Sonoma Valley Hospital uses robot to kill germs

Her name is Lisa and her gaze, which pulses like a runway light or a sci-fi space beacon, is quite deadly.

Left alone in a hospital room, her elongated eye emerges from her cylindrical body and in quick flashes emits a powerful ultraviolet light that can destroy viruses, bacteria, mold, fungi and bacterial spores.

If the day ever comes when she has to, she can kill the Ebola virus, too.

For now, her main job is quickly eradicating the germ load inside patient rooms, surgery rooms and medical exam rooms at Sonoma Valley Hospital in an ongoing campaign to reduce hospital-acquired infections, which affect about one in every 25 inpatients across the country.

Lisa is a germ-zapping robot, manufactured by Texas-based Xenex Disinfection Services. Unlike standard disinfection systems that use mercury-based ultraviolet light, Lisa uses xenon, an environmentally friendly gas that provides a broader spectrum of UV light.

That, according to Xenex, means Lisa can kill more efficiently.

Sonoma Valley Hospital, which Consumer Reports recently found to be one of the 15 safest hospitals in the country, is using her to improve patient safety even more.

“This is just one more layer to ensure we don’t have infection control issues,” Sonoma Valley Hospital CEO Kelly Mather said. “It’s another safety approach.”

Infectious microorganisms, or superbugs, are shed by patients when they go into a hospital or other health care facility. When in the hospital, some patients have compromised immune systems and are more susceptible to infections.

At the same time, some superbugs have become more resistant to antibiotics, exacerbating hospital-acquired infections.

The germ-fighting device is used after a hospital room undergoes its usual sanitation procedure. The robot is placed in a room by itself, the door is closed and the device begins to emit high-intensity ultraviolet flashes.

The Xenon-based ultraviolet light hits all surfaces in the room and penetrates the cell walls of microorganisms, wreaking havoc on their DNA and inhibiting their ability to reproduce or mutate, said Kathy Mathews, a registered nurse who coordinates Sonoma Valley Hospital’s infection prevention and clinical quality programs.

Mathews said the most common microorganisms in the hospital setting are clostridium difficile, or C. diff, multi-drug resistant organisms such methicillin-resistant staphylococcus aureus or vancomycin-resistant enterococcus.

“These types of organisms are quite worrisome,” Mathews said.

According to the federal Centers for Disease Control and Prevention, in 2011 there were an estimated 722,000 hospital-acquired infections in acute care hospitals in the United States. Of these, 75,000 hospital patients died during their hospitalizations.

The CDC reports that more than half of all such infections occur outside the intensive care unit. Melinda Hart, a Xenex spokeswoman, said the UV light emitted by the robot is 25,000 times brighter than the sun’s UV light, which is the reason Lisa must work alone. The robot’s UV light has a broad spectrum, from 200 nanometers to 320 nanometers, “covering the entire germicidal UV band,” Hart said.

Such a broad spectrum of UV light kills superbug DNA in four different ways, she said.
But that frequency of light cannot penetrate film thicker than Saran Wrap or a plastic baggie, so it’s perfectly safe to watch Lisa work from behind a window, Hart said.

“The light has the potential to irritate human eyes. That’s why we recommend that no one is in the room when it’s in operation,” Hart said.

Hart said the rise of the Ebola epidemic in West Africa has brought a lot of interest to the Xenex device among hospital officials. The company currently has about 250 devices in U.S. hospitals and the company is receiving an increasing number of inquiries about the technology.

“Right now, the superbugs in U.S. hospitals kill more than 200 people every day,” Hart said.

Ebola has killed one person in the United States since its outbreak in West Africa. “With the arrival of the Ebola virus in the U.S., we believe that hospital executives and administrators will be willing to make investments in new technologies for patient safety,” Hart said.

Xenex has created an Ebola protocol for medical professionals who come into contact with patients infected with the deadly virus. That protocol essentially has the medical professional’s protective gear zapped with ultraviolet light before the gear is removed.

Sonoma Valley Hospital was able to purchase Lisa thanks to a donation made by Bill and Gerry Brinton, the owners of Charles Creek Winery. The Brintons offered to purchase the $110,000 device for the hospital.

Source: http://www.pressdemocrat.com/news/3075281-181/sonoma-valley-hospital-uses-robot?page=0

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