Pilot Testing of an Out-of-Country Medical Care Questionnaire with Screening and Cost Analysis of Preemptive Isolation for Carbapenem-Resistant Enterobacteriaceae in a Large Canadian Health Region

To the Editor—The spread of carbapenem-resistant Enterobacteriaceae (CRE) has become an important global public health concern. Since their emergence, numerous institutional outbreaks have been reported worldwide. Infections with these multidrug-resistant organisms have limited treatment options and are associated with significant morbidity and mortality. The lack of systematic surveillance for CRE in many countries presents a major prevalence knowledge gap. A key risk factor for CRE acquisition is the receipt of medical care in countries that are considered areas of endemicity for CRE. Prompt identification and isolation of patients infected or colonized with CRE has been advocated as a means for preventing transmission in hospital settings but has significant resource implications.

Using a focused out-of-country medical care (OCMC) screening questionnaire, we determined the proportion of admitted patients in our health region (4 hospitals with a catchment area of approximately 1.4 million people) who received OCMC in the previous 12 months, assessed their CRE colonization status, and estimated the costs associated with a preemptive isolation strategy. The pilot project took place over a 2-month period between July and September 2012, a period chosen to capture both the peak tourist season and international travel from Calgary residents, the costs for preemptive isolation for 3 patients, which may be an overestimate, but if we project that the summer months represent approximately half of all out-of-country and local resident out-of-country travel, the extrapolation yields 1,286 OCMC recipients. Using this figure, which may be an underestimate given the midwinter travel by local residents, the costs for preemptive isolation for 3 days ($925 per patient) would be $1.19 million per year. The cost of isolating only recipients of inpatient OCMC (including those who were cared for in both inpatient and outpatient settings) would be $404,688 per year.

This study was subject to several limitations. The reasons for the 48% completion rate for the screening questionnaires were multifactorial and included limited awareness of the study by some frontline staff responsible for questionnaire administration, the additional time commitment required to complete the form in a time- and resource-constrained work environment, and patient factors, such as language barriers or critical illness that precluded administration of the questionnaire. The most commonly cited reason for failing to collect a CRE screening sample from a patient was that the patient was discharged from the hospital before sample collection.

We acknowledge the difficulty of using extrapolation to determine annual rates of OCMC but provided a conser-
tative figure in our calculations. We also recognize that the general inflation factor used may be an underestimate for "medical" inflation.

With increasing rates of travel and medical tourism, more patients are receiving OCMC. Although this point-prevalence study did not identify any CRE-colonized patients, ongoing surveillance and stringent infection control practices will be critical for identifying and limiting the spread of CRE among hospitalized patients in Canada. A preemptive isolation strategy has significant resource implications and is not economically practical at this time in our setting given the low prevalence of CRE colonization.

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REFERENCES


Establishing Surveillance for Carbapenem-Resistant Enterobacteriaceae in Minnesota, 2012

To the Editor—Carbapenem-resistant Enterobacteriaceae (CRE) have emerged as a public health threat; Enterobacteriaceae harboring carbapenemase-encoded genes often carry resistance to multiple antibiotic classes, rendering the bacteria resistant to almost all available antibiotics. Invasive CRE infections are associated with a high mortality rate (38%–48%), and intra- and interfacility spread in a variety of healthcare settings has occurred. A standardized approach to CRE surveillance and a clearer description of the evolving epidemiology are needed to understand the health burden and evaluate the impact of control measures.

In 2009, the Minnesota Department of Health (MDH) Public Health Laboratory (PHL) first confirmed Klebsiella pneumoniae carbapenemase in a clinical Enterobacteriaceae isolate. The MDH immediately initiated statewide voluntary reporting of CRE with isolate submission to the PHL (clinical cultures from all sources and Enterobacteriaceae species). In collaboration with the Centers for Disease Control and Prevention (CDC) Emerging Infections Program (EIP) Multi-site resistant Gram-negative Surveillance Initiative (MuGSI),