Recommendations for Prevention and Control of Targeted Multidrug-Resistant Organisms in Wisconsin Nursing Homes

Healthcare-Associated Infections (HAI) Prevention Program
Division of Public Health–Wisconsin Department of Health Services

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WISCONSIN DEPARTMENT *of* HEALTH SERVICES

Table of Contents

Version Information:

- This guide was originally published in May 2022 (**version 1**).
- The guide was updated in September 2022 (**version 1.1**) to incorporate expanded recommendations from the Centers for Disease Control and Prevention (CDC) regarding the use of enhanced barrier precautions in nursing homes. The updated content is mainly found in the Management of Residents section, which starts on page 13.

INTRODUCTION AND PURPOSE

This document is designed to aid Wisconsin nursing homes in the prevention and control of outbreaks of a specific group of highly concerning multidrug-resistant organisms (MDROs). MDROs are an emerging threat to global public health, and the potential for rapid spread within nursing homes, as well as the difficulties of treating infections caused by these organisms, make it critically important for nursing homes to be prepared to respond to a potential outbreak.
The recommendations included in this document are intended to support a nursing home's response to the identification of single case of a targeted MDRO within the facility, reduce the risk of spread of the targeted MDRO within the facility, and help contain outbreaks.

While primarily designed for skilled nursing facilities, this document may also be helpful for other long-term care facilities such as assisted living facilities, as well as for long-term acute care facilities, when a targeted MDRO is found to be present in a facility.

Note that other than sections that discuss Wisconsin communicable disease reporting requirements and processes, this guide draws heavily from three Centers for Disease Control and Prevention (CDC) resources:

- CDC—Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs)
- CDC—Containment Strategy Guidelines: Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)
- CDC—Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes

This document aims to synthesize CDC guidance on MDROs with local lessons learned, and to serve as a high-level guide to the MDRO prevention and response process in nursing homes. However, facilities are encouraged to refer directly to the CDC documents above and to the other resources listed throughout this guide for additional details and information. This guide was prepared in early 2022; facilities are also encouraged to regularly refer to the resources included to ensure they are aware of current information and guidelines.

Finally, facilities should note that these recommendations are not exhaustive and implementation of all strategies and measures may not be appropriate or feasible in all situations. Facility-level assessment of the situation should be made by the facility's infection preventionist or other infection prevention and control (IPC) staff in collaboration with facility leadership.

Targeted MDROs Discussed in this Document

In alignment with CDC, the targeted MDROs discussed in this document include the organisms in Table 1.

Table 1. Targeted MDROs

Organism	Notes and Considerations
Pan-resistant organisms	• These organisms are resistant to all tested antimicrobials (antibiotics or antifungals).
Carbapenemase-producing carbapenem-resistant Enterobacterales (CP-CRE)	• This order of bacteria is commonly found in the human gastrointestinal system as part of the normal flora. • CP-CRE can cause serious infections if introduced to a sterile site, but people can also be colonized with CP-CRE without illness.
Carbapenemase-producing carbapenem-resistant *Acinetobacter baumannii* (CP-CRAB)	• *Acinetobacter baumannii* is commonly found in soil and water. • This organism can survive for a long time on surfaces, can colonize on the skin, and can cause severe infections. • CRAB can be highly resistant to antibiotics. Pan-resistant CRAB isolates have been detected in Wisconsin.
Carbapenemase-producing carbapenem-resistant *Pseudomonas* spp. (CP-CRPA)	• *Pseudomonas aeruginosa* is a bacterium commonly found in soil and water. • *Pseudomonas aeruginosa* is naturally drug-resistant and can cause severe wound, burn, and respiratory infections. • While only a small proportion of CRPA isolates are carbapenemase-producing, CP-CRPA can cause very serious and hard-to-treat infections.
***Candida auris* (*C. auris*)**	• *Candida auris* is a rare but potentially life-threatening type of fungus that is resistant to most antifungal medications. • *C. auris* can colonize the skin and it is difficult to eliminate from the resident environment. • CDC estimates that *C. auris* infections have a high mortality rate.

While all carbapenem-resistant organisms are of concern, carbapenemase-producing organisms (CPOs) are particularly concerning because of their ability to produce an enzyme (carbapenemase) that increases the organism's resistance to almost all β-lactam antibiotics, including carbapenems. In addition, carbapenemase genes are often located on mobile resistance elements that enable the transfer of antibiotic resistance to other organisms. For these reasons, this document is specifically focused on CPOs. A number of different types of bacteria can be carbapenemase-producing, but carbapenemase production has most often been identified among members of the Enterobacterales order (for example, *E. coli* and *Klebsiella*), as well as in *Acinetobacter baumannii* and *Pseudomonas aeruginosa*.

It is important to note that individuals can be "colonized" or infected with any of the above MDROs. An individual who is colonized with a targeted MDRO is carrying the organism in or on their body, often for very long periods of time, but the organism is not causing symptoms or making the individual ill. Individuals who are colonized with an MDRO can, however, spread the organism to surfaces in their environment and to other people. An individual who is infected with a targeted MDRO has the organism in or on their body and it is causing symptoms or illness. An individual who is colonized with a targeted MDRO can also become infected later with the organism.

Wisconsin Data Snapshot

Of the targeted MDROs, historically only CP-CRE has been a reportable communicable disease condition in Wisconsin. As of July 2022, CP-CRPA, CP-CRAB, and *Candida auris* are also reportable disease conditions, which will enable systematic, statewide surveillance for these organisms going forward. The below data on CP-CRAB, CP-CRPA, and *Candida auris* are based primarily on voluntary submission of isolates by clinical laboratories to the Wisconsin State Laboratory of Hygiene (WSLH). Nevertheless, even this incomplete picture of the prevalence of these organisms in Wisconsin underscores the need for nursing homes to be prepared to respond to a targeted MDRO in their facility.

CP-CRE, CP-CPRA, and *Candida auris*

Table 2. Reported Cases* of CP-CRE, CP-CRPA, and *Candida auris* in Wisconsin, 2020 and 2021

	2020	2021
CP-CRE	30	46
CP-CRPA	2	3
Candida auris	0	1

CP-CRAB

A review of recent data on CP-CRAB cases in Wisconsin demonstrates that that this organism is clearly present in the state and of particular concern for nursing homes. As shown in the maps below, there was an increase in the number of positive CP-CRAB clinical and colonization screening isolates identified in Wisconsin between 2020 and 2021. Additionally, while CP-CRAB cases have historically been identified primarily in the southeastern region of the state, many more cases were identified in other regions of the state in 2021. A number of the CP-CRAB isolates identified in 2021 were also found to be pan-resistant, meaning they were resistant to all of the antimicrobials against which they were tested. This was seen in 24 or 15% of CP-CRAB isolates identified in 2021. Finally, and of particular importance for nursing homes, of the 134 CP-CRAB cases in Wisconsin in 2021 for which case history information was available, 121 or **90% were either a current or former long-term care facility (LTCF) resident**.

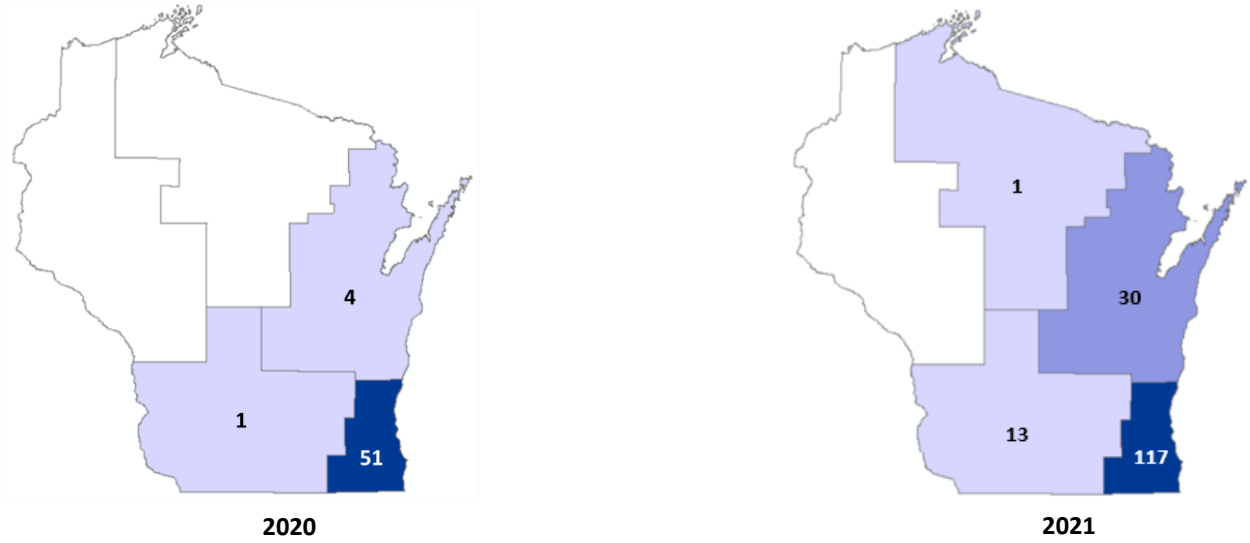

Figure 1. Reported CP-CRAB Cases* in Wisconsin, 2020 and 2021

*Cases include both clinical and colonization screening isolates. Also, the numbers in the table and maps are not de-duplicated across years. This means that an individual with a positive specimen in both 2020 and 2021 would be included in the numbers for both years.

Resources

- DHS – Multidrug-Resistant Organisms (MDROs) Fact Sheet for Health Care Personnel
- DHS – Multidrug-Resistant Organisms (MDROs) Fact Sheet for Residents and Families
- DHS – Carbapenem-Resistant Enterobacterales (CRE) Fact Sheet for Long-Term Care Facilities
- DHS – Carbapenem-Resistant *Acinetobacter baumannii* (CRAB) Fact Sheet for Long-Term Care Facilities
- DHS – Carbapenem-Resistant *Pseudomonas aeruginosa* (CRPA) Fact Sheet for Long-Term Care Facilities
- DHS – *Candida auris* Fact Sheet for Long-Term Care Facilities

PREVENTION AND PLANNING

Early identification of residents who are colonized or infected with a targeted MDRO, paired with immediate implementation of appropriate precautions and environmental cleaning, is critical to mitigating the risk of MDRO transmission in nursing homes.

Having the following plans and resources in place will help to ensure your facility is prepared to respond to the presence of a targeted MDRO in your facility.

- Ensure that paperwork and verbal reports received for new admissions and re-admissions to the facility include a review of residents' MDRO history.
- Have a plan to promptly obtain additional resources (for example, transmission-based precautions and enhanced barrier precautions door signs, educational materials, cleaning supplies, and personal protective equipment [PPE]) when a resident is identified as infected or colonized with one of the targeted MDROs.
- Review your facility's policies regarding enhanced barrier precautions. Enhanced barrier precautions are a key part of a facility's **response** to the presence of a targeted MDRO, and are also increasingly recognized as an important strategy for **preventing** the "silent transmission" of MDROs within nursing homes.
- Ensure that contact information for the Local or Tribal Health Department (LTHD), Wisconsin Healthcare-Associated Infections (HAI) Prevention Program, and other key health care partners is readily available.
- Review facility cleaning guidelines and identify potential gaps. Observe routine housekeeping procedures to identify cross-contamination issues, such as using the same cloth to clean bathroom surfaces and wiping down ice buckets. Identify high-risk surfaces, including surfaces with frequent hand contact, surfaces in shared areas such as tub or shower rooms, and shared medical equipment. Develop an outbreak-specific cleaning plan to supplement routine protocols.
- Form a multidisciplinary planning committee or team to provide guidance and response when potential cases or outbreaks occur. This planning committee should designate specific individuals to manage various tasks during an outbreak, such as communication with families, visitors, residents, and the LTHD; inter-facility coordination; and training and education of staff.
- Provide regular information to residents and staff (for example, in-services, notices, and posters) to reinforce facility policy regarding proper hand hygiene. Ensure there is adequate access to hand hygiene stations and supplies to support this.

INTERPRETING LAB RESULTS

Interpreting the results of testing for a targeted MDRO can be challenging, and the testing often involves multiple steps. Isolates that are carbapenem-resistant undergo confirmatory testing at WSLH to determine whether the organism is carbapenemase-producing (CP). WSLH will also determine whether unusual *Candida* species isolates are *Candida auris*.

When reviewing lab results for a resident, it's important to note that just because a resident tests positive for carbapenem-resistant Enterobacterales (CRE), *Pseudomonas spp.*, or *Acinetobacter baumannii,* this doesn't necessarily mean that the resident has CP-CRE, CP-*Pseudomonas*, or CP-*Acinetobacter baumannii.*

CDC currently includes CP-Enterobacterales, CP-*Pseudomonas* spp., and CP-*Acinetobacter baumannii*, along with pan-resistant organisms and *C. auris,* as organisms that require the use of enhanced barrier precautions in the nursing home setting. This topic is discussed in greater detail in the **Management of Residents** section of this document.

While awaiting final test results from WSLH to determine whether a resident is infected or colonized with a targeted MDRO, the following precautions should be taken with the resident whose results are pending:

- **If the resident has signs or symptoms of infection**, use contact precautions in addition to standard precautions. Place the resident in a private room, if possible. All staff should wear a gown and gloves upon entry to the room. Disinfect medical equipment and personal care items before removing from the room or discard disposable items. Limit movement in and out of the resident's room.
- **If the resident does NOT have signs or symptoms of infection**, use enhanced barrier precautions (EBPs), in addition to standard precautions for all high-contact care activities. Refer to the section titled **Management of Residents** for more details on EBPs.

Upon receipt of final test results:

- **If the test results show that the resident has a CPO or *Candida auris***, follow the guidance outlined in this document.
- **If the test results show that the resident does not have a CPO or *Candida auris***, then default to your facility's protocols for management of MDROs that are not targeted organisms, as appropriate.

NOTIFICATION AND COMMUNICATION

Upon identification of a case of a targeted MDRO, the DHS HAI Prevention Program or the LTHD will reach out to the affected facility to consult with them about response efforts. Prevention and control of targeted MDRO outbreaks requires the participation of several key stakeholders to be most effective. The medical director should be consulted any time the facility has a new case of a targeted MDRO. Additional members of leadership should also be involved, including the director of nursing, infection preventionist, administrator, and housekeeping or environmental services manager.

Internal Communication and Signage

When a targeted MDRO is identified in a facility, communication between direct care staff and housekeeping staff is essential. Staff who will be entering the rooms of residents who are on transmission-based precautions should be made aware of appropriate control measures prior to entering. This can be done by placing instructional signage on the door to the resident room and flagging the resident's medical record.

In its Frequently Asked Questions (FAQ) document on precautions in nursing homes, CDC discusses what information should be included on resident door signs while maintaining the rights and privacy of residents:

> Signs are intended to signal to individuals entering the room the specific actions they should take to protect themselves and the resident. To do this effectively, the sign must contain information about the type of Precautions and the recommended PPE to be worn when caring for the resident. Generic signs that instruct individuals to speak to the nurse are not adequate to ensure Precautions are followed. Signs should not include information about the resident's diagnosis or the reason for the Precautions (e.g., presence of a resistant pathogen); inclusion of that information would violate HIPAA and resident dignity.

See the "Resources" section below for links to printable contact and enhanced barrier precautions resident door signs from CDC. Also see the guidance at F583 of the CMS State Operations Manual, Appendix PP for additional information on the use of precautions signage outside resident rooms.

External Communication and Transfers

The importance of clear and timely communication between facilities when a resident who is colonized or infected with a targeted MDRO is being transferred cannot be overstated. Communication failures at the time of resident transfer have been identified in the literature and by the Wisconsin HAI Program as a key contributor to the spread of MDROs between facilities. When a resident with a targeted MDRO is transferred from one facility to another, the receiving facility must be informed of the resident's MDRO history and status, ideally prior to the transfer, so that appropriate precautions can be implemented.

The following information should be communicated to the receiving facility:

- Basic information about the resident and transferring facility
  - Resident name and date of birth
  - Transferring facility name
  - Reporter name and contact information
- Resident MDRO history and current status
  - Organism name
  - Specimen type and collection date
  - Does individual have an infection or are they colonized with the MDRO?
  - Is resident currently being treated for MDRO infection? Is treatment complete or ongoing?

Ideally, the transferring facility will contact the receiving facility by phone to ensure the facility is aware of and understands the resident's MDROs status. At minimum, MDRO status information should be included in the transfer paperwork and in the resident's chart.

In addition to notifying other health care facilities upon transfer of a resident who is colonized or infected with a targeted MDRO, facilities should consider notifying "sister" facilities with which they share staff, facilities, or other resources of their current outbreak status, so the other entities can implement proper IPC measures.

Resources

- CDC—Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes
- CDC – Enhanced Barrier Precautions Sign
- CDC – Enhanced Barrier Precautions Sign (Spanish version)
- CDC – Contact Precautions Sign
- Centers for Medicare and Medicaid Services (CMS)—State Operations Manual Appendix PP—Guidance to Surveyors for Long Term Care Facilities
- CDC—Inter-facility Transfer Form Template

SURVEILLANCE AND OUTBREAK IDENTIFICATION

Surveillance activities for targeted MDROs include identifying potential sources of transmission, determining prevalence, monitoring rates of transmission within the facility, and determining host risk factors for carriage.
Examples of surveillance activities include:

- Maintaining line lists of residents known to be infected and colonized with targeted MDROs.
- Obtaining cultures of all high-risk residents and/or upon admission to detect colonization or infection with targeted MDROs.
- Performing point prevalence screening (PPS) to determine the extent of spread of the targeted MDRO within the facility.

Risk factors that increase a resident's risk of becoming infected and/or colonized with a targeted MDRO include:

- Underlying medical conditions
- Current and/or prolonged antibiotic use
- Indwelling medical devices and/or lines
- Presence or history of wounds
- History of frequent or prolonged hospitalizations and frequent surgeries or procedures
- History of residing in congregate living settings
- History of health care abroad

Point Prevalence Screening (PPS)

PPS is a specific surveillance activity that is typically done when a resident in a nursing home is found to be colonized or infected with a targeted MDRO. PPS is conducted to identify other residents who are colonized or infected with the targeted MDRO. PPS may be conducted with residents of a particular area of the facility or with all residents. The LTHD and/or the HAI Prevention Program will assist with determining the scope of PPS, but, in short, PPS is a key activity which enables the facility and public health to understand the extent of the outbreak and respond accordingly.

Key Points to Know about PPS

- Depending on the location(s) of the positive resident(s), screening may be done at the unit-level or facility-level. The LTHD and/or HAI Prevention Program will assist in determining the scope of the PPS.
- The LTHD and/or the HAI Prevention Program will also assist with determining testing frequency and with ordering testing supplies from WSLH.
- WSLH offers fee-exempt colonization testing for select organisms. WSLH has specific expertise in the surveillance of targeted MDROs and serves as the CDC-appointed Midwest Region Antibiotic Resistance Lab Network laboratory.

- If possible, it is helpful to have the same staff member(s) perform the screening, to help ensure specimen collection and documentation are done in a consistent way.
- Residents or a resident's power of attorney (POA) must provide informed consent prior to testing. Screening tests are voluntary and residents/POAs have the right to decline testing. See the "Resources" section below for a sample template that can be revised and used to obtain and document informed consent.
- Note that when a new resident who is already known to be infected or colonized with a targeted MDRO is admitted to the facility, PPS would **not** be required, so long as proper precautions are taken upon admission. Refer to the **Management of Residents** section of this document for further information on precautions.

Details Regarding Specimen Collection and Clinical Testing

- Colonization screening supplies and processing of tests will be provided by WSLH at no charge.
- Instructions for the specific swab being used will arrive with the testing supplies and are also available online. Often, specimen collection involves a bilateral axilla and groin swab, though in some cases (particularly when testing for CP-CRE) a rectal swab or stool sample is taken. Be sure the person performing the tests has reviewed how to properly collect the specimen in advance.
- Unpack screening supplies received from WSLH promptly. Review the contents to be sure all needed supplies are included and place ice packs in the freezer as directed.
- The LTHD or HAI Prevention Program will send a supply request to WSLH. Information needed from the facility includes:
    - Main contact's phone and email
    - Approximate number of swabs that will be collected
    - Anticipated date of collection
    - Facility's Clinical Laboratory Improvement Amendments (CLIA) or National Provider Identifier (NPI) number
- If possible, collect swabs on a Monday or Tuesday.
    - In most cases, swabs are only validated for testing within four days after collection. Swabs received late in the week or on weekends may be unable to be tested and require re-collection.
- The facility must fill out a WSLH test requisition form with resident identifiers for each swab collected.
- Each swab must also be labeled with at least two identifiers (typically name and date of birth).
- The facility should package the swabs using the ice packs and insulated shippers provided by WSLH and send them back via FedEx® on WSLH's account. If necessary, call FedEx to ensure prompt pick-up of swabs. There is no charge to the facility for shipping.
- Test results can take 1-5 days to receive, depending on the type of test ordered.
    - CP-CRE or CP-CRPA rectal swabs are tested directly from the swab, so results are available quickly.

    - Any CP-CRAB or non-rectal CP-CRE or CP-CRPA swabs need to be grown first, which takes additional time.
- Results are currently faxed to the facility and the HAI Prevention Program.
- Any resident who tests positive is assumed to be colonized indefinitely and will not need to be tested again.
- PPS testing should be repeated every 1-2 months until the facility has two consecutive rounds of tests without any new positive cases identified. At this point, containment has been achieved. Periodic, less frequent PPS may be recommended by the LTHD and/or HAI Prevention Program following containment depending on the details of the outbreak.

Resources

- DHS – Multidrug-Resistant Organism (MDRO) Point Prevalence Screening Fact Sheet for Health Care Personnel
- DHS – Multidrug-Resistant Organism (MDRO) Screening Tests: Resident and Family Education (Includes fact sheet and modifiable template for obtaining informed consent for screening. Fact sheet and consent template are available in English and Spanish.)

MANAGEMENT OF RESIDENTS

This section is intended to provide guidance on the different types of precautions, including enhanced barrier precautions, that may be needed when a targeted MDRO is identified in the facility.

Key Points about PPE and Medical Equipment during Targeted MDRO Response

- Plan to promptly obtain additional PPE. Gown and glove usage will increase during a targeted MDRO response. Estimate the quantities of PPE that will be needed, taking into account staff room entry practices, policies for grouping cares, current burn rates, and other facility-specific issues.
- Ensure signage noting the type of precautions is posted on each affected resident's door and ensure the necessary PPE based on the type of precautions is available outside each room. This serves as a reminder to staff who enter the room to don the appropriate PPE prior to entry.
- Provide alcohol-based hand sanitizer (ABHS) throughout the building to promote frequent hand hygiene among staff, residents, and visitors. This includes availability for each resident room, ideally both inside and outside the room, to provide access as part of the PPE donning and doffing process.
- Keep garbage cans near the door inside each affected room to facilitate proper doffing and immediate disposal of used PPE before staff leave the room. Standardizing the location of the garbage cans will help reinforce a consistent process for staff, not only upon exit of the room, but also when providing care for multiple residents in the same room. Staff should know how to remove PPE and don clean PPE for the next roommate when providing care in double occupancy rooms.
- Neither extended use nor reuse of gowns and gloves is recommended for mitigating shortages in the context of precautions for targeted MDROs.
- For residents known to be infected or colonized with a novel MDRO, use single use/disposable or dedicated medical equipment (for example, vital signs equipment, shower chairs, or lift slings) if possible. If supply does not allow for this:
    - Shared equipment must be cleaned and disinfected between each use. Use Environmental Protection Agency (EPA)-registered disinfectants according to the label instructions, ensuring the contact time is followed. Contact time is how long the disinfectant needs to remain on a surface for it to be effective.
    - Launder lift slings between uses with different residents.

Enhanced Barrier Precautions

CDC released specialized guidance in 2019 to prevent the spread of targeted MDROs in nursing homes. Enhanced barrier precautions (EBPs) expand the use of PPE beyond situations in which exposure to blood and body fluids is anticipated, and incorporate gown and glove use for high-contact resident care activities where MDROs may be transferred to staff hands, equipment, and clothing. EBPs address the

growing number of outbreaks where MDRO transmission is believed to have occurred from residents who were colonized with an organism, but not actively infected.

EBPs offer a mid-point between standard and contact precautions, and were developed to protect at-risk residents, while being less restrictive than contact precautions. They also take into account the types of activities that pose a higher transmission risk in the more home-like environment of skilled nursing facilities for residents who may live there for many years.

In July 2022, CDC expanded its recommendations for the use of EBPs in nursing homes, in part because of the growing recognition of the high prevalence of MDRO colonization as well as documented MDRO transmission in the nursing home setting. The updated CDC guidelines now recommend EBPs for **all residents with wounds and indwelling medical devices** and **expands the types of MDROs** for which EBPs are recommended. CDC states that in addition to the "targeted" MDROs, facilities should also consider implementing EBPs for "other epidemiologically important MDROs."

Per CDC's current recommendations, EBPs can be used with:

- Residents who are infected or colonized with an MDRO, *when contact precautions do not apply.*
- Residents who have wounds and/or indwelling medical devices, such as a central line, urinary catheter, feeding tube, or tracheostomy/ventilator, *regardless of MDRO status*.

EBPs apply both to situations where a current resident is newly identified as being colonized or infected with an MDRO, and when a resident with a known MDRO is newly admitted to the facility.

CDC identified specific **resident care activities** that require gown and glove use, based on studies where researchers observed care to identify activities involving a greater degree of staff-to-resident contact, as well as contact with bodily fluids that could increase transfer of organisms to staff hands and uniforms. These **high-contact resident care activities requiring EBPs** include:

- Dressing
- Bathing or showering
- Transferring
- Providing hygiene
- Changing linens
- Changing briefs or assisting with toileting
- Device care or use, including devices such as a central line, urinary catheter, feeding tube, or tracheostomy/ventilator
- Wound care, including any skin opening that requires a dressing

Therapists should use gowns and gloves when working with residents on EBPs in the therapy gym if they anticipate close physical contact while assisting with transfers and mobility.

A key point to remember is that EBPs should generally be used **for the duration of a resident's stay** in a facility. In some situations, a resident may transition back to standard precautions. For example, a resident who is placed on EBPs solely because of an indwelling medical device may transition back to

standard precautions when the device is removed. Similarly, a resident on EBPs solely because of the presence of a wound may transition to standard precautions when the wound is healed.

Finally, there are situations where EBPs are **not** appropriate. EBPs are not appropriate for situations where resident body fluids or wounds are unable to be contained or for diarrheal illnesses like *Clostridioides difficile* or norovirus. Nursing homes should continue to follow CDC guidance for the use of standard precautions and contact precautions where indicated. Also, CDC developed the EBP guidance specifically for the nursing home setting, due to the differences in length of stay, activities, MDRO transmission patterns, and types of care provided. EBPs are not typically advised for acute care or long-term acute care facilities for those reasons.

Resident Rooms and Cohorting

CDC discusses resident room assignment, cohorting, and other considerations on its "Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes" webpage. In response to a question regarding whether residents placed on EBPs require placement in a single-person room, CDC states:

> Single-person rooms (if available) should be prioritized for residents who have acute infection with a communicable disease (such as influenza, SARS-CoV-2, hepatitis A) or for residents placed on Contact Precautions for presence of acute diarrhea, draining wounds, or other sites of secretions or excretions that are unable to be covered or contained. Residents on Enhanced Barrier Precautions may share rooms with other residents; however, facilities with capacity to offer single-person rooms or create roommate pairs based on MDRO colonization may choose to do so. Further, if there are multiple residents with a novel or targeted MDRO in the same facility, consider cohorting them together in one wing or unit to decrease the direct movement of healthcare personnel from colonized or infected residents to those who are not known to be colonized.

CDC goes on to say that when hen residents are placed in shared rooms, facilities must implement strategies to help minimize the transmission of pathogens between roommates including:

- Maintaining spatial separation of at least 3 feet between beds to reduce opportunities for inadvertent sharing of items between the residents
- Using privacy curtains to limit direct contact
- Cleaning and disinfecting any shared reusable equipment
- Cleaning and disinfecting environmental surfaces on a more frequent schedule
- Changing personal protective equipment (if worn) and performing hand hygiene when switching care from one roommate to another

Decisions about cohorting residents are complex and many factors need to be considered, including space issues, resident co-morbidities and clinical care needs, staffing patterns, and other issues.

Facilities are strongly encouraged to consult with the HAI Prevention Program or their LTHD to discuss potential cohorting plans and options.

EBPs and Other Precautions in the Broader Context of Daily Life in Nursing Homes

The CDC EBP guidance specifies which activities need gowns and gloves to minimize transmission. The principles of EBP focus on transmission between staff and residents, not residents to other residents or via inanimate objects. EBPs are different than contact precautions and do not require room restriction or limitations on visiting common areas or other group activities. This is because it is the high-contact activities that are considered the risk, most of which involve personal hygiene issues that are room-based. If a resident will not have that type of contact with a staff member while in common areas or during group activities, staff should follow their standard precautions.

Staff do not need to wear gowns and gloves when performing care duties that are not part of the EBP list as long as they keep standard precaution principles in mind. For example, a certified nursing assistant (CNA) who is accompanying a resident to physical therapy across the building does not need to wear a gown or gloves during this time, unless there is anticipated extensive physical contact due to mobility issues. Activities like dining and sharing paper materials or games as part of group activities do not involve direct, prolonged contact between the resident and a staff member and do not require EBP.

In general, residents colonized or infected with a targeted MDRO may use common living areas, recreational areas, and dining facilities. Residents leaving their rooms for activities should have clean, dry dressings and wear clean clothes or a clean cover gown. All residents should perform hand hygiene immediately before leaving their rooms. If residents are unable to perform hand hygiene themselves, residents' hands should be cleansed for them. Hand hygiene should be offered frequently, particularly before dining and group activities, as well as whenever they become contaminated.

Table 3. Overview of PPE Use and Resident Room Restriction (Adapted from CDC's Summary of PPE Use and Room Restriction When Caring for Residents Colonized or Infected with MDROs in Nursing Homes)

Precautions	Applies to:	PPE used for these situations:	Required PPE	Room restriction
Standard Precautions	All residents	Any potential exposure to: • Blood • Body fluids • Mucous membranes • Non-intact skin • Potentially contaminated environmental surfaces or equipment	Depending on anticipated exposure, gloves, gown, or face protection Change PPE before caring for another resident.	None
Enhanced Barrier Precautions	All residents with *any of the following*: • Infection or colonization with an MDRO *when contact precautions do not apply*. • Wounds and/or indwelling medical devices (e.g., central line, urinary catheter, feeding tube, tracheostomy/ventilator) *regardless of MDRO colonization status*.	During high-contact resident care activities: • Dressing • Bathing/showering • Transferring • Providing hygiene • Changing linens • Changing briefs or assisting with toileting • Device care or use: central line, urinary catheter, feeding tube, tracheostomy/ventilator • Wound care: any skin opening requiring a dressing	Gloves and gown prior to the high-contact care activity Change PPE before caring for another resident. Face protection may also be needed if performing activity with risk of splash or spray.	None
Contact Precautions	All residents infected or colonized with a targeted MDRO *in any of the following situations*: • Presence of acute diarrhea, draining wounds, or other sites of secretions or excretions that are unable to be covered or contained. • On units or in facilities where ongoing transmission is documented or suspected. • For infections and other conditions where contact precautions are recommended, see Appendix A –of the CDC Guideline for Isolation Precautions	• Any room entry	Gloves and gown Don before room entry, doff before room exit. Change before caring for another resident. Face protection may also be needed if performing an activity with risk of splash or spray.	Yes, except for medically necessary care

Final Points About Resident Management

- Educate staff on the different types of precautions, including the different types of PPE used and activities that are part of contact precautions and EBPs. Regular review of the expectations around donning and doffing PPE, performing hand hygiene, and discarding used PPE is critical to preventing transmission. This should be provided upon hire and at regular intervals.
- Appropriate signage will help reinforce staff practices:
    - Use standardized signs that clearly indicate the type of precautions and PPE that should be used so all staff understand the expectations for room entry, providing cares, and housekeeping. Signs should not include the type of condition or the resident's name, but rather the type of precautions to be used. Signs should not be a simple stop sign or direction to the nurse's station for further information.
    - Clearly indicate the high-contact resident care activities that require the use of gown and gloves on enhanced barrier precautions signs.
- Reinforce policies for precautions and PPE use through routine auditing. This can include formal auditing practices by designated staff, as well as just-in-time reminders from co-workers, or "secret shopping" by volunteers. Staff meetings and regular education opportunities can help address any adherence themes identified during these reviews, as well as determine whether practices in written policies or procedures need adjustment based on the reality of implementation.
- Provide education to residents and their visitors about EBPs so that they understand why this type of precaution was put in place and in what circumstances it will be used.
    - Visitors are not required to wear a gown and gloves when visiting a resident on EBPs; however, hand hygiene should still be encouraged. If a visitor participates in any high-contact resident care activities with a resident who is colonized or infected with a targeted MDRO, the facility may consider providing the visitor with education on EBPs and how to safely use a gown and gloves during resident cares.
- This guidance is specifically intended for response to targeted MDROs, but facilities should still follow the appropriate CDC guidelines for infection prevention practices and the duration of isolation precautions for other MDROs and communicable diseases (such as *C. difficile*, norovirus, or scabies) found in the CDC Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. Appendix A.

Resources

- CDC – Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs)
- CDC – Frequently Asked Questions about Enhanced Barrier Precautions in Nursing Homes
- CDC – Consideration for Use of EBPs in Skilled Nursing Facilities
- CDC Video – Preventing the Spread of Novel or Targeted MDROs in Nursing Homes through Enhanced Barrier Precautions
- CDC – Enhanced Barrier Precautions Sign
- CDC – Enhanced Barrier Precautions Sign (Spanish version)
- CDC – Contact Precautions Sign
- CDC – Contact Precautions Sign (Spanish version)
- CDC – Containment Strategy Responding to Emerging Antibiotic Resistance (AR) Threats webpages
- DHS – Hand Hygiene Resources for Health Care Personnel Fact Sheet
- DHS – Infection Preventionist Starter Kit: Transmission-Based Precautions and Enhanced Barrier Precautions Sections

MANAGEMENT OF STAFF

Staff Assignments

If possible, designate specific direct caregiver and housekeeping staff to work in affected units. Facilities should also limit staff moving between affected and unaffected units. If staffing levels do not allow complete separation:

- Bundle cares to limit the number of staff members providing direct care to residents infected or colonized with a MDRO.
- Ensure environmental cleaning is done starting with unaffected areas and resident rooms first, including unaffected common areas like the dining room. Clean affected units and the rooms of residents who are colonized or infected with a targeted MDRO last.

Staff Education

Provide education to staff regarding the targeted MDRO, including how it is spread, the significance it has on infections in residents, and how to prevent and control the spread within the facility. Educate staff on the need to maintain strict hand hygiene and a clean environment to minimize the risk of transmission of the targeted MDRO.

Hand Hygiene Reminders

Reinforce the importance of hand hygiene when providing care to residents who are infected or colonized with a targeted MDRO. **Alcohol-based hand sanitizers are the preferred method for cleaning hands in most clinical situations, due to evidence of better compliance compared to soap and water.** Wash hands with soap and water whenever they are visibly dirty, before eating, after using the restroom, and after known or suspected exposure to gastrointestinal pathogens, such as norovirus or *C. difficile*.

Multiple opportunities for hand hygiene may occur during a single care episode. The clinical indications for hand hygiene include:

- Immediately before touching a resident
- Before performing an aseptic task or handling invasive medical devices
- Before moving from work on a soiled body site to a clean body site on the same resident
- After touching a resident or the resident's immediate environment
- Immediately after glove removal following contact with blood, body fluids, or contaminated surfaces
- When hands are visibly soiled

Ensure staff are performing hand hygiene appropriately and periodic audits are being done to reinforce the process. Staff should also be empowered to discreetly remind each other of the need for hand hygiene if they observe another not performing it.

Precautions and PPE

Implement contact precautions and/or EBPs as outlined in **Management of Residents** section. Ensure staff are donning and doffing PPE in the proper sequence and periodic audits are being done to maintain skills, particularly for new staff or when new PPE is included in the process.

Most PPE used during resident care, including care of residents placed in EBPs or transmission-based precautions, would not be considered regulated medical waste requiring disposal in a biohazard bag, and could be discarded as routine, non-infectious waste.

After removing PPE, immediately perform hand hygiene and ensure hands and clothes do not touch potentially contaminated environmental surfaces or items in the resident's room, such as bed rails, light switches, doorknobs, and tables.

Resources

- CDC – Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs)
- CDC – Frequently Asked Questions about Enhanced Barrier Precautions in Nursing Homes
- CDC – PPE Sequence
- DHS – Hand Hygiene and PPE Audit Tool
- DHS – Hand Hygiene Observations Audit Tool
- Wisconsin Department of Natural Resources – Table of Common Wastes in Healthcare

CLEANING MANAGEMENT

As noted earlier, some of the targeted MDROs are very persistent and can survive a long time in the environment, making regular and thorough cleaning and disinfection essential to stopping their spread.

Training and Auditing Staff Practices

- Train and regularly check the competency of housekeeping staff in the facility's cleaning and disinfection practices for the health care environment. Ensure housekeeping personnel are made aware when a resident with an MDRO is in the facility so they may respond appropriately, including use of the correct disinfectant and reinforcement of proper practices.
- Ensure laundry personnel are made aware of potentially infected linen and are provided with appropriate PPE.
- Ensure that any clinical staff who will be responsible for cleaning and disinfecting resident items or spaces are also trained and educated on proper procedures.
- Regularly audit environmental cleaning practices and assess staff competency and understanding of cleaning protocols and practices.

Order of Operations and Key Areas for Environmental Cleaning and Disinfection

- Clean and disinfect surfaces starting from the areas with a lower likelihood of contamination to areas with highly contaminated surfaces. This includes cleaning non-affected wings and resident rooms prior to the rooms of residents who are colonized or infected with a targeted MDRO.
- Increase the frequency of routine environmental cleaning, including cleaning shared areas, such as tub or shower rooms, and the area surrounding the living space of residents who are infected or colonized with the targeted MDRO. Pay particular attention to cleaning objects and surfaces that are frequently touched.
- Be sure that lift slings are laundered frequently. Ideally, residents who are colonized or infected with a targeted MDRO should have their own lift sling that is not used with other residents. If this is not possible, launder slings after they are used with residents who are infected or colonized with an MDRO.
- Change privacy curtains on a routine basis, if they become soiled, and after a resident on isolation is discharged or transferred. If privacy curtains are needed in shared bathroom or shower areas, consider using vinyl curtains that can be cleaned and disinfected between each use.

Cleaning and Disinfecting Product Considerations

- Check the master labels of the disinfectants being used against the EPA list of registered disinfectants to be sure they are effective against the organism(s) you desire to kill.

- Use disinfectants according to the label instructions. Contact time is how long a disinfectant needs to remain wet on a surface for it to be effective. Ensure staff are aware of contact time requirements and use products appropriately. If the contact time poses difficulties, facilities may also consider changing to another product with a shorter contact time.

Final Notes on PPE Usage for Housekeeping Activities

Linen handling is one of the high-contact activities discussed in CDC's EBP guidance, due to the risk of contamination of linens through body fluids, and because targeted MDROs can colonize individuals' skin. There is also a high likelihood that linens will contact a staff person's uniform as the person removes or carries linens. Gowns and gloves prevent contamination of the staff member, especially when they may transition from handling dirty linen to clean linen in short periods of time.

All staff who remove resident linens, change bedding, or perform similar duties with used linens should wear gowns and gloves when working with linens from the rooms of residents on EBPs. This may include nursing staff, housekeepers, and laundry staff.

Facilities need to be able to clearly identify which linens may require additional PPE use. Other than linen handling, PPE for housekeeping staff in the rooms of residents on EBP should be dictated by facility policy and standard precautions for anticipated exposures to body fluids, chemicals, and contaminated surfaces. Residents on contact precautions have a different level of expectation for transmission, so housekeeping staff should wear gowns and gloves whenever cleaning those rooms, not just for certain cleaning activities. Again, appropriate door signage will assist housekeeping staff in knowing what type of PPE should be worn for their safety and to minimize transmission.

Resources

- DHS – Multidrug-Resistant Organisms (MDROs) Fact Sheet for Housekeeping Staff
- CDC – Resident Care Equipment Cleaning Audits
- DHS – Infection Preventionist Starter Kit: Detergent Marking for Environmental Cleaning Audits

SUSTAINABILITY

Responding to targeted MDROs in the nursing home setting is a lengthy process and will require the commitment of both leadership and staff. In addition to initial response activities, the following practices will also likely be needed:

- Continued PPS testing
  - PPS testing will allow the facility to gauge the extent of the outbreak and when transmission has been stopped.
  - PPS testing should be repeated every 1-2 months until the facility has two consecutive rounds of tests without any new positive cases identified. At this point, containment has been achieved.
  - In certain situations, screening of new admissions may be recommended by your LTHD and/or the HAI Prevention Program.
  - Prepare for the possibility of finding more cases during the screening process.
- Continued observations and audits of staff practices (for example, hand hygiene, proper donning and doffing of PPE, and environmental cleaning)
  - Clinical leadership, including IPC staff, should round in the facility routinely to observe staff members' natural practices and provide immediate feedback and support as needed.
  - Incorporate audit results into the facility's Quality Assurance Performance Improvement (QAPI) Program to identify trends and initiate performance improvement projects when needed.
- Regular environmental rounds
  - Have leadership from both clinical and ancillary services, such as housekeeping and facilities management, tour the facility on a routine basis to assess the cleanliness and condition of the overall environment, resident rooms, shared spaces, and shared medical equipment.
- Continuing education for staff
  - Plan for how all staff will be educated on mitigating the transmission of targeted MDROs. Evaluate education provided in new employee orientation and annual training, and revise or supplement educational materials as needed.
- Continued oversight of IPC practices through the Quality Assessment and Assurance (QAA) Committee and QAPI Program
  - As noted in section F865 of the CMS State Operations Manual, "each LTCF, including a facility that is part of a multi-unit chain, must develop, implement, and maintain an effective, comprehensive, data-driven QAPI program that focuses on outcomes of care and quality of life indicators."
  - Provide regular updates to the QAA Committee on the status of the outbreak, measures being taken to mitigate transmission of the targeted MDRO, and results of staff audits.

- Engage the QAA Committee to problem solve any barriers to effective IPC practices. Develop and initiate performance improvement projects as necessary.
    - Performance improvement project goals should be specific, measurable, attainable, realistic, and time-bound to help keep efforts organized and on track.
- Review and update your facility's policies and procedures regarding topics such as MDROs, enhanced barrier precautions, transmission-based precautions, hand hygiene, and environmental cleaning. Educate staff on any updates that are made.

Responding to the presence of a targeted MDRO in your facility and protecting the health of your residents and staff in these situations can be a daunting task. Remember that the DHS HAI Prevention Program and/or your LTHD will be available to assist and advise you and your facility throughout the process. Contact information for your HAI Program Regional Infection Preventionist and other HAI Program staff is available on the HAI Program's webpage.

ADDITIONAL RESOURCES

See each section of the guide for links to resources related to that topic. In addition, the following general resources may also be helpful.

- Wisconsin HAI Prevention Program staff contacts
- Wisconsin HAI Prevention Program New MDRO Reportables webpage
  The HAI Program New MDRO Reportables webpage includes links to a number of resources, including the two below documents, which may be of interest to readers of this guide.
  - **DHS Guidelines for Prevention and Control of Multidrug-Resistant Organisms for Health Care Settings**
    This document provides background information and guidance on the prevention and control of MDROs in a variety of health care settings. While portions of the document are similar to this guide, the document also discusses additional MDROs and focuses on settings other than nursing homes.
  - **Wisconsin Protocol for Local and Tribal Health Departments: WEDSS Surveillance and Response for Antibiotic Resistance Lab Network (ARLN) Pathogens**
    This document provides guidance to LTHDs on surveillance protocols for targeted MDROs. It may also be helpful as background information for skilled nursing facilities that wish to better understand the surveillance, testing, and public health response processes for these organisms.