

Disinfection with Steam Vapor Systems: Implications for Dentists

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Objective:

With the constant emergence of new pathogens and development of antibiotic resistance in others, it is especially important to clean beyond what one can see. Dental care facilities must guard particularly against surface transmission of antibiotic-resistant pathogens. Many of the infections that were once considered nuisances may now be incurable.

The basic technologies that can be used to kill microorganisms on surfaces along with their advantages and drawbacks are listed. The many advantages of steam technology when used for disinfection are discussed in detail. The objective of this study is to document the disinfection efficacy of steam when applied with a modern dry steam vapor system when compared with other methods of disinfection.

Methods:

Test protocols were developed to reflect those required by the Environmental Protection Agency (EPA) for traditional chemical disinfectants and were performed by a third party commercial microbiology laboratory.

- Microorganisms were grown in liquid culture or harvested from stock suspensions.
- Artificial soil was added to the culture.
- The culture was applied to a test surface.
- Microorganisms were allowed to dry on the surface.
- Contaminated surfaces were treated with the portable steam vapor system for various periods of time.
- After contact, surviving microorganisms were enumerated and percent reductions were reported.

Results:

One of the most important ramifications of the modern portable steam vapor system tested is that the disinfecting power of steam can now be applied to contaminated dental operatory surfaces, as well as all washable surfaces, in an effective, safe manner. Testing showed that dry steam vapor disinfection is a reliable way to quickly eliminate microorganisms from surfaces (within 5 seconds). Since steam penetrates pores that many chemicals and abrasive cleaners cannot, steam may, in fact, be superior to many chemical disinfectants for surface disinfection.

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