



Best Practices for Infection Prevention

CLEANING AND DISINFECTING MOBILE DEVICES IN HEALTHCARE ENVIRONMENTS

BY DARREL HICKS, A NATIONALLY-RECOGNIZED EXPERT IN INFECTION CONTROL

Each year in the United States, approximately 1.7 million patients are affected by healthcare-associated infections (HAIs). Of these, it is estimated that one-third could be prevented by adherence to infection prevention guidelines.¹ A variety of sources are associated with the transmission of HAIs, including patients, medical equipment and devices and surfaces. In recent years, the use of mobile devices by healthcare workers—including cell phones and tablets, mobile computers and printers—has rapidly expanded. While these devices have significantly improved the quality of the patient experience, they also have the potential to harbor harmful infectious organisms, introducing new risks of transmitting microorganisms throughout healthcare facilities.

For hospitals to protect patients and staff, it is critical for them to put a robust infrastructure of infection protection practices in place that includes the cleaning and disinfection of mobile devices used by healthcare workers.

The Agency for Healthcare Research and Quality and other organizations stress the importance of cleaning and disinfection in reducing the incidence of HAIs.² The terms “cleaning” and “disinfection” have significantly different definitions.

CLEANING MOBILE DEVICES

Cleaning mobile devices includes the removal of visible soil and biofilm in a manual process using a scrubbing motion with a dampened micro-denier microfiber wiper (eyewear lens cloth).

ABOUT MICROFIBER: Microfiber cloths are proven effective in removing the moisture needed for the growth and survival of microorganisms. Microfiber is a material that consists of densely constructed synthetic fibers that are six times more absorbent than conventional cleaning products. Microfiber cloths are powerful tools in the fight to prevent the spread of harmful microorganisms. Better grades of microfiber are able to remove large volumes of microbes, including hard-to-kill spores. According to the *American Journal of Infection Control*, microfiber demonstrates “superior microbial removal” compared to conventional products.³

In tests published by the Environmental Protection Agency (EPA), microfiber cleaning products were shown to remove up to 98% of bacteria (and 93% of viruses) from surfaces using only water.⁴ While regular cleaning of a device by wiping with a moist microfiber cloth is often enough to eliminate many kinds of bacteria, an additional level of decontamination is often needed to remove more dangerous and long-lasting bacteria.

DISINFECTING MOBILE DEVICES

Disinfection is a process that eliminates many or all pathogenic microorganisms on a precleaned surface. The efficacy of any disinfectant is diminished when soil is present. Disinfectants are used to destroy microorganisms on surfaces. According to the Centers for Disease Control and Prevention (CDC), there are three levels of disinfection:⁵

HIGH-LEVEL DISINFECTION: Destroys all microorganisms except high levels of bacterial spores with “a chemical germicide cleared for marketing as a *sterilant*” by the Food and Drug Administration (FDA). This level of disinfection is required for devices that contact sterile tissue or mucous membranes, such as surgical instruments.

INTERMEDIATE-LEVEL DISINFECTION: “Kills mycobacteria, most viruses and bacteria with a chemical germicide registered as a *tuberculocide*” by the EPA. These are used in areas of the hospital where the most frequent interactions of patients, visitors and staff occur. Disinfectants for intermediate-level areas include EPA-registered hospital disinfectants such as sodium hypochlorite (bleach). Bleach- or hydrogen peroxide-based wipes or sprays are generally effective. The Society for Healthcare Epidemiology of America (SHEA) recommends a 1:10 bleach solution to kill pathogens (e.g., *C. difficile*) that are of greatest concern to hospitals.

LOW-LEVEL DISINFECTION: “Kills some viruses and bacteria with a chemical germicide registered as a *hospital disinfectant*” by the EPA. Quaternary disinfectant cleaners, or quats, are generally used on surfaces that are touched less frequently in non-patient areas.

All claims of the efficacy of a disinfectant must be registered by the EPA. Every disinfectant used by a hospital should have an EPA registration number on the label. For proper disinfection—and to alleviate the risk of leaving harmful bacteria on the device surface—it is important to check Occupational Safety and Health Administration (OSHA) guidelines and follow the directions provided on the agent used for the disinfection process.



THE 5:1 RULE

After a device has been disinfected at the beginning of a workday, a good rule of thumb—or ratio for cleaning vs. disinfection of enterprise mobile devices—is 5-to-1. In other words, a device should be disinfected after it has been cleaned with a microfiber cloth five times.



CDC DEFINITIONS

CLEANING:

the process by which foreign material such as dirt and grime are removed from the surface of an object.

DISINFECTION:

The use of a chemical procedure that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial endospores) on inanimate objects.⁶

NONCRITICAL PATIENT CARE ITEM:

An item that comes into contact with skin but not mucous membranes.

CLINICAL CONTACT SURFACE:

A surface that might be touched frequently with gloved hands during patient care... and subsequently contact instruments, hands, gloves or devices.

BEST PRACTICES FOR CLEANING AND DISINFECTING MOBILE DEVICES

The *CDC Guideline for Disinfection and Sterilization in Healthcare Facilities* does not specifically address mobile devices. Best practices for cleaning and disinfecting these devices can be created by using a definition that falls between the CDC definitions for a “noncritical patient care item” and a “clinical contact surface.” Recommendations for healthcare workers who need to clean and disinfect their mobile devices after each patient visit, include:

- 1 To disinfect the device, dampen a soft cloth with the cleaning agent or use a pre-moistened wipe. Never apply liquid directly to the device. Do not allow the liquid to pool around the display window or any other area on the device.
- 2 Gently wipe all surfaces on the device. Be sure to clean the keys and between the keys of mobile computers. After cleaning, immediately dry displays and windows with a soft nonabrasive cloth to prevent streaking.
- 3 Allow the unit to air-dry before the next use.

It is important to note, most disinfectants leave residual materials that build up over time. At least once per shift, the device should be cleaned with an isopropyl alcohol wipe to prevent this buildup.

ADDITIONAL RECOMMENDATIONS

Additional recommendations, adapted from CDC recommendations by the Association for Professionals in Infection Control and Epidemiology, include:⁷

BARRIER PROTECTION: Place a waterproof or water-resistant barrier over the mobile handheld device. The CDC recommends the use of barrier protective coverings for “noncritical clinical contact surfaces that are touched frequently with gloved hands during the delivery of patient care.”

FREQUENCY: Disinfect the mobile device before and after every interaction with a patient or family with a disinfectant approved by the facility for noncritical items. The CDC guidelines advise “low-level disinfection for noncritical patient care surfaces and equipment that touch intact skin.”⁸

SCHEDULE: Follow a regular, standardized schedule for the disinfection of the mobile handheld device. The CDC recommends the use of low-level disinfectants “on a regular basis” for noncritical patient care devices.

HAND WASHING: Perform hand washing before and after use of a mobile handheld device. The CDC guideline recommends decontamination of hands after “contact with inanimate objects...in the immediate vicinity of the patient.”

SELECTING CLEANING PRODUCTS

There is a wide range of cleaning products registered by the EPA for infection control for use in healthcare facilities. When selecting the products that are available for your facility, it is important to consider safety, shelf life, compatibility with materials and application. The specific area of the hospital determines the level of cleaning and disinfecting that is required.

INCREASING **AWARENESS** INCREASES **COMPLIANCE**

In addition to establishing formal, standardized best practices for the cleaning and disinfection of mobile devices to be followed by staff at each healthcare facility, experts agree that infection prevention control departments should put procedures in place that would enable them to increase awareness and monitor usage of the new technologies that are in use in their facility. In facilities that provide staff with mobile handheld devices, information and reminders about compliance should be included as part of the software embedded on each device.



ABOUT THE AUTHOR: Darrel Hicks is nationally recognized as a leading expert in infection prevention and control as it relates to cleaning. He began his career in the management of housekeeping services and recently retired as the director of environmental services at a 500-bed, award-winning hospital in the U.S.

Mr. Hicks served as the president of the International Executive Housekeepers Association (IEHA) and holds the title of Registered Executive Housekeeper (REH) through this organization of over 3,500 members. He is also an active member in the American Society for Healthcare Environmental Services (ASHES) and holds the designation of Certified Healthcare Environmental Services Professional (CHESP).

Mr. Hicks is the author of Wiley Publishing's, *Infection Control for Dummies*, and has written and published numerous articles in professional and healthcare related journals as part of his commitment to providing a cleaner, safer and healthier environment in healthcare institutions.

Sources

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For more information, please visit www.zebra.com



NA and Corporate Headquarters
+1 800 423 0442
inquiry4@zebra.com

Asia-Pacific Headquarters
+65 6858 0722
contact.apac@zebra.com

EMEA Headquarters
zebra.com/locations
mseurope@zebra.com

Latin America Headquarters
+1 847 955 2283
la.contactme@zebra.com