

Factsheet

Selecting and using aerators in medical facilities

The problem of pathogens being transmitted via the water supply system in medical facilities and especially in hospitals is a constant cause for discussion. The guidelines for hospital hygiene and infection prevention published by the Robert Koch Institute in 1988 stipulated that taps with aerators containing a strainer or perforated plate were not suitable for hospitals. Since their publication, these guidelines have not been re-examined or revised.

However, certain parameters have of course changed in the last 30 years. Working together with BZH GmbH (German Consulting Centre for Hospital Epidemiology and Infection Control) in Freiburg/Breisgau, Neoperl GmbH in Müllheim has consequently spent several years conducting various laboratory tests at the Ruhr District Institute of Hygiene and the Fraunhofer Institute for Toxicology and Experimental Medicine (ITEM) in Hannover, as well as carrying out literary research. In June 2016, the BZH compiled an expert report on the subject of aerators in water outlet points in medical facilities, taking into account the results of the laboratory tests.¹

Expert report by the BZH (German Consulting Centre for Hospital Epidemiology and Infection Control)

Microbiological experiments on aerators

In order to further investigate the issue of bacterial contamination of aerators, Neoperl GmbH commissioned tests of the influence of various types of aerators and materials on microbiological colonisation.

The results found no clear correlation between the material/design of the aerator or water stream (vented or laminar) and microbial growth on the surface. Additional structures to protect the aerator against external contamination were also not found to change the level of microbial colonisation.

Experiments on aerosol formation caused by aerator

In order to estimate the quantity of aerosol and the resulting risk of infection through the inhalation of pathogens, Neoperl GmbH commissioned an experiment at the Fraunhofer Institute ITEM. This showed that more aerosol particles are emitted with the use of vented aerators than non-vented ones. However, the amount is very small compared to the quantity of aerosol produced by a shower head or when a splash of water lands on a solid surface. Supported by a risk assessment, the researchers have therefore reached the conclusion that there is only a minimal risk of the aerosol from an aerator directly resulting in legionella bacteria infection, even if the water were heavily contaminated.

Conclusions made by the BZH

- Aerators should be fitted at all outlet points to prevent water splashing and therefore directly contaminating the surrounding area.
- A traditional vented aerator does not present a significantly higher risk of aerosol formation and can therefore be used.
- Aerators should be replaced at regular intervals to prevent excessive bacterial contamination of the water through biofilm growth on the aerators.

- The replacement interval must be defined in line with the individually defined hygiene concept within a facility, as water quality, frequency of use and overall flow volume have an affect on the potential formation of a biofilm.

Recommendations of the Neoperl Group

Based on the expert report from the BZH, the Neoperl Group issues the following recommendations for aerators in medical facilities:

- In medical facilities, aerators help to prevent water unintentionally landing on surfaces or splashing. This means they reduce the risk of pathogens being transmitted.
- Although the expert report shows that traditional vented aerators do not present a significantly higher risk of infection through inhalable pathogens, we recommend using laminar flow aerators. These almost completely prevent the intake and distribution of contaminated aerosol particles.
- Various environmental factors in a medical facility can lead to biofilm growth on an aerator. We therefore recommend replacing them regularly. Exactly how often the aerators should be replaced is up to the individual medical facility, but Neoperl's colour coding system can help to remind staff when it is time for a replacement.

For any queries regarding these recommendations or for the full expert report please contact us via electronic mail: clinic@neoperl.de

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¹ Fritz, Eva / Schultz-Stübner Sebastian (publisher) (2016): Selecting and using aerators in medical facilities, German Consulting Centre for Hospital Epidemiology and Infection Control, BZH GmbH, DE-Freiburg/Breisgau