



INSIDE

- Research: Needed but Complicated
- Clinical Case: Why is My Dog Wobbly?
- Definitions
- The Different States of Legal Marijuana
- Every Practice Must Have a Drug Policy
- Viewpoints

Marijuana: From People to Pets

Suzanne Smither

Fort Lauderdale, Florida

Marijuana, derived from the cannabis plant, has long been used in human medicine, but its effects on companion animals have only been noted since the mid-to-late 1900s.

When medical marijuana first became legal for human use in California in 1996,¹ it was only a matter of time before human patients, pleased with the results of therapeutic cannabis, began giving it to pets with similar conditions.



A 2012 study evaluating 125 client-owned dogs in Colorado presented for known or suspected marijuana toxicosis² found a significant correlation between the number of people registered for medical marijuana licenses (which had increased 146-fold in the previous 5 years) and marijuana toxicosis cases in animals (which had increased 4-fold), although the study reported only 2 deaths from the “ingestion of baked goods made with medical grade tetrahydrocannabinol butter.”

Marijuana & Hemp

The term *Cannabis sativa*—the genus and species that comprise subspecies of both marijuana and hemp—is often incorrectly used, so distinguishing between the 2 plants, as well as an intermediate variety, can be difficult. (See **Definitions**, page 32.) Each plant has many chemical constituents known as cannabinoids, including delta-9-tetrahydrocannabinol (THC), which is psychoactive, and cannabidiol (CBD), which is not.³

The cannabinoid THC is the most recognized because it is the principal psychoactive component of the plant, but it is one of many, according to the US Pharmacopeia: “The potential for therapeutic activity of cannabis is not limited to cannabinoids; emerging research suggests that other minor

compounds ... also play a role in the complex pharmacology of this botanical.”³

History

The roots of medicinal cannabis have been entwined with human history for millennia, perhaps starting with

the Chinese emperor Fu Hsi around 2900 BC.⁴ (See **Time Line**.)

Its use next can be traced from the 9th- and 10th-century Arab world, to Europe and Asia in the Middle Ages,

Continued on page 38

Research: Needed but Complicated

Researchers exploring the potential benefits and risks of cannabis for pets must navigate a legal labyrinth.

“The biggest single issue in the use of marijuana in pets is the legal issue—the fact that it’s still a Schedule I drug,”¹ said Robert Silver, DVM, MS, CVA. (See **Definitions**, page 32.)

“States are legalizing the use of medical and recreational marijuana. Federal efforts have limited funding for the use of enforcing medical marijuana laws (Congress) or use prosecutorial discretion to limit the enforcement of marijuana laws (Department of Justice). However, those moves do not resolve the serious disconnects in the law that extend far beyond a medical marijuana patient fearing prosecution.

“Both CBD and THC products can have healthful benefits but we don’t know the therapeutic dose. ... A pharmaceutical company or large pet food company with a lot of financial resources needs to get these products on the market,” said Tina Wismer, DVM, DABVT, DABT, but to do this they must apply to the FDA.

If marijuana is declassified as a Schedule I drug on the human side, as some politicians are pushing for, Wismer said, it will become easier to do research. In January 2015, the American Academy of Pediatrics recommended that the DEA reclassify marijuana so more research can be conducted in the hopes of finding benefits for children.²

Bills aiming to reform marijuana laws and allow further research are pending in both houses of Congress. The Senate bill also reclassifies marijuana from Schedule I to Schedule II and excludes CBD from the definition of marijuana.^{3,4}

But until the laws change, Wismer said, “We are walking a tightrope.”

See references on page 53

—Suzanne Smither

15th CENTURY BC

One source¹ that dates the earliest written reference to medical marijuana to China also cited:

- Old Testament references from the Book of Exodus to holy cannabis oil around 1450 BC, as well as New Testament references to Jesus using chrism, a holy anointing oil thought to have been made from cannabis
- Ancient Egyptian prescriptions using cannabis to treat glaucoma and inflammation
- Ancient Indians using cannabis as an anesthetic and a cure for leprosy
- Ancient Greeks using cannabis as a remedy for earache, edema, and inflammation
- Roman scientist and historian Pliny the Elder writing in 79 AD about using cannabis roots boiled in water to “ease cramped joints, gout too and similar violent pain”

Why is My Dog Wobbly?

Tina Wismer, DVM, DABVT, DABT
ASPCA
Urbana, Illinois

TEACHING TARGET

AS MARIJUANA USE EXPANDS AMONG HUMANS, MARIJUANA TOXICITY IS AFFECTING MORE PETS. FOR PATIENTS, LEARN HOW TO RECOGNIZE AND TREAT A CASE; FOR TEAM MEMBERS, LEARN HOW TO DEVELOP A DRUG POLICY AND INSTITUTE DRUG TESTING. THE ENTIRE TEAM MUST KNOW THE LAWS AND DEFINITIONS RELATING TO MARIJUANA.

Clinical Case Summary

Lucy, a 27 lb, 4-year-old spayed beagle, presented with acute-onset lethargy, ataxia, and urinary incontinence. She had vomited once earlier that day, but that was not unusual because, her owners said, she “eats everything.” On physical examination, Lucy was mildly disoriented and hyper-reactive to stimuli (ie, she startled easily, overreacted to hand movements) but was dull when unstimulated and fell asleep. The remainder of her physical examination was within normal limits.





Because Lucy had been unsupervised for several hours before onset of clinical signs, and given her abnormal neurologic status, her owners were asked whether any neurologic toxins (eg, ethanol, ethylene glycol, ivermectin, marijuana, medications [antidepressants, benzodiazepines, barbiturates, opioids, phenothiazines]) were present in the home. The clients told the veterinary team Lucy may have had access to medical marijuana.

Overview

Humans use marijuana (*Cannabis sativa*) medicinally as an antiemetic and appetite stimulant, and for glaucoma to decrease intraocular pressure, as well as recreationally.¹ However, even though the plant has been legalized in some states for medicinal or recreational use, marijuana is still a Schedule I controlled substance under the US Controlled Substances Act.² (See **Definitions**.)

Marijuana's toxicity mostly comes from a resin called delta-9-tetrahydrocannabinol (THC), but the plant also contains other cannabinoids and cannabins.

Ingesting marijuana plant material intended for human consumption via inhalation used to be the most common pet exposure, but now that

marijuana has been legalized, it is increasingly available in various forms, including dried plant leaves, edibles (eg, cookies, brownies), butters, and concentrates (eg, oils, waxes). Many edibles include chocolate, which can lead to concurrent methylxanthine toxicosis. Selective breeding of marijuana plants has favored increased THC concentrations—the University of Mississippi Potency Monitoring Project reported that THC levels have more than

doubled over the last 25 years.³ THC concentrations vary: for example, plant materials contain 1% to 8%, extracts contain 28%, and hash oil contains up to 50% THC.⁴

The most common clinical signs following marijuana ingestion are lethargy, depression, ataxia, and urinary incontinence—the latter is unique to dogs and caused by THC metabolites that are not produced during human metabolism. Approx-

Definitions

- **Cannabidiol (CBD):** A crystalline diphenol $C_{21}H_{28}(OH)_2$ obtained from the hemp plant and is nonpsychoactive.^{1,2}
- **Cannabinoid:** Any of the various chemical constituents (such as THC) of cannabis or marijuana.¹
- **Cannabis:** 1) A genus of annual herbs (family Moraceae) that have leaves with 3 to 7 elongate leaflets and pistillate flowers in spikes along the leafy erect stems and that include hemp (*Cannabis sativa*); 2) any of the preparations (eg, marijuana, hashish) or chemicals (eg, THC) that are derived from hemp and are psychoactive.¹
- **Hemp:** A tall, widely cultivated Asian herb of the genus *Cannabis* (*C sativa*) with strong, woody fiber used especially for cordage, as well as a source of psychoactive drugs such as marijuana or hashish.¹
- **Marijuana:** The dried leaves and flowering tops of the pistillate hemp plant that yield THC and are typically smoked for their intoxicating effect.¹
- **Schedule I Controlled Substances:** Substances defined by the US Department of Justice Drug Enforcement Administration as those having “no currently accepted medical use in the United States, a lack of accepted safety for use under medical supervision, and a high potential for abuse.”³
- **Tetrahydrocannabinol (THC):** The chemical responsible for most of marijuana's psychoactive effects. THC, one of many compounds found in the resin secreted by the plant's glands, attaches to receptors in certain areas of the brain, activates them, and affects a person's memory, pleasure, movements, thinking, concentration, coordination, and sensory and time perception.²

See references on page 53

1611

Marijuana plants, also known as hemp, arrive in America with early settlers of Jamestown, Virginia.¹

1840

Marijuana becomes a mainstream medicine in the West in the 1840s when French psychiatrist Jacques-Joseph Moreau discovers it “suppressed headaches, increased appetites, and aided people to sleep.”¹

Whom do you contact if a pet has suspected marijuana toxicosis?

- ASPCA Animal Poison Control Center 24-hour hotline: 1-888-426-4435 (aspcapro.org/animal-poison-control-center)
- Pet Poison Helpline: 1-855-764-7661 (petpoisonhelpline.com)
- Your local veterinarian

imately 25% of patients may display hyperexcitability rather than dull mentation. Other common signs include disorientation, hyperesthesia, tremors, bradycardia, hypothermia, and mydriasis. Patients ingesting high THC doses in concentrates or butter products may display more severe neurologic and cardiovascular signs, including coma and hypotension. Clinical signs may be seen 30 minutes following ingestion and last up to 72 hours.

Diagnosis is typically made based on history of possible exposure and clinical signs. A human urine drug test can be used, but it has not been validated in dogs. False negative results are common in dogs, which produce different metabolites than humans.⁵ When evaluating these patients, diagnostic tests are essen-

tial to rule out ethylene glycol toxicosis because antifreeze poisoning in its initial stages can appear clinically similar to marijuana toxicity. Failure to diagnose ethylene glycol toxicosis routinely leads to fatal acute kidney injury.

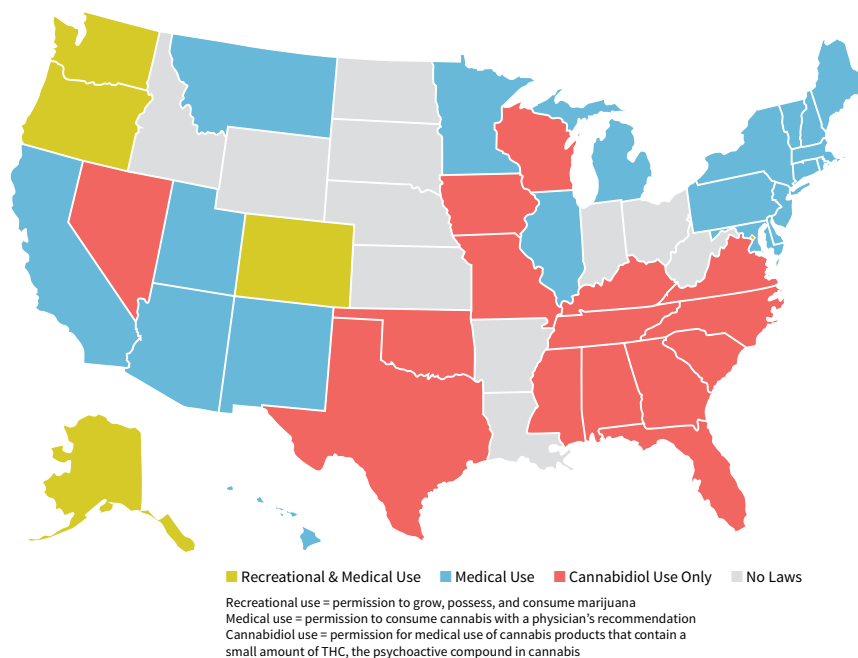
Treatment

Marijuana toxicosis is rarely fatal because the drug has a wide safety margin, but patients' cardiovascular

and neurologic status, respiratory function, and body temperature should be closely monitored. Only 2 deaths have been reported to date.⁶

Marijuana is an antiemetic so inducing emesis likely will be unsuccessful but may be attempted using apomorphine within 30 minutes of oral exposure if the animal is asymptomatic. However, apomorphine does not always work because

The Different States of Legal Marijuana



See reference on page 53



THC affects the vomiting center; hydrogen peroxide, a local irritant, may work best. Also, THC is highly lipophilic and enterohepatically recirculated; therefore, repeated activated charcoal dosing is sometimes used to decrease the half-life of THC in the body⁷ but should be reserved only for life-threatening situations.

Patients with few symptoms likely will recover with minimal supportive care, but intravenous lipid emulsion should be used in more symptomatic patients to hasten THC elimination, although recovery may be variable. The dosing regime is a 1.5 ml/kg initial bolus over 20 to 30 minutes followed by a CRI of 0.25 ml/kg/min for 30 to 60 minutes.⁸ If the response is inadequate, the 1-hour CRI can be repeated once in 4 hours provided there is no lipemia.

Intravenous fluid administration can be used to correct hypotension or dehydration as warranted. Benzodiazepines or low-dose acepromazine are appropriate sedatives for agitated patients if hypotension is absent. Patients benefit from maintaining normothermia, minimizing sensory stimuli, and providing recumbent nursing care if nonambulatory.

Recovery may take 24 hours to several days, depending on the amount ingested.⁷

Outcome

Lucy was prescribed IV fluids and monitored overnight for declining neurologic status. She experienced mild hypotension that a fluid bolus easily reversed and was discharged the following afternoon with full resolution of clinical signs.

Recovery from marijuana toxicosis may take 24 hours to several days, depending on the amount ingested.

Marijuana toxicosis is being seen more frequently in veterinary medicine,⁶ with more than 181 000* marijuana-related calls to the ASPCA Animal Poison Control Center in 2015. Whether this is due to an actual increase in cases, owners' changing attitudes making them more willing to seek veterinary care, or owners seeking medical attention because their pets are ingesting more potent forms of marijuana is not known.

Questions for a Helpful History

An accurate history is most important when a patient is suspected of marijuana toxicity. Ask questions like the following:

- *Is it possible your pet had access to any neurologic toxins such as ... while you were gone?*
- *Can you describe the clinical signs that made you seek veterinary help?*
- *Could any visitors have left marijuana or other medications in your home?*
- *Do you have any anxiety medications or antidepressants in your home?*
- *Do you have any baked goods or other food items that may contain marijuana?*

Conclusion

Obtaining an accurate history may be difficult when a patient is suspected of illicit drug exposure. (See **Questions for a Helpful History**.) However, it also is important, so use direct, nonthreatening questions when talking to clients. ■

*From the author, the ASPCA Animal Poison Control Center medical director.

See references on page 53

1850

Marijuana is added to the United States Pharmacopeia, listed as a “treatment for numerous afflictions, including neuralgia, tetanus, typhus, cholera, rabies, dysentery, alcoholism, opiate addiction, anthrax, leprosy, incontinence, gout, convulsive disorders, tonsillitis, insanity, excessive menstrual bleeding, and uterine bleeding, among others.”¹

1890

After the Civil War, marijuana becomes a popular ingredient in many medical products and is sold to the public in pharmacies. George Washington grew marijuana and Thomas Jefferson grew hemp.¹

Every Practice Must Have a Drug Policy

Heather Prendergast, RVT, CVPM

Synergie

Las Cruces, New Mexico

As veterinarians face the prospect of using cannabis or cannabis components in their patient treatment protocols, practice managers need to have a plan in place to deal with team member use of the substance.

Some states have legalized the Class 1 Controlled Substance, some allow its use for medical purposes only, and others still have not made the drug legal. However, every practice, no matter its location or number of team members, should have a written drug and alcohol policy. (See **Resource**, page 37.)

Safety is Key

Every veterinary employer must

provide a safe work environment for team members, clients, and patients, and a policy addressing drug and alcohol impairment will help ensure the workplace is safe. For example, if a team member is taking a prescribed controlled substance but cannot

perform his or her job safely and efficiently, the practice is protected so long as a drug policy is in place. (See **Drug Policy Example**.)

Visit veterinaryteambrief.com to download the drug policy example.

Drug Policy Example

Following is an example of a drug policy that includes cannabis that is appropriate for a veterinary practice:

VTB Veterinary Practice has vital interests in ensuring a safe, healthy, efficient working environment for every team member, our clients, and our patients. The use or possession of alcohol or other intoxicating drugs in the practice presents a danger to all; therefore, we have established the following **Intoxicants in the Workplace** policy as a condition of hiring and employment with the practice.

Controlled substances, because of their psychoactive effects, are defined by federal and state governments to describe 5 drug levels, with Schedule I drugs (eg, heroin, LSD, cannabis) the most restrictive and illegal to possess or use and schedule V drugs (eg, cough syrup, sleep aids) the least restrictive and usually available without prescription.

Team members are prohibited from reporting to work or working while under the influence of alcohol and/or other drugs that adversely affect their ability to safely perform their duties.

The practice understands the difference between substance use and substance abuse and that use may not mean abuse. Team members are free to make lifestyle choices when not in the practice or working outside but representing the practice; however, their choices must not interfere with job performance.

Team members are prohibited from reporting for duty or remaining on duty under the influence of alcohol or any other intoxicants. They are also prohibited from consuming alcohol or other intoxicants during working hours, including meal and break periods.

Failure to comply with the foregoing substance abuse policy may result in disciplinary action, up to and including termination of employment.

For more information, please speak with a member of the management team.²



Different States

Most importantly, be familiar with the varying state laws. According to the Drug Enforcement Agency, marijuana is classified as a Class 1 Controlled Substance and is illegal in all states. However, some states have passed laws that contradict the federal classification and legalize the substance for medical and/or recreational use. A clearly defined practice drug policy is imperative.

In states where marijuana is legalized, the practice policy should state that alcohol and marijuana use will be treated the same way: It is unacceptable to come to work under the influence of either. Alcohol is also legal, but it is illegal to drive under the influence.

In states where medical marijuana use is approved, a team member does not have automatic permission to be actively under the influence at work. However, accommodations under the Americans with Disabilities Act may be necessary depending on the nature of the job and the safety required.¹

Also, the federal Occupational Safety and Health Administration is likely to step in if a marijuana incident occurs in the practice, and the federal illegal status of the drug will likely trump state law.² (See **The Different States of Legal Marijuana**, page 33.)

Implementing a Policy

A drug testing policy should be in writing and include the testing reason (eg, preemployment, random, postincident) and the consequences of a positive test. Be sure to:

- Fully explain the policy to the team.
- Apply the policy consistently to all team members to avoid discrimination charges.
- Document all testing, including the selection method. (See **Drug Testing Recommendations**.)

If the practice chooses to test team members randomly, attorneys suggest limiting testing to situations with cause³ (ie, when the manager has reasonable suspicion of drug use), or when the team member has been involved in a workplace accident (eg, tripping, slipping, falling; back injury from carrying heavy patients or products; injury from a patient [dog or cat bite, horse or cow kick]).

Be sure to document the facts—not gossip or rumors—supporting the cause if the practice does decide to test a team member for cause.

If a Drug Free Workplace Policy is implemented, give team members 30 days' notice and then test every member to avoid discrimination claims. If management suddenly tests 1 team member without a drug

Drug Testing Recommendations

- Using a state laboratory that employs a Medical Records Officer (MRO) is the best way to perform any drug testing for the practice, in the author's opinion. An MRO can interpret the results, compare positive results with a team member's current prescriptions, and verify the prescription as the reason the team member tested positive.
- Testing saliva or blood can estimate recent cannabis use by detecting the presence of THC rather than the inert cannabinoid metabolites detected in a urine sample.⁴ (This is important in states like Colorado where recreational use is legal and a team member who used the drug over the weekend would show up positive on a urine drug test the following week but would not be under the influence.)

testing policy in place, the practice could potentially be sued.

Conclusion

Every veterinary practice must institute a drug and alcohol policy and test team members appropriately and be prepared to discipline or terminate those who screen positive for current use of illegal drugs.¹

See references on page 53

1930 to 1950

Research links an increase in violence and crime to marijuana; 29 states outlaw possession; strong sentencing laws—2 to 10 years and up to \$20000 in fines—are enforced.²

1942

Marijuana is removed from the United States Pharmacopeia, losing what the American Medical Association called its “remaining mantle of therapeutic legitimacy.”¹

1970

The Controlled Substances Act classifies “marijuana (cannabis)” as a Schedule I drug with “no accepted medical use.”³

See references on page 53

Resource

- Drug-Free Workplace Advisor. US Department of Labor. <http://webapps.dol.gov/elaws/asp/drugfree/drugs/screen1.asp>.

TEAM TAKEAWAYS:



Veterinarians: When marijuana toxicosis is suspected, run diagnostic tests to rule out antifreeze poisoning, which can appear clinically similar in its initial stages.

Management Team: Develop a written drug testing policy according to your state's marijuana laws that includes the testing method and the consequences of a positive test. Make sure every team member is familiar with the policy.

Nursing Team: Obtaining an accurate history is key for a patient suspected of marijuana toxicity, so ask clients specific, non-threatening questions to get correct information.

Client Care Team: Be prepared to answer questions and guide clients to bring their pets in for examination if marijuana exposure is a possibility.

Viewpoints

Suzanne Smither

Fort Lauderdale, Florida

Therapeutic use of cannabis in pets is a hot topic.
Here are some veterinarians' views:

ROBERT SILVER, DVM, MS, CVA

“There is a huge body of evidence from well-performed research studies showing ... the medicinal value of the whole marijuana plant.”

NARDA ROBINSON, DVM, DO, MS, DABMA, FAAMA

“THC and cannabis in general have anti-inflammatory effects,” she said. According to a survey she conducted, possible therapeutic uses of cannabis also include easing pain, alleviating separation anxiety and seizures, and stimulating the appetites of cancer patients undergoing chemotherapy.

JUSTINE LEE, DVM, DACVECC, DABT

“I don't underestimate the therapeutic effects of marijuana. We as veterinarians need to be very cautious because we don't know the toxic dose; we don't know the therapeutic dose; and we don't know the variable amounts of cannabinoids within different products, both hemp and marijuana.”

TINA WISMER, DVM, DABVT, DABT

“When animals eat marijuana, they are going to be symptomatic for a much longer time than humans ... 24 to 72 hours. It's all about the dose.”

“If people have (cannabis) products in their homes, they need to make sure to keep them away from children and pets because they can't control the dosage.”



1996

California passes Proposition 215 and becomes the first state to allow the sale and medical use of marijuana.⁴

2016

As of May, 24 states and the District of Columbia have legalized marijuana for medical use and 4 states and the District of Columbia have legalized marijuana for recreational use.⁵

Resources

- Price M. What is hemp? Understanding the differences between hemp and cannabis. Medical Jane. <http://www.medicaljane.com/2015/01/14/the-differences-between-hemp-and-cannabis>. Published January 2015.
- FDA and marijuana: Questions and answers. US Food and Drug Administration. <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm421168.htm#pets>. Updated June 2015.
- Lee J. Pot is not for pets! Vetgirlontherun.com. <http://vetgirlontherun.com/wp-content/uploads/2014/08/Pot-is-not-for-pets-AVMA-2014.pdf>. Published August 2014.
- Nolen RS. Marijuana toxicosis claims yield insights. *JAVMANews*. <https://www.avma.org/News/JAVMANews/Pages/150701k.aspx?PF=1>. Published June 2015.
- State Industrial Hemp Statutes. National Conference of State Legislatures. <http://www.ncsl.org/research/agriculture-and-rural-development/state-industrial-hemp-statutes.aspx>. Published March 2016.

to America, where it arrived with early settlers of Jamestown, Virginia, in 1611.⁴

Marijuana joined mainstream medicine in the West in the 1840s, when French psychiatrist Jacques-Joseph Moreau discovered it “suppressed headaches, increased appetites, and aided people to sleep.”⁴

In America, marijuana was added to the US Pharmacopeia in 1850.⁴

Legal Restrictions

Restrictions on cannabis use began in

the early 20th century, with prohibitionists similar to those who later outlawed alcohol. Massachusetts made marijuana illegal in 1911; 10 other states followed suit from 1915 through 1927. When marijuana was removed from the US Pharmacopeia in 1942, it lost what the American Medical Association called its “remaining mantle of therapeutic legitimacy.”⁴ In 1970, the Controlled Substances Act classified “marijuana (cannabis)” as a drug with “no accepted medical use.” Still today it is listed in Schedule I along with heroin, peyote, LSD, and Ecstasy.⁵

Even veterinarians enthusiastic about the benefits they believe these products provide their patients are cautious when discussing them with clients because of legal risks and undetermined therapeutic and toxic dosages. Federal law prohibits veterinarians from prescribing marijuana, even in the 24 states and the District of Columbia where it is currently legal for human medicinal use.⁶ Hemp-derived supplements are legally available from pet product retailers but are not FDA-regulated.

Conclusion

Clearly, more research is needed, but obstacles stand in the way. (See **Research: Needed but Complicated**, page 30). Veterinary professionals need to know what is legal and illegal in their state and make the legal status clear to clients when discussing marijuana’s possible benefits for patients. ■

“We are walking a tightrope.”

—Tina Wismer

See references on page 53



FROM PEOPLE TO PETS / CONTINUED FROM PAGE 38

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5. Controlled substance schedules. US Department of Justice. <http://www.deadiversion.usdoj.gov/schedules>. Accessed April 2016.
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