example, if the patient has Cushing disease, diabetes, or acromegaly. When the pituitary tumor is functional, we tend to assume it is an adenoma. From a surgical standpoint, those tumors are going to be more easily removable because they are softer, so we feel we can better predict the tumor consistency in patients with functional disease as opposed to nonfunctional disease.

Dr. Owen: In addition, the overall health of the animal, the infiltrative nature of the tumor, and the size of the tumor all make a difference in selecting the ideal treatment. There is more potential for neurologic signs with larger tumors.

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What is transsphenoidal hypophysectomy, and when would it be the best treatment option?

Dr. Owen: Transsphenoidal hypophysectomy is the surgical removal of a pituitary tumor or the pituitary gland through the basi-sphenoid bone at the base of the skull. The surgery is very comparable between animals and humans. In people, the surgeon approaches the pituitary through the nose. In dogs and cats, the approach is a bit different because of the shape of the skull. We approach the tumor through the mouth and through the soft palate, to the basi-sphenoid bone.

The most common reason we would perform surgery on a dog is for pituitary-dependent Cushing disease. In cats, it’s acromegaly or overproduction of growth hormone due to a pituitary tumor.

Dr. Chen-Allen: In cats especially, we feel there is more of a push for surgery because when they’re acromegalic they often have insulin resistance that leads to uncontrolled diabetes mellitus. In those situations, there really is no good medical management. There’s not a drug you could give to control the diabetes successfully long-term, and so in that situation surgery becomes a really good option because often we’re able to put them in diabetic remission to cure their diabetes and also cure their acromegaly.

Dr. Owen: Surgery allows us to diagnose by histopathology. No other treatment option provides tumor tissue to be able to make a diagnosis, which can help plan postoperative care and also prognosticate. Surgery also allows us to decompress the tumor, so we can gain rapid control of the neurologic signs and endocrine signs if it’s a functional tumor.

It also allows us the potential for cure. Although we don’t know the definition of cure in animals, people are considered cured following pituitary tumor surgery if they have no endocrine or neurologic relapse for 5 years.

What would you like other veterinarians to know about this surgery?

Dr. Owen: We know from the literature and from experience that success rates with surgery are higher when treating smaller tumors. So we’re trying to educate the public and the veterinary community that we need to see these tumors when they’re smaller.

Also, acromegaly in cats can be treated with radiation, but it takes a long time to gain control of the endocrine signs and a long time to shrink the tumor. We would like to see these cases sooner to try and remove the tumor when it’s much smaller, before the patient becomes neurologic, then we have a better chance at a successful outcome.

Dr. Chen-Allen: The earlier surgery is performed, the better the chance is to remove the tumor completely and the lower the risk of complications. We advocate brain imaging as part of the initial workup when cats and dogs are diagnosed with acromegaly and Cushing disease. This will help owners decide in the initial stages—before it’s too late—whether surgery is an option. If we can catch these tumors when they’re smaller, before the patient becomes neurologic, then we will decide whether the animal is a good surgical candidate.

If the procedure is planned, the clients come in and meet the team. Dr. Chen-Allen is our neurologist and assists Dr. Owen with the surgery—she is her right-hand woman, so to speak. As a group we try to help each other whenever we can. I am not a surgeon, but I am in surgery assisting with anesthesia and patient care, and helping Drs. Owen and Chen-Allen with anything they might need.

Once the surgery is finished, the ball is in my hands. I manage the postoperative care, which includes monitoring the patient and overseeing the tests that need to be completed. Of course, I receive a lot of assistance from other team members. It’s by far not just the 3 of us; we have a lot of support. Because we work well together as a team we can provide the best care possible for our clients and our patients.

How does your team approach at WSU shape the care you are able to provide?

Dr. Martin: I think the team approach is very helpful when it comes to doing pituitary surgery. The surgery itself is a very difficult, and Dr. Owen has trained for many years to provide this service. She is the one who initially discusses the surgery with the clients or referring veterinarians. Between them, they will decide whether the animal is a good surgical candidate.

Dr. Owen: The success rate of pituitary surgery is very similar in people and animals—80% to 90% of people, dogs, and cats achieve disease remission with surgery. There is about a 25% rate of recurrence, usually because small remnants of tumor are left behind.

If a tumor recurs, the treatment could be a combination of things. We could repeat the surgery—although we don’t do that very often—they can have radiation as a follow-up treatment or, depending on the tumor type, chemotherapy may be potentially helpful. This is where getting tissue from the tumor, submitting it for histopathology, and getting a diagnosis can really help with follow-up treatments or to plan for subsequent care in case of recurrence.

Dr. Owen: I think the owners are very appreciative because the 3 of us are there to explain our respective roles when clients come in for the initial consult, and we are there throughout the pet’s care at the hospital, which can be 7 to 10 days or so. When pet owners see a cohesive team working together I think they are much more comfortable with their decision and know that their animals are in very good care.
(continued from front cover) recently published study, clinicians evaluated the frequency with which owners administered dietary supplements, which supplements were commonly given, and the owners’ rationale for or against using those supplements. The authors also presented a review of current evidence for potential benefit and potential drug interactions for the most common supplements reported.

STUDY DESIGN
Data were collected through a prospective survey of owners of epileptic dogs, administered online from April to June 2017. To be included in the analyses, dogs must have met the criteria for tier 1 evidence for diagnosis of idiopathic epilepsy based on the International Veterinary Epilepsy Task Force guidelines. Once surveys were complete, owners were categorized as having recently used, previously used, or never used supplements as part of the management plan for their pet’s idiopathic epilepsy. For those who used dietary supplements, the questionnaire also included the type of supplement administered, how and why the supplement was chosen, the reason for stopping the supplement, and any perceived adverse effects.

RESULTS AND DISCUSSION
Of the 547 responses, 297 met the inclusion criteria and were used in the analyses. Respondents were from the United Kingdom, United States, Canada, Germany, and Australia. Seventy-one percent of the dogs included in the study had generalized seizures, and 87.8% received concurrent AEDs. The most frequently administered AED was phenobarbital (n = 207), either alone (n = 61) or in combination with other AEDs (n = 146). Dogs receiving dietary supplements were significantly more likely to have been prescribed multiple AEDs, either in the past or currently (P = .012); however, the number of seizures was not associated with the use of dietary supplements (P = .064). Cluster seizures were also not associated with the use of dietary supplements (P = .714), but dogs that had experienced a status epilepticus event were more likely to have received dietary supplements (P = .004).

Two-thirds of respondents (67.7%) changed their dog’s diet after the idiopathic epilepsy diagnosis. The various diets included dry food only (60.6%), dry food combined with wet food (25.6%), raw food (21.9%), and home-cooked food (17.8%). When asked where they sought advice for new diet choices, 27.6% asked their veterinarian, 13.8% used online information, and 37.5% cited “other” as the source of their recommendation. The most commonly administered dietary supplements were coconut oil (77.3%), fish oil (77.3%), milk thistle (42.7%), and cannabis oil (42.0%). The most common sources of advice for selection of dietary supplements were online support groups (38.2%), other online information (20.6%), and their veterinarian (17.5%).

Owners cited the most common reasons for administering dietary supplements as reduction of seizure frequency (88.2%), protection against adverse effects related to AEDs (62.5%), reduction of seizure severity (61.8%), improved postictal recovery (42.6%), reduction of AED adverse effects (41.2%), or reduction of comorbidities (30.1%). Of respondents who gave their pets dietary supplements, 21 stopped administering them for the following reasons: no recognizable benefit (33.3%), concern regarding potential adverse effects (9.5%), and refusal of the dog to take the supplement (9.5%). Forty-seven percent of respondents had never given their dog dietary supplements. Reasons cited were lack of awareness that dietary supplements were available (37.8%), feeling uncomfortable giving supplements without veterinary supervision (32.1%), and lack of scientific evidence (11.4%). The majority of owners (92.5%) who had stopped or not previously administered dietary supplements would consider doing so when more scientific evidence was available.

Adverse effects of dietary supplements, as reported by owners, included sedation (9.7%), increased water consumption (8.0%), and weight gain (7.4%).

CLINICAL IMPACT
Owners of dogs with idiopathic epilepsy commonly provide dietary supplements and nutritional changes to their pet, most commonly without veterinary supervision. Although adverse effects are reported infrequently by owners, there is evidence of interactions with commonly used AEDs, including lowering plasma levels of drugs (eg, with high chloride or sodium intake increasing excretion and lowering plasma levels of bromide and lower protein intake decreasing plasma levels of phenobarbital). Further, it would be prudent to monitor triglyceride levels or pancreas-specific lipase in patients administered additional oils as dietary supplements. Given that dietary supplements are commonly administered by owners, it is important to a patient’s well-being for veterinarians to engage owners in conversations, ensure dietary consistency, and monitor for adverse effects and potential AED interactions.

By Rebecca A. Packer, MS, DVM, DACVIM (Neurology/Neurosurgery)
THE BIGGEST MISCONCEPTION ABOUT GENETIC TESTING

According to Leslie Lyons, PhD, Gilbreath-McLorn Endowed Professor of Comparative Medicine at the University of Missouri College of Veterinary Medicine, genetic testing isn’t always about finding a cure.

“One of the biggest misconceptions that we have with genetic testing is, ‘Oh, that’s obviously going to lead to a cure.’”

It doesn’t lead to a cure, Dr. Lyons says. Instead, it leads to better treatment. “Do we want it to lead to cures? Yes, down the road. We’re making big advances with gene therapies and stem cell therapies where we may be able to cure some diseases and some presentations eventually,” she says. “But mostly, these genetic mutations allow us to determine why a given individual has a certain presentation and really tailor our treatment plans to that animal.”

BE A BEHAVIOR RESOURCE

Even if you don’t know the specific answer to a behavioral modification question or concern, as a veterinarian you should be able to offer referral resources to your clients, says Amy L. Pike, DVM, DACVB, chief of the Behavior Medicine Division at the Veterinary Referral Center of Northern Virginia.

“I think veterinarians need to be the primary source for all things pet, and that includes training,” she says. “Unfortunately, there is not a lot of behavior education in veterinary school, and so we don’t know a whole lot.” Nevertheless, your client should be able to come to you and ask about pet training. “If you don’t know how to address certain issues,” Dr. Pike advises, “know where to refer.” Veterinarians should know the positive reinforcement trainers in their area, attend a class, or even partner with trainers to hold classes in the practice after hours. “It’s a good practice builder as well,” she says.

GERIATRIC PAIN MANAGEMENT CHALLENGES

Janice Huntingford, DVM, DACYSMB, CVA, CVPP, CCRT, CAVCA, owner and medical director of Essex Animal Hospital, Canine Rehabilitation and Fitness, in Ontario, Canada, believes that the most common challenge veterinarians face with regard to geriatric pain management is that clients frequently do not recognize when their animals are in pain. They figure that being a geriatric is simply getting old and that many of the pain signs they show are from old age, not from pain.

Cats show very strange pain signs, as far as people are concerned. Dr. Huntingford says. If you have a cat that does not like to be petted, some people think that’s just the cat’s personality. “Sometimes it isn’t,” she says. “Sometimes it’s pain.” Or, as the pets get older, they stop doing things that they normally had been doing. “I had a client who was thrilled to tell me that her cat finally learned not to jump up on the counter at the age of 10,” Dr. Huntingford recalls. “I told her, ‘That’s not so great. That means that this cat is painful.’”

ADVISING CLIENTS ABOUT PET POISONINGS

Preventing a majority of pet poisonings isn’t difficult, says Justine Lee, DVM, DACVECC, DABT, founder of the podcast and webinar service VETgirl, but it requires that pet owners become aware of simple mistakes they may be making. “Statistics show that 50% of the poisons dogs and cats get into are human medications,” Dr. Lee says, “drugs like prescription antidepressants, prescription amphetamines, cardiac medications, and nonsteroidal anti-inflammatory drugs [NSAIDs].”

She offers owners 3 tips to help minimize the risk of pet poisoning. First, advise clients who use weekly pill holders not to put them on a counter. “If your dog is going to counter surf, that can be really, really deadly,” she says. Her second piece of advice is to hang up your medications, and nonsteroidal anti-inflammatory drugs [NSAIDs].”

Second, tell clients to put away poisonous things, such as small containers of NSAIDs or other potentially dangerous medications, a cell phone with a battery in it, coins, and gum sweetened with xylitol. Finally, she says, make sure guests don’t put all those pills into a small plastic bag and leave it in the suitcase. “It’s really easy for dogs and cats to chew into that,” she adds.

About Leslie Lyons, PhD

Leslie Lyons, PhD, Gilbreath-McLorn Endowed Professor of Comparative Medicine at the University of Missouri College of Veterinary Medicine, is an expert in the fields of data science, genotyping, and genetic disease. She is the author of three books and more than 100 journal articles and has spoken at numerous conferences around the world. She is a member of the American Society for Animal Genetics and the American Society for Animal Behavior. She is also a member of the American Animal Hospital Association and the American Veterinary Medical Association. She is a member of the American Society for Animal Genetics and the American Society for Animal Behavior. She is also a member of the American Animal Hospital Association and the American Veterinary Medical Association. She is also a member of the American Animal Hospital Association and the American Veterinary Medical Association. She is also a member of the American Animal Hospital Association and the American Veterinary Medical Association.
Today’s market is saturated with veterinary health care options for pet owners. Every street corner seemingly houses a general practice, a specialty hospital, a vaccine clinic, or some other type of business that provides pet health care. If pet owners choose to come to your hospital, you have hit the jackpot! But don’t get too excited yet. Now you are tasked with wowing those pet owners and turning them into loyal clients. Following are 3 reasons why practices sometimes lose clients, along with advice for avoiding these fraught situations.

**REASON #1: THEY DON’T FEEL VALUED.**

*The Scenario*

Mr. Lee has a 13-year-old Siamese named Eisenhower. Mr. Lee works from home and Eisenhower is his constant companion; they are inseparable. Mr. Lee brought his cat in today because Eisenhower is always looking for food and seems to be losing weight. Following her examination of Eisenhower, the veterinarian says she is concerned about his health. She recommends some testing, including bloodwork and radiographs. The treatment plan Mr. Lee is given totals $585, and he is asked for his approval to move ahead.

Mr. Lee is quite confused because he does not understand why the tests are necessary. Why do we need x-rays, he wonders. He wants to do what is right for Eisenhower, but he doesn’t want to spend money for something that may be unnecessary. Mr. Lee feels like he is being asked for money without justification or answers about his pet’s condition. He agrees to the bloodwork but not the radiographs, and the doctor says she will call him with the results. When Mr. Lee arrives home, he calls a couple of friends asking for recommendations for a new veterinarian.

*What Went Wrong (and How to Fix It)*

Make sure you and your team are taking the extra few minutes to explain each item on the diagnostic and treatment plan thoroughly enough for clients to understand fully the impact that each will have on the treatment plan for their pets. Taking the extra time now will save you time later from having to rework the plan, sometimes more than once, to better fit what you think the client can afford.

**REASON #2: THEY HAD A BAD EXPERIENCE.**

*The Scenario*

Mrs. Meyer brought in her great Pyrenees, Petunia, today for her annual physical and vaccines. Before being led to an exam room, the veterinary assistant escorts the pair to the floor scale in the lobby to get an accurate weight for Petunia. Mrs. Meyer mentions to the assistant that Petunia really doesn’t like this scale and, in the past, the staff has had a hard time getting a correct weight on there. The assistant says “OK” to Mrs. Meyer and continues walking toward the scale.

As they approach, Petunia starts to pull on her leash and become unruly. Mrs. Meyer says she doesn’t think this is a good idea because Petunia is getting very stressed. Ignoring her, the assistant tries with all her might to drag and shove Petunia onto the scale. After struggling for what seems like an eternity, she lets out a large sigh and brings Mrs. Meyer and her dog into an exam room.

Petunia’s appointment has not even started yet and the dog is trembling in the exam room. Mrs. Meyer is not comfortable with how she and her dog have been treated so far, but she doesn’t like to complain or upset the staff and doctor who will be seeing them today. Petunia has her appointment, after which she is taken to “the back” and somehow the staff measures her body weight. As Mrs. Meyer is paying the bill, she is already thinking about searching online for a new veterinary practice when she gets home.

*What Went Wrong (and How to Fix It)*

The veterinary assistant in this scenario may have heard Mrs. Meyer say that Petunia was uncomfortable with the floor scale in the lobby, but she certainly didn’t listen to or address Mrs. Meyer’s concern. Clients want to be considered partners with their veterinary practice in caring for their pets. This appointment left Mrs. Meyer feeling irrelevant and convinced that the veterinary team did not have her dog’s best interests at heart.

There is no secret to retaining veterinary customers. Just do a few things right every time, and your practice will thrive.

By Erika Ervin, MBA, CVPM, CVT
How will you know why Mrs. Meyer, or any client, hasn’t returned? You won’t, unless you ask her about her experience at your hospital. Make sure the practice follows up with clients after every appointment. Calling the client the day after a visit to see how the pet is doing and asking, at that time, whether the client has any questions or concerns will open the door for them to speak about their experiences.

If you’re worried that clients won’t feel comfortable talking about their appointments, send email surveys after appointments. Offer a small incentive for clients to complete the surveys—your drug reps can likely help you with the prizes—and have a monthly drawing from among those clients who completed the surveys.

**REASON #3: THE PRACTICE STAFF IS NOT ON THE SAME PAGE.**

The Scenario
Mr. and Mrs. Burgess brought in their Jack Russell, Captain Biscuit, today for his annual physical exam, vaccines, and bloodwork, including a heartworm test. They had received a postcard reminder in the mail noting all the services due for Captain Biscuit. When they arrive at the hospital, an assistant escorts them into an exam room and states what Captain Biscuit’s annual visit will include, mirroring the information on the postcard. The assistant takes a history on Captain Biscuit, asking about his diet and preventive medications. The Burgesses are very good about giving Captain Biscuit his monthly heartworm pill and will need a refill of the medication today. The assistant relays the information to the veterinarian and lets him know the plan for today’s visit.

The veterinarian examines Captain Biscuit and discusses what he plans on giving the dog. He does not say he wants to perform a heartworm test. Mrs. Burgess asks the doctor why the test is not part of the plan. The veterinarian responds that a heartworm test isn’t necessary because they have given Captain Biscuit all of his preventives. Mr. and Mrs. Burgess glance at each other, confused by the differing information they have received, but they take the doctor’s word that Captain Biscuit does not need a heartworm test.

While Captain Biscuit is in the treatment room getting blood drawn, the Burgesses discuss the conflicting information they received. If the annual heartworm test isn’t necessary, then is the assistant just trying to sell them unnecessary services? They are not happy. After they leave the hospital, they go home and search for some information on the internet, including other veterinarians in the area.

What Went Wrong (and How to Fix It)
Giving conflicting recommendations or mixed messages to clients does not inspire trust. Clients who don’t trust your team will always question the motives behind the recommendations they receive. Make sure you have standards of care for your practice and hold training sessions for the entire team so everyone remains on the same page and can explain all recommendations. Nothing will be worse for your business than clients who doubt what you are recommending for their pet.

**CONCLUSIONS**
Acquiring new clients is not inexpensive, nor is it easy to do well on a consistent basis. It requires ongoing staff training and coaching. If you have regular clients, you need to do your best to hang onto them. Some client attrition is normal; pets die, clients move, or a number of other circumstances may arise. Regardless of the situation, look to gain new clients continually to make up for those who leave. We can put less pressure on ourselves if we know we are doing everything we can to ensure our clients’ trust and provide them with a top-notch veterinary experience.

Ms. Ervin has experience in all aspects of veterinary medicine, including client service, surgical assistance, dentistry, private and corporate practice management, and lab animal medicine. She became a certified veterinary technician in 2005 and was certified as a veterinary practice manager in 2017.

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Planning for the Unthinkable

Acts of violence at veterinary clinics remain relatively rare, but owners and staff should be prepared.

By Don Vaughan

Charles Anthony Smith did not take well the news of his cat’s demise. On October 9, 2014, Smith, 57, showed up at the Maplewood Animal Hospital in Bellingham, Washington, where his cat had died the day before, and stabbed with a kitchen knife the veterinarian who greeted him in the lobby. The veterinarian suffered a puncture wound to the upper chest but was able to free herself from Smith and run to the back of the office. Smith pulled out a second knife and threatened the front-desk staff before fleeing.1

Minutes later, Smith walked into the nearby Fountain Veterinary Hospital, where he had been a client earlier in the year, and stabbed a female employee in the throat. The incident prompted police to urge other regional veterinary clinics to lock their doors until Smith could be caught. Authorities located Smith a few miles from Fountain Veterinary Hospital and apprehended him without incident.7

Smith’s horrific deeds were an isolated incident perpetrated by an emotionally distraught individual, but they demonstrate the unfortunate trend of sudden violence in private and public spaces. Schools, entertainment venues, churches, and businesses once considered havens must now consider and plan for the unthinkable.

According to the US Bureau of Labor Statistics, 5190 fatal work injuries were recorded in the United States in 2016, a 7% increase over 2015.2 Transportation incidents (the largest category) accounted for 40% of fatal events. Violence and other injuries by persons or animals increased by 23% to become the second-most common cause of workplace fatalities in 2016.2

About 500 people are killed at work annually, mostly during robberies, according to workplace violence expert Steve Albrecht, an Association of Threat Assessment Professionals certified threat manager. “Cab drivers, retail employees, police officers, and hospital employees are most at risk from workplace violence,” he said.

TYPES OF WORKPLACE VIOLENCE

The Federal Bureau of Investigation divides workplace violence into 4 categories, each of which poses a potential risk to veterinary practices14:

- Type 1 involves offenders who have no relationship with either the victims or the establishments.
- Type 2 involves offenders who are receiving services from the targeted facilities when they commit an act of violence against them.
- Type 3 involves current or former employees acting out toward their present or past places of employment.
- Type 4 involves disputes between an employee and the offender that spill over into the workplace.

Join Us for a Critical Discussion About Workplace Violence

As violence in the workplace increasingly takes over today’s headlines, veterinary practices must acknowledge their vulnerability and be prepared for the unthinkable. Join the Bridge Club and American Veterinarian® for a free candid discussion about the very real threat of workplace violence and learn how to protect your employees.

When: February 12, 2019 at 11:30 AM ET
Where: Online through Zoom

Visit AmericanVeterinarian.com/link/90 for more information about the Bridge Club and to reserve your spot at this important event.
Criminals might perpetrate violence while stealing drugs. Clients, distraught over an issue with their pet, might become violent against practice staff, as demonstrated by the incident with Charles Anthony Smith. (In another incident in December 2014, a man shot himself in the parking lot of a veterinary clinic in Tuscaloosa, Alabama, after having his pet euthanized. The bullet passed through the man’s abdomen and struck his son in the forehead.) Disgruntled employees might return, armed, to settle perceived slights. And former spouses or significant others of staff might show up to settle a domestic dispute. Such an incident occurred in 2011 when a female employee of Carolina Crossing Veterinary Clinic in Benson, North Carolina, was shot in the abdomen by a former boyfriend, who subsequently took his own life.

In the past, law enforcement attempted to create profiles of individuals likely to commit acts of violence in an effort to stop them before they could act again. This is no longer the case, Albrecht reported. “We have moved away from the idea of profiles and back to the common characteristics of those who engage in workplace acts of violence. The most common characteristics of those who engage in workplace acts of violence are desire for revenge, depression, no father figure, untreated mental illness, psychopathy, rage-filled narcissism, entitlement, and religious zealotry.”

THE COST OF VIOLENCE
The cost of workplace violence can be high for all involved, the Occupational Safety and Health Administration stressed in a December 2015 report. First and foremost, it harms workers—often both physically and emotionally—and makes it more difficult for them to do their jobs,” the report stated. “Employers also bear several costs. A single serious injury can lead to workers’ compensation losses of thousands of dollars, along with thousands of dollars in additional costs for overtime, temporary staffing, or recruiting and training a replacement. Even if a worker does not have to miss work, work can still lead to ‘hidden costs’ such as higher turnover and deterioration of productivity and morale.”

Although more violent episodes typically receive greater attention, worker-on-worker bullying or intimidation is by far the most common form of workplace violence and something that all practices should work diligently to prevent. The first step is fostering an environment of trust and respect among workers and between staff and management, noted Workplace Answers, an online compliance training company, in a report on strategies for preventing workplace violence. The company also suggested taking steps to reduce negativity and stress in the workplace, establishing procedures for employees to report threats and bullying, and instituting a mediation program to resolve employee disputes in a timely fashion. Employees who bully or intimidate other staff or clients should be terminated immediately.

There are also steps that practices can take to address threats from individuals associated with employees, such as former spouses and significant others. Foremost, employees should notify administrators when a restraining order has been issued and give a photo of the individual noted in the order to front-desk staff so they will be aware. All telephone and in-office threats should be reported immediately to the police.

Should a distraught individual confront practice staff, there are behaviors that can help diffuse anger, notes the Centers for Disease Control and Prevention. Most important, present a calm, caring attitude, and acknowledge the person’s feelings, the agency advises. Additionally, don’t match threats or give orders, and avoid any behavior that may be interpreted as aggressive, such as moving rapidly, getting too close, or talking loudly.

PLANNING AND PREVENTION
Although the likelihood of a violent incident at a veterinary practice is statistically low, owners and staff should still have a prevention/action plan in place. Acts of violence tend to escalate very quickly, often with little to no warning, so developing a plan is vital. Ensuring staff and client safety is the primary goal of a workplace violence policy. Among the most important protocols:

- Establish a zero-tolerance policy toward workplace violence that includes all workers as well as clients and contractors.
- Establish a zero-tolerance policy regarding weapons in the clinic and on clinic grounds.
- Designate a windowless safe room to which staff and clients can flee if threatened by an individual with a weapon. The door should be sturdy, preferably bullet-proof, and lockable from the inside.
- Train front office staff to recognize—and report—potential preattack behaviors and events, such as threats, multiple office visits by an angry individual, vandalism, confrontations with staff, and arguments over treatment or billing. “Veterinary offices should use access control to keep clients on one side of the counter,” Albrecht advised. “Clients should not be able to go into any part of the practice without an escort.”
- Make sure staff are aware of all office policies specific to workplace violence and understand what to do in each type of emergency. Hold regular practice drills after hours so staff maintain a heightened awareness of potential threats.

SURVIVAL MINDSET
“Realizing that the incident may end prior to the arrival of law enforcement demonstrates the need for workers to take responsibility for their own lives, in part, by developing a survival mindset, which involves being ready (both mentally and physically) for the worst-case scenario,” Federal Bureau of Investigation experts reported in Workplace Violence Prevention: Readiness and Response. While no foolproof strategy exists for surviving an active shooting incident, this type of mindset has the three components of awareness, preparation, and rehearsal that can provide a foundation for survival.”

Some practice owners may consider having a gun on premises for defense. However, most law enforcement experts believe that’s a bad idea. Most active shooter events occur very quickly and without warning, leaving staff members no time to get the gun from its lockbox. And even if a staff is able to retrieve the gun in time, attempting to engage a shooter in the chaos and horror of the moment would likely endanger more lives than it would save.

Workplace violence will always be a possibility; that’s just the world we live in now. But by planning, training staff, rehearsing scenarios, and remaining vigilant, veterinary clinics can effectively prevent violence before it happens and know exactly how to react should the unthinkable occur.

References available at AmericanVeterinarian.com.

Don Vaughan is a freelance writer based in Raleigh, North Carolina. His work has appeared in Military Officer, Boys’ Life, Writer’s Digest, MAD, and other publications.
Empathy Versus Apology

JOHN OWENS, VETERINARY ATTORNEY at the Law Offices of John Owens, LLC, says there is a difference between apologizing and being empathetic. “When you’re empathetic, if an incident occurs, your first response is to say that you’re sorry, but more than likely, you are just as affected as your client is when something goes wrong.” What you are really saying with that apology is, “I’m sorry this happened.”

An apology has 2 added components: admitting that the problem was your fault and finding out what you can do about it to appease your client. Mr. Owens says veterinarians often are much more eager to take blame before they determine whether something really is their fault.

A structured system for developing apologies is a great tool; having a preplanned script tends not to work as well. “Besides compassion and understanding, one of the primary things clients are looking for in an apology is honesty,” he says. “If an apology comes across as scripted or preplanned, it tends to lack that honesty and actually can do more harm than good.”

Hiring? Look Beyond Online Ads

A WHOPPING 60% of job seekers quit in the middle of filling out online job applications because the process is too long or too complex, says Stacy Pursell, BA, CPC, CERS, founder and CEO of The VET Recruiter. “When you’re looking to hire qualified candidates for your practice,” she says, “you want the pool to be as large as possible.” If you’re only posting open jobs online, you’ll miss not only those who don’t complete the application process but also potential candidates who are not actively seeking a job. “In today’s market, veterinary employers need to do more than just use online job advertisements if they want more success hiring the great candidates.”

To broaden your search, Pursell advises, consider advertising in professional publications or at local veterinary medical or technical colleges and universities, using employee referrals, or hiring a recruiter.

Perfecting Your Online Practice Persona

CAITLIN DEWILDE, DVM, owner of the social media consulting firm The Social DVM, LLC, offers some dos and don’ts for building a professional online persona. First, make sure you’re using a professional page. “For sites like Facebook and Instagram, you want a business page,” she says. “That will give you a lot more access to insights and analytics about when to post and who your clientele and followers are.” Facebook allows business users to schedule posts up to 6 months in advance.

You also want to add value to what you’re sharing, says Dr. DeWilde. “Make sure the content you’re putting out there is something that will resonate with your clients and offers value in some way.”

Dr. DeWilde cautions veterinarians who communicate with pet owners on social media to protect the veterinarian-client-patient relationship. “You need to have a policy and a protocol in place about communicating with pet owners online,” she says. “If you give medical advice to a nonclient, you are violating the veterinarian-client-patient relationship.”

Fostering a Culture of Empowerment

WHEN PRACTICES SET STANDARDS and develop systems, they can really empower their team, says Tracy Dowdy, CVPM, managing director of MRG Consulting and founder of the Relationship Centered Practice Academy. It starts with a mindset shift, she says, where practices see the advantages of sharing the knowledge wealth and the emotional wealth with the entire veterinary team.

“It starts at the top, with the leadership,” she says. “Practice owners and veterinarians have to trust that their team has the skills and knowledge necessary to educate pet owners and to do the tasks that don’t require a veterinary license.”

The Third Person in the Exam Room

NANCY DEWITZ, DIRECTOR of sales and marketing and technical consultant for the marketing consulting firm Beyond Indigo Pets, suggests that practices implement a care team for each exam: the veterinarian conducting the exam, the veterinary technician helping with the animal, and a third person inputting information directly into the practice management system.

“This way, medical records are getting updated right away; billing happens right away, because it’s incorporated into the practice management software; and the veterinarian is forced to verbalize what’s going on during the exam, which means the client has a much better understanding of what’s happening—and of the value you’re providing,” she says.

Think you can’t afford to have a third person in the exam room? Think again. “Most of the time,” Ms. Dewitz says, “the increase in efficiency when conducting exams and the use of electronic medical records more than make up for the added salary.”
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