

MANAGEMENT OF THE  
PATIENT WITH A  
MULTIDRUG-RESISTANT  
ORGANISM IN THE HOME:  
STANDARD PRECAUTIONS  
VS.  
CONTACT PRECAUTIONS

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Patients receiving care in the home are often colonized or infected with multidrug-resistant organisms (MDROs). MDROs are bacteria and other microorganisms that have developed resistance to antimicrobial drugs. Examples of multidrug-resistant organisms are listed in Table One.\* Methicillin-Resistant Staphylococcus Aureus (MRSA) and Vancomycin-Resistant Enterococcus (VRE) are the most frequently encountered MDRO in patients receiving care outside of the hospital; however, MRSA is the most common MDRO encountered in home care patients. Invasive (i.e., serious) MRSA infections occur in approximately 94,000 persons each year and are associated with approximately 19,000 deaths. Of these infections, about 86 percent occur in persons with exposures to hospitals or health care settings (i.e., health care-associated) and 14 percent occur in persons without recent hospitalization or other established MRSA risk factors (i.e., community-acquired-MRSA [CA-MRSA]) (Klevens, M.R., et al, 2007).

However, the majority of cases overall had their infection manifest or discovered when the person was out of the hospital. There are an estimated 292,000 hospitalizations with a diagnosis of S.Aureus infection annually in U.S. hospitals. Of these, approximately 126,000 hospitalizations are related to MRSA (Kuehnert, M.J., et al., 2005) and guess where they'll be receiving their care after discharge from the hospital. In the home. Once the patient is at home, staff is often uncertain about what type of isolation precautions to use when caring for a patient with an MDRO, such as MRSA. This article will provide guidance as to when to use standard precautions versus when to add contact precautions while caring for a patient with a MDRO in the home.

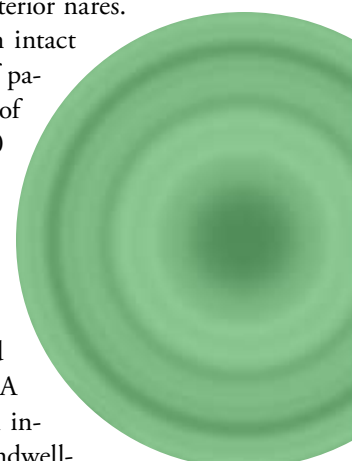
## Patients Colonized with MRSA

Unless a patient has been in a hospital that conducts active surveillance cultures or the patient was hospitalized to treat an infection caused by a MDRO, staff going into the home is not going to know whether a patient is colonized or infected with a MDRO. Patients can be colonized and their home environment contaminated without the staff being aware of this. That's why it is important to focus on using prevention activities through the implementation of standard precautions to prevent the transfer of a MDRO, thereby preventing colonization which helps prevent infections.

In the United States, approximately 2.3 million persons are colonized with MRSA (Kuehnert, M.J., 2006). Even if a patient is colonized and does not have an acute infection, it

is important to manage the patient carefully to prevent the spread of the MDRO. Newly colonized patients have up to 30 percent risk of infection in the coming year. And once a patient becomes colonized with MRSA, the organism can harbor in a number of different body sites for months and even years. The most common reservoir is the anterior nares.

Patients can also carry the MRSA on intact skin in the axillae (15 – 25 percent of patients), the perineum (30-40 percent of patients), and the hands or arms (40 percent of the patients). Some colonized patients, particularly those who have received antimicrobial therapy, develop heavy MRSA colonization of their gastrointestinal tract. Ostomy sites, wounds and pressure ulcers, and sputum are other common site of MRSA colonization. Colonized patients with invasive devices such as central lines, indwelling Foley, or suprapubic catheters, and patients on mechanical ventilation are at higher risk for infection, and meticulous care and management of the indwelling device is necessary to reduce this risk. Eliminating MRSA colonization in patients who are colonized only in the nose and on the skin may be attempted using nasal mupirocin and chlorhexidine gluconate body wash; however, using mupirocin on a widespread basis is not encouraged, as this can lead to the development of drug resistance to mupirocin.



**TABLE ONE**

### Common Multidrug Resistant Organisms (MDROs)

<b>MRSA</b>	methicillin/oxacillin-resistant Staphylococcus aureus
<b>VRE</b>	vancomycin-resistant enterococci
<b>ESBLs</b>	extended-spectrum beta-lactamases (which are resistant to cephalosporins and monobactams)
<b>PRSP</b>	penicillin-resistant Streptococcus pneumoniae

*Source: Centers for Disease Control and Prevention (CDC). www.cdc.gov. Accessed on March 31, 2009.*

## Unique Considerations in Home Care

While the reasons for preventing infections are the same in any care setting, several considerations relevant to the prevention of infection differ in patients receiving care in the home. The biggest reason is that the care setting is their home and for the most part, there are no other patients receiving care. Patients receiving care in the home are often functionally impaired (i.e., incontinent, immobile, and confused or demented).

The lower the patient's functional status, the greater the likelihood that the patient is infected or colonized with a MDRO.

For example, MRSA colonization is more likely to be identified in bedbound patients, or those that require feeding tubes or indwelling urinary catheters and patients with fecal incontinence or pressure ulcers (Bradley, 1999).

MRSA is often shed into the patient's immediate environment, resulting in contamination of surfaces and inanimate objects located near the patient. In the home setting, the patient's immediate environment is where the patient spends most of their time which is commonly the bedroom, bathroom, living room, and kitchen. The staff's hands and clothing can become contaminated by having contact with surfaces and objects in the patient's immediate environment by touching colonized wounds, secretions, and excretions, as well as areas of the patient's intact skin.

## Controlling MDRO Transmission

The good news is that acquiring a MRSA is preventable. The most important way to prevent the transfer of micro organisms is hand hygiene. Contamination of the hands through direct contact with a patient colonized or infected with MRSA or their home environment is a major pathway for the potential transmission for patients receiving care in the home. When staff has substantial contact with infected or colonized patients (such as an aide providing a bath to a bedbound patient), they may also contaminate their clothing with MRSA while leaning into the patient, and contaminating their hands by touching their clothing. To date, there is no data to support the transmission of MRSA from one patient in a home to another, but it is a possibility. That's why it is important to routinely follow standard precautions.

## Standard Precautions for Patients Colonized or Infected with a MDRO

Standard precautions are based on the principle that all blood, body fluids, secretions, excretions except sweat, non-intact skin, and mucous membranes may contain transmissible infectious agents. Standard precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which health care is delivered. These include: hand hygiene; use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; and safe injection practices (CDC, 2007). A mask should be worn when within three feet of a patient who has productive respiratory infection of any kind, including MRSA.

A gown should be worn to protect the skin and prevent the contamination of clothing during procedures and patient-care activities in which there may be contact with the patient or their immediate care environment. The gown should preferably not be reused for multiple home visits, even for repeated contacts with the same patient in the home. When leaving the patient's care area, the gown should be removed, disposed of, and hand hygiene performed.

When a patient with a MDRO (infected or colonized) is admitted, the registered nurse assessing the patient should make a determination whether the patient's care requires contact precautions, in addition to standard precautions. Table Two contains assessment criteria and questions that may be asked of a patient and their caregiver on admission, and ongoing as needed, to make a determination as to the type of isolation precautions required. Standards precautions may be implemented when caring for a patient in the home when the patient has a:

- MDRO identified in a nares culture;
- MDRO history of colonization;
- MDRO in the sputum, but no cough;
- MDRO in the sputum, but the patient covers their cough, uses and properly disposes of tissues, and performs hand hygiene;
- MDRO in the urine, but the patient is continent or their urine is contained;
- MDRO in a pressure ulcer, skin lesion, or wound that is covered and the dressing contains any discharge; and
- Patient is colonized or infected with a MDRO and there is no uncontrolled drainage present (McGoldrick, 2009).

**TABLE TWO**

**When to Implement Standard Precautions vs. Contact Precautions for a Patient at Home Infected or Colonized with a MDRO**

*Assessment Criteria/Assessment Questions*

When a patient is known to be infected or colonized with a MDRO, assess the patient on admission and ongoing thereafter, as needed, to determine the type of isolation precautions (i.e., Standard Precautions vs Contact Precautions) to be implemented.

1. Contained and Controlled Secretions and Excretions; if the patient is incontinent, are urine and/or stool contained in a diaper or other collection device?  Yes  No
2. If the patient has a wound or open skin, is the wound covered and any drainage contained within the dressing?  Yes  No
3. Does the patient have an indwelling device (i.e., tracheostomy, central line, indwelling urinary catheter)? If yes, is the drainage from the device, if any, contained?  Yes  No
4. If the patient has a productive cough, is the patient adhering to respiratory hygiene/cough etiquette?  Yes  No

*If yes to all questions (1-4), implement standard precautions. If no to any question (1-4), proceed to questions 5 through 7.*

5. Cognitively intact and competent. Is the patient or caregiver able to comprehend directions and instruction regarding infection prevention and control measures in the home?  Yes  No
6. Cooperative and compliant. Is the patient or caregiver willing to follow directions regarding infection prevention and control measures in the home (e.g., covering his/her mouth when coughing, using a tissue to contain respiratory secretions and then throwing it in a waste can for disposal, routinely performing hand hygiene, etc.)?  Yes  No
7. Cleanliness. Are the patient's hands, clothes, and home environment generally clean?  Yes  No

If the answer is yes to questions 5, 6 and 7, implement standard precautions. If the answer is no to questions 5, 6, or 7, implement contact precautions. Otherwise, implement standard precautions Infection Prevention and Control Measures Selected:

Standard Precautions  Contact Precautions

*Source: McGoldrick, M. (2009). Home Care Infection Prevention and Control Program; Saint Simons Island, GA: Home Health Systems, Inc. www.HomeCareandHospice.com. Reprinted with permission.*

The Five S's in preventing and controlling the transmission of MDROs include:

- Standard Precautions – always;
- Stress hand hygiene before and after all patient contact, after glove removal, and handling items in the patient's home;
- Select dedicated patient care equipment for the patient's use (i.e., wheelchair, thermometer, blood pressure cuff, stethoscope) when feasible, or thoroughly clean and disinfect all shared patient care equipment before use on another patient;
- Surface barrier is used when patient care equipment or supplies are placed down on a surface in the patient's home; and
- Schedule the patient for the last visit of day, whenever possible (McGoldrick, 2009).

## Contact Precautions for Patients Colonized or Infected with a MDRO

In the hospital, patients infected with MRSA are placed on contact precautions in a single-occupancy private room or placed in a semi-private room with another patient with the same organism (e.g., MRSA, although patients can be colonized with other MDROs). Contact precautions are intended to make it less likely for staff to move from an infected or colonized patient to an adjacent, uncolonized patient without removing their gloves and gown and cleaning their hands. Contact precautions are designed to interrupt the mode of transmission of infectious agents (i.e., MDROs) which are spread by direct or indirect contact with the patient or the patient's environment. Wearing gloves when having contact with patients or with the immediate environment of patients colonized or infected with MRSA can reduce the likelihood that staff will contaminate their hands. Wearing a gown can protect staff from contaminating their clothing when caring for patients colonized or infected with MRSA. Airborne transmission of staphylococci can occur, but most experts believe that this is a relatively rare event, and that masks (and special air handling in a facility) are not required routinely.

Patients with known MDRO colonization or infection who are not able to comply with infection prevention and control measures (e.g., not able to perform hand hygiene, cover their cough, etc. or secretions are not readily contained) should have the following infection control measures implemented:

- Implement contact precautions, in addition to standard precautions;
- Wear a gown and gloves for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's home;
- Don the gown and gloves upon entry to the home and when performing patient care;
- Remove and discard the gown and gloves and perform hand hygiene prior to leaving the home;
- Make sure that clothing and skin does not contact potentially contaminated environmental surfaces after removing the gown and gloves (which could result in possible transfer of microorganism to other patients or environmental surfaces); and
- Discontinuation of contact precautions may be considered if/when the patient meets the criteria for having standard precautions implemented in the home, although CDC Guidelines do not include an official recommendation (CDC, 2006).

## Patient/Family Education

In the home, the following information may be taught to the patient and caregiver to help them prevent the spread of the MDRO to others:

- Wash their hands after physical contact with the infected or colonized person and before leaving the home;
- Encourage them to question any health care provider whom they do not observe performing hand hygiene;
- Use towels only once after contact;
- Wear disposable gloves if contact with body fluids is expected and wash hands after removing the gloves;
- Wash linens when soiled and on a routine basis;
- Clean the patient's environment routinely and when soiled with body fluids; and
- Notify any health care providers who provide care for the patient that the patient is colonized or infected with a multidrug-resistant organism.

Providing care in the home has unique challenges, but it is the safer place for patients to receive care from an infection prevention and control perspective. By following the principles of standard precautions and implementing contact precautions when needed, the transmission of MDROs, especially MRSA, can be prevented.

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