Deona Duke hadn’t yet turned 14 in June when the bonfire exploded. She was watching it with a friend, and the explosion coated her in flames that burned a third of her body. When she awoke four days later from a medically induced coma, she had to watch while physicians changed her bandages and scraped away dead skin. That’s about as fun as it sounds, she says. “The recovery was actually more painful than the accident itself.”

At the Shriners Hospital for Children in Galveston, Texas, doctors started the girl on an unusual treatment to go with the painkillers: a virtual-reality headset. Slipping it on, she was immersed in SnowWorld, a game depicting an icy landscape, where she lobbed snowballs at igloos and penguins. “It distracted me from what they were doing,” Duke says, “so it helped with the pain.”

Shriners is one of a few U.S. hospitals testing VR as a pain reliever. The idea is that the distraction of the virtual world’s use in pain management dates to 1993, when Tom Furness, an industrial engineering professor known as the godfather of VR, unveiled an $800 headset for consumers that relied on a TV tuner and a small supply of videotapes. The device was a commercial flop but got rave reviews from dentists who found it mollified young patients. Early VR equipment tailored for medical use cost as much as $35,000 and found few takers, except for a handful of academic research labs.

As Samsung, Facebook, Sony, HTC, and others race to build a dominant VR system, the equipment is finally getting both good and affordable enough for more hospitals to test. Software makers like AppliedVR are supplying several hospitals with headsets that play their games. Houman Danesh, director for integrative pain management at Mount Sinai Hospital in New York, says VR use has the potential to become a relaxation technique akin to yoga and hypnosis. Like Spiegel, though, he cautions that its effectiveness in treating chronic pain has yet to be proven or fully understood. And if its effects can be verified, how long do they last?

At Shriners in Galveston, Duke says the painkilling effects of SnowWorld, made by researchers at the University of Washington, diminished over time as she got bored. “For teenagers they should find, like, different games,” she says. “That game they were showing me seemed like it was for little kids.”

—Ian King and Caroline Chen

The cost of some early, 1990s-era medical VR equipment have yet to be adequately studied. He’s about to begin a new, more stringent clinical trial. “As a scientist, I want to understand rigorously how something like virtual reality can truly improve health outcomes, compared to a control population,” Spiegel says.

The bottom line VR, used as a distraction tool for severely injured patients, seems to help relieve pain but needs more thorough testing.