

DISINFECTION DATA

FROM THE AMERICAN JOURNAL OF INFECTION CONTROL 37(1):20-27,
FEBRUARY 2009/TANNER, BENJAMIN D. PHD

ABSTRACT:

Background: Surface-mediated, infectious disease transmission is a major concern in various settings, including schools, hospitals and food-processing facilities. Chemical disinfectants are frequently used to reduce contamination, but many pose significant risks to humans, surfaces and the environment and all must be properly applied in strict accordance with label instructions to be effective. This study set out to determine the capability of a chemical-free, saturated, steam-vapor, disinfection system to kill microorganisms, reduce surface-mediated infection risks and serve as an alternative to chemical disinfectants.

Methods: High concentrations of *Escherichia coli*, *Shigella flexneri*, vancomycin-resistant *Enterococcus faecalis* (VRE), methicillin-resistant *Staphylococcus aureus* (MRSA), *Salmonella enterica*, methicillin-sensitive *Staphylococcus aureus*, MS2 coliphage (used as a surrogate for non-enveloped viruses including norovirus), *Candida albicans*, *Aspergillus niger* and the endospores of *Clostridium difficile* were dried individually onto porous clay test surfaces. Surfaces were treated with the saturated, steam-vapor, disinfection system for brief periods and then numbers of surviving microorganisms were determined. Infection risks were calculated from the kill-time data using microbial, dose-response relationships published in the scientific literature, accounting for surface-to-hand and hand to mouth transfer efficiencies.

Results: A diverse assortment of pathogenic microorganisms was rapidly killed by the steam, disinfection system; all of the pathogens tested were completely inactivated within 5 seconds. Risks of infection from the contaminated surfaces decreased rapidly with increasing periods of treatment by the saturated, steam vapor, disinfection system.

Conclusions: The saturated, steam-vapor, disinfection system is chemical-free, broadly active, rapidly efficacious and therefore, represents a novel alternative to liquid, chemical disinfectants.

Copyright © 2009 by the Association for Professionals in Infection Control and Epidemiology, Inc.