

Are Surface Disinfectants Safe?

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The COVID-19 pandemic brought to light numerous issues from telehealth to infection control to personal and patient mental well-being. Early in the pandemic, with transmission still shrouded in confusion and a lack of data, infection by contact, also termed “fomite transmission,” was among vectors thought to be important. Months of data collection and analysis diminished the importance of contact transmission compared to droplets, aerosols, and personal distancing, but the original concerns prompted some practices to implement more rigorous protocols, some of which were homegrown.

The purpose of this brief commentary is to bring attention to the need for members to look critically at their practices of surface disinfection. Dental practices have long adhered to CDC recommendations for surface disinfection. The almost-nil infections traced to dental offices suggest that those recommendations remained effective in the pandemic. Until that eventuality was accepted, concerned dentists looked for information to address safety concerns about COVID-19 transmission, including those related to surface disinfection. Dentists approached disinfection with “an abundance of caution,” often modifying techniques with new materials, devices, and procedures, many of which were not vetted for safety or efficacy.

The CDC determined that surface transmission of COVID-19 is a limited concern, and that existing infection control practices recommended for infectious disease transmission already in place for dental offices are adequate. Those can be found at <https://www.cdc.gov/oralhealth/infectioncontrol/index.html>. The AAPD encourages its members to review and implement these proven approaches, and be aware of some of the hazards associated with their use.¹

What prompted this report was a recent concern about the safety of an ultraviolet (**UV**) disinfection system.² Recent medical literature suggests that chronic, long-term exposure to disinfection agents may have negative health consequences on health personnel.³ The concern about UVC radiation is that it can pose a risk to people in direct exposure of it, even after just seconds. Eye injury (including eye burns) and skin injury can occur, especially without adequate training of its use. According to the Food and Drug Administration (**FDA**), some UV devices create ozone (an airway irritant) and degrade surface materials like plastics. They also may contain mercury, so further caution is advised when cleaning up an accidentally broken device.⁴

UV has not been widely tested for efficacy and much current information comes from reports of injury. In a recent case, a UV product called the Max-Lux Safe-T-Lite UV WAND was found to produce an unsafe level of UV-C radiation and did not have the level of protection needed to protect the user or people within its path of exposure.²

Concern about chronic exposure to disinfection agents stems largely from research focused on operating room exposure. Nurses exposed to disinfecting agents are at risk of congestive obstructive pulmonary disease, according to at least one longitudinal study.³ Another study of respiratory illness found an unexplained association of idiopathic pulmonary fibrosis with dentistry, but lacked clarity on a possible role of disinfectant exposure.⁵

Research is limited on the effect of long-term use of various surface disinfectants, but the COVID-19 pandemic has brought use of these under better, and frankly, needed scrutiny. Simple procedures known to be effective may have been modified in the pandemic to account for elevated transmission risk. Leaving surfaces wet; isolating operatories for a period of time with disinfectants; allowing agents to work, but also evaporate into room air; and mixing agents for perceived or real improved potency, all occurred in the pandemic. The general health effect of these practices is not well understood and over periods of months or years, may have an impact on respiratory and other systems.

Physical plant considerations were also a part of COVID-19 mitigation, such as increased air turnover and barrier placement. The infection control effectiveness of these approaches remains under study, but their impact on disinfectant exposure may not be. Older offices with poor air turnover, and those with abundant furniture, playscapes, and other large surface area décor may be sources of prolonged exposure to disinfectants.

Pediatric dentists are encouraged to review their disinfection procedures and enlist help from local experts to balance infection control with minimizing exposure of personnel to chemicals that may be injurious over time.

References

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