Contamination of non-sterile gloves by *Bacillus cereus* and non-spore forming bacteria

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**Introduction**

The hands of health care workers can be highly contaminated, especially during routine care procedures when they are exposed to body substances. Therefore, in addition to hand hygiene, non-sterile gloves are an important tool to minimize cross-transmission of micro-organisms from one patient to another. However, health care workers must be aware that non-sterile disposable gloves could be contaminated with a wide range of bacteria, including spore-forming agents.

*Bacillus cereus* is a gram-positive spore forming rod. Although it is commonly found as a contaminant in clinical specimens, it can cause severe gastro-intestinal and wound infections. Especially immune compromised patients are vulnerable for infections with this micro-organism.

Following an outbreak of *Bacillus cereus* in our burn unit, we aimed to study bacterial contamination of disposable gloves.

**Materials and methods**

The studied gloves included commercially available non-sterile disposable gloves made of two different materials: nitrile and vinyl. For each box, two gloves were cultured: the glove on the top and the glove at the bottom of the box.

After treatment of the surface of the boxes with a disinfectant, each box was opened and the gloves were removed aseptically. Each glove was immersed in 200 ml of broth (VV9). After stirring for 2 minutes, the solution was filtered through a 0.45 µm filter. The filter was placed onto a TSA broth agar and incubated at 37°C under aerobic condition.

A colony count was performed after 24 hours of incubation. For each box of gloves, the sum of the two sampled gloves (top and bottom) was made.

**Results and discussion**

A total of 56 boxes (27 nitrile and 29 vinyl) were examined. Of the nitrile gloves, 11/27 (41%) of the boxes tested contained > 5 CFU *B. cereus*, whereas only 3/29 (10%) of the vinyl gloves contained > 5 CFU *B. cereus* (p < 0.01 Chi-square test).

Considering the contamination by non-spore forming micro-organisms, 9/27 (33%) of the nitrile gloves contained > 5 CFU bacteria, whereas of the vinyl gloves only 3/29 (10%) contained > 5 CFU bacteria (p < 0.01 Chi-square).

**Conclusion**

Our study shows that disposable gloves can be contaminated by *Bacillus cereus* as well as by non-spore forming micro-organisms and that gloves made of nitrile are significantly more contaminated than those made of vinyl. European guidelines and quality norms on bacterial contamination of disposable gloves are therefore needed.

**Literature**