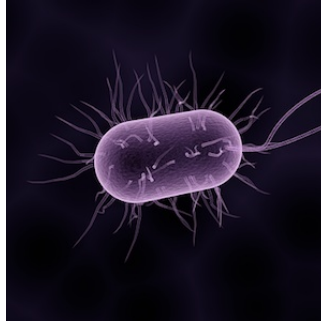


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## How design can eliminate bacteria in OR



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Traffic flow in hospitals can **help spread microbiota**. Researchers examining the influence of traffic and other factors on microbial load in the operating room (OR) found that OR areas of higher traffic had a higher microbial load than areas of lower traffic. Further, the more people present in the OR the higher the bacterial count recorded, according to the findings published in the journal *Infection Control & Hospital Epidemiology*.

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Maintaining cleanliness in the OR is important to prevent surgical site infections, which can result in complications for patients. In this study, conducted at four separate paediatric and orthopaedic ORs at a U.S. academic hospital, traffic was found to be higher near doors, telephones, computer work stations, and storage cabinets. Design guidelines and OR layouts should focus on minimising movement by incorporating desirable internal storage points and workstations to **help reduce microbial load**, according to the researchers.

The objective of the study was to understand the impact of the movement of patients, equipment, materials, and staff, as well as door openings on microbial loads at different locations in the OR. The researchers first analysed 27 videotaped surgical procedures in the OR to determine the areas of the highest and lowest traffic. To measure the [microbial loads](#) in colony-forming units (CFU), air samplers and settle plates were placed in representative locations during 21 selected procedures. Samples were then collected during two different seasons of the year (March and September). In addition, temperature, humidity, number of door openings, physical movement, and the number of people were measured for each procedure in the OR.

Next, the collected samples of the settle plates were incubated at 35°C for 48 hours for [bacterial counts](#) and 26°C for five to seven days for fungal counts. The resulting CFUs were counted and the measurements were adjusted to show the results in CFU/m<sup>2</sup>/hour.

Finally, the data collected was analysed using hierarchical regression with separate models for bacteria and fungi. All bacteria samples collected were higher in September than in March due to a more extreme humidity range, while fungi had some higher measurements in March. Average microbial load for the air sampler measures was lower for the orthopaedic procedures since the arthroplasty surgical teams wear special attire with **more protection against contamination**.

Furthermore, they restricted access to the OR from the outer corridor during procedures. In contrast, average settle plate measures were higher for the orthopaedic procedures for the March and September samples. Overall, the study results reveal that movement in the OR is correlated with the microbial load. According to the researchers, other possible design solutions are to place the nurses that move frequently at a nurse station away from the patients and to have a dedicated door for the anaesthesia team. Also, the research team suggests further studies are needed to understand the [design parameters impacting staff movement and workflow](#).

Source: [Infection Control & Hospital Epidemiology](#)

Image credit: Pixabay

Reference Taaffe K et al. (2018) The Influence of Traffic, Area Location, and Other Factors on Operating Room Microbial Load. *Infect Control Hosp Epidemiol.* Apr;39(4):391-397. doi: 10.1017/ice.2017.323

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