

Some surfaces are harder to disinfect than others

Just nebulise germs away



**Report: Brigitte Schenk,
hygiene specialist**

The Protestant Deaconess Hospital in Leipzig has used hydrogen peroxide nebulisation for several years. During the first test applications in 2015, I myself was still somewhat sceptical: Will it really be worth the effort? Can the associated process really be established without further ado in a hospital of basic and standard care? About two and a half years later, I can state with conviction: The introduction of the hydrogen peroxide nebulisation process as a supplement to the usual final disinfection was a complete success.

This was the case from the very first day, when a new intensive care unit was opened in September 2015 in Leipzig's Deaconess Hospital and a patient with a challenging spectrum of pathogens was admitted in the first few weeks. MRSA as well as 3MRGN *Klebsiella pneumoniae* and 4MRGN *Acinetobacter baumannii* were detectable at several smear sites, e.g. in

the bronchial lavage. In this patient's treatment, I came across the hydrogen peroxide nebulisation process and management approved placement of a trial order.

Workflow for hydrogen peroxide nebulisation

In the preparation phase, disposable products are discarded and a final disinfection is carried out

according to the disinfection plan. All surfaces must be dry and freely accessible; the mattresses must be tilted upwards and the drawers opened in the respective room. Subsequently, personnel from the technical

staff tape the cover grids of supply and exhaust air so that the concentration remains constant during the exposure time. Smoke detectors are shielded with a special foam cover and additionally are temporarily switched off.



Now the possibility arises to position mobile ultrasound and X-ray devices, trolleys, etc. in the room, which have also been wiped with disinfectant, to have them de-contaminated as well. Furthermore, numerous monitors, infusion pumps, blood pressure cuffs and cables in the intensive care unit can also be exposed to the procedure without concern.

Trained employees now position the generator in a corner of the room, aligning the nozzle to the centre of the room. The volume controller is set on the basis of room volume and the measured humidity. To be able to verify the success of the nebulisation, five indicator sticks are laid out at different places in the room. After the device has been switched on, the employee has 30 seconds to leave the room. From the outside, the closed door is sealed with a gas-tight adhesive tape and marked with a sign.

The duration of the nebulisation depends on the room volume and may not exceed 30 minutes. This is followed by a 90-minute exposure time, after which a member of the cleaning staff opens the seal and, protected by a gas mask, enters the room to open the windows for a ventilation time of 45 minutes.



Is it worth all this effort?

The results and findings that we have been able to gather in the Deaconess Hospital so far are absolutely convincing. A significant germ reduction has been verified on various surfaces, especially in an outbreak situation.

The H₂O₂ nebulisation can also be used to reach

areas that are difficult to access manually – bactericidal, fungicidal, virucidal and sporicidal. Even bacterial biofilms are affected, because the preparation used in our clinic is enriched with silver ions.

These enhance the effectiveness of hydrogen peroxide, which results in damages to the membranes of the micro-

organisms. The compound is environmentally harmless – it breaks down into water and oxygen. When wiping disinfection is carried out manually, there remains a risk of insufficient application of aqueous solutions; however, this gap can be closed with a hydrogen peroxide nebulisation. Therefore, the procedure is a valuable supplement.

The combination of wipe disinfection and hydrogen peroxide nebulisation has proved to be a real blessing from the very first difficult patient case to the present day.

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