Fire fighters, medics at greater risk of MRSA exposure than general public

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Firefighters and medics may be at higher risk for carrying methicillin-resistant Staphylococcus aureus (MRSA) than the average person, according to results from a UW study. Credit: Marc Beaudreau

Firefighters and medics may be, perhaps not surprisingly, at a higher risk for carrying methicillin-resistant Staphylococcus aureus (MRSA) than the average person, according to results from a new study conducted by Marilyn Roberts, a University of Washington professor of environmental and occupational health sciences. Roberts, a microbiologist, recently conducted the first-ever environmental health study on MRSA in Northwest fire stations and on fire personnel to determine the extent of related contamination.

In the last ten years, the number of hospital- and community-acquired

MRSA infections--those often contracted in schools, public gyms, and in workplaces--has risen. Because MRSA can be transmitted from surfaces to people and from person to person, the increase in incidence has led to concern for first responders, including police, firefighters and emergency medical personnel. Fire personnel interact with both hospital and community populations as part of their job and have the potential to be exposed to MRSA as part of their daily duties.

"Firefighters and paramedics are at the crossroads between the public and hospital environments," said Roberts. "Their job includes administering first-response care to patients, many of whom are more likely to be MRSA carriers or have MRSA infections then the general population. This puts them at increased risk for MRSA infections."

Roberts found MRSA in four percent of more than 1,000 samples collected from surfaces inside Snohomish County fire stations, medic and fire trucks, and outer protective gear. But in each of the nine areas sampled, at least one sample tested positive for MRSA, and both hospital- and community-acquired MRSA were found.

Roberts conducted the study after being contacted by firefighters who asked for help in determining whether they were being exposed to MRSA on the job. "Firefighters and medics were part of an advisory board that helped us develop the study," she said.

Firefighter and paramedic Kevin Fetter said that he had questions about a new disinfection system, including: What was on the surfaces or being transmitted that might cause infection or illness? As the wellness coordinator for Snohomish County Fire District 1, Fetter called labs all over the country asking for help in testing before connecting with Roberts at the University of Washington. The district is made up of 12 fire stations that field 13,000 emergency calls each year.

Fetter and colleagues knew that MRSA was being studied in hospital settings, but didn't know how MRSA affected them. Except for a small study in Arizona, no one else had looked at this setting and firefighter exposure.

"We now recognize it as a problem," said Fetter, referring to the firefighter community. The UW study results have attracted attention in other regional fire departments, since findings showed firefighters can be carriers.

The research team found more than 20 percent of the fire personnel who volunteered to be tested carried MRSA and an additional 10 percent carried *Staphylococcus aureus* in their noses. Normally, 25 to 35 percent of the general population carries S. aureus in the nose. Also, in studying the genetic characteristics of the different strains of bacteria, Roberts found that MRSA strains on fire personnel were related to the environmental MRSA strains, suggesting transmission between personnel and the environmental surfaces.

Roberts and her team looked at MRSA contamination in fire stations and determined which locations were most likely to be contaminated. The study also was conducted to improve decontamination of the station and truck environmental surfaces and to use the information to develop and distribute educational materials on best practices for disinfection protocols.

Roberts said she hopes to expand the study to determine if the results from the initial study are representative of the larger firefighter population within Washington state and throughout the United States.

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