Guarantee compliance

- Administer the only FDA-approved single-dose otitis externa treatment and rest your confidence on a 30-day duration of effect

Eliminate the stress of at-home treatments

- The power is in your hands to treat your patient’s ear infection in-clinic

SAVE THE DAY. USE CLARO® FOR YOUR MOST COMMON OTITIS CASES.

Claro® is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (Malassezia pachydermatis) and bacteria (Staphylococcus pseudintermedius).

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. CONTRAINDICATIONS: Do not use in dogs with known tympanic membrane perforation. CLARO® is contraindicated in dogs with known or suspected hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate.

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CLARO®
(florfenicol, terbinafine, mometasone furoate)
Otic Solution

Antibacterial, antifungal, and anti-inflammatory
For Otic Use in Dogs Only

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

DESCRIPTION:
CLARO® contains 16.6 mg/mL florfenicol, 14.8 mg/mL terbinafine (equivalent to 16.6 mg/mL terbinafine hydrochloride) and 2.2 mg/mL mometasone furoate. Inactive ingredients include purified water, propylene carbonate, propylene glycol, ethyl alcohol, and polyethylene glycol.

INDICATIONS:
CLARO® is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (Malassezia pachydermatis) and bacteria (Staphylococcus pseudintermedius).

DOSEAGE AND ADMINISTRATION:
Shake before use.

CLARO® should be administered by veterinary personnel.

Administer one dose (1 dropperette) per affected ear. The duration of effect should last 30 days.
1. Clean and dry the external ear canal before administering the product.
2. Verify the tympanic membrane is intact prior to administration.
3. Remove single dose dropperette from the package.
4. While holding the dropperette in an upright position, remove the cap from the dropperette.
5. Turn the cap over and push the other end of the cap onto the tip of the dropperette.
6. Twist the cap to break the seal and then remove cap from the dropperette.
7. Screw the applicator nozzle onto the dropperette.
8. Insert the tapered tip of the dropperette into the affected external ear canal and squeeze to instill the entire contents (1 ml) into the affected ear.
9. Gently massage the base of the ear to allow distribution of the solution.
10. Repeat with other ear as prescribed.

Cleaning the ear after dosing may affect product effectiveness.

CONTRAINdications:
Do not use in dogs with known tympanic membrane perforation (see PRECAUTIONS). CLARO® is contraindicated in dogs with known or suspected hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate.

WARNINGS:

Human Warnings: Not for use in humans. Keep this and all drugs out of reach of children.

ANIMAL SAFETY:

In a target animal safety study, CLARO® was administered aurally to 12-week-old Beagle puppies (4 dogs/sex/group) at 0X, 1X, 3X, and 5X the recommended dose for 3 weeks. No clinical signs, body weight, or food consumption changes were observed during treatment. No treatment-related findings were noted in hearing tests, body weight, weight gain, or food consumption. CLARO® administration was associated with post-treatment ear wetness or clear aural exudate, increased absolute neutrophil count, decreased absolute lymphocyte and eosinophil counts, suppression of the adrenal cortical response to ACTH-stimulation, decreased adrenal weight and atrophy of the adrenal cortex, increased liver weight with hepatocellular enlargement/cytoplasmic change, and decreased thymus weight. Other potentially treatment-related effects included mild changes to AST, total protein, inorganic phosphorus, creatinine, and calcium.

STORAGE INFORMATION:


HOW SUPPLIED:
CLARO® solution is supplied in a single-use dropperette in a blister. Each dropperette contains one 1 mL dose.

CLARO® is available in cartons of two, ten, or twenty dropperettes.

Manufactured for
Bayer HealthCare LLC, Animal Health Division
P.O. Box 390 Shawnee Mission, Kansas 66201 USA.

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NADA 141-440, Approved by FDA
LV1802

ADVERSE REACTIONS:

In a field study conducted in the United States (see EFFECTIVENESS), there were no directly attributable adverse reactions in 146 dogs administered CLARO®. To report suspected adverse drug events and/or obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, contact Bayer HealthCare at 1-800-422-9874. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.

PHARMACOLOGY:
CLARO® Otic Solution is a fixed combination of three active substances: florfenicol (antibacterial), terbinafine (antifungal), and mometasone furoate (steroidal anti-inflammatory). Florfenicol is a bacteriostatic antibiotic which acts by inhibiting protein synthesis. Terbinafine is an antifungal which selectively inhibits the early synthesis of ergosterol. Mometasone furoate is a glucocorticosteroid with anti-inflammatory activity.

MICROBIOLOGY:
The compatibility and additive effect of each of the components in CLARO® solution was demonstrated in a component effectiveness and non-interference study. An in vitro study of organisms collected from clinical cases of otitis externa in dogs enrolled in the clinical effectiveness study determined that florfenicol and terbinafine hydrochloride inhibit the growth of bacteria and yeast commonly associated with otitis externa in dogs. No consistent synergistic or antagonistic effect of the two antimicrobials was demonstrated. The addition of mometasone furoate to the combination did not impair antimicrobial activity to any clinically significant extent.

In a field study (see EFFECTIVENESS), at least 10 isolates from successfully treated cases were obtained for S. pseudintermedius and M. pachydermatis.

EFFECTIVENESS:

In a well-controlled, double-masked field study, CLARO® was evaluated against a vehicle control in 221 dogs with otitis externa. One hundred and forty six dogs were treated with CLARO® and 75 dogs were treated with the vehicle control. All dogs were evaluated for safety. Treatment (1 mL) was administered once on Day 0 to the affected ear(s). Prior to treatment, the ear(s) was cleaned with saline. The dogs were evaluated on Days 0, 7, 14, and 30. Blood work and urinalysis were obtained on Day 0 pre-treatment and Day 30 at study completion. Four clinical signs associated with otitis externa were evaluated: erythema, exudate, swelling, and ulceration. Success was based on clinical improvement at Day 30. Of the 183 dogs included in the effectiveness evaluation, 72.5% of dogs administered CLARO® solution were successfully treated, compared to 11.1% of the dogs in the vehicle-control group (p=0.0001).

EFFECTIVENESS:

Contraindicated in dogs with known tympanic membrane perforation. Use with caution in dogs with impaired hepatic function (see ANIMAL SAFETY).
Temple Grandin challenges veterinarians to think as animals do

To work more effectively with your patients, train yourself to see the world as they see it, through images.

By Joan Capuzzi, VMD

The advent of spoken language enabled humans to fork off from the world of our furred, feathered, and finned counterparts. But it’s a world in which veterinarians and others who work with animals remain steeped. There’s a dissonance in outlook, according to Temple Grandin, PhD, a professor of animal science at Colorado State University in Fort Collins, because humans think in words and animals think in pictures.

“When I was young, I thought everybody thought in pictures,” Grandin said during her keynote address at a recent Fetch dvm360® virtual conference. “And then I learned that most people think in words, but I couldn’t understand why they weren’t also observing.”

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Opioids in veterinary medicine

Drug shortages, legal restrictions, and bounding abuse have led the veterinary community to turn to alternative medications and therapies for pain control in animals. But we haven’t gone cold turkey yet.

By Joan Capuzzi, VMD

Managing acute pain, and they chip away at chronic discomfort too. But opioids are, so to speak, a double-beveled needle.

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AAFP bans elective declaws in Cat Friendly Practices

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The malformed canine heart

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Traumatically displaced teeth

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Integrative medicine
CBD: What we know and where we’re going

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Orthopedics
Tips for better orthopedic exams

page 40
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- **Works for a full month**

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- **Kills** fleas and ticks for a full month

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Here are some of the CE opportunities coming in the next several months. Note that many early 2021 CE events are now being held online. Please visit individual event websites for details.

To let us know about your upcoming CE offering, email dvm360news@mjhassoc.com.
OPIOIDS IN VETERINARY MEDICINE: JUST SAY "NO" (SOMETIMES)

Drug shortages, legal restrictions, and bounding abuse have led the veterinary community to turn to alternative medications and therapies for pain control in animals. But we haven’t gone cold turkey yet.

By Joan Capuzzi, VMD

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Feed the love.
Lose the weight.

A Love Story

GET NEW TOOLS TO MAKE WEIGHT CONVERSATIONS EASIER
And watch Moto’s story at EndPetObesity.com/Vet
# NEWS

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Practical & Online

Education workshops for orthopedic techniques you can offer in clinic

**zoom**
workshops in 2021

- **February** - 22nd-23rd
- **April** - 15th-16th
- **July** - 19th-20th
- **August** - 5th-6th
- **September** - 23rd-24th
- **November** - 23rd-24th
- **December** - 6th-7th

...there’s more ways to learn

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- Treatment options for CCL disease and meniscal injury
- OrthoFoam™ – the bone ingrowth implant
- MMP technique
- Key steps of procedure
- MMP variations
- Difficult cases
- Dealing with complications
- MMP sawbone

**Patellar Luxation**

- Patellar luxation including Tibial Tuberosity
- Transposition
- Introducing RidgeStop™
- RidgeStop™ and TTT sawbone

**Plate Osteosynthesis**

- Fracture and implant biomechanics
- Bone healing principles
- Assessment of fracture patient
- Fracture score
- Internal fracture fixation
- How to apply non locking plates
- Locking plates and screws
- How SOP™ differs to existing implant systems
- SOP™ biomechanics
- SOP™ clinical recommendations
- SOP™ practical sawbones

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Kathryn Primm, DVM, CVPM

Marc A. Rosenberg, VMD

Emily Seidl, DVM
I
n March 2020, the United States was in the early stages of the coronavirus disease 2019 (COVID-19) pandemic. We shut the entire country down and ground the economy to a halt in an effort to slow the spread of the virus. Nine months later, the FDA approved 2 COVID-19 vaccines under emergency authorization. Before New Year’s Day, millions of Americans had received the vaccine. Nine months. Take a moment to let that sink in. It’s the medical breakthrough of our lifetime. Consider these facts:

• In well under a year, scientists identified a novel virus, unlocked and sequenced its genetic code, created new therapies to save lives, and developed multiple safe and effective vaccines using messenger RNA technology, a technology hopefully applicable to future vaccine development for people and pets.
• The United States has approved 2 vaccines for emergency use, one from Pfizer/BioNTech and another from Moderna, and the AstraZeneca/Oxford vaccine has been approved for emergency use in the UK. In addition, 68 vaccine candidates are undergoing human clinical trials right now, including 20 in phase 3 trials, and at least 90 preclinical vaccines are under active investigation in animals.1 In the US and around the world, the pharmaceutical industry has answered the call and invested heavily in this effort.
• This was the fastest vaccine development program in history. Until the COVID-19 pandemic, the fastest development timeline was 4 years, for the mumps vaccine.

The next step of the process—vaccine distribution—will be as challenging as the development phase, if not more so. Factories around the world are working in overdrive to produce hundreds of millions of vaccine doses.

As of press time, more than 30 million doses have been distributed across the country, and more than 10.5 million people have received their first dose, according to the CDC.2 Many patients have already received their second dose.

Every day, more people will be vaccinated. After health care workers and our most vulnerable citizens, other frontline workers will be next. And soon, all Americans will be able to go to their doctor or walk into a CVS or Walgreens and receive the vaccine.

Remember, we did all this in 9 months. Imagine where we will be 9 months from now.

—Mike Hennessy Sr
Chairman and Founder, MIH Life Sciences™

RESOURCES

I continue to practice as a relief vet when I can, and I have never seen as dire a need to help our colleagues as I have in the past year. If we haven’t been ill ourselves, many of us have had colleagues and team members who are sick with coronavirus disease 2019 (COVID-19), the flu, and other illnesses—not to mention the emotional toll on our entire profession during these extremely challenging times. Closing practice doors to keep the team safe has affected not only client service but also our ability to put food on the table for our families. The struggle is real for us, and it’s real for our clients.

Happily, pet adoption at the local animal shelter where I work has been through the roof. The human-animal bond is stronger than ever, with we humans yearning for the unconditional love we receive from animals. These wonderful pets need health care and veterinary visits, yet many pet owners must wait 2 to 3 weeks for a wellness exam. While this is certainly understandable given the constraints imposed by the pandemic, curbside-only care has caused a shift to referral practices and emergency veterinary hospitals.

Just last month, a large referral emergency hospital in New Jersey had 56 end-of-life appointments in a single day. That’s 56 families that had to say goodbye to their loved one, and the mental strain on the hospital team was enormous. Although it may be harder on some days to remember our “why,” keep in mind in that behind the tears of grieving pet parents are the “thank yous” and the “thank you for seeing us” and the “your team is fantastic” comments that often follow these appointments.

The landscape of our profession has changed dramatically in less than 12 months. For many veterinarians, this time last February was business as usual…planning spring marketing events, discussing National Pet Dental Month (which we still can celebrate!), considering upcoming practice initiatives, and the like. Now we truly are just planning for tomorrow and hoping our teams stay safe today so we can do our best to serve clients. Tomorrow may be different. Know that you are in the greatest profession on the planet, surrounded by a sea of colleagues who are here to support you and elevate you in times of need, laughter, and crisis. I have never had a colleague turn down a phone call to chat about a case, discuss personal matters, or be a voice of reason.

We need each other more now than ever. Continue to check in on one other and take time to care for yourself, both mind and body. On behalf of the dvm360® family, we thank you all for your essential work. We honor your strength and perseverance. Continue to problem solve, communicate, and practice the highest quality medicine you can while remaining safe during this pandemic.

—Adam Christman, DVM, MBA
Chief Veterinary Officer

NEWS | Chairman’s letter

Innovation is saving the world

Resiliency is stretched to the limit

Adam Christman, DVM, MBA

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COMMENTARY

Paleontology for veterinarians: The evolution of cats and carbohydrates

Cats are clearly obligate carnivores. So, why are cat foods so high in carbohydrates, and what should be done about it?

By Tom Rothwell, DVM, PhD

The story of cat nutrition is written in the fossil record. As both a paleontologist and a feline veterinarian, I have studied these fossils and they reveal that cats have been meat-eating obligate carnivores for an exceedingly long time. Felis catus, the domestic cat, has a long evolutionary story, a cat’s tale that should greatly influence the practice of veterinary medicine today.

Fossils of the earliest-known cat species are from rocks found in southern France that date back 29 million years. Named Proailurus, of the family Felidae, these early cat fossils contain teeth and bones with all the characteristics of a carnivore, a meat-eating member of the mammalian order Carnivora. Clearly evident in these specimens are the elongated canines and fully developed carnassial meat-eating dental apparatus that defines the order Carnivora: The upper premolar teeth (108 and 208) shear like a scissor blade with the lower molars (309 and 409). The skull and postcranial bones of these earliest known cats are almost identical to the felids of today, including the domestic cat. It is clear to me, after examining thousands of these fossils, that cats have been hypercarnivorous, ambush predators for at least 29 million years.

Why do we care about cat evolution?

We care because cats are determined to be different. They are not close relatives to the more omnivorous dog. The evolution of dogs and cats diverged 50 million years ago. In fact, cats are more closely related to hyenas than to dogs. This means that their anatomy, biochemistry, physiology, and behavior have been evolving separately from dogs for at least 50 million years.

Today, there are 30 closely related species within the family Felidae. None of these cats evolved to digest food with more than 10% carbohydrates, not the lion in the zoo or the cat in the kitchen. The wild ancestor of the domestic cat, Felis silvestris, is still found today in Eurasia and Africa. Its diet consists primarily of small rodents and birds, nourishment that is close to 20% protein and less than 10% carbohydrates. As a cat veterinarian and a feline paleontologist, I ask: If all members of the family Felidae evolved with a diet low in carbohydrates and high in protein, why do we feed excessive carbohydrates to the species that we are most empowered to care for?

The chronology of cat nutrition

The explanation relies in part on international geopolitical conflict. The cat food carbohydrate story has its beginning during World War II when the pet food industry was forced to stop using metal to package pet food in cans. By 1946, dry cat food accounted for 85% of the market share, but the ingredients were somewhat difficult and expensive to bake and convert into kibble. In 1950, the dry food extrusion process, which required adding starch, increased the efficiency and profitability of putting dry pet food into a bag. Dough could be fed into a machine and cooked under pressure before being extruded (pushed out) through small holes to create the kibble. Supermarket shelves subsequently were stocked with inexpensive, convenient dry cat food that had a 20% to 30% carbohydrate content. After 29 million years of nutritional evolution, pet cats were experiencing a new diet.

At the same time, the pet care industry was evolving. Earlier generations of veterinarians were largely ambulatory. They made farm calls, where they were not necessarily involved in the diets of the dogs and cats they encountered. A new type of veterinarian was emerging. Small animal clinics began to open in cities and suburbs specializing in the care of the increasing number of pet dogs and cats. In the 1960s, small animal clinics began to sell dog and cat food, including some from the veterinarian-created company Hill’s Pet Nutrition.

The next big moment in the chronology of cat nutrition occurred in 1976 when Colgate-Palmolive bought Hill’s, which by this time included Prescription Diet and Science Diet products for both dogs and cats. All of the feline diets contained more than 10% carbohydrates. Because of their huge success in marketing toothpaste through dentists, Colgate-Palmolive began retailing Hill’s Prescription Diet products through veterinarians. Suddenly, many small animal veterinarians were selling these popular therapeutic diet formulas. Clients demanded them.

Veterinarians entered the high-carb cat food business.

The consequences

For the past 70 years, most pet cats have been eating food much different than what they have evolved to digest. Have there been consequences? One notorious repercussion was discovered in 1987. Because numerous commercial cat foods did not include muscle meat and its naturally occurring taurine, some cats developed dilated cardiomyopathy. Collectively, veterinarians and the pet food industry had failed to understand that cats are unable to synthesize and conserve sufficient taurine as dogs can. Cats are different.

Could there be other medical or surgical effects? Perhaps dry cat food with excessive carbohydrates contributes to other common cat maladies such as liver disorders, inflammatory bowel disease, obesity, or lower urinary tract issues. Carbohydrate percentage certainly influences diabetes mellitus. What can we do? What should we do? As veterinarians, we are the caretakers. Perhaps, it is time for us to change.

Tom Rothwell, DVM, PhD, is a graduate of the New York State College of Veterinary Medicine at Cornell University. A self-described cat-focused scientist, Rothwell holds a PhD in Paleontology from Columbia University and the American Museum of Natural History, where he studied the fossil record of the earliest cats to enter North America 16 million years ago. Medical director of the Paris Hill Cat Hospital in Paris, New York, until November 2020, he now works part-time at Paris Hill and lectures and publishes on the evolution of the cat and its effect upon veterinary medicine and surgery.
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READER FEEDBACK

Readers respond to “The dilemma”

Two recent columns elicited reader comments.

“T he dilemma,” by Marc Rosenberg, VMD, has always been a popular column, and for good reason. It makes veterinary professionals think about decisions they might make in practice under certain circumstances, and once in a while the column really stokes some readers’ emotions. “Cancel culture” (November 2020) and “How much is too much?” (December 2020) both elicited a number of letters from readers. Here are some of those letters.

Condemning cancel culture

I cannot disagree more with Dr Rosenberg’s response to this situation. It is way past time for all of us to start thinking logically and stop responding to every situation with a knee-jerk reaction. This dilemma is a basic one: How much control does an employer have over their employees? Follow this logic. If the employer disagrees with a company that sells food, they do not have to purchase anything from that company. However, the owner cannot dictate what his employees purchase with their wages, to consume on or off his premises. What’s next? Does he inspect the lunch box items for foodstuffs from companies he disagrees with? Does he set up a company lunch vendor and demand that employees purchase only items from that vendor?

Because the owner and some of the employees feel they are “woke” and therefore correct about everything, they believe any means necessary must be utilized to force others to conform to their standards. We are falling into a trap that will harm a great many more than it will help if we continue this ridiculous cancel culture idea.

Would this situation be any different if a practice owner demanded that employees not patronize a food establishment owned by openly gay people, or insisted that they were not allowed to bring in food from a Muslim-owned eatery? There is no difference. Just because an employer has certain beliefs or standards does not mean they are free to impose those beliefs onto their employees. And I can already hear the argument that those employees who disagree can always find another job. Prior to the establishment of labor unions, that was an argument used by employers as well. It did not hold up then, and it does not hold up now. Stop with the manipulation, and allow human beings to make their own choices, whether you agree with them or not.

—Susan Scholl, DVM
Bremen, OH

There is no justification for the practice owner to tell any employee where to spend their money, period. Lunch is the employees’ time to spend their money as they please. The so-called moral outrages you mentioned came from establishments that were kind enough to bring a free lunch to your clinic. Did you provide free services to your patients during that time? These businesses were acting in a thoughtful and kind manner. Treating employees like subjects who are unable to make their own decisions is offensive, demeaning, and hypocritical.

—Dean Smylie, DVM
Advanced Animal Care
Douglas, WY

How much is too much?

I totally agree with Lee Animal Hospital management’s decision to increase professional service fees and eliminate all additional surcharge line items. I am an ancient dinosaur who graduated in 1968. I have had this policy in place ever since I started my own practice in 1971. It has served me very well. I often get comments from clients about the nickel-and-dime practices of other hospitals. I might add that you seldom see these kind of charges as line items from other professionals, such as your own doctor or attorney.

—Sophia Kaluzniacki, DVM
Green Valley Animal Hospital
Green Valley, AZ

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Midwestern Pet Foods expands recall after nearly 70 dog deaths

Seventy deaths and 80 illnesses have been reported in dogs to date, presumably caused by aflatoxin toxicity.

By dvm360® Staff

Midwestern Pet Foods, Inc has initiated a recall of more than 1000 lot codes of its Sportmix brand pet foods due to potentially elevated aflatoxin levels. All pet food products containing corn that were manufactured in the company’s Oklahoma plant and have an expiration date on or before July 9, 2022, have been recalled.

First announced on December 30, 2020, following an alarming surge of consumer complaints of deaths and illnesses among dogs that consumed the affected pet foods, the recall was expanded on January 11, 2021. As of press time, 70 dogs have died and more than 80 fell ill after consuming Sportmix products, according to the US Food and Drug Administration (FDA). It’s important to note that not all cases have been officially confirmed as aflatoxin poisoning.

Signs of aflatoxin poisoning include sluggishness, appetite loss, vomiting, jaundice, diarrhea, and, in severe cases, death. Affected pets may suffer liver damage with no clinical signs.

The following pet foods have been recalled if the lot code has an expiration date on or before “07/09/22” and includes “05,” which identifies products made in the Oklahoma plant:

- Pro Pac Adult Mini Chunk, 40-lb bag
- Pro Pac Performance Puppy, 40-lb bag
- Splash Fat Cat 32%, 50-lb bag
- Nunn Better Maintenance, 50-lb bag
- Sportmix Original Cat, 15- and 31-lb bags
- Sportmix Maintenance, 44- and 50-lb bags
- Sportmix High Protein, 50-lb bag
- Sportmix Energy Plus, 44- and 50-lb bags
- Sportmix Stamina, 44- and 50-lb bags
- Sportmix Bite Size, 40- and 44-lb bags
- Sportmix High Energy, 44- and 50-lb bags
- Sportmix Premium Puppy, 16.5- and 33-lb bags

Veterinarians who suspect aflatoxin poisoning should submit reports electronically through the FDA Safety Reporting Portal (safety reporting.hhs.gov) or by calling their state’s FDA Consumer Complaint Coordinators. Additionally, the FDA urges all veterinarians treating patients for aflatoxin poisoning to ask clients for a detailed diet history.

The FDA and the Missouri Department of Agriculture are working with Midwestern Pet Foods to determine whether any additional products may have been made with the same ingredients containing potentially fatal levels of aflatoxin. This investigation is ongoing and new information will be released as it becomes available.

DJO, a global provider of medical technologies intended to get and keep people moving, has acquired LiteCure, the parent company of Companion Animal Health, with a goal of commercializing their globally recognized products into innovative care solutions for veterinary applications.

“The acquisition by DJO provides us with an immediate international footprint, additional products that align well with our existing portfolio, and added resources to help us continue to improve the lives of veterinarians, pets, and their owners,” Companion Animal Health President Craig Tockman, DVM, says in a press release about the acquisition.

Delaware-based LiteCure designs and manufactures medical equipment for human and veterinary medicine and is an industry leader in laser therapy.

“Together, we will bring leading technologies and treatment modalities designed to enhance patient outcomes and practice efficiency to veterinary clinics around the world,” says DJO President Terry Ross, MBA.
New app offers free 24/7 access to mental health resources

By dvm360® Staff

As mental health among veterinary professionals continues to be a concern around the world, the newly formed not-for-profit Vets in Mind Alliance has launched a free app that offers 24/7 access to mental health support, tools, and resources to help tackle the high burnout, depression, and suicide rates among veterinary professionals.

“Having experienced burnout myself…and having also experienced the loss of my father, who took his own life when I was 10 years old, I have long wanted to help members of our profession with something tangible and really supportive,” says Vets in Mind Alliance founder Mark Johnston, DVM, in an organizational press release. “Developing an app that anyone can have in the palm of their hand, wherever they are, I believe will be more than just helpful; it will be life-saving.”

The Vets in Mind app includes more than 500 informational resources as well as personal stories about such mental health issues as depression, anxiety, anger, self-harm, and suicide. Other key features include as follows:

• Measures to take if you or someone you know needs professional support
• Tips for building resilience and well-being
• Helplines and other contact points in over 50 countries
• News about current research and initiatives, along with streams from forthcoming meetings and events
• Tools and resources to help relieve stress at critical moments
• Books, podcasts, and eLearning courses
• Links to other apps, blog posts, and products that offer guidance and insight

The app maintains confidentiality by not registering users’ personal information.

FDA conditionally approves first oral canine lymphoma treatment

Laverdia-CA1 provides an additional treatment option for dogs suffering from this devastating illness.

By dvm360® Staff

The US Food and Drug Administration (FDA) has announced the conditional approval of Laverdia-CA1 (verdinexor tablets) to treat canine lymphoma.

Laverdia-CA1 prevents certain proteins from leaving the nucleus of cancer cells, thus allowing the proteins to control the growth and prevent the spread of cancerous cells. It is the first conditionally approved oral treatment for canine lymphoma and the second conditionally approved treatment for the condition. (Tanovea-CA1, an injectable, received conditional approval in 2016.) Laverdia-CA1 is administered orally twice a week at home, with at least 72 hours between doses.

“Lymphoma is a devastating cancer in dogs, with few FDA-approved treatments available. This conditionally approved oral treatment offers an additional option for dogs suffering from this disease,” says Steven M. Solomon, DVM, MPH, director of the FDA’s Center for Veterinary Medicine, in an FDA release. “We are encouraged to see drug companies bring forward applications for products to treat serious diseases, even if they affect relatively small populations.”

Conditional approval, which is an option for drugs intended for minor use in major species, provides veterinarians with access to necessary treatments while the pharmaceutical company gathers additional efficacy data. According to the FDA website, a company has up to 5 years to complete effectiveness studies to support full approval.

Laverdia-CA1’s reasonable expectation of efficacy was demonstrated in a study of 58 client-owned dogs of various breeds, weights, and genders with B- or T-cell lymphoma. All participants were followed for at least 8 months. The dogs were either newly diagnosed with lymphoma or in their first relapse after completing a single- or multi-agent chemotherapy regimen. Most of the dogs had stage III disease (generalized lymph node enlargement).

After verdinexor administration, 17 of the 58 dogs (29%) showed no progression of lymphoma for at least 56 days. Of these dogs, 3 showed no progression for at least 182 days.

The most common adverse effects associated with verdinexor administration include anorexia, vomiting, diarrhea, weight loss, lethargy, increased water intake, increased urination, elevated liver enzymes, and low platelet count. Laverdia-CA1 should be administered immediately after eating, thus increasing the amount of drug absorbed into the bloodstream. Pregnant women, women who may become pregnant, nursing women, and children should not handle or administer Laverdia-CA1 or touch the feces, urine, vomit, or saliva of treated dogs. Laverdia-CA1 is available by prescription only.
AASVB unveils PAVE standards for technicians

The Veterinary Hospital Managers Association (VHMA) recently announced the 23 veterinary practice management professionals from the November class of 2020 who have earned the Certified Veterinary Practice Manager (CVPM) designation. CVPM is a voluntary credential awarded to individuals who display the knowledge and experience needed to successfully manage the ever-changing veterinary practice.

The 23 new CVPMs are Isabel Ameijeiras, Amanda Burkett, Rachelle Carl, Lillian Kathleen Clegg, Kelly Cromwell, Joanne Fleming, Kristen Fredette, Marsha Morgan Godfrey, K’tanaw Hirsch, Heather Hoell Warren, Sheri Holloway, Amy Lubinski, Mamie Mayner, Maria Morgan, Jasminne Nash, Chelsie Lynn Roberge, Marianne Saccoccio, Frances Pauline Saraka, Angie Sevier, Erin Thatcher, Lisa Thompson, Kellie W. Turnage, and Monica Weiss-Sharp.

To apply for the CVPM exam, candidates must meet practice management experience and educational requirements. The exam, which is offered electronically to registered candidates throughout North America, tests practice management knowledge in 5 areas: law and ethics, human resources, finance, organization skills at the practice, and marketing.

To learn more about CVPM certification, visit vhma.org/cvpm-certification.

AAFP bans elective onychectomy at Cat Friendly Practices

The American Association of Feline Practitioners (AAFP) has announced an update for all designated Cat Friendly Practices (CFPs): Elective feline onychectomy procedures are no longer allowed at these hospitals. The policy change aligns with the association’s 2017 statement strongly opposing onychectomy as an elective procedure. The controversial procedure is rarely medically necessary and is already banned in many areas.

The update went into effect on January 1, 2021, for all new CFP locations in North, Central, and South America. It also is now standard for all practices seeking CFP designation. Current CFPs that continue to offer elective onychectomy after July 1, 2021, will maintain AAFP membership but may not use the CFP designation.

The AAFP and International Society of Feline Medicine established the CFP program in 2012 as a global initiative to help make veterinary care less stressful for cats and their owners. A CFP designation is a recognized symbol that acknowledges a practice’s commitment to providing better experiences for feline patients, their owners, and veterinary staff.

The AAFP has also developed a comprehensive Claw Friendly Educational Toolkit (catvets.com/claw-friendly-toolkit) that provides resources for veterinary teams and cat owners about living with clawed cats:

- A summary of relevant scientific literature
- Scratching resources, including claw counseling
- Implementation plans to stop elective declawing in veterinary practices
- Testimonials from practices that have stopped elective declawing
- 2 complimentary webinars
- FAQs for veterinary professionals and pet owners
- Phone scripts
- Client resources

VHMA announces 2020 CVPM recipients

The association awarded 23 veterinary practice management professionals with their Certified Veterinary Practice Manager designation.

By dvm360® Staff

The AASVB unveils PAVE standards for technicians

PAVE for Veterinary Technicians was created to assess the education equivalence of international veterinary technician/nurse graduates.

By dvm360® Staff

The American Association of Veterinary State Boards (AASVB) has completed the standards and policies for the much-anticipated Program for the Assessment of Veterinary Education Equivalence (PAVE) for Veterinary Technicians, which assesses the educational equivalences of veterinary technician/nurse graduates of nonaccredited programs outside the United States and Canada on behalf of participating AASVB member boards, according to an association release.

“When the AASVB first launched PAVE for Veterinarians in the early 2000s, it was a game changer for both our Member Boards and licensure applicants,” says AASVB President Roger Redman, DVM, in the release. “In the past few years, our membership has made it clear the demand to expand PAVE into the veterinary technician/nurse profession is immense.”

The PAVE for Veterinary Technicians certificate will be recognized by jurisdictions that accept it as substantiating the educational requirements as one criterion toward credentialing eligibility. The certificate is not a credential to practice as a veterinary technician. To be credentialed to practice, candidates who receive the certificate must also meet additional statutory criteria, including successful completion of the Veterinary Technician National Examination. Because requirements vary across jurisdictions, the AASVB urges candidates to directly contact the specific veterinary board(s) in which they desire credentialing.
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*Approved for use in dogs older than 9 months of age and greater than 8 pounds. Monitoring is recommended if used long-term.

INDICATION
Galliprant is an NSAID that controls pain and inflammation associated with osteoarthritis in dogs.

IMPORTANT SAFETY INFORMATION
Not for use in humans. For use in dogs only. Keep this and all medications out of reach of children and pets. Store out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose. Do not use in dogs that have a hypersensitivity to grapiprant. If Galliprant is used long term, appropriate monitoring is recommended. Concomitant use of Galliprant with other anti-inflammatory drugs, such as COX-inhibiting NSAIDs or corticosteroids, should be avoided. Concurrent use with other anti-inflammatory drugs or protein-bound drugs has not been studied. The safe use of Galliprant has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kg), dogs used for breeding, pregnant or lactating dogs, or dogs with cardiac disease. The most common adverse reactions were vomiting, diarrhea, decreased appetite, and lethargy. For full prescribing information see Galliprant package insert.


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For oral use in dogs only
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A prostaglandin E₂ (PGE₂) EP4 receptor antagonist; a non-cyclooxygenase inhibiting, non-steroidal anti-inflammatory drug

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

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

Indication:
GALLIPRANT (grapiprant tablets) is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Dosage and Administration:
Always provide “Information for Dog Owners” Sheet with prescription.

Use the lowest effective dose for the shortest duration consistent with individual response.

The dose of GALLIPRANT (grapiprant tablets) is 0.9 mg/lb (2 mg/kg) once daily.

Only the 20 mg and 60 mg tablets of GALLIPRANT are scored. The dosage should be calculated in half tablet increments. Dogs less than 8 lbs. (3.6 kgs) cannot be accurately dosed.

The 100 mg tablet is not scored and should not be broken in half.

See product insert for complete dosing and administration information.

Contraindications:
GALLIPRANT should not be used in dogs that have a hypersensitivity to grapiprant.

Warnings:
Not for use in humans. Keep this and all medications out of reach of children and pets. Consult a physician in case of accidental ingestion by humans.

For use in dogs only. Store GALLIPRANT out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose.

Precautions:
The safe use of GALLIPRANT has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kg), dogs used for breeding, or in pregnant or lactating dogs.

Adverse reactions in dogs receiving GALLIPRANT may include vomiting, diarrhea, decreased appetite, mucoid, watery or bloody stools, and decreases in serum albumin and total protein.

If GALLIPRANT is used long term appropriate monitoring is recommended.

Concurrent use with other anti-inflammatory drugs has not been studied. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications.

Drug compatibility should be monitored in patients requiring adjunctive therapy. Consider appropriate washout times when switching from one anti-inflammatory to another or when switching from corticosteroids or COX-inhibiting NSAIDs to GALLIPRANT use.

The use of GALLIPRANT in dogs with cardiac disease has not been studied.

It is not known whether dogs with a history of hypersensitivity to sulfonamide drugs will exhibit hypersensitivity to GALLIPRANT. GALLIPRANT is a methylbenzenesulfonamide.

Adverse Reactions:
In a controlled field study, 285 dogs were evaluated for safety when given either GALLIPRANT or a vehicle control (tablet minus grapiprant) at a dose of 2 mg/kg (0.9 mg/lb) once daily for 28 days. GALLIPRANT-treated dogs ranged in age from 2 yrs to 16.75 years. The following adverse reactions were observed:

Table 1. Adverse reactions reported in the field study.

<table>
<thead>
<tr>
<th>Adverse reaction*</th>
<th>GALLIPRANT (grapiprant tablets) N = 141</th>
<th>Vehicle control (tablets minus grapiprant) N = 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>Diarrhea, soft stool</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Anorexia, inappetence</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Lethargy</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Buccal ulcer</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Immune mediated hemolytic anemia</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*Dogs may have experienced more than one type or occurrence during the study.

GALLIPRANT was used safely during the field studies with other concurrent therapies, including antibiotics, parasiticides and vaccinations.

To report suspected adverse drug events and/or to obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, call 1-888-545-5973.

For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth

Information for Dog Owners:
Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, and decreasing albumin and total protein. Appetite and stools should be monitored and owners should be advised to consult with their veterinarian if appetite decreases or stools become abnormal.

Effectiveness:
Two hundred and eighty five (285) client-owned dogs were enrolled in the study and evaluated for field safety. GALLIPRANT-treated dogs ranging in age from 2 to 16.75 years and weighing between 4.1 and 59.6 kgs (9 – 131 lbs) with radiographic and clinical signs of osteoarthritis were enrolled in a placebo-controlled, masked field study. Dogs had a 7-day washout from NSAID or other current OA therapy. Two hundred and sixty two (262) of the 285 dogs were included in the effectiveness evaluation. Dogs were assessed for improvements in pain and function by the owners using the Canine Brief Pain Inventory (CBPI) scoring system.¹ A statistically significant difference in the proportion of treatment successes in the GALLIPRANT group (63/131 or 48.1%) was observed compared to the vehicle control group (41/131 or 31.3%). GALLIPRANT demonstrated statistically significant differences in owner assessed pain and function. The results of the field study demonstrate that GALLIPRANT, administered at 0.9 mg/kg (0.9 mg/pound) once daily for 28 days, was effective for the control of pain and inflammation associated with osteoarthritis.

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November 2018
The problem with the master problem list

Using standardized medical terminology in your patient medical records makes it easier and more accurate to share data, ultimately improving medical decision-making.

By Sonnya Dennis, DVM, DABVP (Canine & Feline Practice) and Julie Green, DVM, MS

Are you using standardized medical terminology in your master problem list and assessments? The answer may surprise you. Of course, we think the answer is yes. After all, we are veterinary professionals and learned all those big words in veterinary school. It would seem almost insulting to think we aren’t using the proper terminology in our records. But this isn’t always the case.

Using proper medical terms differs from using an external standard for medical terminology. This is an important distinction because use of an external standard will align your diagnoses and findings with those of others outside your practice, allowing for a more accurate exchange of case data. This may mean sharing with a referral clinic or, even better, sharing data. This may mean sharing with others outside your practice, allowing diagnoses and findings with those of an external standard will align your important distinction because use of an external standard isn’t always the case.

It would seem almost insulting to those big words in veterinary school. Frequently professionals and learned all answer is yes. After all, we are veterinary

So, what do we use?
The Systematized Nomenclature of Medicine - Clinical Terms (SNOMED-CT) is the most comprehensive standardized clinical terminology in the world, including more than 352,000 concepts. When combined with the Veterinary Extension of SNOMED-CT (VetSCT), it provides a rich structure of concepts for veterinary medicine. Each concept is linked to multiple terms or synonyms designed to help you find what you need. Whether you call it leptospirosis, swamp fever, or Queensland fever doesn’t matter because all of those terms link back to the same concept: Leptospirosis, Concept Identifier: 77377001.

And each concept is also linked to other concepts. For example, leptospirosis is linked to “spirochetal infection” and the organism “Leptospira.” Now consider pneumonia. This term is linked to numerous “children,” including lobar pneumonia, interstitial pneumonia, aspiration pneumonia, viral pneumonia, bacterial pneumonia, uremic pneumonitis, and so forth. These linkages structure your data so that you, or researchers, can collect case data for analysis on all types of pneumonias using a simple terminology query.

Why does it matter?
Most dvm360 readers are in clinical practice as opposed to research. Even so, the use of structured, standardized terminology ultimately improves decision-making by contributing to evidence-based medicine while also supporting public health (back to that leptospirosis) and enabling disease surveillance and trending of novel diseases (think coronavirus).

Ideally, these data should be easy for clinical practitioners to record; practice information management systems (PIMS) are making this easier for us all the time. The American Animal Hospital Association Problem and Diagnosis Terms (AAHA-PDTs) is a subset of SNOMED-CT and VetSCT that provides concepts for general small animal practices. Over the past 10 years, the AAHA Diagnostic Terms Editorial Board has curated and honed the 350,000+ SNOMED terms into about 3500 concepts and 6500 descriptive terms that cover more than 90% of cases seen in small animal practice, ranging from “abdominal cryptorchidism” to “zygomatic mucocele.” The AAHA-PDT is free and accessible to everyone, thanks to AAHA’s financial support. Many practices already have direct use of the tool within their PIMS. If you are unsure whether your system uses the AAHA-PDT, contact your provider and ask today. Get started by entering a diagnosis for every patient at every visit. Sometimes, it might be as simple as “healthy,” but there is even a code for that.

Sonnya Dennis, DVM, DABVP (Canine & Feline Practice), owns and practices full-time at Stratham-Newfields Veterinary Hospital in New Hampshire. She is currently the AAVSB representative to the AVMA’s American Board of Veterinary Specialties, chair of the AAHA Veterinary Informatics Committee and Diagnostic Terms Editorial Board, a peer reviewer for JAAHA, chair of the AI Halin Award for Lifetime Achievement in Veterinary Informatics, and a member of the Outreach and Credentials Committees with ABVP.

Julie Green, DVM, MS, is an assistant research professor at Virginia–Maryland College of Veterinary Medicine in Blacksburg, Virginia. She also serves on the AAHA Veterinary Informatics Committee and Diagnostic Terms Editorial Board.

REFERENCES
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55.8% OF POPULATION

The percentage of dogs and cats in the U.S. that are overweight or obese.*

59.5%

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Weight loss for our feline friends is more complicated than it is for dogs or people. Never put your cat on a diet without veterinary supervision—you could actually endanger his health.

Transition your pet to a new diet over a one-week period.

<table>
<thead>
<tr>
<th>Days 1–2:</th>
<th>Days 3–4:</th>
<th>Days 5–6:</th>
<th>Day 7:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 new food, 3/4 old food</td>
<td>1/2 new food, 1/2 old food</td>
<td>3/4 new food, 1/4 old food</td>
<td>100% new food</td>
</tr>
</tbody>
</table>

1 premium pig ear = 6 12oz colas*

Oink, oink

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Arthritis
Kidney disease
ACL injury
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*Source: Association for Pet Obesity Prevention 2019

Underwritten by Veterinary Pet Insurance Company (CA); Columbus, OH, an A.M. Best A+ rated company (2019); National Casualty Company (all other states), Columbus, OH, an A.M. Best A+ rated company (2019). Agency of Record: DVM Insurance Agency. Nationwide, the Nationwide N and Eagle, and Nationwide is on your side are service marks of Nationwide Mutual Insurance Company ©2021 Nationwide. 20VET7948_GP
Generational shift brings opportunities for veterinary practices

As the veterinary workforce shifts from Gen X to millennials, increased communication and collaboration will be key to practice success.

By Matthew Salois, PhD

In 2021, millennials will surpass Generation X as the leading age group in the US veterinary workforce. This natural generational shift will bring significant change to the profession, affecting predominant work habits, values, and commitments, among other areas. Our community can leverage these changes to our advantage—spurring innovation and setting the stage for a strong veterinary future—if we work together with mutual collaboration, respect, and understanding.

Are we up to the challenge?
The veterinary workforce includes 4 generations: silents (born 1928-1945), baby boomers (1946-1964), Generation X (1965-1980), and millennials (1981-1996). Each generation has its own cultural tendencies and characteristics shaped by shared life experiences. That means that as millennials surpass the other age groups and baby boomers continue to reach retirement age, we’ll see a shift in the collective behaviors and attitudes of veterinarians and changes in the veterinary profession overall.

The key is how to approach these changes. Should generational differences be viewed as learning opportunities or annoyances? It’s common to bemoan other generations for what some see as shortcomings based on stereotyping (eg, millennials lack motivation, baby boomers are slow to adopt technology). But the truth is, if we take the time to really listen, explore, and understand one another, there’s much we can learn from our peers, no matter their age.

Following are a few areas that likely will be affected by this generational shift and how we might use the changes to our benefit.

Work-life integration
As a group, millennials strive to maintain a healthy work-life balance. Well-being is a top priority, and they know it requires a conscious effort in many areas of their lives. Although baby boomers may pride themselves on working 80 hours per week, that’s not what their millennial peers aim to do, as a rule. This doesn’t mean that millennials value their careers less or that they are less committed to the job. It’s simply a different balance of priorities.

As we look to grow our teams or replace retiring members with new employees, it’s important to consider work-life integration in the hiring process. Millennial job seekers are looking for an environment in which they’re seen as a whole person—not just as an employee, but someone with hobbies, interests, and goals outside the workplace.

Here are other characteristics millennials typically look for in a job:
• Supportive work culture
• Respect and influence in day-to-day decision-making
• Opportunities for growth
• Community impact

The American Veterinary Medical Association (AVMA) has resources for creating a supportive work environment and culture that support work-life integration. Find them at avma.org/WorkplaceWellbeing.

Mentorship
Another characteristic of millennials is their desire for mentorship. Especially as they enter the profession, this younger cohort will look toward their more experienced peers for feedback, guidance, and encouragement. Gen Xers and baby boomers can fill this very critical mentorship role.

Many important skills aren’t taught in veterinary school but rather come with years of experience and practice. Baby boomers and Gen Xers have the expertise and insight that younger veterinarians are looking for as they build their competence and confidence in practice. It’s not just a matter of fine-tuning clinical skills, which we all know are critical. Just as important is mastering the many nuances of client communication, bedside manner, team building, and running a business. If you’re a practice owner, this is especially crucial when considering who will take ownership of (or manage) the practice after you retire.

AVMA’s tools to strengthen the veterinary team (avma.org/resources-tools/wellbeing/tools-strengthen-your-veterinary-team) are a great place to begin fostering these critical team relationships and supporting mentorship. They include downloadable resources for everything from onboarding and training to performance reviews and running effective team meetings.

Technology
Although there is much to be learned from baby boomers and Generation X, the same is true of millennials, the first digitally native generation. As a group, millennials have an innovative mindset, and other groups can benefit from that.

Here’s an example: Millennials may become frustrated if they’re expected to follow standard procedures when they know of a better, faster, or more efficient way. More often than not, this will involve an app or technology service their bosses or colleagues aren’t aware of. Listen to their ideas. Explore their suggestions. Millennials grew up learning the language of technology, and they’re likely better versed in the many possibilities for implementing it in practice.

Another example: Millennials may expect or ask for flexible working hours or the opportunity to work remotely. Hear them out. Are there certain things that can be done outside the clinic? If so, is there any reason why they shouldn’t be? There are many ways to adopt technology to make work easier, faster, and more convenient. This can improve work-life balance for all and potentially add to practice efficiency.

The client connection
The veterinary profession isn’t alone in experiencing this generational shift. It’s a microcosm of the population as whole. Is it any wonder that practices are implementing more and more telehealth services? This meets the changing needs of clients, who include the same growing millennial population.

Just as the generational shift is affecting many of the ways in which teams work together, so does it alter relationships with clients. It will serve the profession well to consider that millennial colleagues hold critical insight into the changing needs and expectations of clients.

Bottom line
Different upbringings and experiences bring new wisdom to the problems and challenges we all face. As a generational shift in veterinary medicine occurs, intergenerational communication and collaboration will be crucial to success. It’s critical to take the opportunity to learn from colleagues and peers who are both younger and older. Above all, listen. True listening isn’t a passive exercise, but one that is intentional. Only when unique perspectives are met with thoughtful exploration and mutual respect can true understanding and innovation occur.

Matthew Salois, PhD, is director of the AVMA Economics Division.
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The safety of Bravecto® 1-Month has not been evaluated in breeding, pregnant and lactating dogs (see Animal Safety).

**Adverse Reactions:**

In a well-controlled U.S. field study, which included 271 dogs (201 dogs were administered Bravecto® 1-Month every 30 days and 70 dogs were administered an oral active control [an isoxazoline] every 30 days), there were no serious adverse reactions associated with treatment. Over the 90-day study period, all observations of potential adverse reactions were recorded.

**Dosage with Adverse Reactions in the Field Study**

<table>
<thead>
<tr>
<th>Adverse Reaction (All)</th>
<th>Fluralaner Group</th>
<th>Percentage of Dogs with the AR during the 90-Day Study (n= 201 dogs)</th>
<th>Active Control Group</th>
<th>Percentage of Dogs with the AR during the 90-Day Study (n= 70 dogs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pruritus</td>
<td>7.0%</td>
<td>10.0%</td>
<td>3.0%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>3.0%</td>
<td>4.3%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Vomiting</td>
<td>3.0%</td>
<td>4.3%</td>
<td>3.0%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Decreased Appetite</td>
<td>3.0%</td>
<td>4.3%</td>
<td>3.0%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Loss of Claws</td>
<td>1.0%</td>
<td>1.4%</td>
<td>1.0%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Lethargy</td>
<td>1.0%</td>
<td>1.4%</td>
<td>1.0%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Weight Loss (&lt;15%)</td>
<td>0.5%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

*All adverse reactions (AR) are presented in the following categories: Fluralaner (45 mg) is administered at a dose of up to 168 mg/kg on three to four occasions at 8-week intervals. The dogs in the control group were untreated. There were no clinically-relevant, treatment-related effects on body weights, food consumption, reproductive performance, semen analysis, litter data, gross necropsy (adult dogs) or histopathology findings (adult dogs and pups). One adult dog in the treated group suffered a seizure during the course of the study (48 days after the third treatment). Abnormal salivation was observed on 17 occasions: in six treated dogs (11 occasions) after dosing and four control dogs (6 occasions). The following abnormalities were noted in 7 pups from 2 of the 10 dams in only the treated group during gross necropsy examination: (i) deformed (4 pups), (ii) enlarged heart (2 pups), (iii) enlarged spleen (3 pups), and (iv) cleft palate (2 pups). During the Margin of Safety Study Day 1, two pups from the control group had impalpable testicles, and two from pups from the treated group had impalpable and cryptorchid testicles, respectively. No uncontrolled deaths were observed at the time of necropsy (days 50 to 71). In a well-controlled field study Bravecto® 1-Month was used concurrently with other medications, such as vaccines, antibiotics, and corticosteroids. No adverse reactions were observed from the concurrent use of Bravecto® 1-Month with other medications.

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**How Supplied:**

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Rev 05/20
Pain management
> Continued from cover

According to the Centers for Disease Control and Prevention (CDC), more than 81,000 human drug overdoses occurred during the 1-year period ending in May 2020—the highest annual number of such deaths ever reported—and the overdose rate was accelerated during the pandemic months.1 Although the compounds that drove this jump were primarily synthetic opioids, such as fentanyl, one-third of all overdoses occurred using prescribed medications. Prescription drug overdose is now the leading cause of accidental death in individuals under 50 years old.2

Where do veterinarians come in? We extensively use opioids and other controlled substances that vary in danger and addiction capacity, from the Schedule II drugs, such as hydrocodone, to the Schedule III drugs, which include buprenorphine and ketamine, to the less addictive but nonetheless sought-after intravenous drugs, such as tramadol and alprazolam (Xanax).

Whose pill is it, anyway? The heaviest veterinary use of opiates is within the clinic setting.3 An example is analgesia for a surgical procedure. Here, drug diversion by hospital staff is an obvious risk. Simon Platt, BVMS, FRCVS, DACVIM, DECVCN, a professor of neurology at the University of Georgia College of Veterinary Medicine in Athens, recalls an issue at the college several years ago with disappearing fentanyl patches.

Students were the suspected users and, for this reason, the institution decreased its use of patches. But there’s no way to control pills once they go out the door with pet owners. “It’s precarious,” Platt says.

Probably the most common opioid that veterinarians dispense—and the opioid most often diverted from pet to human use—is tramadol. Julia M. Block, VMD, who owns Hamilton Veterinary Hospital in Roslyn, Pennsylvania, recalls an issue she had a few years ago with a client who regularly requested tramadol for her 2 elderly dogs. She wanted it prescribed through her pharmacy rather than buying it from Block’s hospital.

When the pharmacy later required that these refills be phoned in, Block checked the owner’s record of refill requests and realized things didn’t add up. “There was no way she should have needed more pills unless she was taking them herself,” she recalls. “So, we worked in conjunction with the pharmacist, and we contained it.”

A 2018 survey of 189 Colorado veterinarians found that 44% were aware of opioid abuse or misuse by either a client or a hospital staff member, and 13% had discovered that an owner had intentionally injured or sickened a pet, or made it seem compromised, to obtain controlled drugs.4

Clients seeking their own narcotic relief will sometimes “vet shop” until they find a clinic willing to send them home with tramadol and other drugs they typically request by name, such as Valium (diazepam), Xanax, Buprenex (buprenorphine), pheno-barbital (Luminal) and, increasingly, trazodone, an unscheduled selective serotonin reuptake inhibitor.

Few opioids are approved for animals, and only 2 are now marketed: buprenorphine (for use in cats) and butorphanol (for use in cats, dogs, and horses). But the Animal Medicinal Drug Use Clarification Act of 1994 permits veterinarians extralabel use of certain approved human drugs for animals under specific conditions, availing them of a buffet of opioids and other controlled compounds for pain relief in their patients.

However, there’s a risk to treating animals with human medications, Block says. She believes owners are more likely to pop their pets’ people pills than those labeled for use in animals only. “One of the ways that we as a veterinary community can control it is to use only veterinary drugs,” Block says.

Is pain such a pain? Some experts, such as Emily McCobb, DVM, MS, DACVA, clinical associate professor at Tufts University Cummings School of Veterinary Medicine, question the rationale behind chronic therapy with this class of drugs. “It’s not a great idea to have any creature on long-term opioids,” McCobb says.

She points to the early 2000s, when the veterinary community paid far less heed to pain in animals. But the pendulum has swung wildly the other way, she says.

This is a problem because there is some therapeutic value to pain: It makes animals rest and restore. Furthermore, pain is difficult to define. “Pain is a subjective state,” McCobb says. “And in people, value systems and even religious beliefs come into play.”

In our society, she adds, there’s a pill for everything. In a recent study at Colorado State University,7 members of the Veterinary Information Network (VIN) were surveyed about their use of opioids in practice. Of the nearly 700 respondents, 99.7% reported using, dispensing, or prescribing opioids for their patients.

The survey also found that the 3 most frequently used opioids used in veterinary practice are (in descending order) buprenorphine, tramadol, and butorphanol. The latter 2, plus hydrocodone, are the opioids that most respondents reported dispensing or prescribing “frequently.” For in-clinic hospital administration, buprenorphine, butorphanol, and hydromorphone are the apex drugs.

Red tape and super sleuthing The US Drug Enforcement Administration (DEA) creates and oversees the regulations regarding these and other controlled substances. DEA statute 21 CFR § 1301.71 states that “all applicants and registrants shall provide effective controls and procedures to guard against theft and diversion of controlled substances.” Doctors also are governed by state laws as well as their state boards of both veterinary medicine and pharmacy. When the different sets of rules clash, they are bound to comply with the most stringent.

In response to the growing opioid crisis in the US, 14 states and the District of Columbia now direct veterinarians to report to their state prescription drug monitoring program (PDMP) all instances of dispensing or prescribing opioids and other DEA Schedule II through IV substances.

Many states, in further effort to head off drug diversion from pets to owners, also require—or urge—veterinarians to look up an owner’s pharmaceutical purchase history before providing these medications for their pets. In human medicine, this extra measure has made a difference. The CDC reported a 75% drop in doctor shopping in 2012, a year after a law was enacted mandating that human medical prescribers check their state’s PDMP before prescribing opioids.8

Some states have gone a step further by imposing limits on drug quantities and treatment durations. New Jersey, for instance, sets a 5-day maximum on initial opioid prescriptions for both animals and humans.

For Block, compliance also means meeting extra marks stipulated by the American Animal Hospital Association. Her hospital’s accreditation requires added record keeping for bottles coming in, bottles on hand, open bottles, and pill numbers for controlled medications.

But regardless of whether veterinarians must count and recount pills, audit their clients’ opioid prescription histories, or just look owners in the eye when they say their pets are in pain, the question remains: Is it the veterinarian’s responsibility to sniff out 2-legged drug users?

“It’s really not their responsibility,” Platt says. “Although we might be suspicious about someone,” he says, “we’re not trained to recognize even obvious signs of addiction in people.”

Dwindling supply If drug abuse and regulatory burdens are not enough to make veterinarians snub opioids, since late 2018 hydro-morphone, oxymorphone, morphine, and fentanyl (injectable and patches) have become more difficult to obtain.

The DEA responded to the human opioid abuse epidemic by restricting the quantity of opioids a manufacturer may produce. Compounding matters were production snags at Pfizer, the largest manufacturer of opioids in the US. The company slashed sales to its veterinary customers because of mandatory upgrades to its newly acquired plant in Kansas.

To alleviate shortages, the US Food and Drug Administration (FDA) worked with Pfizer to move limited quantities of product from the human to the veterinary side and to import hydromorphone from Canada. But these actions didn’t work quickly enough. More than 40% of participants in the VIN study said they were hindered in delivering pain relief...
and optimal anesthesia to their patients.\textsuperscript{2} Particularly hobbled were specialty practices and university teaching hospitals, which handle critical cases needing complex surgical interventions that often cannot be managed safely under gas anesthesia alone.

**Alternatives to the rescue**

Although largely resolved now, these shortages spurred creativity among veterinarians in their anesthesia and analgesia protocols. At the same time, the FDA Center for Veterinary Medicine pushed the use of “nonopioid alternatives, when appropriate, to control pain.” The move toward multimodal approaches has meant bringing in alternative analgesics that can lessen needed quantities of opiates. Examples are:

- Local and regional blocks using lidocaine or bupivacaine provide preemptive analgesia; the latter can deliver analgesia for up to 72 hours.
- Gabapentin, an anticonvulsant with analgesic properties, reduces neuropathic pain by an unknown mechanism, and can be administered a few days before surgery.
- Ketamine can provide analgesia as a constant-rate infusion or as a 1-time dose.
- Dexametomidine, an \( \alpha_2 \) agonist, offers some analgesia and prolongs the duration of analgesia when combined with an opioid.
- Amantadine has a pain-modifying effect and may reduce chronic neuropathic pain.
- Maropitant is a central-acting antiemetic that blocks substance \( P \), a neuropeptide that is involved in pain processing.
- Nonsteroidal anti-inflammatory drugs and corticosteroids modulate pain by decreasing inflammation.
- Sedatives, nutraceuticals, acetaminophen (dogs only), weight optimization, physical rehabilitation, acupuncture, cold compression, and environmental modifications (eg, soft bedding) also can reduce pain and pain perception, and ultimately reduce opioid dosing.

Many veterinarians have ditched Schedule II mu agonists, including morphine and fentanyl, opting instead for partial mu agonists and agonist-antagonists such as buprenorphine, butorphanol, and tramadol. At Block’s hospital, some of the more highly regulated drugs have been switched out in favor of milder formulations, such as trazodone and maropitant.

Like most practitioners, Block also uses tramadol, but she questions its efficacy. So does McCobb. She refers to the Schedule IV opioid, which has low plasma levels that diminish soon after administration, as “tramadil” because of its synergistic use with Rimadyl (carprofen, Zoetis); the latter is thought to be the main driver of pain reduction.

For safety and simplicity, Block also reduced her inventory of controlled drugs a few years ago from about a dozen to 5 or 6. “We can still control anesthesia beautifully,” she says.

**Opioids are here to stay**

Although some practice owners such as Block have started to wean their clientele off compounds that carry abuse potential, 1 thing is sure: Controlled meds aren’t going anywhere.

But Block joins a chorus of her colleagues in voicing desire for a uniform, nationwide database to address gaps in current state reporting. If DEA license holders had a platform for “talking” to each other, they might be able to sift out instances of drug diversion, and even animal abuse, and boost industry standards for inventory stocking, tracking, and security, Block says.

To this end, the FDA has outlined a 6-step plan for veterinarians who stock and administer opioids:

- Follow all federal rules on prescribing opioids.
- Follow all state rules on prescribing opioids.
- Use alternatives to opioids.
- Educate pet owners on safe storage and disposal of opioids.
- Know what to do if a pet overdoses on opioids.
- Have a safety plan and know the signs of opioid abuse.

Regarding scheduled drugs, McCobb says it’s important to reduce use, reorganize protocols, and remember that “we really don’t have control over what happens once those medications leave our office.”

**Joan Capuzzi, VMD**, is a small animal veterinarian and journalist based in the Philadelphia, Pennsylvania area.

**REFERENCES**

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behavior

Every picture tells a story
As a person with autism, Grandin uses her own image-based mental circuitry to consult on both livestock handling equipment design and animal welfare. She homes in on what animals are seeing, from the vantage point of the cat carrier, the horse stall, or the cattle chute.

In Arizona, Grandin visited different farms, some of which operated successfully and others whose bovine occupants showed signs of stress. She called on a cattle farm that was tackling its animals’ reluctance to be herded into a building that had solid walls and a dark entrance. On her recommendation, they opened up the walls to let light in, and the cattle began crossing the brightened threshold willingly.

Another example was when she walked around nearly identical feed yards in hopes of figuring out why they varied in their fitness for cattle. She noticed glaring differences in their orientation to the sun. In the feed yards that worked poorly, she said, “the cattle were going directly into the sun.”

In her work with cattle farmers, she also ventures into chutes to view what the cattle are seeing. Coming up into the entrance of 1 particular chute, she noticed that incoming cattle could see a car through the bars. Cars, she noted, have reflections. Once inside the chute, the cattle could see other objects, such as a dangling chain and a white jug hanging from the fence. A jug, a chain, reflections of light…all seemingly benign images. To us. But, she emphasized, not to cattle.

“It’s these little things that you tend not to notice that will spook them,” she said.

Grandin cited a study in which colts were trained to walk calmly past a children’s playset. They were led past the structure repeatedly until they no longer reacted to it. But once the playset was turned 90 degrees, the horses no longer recognized it as a harmless object, and they again showed fear.

Likewise, she said, if a horse is trained to tolerate the sudden opening of an umbrella, this comfort level does not necessarily extend to a tarp or a flag, despite the fact that they are made of similar, flexible materials. Animals, she reminded the audience, categorize things, as do we. But their categories often differ from ours.

Animal sense
Grandin prods animal handlers, from ranchers to zookeepers to veterinarians, to be better observers. This goes beyond scouting out what an animal is seeing. Unlike people, whose comprehension is verbal, animals are sensory. Understanding an animal’s reaction to a situation means embracing its sensory input, she explained. “What is it seeing? What is it feeling? What is it smelling?” she asked.

Reaction to sensory input also depends on context. A circuit of neurons in the brain—the nucleus accumbens—draws animals and humans alike to novelty, whether it is a new sight or an unfamiliar smell. She showed video of several cows fearlessly crowding in on a clipboard lying on the ground. But as they sniffed and studied it, its affixed papers began to flap in the wind. The startled cattle jumped back.

“Sudden surprises scare,” Grandin explained. “This applies especially to animals that possess what she calls “nervous genetics.”

Although high-strung individuals of any species will react more profoundly, it is the sensing acuity that bridges animals and autistic humans, such as Grandin. As chronicled in the HBO movie about her life, Animals in Translation, autism has helped her understand the minds of animals. Like them, she thinks in pictures.

The autistic mind
Grandin has had brain scans that highlight her enlarged visual cortex and her stunted mathematical processing center. But if veterinarians tend to be mathematical thinkers, she ponders, then what of their ability to think visually, as their animal charges do?

She encouraged the audience to train themselves to sense what animals are sensing, from sights in the exam room to sounds in the waiting room to smells in the field. Only then can they understand what their patients are feeling and fearing.

“Fear is 1 of the main emotions of animals. And it’s also a big main emotion of autism,” she said.

Unfortunately, she added, “people underestimate fear.”

Grandin likens the psyche of a dog to a music mixing board. Imagine 7 slots, 1 for each emotion, including fear. A switch—controlled by both genetics and previous experience—adjusts the volume for each.

Unlike people, whose comprehension is verbal, animals are sensory. Understanding an animal’s reaction to a situation means embracing its sensory input.

Previous experience, which often means first experience, modulates an animal’s fear of that experience. For a cat, or even a puppy, the first experience with a carrier should be a good one: A cat’s maiden stay in a carrier should not be in transport to a veterinary hospital but rather resting or eating a good meal. Grandin also frowns on the practice of packing a newly purchased puppy into a carrier and putting it on an airplane.

“I’ve [seen] binders detailing bloody mouths and bloody paws of dogs trying to bust out of their airplane carriers because they’re freaking out in that black hole,” she said.

But that’s just the puppy’s first flight. When there are 2 flights involved, it’s the second flight that they actually die on, because the visual of the conveyor belt is often enough to set up an anticipatory cortisol cascade.

Another important first is the veterinary encounter. A zoo animal’s first encounter with a veterinarian might be when it is darted in preparation for a medical procedure. The animal is likely to never cooperate with the vet and might always recognize them no matter what the attire.

The role of firsts
Grandin also described the case of the “black hat horse.” This horse was terrified of anyone wearing a black cowboy hat. The fear, it was thought, came from the animal’s ordeal of being accidentally sprayed in the eyes with alcohol by a veterinarian wearing a black hat. In a phenomenon that shows just how specific a memory can be, this horse was not afraid of people wearing white hats, only those wearing black hats.

The memory was a picture, Grandin figured. So, she placed a black hat on the ground and found that it became less scary to the horse. Through repetition, she finally coaxed the horse to touch the hat.

Grandin called on veterinarians to sync their brains with those of their patients so that they might make first visits positive. What is the kitten hearing—barking dogs? Consider having a separate waiting area for cats. What is the puppy fearing—falling? To combat this primal fear of fears, simple improvements such as nonslip floors and rubber-matted exam tables offer added traction.

Other major fears dogs face (thunderstorms and being alone) can sometimes be blunted through better socialization. Socialized dogs—those that get out of the house often, meet people, play with other dogs—are typically less neurotic, she said. As such, these dogs are not as prone to thunderstorm phobia, separation anxiety, and graying prematurely.

Whether an animal lives in a home, a barn, or a zoo, training goes a long way in buying cooperation. Using positive reinforcement, desensitization, and observation, antelopes and cattle have been primed to position themselves for jugular sticks, dogs have been taught to crawl into MRI tubes and lie still for 15 minutes, and sheep have been trained to willingly enter squeeze restraints.

But training requires time and patience—and perspective.

As an autistic person, Grandin says she comes by the animal perspective naturally. But veterinarians and other animal caretakers can train themselves to relate better to their animal charges by taking a moment to notice the world through their eyes. 

Hospital expansion also builds community

A local fixture’s exponential growth offers better care for all.

By Sarah A. Moser

For more than 40 years, Mount Laurel Animal Hospital in New Jersey has been a fixture in the community. Locals know the hospital as the place to go for primary and emergency care for their pets, as well as a place to enjoy nature on the farm behind the hospital.

In 2004, just out of veterinary school, Robert Mankowski, VMD, joined the bustling practice as an associate veterinarian. In 2013, he partnered with Christopher Torre, VMD, to purchase the hospital. By this time, they were open 24 hours a day, with primary care and 1 specialty offered. The 2 owners agreed that growing the specialty side of the practice made good sense, and before long they had more than 100 full-time employees sharing just over 9000 square feet.

“As we added specialists, our emergency practice grew,” Mankowski says. “As the emergency practice grew, it fed the specialty side, and back and forth. Everything grew together, keeping us busy and doing good for the community.”

The surge in business quickly led them to decide to expand their hospital footprint to better serve the community. The owners began the process of adding space while keeping the 24-hour hospital functioning. The big build resulted in keeping the original facility for the primary care practice and a 17,328-square-foot expansion and addition to house the specialty and emergency sides of the practice.

The smart design earned Mount Laurel Animal Hospital a 2020 dvm360® Hospital Design Competition Merit Award. It also gave the 48 doctors and their team of 200 full- and part-time employees a space to work and serve their community with excellence in an environment they truly enjoy.

Get buy-in from your team and community

Changing a neighborhood fixture can be dicey. But having team members, clients, and the community all on board paves the way for a smooth transition.

Mankowski says it’s important to communicate well with your staff regarding hospital construction updates and progress and to thank them for their patience. Also, he says, create excitement about the new building by involving the team in the design process.

“We laid out the plans on a bulletin board and empowered the team to take charge of their departments and lay it all out,” he says. “They weighed in on what would and wouldn’t work, what they wanted to...”
The hospital boasts 21 exam rooms. The rooms are neutral in color and decorated with photos of clients’ pets that they submitted online, lending a personal touch to the space.

The hospital has 4 surgery rooms that are seemingly in constant use.

The auditorium and employee lounge open to a large outdoor fiberglass deck, complete with lounge chairs and surround sound, that overlooks the property’s 16 acres of farmland and a serene pond.

Besides animal care, the hospital offers lectures, hosts events, and serves as a space for community engagement. The hospital’s second floor houses an auditorium, conference room, employee lounge and meditation room, physical therapy, and doctor and administrative offices.

The in-house laboratory and pharmacy are conveniently located between the primary care practice (original wing of the hospital) and the new specialty/emergency wing, allowing for a seamless transition between old and new.
see in their space. Getting the team involved in the process helped build their excitement and give them a space that works for their unique needs. "We were in constant communication, talking about and looking toward the future."

Clients and the community also were excited about what was to come. Mankowski says locals were happy that it wasn’t a big corporation coming in, but rather an extension of a part of the community for more than 40 years. "Community members have been with us since the beginning, helping us grow," Mankowski says. "They feel [as though] they’ve been a part of it all along and are happy for us. And they’re glad to have these resources close to them in a place they are already comfortable with and used to."

The same holds true for referring hospitals, he says. They are happy to support Mount Laurel’s expansion of services, knowing they can refer even more cases to a local team they know and trust.

A testament to the hospital’s reputation in the community is that of the 2 former owners (the founder and the subsequent owner), 1 has a daughter who works at the practice as a cardiologist and the other is still on staff. "The original owners are very supportive and happy for us, to see how their dreams have grown with us," Mankowski says.

**Surround yourself with a good team**

Here’s something you don’t hear every day: Mankowski and Torre met their hospital builder at a chili party. Old-fashioned socializing and networking brought the perfect builder for their project into their lives just as the right time.

Granted, the builder had never constructed a veterinary practice. But Mankowski says they had the ability to communicate well and trust another, which was most important to the process. The builder had constructed some other types of medical facilities previously. And now, his experience with Mount Laurel Animal Hospital has opened the doors to more veterinary hospital builds.

"We really enjoy our builder and are friends with him now," Mankowski says. "But you don’t have to be friends with your contractors, as long as you can communicate well and be on the same page as those on your team."

Mankowski also stresses how important it is to do your homework in all areas before starting a construction project. He consulted an architect who has designed veterinary facilities, visited specialty veterinary hospitals, and referenced magazines all to determine exactly what would make a specialty/emergency practice run most smoothly.

Despite all the research—and the admonitions that most people build too small—Mankowski believes they built too small. He regrets that he didn’t add at least another 10 exam rooms and a third floor to the building.

**Make space for the community**

Building a space to care for animals is important. Creating a space that welcomes the community and offers a peaceful respite for staff members is a bonus.

Mount Laurel Animal Hospital sits on 16 acres of farmland. On the farm, staff members raise chickens and sell eggs, care for goats and offer goat yoga classes, and welcome 50 to 80 visitors per day. In nondreadenmic times, students visit for field trips.

"This is the dream of the original founder, to be a part of the community and a resource to teach about animals any way we can," Mankowski says. "We take pride in welcoming people to our farm. It’s an important part of our responsibility as veterinarians to teach the next generation about animals."

They don’t charge visitors to tour the land, although some have suggested it. The owners want to keep the space a free and welcoming space to all.

Last fall, they asked the public to donate their pumpkins when they were finished with them. They received more than 2000 pumpkins, then allowed visitors to sign up for a time to come feed the pumpkins to the animals. The time slots were filled within 2 hours.

A bonus in all of this is that the farm offers staff peace in the midst of their crazy days. A new deck attached to the hospital overlooks the farm and a serene pond; here, staff members have a spot to enjoy their lunch or take a quick mental break. "Veterinary medicine is such a challenging profession; it’s important to take care of our employees and give them a good work environment," Mankowski says.

Sarah A. Moser is a freelance writer in Lenexa, Kansas.

By the numbers: Mount Laurel Animal Hospital

Owner: Christopher Torre, VMD, and Robert Mankowski, VMD
Number of doctors: 39 full time, 9 part time
Exam rooms: 21
Total cost: $4,300,000
Cost per square foot: $248
Square footage: 26,475 square feet (17,328 square feet added onto existing 9147-square-foot facility)
Structure type: Renovation and new construction, freestanding
Architect: Jeffrey L. Grogan Architects, Conshohocken, Pennsylvania
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Pet health insurance provides clients with financial preparedness, aids in securing patients the treatments they need, and ensures that veterinary hospitals receive payment for their services. Yet only a marginal number of pet owners have insurance coverage for their pets. Could a recommendation from your veterinary practice be what they need to take the next step?

**CHALLENGE ACCEPTED**

The leadership team at Quakertown Veterinary Clinic in Quakertown, Pennsylvania, believes that having clients with pet health insurance offers multifaceted benefits. For the last 5 years, the 24-hour, full-service veterinary practice has made it a goal to better familiarize clients with the advantages of having insurance for their pets.

To maximize its efforts, the hospital appointed 2 staff members as pet insurance liaisons. Purchaser Janet Felix and phone system administrator Linda Gallagher spearhead a program to increase the number of clients with coverage. Today, the hospital is one of Nationwide’s most successful pet insurance customers: An estimated 9% of its patients are insured, a figure that is substantially higher than the national average.

According to the North American Pet Health Insurance Association (NAPHIA) 2020 State of the Industry Report, close to 3 million pets were insured in 2019. This accounts for 1.7% of all cats and dogs (about 0.6% of cats and 2.8% of dogs) in the country. Although pet insurance has been available in the United States since the 1980s, its adoption as a payment method has been slow. While there is certainly room for improvement, in many aspects it looks like the tides are shifting in a positive direction.

“[In 2019, more than] 2.81 million pets were insured across North America, which represents a 16% increase over 2018,” NAPHIA Executive Director Kristen Lynch notes in an association press release. “These results...
show another year of strong growth in the pet insurance marketplace, and further evidence that an increasing number of pet owners are recognizing the value of insuring their pets."

Even with the success it has achieved thus far, Quakertown Veterinary Clinic remains focused on educating clients about the value of pet insurance. And Felix and Gallagher continue to look for ways to enhance their client-focused campaigns despite the obstacles created by the coronavirus pandemic.

**BEST PRACTICES**

Veterinary professionals have a substantial impact on the decisions clients make about their pets’ care. Research funded by the American Veterinary Medical Association found that nearly half of dog or cat owners would be likely or extremely likely to purchase pet health insurance if veterinarians recommended it as a method of payment. In addition, NAPHIA reported that pet owners with insurance schedule 40% more veterinary visits than owners of uninsured pets, and those clients spend twice as much on veterinary care throughout their pets’ lives.

But this increased uptake equates to more than a bump in the bottom line. When clients routinely bring their pets to the veterinary hospital, the animals receive preventive care and life-saving treatments. "Our income has increased, but also our staff morale is better when a client is able to say yes to the best treatment because they have pet insurance," Gallagher says.

She recalls a recent case in which a dog needed a splenectomy—at a cost of more than $7000. "Luckily, the owners had pet insurance and we were able to save the dog," she says.

How can veterinary practices—already providing an abundance of information and services during appointments—successfully promote the value of pet insurance to clients?

Quakertown Veterinary Clinic has found success in melding pet health insurance best practices—such as those from NAPHIA and the National Commission on Veterinary Economic Issues—with creative ideas tailored to meet the needs of its clientele.

Select key staff members to serve as insurance coordinators.

At Quakertown Veterinary Clinic, this is where Felix and Gallagher shine. They have become the liaisons between the hospital and the pet insurance company representatives and are responsible for overseeing ongoing efforts to educate clients.

Support a limited number of pet insurance companies.

Don’t put the onus on clients to research and compare all available options; it is too intimidating. Pet owners prefer and value their veterinary practice’s opinion. For Quakertown Veterinary Clinic, it was important to find a variety of companies and plans. "We have a very diverse clientele so we decided on plans that we felt would best suit their different needs," Gallagher said. "We also wanted financially sound companies that provided good customer service."

The pair narrowed it to 3 policies, including Nationwide’s Whole Pet with Wellness coverage. "We figured that if we recommended more than a few plans, clients would not take the time to look at the information," Felix adds.

Make insurance information easily accessible.

Quakertown Veterinary Clinic provides all new clients and existing clients with new pets with a pet insurance packet to take home after their first visit. The packet, prepared by hospital staff, includes an introduction letter from the hospital, testimonials from pet owners about the benefits of pet health insurance, as well as information provided by the 3 insurance companies that details the recommended plans.

The amount of advice offered during initial veterinary visits—think parasite prevention discussions, spay/neuter schedules, vaccination timelines—can lead to information overload for new pet parents, and the importance of pet insurance
can get lost in the shuffle. Sending clients home with a thorough overview of recommendations lets them really consider which plan best fits their needs.

**Utilize the knowledge of insurance representatives.**

Felix and Gallagher say they rely heavily on the insurance representatives assigned to Quakertown Veterinary Clinic to promote messaging to clients. "They have been really critical to what we have done here," Felix says.

Prior to COVID-19 restrictions, the practice hosted pet insurance education seminars 4 times a year. Representatives from the 3 recommended insurance companies delivered 30-minute presentations followed by a networking period where clients could ask questions and receive insurance quotes. "These were very successful events," Gallagher says. "And 95% of attendees signed up for pet insurance either that night or within 2 weeks."

Every month, the practice also invited a pet health insurance representative to set up a table in the hospital lobby. This gave clients with the opportunity to learn more about coverage options while waiting for their appointments.

**Engage the staff.**

Felix and Gallagher do not expect the staff at Quakertown Veterinary Clinic to become pet insurance experts, but they do rely on team members to ask clients during examinations if they have pet insurance. "If clients hear that enough times from the staff it might make them think, 'Maybe I should get pet insurance. Everyone is talking about it,'" Felix explains.

To educate staff on the plans the hospital promotes, Felix has insurance representatives talk directly to staff about the policies and how they can benefit clients and patients. "We have 200 people on staff here, so it is baby steps," she says.

**Provide incentives for clients.**

The practice periodically runs promotions to entice clients to ask about pet insurance without being prompted by a veterinary technician or doctor. For example, Quakertown Veterinary Clinic might run a raffle where every client who asks for a pet insurance packet is entered to win a gift basket (typically donated by a pet insurance or drug company). "That way no one on staff missed asking the client about insurance—the client comes to us," Felix says.

**Repeat the message.**

It is important to remind clients consistently about pet insurance. In addition to marketing materials in the lobby and examination rooms, Quakertown Veterinary Clinic uses its outdoor signage to promote the service. "We also put it on our on-hold message," Felix explains. "Something like: 'Do you have pet insurance? Do you know that the average cost of an emergency is X dollars, but with insurance that could be covered?'

**Schedule digital reminders.**

Although the pandemic has hindered many of the usual ways Quakertown Veterinary Clinic talks to clients about pet health insurance, digital media remains a reliable tool to initiate engagement. Brief statements and visuals about pet health insurance plans are posted frequently on the hospital’s Facebook page. They also have had success in deploying email blasts created with assistance from the insurance companies. "Typically, after sending an email we will see an increase in [the number of] those pet insurance policies," she says.

- 3 -
NEXT STEPS

In light of the pandemic and lack of face-to-face contact with clients, Felix and Gallagher say many of their scheduled plans to promote pet health insurance plans have stalled. For example, the hospital’s annual pet fair—which draws upwards of 1000 pet owners—was canceled last spring, and quarterly pet insurance seminars are sidelined for now. But the pair has been formulating plans for a virtual session that would connect the insurance representatives with clients via Zoom or a similar video conferencing platform.

Felix says the clinic also hopes to use its partnerships with breeders and shelters to promote pet health insurance. "Breeders have a big impact on the people who are buying puppies from them, especially first-time buyers. Whatever the breeder says they take it as gold," she says. "We hope to get some of our top breeders to tell customers that they should get pet insurance even before bringing their puppy to the hospital."

Both Felix and Gallagher anticipate that the pet health insurance industry will continue to grow. However, they predict that the rate of adoption could depend largely on how the companies approach continuing education and marketing opportunities. "I don’t think pet insurance companies advertise enough," Gallagher says. "Our clients see commercials for other pet-related services and products, but they don’t see any commercials for pet insurance. And what can be done to better educate and persuade pet owners to acquire insurance? Commercials about pet insurance, especially ones that feature a pet [that] avoided economic euthanasia because their owner had pet insurance."

There also needs to be a proactive push toward helping veterinarians understand the value of educating clients about pet insurance, Gallagher said. "Until recently, veterinarians have been [reluctant] to talk about pet insurance," she notes. Educating future veterinarians on pet insurance while they are still in veterinary school could be an important first step, she says, followed by offering continuing professional education classes on pet insurance to seasoned professionals.

THE BOTTOM LINE

A recommendation from a trusted veterinary professional is often the push clients need to secure health insurance for their pets. By incorporating some best practices, veterinary hospitals stand to gain increased profits. And having insurance could be what saves a patient’s life. Just as in the sales world, it may take multiple impressions before a client seriously considers obtaining insurance coverage. “You just have to keep talking about it,” Felix says.

REFERENCES

Products underwritten by Veterinary Pet Insurance Company (CA), Columbus, OH, an A.M. Best A+ rated company (2020); National Casualty Company (all other states), Columbus, OH, an A.M. Best A+ rated company (2020). Agency of Record: DVM Insurance Agency. All are subsidiaries of Nationwide Mutual Insurance Company. Nationwide, the Nationwide N and Eagle, and Nationwide is on your side are service marks of Nationwide Mutual Insurance Company. ©2021 Nationwide.

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The malformed canine heart

Congenital defects that affect the canine heart have hallmark signatures traceable on puppy exam. Understanding the subtle differences in how they present enables the veterinarian to bring clarity and hope to a dog born with a faulty heart.

By Joan Capuzzi, VMD

Understanding normal cardiac anatomy and physiology is the foundation for flagging heart defects in young dogs, according to Kelly Wiggen, DVM, a cardiology faculty member at the University of Missouri Veterinary Health Center in Columbia. During a recent Fetch dvm360® virtual conference session, Wiggen reviewed the normal structure and function of the canine heart, described the clinical fallout of mishaps in its formation or maturation, and addressed treatment plans for afflicted dogs.

The pumping mechanism

The left and right sides of the heart each have 2 chambers—the atria and the ventricles. The left atrium collects oxygenated blood from the pulmonary veins and directs it into the left ventricle through the mitral valve. The left ventricle pumps this fresh blood through the aortic valve into the aorta and out into general circulation.

The right heart handles deoxygenated blood. The cranial and caudal vena cavae return used blood to the right atrium, which then directs it through the tricuspid valve into the right ventricle. From here, it is pumped into the pulmonary artery through the pulmonary valve and then into the pulmonary vasculature, where it picks up more oxygen.

Normal systemic blood pressure is 120/80 mm Hg. The systolic number, 120, represents the pressure generated by the left ventricle to deliver fresh blood out to the body. What enable the cardiac pump to function are pressure differentials between the heart and great vessels, as well as between the cardiac chambers themselves: Blood is pumped down pressure gradients through valves that open and snap shut, correlated with the heart sounds.

Heart murmurs

The pulmonic and aortic valves are atop the heart, near its base. The tricuspid and mitral valves reside closer to the sternum, at the apex. To listen for their normal sounds, as well as murmurs associated with blood regurgitation or turbulence from inborn heart defects or damaged valves, Wiggen recommends auscultating 5 spots on the dog:

- **Left axilla:** Continuous murmurs associated with patent ductus arteriosus (PDA)
- **Left heart base:** Normal sounds from pulmonary and aortic valves; systolic murmurs associated with pulmonic stenosis (PS) and subaortic stenosis (SAS); tetralogy of Fallot, and physiologic variations from fever, anemia, or excitation; diastolic murmurs, usually due to a leaky valve
- **Left cardiac apex:** Normal sounds from mitral valve activity; systolic murmurs associated with mitral valve dysplasia (puppies) and degenerative mitral valve disease, endocarditis, or dilated cardiomyopathy (older dogs); diastolic murmurs connected to mitral valve stenosis
- **Right heart base:** Systolic murmurs from ventricular septal defect (VSD)
- **Right cardiac apex:** Normal sounds from tricuspid valve activity; systolic murmurs associated with tricuspid valve dysplasia (puppies) and degenerative mitral valve disease, endocarditis, or dilated cardiomyopathy (older dogs); diastolic murmurs connected to tricuspid valve stenosis

Murmurs, if found, are graded from 1 to 6 (see “Heart murmur grades”).

To match a murmur to the pathology, investigate the location where it’s loudest, its cardiac cycle phase, and related femoral pulse quality, Wiggen said. For instance, PDA advertises itself with a continuous murmur that is loudest at the left axilla, and bounding pulses. SAS and PS are linked to systolic murmurs loudest at the left heart base. PS typically has normal pulses, whereas pulses can be weak in patients with SAS. A VSD would be loudest at the right heart base, and congenital defects of the mitral and tricuspid valves would be heard at the left and right apex, respectively.

A murmur does not always mean a heart defect; some murmurs are innocent. How do you tell them apart? Benign murmurs, Wiggen said, typically can be heard only at 1 small spot, are usually limited to early or mid-systole, and can change with excitement. Likewise, she added, a heart defect doesn’t always mean a murmur.

The physical exam combined with the signalment can steer the practitioner toward the disease process. For instance, a 6-month-old golden retriever with a murmur likely has SAS. A 6-month-old Chihuahua, on the other hand, is a strong candidate for PDA.

The top heart defects

**PDA**

The most common congenital heart defect in dogs is PDA. Here, the ductus arteriosus—a vessel that connects the pulmonary artery and aorta in the fetus, enabling blood to bypass the nonfunctional lungs—fails to close at birth. As a result, some of the oxygenated blood gets dumped back into the pulmonary artery rather than into the systemic circulation. This left-to-right shunting causes left-sided volume overload and subsequent left-sided congestive heart failure (CHF).

PDA often affects smaller breeds, particularly Havanese, toy poodles, Maltese, Yorkshire terriers, and Chihuahuas. However, it can also be seen in larger breeds, such as sledies, collies, and German shepherds. It also occurs more commonly in females than males and more in dogs than cats.

Puppies with PDA are often asymptomatic, although they may be smaller and quieter than their littermates. They typically have low diastolic pressures, causing bounding femoral pulses, and a continuous murmur. Electrocardiography can reveal evidence of left-sided chamber enlargement. X-rays often show left atrial and ventricular expansion, as well as dilated pulmonary arteries and veins, and bulging aorta, main pulmonary artery, and auricles (Figure 1).

Suspected PDA cases are best referred to a cardiologist for confirmation of the diagnosis, Wiggen said. Other potential heart defects must be

**Heart murmur grades**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>Grade 1: May be intermittent, heard only in a quiet setting</td>
<td>Grade 2: Subtle, focal murmur with no radiation</td>
</tr>
<tr>
<td>Grade 3: Audible in multiple spots, has point of maximal intensity</td>
<td>Grade 4: Radiates, no point of maximal intensity</td>
</tr>
<tr>
<td>Grade 5: Has a palpable thrill</td>
<td>Grade 6: Audible even with stethoscope off chest</td>
</tr>
</tbody>
</table>

Figure 1
ruled out because they may change the prognosis or the ability for the PDA to be fixed.

Two treatment options exist for PDA. Option 1 is to close off the vessel with an occluder device, which carries a lower risk for embolization and infection. Option 2 is surgical correction via thoracotomy, which risks fatal hemorrhage and persistent flow through the PDA. Wiggen prefers the occluder device but noted that it is only available for patients with an average weight of about 6 lb (2.7 to 3 kg), and for PDAs of certain structure.

Whatever method is chosen, early closure carries an excellent prognosis, Wiggen said. “This is one of those congenital diseases where we can actually fix these dogs rather than just palliating their disease,” she said.

Later diagnosis produces lesser results, however. By age 1, two-thirds of affected dogs have developed left-sided CHF. Nevertheless, Wiggen recommends correcting PDAs in these patients because doing so still often extends their life by years.

**Subaortic stenosis and pulmonic stenosis**

The next 2 inborn cardiac flaws, SAS and PS, are tied for second most common. SAS occurs at the left side of the heart, below the level of the (aortic) valve. PS happens on the right, at the level of the (pulmonary) valve. Despite their different locations, the pathologies are similar, Wiggen said.

“It’s the same phenomenon as if you take a garden hose and started moving your finger over the end,” she explained. “The more you move your thumb over it, the faster that water is going to have to flow. That’s what’s happening in the heart.”

The greater the narrowing, the worse the obstruction and the harder the heart must pump. The chambers thicken in response, yet the myocytes outgrow their vascular supply, leading to myocardial ischemia and fibrosis, conduction disturbances, and eventual CHF. With pulmonic stenosis, the valves themselves can be dysplastic as well.

SAS is more common in large breeds. Because it is progressive up to when a dog is full grown, a murmur may not be present at the first puppy visit. PS usually affects small breeds, is not progressive, and is more likely to manifest at the initial puppy exam. Both conditions are usually asymptomatic, but dogs with SAS may display left-heart failure signs, such as coughing and respiratory distress. Dogs with PS show right-heart sequelae, such as abdominal distention from ascites.

A basilar systolic murmur accompanies both diseases. Femoral pulses are generally weak in dogs with SAS but normal in dogs with PS. X-rays for the former show left heart enlargement and a prominent aorta (Figure 2) and, for the latter, right heart enlargement and a dilated main pulmonary artery (Figure 3). On electrocardiography, dogs with SAS can have wide P waves and tall R waves, indicative of left atrial and left ventricular enlargement, respectively. Patients with PS can have tall P waves and deep S waves, reflecting enlargement of the right heart chambers. For both conditions, echocardiograms may reveal chamber thickening, blood flow obstruction, increased flow velocity leaving the heart, and valves...
that are leaky. A narrowing is often visible below the level of the aortic valve in the case of SAS, and poorly mobile or abnormal leaflets are visible with PS.

Both diseases are graded based on pressure generated by the affected ventricle. Mild and moderate cases are often clinically silent, do not require treatment (except beta blockers in some cases of moderate PS), and carry an excellent prognosis.

Dogs with severe SAS are at risk for left-sided CHF and sudden death before age 5. They may be prescribed β-blockers (eg, atenolol), which decrease the rate and force of contractions. Balloon valvuloplasty may improve clinical signs, but neither this nor medication has been demonstrated to improve survival time.

Dogs with severe PS are at risk for right-sided CHF and sudden death. These patients benefit from β-blockers and balloon valvuloplasty.

Other birth defects
Other heart malformations occur less commonly. Tricuspid valve dysplasia, to which Labrador retrievers are predisposed, boosts right atrial pressure, resulting in jugular vein distention and pulsation, hepatomegaly, and ascites. A right apical systolic murmur may be heard on puppy exam. This condition is usually managed medically, although surgical intervention is available at Colorado State University.

Mitrval valve dysplasia, an uncommon anomaly that strikes bull terriers preferentially, causes left heart failure. Its attendant signs are respiratory distress, cough, tachycardia, and hypothermia. A left apical systolic murmur accompanies this condition, which also is treated medically.

Puppies born with a VSD, a hole in the septum between the ventricles that allows blood to pass from the left to right side of the heart, experience left-sided volume overload. Auscultation reveals a left basilar systolic murmur. The prognosis depends on VSD location and volume shunted. The smaller the VSD, the less chance of volume overload and the better the prognosis. Small VSDs, which ironically produce loud murmurs, may close over time. Large VSDs cause higher volume overload and carry a poor prognosis. If the defect is not too big and is in an adequate location, it can be managed by surgery or device occlusion.

Silent heart disease
Although the aforementioned cardiac malformations produce murmurs, Wiggen said, there also are heart diseases that don’t produce murmurs. The most common “murmurless” heart defect is the reverse PDA, which occurs when the left-to-right shunting of a PDA switches direction. As a result, deoxygenated blood is pushed into circulation via the aorta, and the dog becomes hypoxic, particularly in the caudal half of the body. The kidney boosts erythropoietin production in response, and more red blood cells are churned out. Affected dogs experience multiple clinical signs, such as lethargy, exercise intolerance, respiratory distress, pelvic limb weakness, and differential cyanosis (pink up front, blue at rear).

Blood work shows polycythemia with a regenerative response. X-rays and echocardiography reveal an enlarged right heart and prominent main pulmonary artery as well as peripheral pulmonary artery dilatation (Figure 4). Phosphodiesterase inhibitors, such as sildenafil and tadalafil, are used to treat pulmonary hypertension, and therapeutic phlebotomy may alleviate blood hyperviscosity and prevent associated seizures. Some cardiologists will also recommend hydroxyurea to also help manage the secondary polycythemia. The average lifespan of affected dogs is 5 years.

Conclusion
When you hear a heart murmur in a puppy, Wiggen said, blend the signalment, history, and physical exam findings to determine what anomaly is most likely present. It’s important to remember that a pet may have multiple cardiac defects.

Joan Capuzzi, VMD, is a small animal veterinarian and journalist based in the Philadelphia area.
CASE REPORT: Removing traumatically displaced teeth from a dog’s nasal cavity via an intraoral approach

Arlo, a 2-month-old intact male Siberian husky, was presented to his primary care veterinarian 1 week after being bitten on the muzzle by another dog.

By Anthony Caiafa, BVSc, BDSc, MANZCVS; and Casey Gordon, BVSc (Hons)

On clinical examination, Arlo had an audible nasal airflow obstruction, purulent nasal discharge, and fractures of both upper deciduous canine teeth. The fractured teeth were removed under general anesthesia, and dental radiographs showed no evidence of structural changes to the nasal cavity.

A swab of the nasal cavity was collected and sent for culture and sensitivity. While the results were pending, Arlo was started on a course of amoxicillin-clavulanic acid. Although the culture result showed growth of Enterobacter asburiae with resistance to amoxicillin-clavulanic acid, the pathologist suggested that this was likely a normal commensal of the nasal cavity and not representative of a true infection. The primary care veterinarian decided to continue the course of antibiotics because, clinically, there was a reduction in nasal discharge.

The nasal discharge recurred when the course of antibiotics was completed, and the primary care veterinarian sought the author’s (AC) advice. Due to the traumatic injury, there was likely to be a comminuted maxillary fracture, altered maxillary growth, and possible displacement or impaction of the permanent teeth, particularly the maxillary canines. A dorso-ventral radiograph of the maxilla (Figure 1) showed that the right maxillary adult canine tooth was sitting more medially than would normally be expected. At this stage, it was recommended to monitor the eruption of the adult teeth closely.

Arlo was presented again 6 weeks later due to nasal stertor, reduced exercise tolerance, and sneezing. Obvious maxillary brachygnathism had developed, suggesting damage to maxillary growth, resulting in a post-traumatic class III malocclusion.

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Figure 1. A preoperative occlusal-view radiograph showed displaced and impacted teeth 104, 106, and 204 (arrowheads). Also note missing tooth 105 and remnants of tooth 107.
Arlo was referred to our hospital for further investigation and treatment.

**Further findings**
Clinical examination revealed a missing right maxillary canine tooth (104), and only the incisal edge of the crown of the left maxillary canine (204) was visible. Airflow through the nasal cavity (particularly the right nostril) was restricted, and an audible stertor was still present during normal, relaxed respiration. Due to the history of trauma, unerupted and possibly displaced maxillary permanent canine teeth—the mandibular canines already were erupting into a normal position—as well as the altered maxillary growth and restrictions in nasal airflow, a decision was made to obtain a CT scan.

The CT scan (Figure 2) revealed that both maxillary canine teeth were displaced and impacted into the nasal cavity. The root of tooth 204 was within the left nasal cavity, and the whole of tooth 104 was horizontally and palatally displaced within the nasal cavity, being close to the vomer and nasal septum. Exostosis was noted associated with and encapsulating tooth 104. The right maxillary second molar tooth (106) appeared to be impacted, also.

Surgery was selected as the best option to relieve the respiratory distress caused by the displaced maxillary canine teeth. It was assumed that maxillary fractures caused by the original trauma would be present, leading to a posttraumatic class III malocclusion due to alteration in the normal development of the incisive, nasal, and maxillary bones.

**Surgical correction**
Arlo was premedicated with acepromazine 0.02 mg/kg and methadone 0.3 mg/kg given subcutaneously. An intravenous cannula was placed in the cephalic vein, and general anesthesia was induced with slow titration of alfaxalone 2 mg/kg to effect. Arlo was maintained on oxygen and isoflurane with a cuffed endotracheal tube. The dog’s vital signs were monitored closely throughout surgery and no complications were noted. Cefazolin 22 mg/kg was administered intravenously every 90 minutes during surgery, and a continuous-rate infusion of fentanyl at 4 µg/kg/hr was maintained and titrated as required to ensure ongoing pain relief throughout the procedure.

Dorsal and ventral rhinotomies are the most frequently reported surgical approaches to the nasal cavity for removal of foreign bodies or masses. Initially, a dorsal rhinotomy was considered the best approach to the impacted teeth. However, it was quickly determined that a dorsal approach would be too invasive, and a rarely described intraoral lateral rhinotomy approach was considered the best and least invasive approach to the displaced teeth.

The dog was positioned in right lateral recumbency and a left side caudal maxillary nerve block (1 mL lidocaine 2%) was performed. A pharyngeal pack was placed to protect the oropharynx. A few millimeters of the crown of tooth 204 was visible in the oral cavity.

The root bulge of tooth 204 was palpated just under the labial bony plate. On the CT scan, the root of this tooth communicated with the left nasal cavity. A left lateral rhinotomy via an intraoral approach was performed. Using a Molt No. 9
periosteal elevator, a triangular labial mucoperiosteal flap was raised in the area. Labial bone was removed with an air-powered spinal handpiece and bur, and the impacted crown and root of tooth 204 became visible. With gentle luxation and elevation of the root (size 5 dental elevator), the tooth was extracted with spring-loaded extraction forceps (Figure 3).

The surgical site was vigorously curetted of any granulation tissue and flushed with saline prior to closure of the mucoperiosteal flap. The flap had a periosteal release at its base to allow for tension-free closure with simple interrupted 3-0 absorbable sutures. The dog was then placed into left lateral recumbency. A right caudal maxillary nerve block was administered similar to that on the left side. There was no evidence of the crown of tooth 104, but the CT scan indicated that the tooth was an abnormal stubby shape, more horizontally impacted (closer to the midline), and more caudal or distal compared with tooth 204. It was noted that tooth 106 was missing on oral examination, although it appeared on CT to be impacted.

Tooth 104 was approached again via an intraoral lateral rhinotomy approach, a large triangular mucoperiosteal flap with a vertical releasing incision just caudal or distal to the maxillary third incisor (103), and a horizontal release extending caudally or distally to the mesial surface of tooth 108.

A large lateral rhinotomy via an intraoral approach was performed to access the crown of impacted tooth 104. Tooth 106 was identified and removed in its entirety prior to searching for tooth 104. The abnormal crown of tooth 104 was identified and the rhinotomy was extended caudally, due to the horizontal impaction of tooth 104, allowing for a path of delivery of the tooth. A moderate amount of new bone growth surrounded this tooth, and the lateral component of this new bone growth had to be removed. Once the crown and root were visualized, small dental elevators (sizes 2 and 3) were used to mobilize the tooth, and the intact tooth was extracted through the osteotomy site (Figure 4).

The extraction site was again curetted of granulation tissue and flushed with sterile saline. Again, closure of the mucoperiosteal flap with a tension-free releasing incision of the periosteum was performed as per the tooth 204 site. Full extraction of all displaced teeth was subsequently confirmed (Figure 5).

**Recovery and outcome**

Arlo’s recovery from anesthesia was uneventful, and the respiratory noise was improved in the immediate postoperative period. Arlo remained in the hospital overnight and was discharged the following day as the dog was experiencing no breathing difficulties and was eating and drinking normally. A 5-day course of oral amoxicillin-clavulanic acid 20 mg/kg twice daily was dispensed, and meloxicam 0.1 mg/kg orally once daily was dispensed for 7 days to manage postoperative pain and inflammation.

Arlo was reexamined by his primary care veterinarian 2 weeks after surgery and then again at 2 months after surgery, at which time a mild nasal stertor remained. This was most likely due to scar tissue/exostosis caused by the initial injury, and it is unlikely to ever resolve completely. The surgical sites healed well without complication and with excellent cosmesis. The traumatic malocclusion is still present (Figure 6), but the owners are happy with Arlo’s progress. Arlo remains an active, energetic puppy. (Figure 7.)

**Case in point**

Have an interesting case you’d like to share in the pages of dvm360®? Email Maureen McKinney at mmckinney@dvm360.com | dvm360.com | February 2021 | 37

**REFERENCE**


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Casey Gordon, BVSc (Hons), is a small animal surgery intern at North Coast Veterinary Specialists and Referral Centre in Sunshine Coast, Queensland, Australia. Her goal is to become a surgical resident and ultimately a specialist surgeon.
What we know about cannabinoid therapy is the “tip of the iceberg”

An increasing understanding of endocannabinoid system function and a growing body of literature on cannabinoid therapy point toward a promising future for cannabinoids in veterinary medicine.

By Kate Boatright, VMD

Cannabis therapy has received increasing attention from human and veterinary medical professionals in the last several years. Hemp products, which became more widely available after the passage of the 2018 Farm Bill, are the subject of ongoing research and have been hailed as a therapy for many conditions that ail both humans and animals. But cannabis is not a panacea, according to Tim Shu, DVM, founder and CEO of VETCBD. “There are very specific things for which cannabis can be effective,” he said during a recent Fetch dvm360® virtual conference session.

Cannabis basics

Cannabis is classified into hemp and nonhemp products. Hemp, which is legally defined in the United States as cannabis with 0.3% tetrahydrocannabinol (THC) or less by dry weight, is the product that has become widely studied and commercially available, although it is still not legal in all states. Nonhemp products, colloquially referred to as marijuana, are still considered Schedule 1 drugs by the US Drug Enforcement Administration, although in some states marijuana is allowed for certain medical conditions.

The cannabis plant contains more than 500 active compounds. Phytocannabinoids are the molecules that interact with the body and may have anxiolytic, anticonvulsant, neuroprotective, analgesic, antiemetic, antineoplastic, and anti-inflammatory effects. Although some cannabinoids cause intoxication, most do not.

THC and cannabidiol (CBD) are the major phytocannabinoids. THC is the molecule known for causing dose-dependent intoxication when used recreationally. CBD is the nonintoxicating substance that has been proposed to have numerous therapeutic properties, many of which are supported by preclinical studies and clinical trials.

The endocannabinoid system: what you didn’t learn in vet school

The therapeutic effects of cannabinoids are produced through the interaction of these molecules with the endocannabinoid system (ECS), which is present in all vertebrates and plays a role in homeostasis of bodily functions. Our understanding of this system and its role in both health and disease processes is still developing.

The endocannabinoid system was discovered in the late 1980s and has yet to be widely taught in nursing, medical, or veterinary schools. To highlight the large amount of education about this system that is currently...
therapy was added to their existing reduction in seizure frequency in a study from 2019 showed a significant effect of oral cannabidiol administration in dogs with this condition.1-3 This mobility and decreased pain in studies, which have shown increased benefits, “Shu said. He uses the acronym PAINS for the uses that are currently supported by the literature.1-2

Evidence for efficacy
One of the major critiques of cannabinoid therapy has been a lack of clinical evidence. Shu explained that research historically has been limited due to the classification of cannabis as a Schedule 1 substance. Although the classification of THC is unchanged, the 2018 Farm Bill legalized hemp and hemp derivatives, leading to a growing body of clinical research on CBD.

“We want people to understand that in terms of scientific evidence, there are specific uses for which cannabinoids have a lot of established benefits,” Shu said. He uses the acronym PAINS for the uses that are currently supported by the literature in human and veterinary medicine: pain, anxiety, inflammation, nausea, and seizures.

Since 2018, several clinical studies of cannabinoid therapy in dogs have been released. Osteoarthritis pain has been the focus of many studies, which have shown increased mobility and decreased pain in dogs with this condition.1-4 This research includes 2 randomized, placebo-controlled studies.1,2

A double-blind, placebo-controlled study from 2019 showed a significant reduction in seizure frequency in dogs with epilepsy when cannabinoid therapy was added to their existing treatment protocol.4 However, the placebo group showed a similar proportion of dogs with a reduction in seizure frequency.

Although many have suggested that cannabinoids are useful in cancer treatment, clinical evidence is lacking. Several preclinical studies using in vitro testing and animal models have demonstrated antitumor effects through various mechanisms, but until true clinical studies are published, the efficacy of cannabinoids as therapy for neoplasia remains debatable.

Keys to effective use of cannabinoid therapy
The optimal dosing for cannabinoids varies by the condition being treated and the individual patient. This variability is due to individual differences in the ECS, likely due to genetics, and variances in individual bioavailability. “The best way to dose is to start low and gradually titrate upward until you see optimal effects,” Shu said. It is known that the peak plasma concentration after oral administration in dogs occurs within 1 to 2 hours.1

Even though CBD has a wide safety margin, some situations bring potential for increased adverse effects. Because cannabinoids interact with multiple body systems, they should be used with caution in patients with cardiovascular disease. Additionally, there is potential for drug interactions because CBD is a competitive inhibitor of cytochrome P450, which could result in higher blood plasma levels of drugs that are metabolized in this pathway. Finally, ataxia or other movement-related adverse effects may be seen more often in dogs when utilizing cannabinoids that are CB1 agonists, such as THC.

Shu also encouraged practitioners to look at the cannabinoid profile of different products when choosing a product to prescribe. Some products are a single isolate, whereas others are full-spectrum products containing multiple cannabinoids. The “entourage effect” theory suggests that the effect of multiple cannabinoids used together is greater than the effect of any 1 cannabinoid used in isolation, which means full-spectrum products may be more efficacious. This is currently being studied.

What comes next?
Shu likened the current knowledge of the ECS and cannabinoid therapy to being “at the tip of a very, very large iceberg.” As more is learned about the function of the ECS in both health and disease, practitioners will gain a better understanding of potential uses for cannabinoids. This knowledge, combined with existing data, will help to guide future clinical research to maximize the use of cannabinoid therapy for veterinary patients.

REFERENCES

Kate Boatright, VMD, a 2013 University of Pennsylvania graduate, is a practicing veterinarian, freelance speaker, and author who lives in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside of clinical practice, Boatright is actively involved in organized veterinary medicine at the local, state, and national levels.
Consider these 5 tips for improved orthopedic exams

There’s no single way to practice veterinary medicine or perform an orthopedic exam, but here’s how to achieve the best possible patient outcomes.

By Karen Todd-Jenkins, VMD

Whether a practitioner sees limping patients every day or infrequently, it’s never too late to refine exam techniques and diagnostic procedures. During a lively, interactive keynote session at a recent Fetch dvm360® virtual conference, Courtney Campbell, DVM, DACVS-SA, shared 5 pearls of wisdom that can help veterinarians improve their approach to orthopedic exams.

1. Remember neuropathic pain
When performing an orthopedic exam, it may seem logical to focus on muscles, joints, bones, tendons, and ligaments. But how often do those exams fail to identify a reason for the patient’s lameness? Campbell, who practices at VetSurg in Ventura, California, noted that neuropathic pain is a common, underdiagnosed cause of lameness. “About 50% to 60% of my patients that come in for an orthopedic condition have a component of neuropathic pain,” he said, adding that diagnosing neuropathic and orthopedic pain simultaneously is still an emerging field in human and veterinary medicine.

Neuropathic pain can cause spontaneous or paradoxical pain, allodynia, and other clinical signs. It can result from intervertebral disk disease, trauma, abnormal conformation, neoplasia, immune-mediated disease, and other conditions. Although various nerves can be associated with neuropathic pain, Campbell noted it’s also important to check for sciatic and radial nerve pain.

To detect sciatic nerve pain during a physical exam, use the thumb to apply deep pressure between the biceps femoris and semitendinosus muscles, along the popliteal fossa (Figure 1). Radial nerve pain can sometimes be isolated by deep palpation of the triceps muscle bellies directly behind the shoulder joint (Figure 2). Campbell also advised palpating the lumbar, lumbosacral, and tail base areas for signs of pain. Evaluate the cervical region by taking the neck through range of motion and apply digital pressure. “To help avoid overlooking the possibility of neuropathic pain, it’s important to evaluate every animal for the presence of para, spinal, sciatic, and radial hyperpathia,” Campbell said.

Following the physical exam, radiography can further elucidate causes of neuropathic pain (sedation may be needed). Referral to a neurologist for an MRI and electrodagnostic testing also may benefit some patients. Neuropathic pain can be treated with medications such as gabapentin, pregabalin, amantadine, and amitriptyline. Campbell also recommends developing a good working relationship with a neurologist to facilitate diagnostic and therapeutic cooperation that benefits patients.

2. Use a composite approach when checking for cruciate ligament injury
Cruciate ligament disease is the most common orthopedic condition in dogs, costing pet owners more than $1 billion annually, Campbell said. Diagnosis can be a challenge, however, because a positive drawer sign and other routine assessments aren’t always conclusive. Campbell noted that diagnostic success can depend on both the technique used and the execution of that technique (Figure 3). Using improper hand positions, bending the wrists, not being assertive enough, sliding the patient’s skin instead of the body structures underneath, failing to assess range of motion, and other technique glitches can limit effectiveness when trying to elicit the drawer sign, he cautioned.

Instead of relying on a single procedure, Campbell recommends a composite approach, using a combination of properly executed techniques to evaluate the knee joint before deciding whether the cruciate ligaments are damaged. Techniques such as the cranial drawer test, parapatellar palpation, positive sit test, tibial compression test, and an assessment of the stifte joint in hyperextension all can add relevant information, especially when executed properly and used concurrently.

3. Take comparison radiographs
When evaluating radiographs, Campbell said, “there’s tremendous diversity among dogs. With so much variation, it can be hard to know what’s pathologic and what’s not.” He further noted that incidental findings, normal anatomic variations, and open growth plates (in juvenile patients) may appear pathologic when they really aren’t. Taking comparison radiographs of the opposite leg can help identify normal anatomic variations that may be incidental findings for a patient and reduce the chances of misdiagnosing a normal variant as pathology.

To improve detail, Campbell also advises collimating the x-ray beam and centering it properly over the area of interest.

4. Remember that cats are different
Campbell noted that orthopedic exams in cats are different than in dogs for several reasons. Cats tend to display pain differently than dogs do, cat owners may have a harder time recognizing pain, and cats need special handling in a clinic setting. “Cats rarely come in for orthopedic lameness,” he said. “But when they do, you’ll likely find something. So, if you see a cat limping, there’s likely a problem.”

When reviewing the medical history, it may be helpful to ask different questions of cat owners. Campbell said that cats experiencing pain at home may be reluctant to jump, jump shorter distances, or show reluctance to use stairs. Hiding, appetite loss, and changes in personality also can be indicators of pain in cats. “It’s important to get a thorough history and ask a lot of questions,” he said.

Once in the office and out of the carrier, conducting gait analysis is...
different for cats, because they’re often too stressed and nervous to walk around in the exam room. Campbell likes to clear an area in the center of the room but create a dark/covered spot in a corner (eg, the space under a chair or an open carrier). Some cats will walk from the center of the room over to the dark area. “Sometimes, a few steps are all you’ll get,” he said. Another method Campbell uses is shining a laser pointer or flashlight on the floor to see if the cat will take a few steps to play with it (Figure 4). It may expedite the exam if pet owners record video of the cat at home, where the cat is more relaxed and therefore more likely to display signs, he said.

Stressed or anxious cats are likely to be more resistant to examination. A quiet exam room environment can encourage them to relax. Towels can facilitate restraint and handling, but some cats are better with sedation. Campbell noted that gabapentin and trazodone won’t influence pain response during the exam, so they are good choices for patients that need it.

The exam for cats is slightly different, too. “We know that bite wounds in cats are the most common cause of lameness, so I check the long bones for heat, pain, and swelling,” Campbell said. Other things to assess include crepitus, muscle mass, limb asymmetry, and movement of the limbs and joints through range of motion. Lumbosacral disk disease is underdiagnosed in cats, so it’s essential to remember to check the length of the back for pain.

5. Make the right call about a splint

External coaptation is a good option for some fractures, especially for pet owners who can’t pursue surgery. However, case selection has a critical impact on treatment success. Campbell urged practitioners to consider patient, fracture, and owner characteristics when deciding whether a splint is the best option for a patient.

Patient characteristics include things such as size (giant-breed dogs can be difficult to splint). Older dogs may not heal well, and greyhounds’ thin skin may not tolerate bandaging. Additionally, some chondrodystrophic dogs do better with surgery, simply because the conformation of their limbs can make external coaptation more difficult. Also consider whether an owner will have difficulty maintaining and monitoring a splint.

Finally, the nature of the fracture is key. Some fractures, such as greenstick fractures and nondisplaced or minimally displaced long bone fractures, may heal well after splinting. Campbell said that only long bone fractures that are below the elbow or stifle are readily amenable to splinting. “You can barely immobilize the femur. Even if you take the splint above the hip, you’re not immobilizing the femur,” he said. Comminuted and periarticular fractures also do better with surgical correction, he said.

Conclusion

Some of the clinical tools discussed here may be unfamiliar or challenging to remember. However, with consistent practice, these tools will help to better differentiate normal versus abnormal findings on your orthopedic and neuropathic exam. As the veterinary maxim goes, for every mistake you make for not knowing, you make 10 for not seeing. #omglovedOG

Karen Todd-Jenkins, VMD, is a graduate of the University of Pennsylvania School of Veterinary Medicine. She is a medical writer and technical director with animal health marketing agency Shepherd, and she has been in clinical practice for more than 20 years. She is also a member of the American Medical Writers Association and One Health Initiative.
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Divorce leads to dueling pet owners

Who controls an animal’s care when its owners split up? Things can get nasty, and the veterinarian may be caught in the middle.

For the past 10 years, the Kings have been dedicated, conscientious clients. As a cherished member of the family, their dog Cookie rarely missed a scheduled appointment for vaccines or other preventive care. Recently it was noted that Cookie was overdue for vaccinations and the bloodwork required to renew the dog’s arthritis medication. In response to a second reminder, Mrs King called the clinic to ask that Cookie’s records be placed in her name only and the contact information updated. She diplomatically explained to the receptionist that she and Mr King were no longer together and that she now was the dog’s sole owner. The receptionist was appropriately sympathetic and changed the information per Mrs King’s request.

The next day, Mr King called the clinic to make the very same request that his estranged wife had made the day before. Unsure what to do, the receptionist staff sought guidance from the hospital administrator, who asked several questions. Were both Mr and Mrs King listed on the client record? Who had signed off on treatment and surgical authorizations in the past? When it became clear that both parties were equally represented in the pet’s records, individual calls to Mr and Mrs King were in order.

The administrator first called Mrs King and advised her of the conflict the veterinary clinic was facing. They wanted to provide Cookie with all appropriate care, but in view of the current circumstances it was not clear who was empowered to authorize that care. When asked if there was a legal determination as to who now owned Cookie, Mrs King said that although there was no legal order giving her full ownership of the dog, Cookie was hers before they married so she believed she was entitled to ownership now that they had split up. At this point, the hospital administrator asked Mrs King if she could speak with her estranged husband and decide between them who would authorize and pay for the pet’s treatment going forward. Mrs King declined to speak to her husband about the issue, noting that because the dog was now living with her she was the dog’s caretaker and decision maker. The hospital administrator concluded the conversation without any clear-cut answer as to who owned the dog and was responsible for its health care.

What to do? The administrator wanted to ensure that the dog’s medical needs were met and that direction of the dog’s care was appropriate. It also was important that the clinic not be placed in legal jeopardy. Clinic leadership decided that the practice would consider Mr and Mrs King as co-owners of Cookie until a legal document specifically defining ownership was made available. Until that time, whenever Cookie was presented for treatment, the co-owner who was not present would be contacted and asked to consent to the dog’s recommended care. The only exception to this protocol would be emergency care when time was of the essence.

The hospital administrator knew she had made a good decision when she presented these terms to Mr and Mrs King, neither of whom was happy with the terms but agreed to abide by them. She knew that the sign of a healthy compromise was an agreement in which neither party is fully satisfied with the outcome.

Rosenberg’s response:

It is the nature of a general veterinary practice to be a frontline family resource. The emergency contact numbers affixed to a refrigerator door or posted in another strategic household location often include those of the family’s doctor, dentist, and veterinarian. Many veterinarians enter the field not only to care for pets in need but also to avoid the challenges and problems of the families those pets live with. That is an unrealistic expectation. People and their pets are intimately connected, and that connection extends directly to the veterinarian.

Mr and Mrs King are a prime example. This situation was challenging for everyone involved, but it clearly demonstrated just how much people love their companion pets. In the end, as veterinary professionals, what more could we ask for?
The trailer rolled into the clinic parking lot, eliciting sighs of amazement from a group of onlookers. Mr Pep was the client’s name, and he was bringing in his sick cow. The other clients who happened to be at the clinic with me stood with dropped jaws as he pulled across the expanse from the road to the building.

It’s not every day you see a cow riding on a flatbed trailer. This was no ordinary flatbed; it must have been 5 feet off the ground, and it had a cow strapped down on it with those “come along”–type straps used to bind round hay bales—not your ordinary bovine delivery method.

A ‘real sick’ cow
Pep had called early that morning to tell me that he had a “real sick” cow that I needed to come out and examine. My reply included phrases such as, “I’m really busy this morning… we could get to her quicker if you could load her up,” and “Get her here as quick as you can.”

It was now 5 PM, and I had almost completely forgotten he had phoned.

Strapped to that trailer was the skinniest cow I had ever seen. She looked like something from an Ace Reid “Cowpokes” cartoon. Every rib was visible, and her flanks were so sunken they almost touched in the middle. I was amazed.

“What are you feeding her, Pep?” was all I could think to say as I stood over her.

“I got a giant pile of food for ‘em out there,” he replied with great conviction.

“Do all of your cows look like this?” It was the next logical question.

“No. About half of ‘em are big and fat.”

I learned early in my career that the last thing you want to do is argue with an opinionated cow raiser about nutrition. So, I treated the cow as best I could, and Pep went merrily on his way.

To the pasture
Three days later, he called me to treat another cow. This time, things around the clinic were quiet, so I drove out to his place on the outskirts of town. Pep told me that the cow we treated at the clinic was much better, but another had died, and 2 or 3 others were in bad shape. What I saw when I arrived amazed me. He must have had 100 cows grazing in what looked like a junkyard.

As I stood in the middle of Pep’s “pasture,” I assessed the herd. He was right; some of the cows were big and fat, but others looked as poor as any cattle I had seen in my life. My mind raced with every diagnostic differential I learned during veterinary school. I considered disease, poisoning, age, bad teeth, and afflictions with big, Latin-sounding names.

Eureka!
As I pondered the situation with perplexity, it suddenly hit me: All the tall cows were fat, and all the short cows were skinny. My eyes moved from cow to cow…tall cow, fat…short cow, skinny…tall cow, fat…short cow, skinny. There was no variance as I scanned the entire herd.

“Pep, where is this pile of food you told me about?”

“You mind if I have a look at it?”

“Shoot, no. Come on over.”

As we rounded the corner, I found my diagnosis. There, about 10 feet behind the barn, was another flatbed that was 5 feet off the ground. A large group of the short cattle were straining their necks, trying to reach the “giant pile” of food that the tall cows had eaten back from the edge.

I counseled Pep for a while about pushing that feed off the trailer so the short cows could get to it. I could tell he thought that was going to be too much work, but he grudgingly agreed that he would do something to remedy the situation.

Problem solved
I drove by Pep’s place a month later and decided to stop by to see how the short cows were faring. He was nowhere to be found, so I drove to the pasture and checked on the cows. Things looked good—tall cow, fat…short cow, fat.

You’ll never believe how Pep had addressed the problem. There, in the same spot as before, was the flatbed trailer with a pile of food on it. The only difference was that Pep had apparently hired a backhoe to dig a pit into which he could park the trailer. Now the trailer was lower to the ground, and all the cattle could get to the pile.

They just can’t teach you this stuff in school.
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