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Intensified Infection Control Measures to Minimize the Spread of Colistin-Resistant *Acinetobacter baumannii*

To the Editor—The emergence of carbapenem-resistant gram-negative bacteria (GNB) is an increasing source of healthcare-associated infection worldwide and has been associated with adverse clinical outcomes and resource consumption.[1,2] The use of colistin and polymyxin B has been resurrected during the past decade, especially in combination drug regimens targeting carbapenem-resistant GNB.[3] To date, the emergence of colistin-resistant GNB has been uncommon, yet it is of global concern.[3] We report a case of pneumonia due to colistin-resistant *Acinetobacter baumannii* infection in a patient who presented to an intensive care unit (ICU), implementation of intensified infection prevention control (IPC) measures, and the ICU monitoring efforts associated with ensuring that there was no subsequent detection of this pathogen in other patients. On September 15, 2012, a 74-year-old man with chronic obstructive pulmonary disease, diabetes, renal failure, and recurrent carbapenem-resistant *A. baumanniii* pneumonia (3 episodes in the previous 12 months) was readmitted to the medical ICU with fever, shortness of breath, and pneumonia. Because of a history of carbapenem-resistant *A. baumannii* infection treated with colistin and cefoperazone-sulbactam, the patient was placed under isolation precautions at hospital admission. Sputum cultures obtained at admission grew colistin-resistant *A. baumannii* (colistin minimum inhibitory concentration, 128 μg/mL), the infection control team was notified, and IPC measures in the 8-bed medical ICU were initiated. The IPC measures included (i) implementation of enhanced contact isolation precautions (ie, strict adherence to hand hygiene protocols before and after patient care and use of gowns and gloves); (ii) active surveillance cultures, defined as culture of rectal swab samples and tracheal aspirates (if the patient received mechanical ventilation), for all patients in the unit (on day 0, day 7, and every week until hospital discharge); (iii) daily environmental cleaning with detergents and with phenolic agents of high-touch surfaces and sites contaminated with body fluids or with blood; (iv) an up-to-date education program for all healthcare workers (HCWs) within the first week of the case detection[4,5]; and (v) delivery of real-time feedback to HCWs regarding IPC compliance. A case patient was defined as a patient with nosocomial colonization or infection with colistin-resistant *A. baumannii* identified by clinical culture more than 48 hours after ICU admission; nosocomial acquisition of this microorganism was defined as a positive active surveillance culture more than 48 hours after admission if the initial surveillance cultures were negative. Active surveillance cultures were performed on tracheal aspirate specimens and rectal swab specimens (if the initial

TABLE 1. Infection Prevention Control (IPC) Measures Monitored in an 8-Bed Intensive Care Unit over a 76-Day Study Period after Index Case Detection of Colistin-Resistant *Acinetobacter baumannii* Infection

Variable	Observation data
No. of patient-days monitored	540
Compliance with IPC measures, no. (%) of opportunities ($n = 100$)	
Hand hygiene	85 (85)
Contact isolation	74 (74)
Environmental cleaning	100 (100)
Active surveillance culture	81 (81)
Chlorhexidine bath	79 (79)
Chlorhexidine mouth care	100 (100)
New cases of colistin-resistant *A. baumannii* infection or colonization	0

tracheal aspirate specimens had negative results) on day 0, day 7, and every week until discharge from the ICU. Hand hygiene and IPC compliance were monitored as described elsewhere.[4,5]

The case patient was transferred from the ICU to a medicine unit on October 21, 2012, and discharged to home on October 28, 2012. He had confirmed active surveillance cultures from rectal swab samples and tracheal aspirate positive for colistin-resistant *A. baumannii* at hospital admission, with 3 subsequent serial negative surveillance cultures as of October 14, 2012. Intensified IPC measures in the ICU were implemented with daily monitoring for the emergence of colistin-resistant *A. baumannii* from September 15, 2012, through November 30, 2012. A total of 64 surveillance cultures from 39 patients were performed over the 76-day study period. Compliance with hand hygiene before and after patient contact as well as contact isolation precautions were sustained with no subsequent cases of infection or colonization in the ICU (Table 1). The total costs were US$460 for the IPC interventions and active surveillance cultures.

Implementation of intensified infection control measures is recommended by the Healthcare Infection Control Practices Advisory Committee and the Centers for Disease Control and Prevention if containment of multidrug-resistant (MDR) bacteria fails after implementation of basic infection control measures or when an institution encounters the emergence of MDR bacteria.[6,7] Here we report a single case of colistin-resistant *A. baumannii* hospital-acquired pneumonia in Thailand and describe methods that were effective in preventing the spread of this pathogen to other patients in an 8-bed ICU. Our findings suggest that intensified IPC measures after prompt case detection and isolation of the patient were associated with containment of colistin-resistant *A. baumannii* in a resource-limited setting. Additional studies to identify risks for the transmission of colistin-resistant *A. baumannii* as well as the detection and duration of gastrointestinal tract colonization with this pathogen remain relevant to current and future goals in healthcare epidemiology.

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Using a Qualitative Study to Understand the Failure of a Strategy Implemented for Improving Hand Hygiene Adherence in 4 Intensive Care Units

To the Editor—The strategy of active detection and isolation of patients with methicillin-resistant *Staphylococcus aureus* (MRSA) infection has a number of adverse unintended consequences[1] and raises ethical concerns.[2] Concurrently, certain studies have questioned the effectiveness of associating the screening of carriers and the implementation of contact precautions.[3,4] Although there are some arguments to support a policy of strict application of standard precautions to control MRSA, the low compliance with hand hygiene reported in most studies constitutes what is probably a major barrier against the effectiveness of this policy.[5,6]

In a recent study,[7] we aimed to assess the impact of screening and signaling MRSA carriers on hand hygiene compliance in 4 intensive care units (ICUs) using a strategy of strict application of standard precautions. Although an active campaign of information about MRSA and the potential consequences of MRSA transmission had been performed by the professionals of the infection control (IC) unit of the hospital before this evaluation study, a total absence of impact of the signalization of MRSA carriers on compliance with hand hygiene was recorded.

Concurrent with this study, we performed a qualitative study in the same units, the objective of which was to better understand the feelings of caregivers about IC in general and hand hygiene in particular. The aim of this article is to try to explain the failure of the strategy implemented by using the results of this qualitative study.

This qualitative study included 2 successive phases: a phase of participative observations and a phase of face-to-face interviews. The first phase was conducted during a 4-week period by a master's student in sociology. It is noteworthy that this student was also a registered nurse who did not work in this hospital but concurrently worked in the community setting. She was immersed in the ICUs to observe practices and to talk with healthcare providers, and she also participated in providing patient care. She was in contact with 20–25 healthcare workers each day except weekends between 8 AM and 5 PM. Overall, she met more than 100 healthcare workers who belonged to all categories of personnel. She made a note of her observations and discussions.

Ten face-to-face interviews were conducted. These interviews took 45–60 minutes and were led by 1 of the 2 interviewers who participated in the study: a professor of sociology and the master's student in sociology. All interviews were conducted in accordance with a semistructured interview guide, recorded with a voice recorder, and fully transcribed. The result analysis was performed on the basis of the participative observations and face-to-face interviews.

Most of the caregivers considered IC to be an essential aspect of their work. However, they also mentioned that the transmission of recommendations by IC professionals usually had a weak impact on their practices. The terms "normally," "theoretically," and "in principle" were widely employed by the participants when the protocols and recommendations provided by the IC unit were considered during the interviews. Therefore, these protocols and recommendations seem to have only a relative value. Throughout the conversations with the ICU professionals, the words "we" and "they" were used to refer to ICU staff and the IC professionals, respectively, potentially indicating that the latter were regarded as outsiders whose advice and recommendations were considered an imposition or intrusion upon the culture of the ICU.

In addition, according to the participants, IC is not the only aspect that should be considered during patient care. Other considerations, such as the emergency linked to a clinical situation, can represent a barrier to compliance with good hygiene practices. The desire to protect the relationship between the healthcare professional and the patient can be another barrier. For instance, healthcare workers often expressed concern that wearing gloves, a mask, or goggles might be perceived as hostile to their patients.

Participants reported being more vigilant about prevention measures after contact with patients in situations considered to be physically dirty or "emotionally dirty." In addition, some participants acknowledged that their main motivation for practicing hand hygiene after contact with a patient was to protect themselves. Therefore, it is probable that subjective criteria and self-protective attitudes have a stronger impact on the behavior of healthcare professionals than do recommendations transmitted by the IC unit.

To our knowledge, few qualitative studies have been used to assess the results of a study evaluating a strategy implemented to decrease the risk of cross transmission. Our findings are consistent with the results of some other previous studies. According to Larson et al,[8] the diffusion of recommendations from the Centers for Disease Control and Prevention in healthcare settings was not sufficient to change practices. In a recent study,[9] participants also reported that