# Operating Room floors: No five second rule

**Jim Gauthier**

Operating Room (OR) floors are the repository for many things: blood and body substances released during a procedure, our feet, equipment and linens, dropped articles, needle covers**,** and more.

Standard operating procedures (SOPs) indicate that, if visibly soiled, OR floors will be disinfected. In the disinfectant industry, 'disinfection' is defined as a reduction in microorganisms by large factors of 10 ($log_{10}$). The $log_{10}$ for 100 is 2, $log_{10}$ of 1,000 is 3, and so on. For bacteria, the reduction has to be 6 log, or 99.9999% of the bacteria would be killed. For viruses, a 4 log reduction must be shown, i.e., 99.99% of viruses killed by the disinfectant. Is this reduction of bacteria and viruses (4–6 log or 99.99%–99.9999%) on an OR floor required, or is this a huge margin of safety? Would sanitizing the floor (3 log or 99.9% reduction) be adequate to keep patients safe from microorganisms that may move from the floor to the patient through staff movement?

What is the risk? Blood, urine, cerebrospinal fluid, and bone fragments from a patient's procedure would generally be considered clean or microorganism-free, unless the patient was septic or a necrotic situation **was** encountered. Routine practices would have these body fluids or body substances being cleaned up and the area disinfected in case of unrecognized microorganisms (blood borne pathogens for instance). Feces or respiratory secretions do have very high levels of microorganisms, regardless of patient preparation or decolonization. These substances would need to be cleaned, and the area of that body substance disinfected. The application of a sporicide on a fecal spill, after cleaning and disinfection, also makes sense as the spore count in feces can be in the billions.

Papers or studies on floor colony counts are scarce or quite dated. One study found colony counts (using a contact plate – agar in a Petri dish pressed to the surface) during operations to be in the 4 per 10 $cm^2$ range (Suzuki et al., 1984). Even one week of not using a disinfectant, instead using just a cleaner, the colony count was only 11.3 per 10 $cm^2$ or approximately 1 colony per square centimeter. These colony counts are all under 2 log (<100). Most of the flora on floors or in OR dust is skin flora from personnel (Shin et al., 2015).

A non-food contact sanitizer must be able to kill 3 log (99.9%) of bacteria within 5 minutes; manufacturers state the contact time for their sanitizers, either on labels or in accompanying information. Many disinfectants also carry a sanitizing claim, which is usually a more dilute solution with a shorter contact time.

Regular use of a sanitizer between cases on a visibly clean floor could kill or remove bacteria that may be harmful to the next patient and allow for a rapid turnaround of the OR. This would require any visible soiling (blood, bone chip) to be cleaned with a disinfectant wipe, and then re-applied for the contact time.

Current ORNAC guidelines are to work high to low, clean to dirty, which means in many ORs any visible soiling on the floor is left until the end of the turnover procedure. This can allow blood and body substances to be moved during the 'high' cleaning process. Could we consider cleaning (and disinfecting) body substances on the floor first (using a cloth and disinfectant, or a pre-wetted wipe), then complete the turnover steps of other surfaces, finishing with a sanitizer on the floor (some products have a 30 second contact time), so that some time can be saved (if using a disinfectant with a longer contact time)?

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## References

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