

Virtual Reality Medical Center finds success treating patients with 'real' problems

By Arthur Lightbourn

Many people may regard "virtual reality" as a sophisticated and expensive toy for computer nerds or game enthusiasts hooked on escape.

Not so, Dr. Brenda Wiederhold.

She and her husband, Dr. Mark Wiederhold, run the Virtual Reality Medical Center (VRMC) offices in San Diego, West Los Angeles and Palo Alto, where the fake worlds of virtual reality are used to treat patients with very real problems.

Some of those real problems include everything from gambling addiction, eating disorders, attention deficit and pain management to a full range of phobias including the fear of flying, public speaking, heights, needles, crowds and driving.

The attractive Texas-born clinical psychologist, a recognized national and international leader in the treatment of anxiety, panic and phobias, is also the CEO of the Interactive Media Institute (IMI), a nonprofit organization working to further the application of advanced technologies for patient care through education, research and clinical trials.

At the clinic, established in 1997, virtual reality is used as a tool, combined with traditional cognitive-behavioral therapy, for helping patients and clients overcome everything from fear of flying, heights, public speaking and freeway driving, to various addictions and disorders.

We interviewed the couple in their combined VRMC/IMI offices in the Sorrento Mesa area of San Diego.

For starters, the clinic is not your traditional psychologist's office. In many of the treatment rooms, you will find automobile simulators, for example, and sets of airline seats mounted on special platforms to simulate an aircraft's motions and vibrations.

You'll also find graphics graduates from UCSD in front of computers creating animated fantasy worlds and recreations of real places, such as the San Diego airport where patients with a fear of flying will be able to enter a virtual reality world that will take them into the airport, onto an aircraft, and 30,000 feet above California or anywhere in the world, complete with sound effects.

At the San Diego clinic, the top phobia being treated is the fear of flying which took a sharp rise after terrorists crashed commercial airlines into the World Trade Center towers and the Pentagon on 9/11.

To enter the VR world, patients and clients are issued head-mounted displays or HMDs through which they experience these new worlds and, with the assistance of a psychologist, can face and overcome their worst fears.

"And they can look around 360 degrees so it's not just like watching a video," she said. "Also they go at their own pace, so they can take as long as they like to navigate the airport."

"Some people have their biggest fear even before they get on the airplane," she said.

Patients are also assigned homework.

"We have a workbook, so they have to do pages in the workbook and sometimes they



Dr. Brenda Wiederhold at the the Virtual Reality Medical Center.

have to go to the real airport after a certain time and do some reading, so they'll learn to relax in the airport."

In another VR world, patients who have a fear of needles can enter Scripps Hospital and navigate their way to a lab and ultimately, when they are ready, have their blood drawn.

"We also now have government grants from the National Institute of Health to put people in VR while they are getting sometimes painful medical and dental procedures," she said. "So... we have this going on, on a test basis, at Scripps Center for Dental Care right now. We put people into the VR world and it lowers their pain and anxiety while they are getting dental procedures."

VR is currently used in conjunction with the traditional tooth-numbing painkillers. It hasn't been used yet in place of these medications. "That will be our next step, to use VR instead of medication," she said.

The same virtual world called "Icy Cool" is used for dental patients and for burn victims.

"So while they are getting their bandages changed after they have been burned, they go into this world and they shoot snowballs and they can shoot little laser beams of light to release these penguins encased in cubes of ice. So it's a fantasy world. They see waterfalls and crystals and things like that."

Another exploratory fantasy world is called "Enchanted Forest," replete with treehouses, deep, cool streams and fantasy animals.

All of these are designed to take a patient's mind off his or her pain and anxiety while engaging in these virtual worlds. "You only have so much cognitive processing ability. And if you are attending to one thing, you can't often be attending to another."

To combat the fear of driving, IMI has created virtual worlds in which "we can put you on the San Francisco Bay bridge, we can put you on freeways, we actually have a replica of Los Angeles and we can put you on LA freeways, we can change it nighttime, daytime, rain, different weather conditions, different traffic densities."

"The number one fear in the United States," she said, "is pub-

lic speaking followed by fear of flying, spiders and driving...Fear of death is number eight."

A customized VR world has been created, complete with hecklers, in which clients can practice their speeches at a microphoned podium and woo even the toughest audiences.

The clinic currently has more than 100 VR worlds in its library.

The cost is \$180 for the initial two-hour "intake" session with a psychologist in which a complete clinical history is taken to determine if the patient is an appropriate candidate for VR therapy.

Subsequent therapy sessions are \$120 each and can be billed to your insurance company if you have applicable coverage.

They have a "92 percent success rate," she said, "and the way we determine it is if you come in and you have a fear of flying and you haven't flown for 20 years and I get you on a plane, then that's success."

"Other people say, I'm already flying, but I want be able to fly without taking medication. So success would be getting you to fly without medication."

Same thing applies to driving. "If I get you on the freeway, then that's success."

Wiederhold has used VR therapy in some 4,000 sessions with patients. The most important thing she has learned, she said, is to listen to her patients.

"They are your most valuable teachers."

"What we do is have the patients come in during the development of the virtual reality worlds, so they tell me, they tell the virtual reality world developer, what they need as patients."

She said while she may think something is important to include and her graphic VR developer may have an opinion, "but if it's not important to the patient, then it's not important."

"Pretty pixels don't make a good world for a patient."

IMI produces many of the worlds they use in treating patients.

They also use "worlds" that have been created by their counterparts in other countries including Korea, Italy, Spain, Switzerland, Canada and Israel.

When VRMC was established in 1997, it was the only clinic of its kind in the western U.S. At the time, Atlanta, Boston and New York had VR clinics. Today, there are 10 free-standing VR clinics in the U.S., she said, in addition to some university-based clinics on the east coast.

VRMC president Dr. Mark Wiederhold said the significance of VR therapy is "significant from the point of view that patients tell us it has helped them. And I think it's going to grow dramatically if we can make the

technology less expensive and easier to use."

Prior to establishing VRMC, Mark Wiederhold was an internist at Scripps Clinic in La Jolla for 15 years. He is the founder of the *CyberPsychology & Behavior Journal* and serves as its editor-in-chief.

As for the future and what lies ahead in the treatment of phobias, disorders, addictions, and chronic conditions, "I'll give you my prediction," he said. "I think we can do anything."

"Picking up objects and touching them," he said, "are still tough to do in the VR world. And having two or three people together in the simulation is also more difficult and more expensive."

"But," he said, "the thing about this technology and the key here is...we are riding the wave of increasing computing power and decreasing costs and that's what makes this very exciting and rewarding..."

The Wiederholds, most recent findings are described in their book, *Virtual Reality Therapy for Anxiety Disorders*, just published by the American Psychological Association.

For additional information, please call 858/642-0267 or log onto: www.interactivemediainstitute.com.