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Reply to Crnich and Drinka

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Reply to Crnich and Drinka

To the Editor—We appreciate the insightful comments of Crnich and Drinka[1] about our recently published study.[2] They raise a number a number of excellent points about employing contact precautions in nursing homes (NHs), emphasizing that the efficacy and consequences of such a practice are not yet fully understood.

Our simulation modeling study, using RHEA (Regional Healthcare Ecosystem Analyst),[3-6] aimed to galvanize and further the discussion on using contact precautions in NHs, not to establish a final recommendation. So Crnich and Drinka's letter is one of the desired results of our study. As stated in the discussion, we fully agree that caution about use of contact precautions in NHs is important given the risk for isolation or stigma when a home environment is essential. However, we also note that some NHs currently employ contact precautions, especially those that care for higher-risk postacute patients with relatively short (approximately 2 weeks) lengths of stay.[7,8] In addition, contact precautions may be a viable and necessary solution to curb outbreaks.

The purpose of our article was to quantify the potential effects of contact precautions in NHs. This estimate may be helpful in weighing the advantages and disadvantages of their use in certain NH populations or under certain conditions, such as outbreaks. Perhaps most importantly, it provides an estimate against which the effectiveness of alternative interventions can be compared. Such estimates are hard to obtain through epidemiologic studies, and this model may provide early insight into the magnitude of benefit while we await confirmatory studies.

Simulation models like RHEA offer a much less expensive and much safer arena to evaluate different large-scale possibilities before unveiling them in the real world. Another benefit of modeling is to identify current gaps in data and understanding so as to guide future studies and data collection. For example, varying parameters such as contact precaution efficacy and compliance can delineate their potential impact and thus help prioritize data collection for researchers, policy makers, administrators, and funders. Of note, in response to Crnich and Drinka's comments, our RHEA model does not assume that methicillin-resistant *Staphylococcus aureus* (MRSA) acquisition and transmission rates are homogeneous across NHs. Only the mixing patterns of patients within each NH were homogeneous.

In addition, modeling is an iterative progressive task. Initial models contain assumptions and simplifications. Experts such as Crnich and Drinka offer comments and suggestions that can help guide the next round of refinements to the model. With each progressive modeling round along with concomitant data collection and clinical studies, the field moves closer and closer to a specific set of recommendations. The final preferred NH intervention may be adaptation of some current acute care contact precaution procedures that accounts for the challenges elucidated by Crnich and Drinka, such as the behavioral and psychological issues associated with glove and gown use. A combination of active dialogue, planning, and innovative approaches will be the way to tackle the important problem of MRSA and other infectious diseases in NHs.

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Impact of Cohorting for Multidrug-Resistant Organisms with and without Real-Time Feedback

To the Editor—Creating a cohorting area is recommended by several guidelines as a strategy to prevent transmission of multidrug-resistant organisms.[1,2] The use of a cohort area, coupled with real-time feedback of compliance with infection prevention measures (eg, hand hygiene and gowning and gloving for isolation patients), has successfully contained multidrug-resistant *Acinetobacter baumannii* transmission in a resource-limited setting.[3] The additive effect of patient cohorting and real-time feedback versus the creation of a defined cohort area alone has not been previously examined. Observation and real-time feedback is a resource-intensive practice; therefore, understanding its contribution to compliance with infection prevention measures is important. We conducted a study to evaluate the effect of creating a cohort area with and without frequent real-time feedback on compliance with infection prevention practices to prevent transmission of multidrug-resistant organisms (MDROs).

A 2-period observational study to evaluate compliance with infection prevention practices was conducted in a 30-bed open unit at Thammasat University, Pathumthani, Thailand. The unit nurse-to-patient ratio was 1 : 8. We created an 8-bed cohort area in the unit, with 1 nurse per shift being assigned to care for patients in this area. Two 1-hour educational sessions per month were provided to all unit nurses on the importance of adherence to the infection control measures. Observations using a standardized data collection tool were performed by infectious diseases physicians (S.W. and P.L.) on isolation equipment preparation (eg, isolation signs being posted and availability of isolation equipment, such as gloves, gowns, masks, alcohol gel, and stethoscopes), infection control practices (eg, hand hygiene before and after patient contact, appropriate use of gloves and gowns, and environmental cleaning), and time spent with each patient. Hand hygiene compliance was defined as the number of observations for which hand hygiene was performed before and after patient contact divided by the total number of observed hand hygiene opportunities. Monitoring of environmental cleaning was performed as described elsewhere.[3] In period 1 (September 1–30, 2012) no feedback of observations was given to staff, while in period 2 (November 1–30, 2012) real-time feedback on infection control adherence was provided to healthcare workers (HCWs) in the cohort area. Real-time feedback was performed by an infection control nurse when HCWs did not perform hand washing or wear an isolation gown 3 times a week. To avoid an impact of education on infection control practices, we allowed a 1-month washout period (October 1–31, 2012) during which neither cohorting nor education was performed.

During the study, there were 600 observations performed (300 in period 1 and 300 in period 2). In period 1 there was no significant difference in isolation equipment preparation and infection control compliance between the cohort and noncohort areas. In period 2 there was a significantly higher compliance with infection control practices in the cohort versus the noncohort area, and HCWs spent more time caring for patients in the cohort area (Table 1). Notably, compliance with gown use was still low in the cohort area (37.2%). When comparing period 2 with period 1, there was a significant increase in the frequency of environmental cleaning in the cohort and noncohort area, and the proportion of each specific MDRO was different. However, there was no significant change in other isolation precaution practices within the noncohort area (Table 1).

Contact isolation is a key measure to prevent the spread of MDROs by indirect contact in the hospital. Previous data