

Germ-zapping robot could support war against Ebola (w/ Video)

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Some years ago, when Ebola was not in any global news headlines, researchers presented their paper, "Use of Medical <u>Robotics</u> in Biothreat Situations" to an American Medical Informatics Association symposium where they said that "In biothreat situations, mobile robots have several advantages over humans including: imperviousness to infection; ability to be coated in self-decontaminating surfaces; 24-hour availability; and the ability to serve as a virtual telepresence and communication conduit



for one or more participants. In the case of new biothreats, mobile robots could carry some of the burden that falls upon clinicians including: collecting lab specimens, delivering medications and meals, transporting bio-hazardous materials and biological waste."

Healthcare associated infections (HAIs) are a burden for patients and doctors who must invest time and money in additional treatment for these illnesses. But cleaning any space with sick patients carries the risk of also spreading disease to doctors and other staff members. In 2014, the presence of Ebola makes interest in hospital use of robotics all the more compelling. According to the Centers for Disease Control and Prevention, "There is no epidemiologic evidence of Ebola virus transmission via either the environment or fomites that could become contaminated during <u>patient care</u> (e.g., bed rails, door knobs, laundry). However, given the apparent low infectious dose, potential of high virus titers in the blood of ill patients, and <u>disease</u> severity, higher levels of precaution are warranted to reduce the potential risk posed by contaminated surfaces in the patient care environment."

Xenex is a company that produces a germ-zapping robot that could be a beneficial support in fighting potential risks of contamination in hospital settings and address sterilizing spaces contaminated by Ebola. A video from the company explains what the machine does in general: the Xenex technology utilized is all about ultraviolet light, produced by the sun in three types, UV-A, -B and -C. The A and B types cause suntans and burns, but C is filtered by the ozone layer around the earth. As it does not occur in nature, bacteria and viruses have no defense against it. When germs are exposed to UV-C, the light kills the germs. The Xenex machine, once producing this light in a hospital room, can in five minutes drastically reduce germs in the room. The user stays outside the room; with prolonged exposure, UV-C could damage the eyes; the robot must always be run in an empty room. For additional safety, an orange cone stays outside of the room, as well as caution signs for the door.



Inside the room, there is a gray cone that watches out for motion. Should motion be detected, the gray cone will turn the device off. The device is run when the room is empty after the patient is discharged and terminal cleaned. The xenon bulb —the Xenex robot utilizes pulsed xenon to create UVC light—will pulse for five minutes, disinfecting the area around the device. UV-C light cannot go through glass, walls or windows.

Xenex was founded by epidemiologists Mark Stibich and Julie Stachowiak both holding doctoral degrees from Johns Hopkins. The Xenex mission is "to eliminate the pathogens that cause the infections that impact the health and lives of millions of patients and their families." Since the company's launch in 2010, Xenex devices have been included in infection control protocols in hospitals throughout the U.S., said the company. This kind of technology is more interesting than ever with cases of Ebola being diagnosed and treated. "We've definitely had an increase in interest in our <u>technology</u>," Xenex spokesperson Melinda Hart said in CNN. What is more, "We can see a number of places where we could intervene to help (conduct) a final clean on health care workers as they come out of <u>situations</u> where they have been in contact with Ebola," CEO Morris Miller said. "We've submitted with the International Red Cross and a few other organizations some protocols, some ideas we have published, of ways to use the robot."

More information: *Arch Virol.* 2011 Mar;156(3):489-94. <u>DOI:</u> <u>10.1007/s00705-010-0847-1</u>. Epub 2010 Nov 23.

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