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# You missed a spot! Disinfecting shared mobile phones

By Roberta Basol, MA, RN, NE-BC; Jean Beckel, DNP, MPH, RN, CNML; Judy Gilsdorf-Gracie, MBA, MS, RN, CNOR; Amy Hilleren-Listerud, MA, RN, ACNS-BC, CBN, PCCN; Terri D. McCaffrey, MA, APRN, CNS; Sherri Reischl, RN, CEN; Pamela Rickbeil, MSN, RN, ACNS-BC, RN-BC; Mary Schimnich, RN; Kirsten Skillings, MA, RN, CCNS, CCRN; and Mary A. Struffert, MSN, RN, NE-BC

**T**he use of portable mobile devices has facilitated timely communication among healthcare team members. It's now a common practice for hospital-owned mobile phones to be shared among healthcare employees from shift to shift. Despite the benefit of increased, timely communication between caregivers, sharing mobile devices can lead to the spread of healthcare-associated infections (HAIs) if they aren't properly disinfected. The Guidelines for

these devices.<sup>2-4</sup> The CDC recommends a cleaning regimen that's effective, fast-acting, easy to follow, and economical.<sup>1</sup> Currently, there are no published studies with standards for cleaning mobile phones.

We studied the efficacy of two types of cleaning products on shared mobile phones carried by RNs at a 489-bed, Magnet®-designated, Midwestern regional medical center. The cleaning methods evaluated were 70% isopropyl alcohol wipes and ethyl alcohol wipes.

## Background check

The issue of HAIs has presented an ongoing challenge to healthcare facilities. Healthcare workers are a potential source of HAIs because many pathogens are transmitted by hand and contaminated medical devices. There's extensive literature on the survival of organisms on inanimate objects, and studies suggest that commonly used patient-care items may serve as reservoirs and vectors for HAIs.<sup>5,6</sup> For example, vancomycin-resistant enterococci (VRE) are capable of prolonged survival on hands, gloves, and environmental surfaces.<sup>7</sup>

Mobile communication devices can act as reservoirs for bacteria associated with HAIs and are routinely transported into the operating environment by medical staff.<sup>8</sup> Data indicate that healthcare employee mobile phones have evidence of significant bacterial contamination, including bacteria known to cause HAIs.<sup>9-19</sup> Additional studies have shown cross-contamination between healthcare workers' hands, mobile phones, and patients, including transmission of multidrug-resistant strains of bacteria.<sup>20</sup> Contaminated mobile phones are hazardous to patients and may also pose a threat of spreading infections into the community.<sup>21</sup> In one study, it was found that 88% to 89.5% of study participants



Disinfection and Sterilization in Healthcare Facilities describe "non-critical environmental surfaces" as items that are frequently touched by the hand and may pose a risk of secondary infection transmission.<sup>1</sup> Mobile phones are recognized as noncritical environmental surfaces, and research demonstrates the presence of contaminants on

never cleaned their mobile communication devices and that pagers were often touched during or after the examination of patients without hand washing. Microbial contamination is a risk associated with the infrequent cleaning of phones.<sup>22</sup>

The good news is that studies have shown a significant reduction in contaminated pagers with the use of several prepackaged disinfecting agents; alcohol wipes with 0.5% chlorhexidine/70% isopropyl were significantly more efficacious in eliminating all bacterial growth than the other agents.<sup>23</sup> In a unique study on the use of alcohol-based hand foam, results showed that the foam simultaneously sterilized the hands and a stethoscope head, which significantly reduced the number of bacterial colonies, including methicillin-resistant *Staphylococcus aureus* (MRSA).<sup>24</sup> These studies suggest that cleaning mobile phones may significantly decrease bacterial colonies and the threat of device related bacterial cross-contamination.

#### **Collecting the cultures**

A random sample of 66 shared mobile phones routinely used by direct care RNs was taken. The collection occurred in 11 acute care units and CCUs, with six samples taken from each unit. Two phone cleaning products were tested: 70% isopropyl alcohol wipes (product a) and ethyl alcohol wipes (product b).

A cleaning method sampler container holding an equal number of products a (33) and b (33) was used to determine which cleaning method was tested. Paper lab requisition forms and adhesive labels for cultures were premade to match the total number of samples, with two requisitions per sample

and a unique identifier number. The researcher selected a patient care unit as well as cleaning product a or b. The researcher approached a direct care RN on the selected unit and informed the RN of the study to culture his or her phone. No consent was obtained. RNs were allowed to refuse to participate; however, none refused.

To culture the devices, an RN held the phone while the researcher swabbed the keypad, mouthpiece, earpiece, and back of the phone using three long strokes per side, constantly rotating the swab and not touching the RN's fingers. This method was used to

analyze the presence and identification of bacteria. There were no pathogenic bacteria detected on the mobile phones before or after cleaning with either 70% isopropyl alcohol wipes or ethyl alcohol wipes. Of the 66 samples obtained, 64% had the presence of normal skin flora. Normal skin flora was reduced from 64% to 12% with isopropyl alcohol wipes and from 64% to 15% with ethyl alcohol wipes.

Researchers in our study determined that the shared mobile phones tested weren't contaminated with pathogenic bacteria and weren't a source of HAIs. Because there was no MRSA or VRE cul-



### ***Balance efficient communication with hands-on patient contact to minimize the transfer of bacteria within the hospital environment.***

obtain the culture before and after cleaning. The RN was asked to perform hand hygiene with alcohol-based foam following the first culture and before cleaning the phone. He or she was then instructed to clean the phone thoroughly using product a or b. The researcher waited 2 minutes while the RN continued to hold the phone, which wasn't allowed to be set down, placed in a pocket, air blown, or waved dry. Then, the second culture was obtained. The culettes were sent to the hospital lab for analysis. A data collection log was used to track the samples and results.

#### **Now that's clean!**

Culture results from 66 paired samples taken before and after cleaning shared mobile phones

tured, resistance testing wasn't necessary. Disinfection of normal skin flora did occur with both 70% isopropyl alcohol wipes and ethyl alcohol wipes, but no conclusion may be drawn as to which product is more effective for disinfection of pathogenic bacteria. However, it was determined that the cleaning of mobile phones by healthcare workers is an effective way to eliminate bacteria.

#### **Continued infection prevention**

Inanimate objects may harbor pathogenic bacteria, which may result in cross-contamination from healthcare workers to patients, leading to HAIs. Previous studies have demonstrated that pens, stethoscopes, pagers, computer keyboards, and mobile phones test positive for pathogenic and

nonpathogenic bacteria, including multidrug-resistant organisms. Healthcare workers are responsible for maintaining clean shared mobile phones by following the cleaning process. In this particular study, culture results didn't reveal the presence of pathogenic bacteria, however, normal skin flora was found. Healthcare facilities should consider disinfecting shared mobile devices with 70% isopropyl alcohol wipes or ethyl alcohol wipes to help prevent the spread of bacteria.

Mobile phones go everywhere with staff members on duty and are

## Healthcare workers are responsible for maintaining clean shared mobile phones.

handled during the course of patient care, staff breaks, and in other venues within the hospital. Nurses need to balance efficient communication with hands-on patient contact to minimize the transfer of bacteria within the hospital environment. Identifying efficient and effective disinfection methods related to mobile phone bacterial transmission may reduce the spread of HAIs and their related impact on patient length of stay, cost, and mortality. **NM**

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