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Patient Isolation in the High-Prevalence Setting: Challenges with Regard to Multidrug-Resistant Gram-Negative Bacilli

To the Editor—Isolation of patients for prevention and control of infections is a standard intervention in infection control practices. Patients infected or colonized with infective agents that are potentially transmissible are physically isolated in a separate room with protective barriers so as to prevent transmission from patients to other patients, staff, or visitors. Examples of infections for which such isolation practices are implemented include tuberculosis, pandemic viral infections, chickenpox, measles, infectious diarrhea or vomiting, and those caused by multidrug-resistant bacteria. Since infections caused by multidrug-resistant organisms (MDROs) have become a major health concern in recent times, these infections are often the most common cause of keeping a patient under barrier precautions and preventive isolation.[1]

The Tata Medical Center is a newly built modern cancer care center in eastern India. The incidence of community-acquired infections, such as tuberculosis, viral gastroenteritis, and viral respiratory infections, is relatively low in this hospital, and most infection control concerns are regarding multidrug-resistant healthcare-associated infections. Our experience for the past 19 months has shown that the prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) is low

in this setting (~10%), whereas infections caused by multidrug-resistant gram-negative bacilli, such as those caused by extended-spectrum β-lactamase (ESBL) producers and carbapenem-resistant organisms, comprise the overwhelming majority of infections (ESBL rate, approximately 70%; carbapenem resistance rate, approximately 20%). A significant proportion of patients visiting this tertiary care referral hospital are already colonized with various MDROs. Results from the surveillance cultures of stool samples done near the time of admission or preintervention in hematology and some surgical patients show a high rate of colonization of patients with various MDROs. The surveillance culture antibiogram is similar in pattern to the antibiogram from diagnostic samples. In this context of high prevalence of MDRO colonization or infection, universal isolation of patients on the basis of MDRO status becomes extremely difficult, if not impossible. The hospital has a 47-bed general ward with 1 isolation room, an 11-bed intensive care unit with 5 isolation rooms, and a significant number of single-bed private rooms for patients requiring general or special medical care who are able to afford a higher rate. Emergency ward, day care unit, pediatric, and postoperative patients are managed in open bays that have a bed capacity of 5–6. Patients coming to this hospital are assigned a specific bed location on the basis of clinical need (eg, intensive care/high-dependency support), age group or specialty (eg, pediatrics), and type of intervention (eg, chemotherapy in day care unit, postsurgical intervention cases in surgical bays). For optimal patient placement, it often becomes difficult to achieve a balance among clinical need, available resources, infection control requirements, and patient preferences.

Being a philanthropic initiative, the hospital has invested heavily in optimal bed spacing (space between beds of 1.2–1.5 m against a World Health Organization [WHO]–recommended standard of 1–2 m; area available per patient in a general ward of 7–8.4 m^2), good housekeeping, staff training and education on infection control, water-quality monitoring, infection prevention bundles, and optimal selection and use of disinfectants and less in expensive and difficult-to-maintain isolation rooms.[2] Daily infection control e-mail messages are sent to concerned department doctors, medical administration, nursing, and housekeeping along with the quality manager to notify them about new MDRO cases. The e-mail contains standard instructions about WHO guidelines related to barrier precautions, hand hygiene, enhanced cleanliness, housekeeping, and use of personal protective equipment (PPE).[2] A biohazard label is electronically flagged in the hospital management system whenever an MDRO is detected in a patient to remind the user through a visual alert about infection control precautions to be taken. In the real world of optimal patient placement and bed management, priority is often given to clinical needs and logistical feasibility, overriding theoretical infection control concerns. In this hospital, universal precautions are emphasized and barrier precautions are followed for patients infected or colonized with MDROs.

Because of the limited number of isolation beds in the general ward and surgical bays, only the most drug-resistant infections and transmissible infections (eg, vancomycin-resistant enterococci and colistin-resistant *Klebsiella pneumoniae*, tuberculosis, and chickenpox) are given exceptional infection control priorities for isolation. Patients with ESBL producers, MRSA, and infectious diarrhea or vomiting—or even carbapenem-resistant gram-negative organisms—are isolated on the basis of the resources available and clinical needs.

To conclude, maintaining isolation facilities is a resource-intensive operation. Apart from making available a physically separable room, there is a need for separate ventilation, plumbing, pressure monitoring system, washing and toilet facilities, nursing care, physical barriers (such as double doors), and elaborate use of PPE. In resource-constrained settings, where the priority is to deliver a degree of care to the majority, high-quality measures such as providing an isolation facility that meets international standards may not be economically viable or practically feasible. From a health economic viewpoint, it may be more reasonable to provide high-cost medical and surgical care to patients rather than utilizing the same resources for high-quality but resource-intensive isolation rooms.

The Tata Medical Center is a charitable, nonprofit institution. It aims to deliver state-of-the-art care to cancer patients. There is a need to individualize isolation policies and prioritize isolation based not only on infection concerns but also on clinical needs and resources available. Universal isolation or cohort nursing of patients infected with MDROs is viable when such patients are a minority. In high-prevalence settings, alternative solutions need to be explored.

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Unnecessary Antimicrobial Use in the Context of *Clostridium difficile* Infection: A Call to Arms for the Veterans Affairs Antimicrobial Stewardship Task Force

To the Editor—We congratulate Shaughnessy et al[1] on their recent investigation of unnecessary antibiotic use in patients at the Minneapolis Veterans Affairs Medical Center (MVAMC) with current or recent *Clostridium difficile* infection (CDI). As members of the VA Antimicrobial Stewardship Task Force (ASTF), we are particularly interested in studies that demonstrate priority areas to improve antibiotic use. Their finding that 77% of patients received at least 1 unnecessary antimicrobial dose and that 26% received only unnecessary antimicrobials (apart from those directed against CDI) indicates ample opportunity to improve antimicrobial stewardship among our veteran patients with CDI. Furthermore, the estimate that 45% of total non-CDI antimicrobial days were unnecessary was not surprising given the frequently quoted estimate that approximately 50% of all antimicrobial use is inappropriate, regardless of setting.[2] Their findings are particularly notable given that the MVAMC uses highly sophisticated and robust computerized decision support[3] to assist providers in decision making regarding antimicrobial use; one might speculate that medical centers without similar computerized decision support might have even more unnecessary antimicrobial use in the context of CDI. We particularly agree that the period of time immediately following a CDI diagnosis is "a high-risk period when clinicians should be exercising increased caution with antimicrobial therapy."[1] To the antimicrobial steward, a CDI diagnosis thus represents a "call to arms"—a call we are addressing through a series of recently introduced programs, including one to address antibiotic use after CDI diagnosis.

The ASTF, since being chartered by the VA Office of Patient Care Services in May 2011,[4] promotes the development and expansion of antimicrobial stewardship activities throughout the VA system. One function of the ASTF is to create model antimicrobial stewardship policies that can be adapted by individual VA facilities under the guidance of their pharmacy and therapeutics committees. Model polices are introduced and explained via monthly educational webinars and are made available through the ASTF SharePoint site, which serves as a forum for communication of ideas to promote good antimicrobial stewardship. In addition, ASTF members use the site to actively participate in the dissemination of information and tools that can be used by clinicians implementing and expanding antimicrobial stewardship programs.