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Prevalence and Type of Microorganisms Isolated from House Staff's Mobile Phones before and after Alcohol Cleaning

To the Editor—Mobile phones may pose a risk for the transmission of multidrug-resistant bacteria from healthcare workers to patients, with evidence of phones as sources of contamination with *Staphylococcus aureus* and several gram-negative bacilli.[1-5] We report findings of a pilot study to estimate the prevalence and type of microorganisms isolated from the mobile phones of house staff at a Thai hospital before and after alcohol cleansing.

From August 1 to September 30, 2010, swab cultures were obtained from the mobile phones of house staff at Thummasat University Hospital. After consent, the surface of the phone's keypad, mouthpiece, and earpiece was swabbed in a standardized method. The phone was then cleaned with a 70% alcohol pad, and a second culture swab of the keypad, mouthpiece, and earpiece was obtained 1 minute later. Same-day specimen transport to and processing at the microbiology laboratory of Thummasat University Hospital occurred, with identification of microorganisms according to Clinical and Laboratory Standards Institute criteria.[6] Data collection included participants' occupation, hospital unit, number of patients per unit infected with multidrug-resistant microorganisms that each house staff took care of, and the type of microorganism isolated from each house staff's mobile phone. Data on 5 moments of hand hygiene adherence were recorded from the Infection Control Unit as overall adherence in each unit that each house staff worked on at the time of specimen procurement.

There were 80 employed house staff during the study period, and all consented to study participation. The median age was 28 years (range, 24–33 years); 38 participants (47.5%) had exposure to multidrug-resistant bacteria at enrollment, and there was a median of 2 cases (range, 0–5) per house staff with multidrug-resistant bacteria. Participant characteristics and the overall 5-moment hand hygiene adherence stratified by the hospital unit are summarized in Table 1. Three mobile phones (3.8%) had cultures positive for *Acinetobacter* spp. before alcohol cleaning. After alcohol cleansing, no microorganisms were detected. Overall hand hygiene compliance was 39.0% before touching a patient, 29.4% before a clean/aseptic procedure, and 47.5% after touching a patient's surrounding.

Our study is the first to suggest that alcohol pad cleaning can eradicate microorganisms from mobile phones. Although previous reports identified healthcare workers' mobile phones as a reservoir for various multidrug-resistant bacteria, none to date have shown that alcohol cleansing can reduce the detection of bacteria on mobile phones.[1-5] Notably, overall 5-moment hand hygiene adherence was suboptimal. We acknowledge that we did not distinguish mobile phones by type or structure or evaluate potential behavioral distinctions of the house staff who did and did not have contaminated phones. Nonetheless, these findings suggest a potential environmental and behavioral risk for the transmission of microorganisms to mobile phones via patient-provider encounters. Additionally, our findings support the potential benefit

TABLE 1. Demographic Profile and Microbial Surveillance of the Mobile Phones of 80 House Staff at a Thai Hospital

Variable	No. (%)
Age, years (range)	28 (24–33)
Sex	
Female	47 (58.8)
Male	33 (41.2)
Occupation	
Resident	44 (55)
Intern	36 (45)
Department	
Medicine	30 (37.5)
Surgery	11 (13.8)
Pediatric	12 (15.0)
Ophthalmology	6 (7.5)
Orthopedic	12 (15.0)
Gynecology and obstetrics	2 (2.5)
Outpatient	5 (6.3)
Emergency	2 (2.5)
Exposure to MDR microorganisms	38 (47.5)
Patients infected with MDR microorganism in care	
<1	3 (3.8)
2–3	26 (32.5)
4–5	5 (6.3)
>5	4 (5.0)
Hand hygiene compliance (%)[a]	
Before touching a patient	39.0
Before clean/aseptic procedure	29.4
After body fluid exposure/risk	57.9
After touching a patient	67.2
After touching patient surroundings	47.5
Outcome	
Prealcohol culture	
Positive	3 (3.8)[b]
Negative	77 (96.2)
Postalcohol culture	
Positive	0 (0)
Negative	80 (100)

NOTE. Date are no. (%), unless indicated otherwise. MDR, multidrug-resistant.

[a] Data from Infection Control Unit.

[b] All grew *Acinetobacter* species.

of tailored feedback on 5-moment hand hygiene surveillance to minimize the potential transmission of bacteria in healthcare settings.

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