



Western Pa. hospitals test robot using ultraviolet rays to kill bacteria

Part electric bug zapper, part “Star Wars,” light-blasting robots are emerging as Western Pennsylvania's newest weapon against hospital-acquired infections blamed in thousands of patient deaths nationwide.

“We're not going to make the infection rate zero. But we're going to do everything we can to make it as low as possible,” said Dr. Joseph Romano, an infectious disease physician at UPMC Passavant in McCandless, one of five hospitals testing the technology in Allegheny and Westmoreland counties.

UPMC Passavant received its \$76,000 stationary robot in May through the Passavant Hospital Foundation, which bought the cleaning equipment from Xenex Disinfection Services in San Antonio. Reminiscent of the “Star Wars” character R2-D2, the device nicknamed Violet by Passavant workers isn't much bigger than an industrial-sized trash can. Workers set it up in operating and patient rooms after janitors finish a conventional scrub-down, activating its strobelike flashes for up to an hour per room.

The ultraviolet light from Violet's bulbs filled with xenon gas is about 25,000 times brighter than sunlight — much more intense than traditional ultraviolet light bulbs filled with mercury, Xenex spokeswoman Melinda Hart said.

The so-called UVC rays are bright enough to penetrate and damage the DNA of dangerous “superbug” bacteria such as *Staphylococcus aureus*, known as MRSA, and *Clostridium difficile*, or C.diff, UPMC doctors said. Hart said the treatment makes the bugs unable to reproduce, leaving the treated hospital rooms safer for the next round of patients.

Hospital-acquired infection rates dipped by more than 50 percent at some facilities that use the technology, according to studies cited by the privately held manufacturer.

“The advantage of the UVC rays is that they're able to get into the nooks and crannies that sometimes we, as humans, can't get into,” said Mark Hundley, environmental services director at UPMC Passavant.

The hospital reported six surgical-site infections among 1,508 surgeries that doctors performed in June, well below national averages.

Acute-care hospitals nationwide reported an estimated 722,000 health care-associated infections in 2011, according to the federal Centers for Disease Control and Prevention in Atlanta. About 75,000 of those patients died during hospitalizations, the CDC found.

Whether the UVC technology will curb the problem in Western Pennsylvania is an open question. Excela Health in Westmoreland County added a similar robot from the Oakland, Calif.-based Clorox Co. in April at its Latrobe campus, spokeswoman Robin Jennings said.

Funded by charitable groups, the supplemental device nicknamed the Germinator remains under review to see whether it lives up to its promise.

“Then we'll consider whether we should be using it more broadly,” Jennings said.

UPMC has tested other disinfection robots since winter at Shadyside, and Presbyterian and Montefiore in Oakland. It's too soon to know whether the equipment is reducing rates of infections there and at Passavant, UPMC officials said.

The Downtown-based health care system is considering whether to bring on board more robots for its hospitals. Rival Allegheny Health Network did not comment on whether it's using the technology.

For Xenex-brand devices, the total price over three years can reach about \$134,000, including monthly service fees and support services. Hart said the equipment can pay for itself if it stops a few hospital-acquired infections, which can cost thousands of dollars apiece in treatments.

She said about 250 hospitals and Department of Veterans Affairs facilities have bought the Xenex robots since the company began selling them in 2010. A standard filter prevents much of their visible light from reaching human eyes, the company said.

The most harmful UVC rays can't breach anything thicker than a plastic sandwich bag, so workers should be safe from the beams if they stay behind windows, Hart said. She said safety features should shut down the robot if a person walks into a room where it's working.

“You would have to stare at it a really long time for any damage to occur,” she said.

UPMC's Romano emphasized the effort won't replace traditional cleaning practices such as robust hand-washing.

“We don't want to make somebody worse when they come to the hospital,” he said. “We want to make them better.”

Adam Smeltz is a Trib Total Media staff writer.