## Research Brief

## The survival of bacteria on the curtain fabrics used in clinical settings

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**Background:** In most bedrooms of medical facilities in Japan, curtains are used for the purpose of insulation, shading, and keeping patients' privacy. Especially curtains between beds are often recommended by medical auditor for patient privacy. However, the curtains are frequently touched by contaminated hand of people such as health care workers and patients. Moreover, their cleaning and washing are not so frequent. Centers for Disease Control and Prevention of the United States recommends in order to prevent cross infection of *norovirus* to consider changing privacy curtains routinely and upon patient discharge or transfer.

**Objective:** The aim of this study is to examine the survival of bacteria on the simulated hospital curtain fabrics available in Japan.

**Method:** Five types of curtain fabrics from three companies were examined. One of five  $\mu$ L (ca. 10<sup>9</sup>CFUs/mL) *Staphylococcus aureus* ATCC6538, *Enterococcus faecium* JCM5804, or *Acinetobacter baumannii* JCM6841 was dropped and kept at room temperature in safety cabinet for 2, 7, 14, 21, 28, 42, 56, and 91days. After that, each fabric was stirred in 2mL of tryptic soy broth containing neutralizing agents with the glass beads for 30 seconds. Then the recovered solution was cultured and the number of survived bacteria was counted.

**Results:** *E. faecium* survived for an average of 91 days on all fabrics, which was the longest length in this experiment. *A. baumannii* survived for 70.8 days, and *S.aureus* survived 51 days. Comparing the fabric types, the differences in the periods of bacterial survival had been observed. On the 100% polyester curtain fabrics, the bacteria survived the longest, for 97.0 days, and even on the polyester curtain with bacteriostatic treatment they survived for 47.7 days in the shortest. Therefore, this study revealed any kinds of curtain fabrics are at risk for being the source of cross contamination in clinical settings.

**Conclusion:** The results of this study suggest that an inadequate treatment of curtains can cause to healthcare-associated infection. It is crucial to consider the needs of curtains and the proper way of the management in medical facilities.

Keywords: curtain fabrics, microbial contamination, healthcare-associated infection