Wellbeing tips for the pandemic and beyond

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Keep calm and carry on: Wellbeing tips during the pandemic

With COVID-19 disrupting life both personally and professionally, how can veterinary teams remain calm while continuing to offer patient care?

By Kristina Guldbrand, CVT, BS, CSP

Odds are good that the COVID-19 pandemic has drastically changed how your veterinary clinic operates. Whether you’ve had to cut hours, are trying to help patients via telemedicine for the first time or are offering primarily curbside care, your workday likely feels far from normal.

No matter what new trials you may be facing, taking care of your wellbeing can help reduce anxiety and stress. Kristina Guldbrand, CVT, BS, CSP, offers three tips that will help you stay calm and carry on during the pandemic. (Bonus: These tips will help fortify your mental health even when life returns to “normal”!)

Tip 1: Just breathe

One of the skills you can develop to practice mindfulness when you’re feeling overwhelmed or anxious is deep breathing, Guldbrand says. Here’s what to do:

Inhale deeply while counting slowly to four, hold briefly, and then release your breath slowly, again by a count of four. Do this again and again until you feel like you’re in control.

Tip 2: Practice gratitude

“This can be really hard, especially right now,” Guldbrand acknowledges, “but it’s times like these when it’s most important to practice gratitude.” But you need to be specific about what you are thankful for.

Guldbrand recommends thinking about the many inter-actions you have throughout the day. Perhaps a coworker helped you solve a problem or complete a task you found particularly difficult or stressful, for example. She challenges all veterinary professionals to find three things each day that you are thankful for until this pandemic is over.

Tip 3: Go outside

Finally, Guldbrand recommends giving yourself a break from the nonstop COVID-19 news. “Keeping social distancing in mind, we’re still encouraged to get outside for exercise and fresh air. Get some vitamin D,” she says, Taking your pets for a walk is a great way to relax. “Make sure you get out there and spend some time with your four-legged friends,” she advises. “After all, we all know what the human-animal bond does for wellbeing.”

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No matter what new trials you may be facing, taking care of your wellbeing can help reduce anxiety and stress. Kristina Guldbrand, CVT, BS, CSP, offers three tips that will help you stay calm and carry on during the pandemic. (Bonus: These tips will help fortify your mental health even when life returns to “normal”!)
Medicating cats regularly for chronic diseases can be very difficult for owners and stressful for pets. For cats with seizures, there may be a better option. A recent study from the University of Wisconsin-Madison College of Veterinary Medicine evaluated the pharmacokinetics of transdermal administration of levetiracetam to healthy cats, and the results show blood concentrations sufficient to warrant clinical use in veterinary patients.¹

What they did
Six healthy cats were enrolled in the study. Levetiracetam was compounded into a 400-mg/ml lipophilic liposomal cream by the University of Wisconsin-Madison Veterinary Pharmacy Hospital. The transdermal dose protocol was 60 mg/kg every 8 hours. Using a gloved finger, the experimenter applied the cream to one or both pinnae and rubbed into the pinnae until the gel was no longer visible. Serum levetiracetam concentrations were measured on day 7 of this dosing regimen, at times 0 (prior to dosing), 0.5, 1, 2, 3 and 4 hours after dosing.

What they found
All six cats completed the study. Median serum concentrations for all six cats at all time points ranged from 14.8 to 17.4 µg/ml. The lowest serum concentration was 6.8 µg/ml and the highest was 39.6 µg/ml. All of these concentrations are higher than the 5-µg/ml lower limit of the human therapeutic range (therapeutic ranges for levetiracetam in cats are not known). Adverse effects were minimal and included sedation in one cat that resolved without dose adjustment and mild crusting on the pinnae of one cat.

Take-home points
Although the small sample size limits reliable extrapolation, based on serum concentrations in this study, transdermal levetiracetam has appropriate pharmacokinetic profiles to warrant clinical use in cats with seizures. Adverse effects were minimal. Drawbacks to transdermal administration primarily include the increased cost ($227 for a 14-day supply for a 4.5-kg cat) and difficulty of administering the medication to cats weighing more than 5 kg due to the volume of cream required for dosing.

REFERENCE
All of us feel very overwhelmed at this point,” sympathized Marsha L. Heinke, DVM, EA, CPA, CVPM, owner of accounting and consulting firm Veterinary Practice Made Perfect, as she began a webinar on financial matters veterinary practice owners and managers should be focusing on during the COVID-19 pandemic. It may seem like your hospital has a plan at one moment of the day, but even an hour later things change drastically. “It’s like drinking from a firehose during a tsunami,” Dr. Heinke said.

Even with the unpredictability of the pandemic and its effects on daily life, the lifesaving services provided by veterinary hospitals are invaluable to clients and their pets. Presenting on behalf of the Veterinary Hospital Managers Association on March 31, Dr. Heinke provided guidance on money management, employee communication and updated laws to help navigate these uncharted waters.

Abiding by new restrictions
Dr. Heinke explained that there is no blanket answer regarding which legislative bodies hospitals should reference at this time. Currently, many municipalities and states have regulations that are different, and sometimes stricter, than those of the federal government. Understanding the new regulations as they pertain to where your practice operates is one of the challenges decision-makers have to face.

“Generally, you want to start at the local community level and work your way up from there,” Dr. Heinke said. “If the community is silent on the matter, then go to the next authority, which might be the state government.”

In addition to staying current on new mandates, utilize the business experts in your quiver, Dr. Heinke advised. “It is very important to work closely with professional advisors, but understand that they are also overwhelmed trying to digest all of the changing information,” she said.

Addressing employee and client concerns
With layoffs and furloughs becoming a reality for many businesses, employees should know how their job will be impacted and the temporary changes the hospital may make.

Management needs to remain aware of timely updates and relay that information as it pertains to the practice, such as orders about essential and nonessential workers. “You owe it to your employees to let them know what is happening and what your plans are for the practice,” Dr. Heinke explained.
She also stressed the importance of remaining positive and taking a solutions-based approach to communication. Provide clear direction for how staff should interact with clients, explain proper sanitation protocols to limit exposure and review additional measures being taken to ensure the safety of staff, clients and patients. It is also vital to encourage questions and dialogue. “Remember that everyone is impacted personally and professionally,” she added.

**Updated workforce regulations**

While the government and different agencies are encouraging flexibility in sick leave and paid time-off policies, the temporary laws enacted on April 2 may impact your decisions on those policies, Dr. Heinke said. Paid FMLA leave and emergency paid sick leave are available to be used in addition to a hospital’s existing paid time-off policies, and some types of leave may run concurrently. Practices may not alter their policies to restrict time off in light of the new laws, she warned.

Additionally, hospital management must understand state and federal unemployment requirements. This includes reduced hours and wages, furloughs, layoffs and terminations. “You also want to be paying attention to unemployment insurance and disability benefits if you are in a state, such as New Jersey, that requires those,” Dr. Heinke explained. You have to think about how state and federal policies integrate with current hospital policies and updated laws.

**Payment requirements**

Many hospitals are reducing hours, while some employees are choosing not to come into the office but may telework. Do you continue to pay the full salary? Are there Department of Labor (DOL) standards that apply? Following are some of the key aspects Dr. Heinke said to consider:
- Review existing contracts to see if any applicable details are outlined.
- The DOL requires that, to maintain exempt status, employees receive their full guaranteed salary for any week in which work is performed.
- Some states’ laws require additional payment obligations.
- If setting a new, temporary salary for an employee, it must be at or above federal and state minimums. The federal minimum is currently $648 per week, but many states have higher minimums.
- Do not repeatedly reclassify employees as exempt and nonexempt. This could make it possible for salaried employees to put in claims for unpaid overtime hours they previously worked.
- Evaluate which benefits your hospital is going to continue to pay for and which may be curtailed.

For nonexempt workers, Dr. Heinke encouraged reducing hours rather than reducing pay rates, but in instances where pay is reduced, hospitals must maintain the minimum applicable federal and state rates. Reduced hourly wages cannot be retroactive, and employees must be given notice.

Regardless of what measures hospitals decide to take, Dr. Heinke said now is not the time to become lax about record keeping. For instance, continue to require a doctor’s note from employees who have been diagnosed with COVID-19. “The reality is, you’re going to need that documentation in your files,” she said. If employees take advantage of the new paid sick leave laws, the hospital will be eligible for payroll tax credits to offset those costs but will need proper proof.

**Cutting costs**

Now more than ever, anyone with cash flow oversight responsibilities needs a clear understanding of the daily break-even point and recent profit-and-loss statements. “You are going to need to be brutal about what you can reasonably cut that you don’t need but are paying for,” Dr. Heinke said.

Remain in contact with vendors and discuss possible payment deferments. If your practice is facing a cash flow shortage, Dr. Heinke said, it is important to prioritize what needs to be paid first, taking into consideration interest rates and penalties. It may also be time to explore other funding sources, she suggested. These include using existing lines of credit, practice owners temporarily forgoing compensation and owners contributing personal funds to maintain the practice.

Assess the loans that might be available through federal COVID-19 relief packages. “Many veterinary hospitals are seeing that this is necessary,” she explained. The CARES (Coronavirus Aid, Relief, and Economic Security) Act will provide small businesses with access to $350 billion in loans, a portion of which will be forgivable. Similarly, Paycheck Protection Program loans through the Small Business Administration are available to businesses with fewer than 500 employees.

While so much continues to change and hospitals must routinely readapt, Dr. Heinke predicted that the veterinary profession will fare well when restrictions are lifted. “We are going to look different, but perhaps much better in certain ways,” she said.
Unpacking feline dementia: A veterinary guide

Early detection and regular follow-up are important components for managing this slowly progressive condition in cats—and helping cat owners understand the difference between cognitive dysfunction and ordinary aging.

By Natalie Stilwell, DVM, MS, PhD

Cognitive impairment in cats is tricky—there’s just not much information on the topic for veterinary teams. Here, Margaret Gruen, DVM, MVPH, PhD, assistant professor of behavioral medicine at North Carolina State University College of Veterinary Medicine, provides clarity on the complex etiology of feline cognitive dysfunction syndrome (fCDS) and offers tips for veterinarians on diagnosis and management.

What is feline cognitive dysfunction syndrome?

Cognitive changes are common in cats aged 10 years and older. However, many of these changes, including decreased activity and social interaction, are subtle and may be mistaken by owners as a normal part of aging. In fact, according to one study, owners reported at least one behavior problem in 28% of cats aged 11 to 14 years and in more than 50% of cats aged 15 and older. Many of the reported issues in that study, such as excessive nighttime vocalization and house soiling, were consistent with fCDS, also called “feline dementia.”
Pathophysiology of fCDS

Although our understanding of cognitive dysfunction in animals frequently is extracted from human medicine, the exact etiology of neurobehavioral syndromes remains poorly understood. Cognitive dysfunction likely has genetic, nutritional and environmental components.

Dr. Gruen explains that high oxygen demand and lipid content make the brain particularly susceptible to the “cascade of damage” resulting in cognitive dysfunction. Known neuropathologic changes in the brain that lead to cognitive dysfunction include compromised blood flow, chronic inflammation, oxidative damage, and inefficient free radical scavenging. Across species, these processes cause plaques of beta-amyloid protein to surround neurons, ultimately resulting in neuronal dysfunction and death. Another pathologic change, tau protein hyperphosphorylation, is also documented in humans with Alzheimer disease and in cats, although its role in fCDS remains unknown.

Cognitively impaired patients may have reduced production and/or metabolism of neurotransmitters that are responsible for maintaining normal movement, posture, mood, memory, appetite and sleep. Serotonin, gamma-aminobutyric acid (GABA), norepinephrine, dopamine and acetylcholine are most commonly affected.

The role of chronic pain in cognitive impairment

Dr. Gruen explains that chronic pain plays a significant role in many fCDS cases. Common geriatric issues in cats include degenerative joint disease, arthritis, dental pain, interstitial cystitis and neuropathy. These tend to have “multidimensional effects” on all aspects of the patient’s life, including behavior, sensation, cognition, social interaction and physiology.

Diagnosing fCDS

Physical and behavioral signs

Dr. Gruen recommends using the acronym “DISHA-AL,” adapted from Gary Landsberg, DVM, to remember the main signs of fCDS:

- Disorientation
- Interaction changes
- Sleep-wake cycle alterations
- House soiling
- Activity changes
- Anxiety
- Learning/memory issues

Relatively obvious signs of fCDS tend to be those noticed first by the owner, while subtle or early changes may only be revealed through detailed questioning by the veterinarian. These include mild changes in mood, grooming behavior and appetite. Because owners often mistake subtle signs for normal aging processes, Dr. Gruen explains it is the veterinarian’s responsibility to learn more.

“When we don’t ask about these behaviors,” she says, “we don’t find out about them.”

Cats with fCDS often display learning, memory, motor function and spatial-awareness deficits similar to those seen in humans with Alzheimer disease. Overall, the cat owner may notice these slowly progressive changes as a decreased ability to cope with stress and adapt to changes.

Serial evaluation is key

Dr. Gruen admits that evaluating cognitive function in feline patients isn’t easy. She advises veterinarians to “look at changes in the individual cat over time.” Begin screening early to establish patient-specific physical and behavioral baselines. Then, reference baseline information as clinical signs develop. She also emphasizes that many signs associated with cognitive dysfunction, such as house soiling, may have medical causes, which is why fCDS should be a diagnosis of exclusion after ruling out other diseases.

Multimodal management of fCDS

The main goal of fCDS management, Dr. Gruen notes, is to delay progression of the condition and improve patient quality of life. Multimodal treatment should include environmental enrichment, dietary modification, pharmaceutical pain management and cognitive function support.

Get clients involved

Management of fCDS, Dr. Gruen explains, is most effective when the veterinarian and owner work together. Owners should be encouraged to make a list of activities they perceive as important to their pet’s quality of life. These may include perching, playing and grooming. The veterinarian can then maintain the list in the patient’s record and discuss changes with the owner on a regular basis. Because many cats are more comfortable in the home than in a hospital environment, Dr. Gruen often asks owners to take pictures and video of behavior at home. She then uses these images to determine management strategies.

Environmental management

Social interaction, mental stimulation and physical exercise are all vital components for cognitive support in aging cats. Dr. Gruen recommends use of heated beds to draw cats toward certain areas.
of the home, including elevated perches and window ledges. Also, many enrichment tools created for dogs, such as puzzle toys, effectively stimulate mental and physical activity in cats. The team should focus on helping the cat maintain adequate nutrition, hydration, grooming and elimination habits.

**Dietary supplements and pharmaceutical support**
No FDA-approved options exist for treating behavioral disorders in cats, so use is all off label. Several options are available for symptomatic relief, but Dr. Gruen says those should be considered supportive rather than “miracle drugs” for treatment of fCDS. Options include monoamine oxidase inhibitors (MAOIs), omega-3 fatty acids, free radical scavengers and antioxidants, S-adenosyl-L-methionine (SAM-e) and L-theanine. Some commercial therapeutic diets contain one or more of these ingredients.

Among available pharmaceutical options, selegiline (also known as L-deprenyl; Anipryl—Zoetis) is currently the only FDA-approved drug for treatment of canine cognitive dysfunction syndrome. This MAOI has several documented neuroprotective effects, including improved astrocyte function, increased dopamine production and enhanced free radical scavenging. Clinical improvement is typically observed within 4 to 8 weeks of initiating treatment. A documented treatment for house soiling and reduced activity, selegiline is also particularly useful for regulating sleep patterns when administered in the morning, according to Dr. Gruen. One study also demonstrated improved spatial memory in dogs after selegiline administration. Potential side effects include vomiting, diarrhea, restlessness and anorexia, as well as increased stereotypic behavior if administered at high doses.

SAM-e (Novifit—Virbac) has free radical scavenging effects and improves cell membrane function. Feline studies have demonstrated optimal benefits in patients with mild to moderate cognitive dysfunction, suggesting that SAM-e is best utilized in the early stages of disease.

Other pharmaceutical options include Senilife (CEVA Animal Health), which contains the antioxidants phosphatidylserine, ginkgo biloba, vitamin E and vitamin B6, as well as L-theanine (Anxitane—Virbac), which is a green tea extract designed to enhance GABA, serotonin and dopamine levels.

Keep in mind precautions associated with administration of certain drugs. For example, selegiline should not be used concurrently with selective serotonin reuptake inhibitors, tricyclic antidepressants or opioids due to the risk for serotonin syndrome. Tricyclic antidepressants may have anticholinergic effects, particularly in older pets, and benzodiazepines have been blamed for exacerbating cognitive decline in human patients with existing cognitive dysfunction, particularly when used after anesthesia.

**Targeted treatment for specific signs**
Dr. Gruen says multimodal treatment can be tailored for treatment of specific signs, such as nighttime vocalization. First, she advises identifying and managing any underlying medical causes. Then, incorporate various components of treatment. For example, environmental management of nighttime vocalization may include blocking noises that awaken the cat and owner, use of a heated bed for improved comfort, and adjunctive use of music, aromatherapy and body wraps. To retrain the patient’s circadian rhythm, Dr. Gruen advises owners to keep affected cats awake during the day, especially during the morning and evening periods. Finally, anxiolytic pharmaceutical drugs and supplements may provide additional support for particularly severe cases.

**The bottom line**
Many veterinarians and cat owners find that cognitive impairment issues are relatively complex, which is why it’s important to remember the progressive nature of fCDS and set realistic management goals. As veterinarians, the “goal should be to keep patients as healthy and comfortable as possible during their golden years,” Dr. Gruen says. By establishing patient-specific baselines for behavior and physiology, the practitioner and owner can work together to manage clinical signs and prioritize feline patients’ quality of life.

Dr. Stilwell provides freelance medical writing and aquatic veterinary consulting services through her business, Seastar Communications and Consulting. In addition to her DVM, obtained from Auburn University, she holds an MS in fisheries and aquatic sciences and a PhD in veterinary medical sciences from the University of Florida.

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HEALTH IS NOT JUST ONE THING.
IT IS EVERYTHING.

Health is taking stock. It is remembering what’s important. Over the past few weeks, having taken the time to reflect, here’s what we’ve found. When health is suddenly precarious, we learn to what lengths we will go to preserve it. When maintaining our distance becomes necessary, we understand how fortunate we are to be so close with the veterinarian community. And when we have the companionship of a cat or dog, we are never really isolated.

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Canine wellness dos and don’ts

Commit to a better veterinary clinic experience for dogs. Pick one or two of these to try, or reinforce the ones you’ve done so far. Reap the rewards. Repeat.

By Michael Nappier, DVM, DABVP

As the old saying goes, an ounce of prevention is worth a pound of cure. Because they offer the opportunity not only for a physical examination but also the chance to learn about the dog’s diet, exercise level, lifestyle, and general health, canine wellness visits are a must for maintaining optimal health in your patients.

These checkups can be a piece of cake, depending on the dog being examined, or they can be a struggle from the get-go. Here are some dos and don’ts for wellness exams that will help you ensure your patients have the best experience possible.

6 don’ts for canine wellness visits

1. Don’t mix dogs and cats
   It’s upsetting to the cats, agitates the dogs and aggravates everyone else.

2. Don’t forget the trazodone
   Some dogs need a little help getting in the door without being overwhelmed. A little anxiolytic can go a long way for some dogs.

3. Don’t neglect dental care
   With everything else to think about during a patient visit, it’s easy to forget the teeth. Tired of explaining to Spot’s owner why the dog needs another cleaning? Explain (again) that an ounce of prevention is worth a pound of cure. Dental home care makes everyone’s life better.

4. Don’t get stuck on single doses of preventives
   Sure, it’s easier to sell a client in the short run, but how often do we see dogs back next year and all they ever got was that one dose? Getting the whole year of preventives out the door makes it more likely that patients are going to receive them.

5. Don’t forget to ask about behavior
   Behavioral problems are a top reason why dogs are surrendered to shelters. Just because a dog looks healthy doesn’t mean all is well at home. Be sure to ask about behavior issues, and be prepared with resources to help dogs stay in their forever home.

6. Don’t overuse muzzles
   Muzzles are a valuable tool when used appropriately, but they can become a crutch that enables rough handling or a patch to paper over problems in poor scheduling and staffing. Yes, the muzzle can make sure you get the nail trim done today, but is it worth the behavioral imprinting that will cause you to need to sedate the dog for every nail trim after? (If you really need a muzzle for a particular patient, make it as pleasant as possible and train the patient to like it.)

Offering treats during canine wellness visits is a definite “do.”
6 dos to make great canine wellness visits

1. Be welcoming
   Anticipate who’s coming in the door, and be prepared with a warm greeting and a favorite treat.

2. Manage your reception area
   Retractable leashes are trouble indoors. Designate a reception-area traffic control team member who can politely but firmly enforce reasonable rules to make people and pets more comfortable.

3. Offer lots of positive rewards
   Food is great—and so are balls, squeaky toys and other things that make non–food-motivated dogs happy.

4. Set up and use hospital-wide standards of care
   Make sure your patients and clients get the same message no matter which doctors or technicians they see. This better ensures that nothing gets missed.

5. Remember to read their body language
   It’s easy to get caught up in a busy day and forget to look at the subtle signs our patients give us, especially signs of fearfulness or nervousness.

6. Be sure to look at lifestyle
   Don’t get caught up in giving everything to everyone or making breed assumptions. A Yorkie on the farm? They exist, so make sure all your dogs are getting the right combination of preventive care for the unique life they live.

7. Schedule the next appointment
   You don’t leave your dentist’s office without scheduling the next wellness check. Do the same in your veterinary practice. Get the next appointment scheduled to make sure there are no gaps in care.

Dr. Nappier is assistant professor of community practice in the Department of Small Animal Clinical Sciences at the Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia.
Opioids in veterinary medicine: panacea and pandemonium

Opioids lob their powers against many of the body’s evils, from pain to coughing to diarrhea. But there’s a dark side to opioids, both for the pets prescribed them and for their human caregivers.

By Joan Capuzzi, VMD

Opioids are a large class of natural and synthetic compounds derived from the opium poppy. They include pain medications legally prescribed to people and animals, such as morphine and fentanyl, as well as recreational versions—like heroin—that are illegal.

The “black box” warnings opioids carry on their prescription labels point out the dangers and risks of dependency for humans. Although veterinarians prescribe opioids for animals, they should be mindful of the potential for drug diversion—abuse or illegal distribution—on the part of the pet owner.

“Our patients are not the addicts,” said Julie A.L. Adrian, DVM, associate professor in the Department of Pharmacy at the University of Hawaii, Hilo, during a lecture at the Western Veterinary Conference in February. “But at times, the owners may be, and [prescribed opiates] get diverted to people instead. So, we have to remember to prescribe to safe environments.”

While generally harmless when taken for a short time by the intended patient and via the prescription by a medical doctor, she added, “they produce euphoria or bliss in addition to pain relief, and they can be misused.”

How opioids work
Opiates work at the receptor level within the nervous system (limbic, thalamus, hypothalamus, striatum, midbrain, spinal cord), gastrointestinal and urinary tracts, and smooth muscle throughout the body. They modulate several central nervous system (CNS) receptor types:

- **Mu receptors**, found in pain-regulating regions of the brain: Opioids bound to these receptors may produce analgesia, euphoria, respiratory depression, hypothermia, miosis and physical dependence.
- **Kappa receptors**, found in deep layers of the cerebral cortex and...
spinal cord: Opioids bound to these may produce analgesia, sedation and miosis.\textsuperscript{5,6}

- **Sigma receptors**, found in the cerebral cortex, olfactory bulb, nuclei of mesencephalon, hypothalamus and Purkinje cells: Opioids bound to these receptors may produce dysphoria, hallucinations, cardiac/respiratory stimulation and mydriasis.\textsuperscript{5,7}

- **Delta receptors**, found in the limbic system: Opioids bound to these may blunt persistent pain and improve depressive emotional states.\textsuperscript{5,8}

Opioids work mostly on the mu receptors as analgesics, antitussives and sedating agents. But many of their mu effects, ranging from respiratory depression to emesis to constipation to physical dependence, are potentially dangerous. The secondary effects of opioids, including euphoria and confusion, bradycardia, hypotension, syncope and urinary retention, can be just as crippling.\textsuperscript{5}

Dr. Adrian reminded the audience about the contradictory effects of opioids, which are generally species- or agent-dependent.

For instance, opioids produce miosis in dogs and horses, and mydriasis in cats. Likewise, while opioids generally cause sedation and constipation, morphine produces excitement in horses, cattle and pigs, and defecation in dogs.\textsuperscript{5}

### Opioid classification and cautions

Opioids are controlled substances classified by the U.S. Drug Enforcement Administration (DEA) based on acceptable medical use as well as the potential for abuse or dependency (see Table).\textsuperscript{5}

The schedule II drugs important in veterinary medicine include codeine, fentanyl, hydrocodone, hydromorphone and meperidine. These medications are potentially dangerous because they can cause profound sedation, respiratory depression and death, particularly when combined with other CNS depressants like benzodiazepines and alcohol. They can also induce neonatal opioid withdrawal syndrome.\textsuperscript{10-14}

Veterinarians should use extra caution when prescribing schedule II compounds for a pet that shares a household with children; in some cases, a single dose can kill a child who accidentally ingests one of these medications.

"Many of our patients live with children," Dr. Adrian said, "so we need to educate the owners that they need to keep these drugs in a safe place."

Fentanyl, an opioid used extra-label in small animals, is typically dosed as a transdermal patch for painful pets. It should be used with caution in geriatric and otherwise debilitated patients, as it can cause CNS, respiratory and cardiac depression, as well as urinary retention and constipation. Fatal overdoses can result from increased drug release and rapid absorption in hyperthermic conditions caused by heating pads, warm baths and such. For households with children, this patch is probably too risky.\textsuperscript{11}

Hydrocodone bitartrate is a human-labeled opiate agonist used as an antitussive and analgesic for moderate pain in dogs. Immediate-release products are available in combination with homatropine, acetaminophen, ibuprofen and chlorpheniramine. Cautions include excessive sedation, vomiting and constipation, and it is contraindicated in patients taking monoamine oxidase inhibitors and those that are geriatric or have underlying conditions including Addison’s disease, hypothyroidism, renal insufficiency and respiratory disease.\textsuperscript{12}

Hydromorphone, an opiate agonist used off-label in animals as a sedative, analgesic and preanesthetic agent, can cause vomiting, defecation, panting, sedation, and CNS, respiratory and cardiac depression in dogs. Cats may experience nausea, ataxia, hyperthermia, hyperesthesia and behavioral changes.\textsuperscript{13}

Both hydromorphone and...
hydrocodone can produce rapid-release overdosage if tablets are crushed/chewed. Codeine, an opioid used in cats and dogs to alleviate pain, coughing and diarrhea, causes sedation, constipation and respiratory depression. Cats may experience CNS excitement.10

Meperidine hydrochloride, a human-labeled opioid agonist, is used for analgesia but produces histamine release in cats, resulting in gastrointestinal effects and hypersalivation. For cats and other species, including humans, it carries most of the aforementioned opiate risks, contraindications and adverse effects. Both codeine and meperidine are subject to potentially lethal dosing errors due to confusion between milligrams and milliliters.14

Of the lower-schedule drugs, Dr. Adrian pointed out three that are commonly used by veterinarians. Butorphanol hydrochloride, a schedule III opiate partial agonist that is particularly useful in cats, is an injectable or buccal analgesic. Often used as part of a short-term immobilization “cocktail,” it has fewer adverse effects but lower efficacy than morphine and hydromorphone. Its main risk is potentially fatal respiratory depression, and its effects are not completely reversible with naloxone.15

Butorphanol tartrate, a schedule IV opiate partial agonist, is used as a premedication, antitussive, antiemetic and analgesic in many species. Contraindicated in patients with liver disease, hypothyroidism, Addison’s disease, renal insufficiency and head trauma, it can trigger sedation, ataxia, anorexia and diarrhea in dogs and cats. A particularly effective analgesic in horses, butorphanol can decrease critical equine gut motility and cause excitement.17

Diphenoxylate hydrochloride, a schedule V opiate agonist used in fixed-dose combination with atropine sulfate, is an effective GI motility modifier and antitussive for dogs. It carries cautions for use with certain underlying diseases, and is contraindicated in several diarrheal conditions. Constipation, bloat and sedation are the chief adverse effects. Diphenoxylate must be dosed carefully in small dogs, and it should not be used in young kittens.17

Dr. Adrian closed by asking the veterinary audience which scheduled drugs—of those she covered in her lecture—they use most frequently in their patients. Buprenorphine (mainly in cats) was the No. 1 response, followed by a tie between butorphanol and hydromorphone.

Dr. Joan Capuzzi is a small animal veterinarian and journalist based in the Philadelphia area.

REFERENCES


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1Cardholder Engagement Study Q2 2018.
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Symmetrical lupoid onychodystrophy (SLO) is the inflammatory disease that most commonly causes abnormal nails in dogs. The etiology of this condition is unknown, but it is suspected to be hereditary or immune mediated. SLO normally involves multiple nails on all four paws. It’s most commonly seen in middle-aged dogs, around 3 to 8 years of age, but has been seen in both puppies and older dogs. Predisposed breeds include German shepherds, Rottweilers and Gordon setters, but it has been seen in other breeds as well.

The disease often starts as an acute onset of nail loss. Because SLO often starts with a single abnormal nail, it can take owners a while to realize there is a more generalized nail problem. It may take several months for other nails to become affected or slough off. Nails can also present as dry, distorted claws that do not slough on their own.

One or more of the following abnormalities are typically seen over time:
- Onychogryphosis: abnormal curvature of the claws
- Onychomadesis: sloughing of claws
- Onychorrhexis: fragmentation of the claws
- Onychoschizia: splitting of the claws

Less commonly, significant inflammation (paronychia) or purulent discharge from the nail bed may be present if there is a secondary bacterial infection. Dogs with this disease may be asymptomatic, but many can have associated discomfort or lameness. SLO is not typically seen with other skin abnormalities or systemic illnesses.

Keep in mind that fungal and bacterial infections will often affect more than one paw. Immune-mediated diseases can also affect multiple nail beds or paws. Neoplastic conditions more commonly affect a single digit or paw.

**Diagnosis**
We often diagnose SLO based on history and clinical signs. Certain tests will help us determine if there is a secondary infection that needs to be treated. Skin cytology or culture can be helpful if we see significant paronychia. A fungal culture can rule out...
dermatophytosis. A trichogram or skin scrape can rule out demodicosis. Confirmation of the diagnosis necessitates surgical amputation of an affected P3 for dermatohistopathology. Unfortunately, the nail alone will not give adequate information; the junction between the affected nail bed and P3 is required. However, many veterinarians simply begin empirical treatment rather than performing an amputation. In cases that are biopsied, histopathology often shows hydropic degeneration of the basal cell layer, a lichenoid interface dermatitis and pigmentary incontinence.

General treatment information
It is important to give pet owners realistic expectations when it comes to clinical response to treatments. It will often take 12 weeks to see significant improvement—claws grow very slowly. The first sign of improvement is normal-appearing growth at the base of the claw.

Many treatment options exist; in my practice, we often use a combination of therapies or adjust treatment plans if there is minimal improvement or disease progression over several months. There is no general consensus as to whether and when treatment should be discontinued. SLO is often treated for at least 6 months after remission of clinical signs, but certain cases will require life-long treatment. Medications should be tapered slowly and rechecks performed on a regular basis to monitor for signs of relapse.

Specific treatments
• Nail care:
  − Frequent trimming of nails (about every 2 weeks) to prevent further cracks
  − Manual removal of loose nails (general anesthesia is often recommended)
  − Treatment with appropriate antibiotics if secondary bacterial paronychia is present
• Omega-3 fatty acids
  − 180 mg EPA/5 kg by mouth every 24 hours
  − Often used in combination with vitamin E
• Vitamin E: 200 to 400 IU by mouth every 12 hours
• Tetracycline (doxycycline) and niacinamide
  − Dogs weighing less than 10 kg: 250 mg of each by mouth every 8 hours
  − Dogs weighing more than 10 kg: 500 mg of each by mouth every 8 hours
  − Doxycycline (can be used in place of tetracycline): 5 to 10 mg/kg by mouth every 12 hours
  − Remember that niacin and niacinamide are two different products—make sure owners purchase the correct one (usually over the counter).
  − Pentoxifylline: 10 to 25 mg/kg by mouth every 8 to 12 hours
• Cyclosporine: 5 to 10 mg/kg by mouth every 24 hours, then tapered to the lowest dose possible that prevents relapse
• Prednisone:
  − 2 to 4 mg/kg/day for about 2 to 4 weeks, then tapered slowly to reach the lowest every-other-day dose that prevents relapse
  − Often reserved for cases that have failed other treatments
• Azathioprine:
  − 1.1 to 2.2 mg/kg by mouth every 24 to 48 hours
  − Monitor complete blood cell count and liver enzymes every 2 weeks for at least 2 months.
• Consider pain control, particularly in the early stages of the disease.
• Consider a food elimination trial if there is a suspicion of an adverse food reaction based on history and diagnostics.
• Make sure dogs with hypothyroidism are supplemented appropriately as some dogs with SLO have concurrent hypothyroidism.
• Onychectomy may be considered for refractory cases associated with onychalgia (pain).

Prognosis
The overall prognosis is good but owners should be aware that claws may continue to break easily and remain deformed. Outcome will depend on control of secondary infections, response to therapy and client compliance. Overall, the majority of dogs show some improvement within three to four months of starting treatment.

Differential diagnosis in patients with SLO
Keep these alternative causes in mind when making your official diagnosis:
• Bacterial claw infection
• Dermatophytosis or deep fungal infection
• Immune-mediated diseases:
  − Pemphigus vulgaris
  − Bullous pemphigoid
  − Lupus erythematosus
• Vasculitis
• Drug eruption
• Neoplasia (squamous cell carcinoma)
• Cryoglobulinemia or cold agglutinin disease

Dr. Judy Seltzer graduated from the Royal Veterinary College in London and completed her residency in dermatology at the University of Florida. She has been working in her home state of New York since 2009, currently at BluePearl Veterinary Partners in New York City. She and her husband have a baby girl and four cats and enjoy traveling, fall festivals, winter activities and dining out.
Love at first site:
Your location investigation checklist

From location to soil to utilities, here are the fundamentals for finding that perfect site to build or lease your veterinary hospital space.
There are many, many steps that must come before cutting the ribbon on a new veterinary clinic. There’s planning, building, designing and everything in between. But before any of that can even be started, the perfect site needs to be chosen. Whether you have the perfect spot in mind or you’re still looking for that love-at-first-site moment, here are the fundamentals of site investigation.

### Building a practice
- Locate your dream site in a growing area as far from other veterinary practices as you can get.
- Check with your municipality to make sure the site is zoned correctly.
  - Identify any restrictions on that zoning, such as an inability to have outdoor dog runs.
- Have a geotechnical report (also called a soils report) done.
  - The report should include foundation recommendations. If the soil is bad, you will need to find out if the foundation can be built affordably on that type of soil.
  - Have a survey done of the geotechnical report that identifies easements, wetlands, property lines and any other site restrictions.
- If your selected site has water and hasn’t been identified as a wetland, this will need to be determined because most states have regulations about building near a wetland and you may not be able to build there.
- Check the slope. Discuss with an architect or civil engineer whether the site is flat enough to build on.
- Determine the location of utilities. Check to see if you can get utilities to the site and what the cost is to do so. Some sites have access already, but some don’t. You’ll need professional help for this.
- Get a sense for any other major site development costs, such as turn lanes that will be put in at the road, storm water ponds, etc.
- Figure out whether the site has unusual local (often environmental) requirements that will restrict its use. For example, in parts of California you aren’t allowed to cut down oak trees, so you have to work around them.

After this has all been done and the site has passed or is passing muster, remember to complete a Phase 1 environmental study to ensure there are no environmental hazards on the site. Even if the site looks like it hasn’t been used, it’s still an important step to carry out.

### Leasing a space
Decided to choose a leasehold space instead of building new? There’s still plenty to keep in mind before you make your final decision:
- Locate in a thriving or growing area—you don’t want to be in a dead shopping center.
- Like with a site investigation, make sure your hospital is as far from other veterinary practices as you can make it.
- Check (and double check) that the space is in good shape. Look for mold or other common problems. The building should be well taken care of.
- Try to find a space without a business above it. You can work with a business above you, but it’s much more difficult. Single-story shopping spaces work best.
  - Square or rectangular spaces work better than long, thin ones. A narrow place wastes space (say that five times fast).
  - In the event that you do choose a small space, look for something no narrower than 25 feet. It is extremely difficult to work in anything narrower than that.
  - You should also avoid irregularly shaped spaces, such as an L-shaped space with a center staircase.
- Determine the availability of utilities to the space.
  - Ask the building owner whether you can expand utilities if needed. At some point you may need more power to the unit and need to know ahead of time that you will be able to make those changes.

### Look to the future
At the end of the day, always be sure to think strategically about your plan. In the future, will you expand or move? If you want to expand, try not to locate next to something that will be there forever so you have the potential for expansion.
We all know the story: A dog walks into a bar—ahem—a veterinary practice, and says, "I'm itchy." You see patchy hair loss and excoriated skin and know that the possibilities are endless. But one rake with a flea comb yields an immediate diagnosis and the news is delivered.

This initial flea diagnosis is where you, super-vet, must sound the alarm. What I tell owners is that in the event of a nuclear war, the only survivors will be horseshoe crabs, cockroaches and, you guessed it, fleas! I’m joking, of course, but I want my clients to take the problem seriously because if they don’t act quickly, aggressively and with painstaking rigor, they will be combatting these hardy invaders for a long time. But sometimes clients just don’t get the message the first time around.

Give them the facts
Fast forward several months, and the owner is back in your office because the fleas won’t go away, or the owner “got rid of them and now they are back.” Get real with your client by reviewing with them these facts:

- The adult fleas you see on your cat or dog—Ctenocephalides felis—likely number fewer than 20, but these buggers are just the tip of the iceberg.
- Each female flea lays 10 to 50 eggs a day, with a lifetime total of up to several thousand eggs. Fleas reproduce following a blood meal, with a new generation of fleas emerging every few weeks.
- The length of flea life stages varies depending on environmental conditions: eggs (3-21 days), larvae (1-2 weeks), pupae (1-3 weeks to one year) and adults (2-7 months).
- Your pet’s fleas never really went away. The “new” infestation is likely another generation of the original batch, still thriving because the life cycle was never broken.

Coaching pet owners through unrelenting flea infestations

Fleas have a supersonic life cycle and fireball breeding power, and while the newer products break the flea life cycle quickly, the occasional client goes several rounds with these pests. Your expertise is critical here.

By Joan Capuzzi, VMD
• You cannot break the flea life cycle without chemicals. Natural remedies (e.g., garlic, coconut oil, borax) won’t put a stop to it.
• With rare exception, if one pet in the household has fleas, every pet has fleas. Surprised because the other pet(s) in your home are not manifesting flea allergy dermatitis and/or pruritus? Don’t be! Flea infestations in some pets are clinically silent.
• If your pet has fleas, your home and likely your yard are also infested.
• Departing an infested environment, like a vacation home, does not necessarily make the fleas die. Adult fleas can live for a few months without a food source, and pupae can survive for up to a year in a barren house; adults are triggered to emerge by vibrations, carbon dioxide and warmth.

**Recommend a holistic approach**

After reviewing the principles that lay the groundwork for persistent flea infestations, I ask how the initial infestation was managed. Then, together, the client and I identify the smoking guns. The most common oversights are (1) failure to treat all pets in the household at the same time and for an adequate duration and (2) failure to treat every part of the environment at the same time as every pet is treated.

**Treating the pet**

I tell owners, “Let’s turn your pet into a walking exterminator.” By treating the animal immediately with an adulticide, the fleas currently on the pet and those that jump on when the pet goes home will die quickly, before they have a chance to lay eggs. I get an adulticide such as nitenpyram on board before the pet leaves my office, thereby killing any fleas that might leap onto the fur from the cat carrier or the car during the ride home, and bringing the pet immediate relief.

I advise the owner to bathe the pet well, manually removing adult fleas in the process. Extra lathering and rinsing also lift flea dirt from the coat.

The owner can then begin—or resume—using oral (dogs) or spot-on (dogs and cats) adulticides that work primarily by disabling the insect’s nervous system and, for most products, kill fleas within hours of administration. These include imidacloprid and fipronil, as well as the newer isoxazoline-based products: fluralaner, afoxolaner, lotilaner, sarolaner.

To dismantle the life cycle of fleas and certain other parasites successfully, these preventive must be given according to the prescribed schedule, which varies by product from monthly to trimonthly. While many veterinarians advocate year-round flea and tick prophylaxis for every pet, I recommend a less-is-more approach that incorporates individual risk factors. At a minimum, however, these products should be continued for at least two months after the last flea is seen. **Treating the environment**

While these products kill fleas that jump onto the pet to feed, I advise owners to short-circuit this process by treating the entire home, right down to the cracks between the floorboards, where flea eggs can drop and safely mature:

• Mop floors, then rinse the infected mop immediately under running water so all fleas, larvae and/or eggs are washed down the drain.
• Flea eggs, which are dry and fall from the pet’s coat, can sink deeply into carpet. So, vacuum all carpets immediately and repeatedly. Put used vacuum bags into sealed bags, and dispose of them in an outdoor trashcan. Then wipe down the bottom of the vacuum cleaner and, for bagless machines, the canister itself with a cloth dampened with water or (even better) an insecticide solution.

**Is it safe to come out yet?**

I explain to owners that if all goes according to plan, it will take a couple months to completely eradicate the flea infestation. More commonly, these diehards wax and wane over six to 12 months as adults die and eggs hatch. When my clients are in this position, I help them identify weak links in their flea management plan and assure them that once we seal these cracks the end really will be in sight.

Dr. Joan Capuzzi is a small animal veterinarian and journalist based in the Philadelphia area.
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A singular problem with diverse presentations

Masses, abnormal test results and specific clinical signs should point to clear diagnoses, right? How well would you do in identifying what's going on with these patients?

By Brooke Britton, DVM, DACVIM (oncology)

These three dogs share the same condition, with vastly different clinical presentations. Dog A developed a rapidly growing, ulcerated and superficially infected mass on the hindlimb over the course of three weeks. Dog B developed too-numerous-to-count, intensely pruritic dermal lesions and progressive lethargy over the course of several months. Within months after surgical excision of a mass,
Dog C developed painful subcutaneous lumps over the dorsum, with straining to defecate, inappetence and intermittent vomiting.

Fine-needle aspiration of the lesions was performed in each dog. The cytology in each dog was similar in appearance, as shown in Figure 1.

*Dr. Britton practices at BluePearl Veterinary Partners in New York, New York.*

(Flip to see the answer.)

---

**What’s your diagnosis?**

A. Mast cell tumor

B. Eosinophilic granuloma complex

C. Cutaneous plasma cell tumor

D. Atypical variant of lymphoma

---

Several dogs were already known to have mast cell tumors, but the majority of canine mast cell tumors occur via the lymphoid system. Regardless of presentation, in dogs with mast cell disease staging should be considered secondary to mast cell tumors.

**Spread of mast cell tumors**

Spread of mast cell tumors occurs via the lymphatic system to the regional lymph nodes, abdominal viscera and, less commonly, the bone marrow; spread to the chest cavity and other bodily locations is rare. Dog C experienced tenesmus due to enlarged medial iliac lymph nodes that were compressing the colon and thereby affecting defecation.

Most canine mast cell tumors can be diagnosed readily on fine-needle aspiration and cytology. Cytology typically yields large, granulated round cells with prominent nuclei that stain intensely purple on application of Diff-Quik. Biopsy of mast cell tumors is required to provide additional prognostic information. Biopsy of skin tumors, as mast cell tumors are often non-mass-forming diseases, provides further diagnostic information. If mass-forming disease is evident, additional samples should be submitted for histopathologic examination. Despite the occurrence of organ infiltration, metastases are rare. Treatment is based on clinical staging, with the majority of dogs exhibiting disease in the region of the affected organ.

**Staging and treatment**

Staging should be performed in all dogs with mast cell tumors, regardless of disease presentation. Fine-needle aspiration yields large, granulated round cells with prominent nuclei that stain intensely purple on application of Diff-Quik. Biopsy of mast cell tumors is required to provide additional prognostic information.

Spread of mast cell tumors occurs via the lymphatic system to the regional lymph nodes, abdominal viscera and, less commonly, the bone marrow; spread to the chest cavity and other bodily locations is rare. Dog C experienced tenesmus due to enlarged medial iliac lymph nodes that were compressing the colon and thereby affecting defecation.

**Staging**

Initial staging should include fine-needle aspiration of each skin lesion. Fine-needle aspiration is readily obtained in canine mast cell tumors and provides diagnostic information with minimal patient discomfort. In dogs with non-mass-forming disease, up to 15% of dogs may have multifocal disease at presentation. Mast cells are found throughout the skin and lymph nodes, primarily in the dermis and subcutaneous fat, and are commonly found in the subcutaneous tissue, lymph nodes, and a variety of other sites. The majority of canine mast cell tumors occur via the lymphoid system.
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