

# Fired Up About Lasers



“I believe that laser therapy is becoming the standard of care.”

—SARAH WOOTEN, DVM

Surgical and therapy lasers can be a worthwhile investment for veterinary practices

by Jen Reeder

**The benefits of lasers to veterinary medicine**—both surgical and therapeutic—can sound like the stuff of science fiction: Reduced bleeding. An alternative to amputation. Help for degenerative myelopathy. A treatment for the dreaded lick granuloma. A more humane way to declaw a cat. But it's reality—incorporating lasers into your practice can lead to dramatic results for your patients, as well as your bottom line.

However, lasers represent a significant investment, as they cost upwards of \$25,000. So it's important to research whether introducing lasers to your animal hospital is the right call—and if so, which kind.

For instance, some experts recommend first investing in a surgical, or “cutting,” laser because the return on investment can be greater. There are two types of surgical lasers: diode and carbon dioxide (CO<sub>2</sub>). Diode lasers produce a wavelength of light of 805–980 nanometers (nm) and CO<sub>2</sub> lasers have a wavelength of 10,600 nm.

John C. Godbold Jr., DVM, owner of Stonehaven Veterinary Consulting in Jackson, Tenn., purchased his



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first CO<sub>2</sub> surgical laser in 1999 and recommends them because the wavelength is highly absorbed by water. This means that when the beam of light is directed at a patient’s tissue, it instantly heats the water in the cells and essentially vaporizes it.

“With the CO<sub>2</sub> laser, because we’re working with tissue that has a very high water concentration, we can have a very high degree of control about our depth of cut,” Godbold said. “We can remove layers of tissue as thin as 1/10 of a millimeter, which is 100 microns. Obviously, we can make much deeper cuts into tissue, but we have to remember it’s control over depth.”

Conversely, he said there is less control with a diode laser because its wavelengths have significantly less absorption of water and a higher absorption of pigments like melanin.

“There are some surgical diode lasers that I know colleagues use and use them successfully, but in general for soft tissue surgery, the CO<sub>2</sub> laser is the better option.”

Additionally, he said the more popular delivery system for a CO<sub>2</sub> laser is the flexible hollow wave guide, which offers a high degree of precision because the laser’s hand piece is held by the surgeon an average of 1–3 millimeters from the tissue. The alternative is the articulated arm

delivery system, with which the hand piece is held an inch from the tissue.

“I’m going to go out on a limb and say I do not think CO<sub>2</sub> lasers would be as predominantly used in veterinary medicine as they are had the flexible hollow wave guide delivery system not been developed,” Godbold said.

Daniel Stobie, DVM, MS, DACVS, chief of staff and founder of AAHA-accredited NorthStar VETS in Robbinsville, N.J., which was AAHA’s 2013 Referral Practice of the Year, said his hospital has several different lasers, including a laser used by the ophthalmologist for eye surgeries, a therapy laser for the rehabilitation department, and a CO<sub>2</sub> surgical laser from Cutting Edge that he purchased in 2000 for approximately \$36,000.

He said the surgical laser creates less swelling and bleeding in surgeries, which is particularly helpful for soft palate resections, and has greatly reduced the morbidity associated with the surgery. It’s also made it easy to “zap” polyps in cats’ ears, turning it from major surgery into an outpatient procedure.

Lasers have also radically changed some interventional procedures by allowing NorthStar VETS surgeons to use the laser in tandem with a scope to avoid surgery, such as removing polyps or correcting incontinence issues stemming from ectopic ureters.

“We use the laser through a scope to make a new opening into the bladder, whereas before we’d have to do surgery on those pets,” Stobbie said. “It’s very precise because the magnification with the scopes is better than what you can see with the naked eye,

and the lasers have a light on them that shows exactly where they're going to fire. So it's the pinpoint accuracy of where your laser beam is going. And on all of the devices, you can adjust the strength of the laser, so you can make it from very weak to very strong just by using the settings on the laser."

He added that a combination of surgical lasers, medication, and laser therapy has resolved lick granulomas—"the bane of every veterinarian's existence"—in dogs and cats.

Still, while lasers have become invaluable for Stobbie's animal hospital, it's important to note it is a 33,000-square-foot facility with about 40 veterinarians on staff and 170 employees that operates 24 hours a day.

Stobbie noted, "They're great tools and we love having them, but they're not cheap. You want to make sure you have the caseload to support their

use. Do your homework before you buy one. Attend a seminar and get training and make sure that it's right for your practice."

Jamie Bobulsky, DVM, medical director at AAHA-accredited Animal Care Unlimited in Columbus, Ohio, said buying a Luxar Nova Pulse CO<sub>2</sub> surgical laser in 2000 and a Companion (LiteCure) therapy laser in 2010 were good investments for her practice. She uses the surgical laser for almost any soft tissue procedure, including spays, neuters, mass removals, and the occasional declaw because it seals off vessels while cutting through tissue.

Bobulsky said that by minimizing bleeding, lasers allow better visibility for the surgeon. This means that surgeries can be completed much more quickly, "saving the team time and the animal from longer anesthesia." She said laser use is included on surgical estimates, with an explanation that "it clots while it cuts."

Both the surgical and therapy lasers are advertised on the practice's website. Bobulsky noted, "We have attracted new clients to our practice just by virtue of having this technology. Although nowadays, it seems that more and more clients expect you to have this technology!"

She said the surgical laser paid for itself within 2 years, though the therapy laser took a bit longer. She noted equipment repairs can be expensive without a maintenance agreement. She also pointed out that it's necessary to have lots of practice to become "quick" with the surgical laser.

"Charge appropriately, and find a way to practice before using this technology on live patients," she advised. "New associates need CE [continuing education] and hands-on with both types of laser."

## How to Choose a Therapy Laser

Ron Riegel, DVM, co-founder of AIMLA, said there are over a dozen companies offering therapy lasers, so it's important to take several things into consideration when choosing the right one for your practice:

1. **Power.** "The most important thing to consider is power. The more power you have, the more versatile the laser is. You can always turn a higher-powered laser down. You cannot turn a low-powered laser up."
2. **Wavelength.** "The higher the wavelength, the deeper you'll have penetration into the dermis. Make sure the wavelength is within the therapeutic window of 630–1,100 nanometers."
3. **Warranty.** "Make sure the hand piece and fiber optic cable are covered. These are the weakest links of any therapy laser—sometimes warranties are only 90 or 120 days for these pieces. So how they are protected is important. Really they should have a bumper-to-bumper warranty for as long as possible, because things break when you're in practice."
4. **Training.** "Obtain the best training possible and make sure that's included in the purchase price of the laser."
5. **Customer support.** "Is there a veterinarian on the staff? If you have a question, who are you going to get—the guy who's in charge of sales? That's like calling a car salesman and asking about a problem with the engine."
6. **Marketing.** "Do they have client education materials available? Do they have brochures? Videos? Something to get your clients informed and excited? Will they help you market your services?"

## Therapeutic lasers

The use of therapeutic lasers has become increasingly widespread in the past 5 years, thanks to technological advances and the dramatic increase in the number of papers published about the modality's efficacy. Therapy lasers, also called "cold lasers" or "low-level laser therapy" lasers, are typically diode lasers with wavelengths ranging from 630–1,100 nm. Instead of cutting, therapy lasers start a biochemical cascade of events

inside the cells called "photobiomodulation," which basically causes a cell to increase its metabolic rate, according to Ron Riegel, DVM, co-founder of the American Institute of Medical Laser Applications (AIMLA).

"When explaining how a laser works to a client, you're not going to refer to the biochemical mechanisms—they're going to look at you like you've got four heads," he said with a laugh. "I know a veterinarian who made it easy

for the client to understand: 'It puts the cells into hyperdrive.' She figures everyone's seen Star Wars."

Riegel, who bought his first laser in 1979, said he feels the lack of consistent clinical results for therapy laser use in the 1980s and 1990s was because "we were way under-dosing our patients."

"We only had ½ watt lasers and we knew so little about dosing. We were told to treat large areas for only 10 minutes, which we know now is an extremely low dose."

He said dosages have been rising in the last few years; at a recent meeting of the American Society for Lasers in Medicine and Surgery, the standard dosage used in almost all of the papers presented was 8 joules per square centimeter or higher.

"All therapy lasers work. There's a ton of research now," Riegel said. "But there are only three things a therapy laser does: it relieves pain; it modulates the inflammatory cycle; and it increases circulation. Therefore, there is an acceleration of the tissues of the animal to heal. That's what it does."

He said software on many therapy lasers has been updated to ask questions to help users calibrate the proper dosage for each animal, such as the color of the skin, weight, hair coat length, area to be treated, and medical issue. He said protective eyewear, both for humans and the animal, is important for safety and to comply with Occupational Safety and Health Administration (OSHA) standards.

Such eyewear also provides a fringe benefit, Riegel noted: "There's



## See Lasers in Action



### Videos courtesy of Big Creek Pet Hospital:

- "Veterinarian in Cleveland, Ohio, Helps Dogs Feel & Walk Better With Technology," [youtube.com/watch?v=Bm4aac4PxBc](https://youtube.com/watch?v=Bm4aac4PxBc)
- "Laser Therapy: Angel's Story," [youtube.com/watch?v=okfYF8zVGmo](https://youtube.com/watch?v=okfYF8zVGmo)

probably no bigger marketing tool than that, because people love to take their dog or cat's picture in goggles and put it on Facebook."

Deborah Fegan, DVM, owner of Big Creek Pet Hospital in Cleveland and Olmstead, Ohio, said she bought a surgical diode laser in 1995 that lasted until 2014. When looking to replace it, she decided to buy a therapeutic laser with a surgical add-on from Companion (the model CTS) to start offering laser therapy as well as laser surgery to clients.

Adding therapy laser treatments turned out to be a "gold mine," she said. "We lease it for about \$450 a month. We schedule between 3–6 therapeutic appointments a day. I make \$2,600 a month on the laser

appointments. If I just count the lease, I make five times return on investment. If I plug in the labor time (and I have that staff anyway) it's a little over half—that's a no brainer. That makes you a lot of money."

Fegan's practice offers laser therapy packages to ensure clients continue to bring their pets in. The first month of unlimited laser therapy on two pain sites is \$260 versus individual sessions for \$24. Packages for subsequent months, when the animal will need less frequent treatment, are reduced to \$140.

"It looks like we lose money, but really we don't because it's still generating quite a bit of profit for us, and the animals are getting their care and the people are committed," Fegan said.

"They come in and they do it, and that's the real key to making this thing work: to get them in. We're willing to sacrifice some of that single-treatment profit to get the results."

She said the results—such as seeing animals dragging their legs before they start laser therapy, and after a month of treatment "bounce in happy to see you and walking and enjoying life again"—have made her staff "believers." She said several employees are trained to do the therapy, and an assistant (not a tech) primarily does the work because the learning curve is so short.

Big Creek uses an infrared camera to take color-coded photos to pinpoint affected areas—while a pet might have arthritis in its right hip, it

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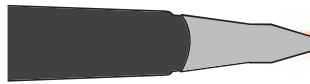
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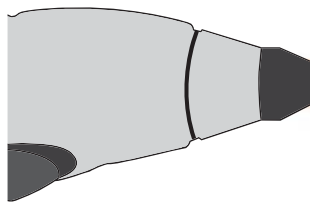
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# Laser Comparison



**Surgical CO<sub>2</sub>**  
CLASS 4  
**10,600 nm**

Used in surgery (e.g. polyp removal, spay/neuter, declaw, interventional radiology).  
Flexible hollow wave guide delivery system offers more control.



**Surgical Diode**  
CLASS 4  
**805-980 nm**

Used for cutting in surgery; some also work as therapy lasers.  
Less absorption of water; higher absorption of pigments due to lower wavelength.



**Therapy (LLLT)**  
CLASS 3 or 4  
**630-1,100 nm**

Used to treat chronic pain (e.g. arthritis, orthopedic issues).  
Patient and attendants need protective eyewear in session.

might also have pain on the left side because of overcompensation—and to show before and after photos to clients.

She said laser therapy is useful for post-ops, post-dentals, ear infections, and arthritis, as well as for less traditional applications, such as soothing pancreatitis pain or even improving mobility in patients with degenerative myelopathy.

“There’s never been anything we could do to help those dogs. You’re

not going to stop that condition—eventually we’re going to lose that battle—but we can restore quality of life to where they are moving more confidently and doing more things for a much longer period of time.”

Elaine Kern, veterinary technician and office manager at AAHA-accredited Ayers Animal Hospital in Huntington, W.Va., said purchasing a therapy laser was “the best investment we have made.” The laser cost \$27,000 and paid for itself within a year, with a \$4,000 profit.

Now all of the practice’s technicians are trained to perform laser therapy sessions, which take place three to four times a day.

“Owners don’t want their pets to be in pain, and laser therapy is a great option for many to ease the pain quickly compared to pain medicine given orally,” Kern said. “We just can’t say enough about how much we love to see our patients improve in healing using laser therapy.”

So to encourage clients to get

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—RON RIEGEL, DVM

onboard with regular laser therapy appointments, Ayers’ staff show before and after photos and videos of patients in the hospital as well as on Facebook. They also market the service on the practice’s website, distribute laser brochures, and hang posters on the clinic’s walls.

Sarah Wooten, DVM, of Sheep Draw Veterinary Hospital in Greeley, Colo., said the hospital has two therapy lasers that have been “revolutionary” in helping improve patients’ quality of life, particularly for animals with chronic arthritis or other orthopedic disease. And the animals enjoy the treatment, which provides a warming sensation—“many cats start to purr, and many dogs become relaxed and some even fall asleep,” she said.

They’ve seen dramatic success stories for patients like Zeus, a 2-year-old Husky mix who sustained nerve damage in a hind leg after being hit

by a car. Zeus was referred to Sheep Draw for amputation of the limb, but after employees discussed laser therapy as an alternative and showed the owner photos of a similar case in the Companion manual, Zeus started laser therapy treatments instead.

“After 4 weeks of treatment, Zeus had almost complete healing of the limb, no visible limp, and used his leg fully,” Wooten said. “While his leg was healing, he wore an e-collar and a light bandage at home to prevent licking. A combination of laser therapy, appropriate drug regimen, wound protection, and dedicated clients all contributed to a successful outcome. Amputation was avoided and Zeus hasn’t looked back!”

Wooten said practices considering investing in lasers should potentially buy a cutting laser before a therapy laser because the return on investment (ROI) is better since it is used

more extensively. Also, since it is typically used for a one-time treatment, it can sustain a higher fee. Meanwhile, the cost-per-treatment of laser therapy needs to be low enough to not be a barrier to the client.

“Training the staff to use the lasers is important, but also important is training the staff to recommend the treatment. We have staff meetings with continuing education provided by the laser companies,” she said. “To get a good ROI on the therapy laser, you must get the staff into the routine of including therapy laser as part of post-op recovery and conditions associated with pain and inflammation—recommend every time.”

She also cautioned that therapy lasers cannot be used for conditions associated with cancer or bleeding, and suggested that a class 4 therapy laser, with more power and a longer wavelength, is ultimately worth the extra expense because it will be more effective.

“Lasers have been a wonderful investment for our practice,” Wooten said. “I believe that laser therapy is becoming the standard of care.” ✖

## Links for More Information

- NorthStar VETS: [northstarvets.com](http://northstarvets.com)
- Animal Care Unlimited: [animalcareunlimited.com](http://animalcareunlimited.com)
- American Institute of Medical Laser Applications: [aimla.org](http://aimla.org)
- American Society for Laser Medicine & Surgery: [aslms.org](http://aslms.org)
- Big Creek Pet Hospital: [bigcreekpet.com](http://bigcreekpet.com)
- Ayers Animal Hospital: [ayersanimalhospital.com](http://ayersanimalhospital.com)
- Sheep Draw Veterinary Hospital: [sheepdraw.com](http://sheepdraw.com)



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