

Prevention and Control of Multi-Drug Resistant Organisms Using Standardized Cross-Setting Communication

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Mrs. A's father was hospitalized multiple times over several months. During that time he developed a **multi-drug resistant organism (MDRO)** infection. Upon transfer to an acute care facility, the MDRO information was inadvertently omitted from the Continuity of Care Form, required of all discharging facilities in Rhode Island. When Mrs. A noted that the healthcare workers in this new facility were not gowned and gloved upon entering his room, she mentioned her father's positive MDRO diagnosis to the nurse. The acute care facility workers immediately implemented measures to ensure the safety of their staff and patients, expressing dismay to one another that their hospital colleagues had not shared the information they needed to care for this individual and prevent transmitting the MDRO to others.

While anecdotal, Mrs. A's story resonates with healthcare providers: when a patient with an MDRO is discharged, the receiving provider—whether a hospital, **long-term care (LTC)** facility, home health agency, or physician's office—frequently does not receive information about existing MDROs. Only by knowing the colonization or infection status of patients can receiving providers implement proper isolation precautions and ensure that direct care workers don **personal protective equipment (PPE)**. In this article, we discuss how Rhode Island's mandated Continuity of Care Form can help providers consistently communicate the status of patients with MDROs.

MULTI-DRUG RESISTANT ORGANISMS (MDROs)

MDROs are microorganisms resistant to one or more therapeutic classes of antimicrobial agents, and include **methicillin-resistant *Staphylococcus aureus* (MRSA)**—described in a companion article¹ and frequently mentioned in the lay press—**vancomycin-resistant *enterococcus* (VRE)** and certain **Gram-negative bacilli (GNB)** that are resistant to

extended-spectrum beta lactamases (ESBLs). MDRs affect patients and healthcare workers in all healthcare settings, causing a spectrum of disease, ranging from asymptomatic carriage (e.g., colonization) to symptomatic illness (e.g., clinical disease or infection), depending largely on the baseline health status of the individual.

Impact of MDROs

The burden of **healthcare-associated infections (HAIs)** caused by MDROs is significant in terms of increased patient morbidity, mortality, and cost. In this issue, Mermel cites nearly 100,000 deaths each year from hospital-acquired infections HAIs,² making them the most common cause of death resulting from infections and one of the top 10 leading causes of death overall.³ Included in these troubling statistics are at least 350,000 infections and 12,000 deaths caused by MRSA, VRE, and other MDROs, specifically. Estimates place the cost of MDRO infections at more than \$3.5 billion in excess healthcare costs annually,³ due to treatment costs and increased hospital lengths of stay.³ Yet many MDROs are preventable: direct care workers can successfully control person-to-person and facility-to-facility transmission through compliance with standard protocols (e.g., PPE, hand hygiene, and isolation precautions) and adequate and timely communication between healthcare settings and providers, including physicians. We describe these tactics below.

Prevention of MDRO Transmission

MDROs are transmitted from one patient to another via the contaminated hands of direct care workers.⁴ As a result, healthcare facilities have evidence-based recommendations for implementing precautions and hand hygiene. These guidelines are intended to interrupt transmission from direct or indirect contact with infected patients and their environment, and also to establish when

precautions should be implemented and discontinued. As indicated in Mermel's companion article,² hand hygiene compliance is essential to prevent the spread of HAIs, including MDROs. The Healthcare Infection Control Practices Advisory Committee strongly recommends that direct care workers entering the room of a patient with a known colonization or infection wear both gowns and gloves, as well as perform hand hygiene before and after patient contact.⁴ This includes following glove removal, due to the potential for minute glove leakage. (Estimates of vinyl glove leakage range from 4% to 63%; latex gloves, 3% to 52%.⁵) Healthcare facilities also clean the rooms of colonized or infected patients thoroughly, using special equipment and processes.

However, these recommendations apply to *known* MDRO infections; a patient's MDRO status may remain unknown unless the facility performs active surveillance or until staff complete the chart review, which may occur up to two days after admission. Active surveillance, in particular, enables facilities to improve disease control by quickly identifying MDRO-positive patients and then implementing guidelines, policies and procedures. A 1993-2007 study in France found a 30% decrease in MRSA infections in 38 hospitals, following the implementation of rapid notification and feedback on patients with MDROs.⁶ Although direct care workers use standard precautions on all patients, these are inadequate to fully contain MDROs in colonized or infected patients, who have the ability to transmit these organisms, especially to vulnerable or immunocompromised individuals.⁴

Treatment of MDROs

Once identified, treatment of MDROs remains problematic. Although Mupirocin and Chlorhexadine have met with success in eradicating MRSA from nares,⁷ treatment of other colonized MDROs remains highly variable.⁴ Patients

quickly placed on precautions and appropriately treated prove less likely to transmit organisms to direct care workers and other patients,⁴ an important implication for patient safety. Treatment also decreases the chance of MDRO-related complications for the colonized or infected patient, such as re-hospitalization following hospital discharge. When a patient has previously tested positive for an MDRO, facilities usually require a number of specimens, after treatment has been discontinued for a sufficient length of time, in order to discontinue isolation precautions.

Need for Communication about MDROs

As Mrs. A's case illustrates, too often MDRO-colonized or infected patients are transferred to the next setting of care (inpatient or outpatient) without accompanying documentation or, preferably, sufficient advance notice for the receiving provider to adequately prepare for the patient's arrival. Advance notice enables inpatient providers, for example, to ensure an appropriate room is available and to arrange for isolation and contact precautions upon admission. The first indication that a patient is colonized or infected often occurs when the patient—

or in the case study, his daughter— incidentally relates his or her experience to a new nurse. Failing to communicate the MDRO colonization or infection *prior* to the patient's care transition places visiting healthcare workers in jeopardy and increases the likelihood of inadvertent transmission to those workers, a subsequent patient, or visitors. Conversely, it follows that communicating a patient's status is crucial to preventing transmission and maintaining continuity of care during care transitions.³

With the incidental discovery of a potential MDRO, the receiving nurse must initiate a lengthy investigative process to confirm the diagnosis with the discharging provider, implement barrier precautions, and educate the patient. Although standard precautions are used on all patients, more stringent contact precautions (e.g., gown and glove) and hand hygiene are required for patients with MDROs—not only to reduce the chance of person-to-person transmission, but also to improve the patient's ongoing treatment.⁴ In the absence of treatment, contact precautions, including isolation of colonized or infected patients, still provides the most successful strategy for containment.⁴

CONTINUITY OF CARE FORM

The Rhode Island Department of Health requires discharging providers to communicate critical patient care information at the time of patient transfer from one health environment to another. The Department's standardized inter-agency report, the Continuity of Care Form, is a five-page, paper-based tool (Table 1) that meets all of the Joint Commission's requirements for information-sharing upon discharge.⁸ The Department of Health developed and revised the form over time, using a consensus-based stakeholder process. Some local institutions have incorporated the form into their electronic health record systems, generating it automatically.

Pages 1 and 2 meet all of the necessary discharge requirements; pages 3–4 include adjunct information to provide a clear description of the patient's status and needs; page 5 is strictly for consults and referrals. Although the Department mandate specifies transfer from one licensed healthcare facility (e.g., home health agencies, hospital, and SNFs) to another, local healthcare providers and stakeholders are collaborating to ensure that community physicians consistently receive a copy—recognizing that infor-

Table 1: Rhode Island Continuity of Care Form

Page	Content	Key MDRO Information
1	Legally-binding orders for the next setting of care (Solely the responsibility of the physician or Licensed Independent Practitioner)	Provides information about the patient's diagnoses, current medications, and any active infections (e.g., MRSA, VRE or ESBL) or disease alerts, as well as information about physician initiation or completion of MDRO treatment, and when subsequent culturing should occur
2	Status (Assessed by nursing in collaboration with the physician, providing dual accountability)	Helps to provide a clear and comprehensive description of the patient's status, including MDROs, from the physician and nursing perspectives
3	Physical and functional status	Informs providers about any effects of the patient's condition (e.g., skin or genitourinary assessments), requiring the next setting of care to address known limitations (such as muscular deconditioning) and maximize activities of daily living
4	Multi-disciplinary discharge summary notes	As with p. 2, helps to provide a clear and comprehensive description of the patient's condition, (e.g., respiratory status) this time from the ancillary providers' perspective
5	Consultations and referrals	If applicable, serves as the necessary background information regarding next steps in patient care (e.g., an infectious disease consult), both for (1) the provider performing the consult or referral and (2) the provider assuming responsibility for the patient's care or aspects of the patient's care, if different from the consulting provider May be the only page completed on transfer from a LTC facility to the Emergency Department prior to an inpatient admission

Table 2: Continuity of Care Form MDRO Audit (N=44)

Information on the Form	Documentation	n (%)
Had known MDRO colonization/ infection listed	30	(68.2%)
Had known MDRO site listed	20	(45.0%)
Current antibiotic therapy was noted	15	(34.1%)
Result dates of (+) MDRO cultures listed	8	(18.2%)

mation about a patient's health event and status (including MDROs) is vital to community physicians' ability to care for their patients. Some providers also give copies to patients and their caregivers, recognizing that the information can help them understand their conditions.

Despite the fact that accurate information (e.g., follow-up culture information) about MDRO colonization or infection on the Continuity of Care Form has the potential to ensure the timely communication of pertinent information needed to discontinue the patient's disease alert status, the authors find that documentation of a patient's MDRO status is often incomplete or absent. In March 2010, we conducted a random audit of Continuity of Care Forms on 44 patients with known MDRO colonization or infection who had been transferred from one Rhode Island healthcare facility to another. Approximately two in five patients were discharged from hospital to home with home care services (n=18, 41%) or hospital to a LTC facility (n=19, 43%), while seven (16%) were admitted to a hospital from a LTC facility. Of the 44 forms, 14 did not contain any information alerting the facility that the patient had an MDRO. Complete information from the audit can be found in Table 2.

Informal interviews with physicians, discharge planners and department heads suggest there is little understanding of the seriousness of MDRO transmission, or the importance of accurate information on the Continuity of Care Forms. One interviewee believed that forms were more likely to be complete when a patient was being discharged to a LTC facility, due to the receiving facility's requirements, but said that for a patient discharged home, the hospital does not complete the same process. LTC facilities receiving patients from an acute care facility may have to re-admit

residents to a private room, and not their previous locale. Private isolation rooms are limited in most LTC facilities, making cohorting necessary in order to receive the returning patient with an MDRO.

The above results clearly indicate, both formally and informally, substantial opportunity for improvement in the local use of the Continuity of Care Form to communicate MDROs. Failure to disclose a MDRO can delay the initiation of proper transmission-based precautions, resulting in a period of time during which the transmission risk to others remains heightened because appropriate barrier precautions have not been implemented.⁹

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RECOMMENDATIONS

Due to the gaps between evidence-based strategies for preventing MDRO transmission and the timely communication necessary to ensure best practices are systematically implemented, the authors recommend that direct care workers, including physicians, use the Continuity of Care Form to improve MDRO-related patient safety. Physicians and discharge planners must ensure that MDRO information be included on all Continuity of Care Forms. The correct use of the Continuity of Care Form will give receiving

providers and physicians accurate, concise and timely information. For example, knowing the positive culture dates and sites, beginning and ending treatment dates, and orders for subsequent testing will enable receiving providers to identify a patient's current status, have the opportunity to treat the patient, when appropriate, and follow-up with culturing that would potentially allow the discontinuation of contact precautions. The standardized, complete transfer of information (including MDROs) during patient care transitions:

- Ensures consistent, accurate information transfers from one facility to the next
- Improves communication (and relationships) between providers
- Alerts receiving providers of known MDRO colonization or infection, facilitating uninterrupted or early treatment/control and implementation of appropriate barrier precautions
- Helps providers determine treatment effectiveness
- Allows providers to educate the patient and/or family
- Limits complications for the patient and spread to other patients, improving patient safety
- Increases favorable outcomes among patients, including the potential to discontinue barrier precautions
- Decreases overall rates of MDRO infections

The standardized, complete transfer of MDRO information further ensures that MDRO-positive patients do not compromise the safety of others.

ADDITIONAL INFORMATION

The Rhode Island Department of Health's Continuity of Care Form is available for use or adaptation on the Department's website at www.health.ri.gov/forms/continuityofcare/index.php.

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