

A BUG ZAPPER FOR HOSPITALS

Device uses UV light to disinfect operating rooms

BY DELTHIA RICKS
delthia.ricks@newsday.com

Infection control experts are escalating their warfare against hospital microbes with the development of Star Wars-like technology that uses ultraviolet energy to destroy rogue pathogens finding their way into hospitals.

The Northwell Health network is working with medical technology developer PurpleSun in Manhattan on the technology. They are testing a type of disinfecting device that uses a strength of ultraviolet light equivalent to the most intense UV light emitted by the sun — but is blocked by Earth's upper atmosphere.

The ultraviolet light system, which has not yet been sold commercially, has a 98 percent kill rate, a Northwell analysis of the UV device has shown.

"The ultraviolet light with its current intensity is able to disinfect the environment within 90 seconds," said Donna Armellino, vice president for infection prevention for the health system. She said Northwell will deploy the device in its operating rooms this year as a new method of sterilizing everything from surgical tables and operating

room equipment to complex tools such as the da Vinci surgical robot.

She expects the technology to be used in other parts of Northwell's system next year. One aim of the joint venture between the health care giant and PurpleSun is to move toward a greater use of UV light because of its potent sterilization capacity.

Although ultraviolet C radiation appears highly effective, Armellino underscored that the technology will not entirely replace manual disinfection with chemical compounds.

The device arrives as the health care industry awaits the Centers for Disease Control and Prevention's updated list of potentially deadly pathogens, which is expected to be published this fall. Six years ago, the CDC released its first list of 18 rogue pathogens known to infiltrate health care settings.

Two weeks ago, the World Health Organization listed drug-resistant so-called "superbugs" as one the top 10 global health threats for 2019. Drug resistance is expected to be the leading cause of death by 2050, outstripping heart disease and cancer unless measures are

taken to beat back the bugs.

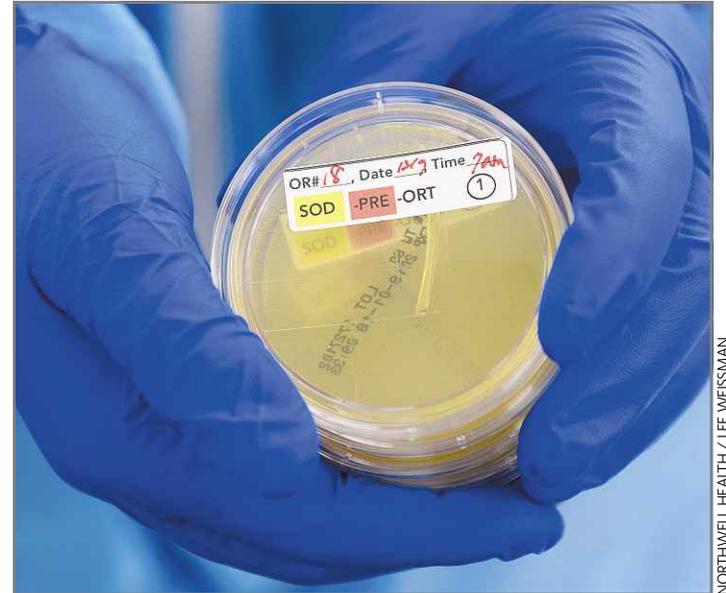
Hackensack Meridian Health in New Jersey joined Northwell and PurpleSun on Monday to help commercialize the device.

Armellino said not only does light from the modular system destroy superbugs, it also is capable of destroying spores emitted by *Clostridium difficile*, bacteria that have invaded hospitals worldwide, including institutions on Long Island.

"We are fighting things we cannot see so we need new technology to better equip ourselves," said Luis Romo, founder and chief executive of PurpleSun, who with a team of collaborators created the connected modular system of six-foot panels on wheels.

The system is easily moved from one part of a hospital to another, Romo said, and can wrap around a surgical table. Anything enclosed in the area and hit by the light will be sterilized. The device is formally called a focused multivector ultraviolet system.

Although small UV light fixtures, usually affixed to ceilings or walls, have been used in tuberculosis clinics for decades, they were not always effective, nor was the intensity



NORTHWELL HEALTH / LEE WEISSMAN

Northwell Health has partnered with medical device company PurpleSun in the fight against microbes. ■ Video: newsday.com/li

of UV light powerful enough to kill all surface microbes, studies have shown.

Romo came up with the idea of using the most intense ultraviolet wavelengths as a sterilization method while a graduate student in 2012.

Armellino, meanwhile, worked with a team of researchers to determine how effectively the panels' ultraviolet energy destroys pathogens. She reported the findings this month in the American Jour-

nal of Infection Control.

The team found the panels emit such potent energy that all microbes in the light's path are destroyed.

She and her team additionally used the panels on 3,000 microbiological samples taken after 100 different surgical cases in and around operating rooms at three different hospitals in the greater metropolitan area. No microbe exposed to the UV light survived, the research showed.

Bucking national trend, enrollment

BY CAROL POLSKY
carol.polsky@newsday.com

Enrollment for health insurance on the state insurance marketplace has already exceeded last year's figures as the Jan. 31 deadline approaches, state health officials said.

More than 4.6 million New Yorkers have enrolled in policies offered on the New York State of Health marketplace, including an 11 percent rise in the number of Medicaid enrollees and a 7 percent rise for both the Essential Plan and for qualified health plans.

Of those opting for private health plans, 58 percent qualify for financial assistance in the

form of subsidies and tax credits.

The surging enrollment — which includes new customers as well as people re-enrolling — contrasts with the estimated 4 percent enrollment decline in the federal marketplace utilized by 39 states. Last year, the Trump administration shortened the enrollment period on Healthcare.gov from 90 to 45 days, and slashed its advertising budget.

In New York, the enrollment period for its state-run marketplace runs for three months, and outreach efforts include community-based "navigators" to assist people in choosing a plan. So far, more than 260,500 New Yorkers have enrolled in qualified health plans — from insurance compa-

nies that have been qualified by the state to offer their products in the marketplace — and 773,300 in the state's affordable Essential Plan for moderate-income New Yorkers.

"Higher enrollment shows ongoing consumer demand for the affordable, quality health plans offered by the marketplace," said NY State of Health executive director Donna Frescatore. "With the Jan. 31 deadline quickly approaching, we encourage anyone who needs coverage for 2019 to enroll now."

The marketplaces were created under the Affordable Care Act of 2010, which also enacted a host of other changes to the nation's health care delivery sys-

tem. It provided subsidies for moderate-income families, expanded Medicaid eligibility in states that agreed to it, required equal treatment for customers no matter their prior health conditions or age, allowed parents to keep children on their health plans up to age 26, and mandated that insurance plans cover a range of essential benefits. It also imposed an individual mandate requiring everyone to buy insurance or pay a tax penalty.

That mandate ended Jan. 1, a consequence of the then Republican-led Congress removing the tax penalty in its tax package of December 2017. A lower court judge in Texas ruled recently that the loss of the individual

mandate meant the entire ACA was unconstitutional, although the ACA remains in effect while that decision is under appeal.

In response, Gov. Andrew M. Cuomo has pledged to propose legislation codifying various ACA protections and to preserve its marketplace. However, if federal funding is cut off, the state would have to use state taxpayer funds to maintain subsidies and its popular Essential Plan.

Health policy expert Sara Collins of the Commonwealth Fund in New York City said the ACA's extensive reach into the nation's health care system meant ending it would be "massively disruptive," and not just to the ACA marketplaces.



NORTHWELL HEALTH / LEE WEISSMAN

Dr. Donna Armellino, head of the ultraviolet treatment program at Northwell Health. "The ultraviolet light with its current intensity is able to disinfect the environment within 90 seconds," she said.



NORTHWELL HEALTH / LEE WEISSMAN

ABOUT THE DEVICE

The PurpleSun device is capable of sterilizing an entire operating room, **KILLING 97.7 PERCENT OF MICROBES** in the space. The device, which has 6-foot-high panels, can surround a surgical table or disinfect large equipment such as the da Vinci surgical

robot. UV light hits objects from five sides. The control panel is on the outside, and the device is operated by hospital housekeeping staff. Operators of the device must wear goggles while the device is in use to protect their eyes from high-intensity UV radiation.

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in ACA surges in NY

"If tax credits were to go away, it would be very hard to maintain the marketplaces as they are," she said. "That's what makes it affordable and states would have to come up with the funding . . . it would be very expensive to do."

While many plans are still expensive for many consumers in the individual marketplace, premiums did fall when the marketplaces opened; rate increases are regulated and subsidies help many afford insurance who otherwise would be priced out.

The percentage of New Yorkers without coverage fell from 10 percent to under 5 percent of state residents under the ACA, according to state figures. In the

previous enrollment period, 4,332,393 New Yorkers enrolled in coverage through the NY State of Health's Individual marketplace, including 253,102 in QHPs with and without financial assistance, 738,851 in the Essential Plan, 2,965,863 in Medicaid, and 374,577 in Child Health Plus. CHP is funded under separate legislation.

County enrollment figures for 2019 are not yet available. Janine Logan, a spokeswoman for the Nassau-Suffolk Hospital Association, one of three local groups certified to help people enroll, said that so far the agency has helped more than 3,000 Long Islanders enroll.

Conceding that policies may

be too expensive for some families that earn too much to qualify for subsidies, she said, "Some do walk out, saying they can't afford it. The enrollers are running them through a lot of different scenarios, spending more time than they have in the past."

So far, she said, 51 percent have enrolled in Medicaid, compared with 48 percent last year, 17 percent in the Essential Plan, compared with 16 percent, and 12 percent in qualified or commercial plans, compared with 15 percent. The group will host an open house to assist last-minute enrollees on Wednesday and Thursday, from 5 to 8 p.m., at 1383 Veterans Memorial Hwy., Suite 26, in Hauppauge.