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Attire as a Fomite: Proposal for a New Index Concerning Change of Attire

To the Editor—Haun et al[1] wrote a review of the literature regarding 2 fomites found in hospitals: devices and attire. This article raises the importance of hygiene in inpatient units to prevent increasingly multidrug-resistant bacteria in hospitals all over the world, and this issue is particularly relevant to our practice. We would like to contribute our experience in a French military hospital to their findings.

In France, we have seen an increase of patients infected or colonized with MRB. For example, Arnaud et al[2] showed that the incidence of extended β-lactamase–positive *Enterobacteriaceae* infections in French hospitals increased by 73% from 0.35 to 0.60 per 1,000 patient days ($P < .001$) from 2009 to 2013. Consequently, the risk of cross infection increases.[3] In this context, we wanted to improve infection prevention in our hospital this past year. Because the indicator of consumption of hydro-alcoholic solution, ICSHA-2 (indicateur de consommation de solutions hydro-alcooliques number 2) is at its highest in our hospital, we focused our attention on 2 other fomites (ie, like Haun et al): devices and attire.[4]

We first studied the bacterial contamination of mobile phones. We obtained 80 samples from 40 phones from 40 people of all healthcare occupations: nurses, doctors, nursing aides and hospital service agents. Overall, 16 mobile phones (40%) were contaminated (ie, >50 colony forming units/25 cm^2). Indicator bacteria were found on 3 phones: *Staphylococcus aureus* (n = 2) and *Escherichia coli* (n = 1). Mobile phones of doctors and nurses were contaminated more often than those of other healthcare workers: 65% versus 35%, respectively ($P = .01$).

In a second investigation, we controlled the implementation of standard precautions[5] when a patient was hospitalized for pneumonia because of *K. pneumoniae* OXA48. We recognized that doctors did not change professional attire every day. Thus, we created a new hospital hygiene indicator: index of change of attire (ICA).

The goal is that each caregiver changes attire every day. This ICA is calculated using 2 variables. The first, referred to as X, is the number of outfits washed each month in the hospital. We were able to measure this variable with the assistance of the laundry service. The second variable, referred to as Y, is the number of monthly working days contributed by all hospital healthcare workers at our institution. We were able to measure this variable with the help of the office of human resources. We then calculated the ICA as ICA = X/Y. According to our stated goal, the ICA should be ≥1.

In our hospital, ICA was <1; it was 0.57 for pants and 0.60 for white gowns. Thus, we sought to determine why all healthcare workers did not change attire daily. In some inpatient units, the reasons were material. For example, the number of outfits worn by doctors was insufficient. An outfit is worn for 1 day then put into the dirty laundry circuit. The dirty outfits are sent to the laundry service at an outside company. The clean garments are returned to the hospital and are distributed to the units. The entire procedure takes 2 weeks. Consequently, each doctor needs at least 12 complete outfits.

To improve the ICA, we changed the contract with the laundry company so that each healthcare worker and doctor were provided the exact number of garments according to his/her scheduled work days. We launched an information campaign regarding wearing and changing attire. The management of our hospital took part in this information campaign to emphasize its importance to all healthcare workers. Hygiene training was provided regarding awareness of the problems of changing attire and mobile phone contamination. In 6 months, we will complete a "before-and-after" study to determine the impact of these measures on our ICA and the number of cross infections in our hospital.

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Multidrug-Resistant Organisms in the Rooms of Patients in Healthcare Facilities

To the Editor—The study by Shams et al[1] adds to the existing body of literature demonstrating the frequent environmental presence of multidrug-resistant organisms (MDROs), including *Clostridium difficile,* in the rooms of patients in healthcare facilities. I commend the authors for their work and wish to make a few comments.

First, it might have been helpful to analyze the data from long-term care facilities and acute-care hospitals separately, given the potential differences in infection control protocols, MDRO prevalence, patient mix, and the variable impact of infection control interventions, including environmental cleaning, on healthcare-associated infections between these 2 types of facilities.[2,3] Second, it would have been useful to report the breakdown of hospital rooms by specialized units (eg, burn or intensive care units) versus general wards to help the reader determine the generalizability of the results to their specific hospital units. Third, given the varied methods of terminal cleaning of patient rooms (including the adoption of "no-touch" technologies) in response to the ongoing transmission of MDROs in healthcare facilities,[4,5] further clarification of the methodology and type of cleaning products used

(reported to have been recorded as stated in the Methods section) by participating facilities would have been welcome. Lastly, with 30% of rooms remaining culture positive for MDROs after terminal cleaning—with their attendant risk of transmission to the new occupants[6]—the results of the study by Shams et al support those of prior works demonstrating similarly high rates of MDRO-positive rooms despite seemingly adequate terminal cleaning.[7–9] Although, as stated by the authors, the relationship between the levels of microbial contamination in the environment and patient acquisition of MDROs remains unclear, one could argue that under the right circumstances in a susceptible host (eg, immunosuppressed or with open wounds), no level of environmental contamination with MDROs in terminally cleaned rooms may be considered safe, and that more effort should be directed now toward devising safe and cost-effective means of eliminating them from the surfaces of all newly vacated patient rooms.

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