



## Multi-Use Lasers Cast Doctors in New Light

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By Phil Galewitz, Special for USA TODAY

They can reshape the cornea to give patients 20/20 vision. They can smooth out wrinkles. They can reduce neck and back pain. They can even remove birthmarks.

And that's just the beginning.

Lasers can vaporize varicose veins, zap stubborn acne and get rid of unwanted hair. In the past decade, lasers also have been approved to unclog arteries, crush gallstones and repair damaged retinas.

Lasers are playing a growing role in medical care as technology has improved and doctors are finding new uses for the devices. "The industry is growing at record paces," says A. Jay Burns, a plastic surgeon in Dallas and former president of the American Society for Laser Medicine and Surgery.

Medical lasers use tubing to deliver highly focused beams of light that pass through a crystal or gas. The material the light passes through helps determine what the light energy does to the body.

Though lasers have made many inroads in medicine in the past decade, numerous other applications are now being tested.

Lasers are expected to play a greater role in diagnosing disease and helping identify cancerous tissue, Burns says. For example, studies are examining how lasers can be used in colonoscopies to help doctors immediately detect cancerous tissue rather than waiting days for a laboratory analysis. Researchers also are trying to see whether lasers can speed the healing of broken bones, help regenerate nerves in patients with injured spinal cords and help grow skin in burn victims.

"This is a compelling technology that's becoming easier to deploy," says John Ambroseo, CEO of Santa Clara, Calif.-based Coherent Inc., a major maker of medical lasers.

### **Costs — and sizes — shrink**

Laser treatment procedures' low costs and the shrinking size of the devices have enabled spas and beauty salons to install them. But the rapid growth in the field has raised concerns about whether laser procedures are being overused and misused.

Many doctors have begun doing cosmetic laser procedures largely to augment their incomes, says J. Stuart Nelson, a surgeon and associate medical director of the Beckman Laser Institute at the University of California-Irvine. That has raised questions of whether doctors are going beyond their expertise. More than 50 medical specialties use lasers today, the American Society for Laser Medicine says.

"Lasers are not for everything," Nelson says. He recommends that people get laser procedures only from experienced medical doctors.

Nelson specializes in using a laser to remove port wine stain birthmarks or small lesions that often appear on the face. Previously, doctors had to use a painful procedure involving skin grafts to eliminate

the birthmarks. Now they use a laser to destroy blood vessels under the skin while leaving healthy tissue alone. The birthmarks can be removed in a series of treatments that take five to 10 minutes.

The use of lasers in cosmetic medicine, such as hair removal and skin resurfacing, makes up about 40% of the \$2.5-billion-a-year global medical laser systems market, according to a study by the market consulting firm Frost & Sullivan.

Dentistry is another big area for lasers. The Food and Drug Administration has approved lasers for teeth whitening and to help treat cavities.

Lasers work well with soft tissue in the mouth, such as in reducing gum around the tooth to prepare for installing a crown.

But there is no proof it works in other applications such as accelerating tooth whitening, says David Garber, a periodontist in Atlanta and clinical professor at the Medical College of Georgia School of Dentistry.

Removing cavities with lasers has not been widely adopted because the process is slower than the traditional method, Garber says. The only benefit of the laser is that people don't have to hear the sound of the dental drill.

Studies are trying to determine whether a laser can identify and then zap away dangerous bacteria around the teeth while leaving the healthy tissues alone. "We have no easy way of controlling aggressive periodontal disease, and this can be a very targeted approach," he says.

### **A potential pain fighter**

Newer "cool" lasers are showing promise as the latest weapon to fight chronic pain. In 2001, the FDA approved the Erchonia laser for chronic pain. It works by stimulating the body's cells to regenerate, according to the manufacturer's studies.

"The results have been remarkable," says Mitchell Prywes, a physical medicine and rehabilitation doctor in Danbury, Conn. He uses the laser on patients who have neck and back pain. Patients come in for five- to 10-minute applications that often complement physical therapy.

"We can often see results in minutes where we see the patient's range of motion improve and it improves pain," Prywes says. The laser reduces chronic neck and back pain because it reduces inflammation and activates cells to improve the natural healing process, he says.

"The laser is very much the future of medicine," Prywes says.

He adds that while the lasers are extremely safe, precautions must be taken to keep laser light away from the eyes, those with pacemakers and pregnant women.

"It is not a panacea for everything, but it can have a dramatic effect in speeding healing," says Charlie Shanks, a vice president of laser manufacturer Erchonia Inc. of Dallas.

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