MedicalXpress

Dirty laundry may cause environmental contamination

November 7 2016

A new paper published in *FEMS Microbiology Letters*, resulting from an investigation of a laundry facility that services several Seattle-area hospitals, suggests that soiled clinical linens may be a source of surface *Clostridium difficile* contamination.

C. difficile is a hospital and community acquired pathogen. *C. difficile* are spore-forming anaerobic bacteria that have been identified in 2-3% of healthy, non-hospitalized adults and in 10-25% of hospitalized adults. Toxin-producing *C. difficile* is the most common cause of hospital-acquired diarrhea. It is estimated that 25% of all *C. difficile* infections occur from exposures in the community that may stem from potential sources including water, soil, livestock, meats, vegetables and pets. There is evidence that *C. difficile* infections are seasonal and are correlated with 151 respiratory illnesses in the winter, due to antibiotic use.

The study determined if *C. difficile* could be cultured from clinical laundry facility surfaces. A total of 240 surface samples were collected from dirty areas, which handle soiled clinical linens, and from clean areas, which process and fold the clean linens, within the University of Washington Consolidated Laundry facility in 2015.

All samples were collected at a laundry facility in Seattle, WA. This facility processes linens from six Seattle area hospitals, 30 local outpatient clinics and the Washington National Primate Research Center. Each week about 300,000 lbs. of laundry are processed. The facility is

separated into two floors with the majority of the soiled linen handled on the 2nd floor and the clean linen handled exclusively on the 1st floor.

The dirty area surface sample sites included the receiving area, the primary sort area, the secondary sort area, and the customer owned goods area for a total of 30 samples at each visit. The clean area sampling sites included washers, the folding area, the processing area and the break area. Thirty samples per sampling time with 120 samples total were collected each from the dirty and clean areas.

All of the samples that tested positive were in areas where dirty linens are handled; no *C. difficile* contamination was found in areas where only clean laundry was handled. Of the samples taken from surfaces in the dirty side of the laundry facility, 23% (25/120 samples) tested positive for *C. difficile*. Only 2% (2/120 samples) of sampled surfaces from the clean side were positive for *C. difficile*. The two surfaces that were positive for *C. difficile* both came from a small area where soiled linen is handled in small batches. While the area is distinct from where clean linen is dried, ironed, and folded, it is on the same floor as the clean side. This indicates that the dirty linens were the likely source of the environmental contamination in the laundry.

According to researchers, their data may be an underestimation of true prevalence and diversity of *C. difficile* on surfaces. The study is limited by the inherently poor recovery of microbes from environmental surfaces, difficulty in culturing *C. difficile* spores, differences in recommended incubation times and media used.

"This research supports the idea that its possible for the soiled hospital linens to contaminate the environment with *C. difficile*, which is the number one cause of hospital associated diarrhea," said study author Marilyn Roberts, PhD. "It's also extremely hard to remove from the environment. Due to this contamination, laundry facilities should be

considered an extension of the healthcare environment when considering infection prevention and occupational health."

More information: Karen Michael et al, Environmental Contamination within a Clinical Laundry Facility in the USA, *FEMS Microbiology Letters* (2016). DOI: 10.1093/femsle/fnw236