ADVERTISEMENT

Trends magazine

Brief Summary of full Prescribing Information.

Librela™
(bedinvetmab injection)

Canine anti-nerve growth factor monoclonal antibody for subcutaneous use in dogs only.

Single-Use Vial

CAUTION
Federal law restricts this product to use by or on the order of a licensed veterinarian.

INDICATION
LIBRELA is indicated for the control of pain associated with osteoarthritis in dogs.

DOSAGE AND ADMINISTRATION
The minimum target dose of LIBRELA is 0.23 mg/lb (0.5 mg/kg) body weight, administered subcutaneously once a month. Dogs should be dosed by weight range according to the specific dosing information below.

The product does not contain a preservative. The full content of each vial is for single-use only. Once punctured, contents of the vial should be used immediately and any remaining solution should be discarded.

Dogs weighing ≥ 11 lb (≥ 5 kg):
Dogs should be dosed by weight range according to the Dosing Table below (Table 1). Dogs are given the full content of 1 or 2 vials of the appropriate concentration based on body weight. Aseptically withdraw the total dose into a single syringe and administer immediately.

Table 1. Dosing Table

Dog Body Weight in Pounds (lb)	Dog Body Weight in Kilograms (kg)	Number and Strength (mg/mL) of LIBRELA Vials to be Administered				
		5 mg/mL orange	10 mg/mL blue	15 mg/mL green	20 mg/mL gold	30 mg/mL purple
11-22.1	5-10	1 vial				
22.2-44.1	10.1-20		1 vial			
44.2-66.1	20.1-30			1 vial		
66.2-88.2	30.1-40				1 vial	
88.3-132.3	40.1-60					1 vial
132.4-176.4	60.1-80				2 vials	
176.5-220.5	80.1-100				1 vial	1 vial
220.6-264.6	100.1-120					2 vials

Dogs < 11 lb:
Aseptically withdraw 0.045 mL/lb (0.1 mL/kg) from a 5 mg/mL vial (orange vial) into a single syringe and administer immediately. Discard the vial after the dose has been withdrawn.

Effectiveness may not be achieved until after the second dose (see **EFFECTIVENESS**).

CONTRAINDICATIONS
LIBRELA should not be administered to dogs with known hypersensitivity to bedinvetmab.

LIBRELA should not be used in breeding dogs or in pregnant or lactating dogs. Immunoglobulin G class antibodies such as LIBRELA can pass through the placental blood barrier and be excreted in milk. Fetal abnormalities, increased rates of stillbirths and increased postpartum fetal mortality were noted in rodents and primates receiving anti-NGF monoclonal antibodies.

WARNINGS
User Safety Warnings
Not for use in humans. Keep this and all drugs out of reach of children. For use in dogs only.

Hypersensitivity reactions, including anaphylaxis, could potentially occur in the case of accidental self-injection.

In case of accidental self-injection, seek medical advice immediately and show the package leaflet, vial or carton to the physician.

Pregnant women, women trying to conceive, and breastfeeding women should take extreme care to avoid accidental self-injection.

The importance of Nerve Growth Factor in ensuring normal fetal nervous system development is well-established and laboratory studies conducted on nonhuman primates with human anti-NGF antibodies have shown evidence of reproductive and developmental toxicity.

PRECAUTIONS
Administration of monoclonal antibodies may be associated with hypersensitivity reactions and delayed hypersensitivity reactions. If anaphylaxis or other hypersensitivity reaction occurs, discontinue use and institute appropriate therapy.

The safe use of this product with other monoclonal antibodies has not been evaluated. Use with caution in dogs with known hypersensitivity to other immunoglobulin therapy.

Evaluations were not made to determine if interactions occurred between LIBRELA and veterinary vaccines.

Treatment with LIBRELA may result in the formation of anti-bedinvetmab antibodies and potentially the loss of product effectiveness (see **IMMUNOGENICITY**).

The safe use of anti-NGF monoclonal antibodies with concurrent non-steroidal anti-inflammatory drugs (NSAIDs) has not been established in dogs. In human clinical trials, rapidly progressing osteoarthritis (RPOA) has been reported in a small number of patients receiving humanized anti-NGF monoclonal antibody therapy. The incidence of these events increased in human patients receiving NSAID treatment long term in combination with an anti-NGF monoclonal antibody. RPOA has not been characterized or reported in dogs.

The safety and effectiveness of LIBRELA has not been evaluated in dogs less than 12 months of age.

LIBRELA has not been studied in dogs that have a history of cruciate ligament rupture within six months before initial product use as these cases were excluded from the field studies.

Long term effects which may occur more than 9 months after the use of LIBRELA have not been evaluated.

NGF is expressed within the heart and vasculature, and the long-term effects of reduced NGF in dogs with cardiac disease are unknown.

Primates receiving high doses of anti-NGF monoclonal antibodies had anatomical changes in postganglionic cell bodies (reduced size and number of neurons). The change in cell body size returned to normal after anti-NGF monoclonal antibody administration was discontinued. NGF is involved in the normal development of sensory and sympathetic nerve fibers in developing animals. This may be important with use of LIBRELA in young growing dogs.

ADVERSE REACTIONS
The safety of LIBRELA was assessed in a masked, controlled 84-day US field study evaluating the effectiveness of LIBRELA for the control of pain associated with osteoarthritis. Enrollment included 272 dogs, 135 dogs treated with LIBRELA and 137 dogs treated with a negative control (sterile saline). The enrolled dogs were at least 1 year of age (1 to 17 years old), weighed between 1.8 to 62.7 kg and were of various breeds or non-purebred. Dogs were dosed at 28-day intervals and received up to three injections. The most common adverse reactions reported during the study are summarized in Table 2 below.

Table 2. Number (%) of Dogs with Adverse Reactions Reported in the US Field Study

Adverse Reaction*	LIBRELA n (%) (Total N = 135)	Negative Control n (%) (Total N = 137)
Urinary tract infection	15 (11.1)	11 (8.0)
Bacterial skin infection	11 (8.1)	9 (6.6)
Dermatitis	10 (7.4)	8 (5.8)
Dermal mass	8 (5.9)	5 (3.6)
Erythema	6 (4.4)	5 (3.6)
Dermal cyst(s)	4 (3.0)	2 (1.5)
Pain on injection	4 (3.0)	2 (1.5)
Inappropriate urination**	4 (3.0)	1 (0.7)
Histiocytoma	3 (2.2)	0 (0.0)

*An adverse reaction may have occurred more than once in a dog; only the first occurrence was counted.
** Of these, two dogs treated with LIBRELA were among those reported with a urinary tract infection.

The safety of LIBRELA was also evaluated in a masked, controlled 84-day European field study evaluating the effectiveness of LIBRELA for the control of pain associated with osteoarthritis. Enrollment included 281 dogs, 138 dogs were treated with LIBRELA and 143 treated with a negative control (sterile saline). The enrolled dogs were at least 1 year of age (1 to 17.5 years old), weighed between 1.7 to 66 kg and were of various breeds or non-purebred. Dogs were dosed at 28-day intervals and received up to three injections. The most common adverse reactions reported during the study are summarized in Table 3 below.

Table 3. Number (%) of dogs with Adverse Reactions Reported in the European Field Study

Adverse Event Reported*	LIBRELA n (%) (Total N = 138)	Negative Control n (%) (Total N = 143)
Increased Blood Urea Nitrogen (BUN)**	19 (13.8)	7 (4.9)
Lethargy	5 (3.6)	0 (0.0)
Emesis	4 (2.9)	1 (0.7)
Anorexia	3 (2.2)	0 (0.0)
Lameness	3 (2.2)	1 (0.7)
Cough	3 (2.2)	1 (0.7)

*An adverse reaction may have occurred more than once in a dog; only the first occurrence was counted.
** Two dogs treated with LIBRELA suffered serious adverse events and were euthanized during or after study completion: A 13-year old Bichon Frise had pre-existing increased urine protein-creatinine ratio and heart failure that worsened during study; the dog also had an increase in creatinine during the study and was diagnosed with renal failure and was euthanized 3 days after completing the study. An 8-year-old mixed breed dog had pancreatitis and was euthanized on Day 74. The remainder of the dogs that had elevations in the BUN did not have any obvious adverse events associated with this finding.

One dog in the LIBRELA group was diagnosed with pyelonephritis on Day 15; this dog had pre-existing increased serum BUN and creatinine and a recent history of urinary tract infection that was not confirmed resolved prior to enrollment. Non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen were initiated on Day 7 for osteoarthritis-associated joint pain but NSAIDs were discontinued on Day 10 due to anorexia and gastroenteritis; azotemia worsened at Day 13 and the dog received no further LIBRELA treatment.

One dog in the LIBRELA group with a history of atopy, developed mild alopecia and mild erythema on the injection site on Days 5 and 23. Both episodes of alopecia and erythema resolved with treatment.

A total of 89 dogs were enrolled in a 6-month, single arm, open labeled, uncontrolled continuation of the EU field study and received monthly subcutaneous injections of LIBRELA. The study provided additional field safety information.

One dog experienced acute gastroenteritis and recovered following treatment for abdominal pain, fever, vomiting, and anorexia. One large breed dog enrolled for stifle osteoarthritis developed acute forelimb lameness that was diagnosed as elbow dysplasia. Two dogs presented with rear limb paresis of unknown etiology, one of whom responded to ongoing NSAID treatment and one who did not.

CONTACT INFORMATION
To report suspected adverse drug events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Zoetis Inc. at 1-888-963-8471.

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

TARGET ANIMAL SAFETY
6 Month Margin of Safety Study:
LIBRELA (bedinvetmab injection) 15 mg/mL and 30 mg/mL concentrations were administered subcutaneously to 11 to 12-month old, healthy Beagles (8 dogs per group) at doses of 1 mg/kg (1X), 3 mg/kg (3X), and 10 mg/kg (10X) every 28 days for seven consecutive doses. The control group (8 dogs) received sterile saline injections. Dogs weighed 5.6-11.7 kg at study initiation.

There were no clinically significant changes noted in neurological examinations, body temperature, heart and respiratory rate, blood pressure, electrocardiography, and organ weights. Detailed pathology evaluation of the shoulder, elbow, hip, and knee joints were conducted.

Vomiting and soft stool were noted across all groups throughout the study. Scabbing on the face, neck and thorax was seen across all groups except the 1 mg/kg group. Injection site redness was noted sporadically for 1 control dog, 2 dogs in the 1 mg/kg treatment group, 5 dogs in the 3 mg/kg treatment group, and 5 dogs in the 10 mg/kg treatment group. One dog in the 3 mg/kg treatment group had a temporary, mild swollen facial area 26 days after the first dose that resolved spontaneously. Two dogs in the 3 mg/kg treatment group had lymphadenopathy on the last study day with no related histopathology findings. One dog in the 10 mg/kg treatment group had an approximately 2.5 cm X 3.5 cm circular raised firm erythematous lesion with slight serosanguinous discharge and mild scabs of the shaved cervical area that resolved over 14 days.

One dog in the 1 mg/kg treatment group had an increasing ALP value over the course of the study that increased threefold above the high end of the reference range at study completion. There was no gross or histopathology correlate.

One dog in the 1 mg/kg treatment group had mild cartilage necrosis in the left ulna and an erosion in the cartilage of the right ulna. One dog in the 3 mg/kg treatment group had mild bilateral, femoral neck enthesophytes observed on radiographs pre-treatment. On end of study radiography and pathology evaluation, this dog had an osteophyte of the left acetabulum, mild left acetabulum remodeling and severe left femoral neck enthesophytes. Microscopically, mild to moderate cartilage degeneration with erosion and proteoglycan depletion was also noted in the left proximal femur and acetabulum. The mild right femoral neck enthesophytes were the same grade as pre-treatment. The findings may be progression of an underlying musculoskeletal condition; however, a potential relation to treatment cannot be ruled out.

None of the LIBRELA-treated dogs developed anti-drug antibodies due to bedinvetmab administration.

Additional Safety Studies:
In a two-week laboratory safety study, eight dogs concurrently received one subcutaneous injection of LIBRELA at the high end of the inherent dose band (1 mg/kg) and fourteen days of an injectable NSAID. This limited laboratory study did not provide sufficient data to support a conclusion on the safety of concurrent use of LIBRELA and NSAIDs.

In a 3-month exploratory laboratory safety study using a non-final formulation of bedinvetmab administered by subcutaneous injection monthly for four doses, a dog administered a 4 mg/kg dose had a reddened and/or swollen muzzle abrasion, with an elevated white blood cell count, and elevated globulin level and fibrinogen level. At one of the injection administrations, one dog administered a 4 mg/kg dose had a 4 cm X 2 cm injection site erythema with an eschar that resolved; and one dog administered a 1 mg/kg dose had 3 cm X 1 cm injection site erythema that resolved. Another dog administered a 1 mg/kg dose had injection site erythema, scabbing, and mucopurulent discharge for 18 days.

STORAGE CONDITIONS
LIBRELA (bedinvetmab injection) should be stored in a refrigerator, 2° – 8°C (36° – 46° F). Do not freeze. Store vials in their boxes to protect from prolonged exposure to light. Once punctured, contents of the vial should be used immediately and any remaining solution should be discarded.

HOW SUPPLIED
LIBRELA is available in 5 strengths packaged in 4 mL glass vials containing an extractable volume of 1 mL of clear solution. Each strength is available in cartons containing 2 or 6 vials.

Approved by FDA under NADA # 141-562

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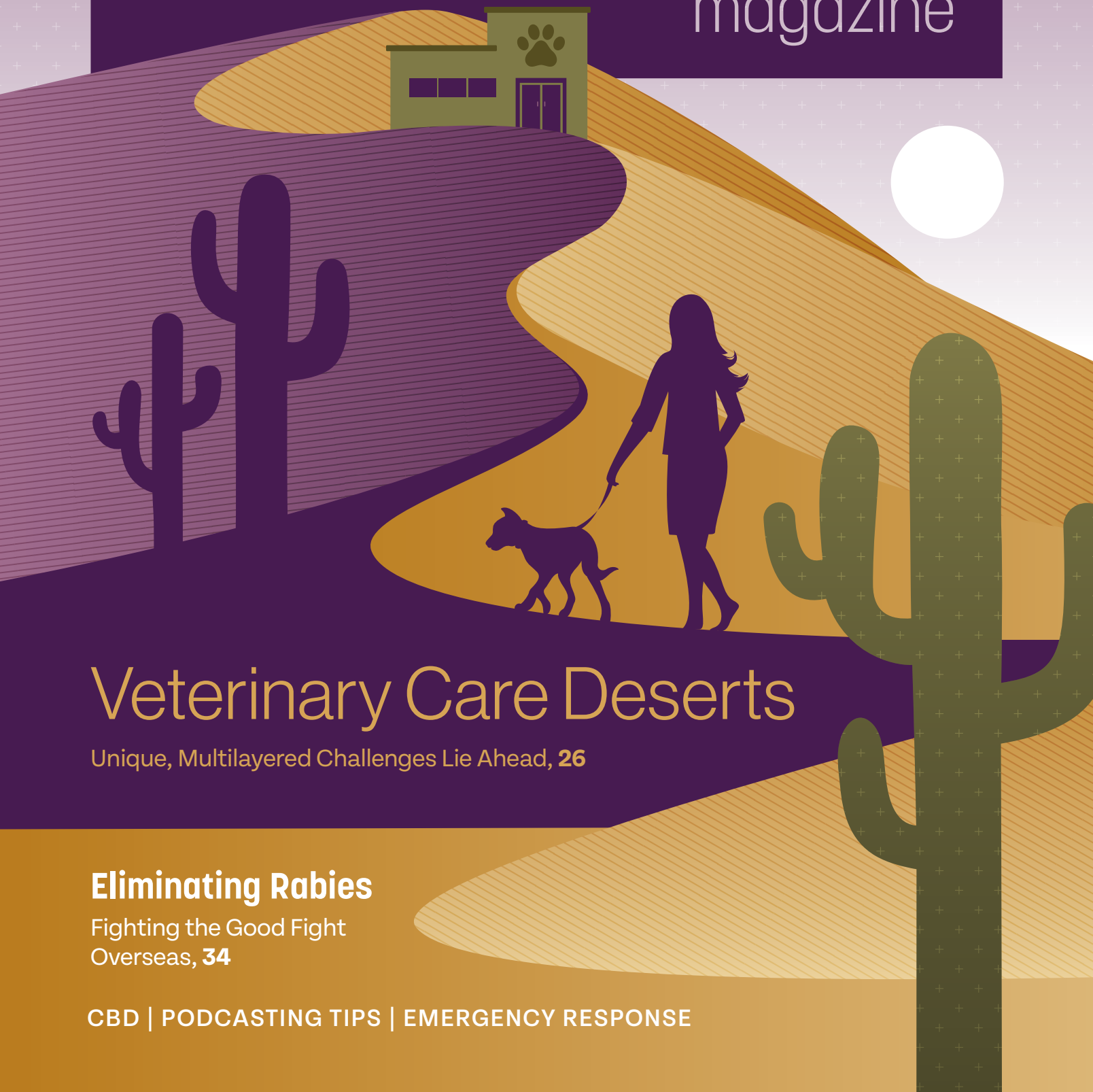

Veterinary Care Deserts

Unique, Multilayered Challenges Lie Ahead, **26**

Eliminating Rabies

Fighting the Good Fight Overseas, **34**

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Trends magazine provides timely perspectives on the art and business of companion animal veterinary practice to all members of the practice team.

The Team

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Brief Summary of full Prescribing Information.

Solensia™
(frunevetmab injection)

7 mg/mL

Feline anti-nerve growth factor monoclonal antibody for subcutaneous injection in cats only.

Single-Use Vial

CAUTION
Federal law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATION
SOLENSIA is indicated for the control of pain associated with osteoarthritis in cats.

DOSAGE AND ADMINISTRATION
Cats should be dosed by weight range according to the Dosing Chart (Table 1) below. Cats are given the full content of 1 or 2 vials based on body weight to target a minimum dosage of 0.45 mg/lb. (1 mg/kg) body weight, administered subcutaneously once a month. Aseptically withdraw the total dose into a single syringe and administer immediately.

The product does not contain a preservative. The full content of each vial is for single use only. Once punctured, contents of the vial should be used immediately and any remaining solution should be discarded.

Table 1. Dosing Chart

Weight of Cat (lb.)	Weight of Cat (kg)	Volume	Number of Vials*
5.5-15.4	2.5-7 kg	1 mL	1
15.5-30.8	7.1-14 kg	2 mL	2

*1 mL frunevetmab injection per vial

CONTRAINDICATIONS
SOLENSIA should not be administered to cats with known hypersensitivity to frunevetmab.

SOLENSIA should not be used in breeding cats or in pregnant or lactating queens because it may pass through the placental blood barrier and be excreted in milk. Fetal abnormalities, increased rates of stillbirths and increased postpartum fetal mortality were noted in rodents and primates receiving anti-NGF mAbs.

WARNINGS
User Safety Warnings
Not for use in humans. Keep out of reach of children.

Hypersensitivity reactions, including anaphylaxis, could potentially occur in the case of accidental self-injection.

In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician.

Pregnant women, women trying to conceive, and breastfeeding women should take extreme care to avoid accidental self-injection.

The importance of NGF in ensuring normal fetal nervous system development is well-established and laboratory studies conducted on nonhuman primates with human anti-NGF antibodies have shown evidence of reproductive and developmental toxicity.

PRECAUTIONS
Administration of mAbs may be associated with hypersensitivity reactions and delayed hypersensitivity reactions. If anaphylaxis or other hypersensitivity reaction occurs, discontinue use and institute appropriate therapy.

Administration of SOLENSIA may be associated with scabbing on the head and neck, dermatitis, and pruritus; however, pre-approval data suggest that these signs do not require cessation of SOLENSIA administration (see **ADVERSE REACTIONS** and **TARGET ANIMAL SAFETY**).

Evaluations were not made to determine if interactions occurred between SOLENSIA and veterinary vaccines.

Treatment with SOLENSIA may result in the formation of anti-frunevetmab antibodies and potentially the loss of product effectiveness (see **Immunogenicity**).

The safe use of SOLENSIA with concurrent non-steroidal anti-inflammatory drugs (NSAIDs) has not been established in cats. In human clinical trials, rapidly progressing osteoarthritis (RPOA) has been reported in a small number of patients receiving humanized anti-NGF mAb therapy. The incidence of these events increased in human patients receiving NSAID treatment long term in combination with an anti-NGF mAb. RPOA has not been characterized or reported in cats.

SOLENSIA has not been evaluated in cats less than 7 months or 5.5 lbs.

Long term effects, which may occur more than 6 months after the use of SOLENSIA, have not been evaluated. Primates receiving high doses of anti-NGF mAbs had reduced cell size in postganglionic neuronal cell bodies. The change in cell body size returned to normal after anti-NGF mAb administration was discontinued. NGF is involved in the normal development of sensory and sympathetic nerve fibers in developing animals. This may be important with use of SOLENSIA in young growing cats.

The safe use of this product with other mAbs has not been evaluated.

ADVERSE REACTIONS
The safety of SOLENSIA was evaluated in a masked, controlled 112-day field study to evaluate the effectiveness of SOLENSIA for the control of pain associated with osteoarthritis in cats. Enrollment included 275 cats weighing 2.5-to 11.4 kg and 1.6-to 22.4 years old; 182 cats were treated with SOLENSIA and 93 cats were administered a vehicle control. Cats were dosed at 28-day intervals and received up to three injections. The most common adverse reactions reported during the field study are presented below.

Table 2. Adverse Reactions Reported in the Field Study[1]

Adverse Reaction	Solensia N=182 (%)	Vehicle Control N=93 (%)
Vomiting	24 (13.2%)	10 (10.8%)
Injection site pain[2]	20 (10.9%)	13 (14%)
Diarrhea	12 (6.6%)	5 (5.4%)
Abnormal behavior and behavioral disorders[3]	12 (6.6%)[4]	5 (5.4%)[5]
Renal insufficiency[6]	12 (6.6%)	4 (4.3%)
Anorexia	12 (6.6%)	4 (4.3%)
Lethargy	11 (6.0%)	3 (3.2%)
Dermatitis	11 (6.0%)	1 (1.1%)
Alopecia	10 (5.5%)	2 (2.2%)
Dehydration	8 (4.4%)	0 (0.0%)
Lameness[7]	8 (4.4%)	2 (2.2%)
Pruritus	7 (3.8%)	0 (0.0%)
Weight loss	6 (3.3%)	5 (5.4%)
Scabbing on head/neck	6 (3.3%)	1 (1.1%)
Gingival disorder	5 (2.7%)	0 (0.0%)
Bacterial skin infection	4 (2.2%)	1 (1.1%)
Otitis externa	4 (2.2%)	0 (0.0%)

[1] If a cat experienced the same event more than once, only the first occurrence is reported
[2] The control product was the vehicle without active ingredient
[3] Behavior abnormal for the individual cat
[4] Individual cats had at least one of the following behavior changes: anxiety (1), hiding (1), hypersomnia (1), inappropriate urination (5), sleeping with owner (1), vocalization (3), increased aggressive behavior (1)
[5] Individual cats had at least one of the following behavior changes: anxiety (2), disorientation (1), inappropriate urination (2), and vocalization (1)
[6] Worsening of existing disease
[7] New lameness or worsening of previous lameness

The safety of SOLENSIA was also evaluated in a masked, controlled 56-day exploratory field study to evaluate the effectiveness of SOLENSIA for the control of pain associated with osteoarthritis in cats. Enrollment included 126 cats; 85 cats were treated with frunevetmab injection manufactured similar to SOLENSIA and 41 cats were administered a vehicle control. Cats were dosed at 28-day intervals and received up to two injections. The most frequently reported adverse reactions were digestive tract disorders, including vomiting and diarrhea, and skin disorders, including dermatitis/eczema and alopecia that were mostly attributed to irritation by an activity monitor collar required for the study.

Immunogenicity
All therapeutic proteins, including monoclonal antibodies, have the potential for immunogenicity, including the production of antibodies that bind to the therapeutic protein and may decrease effectiveness. Such host-derived antibodies are termed anti-drug antibodies (ADA). SOLENSIA, therefore has the potential to cause the cat to produce ADAs against frunevetmab.

The presence of binding antibodies to frunevetmab in cats was assessed using a screening and confirmatory assay approach. In controlled field effectiveness studies in cats with osteoarthritis (see **EFFECTIVENESS**), four out of 259 cats that received SOLENSIA once monthly developed anti-drug antibodies (ADAs). One cat tested positive for ADAs on Days 0, 28, 56, and 84. This cat had non-detectable plasma drug concentration levels of SOLENSIA on Days 28 and 56, and was a treatment failure in the effectiveness analysis, suggesting that the ADAs may have clinical significance. No assessment for neutralizing antibodies was performed.

The observed incidence of antibody positivity in an assay is highly dependent on several factors including assay sensitivity and specificity, assay methodology, sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to SOLENSIA with the incidence of antibodies to other products may not be appropriate.

CONTACT INFORMATION
To report suspected adverse drug events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Zoetis Inc. at 1-888-963-8471.

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

STORAGE CONDITIONS
SOLENSIA should be stored upright in a refrigerator, between 35°– 46°F (2°– 8°C). Do not freeze. Protect from light. See in-use instructions provided in the **DOSAGE AND ADMINISTRATION** section.

HOW SUPPLIED
SOLENSIA is supplied as a sterile buffered solution of 7mg/mL of frunevetmab in single-use 4 mL glass vials containing an extractable volume of 1mL of clear solution with a butyl rubber stopper and aluminum overseal. Vials are available in cartons containing 2 or 6 vials.

Approved by FDA under NADA # 141-546

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Features

Departments

The Usual

DESERTS

From the Editor

Since you are reading this, you hopefully are not in a "veterinary care desert." These are places where veterinary care is not accessible, affordable, or in some cases, even available. It's a real problem in the industry, but luckily *Trends* and the AAHA team is here to help you unpack it. Our cover story discusses some of the complex nature of this problem, as well as a look at some of the organizations that are working to address it.

In honor of World Rabies Day (September 28), we have an enlightening article on some amazing volunteers who go overseas to combat rabies in all corners of the globe. Nonprofits such as Mission Rabies and Rabies Free Africa are working to eliminate this 100% preventable disease by vaccinating thousands of dogs—in one case over 26,000 in one week.

Along the same lines, in honor of National Preparedness Month, we have an article on volunteer teams that are responding to disasters in all areas of this country. From university-based response teams such as Texas A&M University's Veterinary Emergency Team to smaller state-based groups, there are numerous ways to get involved if you are interested in upping your volunteer game!

Nominate Your Employee of the Month

Don't forget to head over to aaha.org/eotm to nominate one of your coworkers for the Employee of the Month contest, and you could win $100 for yourself and $400 for your nominee. There is no catch—it's free to enter and you get free money!

Coming Next Month

In October we'll have some great content for our Technician Issue, including the world-famous Teams@Work photo contest. We will also explore themes of practice culture, wellness, and retention as they relate to technicians.

As always, let me know what you think at trends@aaha.org.

Ben Williams
Editor

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Maureen Blaney Flietner has covered the veterinary profession for *Trends* since 2011. The award-winning freelancer and former newspaper staff writer and editor also has written for the health care, personal finance, green building technology, and other sectors.

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Preparation for the Worst

Disasters come in many shapes and sizes. Some are natural, some man-made, and some are just bad luck. No one could have predicted what happened in March of 2020, but I would bet that those who had disaster plans in place had an edge on those who did not when it came to the world shutting down for COVID-19 and the instant pivot of operations as we knew it in the veterinary world.

Disaster preparedness are two words that meant little to me early in my career. That is, until September 2005, when I had the opportunity to make the acquaintance of a storm named Rita. She is the lesser-known storm that was the sequel to her big sister Katrina. This was really the first time I experienced a disaster as an adult with a young family.

One of the lessons learned during that storm season was that I needed a plan. I started out trying to create the ultimate disaster plan and was quickly overwhelmed, so I lowered my expectations and started with a one-page plan. It consisted of a list of items I would need in case my family and I had to evacuate for three days. That was a simple enough task. After that, I worked on a list of all insurance policies and family records that would not be easy to replace.

By the time Hurricane Harvey hit Houston in 2017 and flooding forced the evacuation of my family from our home, our family disaster plan ran like a well-oiled machine. We moved the five of us, our dog, our perishable food, and enough extras to keep us well fed with a pressure cooker and indoor grill to cook on along with all of our important paperwork and photos from our home and into our hospital in a couple of hours and were able to live comfortably there for nearly a week.

Starting a disaster plan can seem daunting, but all journeys start the same way—by taking that first step. Start with "What if . . ." scenarios and go from there. Having a plan in place goes a long way to maintaining positive mental health during the event. The actual disaster is always stressful, but it is more stressful if you are trying to create a game plan on the fly. There will always be alterations to the plan, and no plan is foolproof, but having a plan does wonders for helping your mental state and the mental state of those around you. I consider my work team my family and have included them in my disaster plans.

Understand that there is no finish line in creating a disaster plan. It will always be a work in progress. I challenge you to get started—before the next disaster strikes.

Scott Driever, DVM, is president-elect of the AAHA board. Driever is a Houston native who received his DVM degree from Texas A&M University in 2000. Upon graduation, he moved back to Houston and began his veterinary career at Animal Hospital Highway 6 in Sugar Land, Texas, where he became a partner in 2005. In 2015, he purchased the rest of the practice and became the sole owner. His wife, Susan, is the office manager at the practice.

The Scoop

New Feline Infectious Peritonitis Oral Treatment Available in the US

Veterinary compounding pharmacy Stokes Pharmacy announced an exclusive partnership with the Bova Group to offer a US-made oral treatment for feline infectious peritonitis (FIP). In a release, they stated that GS-441524 tablets are now available in a quad-scored, 50-mg tuna-flavored tablet with dosages that treats both wet and dry forms of FIP, including cases with or without ocular and neurological involvement.

"Made possible by our Bova partnership, Stokes Pharmacy will compound and sell the only oral formula identical to the Bova formula used in clinical studies across the globe," says Stokes' president Michael Tursi. "Our tablets were tested by Bova to meet their exact specifications. We are thrilled to bring this long-awaited treatment to the United States and put FIP treatment back in the hands of the veterinarians."

natrot, RalchevDesign/iStock via Getty Images Plus

Digitail Adds Upgrades to Its AI Assistant

Veterinary practice management software company Digitail has announced improvements to its AI Assistant, Tails AI.

Tails AI Dictation, a native voice-to-text solution for quick SOAP notes, exam summaries, and client communications, now supports multiple languages. Tails AI Dictation can transcribe notes and generate discharge instructions or educational materials in the provider's or client's preferred language.

Tails AI can also listen to entire phone calls, transcribe them, and condense the key points into communication notes. All client interactions are recorded and stored in their file for future reference, adding to the patient's medical history.

Quote of the Month

You miss 100% of the shots you don't take.

Wayne Gretzky, hockey player

Study: Domestication Constrains Dog's Ability to Convey Emotions Via Facial Expressions

A study from the UK's Durham University reports that the process of domestication and selective breeding of domestic dogs may have accidentally diminished their ability to communicate clearly using facial expressions. The article was published in *Scientific Reports*.

Researchers in the university's Department of Biosciences used an extended Dog Facial Action Coding System to analyze video recordings of captive wolves and domestic dogs during spontaneous social interactions and reactions to external stimuli. The researchers compared wolves with domestic dogs during observed interactions and reactions and found that the wolves' facial expressions mapped almost perfectly to discrete affective states like anger, fear, curiosity, and joy.

Researchers found much more ambiguity in the furry faces of domestic dogs across different breeds. Using the extended version of the Dog Facial Action Coding System, the researchers could only predict the dogs' emotional state based on facial movements with 65% accuracy.

With domestic dogs, the same facial expression might mean the dog was feeling friendly or fearful—which they posit is a dangerous level of confusion, especially when differentiating positive from negative emotional states.

The study findings suggest that misinterpreting a frightened dog's facial expressions as friendly could potentially lead to hazardous situations like dog bites or attacks. The researchers hypothesize that domestic dogs may compensate for their limited facial expressions by vocalizing more than wolves during social interactions.

Illustration of the differences in the main conveyers of facial expressiveness between wolf and examples of domestic dog breeds. **A** wolf (***Canis lupus***) portrait depicting typical head morphologies and facial patterning. Note erect ears, head shape, fur length and slope, and facial masking as a consequence of lighter-colored "eyebrows," muzzle, and cheek area. **B** "Wolf-like" Finnish lapphund dog, with head morphologies and facial patterning almost identical to that of the wolf. **C** Typical rottweiler face with conspicuous brown eyebrows (red circle), set against a solid black background. Note flopped ears and broad head shape in comparison with the wolf. **D** Brachycephalic face of a pug dog. Note flopped ears, bulging eyes, and excessive wrinkling in comparison with the wolf. **E** Komondor dog with less distinct facial features owing to fur type (dreadlocks), length, and slope.

Images courtesy of the American Kennel Club, ER Hobkirk, and SD Twiss

UF Researchers: Respiratory System Affects Flight Mechanics in Birds

A team of researchers led by an assistant professor at the University of Florida (UF) College of Veterinary Medicine has reported that soaring birds use their lungs to influence their flight mechanics in a way that has evolved over time, UF reports. The team's study was published in the journal *Nature*.

Unlike the lungs of mammals, bird lungs do more than just breathe. An air-filled sac within the birds' lungs is believed to increase the force the birds use to power flight muscles while soaring.

"It has long been known that breathing is functionally linked to locomotion, and it has been demonstrated that flapping enhances ventilation," said lead researcher Emma Schachner, PhD. "But our findings demonstrate that the opposite is also true in some species. We have shown that a component of the respiratory system is influencing and modifying the performance of the flight apparatus in soaring birds, who are using their lungs to modify the biomechanics of their flight muscles."

Mammalian lungs are flexible and tidally ventilated—that is, air flows in and out along the same path. In contrast, birds have a unique way of breathing: They have a stationary lung that gets air pumped through it in one constant direction by a series of balloon-like air pockets that expand and deflate. Branching off from these air pockets are many small extensions called diverticula, which vary by number and size across avian species and whose functions remain poorly understood.

The discovery of the unique air sac, known as a subpectoral diverticulum, or SPD, happened by accident as Schachner worked on another project relating to the anatomy of red-tailed hawks. Looking at computed tomography scans, she noticed a huge bulge that sits in between the pectoralis—the downstroke flapping muscle—and the supracoracoideus muscle, or upstroke flapping muscle. Both muscles are located on the front of the bird's chest.

The observation led Schachner to hypothesize that this air sac might be important for the mechanics of soaring. To test her hypothesis, she worked with two key collaborators, including Andrew Moore, PhD, an evolutionary biologist at Stony Brook University in New York. Moore and Schachner surveyed the presence or absence of the air sac in 68 bird species that broadly represent living avian diversity to assess whether soaring flight and the unique structure are evolutionarily correlated.

Their analyses found that the SPD has evolved in soaring lineages at least seven different times and is absent in all nonsoaring birds.

"Birds are wildly diverse," Schachner said. "Think about how different an ostrich is from a hummingbird or a penguin," she said. "It is likely that their lungs are involved in an array of really fascinating functional and behavioral activities that are waiting to be discovered."

VCA Charities Expands Support to Animal Shelters

VCA Charities recently announced the expansion of its Ready for Rescue grant program as animal shelters across the US continue to experience an overflow of dogs and cats.

With a focus on helping shelters prepare animals for adoption, VCA Charities has updated its website to make it easier for shelters to access resources, grant funding, and in-kind donations, including a Dog Day Out Starter Guide for smaller shelters looking to implement its new field trip training program. Additionally, shelters will have access to request enrichment support through Second Chance KONG, VCA Charities' fundraising and grant-making initiative.

"When we launched VCA Charities with the mission of helping pets find and remain in loving homes, our Ready for Rescue grant program was a critical part of our strategy and our vision," said Kimberly West, president and chair of VCA Charities' board of directors and vice president of Corporate Affairs for VCA Animal Hospitals. "What started as a traditional grant program for shelter partners has grown into deeply meaningful training and support programs that are not only increasing adoptions but also decreasing kennel stress, boredom, and behavioral issues and simultaneously increasing connections between the local communities and the shelters."

Dog Day Out programs and overnight fostering are effective ways to get dogs adopted quickly and increase their quality of life. Research by Lisa Gunter, PhD, CAAB, assistant professor of Animal Welfare and Behavior at Virginia Tech University, showed that short-term outings and temporary foster stays made it 5 to 14 times more likely that participating dogs would be adopted. To supplement in-person training, a VCA Charities Dog Day Out Starter Guide was just released in collaboration with Outcomes Consulting, providing best practices and guidance for smaller shelters looking to start or grow a field trip-based enrichment program.

VCA Charities is the nonprofit charitable arm of VCA Animal Hospitals, which owns more than 1,000 practices across the US and Canada.

Learn more about VCA Charities at VCACharities.org or find them on Instagram and LinkedIn.

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AAHA Community

Question

How do you handle shift change hand-offs? Our hospital is transitioning to extended-hours care for our community. We are so excited for the change but are looking for efficient shift transition procedures.

A: We ensure that case handover is always up to date and documented on the communal whiteboard, especially if you don't have the opportunity to do a debrief between shifts.

A: We use a running Google document to leave notes for the next shift about what happened and what to expect moving forward.

How do you tackle shift transitions? Share your thoughts at community.aaha.org

FDA Approves First Generic Phenylpropanolamine Hydrochloride Chewable Tablets for Dogs

The US Food and Drug Administration (FDA) approved phenylpropanolamine hydrochloride chewable tablets for the control of urinary incontinence due to a weakening of the muscles that control urination (urethral sphincter hypotonus) in dogs. This is the first generic phenylpropanolamine hydrochloride chewable tablets for dogs.

Phenylpropanolamine hydrochloride chewable tablets contain the same active ingredient (phenylpropanolamine hydrochloride) in the same concentration and dosage form as the approved brand-name drug product, Proin chewable tablets, which were first approved on August 4, 2011. In addition, the FDA determined that phenylpropanolamine hydrochloride chewable tablets contain no inactive ingredients that may significantly affect the bioavailability of the active ingredient.

Updated Guidelines on When to Neuter or Spay a Dog to Avoid Health Risks

Researchers at the University of California, Davis, have updated their guidelines on when to neuter 40 popular dog varieties by breed and sex. Their recent paper in *Frontiers in Veterinary Science* adds five breeds to a line of research that began in 2013 with a study that suggested that early neutering of golden retrievers puts them at increased risk of joint diseases and certain cancers.

Liudmila Chernetska/iStock via Getty Images Plus

In a release, the school reports that the initial study set off a flurry of debate about the best age to neuter other popular breeds. Professors Lynette Hart, MA, PhD, and Benjamin Hart, DVM, PhD, of the School of Veterinary Medicine, the study's lead authors, set out to add more breed studies by examining more than a decade of data from thousands of dogs treated at the UC Davis veterinary hospital.

They specifically looked at the correlation between neutering or spaying a dog before one year of age and a dog's risk of developing certain cancers. These include cancers of the lymph nodes, bones, and blood vessels, or mast cell tumors for some breeds, and joint disorders such as hip or elbow dysplasia or cranial cruciate ligament tears. Joint disorders and cancers are of particular interest because neutering removes male and female sex hormones that play key roles in important body processes such as closure of bone growth plates.

For the most recent study, they focused on German short/wirehaired pointer, mastiff, Newfoundland, Rhodesian ridgeback, and Siberian husky. The Harts said their updated guidelines emphasize the importance of personalized decisions regarding the neutering of dogs, considering the dog's breed and sex, and context. A table representing guidelines reflecting the research findings for all 40 breeds that have been studied, including the five new breeds, can be found at vetmed.ucdavis.edu.

More Than 400,000 Animals Assisted by ASPCA Animal Poison Control Center in 2023

The American Society for the Prevention of Cruelty to Animals (ASPCA) Animal Poison Control Center (APCC) recently announced its annual list of top toxins for pets.

In 2023, the APCC team assisted more than 400,000 animals from across all 50 states.

Each year, board-certified veterinary toxicologists examine data from the previous year to identify trends and raise awareness around the top toxins that pets are exposed to. In a release, the APCC stated that for the 10th year in a row, human medications led the top toxin list, with human over-the-counter medications making up nearly 17% of the APCC's total call volume for the year. Food products followed closely behind, with protein bars and drinks, grapes and raisins, and items with xylitol such as chewing gum contributing to the high number of calls.

Recreational drugs including marijuana-based drugs, hallucinogenic mushrooms, and cocaine made the top toxins list for the first time in 2022, knocking out gardening products and remaining steady in the 10th spot for a second year. The cases involving recreational drugs most commonly seen at the APCC involve pets ingesting marijuana-laced baked goods, which are more dangerous than ingesting plant material and can result in symptoms such as stomach upset, urinary incontinence, and ataxia.

Additionally, the team saw a 74% increase in call volume related to hallucinogenic mushrooms when compared with the year prior. The items on the top toxin list made up more than 96% of the APCC's total call volume in 2023.

For more information about the ASPCA Animal Poison Control Center, visit aspca.org/pet-care/animal-poison-control.

US Pet Insurance Industry Surpasses $3.9B

The North American Pet Health Insurance Association (NAPHIA) recently published its 2024 State of the Industry Report. It states a 21% increase in premiums in 2023 as compared with 2022, totaling more than 5.67 million insured pets in the US.

"Last year, for the fifth year in a row, the North American market grew by over 20%," stated NAPHIA president Rick Faucher in a release. "When we look at our sustained growth across North America, we see a tremendous upside for the industry and are very encouraged about the future."

NAPHIA Executive Director Kristen Lynch noted that the 25.7% average growth rate in the North American market over the past five years demonstrated pet owners understand the value of pet insurance and its impact on mitigating unexpected veterinary costs.

"At a time when households are experiencing growing financial pressures, pet insurance provides owners with financial protection to cover the rising costs of veterinary care," said Lynch. "Our industry's strong growth is evidence that North American pet families recognize the value of pet health insurance coverage and appreciate the certainty it offers in those instances when their pet has an unexpected illness or injury."

To read the report, visit naphia.org.

Anastasiia_Guseva, Andrii Mischykcha/iStock via Getty Images Plus

Previcox® (firocoxib)

CHEWABLE TABLETS

Brief Summary: Before using* PREVICOX, *please consult the product insert, a summary of which follows:

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

Indications: PREVICOX (firocoxib) Chewable Tablets are indicated for the control of pain and inflammation associated with osteoarthritis and for the control of postoperative pain and inflammation associated with soft-tissue and orthopedic surgery in dogs.

Contraindications: Dogs with known hypersensitivity to firocoxib should not receive PREVICOX.

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

For oral use in dogs only. Use of this product at doses above the recommended 2.27 mg/lb (5.0 mg/kg) in puppies less than seven months of age has been associated with serious adverse reactions, including death (see Animal Safety). Due to tablet sizes and scoring, dogs weighing less than 12.5 lb (5.7 kg) cannot be accurately dosed.

All dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum baseline data is recommended prior to and periodically during administration of any NSAID. ***Owners should be advised to observe for signs of potential drug toxicity (see Adverse Reactions and Animal Safety) and be given a Client Information Sheet about* PREVICOX *Chewable Tablets.***

For technical assistance or to report suspected adverse events, call 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDAVETS or www.fda.gov/reportanimalae.

Precautions: This product cannot be accurately dosed in dogs less than 12.5 pounds in body weight.
Consider appropriate washout times when switching from one NSAID to another or when switching from corticosteroid use to NSAID use.

As a class, cyclooxygenase inhibitory NSAIDs may be associated with renal, gastrointestinal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for adverse events are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached and monitored. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to produce gastrointestinal ulceration and/or gastrointestinal perforation, concomitant use of PREVICOX Chewable Tablets with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. The concomitant use of protein-bound drugs with PREVICOX Chewable Tablets has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant, and behavioral medications. The influence of concomitant drugs that may inhibit the metabolism of PREVICOX Chewable Tablets has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. If additional pain medication is needed after the daily dose of PREVICOX, a non-NSAID class of analgesic may be necessary. Appropriate monitoring procedures should be employed during all surgical procedures. Anesthetic drugs may affect renal perfusion, approach concomitant use of anesthetics and NSAIDs cautiously. The use of parenteral fluids during surgery should be considered to decrease potential renal complications when using NSAIDs perioperatively. The safe use of PREVICOX Chewable Tablets in pregnant, lactating or breeding dogs has not been evaluated.

Adverse Reactions:

Osteoarthritis: In controlled field studies, 128 dogs (ages 11 months to 15 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27mg/lb (5.0 mg/kg) orally once daily for 30 days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed adverse reactions during the study.

Adverse Reactions Seen in U. S. Field Studies

Adverse Reactions	PREVICOX *(n=128)*	*Active Control (n=121)*
Vomiting	5	8
Diarrhea	1	10
Decreased Appetite or Anorexia	3	3
Lethargy	1	3
Pain	2	1
Somnolence	1	1
Hyperactivity	1	0

PREVICOX (firocoxib) Chewable Tablets were safely used during field studies concomitantly with other therapies, including vaccines, anthelmintics, and antibiotics.

Soft-tissue Surgery: In controlled field studies evaluating soft-tissue postoperative pain and inflammation, 258 dogs (ages 10.5 weeks to 16 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for up to two days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Soft-tissue Surgery Postoperative Pain Field Studies

Adverse Reactions	*Firocoxib Group (n=127)*	*Control Group* (n=131)*
Vomiting	5	6
Diarrhea	1	1
Bruising at Surgery Site	1	1
Respiratory Arrest	1	0
SQ Crepitus in Rear Leg and Flank	1	0
Swollen Paw	1	0

**Sham-dosed (pilled)*

Orthopedic Surgery: In a controlled field study evaluating orthopedic postoperative pain and inflammation, 226 dogs of various breeds, ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group were evaluated for safety. Of the 226 dogs, 118 were given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for a total of three days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Orthopedic Surgery Postoperative Pain Field Study

Adverse Reactions	*Firocoxib Group (n=118)*	*Control Group* (n=108)*
Vomiting	1	0
Diarrhea	2**	1
Bruising at Surgery Site	2	3
Inappetence/ Decreased Appetite	1	2
Pyrexia	0	1
Incision Swelling, Redness	9	5
Oozing Incision	2	0

A case may be represented in more than one category.

*Sham-dosed (pilled).

**One dog had hemorrhagic gastroenteritis.

Post-Approval Experience (Rev. 2009): The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: *Vomiting, anorexia, diarrhea, melena, gastrointestinal perforation, hematemesis, hematachezia, weight loss, gastrointestinal ulceration, peritonitis, abdominal pain, hypersalivation, nausea*

Urinary: *Elevated BUN, elevated creatinine, polydypsia, polyuria, hematuria, urinary incontinence, proteinuria, kidney failure, azotemia, urinary tract infection*

Neurological/Behavioral/Special Sense: *Depression/lethargy, ataxia, seizures, nervousness, confusion, weakness, hyperactivity, tremor, paresis, head tilt, nystagmus, mydriasis, aggression, uveitis*

Hepatic: *Elevated ALP, elevated ALT, elevated bilirubin, decreased albumin, elevated AST, icterus, decreased or increased total protein and globulin, pancreatitis, ascites, liver failure, decreased BUN*

Hematological: *Anemia, neutrophilia, thrombocytopenia, neutropenia*

Cardiovascular/Respiratory: *Tachypnea, dyspnea, tachycardia*

Dermatologic/Immunologic: *Pruritis, fever, alopecia, moist dermatitis, autoimmune hemolytic anemia, facial/muzzle edema, urticaria*

In some situations, death has been reported as an outcome of the adverse events listed above.

For technical assistance or to report suspected adverse events, call 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or www.fda.gov/reportanimalae.

Information For Dog Owners: PREVICOX, like other drugs of its class, is not free from adverse reactions. 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, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue PREVICOX therapy and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug-related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: Two hundred and forty-nine dogs of various breeds, ranging in age from 11 months to 20 years, and weighing 13 to 175 lbs, were randomly administered PREVICOX or an active control drug in two field studies. Dogs were assessed for lameness, pain on manipulation, range of motion, joint swelling, and overall improvement in a non-inferiority evaluation of PREVICOX compared with the active control. At the study's end, 87% of the owners rated PREVICOX-treated dogs as improved. Eighty-eight percent of dogs treated with PREVICOX were also judged improved by the veterinarians. Dogs treated with PREVICOX showed a level of improvement in veterinarian-assessed lameness, pain on palpation, range of motion, and owner-assessed improvement that was comparable to the active control. The level of improvement in PREVICOX-treated dogs in limb weight bearing on the force plate gait analysis assessment was comparable to the active control. In a separate field study, two hundred fifty-eight client-owned dogs of various breeds, ranging in age from 10.5 weeks to 16 years and weighing from 7 to 168 lbs, were randomly administered PREVICOX or a control (sham-dosed-pilled) for the control of postoperative pain and inflammation associated with soft-tissue surgical procedures such as abdominal surgery (e.g., ovariohysterectomy, abdominal cryptorchidectomy, splenectomy, cystotomy) or major external surgeries (e.g., mastectomy, skin tumor removal ≤8 cm). The study demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with soft-surgery. A multi-center field study with 226 client-owned dogs of various breeds, and ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group was conducted. Dogs were randomly assigned to either the PREVICOX or the control (sham-dosed-pilled) group for the control of postoperative pain and inflammation associated with orthopedic surgery. Surgery to repair a ruptured cruciate ligament included the following stabilization procedures: fabellar suture and/or imbrication, fibular head transposition, tibial plateau leveling osteotomy (TPLO), and 'over the top' technique. The study (n = 220 for effectiveness) demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with orthopedic surgery.

Animal Safety: In a targeted animal safety study, firocoxib was administered orally to healthy adult Beagle dogs (eight dogs per group) at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated dose of 5 mg/kg, there were no treatment-related adverse events. Decreased appetite, vomiting, and diarrhea were seen in dogs in all dose groups, including unmedicated controls, although vomiting and diarrhea were seen more often in dogs in the 5X dose group. One dog in the 3X dose group was diagnosed with juvenile polyarteritis of unknown etiology after exhibiting recurrent episodes of vomiting and diarrhea, lethargy, pain, anorexia, ataxia, proprioceptive deficits, decreased albumin levels, decreased and then elevated platelet counts, increased bleeding times, and elevated liver enzymes. On histopathologic examination, a mild ileal ulcer was found in one 5X dog. This dog also had a decreased serum albumin which returned to normal by study completion. One control and three 5X dogs had focal areas of inflammation in the pylorus or small intestine. Vacuolization without inflammatory cell infiltrates was noted in the thalamic region of the brain in three control, one 3X, and three 5X dogs. Mean ALP was within the normal range for all groups but was greater in the 3X and 5X dose groups than in the control group. Transient decreases in serum albumin were seen in multiple animals in the 3X and 5X dose groups, and in one control animal. In a separate safety study, firocoxib was administered orally to healthy juvenile (10-13 weeks of age) Beagle dogs at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated (1X) dose of 5 mg/kg, on histopathologic examination, three out of six dogs had minimal periportal hepatic fatty change. On histopathologic examination, one control, one 1X, and two 5X dogs had diffuse slight hepatic fatty change. These animals showed no clinical signs and had no liver enzyme elevations. In the 3X dose group, one dog was euthanized because of poor clinical condition (Day 63). This dog also had a mildly decreased serum albumin. At study completion, out of five surviving and clinically normal 3X dogs, three had minimal periportal hepatic fatty change. Of twelve dogs in the 5X dose group, one died (Day 82) and three moribund dogs were euthanized (Days 38, 78, and 79) because of anorexia, poor weight gain, depression, and in one dog, vomiting. One of the euthanized dogs had ingested a rope toy. Two of these 5X dogs had mildly elevated liver enzymes. At necropsy all five of the dogs that died or were euthanized had moderate periportal or severe panzonal hepatic fatty change; two had duodenal ulceration; and two had pancreatic edema. Of two other clinically normal 5X dogs (out of four euthanized as comparators to the clinically affected dogs), one had slight and one had moderate periportal hepatic fatty change. Drug treatment was discontinued for four dogs in the 5X group. These dogs survived the remaining 14 weeks of the study. On average, the dogs in the 3X and 5X dose groups did not gain as much weight as control dogs. Rate of weight gain was measured (instead of weight loss) because these were young growing dogs. Thalamic vacuolation was seen in three of six dogs in the 3X dose group, five of twelve dogs in the 5X dose group, and to a lesser degree in two unmedicated controls. Diarrhea was seen in all dose groups, including unmedicated controls. In a separate dose tolerance safety study involving a total of six dogs (two control dogs and four treated dogs), firocoxib was administered to four healthy adult Beagle dogs at 50 mg/kg (ten times the recommended daily dose) for twenty-two days. All dogs survived to the end of the study. Three of the four treated dogs developed small intestinal erosion or ulceration. Treated dogs that developed small intestinal erosion or ulceration had a higher incidence of vomiting, diarrhea, and decreased food consumption than control dogs. One of these dogs had severe duodenal ulceration, with hepatic fatty change and associated vomiting, diarrhea, anorexia, weight loss, ketonuria, and mild elevations in AST and ALT. All four treated dogs exhibited progressively decreasing serum albumin that, with the exception of one dog that developed hypoalbuminemia, remained within normal range. Mild weight loss also occurred in the treated group. One of the two control dogs and three of the four treated dogs exhibited transient increases in ALP that remained within normal range.

Made in France
Marketed by: Boehringer Ingelheim Animal Health USA Inc., Duluth, GA 30096.
1-888-637-4251
Approved by FDA under NADA # 141-230

Rev. 03/2023

Boehringer Ingelheim

Trusted for years. Formulated just for dogs.

PREVICOX® (firocoxib) is an NSAID designed exclusively to manage pain and inflammation in dogs. You can trust its canine-focused formulation to be strong enough for soft-tissue and orthopedic surgery patients, yet safe enough to provide long-term relief for osteoarthritis patients.[1] Prescribe PREVICOX Chewable Tablets and **help them get back to living the life they love**.

Previcox®
(firocoxib)

IMPORTANT SAFETY INFORMATION: PREVICOX® Chewable Tablets are for use in dogs only. As a class, cyclooxygenase inhibitory NSAIDs like PREVICOX may be associated with gastrointestinal, kidney, or liver side effects. Dogs should be evaluated for pre-existing conditions and currently prescribed medications prior to treatment with PREVICOX, then monitored regularly while on therapy. Concurrent use with another NSAID, corticosteroid, or nephrotoxic medication should be avoided or monitored closely. **For more information, please see full prescribing information.**

1. Autefage A, Palissier FM, Asimus E, Pepin-Richard C. Long-term efficacy and safety of firocoxib in the treatment of dogs with osteoarthritis. *Vet Rec*. 2011;168(23):617.

Boehringer Ingelheim

5 Questions for a **Multidisciplinary** Specialist

Robin Downing, DVM, MS, DAAPM, DACVSMR, CVPP, CCRP

Robin Downing, DVM, MS, DAAPM, DACVSMR, CVPP, CCRP, Elite FFCP-V, is hospital director of The Downing Center for Animal Pain Management in Windsor, Colorado. Downing is a diplomate of the American College of Veterinary Sports Medicine and Rehabilitation, a Certified Veterinary Pain Practitioner, and a diplomate of the American Academy of Pain Management.

1 What made you choose your specialty area?

My area of specialty straddles two disciplines—pain management and rehabilitation. After years of working with industry partners who brought pain management tools to the profession, I became the third veterinarian in the world to earn a diplomate in the human-medicine American Academy of Pain Management, and later helped found the International Veterinary Academy of Pain Management. I went on to pursue physical medicine and ultimately achieved diplomate status in the American College of Veterinary Sports Medicine and Rehabilitation.

2 What is one thing you wish you could tell general practitioners regarding your specialty?

First, our patients need and deserve to have truly multimodal pain management plans created for them that include physical medicine modalities, enhancing pharmaceutical and nutraceutical effectiveness.

Second, there are resources to help general practitioners provide some rehabilitation, so primary care providers should not shy away from learning what they can do. But patients deserve referrals to rehabilitation specialists, no different from referrals to dermatologists or orthopedic surgeons.

3 What is one thing that clients (pet owners) could do that would make your job more satisfying?

Clients' gratitude on behalf of their pets who have been restored to maximum comfort and function already make my job super satisfying.

4 What is the most rewarding part of your job?

This patient story is a perfect example: Critter was a 14-year-old Dachshund who was referred to me for a wheelchair fitting because he could not use his rear legs. His examination revealed profound back pain. Some dogs have pain and weakness/paralysis, and other dogs have pain that causes weakness or apparent paralysis. We initiated an aggressive multimodal pain management strategy, and within 24 hours Critter was running around the house. With appropriate pain management and rehabilitation, Critter lived to be 21 years old.

5 What advice would you give to someone considering your specialty?

Pain medicine and physical medicine dovetail to make life better for the pets we serve and the people who love them. Pursuing this area of practice provides a perfect way for veterinarians to fulfill our ethical obligation to advocate on behalf of beings who cannot advocate for themselves.

Photo courtesy of Robin Downing

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Employee of the Month

Mikayla Wrasse, CVT

Certified Veterinary Technician, Primary Care

University of Illinois Vet Med South Clinic
Year started in vet medicine: 2016
Years with practice: 4

Nominated by VMSC staff

Why is Mikayla so awesome?

She does so much to keep Primary Care at the South Clinic running smoothly, while also always being willing to jump in and help Urgent Care, or even work nights/weekends in the ICU.

How does she go above and beyond?

Keeping all our doctors' schedules, meetings, time off, and appointments on track is easily the work of three people and she does it like a champ. Not to mention keeping track of the vet students, tech students, and tech externs.

In their own words:

Why do you love your job:
Every day is different. I love that I get to help both animals and students. In addition to helping teach others, I get to learn new things every day as well.

Pets at home:
Boxer/pit mix named Chase, dachshund named Ollie, Bernese mountain dog named Yogi.

What brought you to the profession:
Shelter medicine is what brought me into the field. I love animals and I want to help them as much as I can.

Hobbies outside of work:
Taking my dogs to the dog park, outdoor activities, and trying/experiencing new things.

Each month in *Trends*, we will spotlight a team member from an accredited practice.

Does your team boast an outstanding veterinarian, veterinary technician, veterinary assistant, customer service representative, or kennel worker? Nominate your employee at aaha.org/EOTM, and you and your employee can win $500 in gift cards courtesy of CareCredit!

*The Employee of the Month contest is administered by AAHA.

Photo courtesy of Amanda Green

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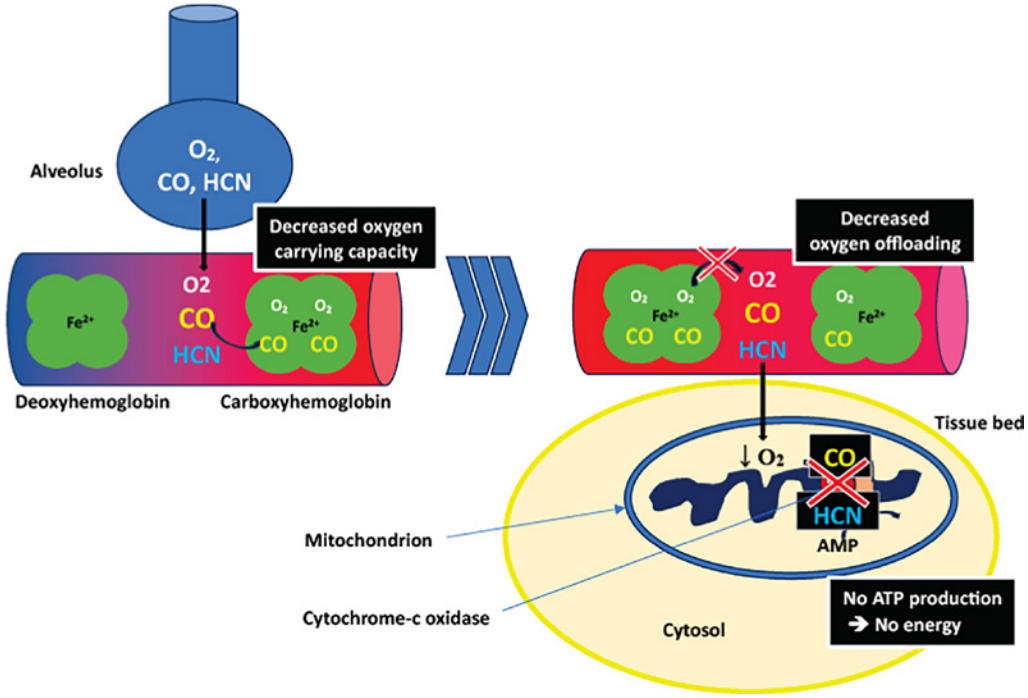
Case Report of the Month



Where There's Smoke . . .

Setting aside the fact that humans are the only animals that inhale smoke on purpose, everyone knows smoke is bad for your health. When animals suffer from smoke inhalation, it is purely accidental or unavoidable, due to a fire in a structure or a wildfire. Depending on the type of smoke inhaled and the chemicals associated with the burning materials, patients will need different treatments—and caregivers can expect different outcomes.

A new review article in the *Journal of the American Animal Hospital Association (JAAHA)* provides information regarding the pathophysiology of smoke inhalation injury and summarizes the important points of stabilization and management in addition to presenting potential complications in veterinary patients.

Read the full article, "***Smoke Inhalation in Veterinary Patients: Pathophysiology, Diagnosis, and Management***," in the latest issue of *JAAHA* at jaaha.org.

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Image Courtesy of *JAAHA*

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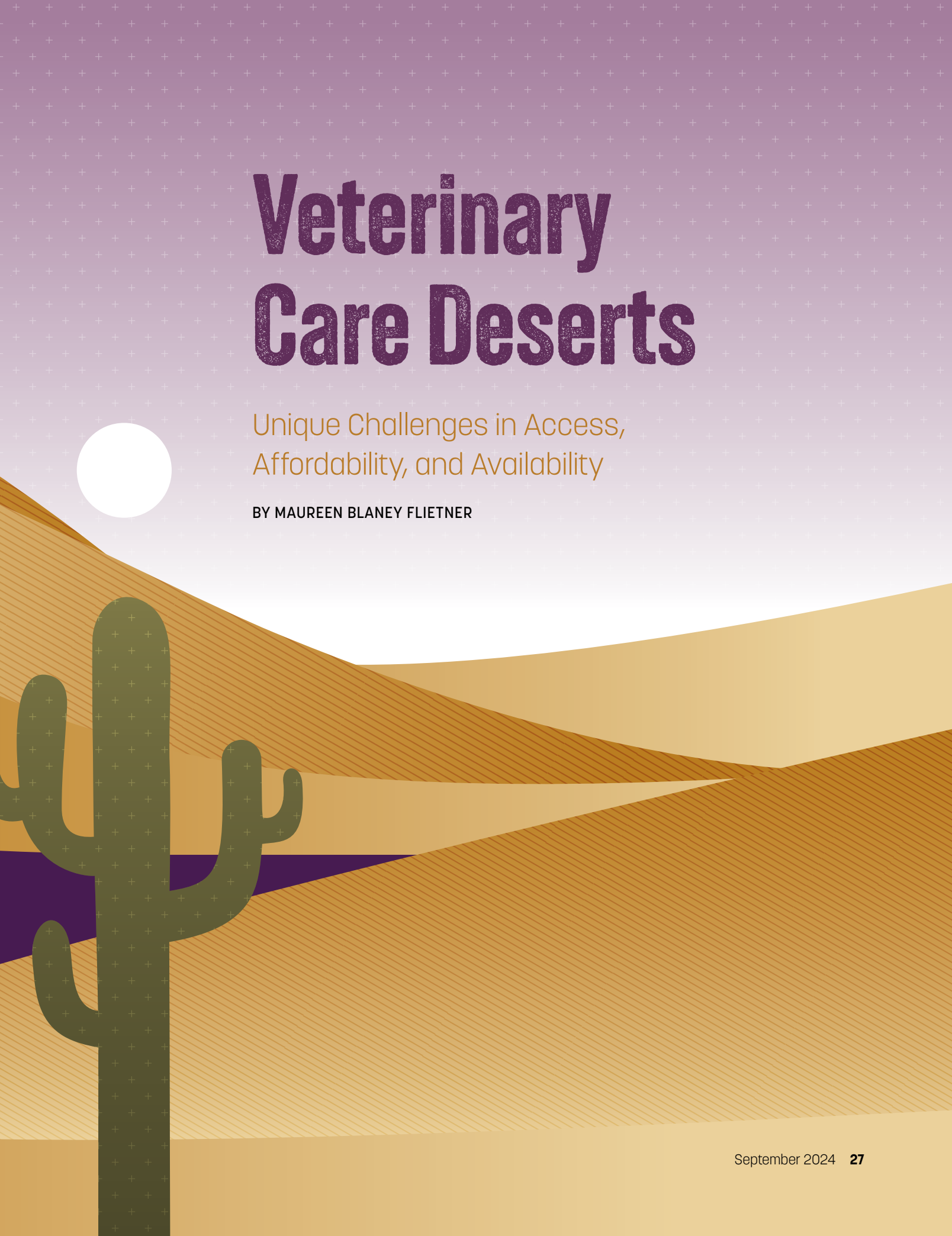
CHAMPION

Veterinary Care Deserts

Unique Challenges in Access, Affordability, and Availability

BY MAUREEN BLANEY FLIETNER



You live near a veterinary hospital but can't afford its products or services. Veterinary care is available an hour away but you need to find a car to borrow and money for gas. You are disabled or elderly and unable to use public transportation to bring your only companion in for care.

Most pet owners don't face such hardships. But, in the US alone, about 20 million pets experience poverty with their families and 70% of these animals have never seen a veterinarian, according to the Humane Society of the United States (HSUS).

Some organizations have been working for years on these access-to-care problems, but now awareness by others is growing. The awareness has even prompted the suggestion of a term for it: "veterinary care deserts."

In a 2023 research report, Laura Bunke, DVM, with the San Diego Humane Society (SDHS), proposed the term and defined it as a geographic area where accessible, affordable, and available veterinary care is limited.

"It is currently a hot topic within veterinary medicine and nonprofit work," she said, noting that naming the problem allows everyone to have a shared understanding. "Awareness is required before solutions can be formulated, tested, measured, and adapted to create change."

In order to address the issue, the SDHS has been assisting pet owners in its service area who fall on hard times or need extra support to access veterinary care. Between June 2022 and June 2023, that meant 40,655 vaccinations, 3,926 veterinary vouchers, and 2,338,970 pet meals.

It also recently established a Community Veterinary Program to offer area families an affordable veterinary care option.

"We are excited to see what the future holds as we work on building out our on-site public hospital and obtaining a mobile unit," said Bunke.

Other groups that work with veterinary care deserts shared insights about what they have experienced. Their comments reveal both the bad news and the good news. The bad: Problems are more complicated than they might appear on the surface. The good: People, animals, and communities can be resilient and resourceful.

Rural Area Veterinary Services, Native Nations

The HSUS Rural Area Veterinary Services (RAVS) program has worked for more than 20 years to expand access to animal health resources in underserved Native Nations communities in the western US, according to Windi Wojdak, RVT, senior director of RAVS. As of May 2024, that translated into veterinary services for more than 175,000 animals.

For these tribal communities, she explained, the closest veterinary care may be 50 miles away with limited appointment availability and no after-hours emergency services. The elderly, families without transportation, and those with disabilities or other challenges can find it nearly impossible to get needed pet care. Those struggling with food or housing insecurity also have a hard time affording pet food.

"Access to care in these

> "Access to care … is almost never a matter of just one barrier but involves layers of barriers and challenges that go beyond just cost of care."
>
> Windi Wojdak, RVT, Senior Director, Humane Society of the United States' Rural Area Veterinary Services

communities is almost never a matter of just one barrier but involves layers of barriers and challenges that go beyond just cost of care," said Wojdak.

Through its field teaching clinics, up to 40 veterinary staff, volunteers, and students set up hospitals for one to two weeks to care for companion animals and to mentor students. In 2023 alone, they provided veterinary care with a value of more than $1.8 million for more than 9,600 animals across 12 partner communities.

The teams are invited and hosted by tribal agencies in each community and have built long-standing relationships. One such community is the San Carlos Apache Tribe in Arizona, an active partner since 2003.

"Our work with the San Carlos community has evolved," explained Wojdak, including supporting the formation of the San Carlos Apache Animal Care Network. The network shares information and resources, helps identify community needs and priorities, provides support for collaborative care events, and helps coordinate efforts for greatest impact.

For that community in 2023, RAVS provided wellness and preventive care, emergency medical care, and surgery valued at more than $400,000 for 1,947 animals. In addition, it delivered 345,000 pounds of donated pet food and 200 pallets of supplies valued at $1.5 million. To extend its support, and reach more animals in the community, RAVS teams have also begun door-to-door outreach.

WisCARES, Madison, Wisconsin

Wisconsin Companion Animal Resources, Education and Social Services (WisCARES), which has been operating for 10 years, is a veterinary clinic and resource center for families experiencing poverty and homelessness and a part of the University of Wisconsin School of Veterinary Medicine. It sees about 3,000 appointments annually—wellness, urgent care, surgeries, and dentistry—and, at the same time, teaches veterinary students how to be better communicators and decision makers.

"In our city, people can live 10 minutes away from a veterinary clinic by car, but it may take them an hour or more to get to a clinic by bus. And even if they live next door to a veterinary clinic but can't afford it, they are also isolated from receiving care," explained Kelly Schultz, DVM, WisCARES clinical instructor and medical director.

Finances, transportation, and disability are intertwining factors that impact the veterinary care desert there.

"When we started ramping up our full clinical services, it was very common to see animals that hadn't been to a vet for five years, mostly for financial reasons," said Schultz. "Many of our owners experience poverty and disability simultaneously. The two tend to go hand in hand, and having a bond with a companion animal has so many benefits to those with disabilities. They give folks a reason to get out of bed and can provide a constant source of support during rough times. Unfortunately, many folks with disabilities also struggle to or are unable to drive so getting to us is difficult."

The clinic's full-time social worker—a second is being hired—runs its boarding and fostering program. With that, the clinic can house animals for clients who have recently been evicted, need to seek their own medical care, or have

other short-term needs relating to their stability.

For most of their appointment, clients work with fourth-year veterinary students. The students take their work very seriously, said Schultz, "actively learning about the medical conditions they encounter, transferring that knowledge to pet owners, and digging into details about what interventions might be most manageable for each family."

NECO, Saskatoon, Saskatchewan

In 2014, Jordan Woodsworth, DVM, PhD, worked with community partners to create the Western College of Veterinary Medicine's Northern Engagement and Community Outreach (NECO) program. They initially started with a small spay-neuter clinic in the tri-community area of La Ronge, Air Ronge, and the Lac La Ronge Indian Band in north-central Saskatchewan.

She said that defining a veterinary care desert in the college's partner regions—Saskatchewan, Manitoba, British Columbia, and Canada's territories—is complex.

"In Saskatchewan and Manitoba, many communities have no access to veterinary care within more than 250 kilometers," Woodsworth said. "Some communities do not have road access and are fly-in only. This means that, even if the closest clinic 'as the crow flies' is only about 300 kilometers away, access is far more complicated and expensive, not to mention time consuming."

She noted that in Canada's vast territories there are few veterinarians, and many small communities are far away from care.

"While some remote outreach programs exist, such as Veterinarians Without Borders' Northern Program, they only have the capacity to serve a few communities a few times a year, leaving many entirely without any veterinary care at all," she said.

Impacts on veterinary care deserts there, she said, include navigability of any roads; availability of facilities in which to provide

VCAS: Data Tools to Target the Issues

"Ten years ago, almost nobody was talking about veterinary care deserts," explained Mike Greenberg, DVM, cocreator of the Veterinary Care Accessibility Score (VCAS).

"Now people are aware of the problem. This is an important first step. It's not a fringe thing anymore. There are major players in philanthropy, industry, academia, private practice, and more—people forming a critical mass to address this problem in creative ways."

In an effort to help groups better understand the complexities, Greenberg, along with Sue Neal, PhD, cofounded the Veterinary Care Accessibility Project and created the VCAS.

The VCAS uses data at the county level across the contiguous lower 48 states to provide a relative measure of the accessibility of veterinary care. Everything from income, to transportation accessibility, to the number of veterinary employees is ranked and used to generate an index score similar to other indices that mathematically summarize complex problems.

These scores then become tools, said Greenberg, to help inform different audiences in their decisions to target access-to-care solutions.

You can check your area's score at accesstovetcare.org.

> "I have been surprised at how difficult it can be to relay the importance of the human-animal bond to human health care workers outside of veterinary medicine."
>
> Kelly Schultz, DVM, Clinical Instructor, Medical Director, Wisconsin Companion Animal Resources, Education and Social Services

care; availability of veterinary professionals, many of whom are typically providing services for free; and funding, as many communities have high rates of poverty.

Additionally, said Woodsworth, there are often policy-related barriers, including extra red tape required by some veterinary licensing bodies to gain approval to practice outside of areas with existing practice standards.

PetSmart Charities

PetSmart Charities has recognized that there are not only proximity barriers to veterinary care but other challenges: financial, linguistic, transportation, and hours of operation. Often, veterinary care deserts exist in regions where the social vulnerability index is also high and people lack access to social services, explained Kate Atema, director of community grant initiatives.

Since its inception in 1994, the nonprofit has granted more than $600 million to fund animal welfare in North America. That comes after looking closely at the needs, assets, and gaps of each community to assess what, if any, veterinary care is available and how accessible it is. In 2023, PetSmart Charities made a commitment of $100 million over five years to support increasing access to veterinary care for pets in need of basic services.

Atema explained that the charity also is finding innovative ways to deliver services such as telemedicine to reach remote regions and a pilot program for veterinarians to offer payment plans for pet parents.

According to Atema, PetSmart Charities' portfolios address many veterinary care issues:

- **Incubator program:** Identifies regions that have been historically excluded from the veterinary care system and cocreates solutions with community input.
- **Accelerator program:** Supports capacity for expanding or launching low-cost clinics in regions that may include veterinary care deserts.
- **Support for higher education:** Supports higher education to promote veterinary programs to minority students, scholarships that support current veterinary students aspiring to do community-based work, and an endowed chair role that promises to advocate for accessible veterinary care across the nation.

Among its grantees from PetSmart Charities of Canada is the University of Saskatchewan and the NECO project. It began its partnership in 2023 with a $405,000 grant to launch a three-year pilot program for increased outreach and expansion in Saskatchewan communities. In January 2024, it awarded $860,000 over the next four years to look at the wider issues regarding access to veterinary care in Saskatchewan, Manitoba, British Columbia, and Canada's northern territories.

PetIQ

PetIQ provides mobile veterinary services "in an environment

without judgment" at more than 2,900 mobile community clinics across the country.

According to Sarah Cutler Tew, PhD, PetIQ Vice President of Medical Services, the company's clinics are set up to provide preventive care services in accessible urban, rural, and suburban locations that pet parents already visit to meet other needs.

The company evaluates many factors when setting up clinic locations, including access to care, which can be impacted by transportation, economics, or availability of professional services. In partnership with the Veterinary Care Accessibility Project, PetIQ identified counties where their mobile clinics are held in communities without any permanent full-time veterinary services and found operations across Texas, Arizona, West Virginia, Florida, Kentucky, North Carolina, and Michigan.

PetIQ also partners with local organizations on various philanthropic initiatives such as last spring's mobile clinic in Hobart, Indiana. When a local student wrote to PetIQ seeking help for local pet parents, PetIQ partnered with the Humane Society of Hobart to provide free core vaccinations and flea and tick prevention—critical services in a county designated as having a "difficult to access" Veterinary Care Accessibility Score.

Complex Problems with Broad Impacts

Work on these veterinary care deserts continues to expose other factors at play.

"Our clinic has always incorporated social workers and resource assistance for both pets and their humans," explained WisCARES' Schultz. "We knew this would be important, but it only becomes more evident with every passing year. I have been surprised at how difficult it can be to relay the importance of the human-animal bond to human health care workers outside of veterinary medicine.

"However, every day we see people who are kept afloat by their pets. On the flip side, we also see people whose housing can be jeopardized by pet incontinence, fleas, or behavioral issues. We also see people whose own medical trauma turns into anxiety and aggression in the veterinary clinic, so having trained staff around to de-escalate is very helpful."

In some of NECO's target communities in Canada, there are other pressing issues beyond the high prevalence of infectious and parasite-borne illnesses. In the far north especially, explained Woodsworth, rabies is a significant risk and is made even more so due to climate change and associated changes in wildlife migration patterns, leading to increased contact with human settlements and domestic animals.

Dog populations that are not well controlled in northern, remote, and Indigenous communities in Canada are another concern.

"Roaming dogs that are unvaccinated and not sterilized pose dangers to community members, particularly in areas where resources are already scarce," she explained. "In First Nations communities where there is no funding available for fences,

> "It needs to be an industry-wide commitment that considers both ends of the leash. Together we can start moving the needle to help serve our whole communities."
>
> Laura Bunke, DVM, San Diego Humane Society

dog houses, dog pounds, and animal control personnel, children, elders, and other community members are often fearful of spending time outside. This then exacerbates many of the challenges already reported to influence negative health and wellbeing outcomes for folks living there."

Industry-Wide Commitment, Creative Thinking Needed

The irony that exists, said Schultz, is that many veterinarians and veterinary nurses are leaving the field because of insufficient compensation. To address this problem, pet owners need to be able to pay more for services, but there is an ever-increasing need for financially accessible pet care.

For Bunke, there is not one solution or organization that can mitigate veterinary care deserts.

"It needs to be an industry-wide commitment that considers both ends of the leash," she said. "Together, we can start moving the needle to help serve our whole communities."

Woodsworth said she doesn't believe veterinary care deserts will ever be eliminated, so there is a dire need to critically evaluate the options available.

"Currently, we are without standardized tools to assess the degree and nature of underservice, and this creates challenges around providing justification for prioritizing resource allocation to these situations," Woodsworth said. "There is still a widespread belief that, particularly when it comes to companion animals, it is the responsibility of the individual, as opposed to the collective, to ensure they are well cared for. As we move towards a more general recognition of animals as sentient beings deserving of minimum standards of care, we have to begin considering the provision of that care as a collective responsibility."

According to Woodsworth, creative thinking is needed about which services must be provided by veterinarians and which can be delegated. She suggested expanding the roles of RVTs and offering programs that enable community members to become trained as lay vaccinators, which, at the same time, could also provide a crucial link to animal health professions.

"We need everyone to join the conversation and work together to help build systems that will bridge the gaps in care to promote animal and human health and wellbeing," said Wojdak. "There will be no quick fix and no single approach that will solve the underlying disparities. It will take real shifts in philosophies, policies, and practices and ongoing commitment and collaboration across sectors."

Fortunately, noted Schultz, there are a growing number of people trying to figure out how to make pet care more accessible.

"I tell my students that we need some smart, systems-oriented veterinary brains out there to solve these problems. So if they enjoy policy, epidemiology, and economics, then accessible veterinary care may be the place they would want to specialize in."

"The human-animal bond runs deep," noted Wojdak. "Despite the multiple complex barriers they may face, folks employ tremendous creativity, resilience, and resourcefulness to provide the best possible care for their animals. They express much gratitude for the opportunity to provide the care they want and need for their animal family members. And often they express relief as the emotional burden of worrying about a beloved animal is lifted."

Child at Mission Rabies vaccination event in Cambodia

Courtesy of Worldwide Veterinary Service

Eliminating Rabies

Fighting the Good Fight Overseas

BY JEN REEDER

Photo taken by Kristina Lombardo, Mah Colleague

For more than 52 years, Rob Armstrong, DVM, DVSc, has worked in veterinary medicine—a career that can still surprise him. This February, the senior professional services veterinarian for the Pacific Northwest region of Merck Animal Health traveled to Mumbai, India, to spend a week vaccinating dogs against rabies as a volunteer with the nonprofit Mission Rabies.

The goal of the weeklong campaign: to be part of a team wandering the streets and trying to vaccinate at least 25,000 dogs against rabies.

"It was an intense, challenging, demanding, wonderful, educational, eye-opening experience," he said. "You couldn't come away from that and be the same person after that."

Each morning, Armstrong and other international volunteers woke in the "wee dawn hours," donned yellow volunteer shirts, and shuttled to remote areas on the city outskirts in teams of five to six people. Each group included a veterinarian, veterinary technician, a couple of locals who spoke regional dialects and languages, and a local veterinary student.

While the interpreters helped explain the goal of the group of people carrying coolers and nets, the team shared informational handouts about rabies and dog bite prevention. Whenever Armstrong vaccinated a dog, the team marked dog's forehead with a brightly colored marker to avoid duplicating efforts.

Though the team visited impoverished areas, locals often invited the volunteers inside their homes to enjoy a few minutes of shade from the heat, use the restroom, or sip a cup of tea.

"Poverty was a big part of the areas that we were in, and yet these people wanted to share," he recalled. "Although they didn't have the material resources, they had incredible closeness of community. They were all together

← Woman with dog vaccinated by Mission Rabies in Cambodia

→ Veterinarian Anke Schutz from Germany with local dog feeder

→ Vaccinating group Samir, Kuldeep, local feeder, Warda, Anke, and Arya (vet student at Mumbai Veterinary college). In addition to mass vaccination campaigns and educational outreach, Mission Rabies works in rabies surveillance and offers technical consulting to governments to help them make informed decisions about rabies control programs, including Bolivia, Peru and Haiti

Photos courtesy of Merck Animal Health and Worldwide Veterinary Service

↑ Children often are caregivers for dogs and bring them to Rabies Free Africa events

and they're rarely in a situation where they would be alone. So that was really something I learned from the whole experience."

During the experience, Armstrong and the other Mission Rabies volunteers vaccinated more than 26,100 dogs for rabies in a single week.

"It's so good to be part of a program that is helping to protect animal and human life at the same time in a situation where there is a clear and present danger from disease for people," he said.

It's not an exaggeration to call the threat of rabies a "clear and present danger." Though rabies is 100% preventable through vaccination, at least 59,000 people die each year, almost entirely in Asia and Africa—and more than 40% are children under the age of 15, according to Fred Lohr, MRCVS, director of strategic partnerships at Mission Rabies, a nonprofit working to eliminate dog rabies worldwide.

"For every reported case, there are around a hundred cases estimated that go unreported. So the truth is, we don't really know how many people die," he said. "In particular, in sub-Saharan Africa and some parts of Asia—where reporting in the rural areas is nonexistent, basically—we don't know what the actual, true burden is. But that's part of our mission—to drill down into that and actually get to the bottom of how big of a problem it actually is."

To that end, rabies surveillance through case management is part of the nonprofit's three-pronged approach to eliminating dog rabies, in addition to mass dog vaccination campaigns (like the one in which Armstrong

> "It's so good to be part of a program that is helping to protect animal and human life at the same time in a situation where there is a clear and present danger from disease for people."
>
> Rob Armstrong, DVM, DVSc, Mission Rabies Volunteer

Photo courtesy of Rabies Free Africa

participated) and educating primary school teachers and students (as well as other vulnerable populations, such as street sweepers and postal carriers in India) about rabies and prevention.

On a Mission

Since its inception in 2013, Mission Rabies has vaccinated more than 3 million dogs and educated more than 7 million children.

Lohr noted that the medical catchphrase, "Prevention is better than cure," could be amended in the case of rabies to "Prevention is better than death," since there is no cure.

"It's the only disease we know of that has a mortality rate of 100%; if you start showing symptoms, that's pretty much it. There's just a handful of documented survival cases, and even in those cases, the quality of life is poor," he said. "So it's one of the very few opportunities where we have all the tools, we know what to

Photos courtesy of Dr. Peggy Burris (Vetmedux), Worldwide Veterinary Service, and Merck Animal Health

Rabies Free Africa "Dollar for a Dog" Program

It's easy to support Rabies Free Africa through the "Dollar for a Dog" program. Essentially, each time a participating North American animal hospital vaccinates a dog for rabies, $1 is collected to donate to Rabies Free Africa to help vaccinate dogs in Africa. "We can provide digital and poster media for your hospital to help spread the message that together, we can save lives," shared Felix Lankester, a director of Rabies Free Africa. "Rabies is the global health tragedy that only veterinary medicine can end. We can and will eliminate human and animal suffering due to rabies across the African continent."

For more information, email: rabiesfreeafrica@wsu.edu

> "Rabies is the global health tragedy that only veterinary medicine can end."
>
> Felix Lankester, PhD, Rabies Free Africa

do, we have an effective vaccine. It just needs to be done."

Veterinarians, veterinary technicians, and nonveterinary professionals are all needed to volunteer. Sometimes, couples and entire families will volunteer on vaccination campaigns (so long as the children are at least 18 years old).

"International 'nonvet volunteers,' as we call them, can help with the data collection, they can help with the logistics," he said. "Years ago, I personally was at a static point in Malawi and I singlehandedly had to vaccinate over 800 dogs in one day, so you need a good support crew literally just drawing up vaccines," he said. "Your hands hurt at end of the day—it's two vaccines a minute."

It's a small price to make a clear impact. For instance, in 2012, the hospital in the city of Blantyre in Malawi reported the highest pediatric death rate from rabies in all of Africa. So Mission Rabies operated a campaign there, and five years later, the city had the lowest number of children dying of rabies on the entire continent, as detailed in *The Lancet*.

Returning volunteers also often comment on the noticeable change in how locals interact with dogs. Whereas in the West dogs are often considered members of the family, it's different in most places where dog rabies is still endemic, where they're used primarily for security and hunting, according to Lohr.

"Year over year, you see that change in how people perceive these dogs and how people handle these dogs," he said. "I think for a volunteer, that's an amazing thing to see."

International veterinarians play a significant role in educating local veterinary students during vaccination campaigns by Mission Rabies (and its parent organization, Worldwide Veterinary Service, which offers hundreds of volunteer opportunities each year, such as vaccinating wildlife against distemper in the Galapagos Islands), he noted.

For instance, during a recent rabies vaccination campaign in Cambodia, more than 200 students joined Mission Rabies vaccination teams with more than 100 international volunteers.

"These students don't get a lot of practicals at university," he said. "Some of them, despite being in their third or fourth year, have never even vaccinated a dog. So this was a really great opportunity for them to learn from international veterinarians."

He hopes veterinary professionals will join the worldwide effort to eliminate dog rabies by 2030—an initiative the World Health Organization and partners dubbed "Zero by 30."

"With rabies, we have one of the rare opportunities to actually achieve elimination of a public health threat and do massive good for the welfare of dogs around the world. Because of the disease, millions of animals are still being culled unnecessarily and cruelly every single year, and thousands of people die the most horrendous death," Lohr said. "As a vet myself, it always brings home again why we're actually in this profession—really seeing that change, seeing that increase in health and welfare all around."

↑ Locals line up with pet dogs at a Rabies Free Africa vaccination clinic

Other Ways to Help

If volunteering abroad isn't a possibility, there are still meaningful ways to make an impact, such as donations, according to Felix Lankester, PhD, clinical associate professor at Washington State University's Paul G. Allen School for Global Health and a director of Rabies Free Africa, a program that combines vaccine research with vaccination programs in Africa.

"For every 3,000 dogs that we vaccinate, we estimate that saves one child's life. So that's really cool. It's approximately a dollar a dog or $1.50 (to vaccinate). So it's approximately $3,000-$4,000 for every child's life saved, which is really not a lot of money," he said. "Compare that to malaria or cholera or other public health diseases, (which have) a much greater expense per life saved than this relatively cheap return."

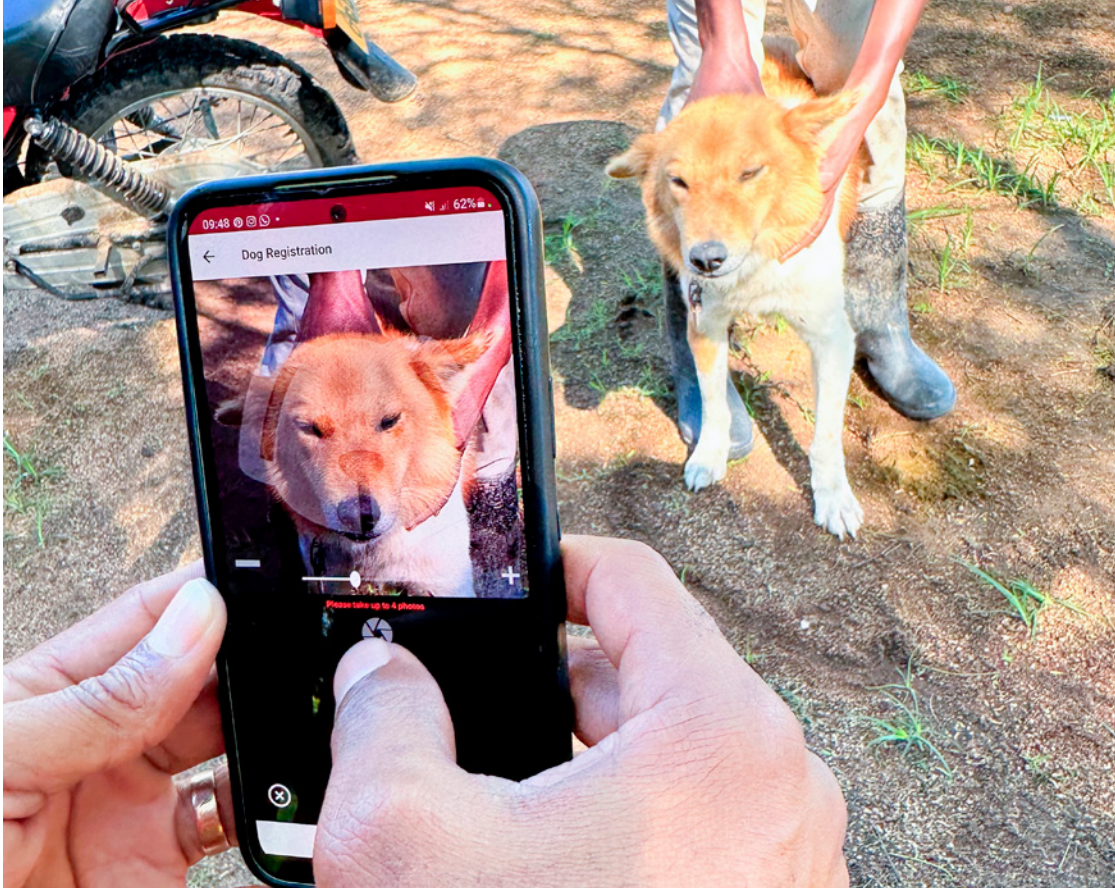
Of course, the impact on families is immeasurable. Lankester hears many heartbreaking cases, like when a rabid dog bites a child, so a parent walks for a day or two to a clinic to get the rabies vaccine—only to find there aren't any available, or are mistakenly given tetanus or a different vaccine, and the child develops rabies and dies.

Rabies vaccines for humans involve four doses that cost $100, which can be two to three months' salary for a parent, he noted. So when children are exposed to a suspected rabid dog, parents can face a heartbreaking choice of risking not vaccinating their child and hoping the dog wasn't rabid or spending money and later learning the dog didn't have rabies.

"There was one example of a mother of five children. They adopted a young puppy and the puppy ended up dying of rabies. They'd all been exposed, but she could only afford enough vaccination for one course. So she had this terrible dilemma.

> "For every 3,000 dogs that we vaccinate, we estimate that saves one child's life."
>
> Felix Lankester, PhD, Rabies Free Africa

Photo courtesy of Rabies Free Africa



↑ Rabies Free Africa is developing dog facial recognition technology that could be game changer for mass vaccination

Photo courtesy of Rabies Free Africa

Do I treat all of my children once with one dose when four doses are needed? Or do I give one of my children a complete dose and protect that child? That's the sort of terrifying dilemma you face," he said. (She gave each child one dose, and fortunately, they all survived.)

Rabies Free Africa partners with animal hospitals across North America that donate $1 for every rabies vaccine administered to dogs in their practice (see sidebar) to go toward vaccination campaigns in Africa. Lankester and his team are also developing dog facial recognition technology to identify dogs who have already been vaccinated for rabies—a cheaper, more effective method than microchipping, collars, or tattoos (which have welfare and time implications).

"It could be a game changer," he said. "I just need to get about $100,000 to take it to the next level and work on getting the technology put onto a device so it can be used offline."

So there's a persistent need for both donors and volunteers. New Jersey-based veterinary assistant Warda El Akkari, MPH, found volunteering in Mumbai earlier this year with Mission Rabies made her even more passionate about her career in veterinary medicine. She's studying to become a Certified Veterinary Technician while working as a scientific marketing affairs specialist at Merck Animal Health, which donates rabies vaccines to both Mission Rabies and Rabies Free Africa.

In India, she met many veterinary professionals who volunteer overseas every year, as she hopes to, too.

"Being in a foreign place without knowing anyone, it was very comforting to find myself surrounded by other like-minded people who share the same passions for travel and animal welfare," she said. "I've done a few of these animal welfare trips, and I still keep in touch with people from all over the world."

She felt a strong camaraderie with fellow volunteers on her most recent trip and loved that even after a 10-hour day, if her group saw other unvaccinated stray dogs, they'd stay late to vaccinate as many dogs as possible.

"It really just speaks volumes about how passionate everyone really is about this cause," she said. "Eradicating rabies isn't only going to help the areas where it's endemic. It's going to make for a better world for anyone who inhabits this planet."

humanmade/E+ via Getty Images

GET SMART / **CBD STUDIES**

CBD for Pets

What's New and What's Not

BY ROXANNE HAWN

When *Trends* published an article about the state of cannabis in veterinary medicine in 2020, I wrote, "By waiting for a definitive decree from national or state organizations or accepting prior statements as final, veterinarians may find themselves far behind in their knowledge of how cannabis-derived products such as cannabidiol (CBD) affect patients' lives. Saying nothing may no longer be viable."

Spoiler alert: All that remains true in 2024.

"There's not much more clarity from the legal side or the organizational side," said Casara Andre, DVM, founder of Veterinary Cannabis Education and Consulting. "Unfortunately, I think there has been enough [going on] in the wider cannabis industry that the veterinary industry has slid by without making comment."

In part, that's because cannabis derivatives are complicated constellations of potentially hundreds of molecules, terpenes, flavonoids, and entourage effects. It's a lot to grasp, juggle, and adapt for different cases and patients. Plus, "Many states are still keeping veterinary practitioners in the dark with regard to legal protection for veterinarians who discuss or recommend cannabis or CBD," said Trina Hazzah, DVM, DACVIM (Oncology), CVCH.

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>
> Trina Hazzah, DVM, DACVIM (Oncology), CVCH

As cofounder and president of the Veterinary Cannabis Society (VCS) and also founder of Green Nile, Inc., a platform for cannabis-specific consultations, Hazzah encourages other practitioners to join the VCS and monitor its Legal Beagle Archive for news. While some states, including Nevada, Utah, California, and Michigan, passed cannabis or CBD-specific legislation, other states end up gutting various bills of cannabis- or hemp-related content before going to a vote.

Meanwhile, consumer demand keeps climbing. According to Packaged Fact's US Pet Market Outlook 2024–2025, "CBD—cited as useful for everything from chronic pain to epilepsy—has become entrenched in the pet supplements space, posting high double-digit and even triple-digit growth in previous years, with pandemic-related anxieties giving the business an additional push. Growth has moderated, however, with annual sales increases projected to be in the 6% range on a compound annual basis through 2028."

The outlook report also discusses the growing presence of direct-to-consumer distribution of CBD products for pets, leaving veterinary practitioners out of the equation entirely.

"I definitely had more expectation from organized veterinary medicine bodies to have, by this time, a much stronger education-forward perspective of cannabis because it's literally

Psychedelics Too

As more states decriminalize psychedelics, which are often derived from mushrooms, consider adding questions about psilocybin to your history-taking, because a lot of people are already giving pets psychedelics on their own. Anticipate all the same concerns and legal hurdles seen with cannabis products.

Legitimate conversations around psilocybin consider the ability to reopen critical learning periods and establish new and positive exposures through expert guidance that may help treat trauma, fear, socialization gaps, and other pet behavior issues.

Safety and Efficacy

Below is a chart showing several safety and efficacy studies that have come out on CBD in recent years.

Safety Studies	Study Participants	Timeline	Results / Conclusions
Tolerability of long-term cannabidiol supplementation to healthy adult dogs J Vet Intern Med. 2024 Jan-Feb;38(1):326-335.	18 healthy adult beagles in one of three groups: • Placebo • 5 mg/kg CBD • 10 mg/kg CBD Dosed once daily with food	36 weeks	"Chronic administration of CBD in healthy dogs at 5 mg/kg was better tolerated than 10 mg/kg, and both dosages caused an increase in ALP activity. Although our data does not indicate hepatic damage, it is recommended to monitor liver function in dogs receiving CBD chronically."
Long-term daily feeding of cannabidiol is well-tolerated by healthy dogs Front Vet Sci. 2022 Sep 21:9:977457.	40 adult dogs (Labradors, beagles, Norfolk Terriers) in two groups: • Placebo • 4 mg/kg CBD Dosed once daily with food (morning)	6 months	"Biochemistry and hematology showed no clinically significant alterations apart from a transient elevation in alkaline phosphatase (ALP) in just over half of the dogs receiving CBD. This elevation was observed in the absence of concurrent elevations of other liver parameters, and without any adverse effects on health and wellbeing. Furthermore, bone alkaline phosphatase (BALP) was simultaneously elevated with a significant, strong ($r > 0.9$) positive correlation between the two measures, suggesting that the elevation of total ALP was at least partly due to the bone-derived isoform. This study provides evidence that a once-daily oral dose of 4 mg CBD/kg BW is well tolerated in clinically healthy dogs for a duration of 6-months."
Safety and tolerability of escalating cannabinoid doses in healthy cats J Feline Med Surg. 2021 Dec;23(12):1162-1175.	20 healthy adult cats into one of five groups: • Placebo (sunflower oil) • Placebo (MCT oil) • CBD in MCT • THC in MCT • CBD/THC in sunflower oil Dosed orally via syringe in fasted subjects with escalating doses over time: 0.5-0.8 ml (0.15 ml/kg; first dose) to 5.0-9.8 ml (1.67 ml/kg; last dose)	6-7 weeks	"Titration to maximum doses of 30.5 mg/kg CBD (CBD oil), 41.5 mg/kg THC (THC oil) or 13.0:8.4 mg/kg CBD:THC (CBD/THC oil) was safely achieved in all subjects. All observed adverse events (AEs) were mild, transient and resolved without medical intervention. Gastrointestinal AEs were more common with formulations containing MCT. Constitutional (lethargy, hypothermia), neurologic (ataxia) and ocular (protrusion membrana nictitans) AEs were more common with oils containing THC (CBD/THC and THC oils). There were no clinically significant changes in CBC or clinical chemistry across treatment groups. Higher plasma levels of the cannabinoids and their metabolites following administration of the CBD/THC combination product are suggestive of a pharmacokinetic interaction."

Efficacy Reviews	Results / Conclusions
Pharmacokinetics, efficacy, and safety of cannabidiol in dogs: an update of current knowledge Front Vet Sci. 2023 Jun 30:10:1204526.	"In terms of efficacy, most studies have tested CBD's ability to relieve osteoarthritic pain. In contrast, few studies have evaluated its role in epilepsy, behavioral disorders, and skin lesions. From obtained results, some evidence exists supporting the beneficial role of CBD. Nevertheless, the limited number of published studies and the occurrence of bias in almost all require caution in interpreting findings . . . Further studies are warranted to define better whether CBD could be a valid adjunct in canine treatment."
Scientific Validation of Cannabidiol for Management of Dog and Cat Diseases Annu Rev Anim Biosci. 2023 Feb 15:11:227-246.	"In companion animals, CBD appears to have good bioavailability and safety profile with few side effects at physiological doses. Some dog studies have found CBD to improve clinical signs associated with osteoarthritis, pruritus, and epilepsy. However, further studies are needed to conclude a therapeutic action of CBD for each of these conditions, as well as for decreasing anxiety and aggression in dogs and cats."

everywhere," Andre says. "I'm shocked when I encounter a pet that has not been exposed. The need for us to understand it as practitioners just continues to grow."

Research Recaps

Thanks to work of veterinary professionals around the world, Andre says, "we've increased our cultural veterinary community understanding of what the endocannabinoid system (ECS) is, how it's implicated in stress, and what we could actually be doing to support the ECS, plus or minus cannabis."

Veterinary researchers continue to explore both the safety and efficacy of CBD for specific conditions. Many of them work with zoo animals in Latin America and publish in Spanish, so increasing translations of papers should allow for greater sharing worldwide.

"We are still learning this information through more research that's continuously being performed," Hazzah says. "Based on several safety trials, we know that CBD and CBG are exceedingly safe at even high doses in dogs and cats, but the longest trial was only six months."

Admittedly anecdotal, some of Hazzah's dog and cat patients have been taking cannabis products for two to five years for "specific diseases such as cancer and seizures" with good tolerance and "minimal to no side effects."

That said, she explains, "A high dose of CBD may interfere with specific drug metabolism; it may be important to keep an eye out for any side effects noted. Also, high doses of CBD in both cats and dogs can increase liver enzymes and bone isoenzymes, so monitoring these values may be recommended

> "I definitely had more expectation from organized veterinary medicine bodies to have, by this time, a much stronger education-forward perspective of cannabis because it's literally everywhere."
>
> Casara Andre, DVM

Process for Choosing a CBD Product

Review: Much like other veterinary efforts, CBD conversations start with a case review, including both practitioners' and family goals.

Product selection: Keep in mind that various products feature either full-spectrum CBD or specific molecules in certain combinations. When in doubt, look up the products used in research or those that consulting practitioners in the cannabis space know well, including third-party certificates of analysis.

Tinctures remain the most common formulation despite the influx of functional treats that list CBD as an ingredient. Watch for forthcoming research into inhalation or vapor therapy for pets.

Dosing: Stick with the adage "start low and go slow." Because CBD-dominant products feature a half-life of four to six hours, consider at least twice-a-day dosing.

Monitoring: Think of cases in two-week increments with detailed client journaling informing decisions about product, dosages, and either solo or adjunct usage. Such journaling notes include at least four time increments per day (morning, lunchtime, afternoon, and evening). The one Andre uses gives clients space to note things like level of arousal, positive interactions with family, positive or negative behaviors, and stool scoring. She says it typically takes three months for clients and patients to adjust to "whatever is going to work for them."

Common hurdles/mindset: Andre says it's common to hear clients or clinicians say, "Oh, it didn't work," or "It's not working" after two weeks. "What we think is happening," she explains, "is the endocannabinoid system is now in this neuroplastic state, which is great, but nothing's changed [with the environmental and other factors] . . . The body just resets [to the new level of cannabinoids], and people think 'It didn't fix the problem' instead of seeing cannabis as a modality for us to rewire a system, but we also have to think about the environment that system exists in."

in some patients, especially the ones that may already have mild liver dysfunction. Also, in pets with moderate to severe cardiac disease, monitoring heart function with a cardiologist a few weeks after starting is recommended."

It's important you know if all your patients already take cannabis-derived products. One recent pilot study found that full-spectrum cannabidiol-rich extract at 6 mg/kg reduced propofol dosages required for anesthetic induction by 23% in dogs. The authors explain, "The fsCBD-rich extract did not produce significant sedation within or between groups, although statistically significant differences in heart rate and systolic blood pressure were found."

However, they also wrote, "Our findings indicate that phytocannabinoids could be an adjunct option in anesthesia, although further research is necessary to better confirm this data. Additionally, further research is needed to determine the best dosage, delivery method, time for administration, ideal molecular profile for desired effects, safety, drug-drug interactions, and transurgical effects."

The typical trajectory for research goes from safety to efficacy for big things like pain before branching out into highly specialized uses for surgical recovery or even kidney disease, liver disease, and beyond. Andre says, "The interest in clinically applicable stuff is growing."

Shared Vocabulary

Andre explains that California is the closest to creating "true cannabis recommendation powers for veterinarians" that might clear up confusion, including "what a medical card for an animal

Aleksandr_Kravtsov/iStock via Getty Images Plus

Liudmila Chernetska/iStock via Getty Images Plus

"Based on several safety trials, we know that CBD and CBG are exceedingly safe at even high doses in dogs and cats, but the longest trial was only six months."

Trina Hazzah, DVM, DACVIM (Oncology), CVCH

means." Yet, that's just one state, and practitioners continue to dance around the appropriate vocabulary for discussions with clients, using words like these:

- Advise
- Educate
- Harm reduction
- Medical guidance
- Medical oversight

It's a verbal challenge in a profession that recommends all kinds of things from probiotics to dental care to have a "CBD recommendation" suddenly mean something specific. It "continues to be a point of confusion and fear for some veterinarians," Andre said.

Like the gastrointestinal microbiome, think of the endocannabinoidome. Andre says, "We've had to start thinking about the ECS in a bigger, broader environment because it interfaces with all these other receptors and systems . . . So, it really is challenging our prescriptive patterns, protocols, how much we're journaling, how individualized we are with a patient, which I think is lovely, but sometimes that can be a little bit complicated."

Looking Ahead

Those working in the veterinary cannabis space predict the creation of a vitality score that will help rank patients' current ECS state and effects of cannabis interventions. The researchers use endocannabinoid assessments, but those aren't yet clinically available in typical practice. Andre imagines an "amazing" future where exam-room or cage-side blood tests give practitioners actionable ECS information.

GET SMART / **EMERGENCY RESPONSE**

Answering the Call

Caring for Sick and Injured Animals During Disasters

BY LAVANYA SUNKARA

According to the National Oceanic and Atmospheric Administration (NOAA), 28 major natural disasters occurred in the United States in 2023 and 11 in 2024. These historic, billion-dollar, climate change–related weather events included severe storms, floods, wildfires, and heat waves, likely to become even more severe in the future. Pets, working animals, and farm animals face displacement, extreme stress, starvation, injuries, and illnesses during disasters. In these catastrophes, federal, state, and county response teams come together to provide relief and shelter and perform search and rescue or recovery operations. But who is caring for the sick, injured, and anxious animals?

With natural disasters increasing in frequency and intensity, veterinarians must be prepared to respond more than ever. From university-based emergency response teams to local volunteer corps, there are many ways veterinary professionals are getting trained and involved to tend to animals in times of extreme distress. For many, it's a calling more than an obligation, and one that is extremely rewarding.

Photo courtesy of UF VETS

↑ Lawrence Garcia, MS, DVM, and the UF VET team pose in front of their bunk trailer as they prepare to depart from the UF CVM campus.

Photo courtesy of UF VETS

Role of University-Based Veterinary Emergency Teams

Hurricane Katrina was a wake-up call for Debra Zoran, DVM, PhD, DACVIM, professor at Texas A&M and director of the university's Veterinary Emergency Team (VET). In 2005, no laws required—or even allowed—first responders to evacuate people with their animals.

"There were lots of people and animals that went through a lot of really tough stuff because there were no plans in place for sheltering them," Zoran said. "As an animal person, I would not have gotten in a boat without my animals."

When Hurricane Ike hit Galveston two years later, Texas decided to build a medical response team to help injured animals. As a long-time volunteer for the Texas Task Force 1 Urban Search and Rescue, Zoran got involved, but it wasn't until 2010 that the VET team was officially established. It has since become the country's leading, largest, and most sophisticated veterinary response team, deployed to 27 disasters throughout Texas and across the country. They provide medical support to companion animals, farm animals, and working dogs during natural and human-made disasters.

The team, which includes staff from Texas A&M's School of Veterinary Medicine and Biomedical Sciences, works at the request of the Texas A&M Task Force or county jurisdictions, deploying when needed and training future veterinarians in emergency preparedness and response.

"Animals that are in emergency shelters are very stressed, even if they're with their owners," Zoran said. "They've often just been evacuated out of a scary situation, whether a flood or a fire, and they're in a strange place. Our role is to support the medical care needs of sheltered animals that are impacted."

↑ The Texas A&M's VET's response to Hurricane Harvey in 2017 included resident animal care and shelter assistance in Jefferson County, Texas.

"Animals that are in emergency shelters are very stressed, even if they're with their owners. They've often just been evacuated out of a scary situation, whether a flood or a fire, and they're in a strange place. Our role is to support the medical care needs of sheltered animals that are impacted."

Debra Zoran, DVM, PhD, DACVIM

In a recent wildfire in the Texas Panhandle, the team, equipped with medical and service trailers, triaged 700 cattle and treated 271 animals for respiratory issues and injuries, providing food for calves whose mothers were killed in the fires.

Because teaching hospitals and colleges of veterinary medicine have the inventory needed to provide medical support in disasters, similar teams are found in other universities. The California Veterinary Emergency Team (CVET), administered by the UC Davis One Health Institute within the School of Veterinary Medicine, comprises dedicated disaster responders. Operational for a little over a year, it offers the necessary resources for professionals and organizations, helping pets and livestock during natural disasters, primarily wildfires, with the aid of 200 volunteer responders across the state.

The University of Florida's Veterinary Emergency Treatment Service (VETS) has been assisting

Photo courtesy of Texas A&M VET

with hoarding cases, hurricanes, oil spills, and other emergencies since the early 2000s. VETS is a member of the Florida State Agricultural Response Team (SART) and works in partnership with the Florida Veterinary Medical Association (FVMA), the Florida Department of Agricultural and Consumer Services, and the Florida Veterinary Corps.

"In most cases, they bring us into areas where all infrastructure is gone, when veterinary practices have no power, no water, no ability to function," says Lawrence Garcia, MS, DVM, medical director of VETS.

During a deployment, the team arrives in self-sustained trucks and trailers, fully supplied with water, fuel, food, and everything they need to sustain themselves for their stay. The team's 42-foot medical unit is equipped for surgery and works as a hospital. After Hurricane Ian, VETS stayed in Fort Myers for 10 days, where more than 60 volunteers saw 400 animals, many with serious medical issues.

Helping Federal K-9 Responders

Federal canine teams specialize in two key areas: detecting survivors (live find search) and detecting deceased individuals (human remains detection).

Currently, there only about 100 human remains detection K-9 responders and between 300 and 400 live-finding K-9s for the entire country in the federal system, according to Zoran. The reality is that when federal teams deploy to disaster areas, there isn't a veterinarian on board to care for the working dogs in the event of injuries.

This led to Texas A&M VET's other primary mission—to help the Texas Task Force 1 working dogs so they can stay healthy during search and rescue/recovery operations.

→ A TAMU veterinary student examines a horse during the VET's Hurricane Harvey response in 2017.

↓ Claudia Sonder, DVM, checks a goat for burns during the LNU fire in 2020.

↘ UF faculty members collecting history from the owner of a pet pig after a storm in Fort Meyers.

Photos courtesy of Texas A&M VET, Napa CART, and UF VETS

↑ Veterinary student Jessica Stephenson wraps the paw of a working dog in the Smokehouse Creek fire response in 2024.

"When we went to Bastrop [during the wildfire in 2011], we were there first and foremost to support those working dogs because, in fires, one of the greatest risks they have is their feet because the ground is burned," said Zoran. "One of the first things we did was develop a wrapping system for dog feet that would allow them to continue to move their feet because they have to have that for stability, but still protect those pads from the hot embers." To better serve federal K-9s that deploy to various parts of the country, Texas A&M VET hopes to establish a nationwide veterinary network of teams with the help of federal funding. The goal is to invest in education and outreach in the eastern, central, and western regions, with these teams supporting local governments and nonprofits to aid in recovery efforts and assist working dogs during disasters. The Homeland Security subcommittee of the House Appropriations Committee will review the funding request in 2025.

Being Prepared for Disasters

A large part of the university emergency response teams' work is outreach and education.

"For most disasters, the response starts locally, so what we try to do is have veterinary practices have a disaster plan that includes how to keep their business operating," said Garcia.

Garcia worries that there's not as much preparation as there should be for the number of storms that hit Florida. Many practices don't think to check if their building is up to code, if they are in a flood zone, what level of storm their clinic can handle, how close they are to storm surge, and if they even have the right insurance, he adds.

"Everybody has electronic records now," Garcia said. "What happens when there's no internet? There are ways to back up and have safe ways to access that information if infrastructure is lost for an extended period."

As the FVMA committee chairman and an advocate of preparedness, Terry Clekis, MS, DVM, says his goal is to prepare veterinarians, their families, employees, and clients for continuity of operations.

"When all these things are set, they can give back to their community," Clekis said. In his volunteer role, he is responsible for ensuring that veterinary hospitals have a plan of action through continuing education in the event of a disaster to be "prepared for their business, their employees,

Photo courtesy of Texas A&M

↑ Lawrence Garcia, MS, DVM, demonstrates how to safely swaddle a stray kitten for handling and evaluation in a mobile hospital unit.

> "Everybody has electronic records now. What happens when there's no internet? There are ways to back up and have safe ways to access that information if infrastructure is lost for an extended period."
>
> Lawrence Garcia, MS, DVM

and their patients."

The American Veterinary Medical Association (AVMA) provides valuable emergency planning resources for veterinary practices, including a downloadable guide to writing a disaster/emergency plan, conducting a business impact analysis, continuing education on disaster and business continuity planning, and a Disaster Business Continuity certificate program, among others.

In addition to university courses for veterinary students, UF VETS started adding a disaster track at conferences around the state to reach practicing veterinarians.

"If you are already getting continuing education somewhere, you can pick up some more," Garcia said.

He further suggests contacting State Agricultural Response Teams and veterinary medical associations, which offer numerous resources. Veterinary emergency teams at universities are helping students prepare for common disasters that they experience in their regions. Texas A&M has a formal, built-in disaster rotation within the curriculum to prepare students, while UC Davis has SVERT, the Students for Veterinary Emergency Response Team.

Becoming a Disaster Responder

When a disaster hits, help from local veterinary practices is critical. Many response teams,

→ Clauida Sonder, DVM, scans a horse for a microchip at Valley Brook Equestrian Center in Napa.

Photos courtesy of UF VETS and Napa CART

"I love my clients, and I love my community. The thought of my long-time clients and patients being in harm's way and doing nothing was unacceptable to me."

Claudia Sonder, DVM

including the university emergency teams, rely on volunteers from private practice veterinarians and technicians to administrative staff, but those willing and able to help must be prepared by taking the necessary courses.

"Before we take somebody into a disaster-impacted area, we have to know that they are aware and safe and prepared," Garcia said.

This includes bringing medications and tools needed to survive, knowing the language used in disaster response, and being mentally prepared.

"You are going into areas and talking to people that have lost everything, and they tell you their story in detail," he added. "You can't help but kind of take that on and feel their pain. It's definitely not for the faint of heart, but it's also important because it means the world to the people you are helping."

To be a disaster responder, emergency teams require that licensed individuals take FEMA's Incident Command System training courses, such as CS-100: Introduction to the Incident Command System; ICS-200: ICS for Single Resources and Initial Action Incidents; IS-700: National Incident Management System, An Introduction; and IS-800: National Response Framework, An Introduction. Additional courses covering an introduction to hazardous materials (IS-5a), livestock in disasters (IS-111), community planning (IS-11.a), and awareness and preparedness (IS-10.a) may also be required. The UF Institute of Food and Agricultural Sciences (IFAS) Center for Public Issues Education offers a free two-and-a-half-hour online Disasters & Mental Health training course.

Veterinarians and students who have taken disaster and emergency response courses offered by veterinary institutions and other organizations and satisfied all core competencies required to respond to disasters can also qualify for the AVMA Veterinary First Responder Certificate Program. In 2022, Texas A&M became the first university to graduate veterinarians with a new certificate from AVMA to assist in

→ A UF faculty member and veterinary student examine a patient with an eye injury in the UF mobile hospital.

Photo courtesy of UF VETS

↑ Canyon, a search and rescue dog who served with Texas A&M Task Force 1 in response to the Smokehouse Creek fire in 2024, takes a break in the VET trailer.

disaster situations.

In California, CVET requires the CVET Basics course, which provides an overview of the team's operations, how the responder fits within the team, general hazardous awareness, and fire-safety courses. "If people want to be more involved in the field, like helping with evacuations or technical animal rescue, we're developing mission-specific training for higher levels of training for those folks," said Ashley Patterson, MPH, DVM, associate director of operations at CVET.

Claudia Sonder, DVM, president of the Napa Community Animal Response Team (CART), says CVET has been an invaluable resource for veterinarians and community volunteers. "They are actually providing training materials for pet owners or CART volunteers so that they are better at assessing an animal and deciding if that animal needs to see a veterinarian and if it is safe to transport," Sonder said.

Giving Back to the Community

Although the work the university teams do in response to disasters is compensated, most of those on the front lines are volunteers.

"I love my clients, and I love my community. The thought of my long-time clients and patients being in harm's way and doing nothing was unacceptable to me," Sonder said. For this long-time volunteer, the ability to be a community leader and to make a difference is gratifying on multiple levels.

"It pays dividends in the recovery after a disaster because people have their animals, and their animals are healthy," she said. "They've just lost everything and don't have to pay a $2,000 vet bill."

The people in the Napa community appreciate Sonder's work, and she says they support her during peacetime and nondisaster times. "They're there filling up our schedule book. So, for me, it's been a no-brainer."

Before heading out there to be a disaster service worker, there may be some apprehension about treating injuries that aren't typically seen daily, like advanced burns.

"Disaster medicine is not very different from field medicine," Sonder says. "It's all the same things: lacerations, eye injuries, lamenesses, colics." In the event of a more advanced case, the patient is taken out of the shelter and referred to a specialist. "Don't be intimidated by the fact that it's a disaster," she said. "You are actually going out there and doing the good work that you do every day."

Photo courtesy of Texas A&M

PODCAST / **STARTING A PODCAST**

Graceful Self-Promotion and Podcasting Tips

A Conversation with Casey Callanan, MBA

INTERVIEW BY KATIE BERLIN, DVM

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Casey Callanan, MBA, is the chief communications officer with Clear Contender, LLC, and has been producing podcasts in the nonprofit sector since 2016. He is also the producer for the AAHA *Central Line* podcast series.

Although it may not come naturally to many of us, there are deep benefits to self-marketing our skills with grace. Furthermore, a podcast can serve as a great vehicle, along with various social media tools, for veterinary professionals to amplify their voices and showcase their expertise.

A podcast, whether self-produced or joined as a guest, becomes a powerful way to catalyze career growth, foster meaningful connections and relationships, and serves as a strong overall tool for professional development. Whether you're a seasoned podcaster or a novice contemplating your first steps, this interview provides valuable insights and encouragement.

Katie Berlin: I was going to say we have a nonveterinary guest, but I feel like you are basically part of the veterinary family at this point. Casey is the guy behind the curtain who is making things happen. And if it weren't for you, there would be no podcast.

Casey Callanan: I feel like a part of the team and family. I love it. I am really honored to be the producer on this show. I'm not a vet med expert, but we can definitely have an intelligent conversation about how those working in vet med can get themselves out there a little bit more by opening up and either joining a podcast as a guest or starting their own. Then we can talk about the value of repurposing clips from your podcast into social media.

KB: I know from my own experience that if you listen to podcasts, you're a pretty dedicated and engaged listener. Quite frequently I feel like they think, what would it be like if I were on a podcast or if I had my own show? And it really isn't a huge leap to doing that. But it can seem really insurmountable.

CC: The number one thing I tend to hear with people that join someone else's podcast is, "oh, that was super easy. I didn't realize that it would just be like a conversation." If you're a guest, or hosting a really good podcast, that's what it should be. It should be just an

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Casey Callanan, MBA

authentic conversation.

But, having the backend piece, where someone's editing it, really helps a lot too. If there's someone editing it and you know that going in as a guest, it just puts you a little bit more at ease so you can say, oh, this isn't live. I don't have to nail it on the first take.

KB: I've noticed as we go on, it gets easier and easier for me to not feel anxious about that. People who really like talking to people, a podcast is just that. It gives you a really good excuse to talk to a lot of interesting people.

CC: I don't know if it's like this in vet med, but it's certainly like this in other fields, where if you go to apply for a job, the first thing that someone does is Google you and check out your public social profiles. They want to see you putting yourself out there as professional. Maybe on Instagram, maybe on LinkedIn, maybe on YouTube.

So, if you're a guest on a podcast, it provides you with a way to have some clips of yourself and what you're all about. Whether we like it or not, social media is a huge reality in this professional environment.

KB: And putting yourself out there publicly also shows that you're able to present yourself in a way that is professional and acceptable to an employer. They don't have to worry about you.

Social media can be a real disaster for some people, if they have stuff on there they wouldn't want an employer to see. It can be really hard to hide that. Podcasting and being on YouTube is the opposite. It makes you really easy to find. It also gives people a window into who you are. And if you're looking to branch into industry or nonprofit work, it is really helpful to see somebody who is a self-starter and who is actually taking it upon themselves to create something.

CC: I want to touch on something that I heard you talk a little bit about in an earlier podcast, that pertains to the question of whether someone in vet med should start their own podcast. And it's about having an abundance mentality. Someone might be thinking, "oh, there's so many podcasts out there. What could I possibly bring to the table?"

The reality is that no one is doing a podcast in your own voice. They're not bringing your unique perspective to the table. Having an abundance mentality means thinking, there's more room for my stuff and for my voice to be out there. I am a huge proponent

of that. And that's why you and I would both encourage anyone listening in vet med or any field to seriously consider starting their own podcasts.

If you are thinking about doing a podcast and you're in vet med, you should come to events and conventions like AAHA Con to meet amazing people. You can build that network of people to bounce ideas off of. I'm a huge, huge proponent of networking, and networking done in a nonsleazy way is the most beautiful thing. That's how you make the most important relationships happen.

KB: I have a friend, Bruce Frankie, he's a practice owner in Michigan, and he has a podcast for his clinic, which is pretty cool. It's a small operation, I think his daughter does the editing.

He basically talks about common medical problems. He also interviews people. He will have experts come in sometimes, but sometimes it's just him. He has little cards that he hands out that have the podcast's QR code. So, if he's talking to somebody about allergies, instead of having to do the 45-minute spiel about all the allergies, he says listen to this episode and just gives them a card.

Is it a huge thing that he's expecting to go viral and make money on? Absolutely not. It's work. He doesn't keep up a lot of episodes, but it serves a great purpose for him and his clients. Podcasts can be just that; they could be anything.

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>
> Casey Callanan, MBA

CC: Definitely. One thing from a technical strategy perspective, if you do start your own podcast, is to have the video out there. Take time to watch some YouTube videos and find out how you do an in-person podcast.

Traditionally, podcasts were always an audio medium. But if you look at the most popular podcasts now, 90–95% of them have a video component. You're going to want it out there on YouTube and you're probably going to want to clip some of the cool highlights from that conversation and put those out on Instagram or whatever platform that you find to be most useful.

CC: One last thing I definitely want to point out is, it might not be in our comfort zone to put ourselves out there. I personally struggle with it, too. I've always been more comfortable flying under the radar, but the reality is you have to build that skillset. You have to be comfortable with being out there, being on video, having conversations, and building up some sort of social media presence. I mean, you don't *have* to, but it helps.

It's an important skillset set to build because there is definitely some real-world carryover. When you spend as much time as you do engaging with people on a podcast, that's really helpful in face-to-face communication.

KB: Yeah. I mean, so much of what we talk about on *Central Line* is about communication. If you're looking to build a network, build a community, I think podcasting is a really great way.

From my own podcast, when I asked people if they wanted to be on it, I had really amazing people say "absolutely." They never asked me, how many people are going to listen? Or what kind of reach do you get? If somebody asks you that, they probably have another agenda.

Mikhail Ognev/iStock via Getty Images Plus

CC: That's a huge piece of it. If you're going to be on someone's show, you wouldn't ask about analytics and metrics.

There's numerous reasons why it's beneficial. It helps with networking. If you are a guest on a podcast or you're hosting one, you do get to meet some amazing people. Just keep in mind that there's so many different ways to use that base podcast. You can use it as social media clips as we talked about. You've used our transcripts from many of these episodes in your publications.

KB: Our guests on the podcast know so much. They are experts in the field. They have stories that they want to tell and they don't mind sharing. That can really form a connection between them and a lot of people who might not otherwise hear those stories. This is just another way to get that connection out there because not everybody listens or watches; some people like to read.

CC: Totally, that's a great way. Having the transcript from every episode of *Central Line* was an important thing to us from the beginning. We want to make sure these conversations are as accessible as possible. We recognize the fact that some people are just speed readers. They can consume content faster by reading it. And some people can consume these conversations fastest by listening to the podcast on double or triple speed while they're on the treadmill or something.

That's just what's cool about podcasts. You want to meet people where they're at with how they want to consume it.

KB: If somebody's listening to (or reading) this episode and have gotten this far, they're probably thinking, yeah, I actually kind of want to do this. What is your recommended first step?

CC: I'm not a DIY person, like around the home. I'm not going to be able to fix much, but from a technical standpoint, I learn essentially everything from YouTube videos. And the information that's already out there on Mr. Google, that is where you want to start. Just start with a search as simple as "how to podcast" and there's so much great simplified video contents out there to do it.

CC: The videos that rise to the top are literally the best ones. Say what you want about the Google algorithm and the YouTube algorithm, yes, it misses the mark often, but when it comes to things like learning how to do a podcast, the videos that come to the top when you search that are going to be where you want to start. That is literally it. Just having the patience to watch those videos and learn how to do it yourself.

I'm happy to talk with anyone in this great community just to answer some questions on what I might be able to help with.

"I'm not a DIY person, like around the home. I'm not going to be able to fix much, but from a technical standpoint, I learn essentially everything from YouTube videos."

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Wellbeing and Mentorship

The *2023 AAHA Mentoring Guidelines* describe the importance of mentorship, and how to make it part of your practice culture. The page below shows some of the wellness struggles brought to light in the 2023 Merck Veterinary Wellbeing Studies, and how mentoring can help.

How can we nurture and retain more veterinary professionals in their chosen field?

- Prioritize stress management for mentor and mentee
- Create a supportive work environment
- Provide mental health coverage and employee assistance programs (EAP
- Have the difficult conversations about finances and how they affect individuals, practices, and pet owners
- Provide living wages for all team members
- Create opportunities for career advancement for more staff members

The state of wellbeing among veterinary staff:

Finances are a major concern

Clinic staff (apart from practice managers) reported lower overall job satisfaction rates than the general US adult population

20%
of clinic staff
reported experiencing serious psychological distress

50%
of staff
reported feeling dissatisfied with their income

25%
of clinic staff
reported needing to work a second job to make ends meet

The state of wellbeing among younger, less experienced veterinarians:

Mentoring can make a huge difference here

- Job satisfaction and wellbeing in veterinarians were reported to be lowest in younger, less experienced veterinarians
- Serious psychological distress was highest in veterinarians aged 34 and younger (17%)
- Veterinarian wellbeing was inversely proportional to their degree of student debt

1. Merck Animal Health Veterinary Team Wellbeing Study II. 2023. www.merck-animal-health-usa.com/offload-downloads/2023-vet-team-wellbeing-presentation
2. Merck Animal Health Veterinary Wellbeing Study IV. 2023. www.merck-animal-health-usa.com/offload-downloads/2023-vet-wellbeing-presentation

This reference page is part of the AAHA Mentoring Toolkit, *which was made possible with support from Merck Animal Health.*

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