

## **I. ROUTINE PREVENTION AND CONTROL**

### **A. Administrative Measures:**

1. Prevention and Control of Multidrug Resistant Organism (MDRO) infections is an organizational patient safety priority at Barrett Hospital & HealthCare (BHH).
2. Patients known to be colonized or infected with a targeted MDRO are designated as such in the medical record and prior notification is provided to receiving healthcare facilities and personnel prior to transfer of such patients within or between facilities. The following protocol describes the initial screening process for MRSA:
  - a) Nurses will conduct a risk assessment of all inpatients upon admission and elective surgery patients at the time of their pre-op appointment. The screen will include the following questions: MRSA Risk Assessment:
    - i. current possible or confirmed diagnosis of MRSA infection? Y/N
    - ii. past history of MRSA infection? Y/N
    - iii. skin wounds? Y/N
    - iv. other factors identified as placing them at increased risk for MRSA transmission? Y/N (please list)
  - b) If the patient meets any risk criteria, the following interventions will reflex to the patient's Medact:
    - i. Contact the primary care physician and surgeon (for pre-op patients) to inquire about cultures and antibiotic therapy
    - ii. Contact precautions
    - iii. single patient room or cohort with other MRSA patients
    - iv. single use items and/or disinfect completely any items used on the patient before using on another patient
    - v. provide education to the patient and family related to MRSA transmission precautions
  - c) If the patient has a positive MRSA culture, the patient's primary nurse is responsible for checking the MRSA box on the clinical information screen in CPSI

### **B. Education and training of healthcare personnel:**

1. Infection Prevention staff provide education and training on risks and prevention of MDRO transmission during orientation and periodic educational updates for healthcare personnel.

### **C. Judicious use of antimicrobial agents:**

1. The Pharmacy & Therapeutics Committee reviews antimicrobial utilization, local susceptibility patterns (antibiograms), and antimicrobial agents included in the

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formulary to foster appropriate antimicrobial use.

2. The Clinical Pharmacist prompts clinicians to use the appropriate antimicrobial agent and regimen for the given clinical situation.
3. Clinicians are provided with antimicrobial susceptibility reports and analysis of current trends, updated at least annually, to guide antimicrobial prescribing practices.

**D. Surveillance:**

1. The Laboratory uses standardized laboratory methods and follows published guidance for determining antimicrobial susceptibility of targeted (e.g., MRSA, VRE, MDR-ESBLs) and emerging (e.g., VRSA, MDR-Acinetobacter baumannii) MDROs.
2. The Laboratory promptly notifies the Infection Prevention staff or medical director when a novel resistance pattern for that facility is detected.
3. The Laboratory has a protocol for storing isolates of selected MDROs for molecular typing when needed to confirm transmission or delineate the epidemiology of the MDRO within the healthcare setting.
4. The Laboratory Manager prepares facility-specific antimicrobial susceptibility reports annually as recommended by the Clinical and Laboratory Standards Institute (CLSI) ([www.phppo.cdc.gov/dls/master/default.aspx](http://www.phppo.cdc.gov/dls/master/default.aspx)) and monitors these reports for evidence of changing resistance patterns that may indicate the emergence or transmission of MDROs.

**E. Infection control precautions to prevent transmission of MDROs:**

1. Follow Standard Precautions during all patient encounters in all settings in which healthcare is delivered.
2. Use masks according to Standard Precautions when performing splash-generating procedures (e.g., wound irrigation, oral suctioning, intubation); when caring for patients with open tracheostomies and the potential for projectile secretions; and in circumstances where there is evidence of transmission from heavily colonized sources (e.g., burn wounds). Masks are not otherwise recommended for prevention of MDRO transmission from patients to healthcare personnel during routine care (e.g., upon room entry).
3. Use of Contact Precautions
  - a. In the hospital, Contact Precautions are implemented routinely for all patients infected with target MDROs and for patients that have been previously identified as being colonized with target MDROs (e.g., patients transferred from other units or facilities who are known to be colonized).
  - b. For MDRO colonized or infected patients without draining wounds, diarrhea, or uncontrolled secretions, establish ranges of permitted ambulation, socialization, and use of common areas based on their risk to other patients and on the ability of the colonized or infected patients to

observe proper hand hygiene and other recommended precautions to contain secretions and excretions.

- c. In home care settings follow Standard Precautions making sure to use gowns and gloves for contact with uncontrolled secretions, pressure ulcers, draining wounds, stool incontinence, and ostomy tubes and bags. Limit the amount of reusable patient-care equipment that is brought into the home of patients infected or colonized with MDROs. When possible, leave patient-care equipment in the home until the patient is discharged from home care services. If noncritical patient-care equipment (e.g., stethoscopes) cannot remain in the home, clean and disinfect items before removing them from the home, using a low to intermediate level disinfectant, or place reusable items in a plastic bag for transport to another site for subsequent cleaning and disinfection.

#### 4. Patient placement

- a. When single-patient rooms are available, assign priority for these rooms to patients with known or suspected MDRO colonization or infection. Give highest priority to those patients who have conditions that may facilitate transmission, e.g., uncontained secretions or excretions.
- b. When single-patient rooms are not available, cohort patients with the same MDRO in the same room or patient-care area.
- c. When cohorting patients with the same MDRO is not possible, place MDRO patients in rooms with patients who are at low risk for acquisition of MDROs and associated adverse outcomes from infection and are likely to have short lengths of stay.

### **F. Environmental measures**

1. Clean and disinfect surfaces and equipment that may be contaminated with pathogens, including those that are in close proximity to the patient (e.g., bed rails, over bed tables) and frequently-touched surfaces in the patient care environment (e.g., door knobs, surfaces in and surrounding toilets in patients' rooms) on a more frequent schedule compared to that for minimal touch surfaces (e.g., horizontal surfaces in waiting rooms).
2. Dedicate noncritical medical items to use on individual patients known to be infected or colonized with MDROs.
3. Prioritize room cleaning of patients on Contact Precautions. Focus on cleaning and disinfecting frequently touched surfaces (e.g., bedrails, bedside commodes, bathroom fixtures in the patient's room, doorknobs) and equipment in the immediate vicinity of the patient.

## **II. INTENSIFIED INTERVENTIONS TO PREVENT MDRO TRANSMISSION**

**A. Indications and approach:**

Indications for intensified MDRO control efforts should result in selection and implementation of one or more of the interventions described below. Individualize the selection of control measures according to local considerations:

1. When incidence or prevalence of MDROs are not decreasing despite implementation of and correct adherence to the routine control measures described above.
2. When the first case or outbreak of an epidemiologically important MDRO (e.g., VRE, MRSA, VISA, VRSA, MDR-GNB) is identified.

Continue to monitor the incidence of target MDRO infection and colonization after additional interventions are implemented. If rates do not decrease, implement more interventions as needed to reduce MDRO transmission.

**B. Administrative measures**

1. Identify persons with experience in infection control and the epidemiology of MDRO, either in house or through outside consultation, for assessment of the local MDRO problem and for the design, implementation, and evaluation of appropriate control measures.
2. Evaluate healthcare system factors for their role in creating or perpetuating transmission of MDROs, including: staffing levels, education and training, availability of consumable and durable resources, communication processes, policies and procedures, and adherence to recommended infection control measures (e.g., hand hygiene and Standard or Contact Precautions). Develop, implement, and monitor action plans to correct system failures.
3. During the process, update healthcare providers and administrators on the progress and effectiveness of the intensified interventions. Include information on changes in prevalence, rates of infection and colonization; results of assessments and corrective actions for system failures; degrees of adherence to recommended practices; and action plans to improve adherence to recommended infection control practices to prevent MDRO transmission.

**C. Educational interventions**

1. Intensify the frequency of MDRO educational programs for healthcare personnel, especially those who work in areas in which MDRO rates are not decreasing. Provide individual or unit-specific feedback when available.

**D. Judicious use of antimicrobial agents**

1. Review the role of antimicrobial use in perpetuating the MDRO problem targeted for intensified intervention. Control and improve antimicrobial use as indicated. Antimicrobial agents that may be targeted include vancomycin, third-generation cephalosporins, and anti-anaerobic agents for VRE; third-generation cephalosporins for ESBLs; and quinolones and carbapenems.

**E. Surveillance**

1. Calculate and analyze prevalence and incidence rates of targeted MDRO infection and colonization in populations at risk; when possible, distinguish colonization from infection
2. Include only one isolate per patient, not multiple isolates from the same patient, when calculating rates
3. Increase the frequency of compiling and monitoring antimicrobial susceptibility summary reports for a targeted MDRO as indicated by an increase in incidence of infection or colonization with that MDRO.
4. Develop and implement protocols to obtain active surveillance cultures (ASC) for targeted MDROs from patients in populations at risk (e.g., patients in intensive care, burn, bone marrow/stem cell transplant, and oncology units; patients transferred from facilities known to have high MDRO prevalence rates; roommates of colonized or infected persons; and patients known to have been previously infected or colonized with an MDRO).
5. Obtain ASC from areas of skin breakdown and draining wounds. In addition, include the following sites according to target MDROs:
  - a. For MRSA: Sampling the anterior nares is usually sufficient; throat, endotracheal tube aspirate, percutaneous gastrostomy sites, and perirectal or perineal cultures may be added to increase the yield. Swabs from several sites may be placed in the same selective broth tube prior to transport.
  - b. For VRE: Stool, rectal, or perirectal samples should be collected.
  - c. For MDR-GNB: Endotracheal tube aspirates or sputum should be cultured if a respiratory tract reservoir is suspected, (e.g., *Acinetobacter* spp., *Burkholderia* spp.).
6. Obtain surveillance cultures for the target MDRO from patients at the time of admission to high-risk areas, e.g., ICUs, and at periodic intervals as needed to assess MDRO transmission.
7. Conduct culture surveys to assess the efficacy of the enhanced MDRO control interventions.
8. Conduct serial (e.g., weekly, until transmission has ceased and then decreasing frequency) unit-specific point prevalence culture surveys of the target MDRO to determine if transmission has decreased or ceased.
9. Repeat point-prevalence culture surveys at routine intervals or at time of patient discharge or transfer until transmission has ceased.
10. If indicated by assessment of the MDRO problem, collect cultures to assess the colonization status of roommates and other patients with substantial exposure to patients with known MDRO infection or colonization.
11. Obtain cultures of healthcare personnel for target MDRO when there is epidemiologic evidence implicating the healthcare staff member as a source of

ongoing transmission.

#### **F. Enhanced infection control precautions**

1. Use of Contact Precautions
  - a. Implement Contact Precautions routinely for all patients colonized or infected with a target MDRO.
  - b. Because environmental surfaces and medical equipment, especially those in close proximity to the patient, may be contaminated, don gowns and gloves before or upon entry to the patient's room or cubicle.
2. When ASC are obtained as part of an intensified MDRO control program, implement Contact Precautions until the surveillance culture is reported negative for the target MDRO.

#### **G. Implement policies for patient admission and placement as needed to prevent transmission of a problem MDRO**

1. Place MDRO patients in single-patient rooms.
2. Cohort patients with the same MDRO in designated areas (e.g., rooms, bays, patient care areas).
3. When transmission continues despite adherence to Standard and Contact Precautions and cohorting patients, assign dedicated nursing and ancillary service staff to the care of MDRO patients only.
4. Stop new admissions to the unit or facility if transmission continues despite the implementation of the enhanced control measures described above. (Refer to state regulations that may apply upon closure of hospital units or services.)

#### **H. Enhanced environmental measures**

1. Implement patient-dedicated or single-use disposable noncritical equipment (e.g., blood pressure cuff, stethoscope) and instruments and devices.
2. Intensify and reinforce training of environmental staff who work in areas targeted for intensified MDRO control and monitor adherence to environmental cleaning policies. Assign dedicated staff to targeted patient care areas to enhance consistency of proper environmental cleaning and disinfection services.
3. Monitor (i.e., supervise and inspect) cleaning performance to ensure consistent cleaning and disinfection of surfaces in close proximity to the patient and those likely to be touched by the patient and HCP (e.g., bedrails, carts, bedside commodes, doorknobs, faucet handles).
4. Obtain environmental cultures (e.g., surfaces, shared medical equipment) when there is epidemiologic evidence that an environmental source is associated with ongoing transmission of the targeted MDRO.
5. Vacate units for environmental assessment and intensive cleaning when previous efforts to eliminate environmental reservoirs have failed.

### **I. Decolonization**

1. Consult with physicians with expertise in infectious diseases and/or healthcare epidemiology on a case-by-case basis regarding the appropriate use of decolonization therapy for patients or staff during limited periods of time, as a component of an intensified MRSA control program).
2. When decolonization for MRSA is used, perform susceptibility testing for the decolonizing agent against the target organism in the individual being treated or the MDRO strain that is epidemiologically implicated in transmission. Monitor susceptibility to detect emergence of resistance to the decolonizing agent. Consult with a microbiologist for appropriate testing for mupirocin resistance, since standards have not been established.
3. Because mupirocin-resistant strains may emerge and because it is unusual to eradicate MRSA when multiple body sites are colonized, do not use topical mupirocin routinely for MRSA decolonization of patients as a component of MRSA control programs in any healthcare setting.
4. Limit decolonization of HCP found to be colonized with MRSA to persons who have been epidemiologically linked as a likely source of ongoing transmission to patients. Consider reassignment of HCP if decolonization is not successful and ongoing transmission to patients persists.

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