

Recommendations for Infection Control for Residents with CRE in Long-Term Care Facilities

From the CRE Workgroup of CACDC

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Background

Carbapenem-resistant Enterobacteriaceae (CRE) represent an important and growing public health risk. Infections with CRE are difficult to treat and have been associated with mortality rates up to 50%. CRE are highly transmissible in healthcare settings, and prevalence has increased throughout the United States since 2000.¹

The CDC defines CRE as Enterobacteriaceae (e.g., *Klebsiella* spp., *E. coli* and *Enterobacter* spp.) which are:

Resistant to any carbapenem antimicrobial (i.e., minimum inhibitory concentrations of ≥ 4 mcg/ml for doripenem, meropenem, or imipenem OR ≥ 2 mcg/ml for ertapenem)

OR

Documented to possess a carbapenemase.²

Enterobacteriaceae that produce carbapenemases (called CP-CRE) are a subset of all CRE which are responsible for much of the increase in CRE and are therefore a high priority for prevention. Testing CRE isolates for presence of a carbapenemase is preferable. But at this time, tests that differentiate CP-CRE from non-CP-CRE are not widely used by laboratories. Identifying a CRE organism based on its antibiotic susceptibility pattern is often the only available option.

Most people who become infected or colonized with CRE acquire it from exposure in healthcare facilities. Failure to practice appropriate infection control measures can allow for spread of CRE among patients within a facility, and movement of patients throughout the healthcare system can lead to spread of CREs between facilities. CRE can pose a particular risk to long-term care facilities (LTCF), where residents often have extensive healthcare exposures

¹ [Carbapenem-resistant Enterobacteriaceae \(CRE\) Infection: Clinician FAQs](#)

² [FAQs about Choosing and Implementing a CRE Definition](#)

prior to admission and might move back and forth repeatedly from the acute care setting. CRE control also poses unique challenges in LTCFs, because residents are often admitted for prolonged periods and infection control measures must account for resident mobility and socialization needs. Local health departments are encouraged to partner with the LTCFs in their jurisdictions as capacity allows to provide consultation, guidance, and linkage to additional resources such as the CDPH Healthcare-Associated Infections (HAI) Program.

The CDC has developed guidance to help facilities and regions control spread of CRE, which can be found at [Facility Guidance for Control of Carbapenem-resistant Enterobacteriaceae \(CRE\)](#). The CDC toolkit provides guidance for responding to CRE cases in healthcare facilities, and includes general considerations regarding application of contact precautions in long term care facilities. This document provides more comprehensive guidance to be utilized by local health departments when developing infection control recommendations specifically for long-term care facilities (LTCFs) that have residents who are colonized or infected with CRE.

Note that this guidance is not intended for LTCFs with high-acuity post-acute care settings (i.e., ventilator units of skilled nursing facilities; in California these are designated as subacute skilled nursing facilities). CDC recommends that high-acuity post-acute care facilities adhere to infection control practices in the same fashion as acute care hospitals.

Recommendations:

Admission or readmission to a long-term care facility should not be denied based on known colonization or infection with any multidrug-resistant organism (MDRO), including CRE.

Communication Measures

Internal

- LTCF medical director, infection prevention personnel, and all staff participating in antibiotic stewardship activities should be notified of the presence of CRE in a resident of the facility. If the facility does not have antimicrobial stewardship activities, a case of CRE may serve to demonstrate their need.³

³ Note: California Senate Bill No. 361, passed on October 10, 2015, requires all skilled nursing facilities, by no later than January 1, 2017, to implement an antimicrobial stewardship policy that is consistent with the antimicrobial stewardship guidelines developed by the Centers for Disease Control and Prevention, the federal Centers for Medicare and Medicaid Services, or specified professional organizations.

- Protocols should be in place to ensure prompt notification of infection prevention personnel by the laboratory when CRE is identified in a resident of the facility.
- Clinicians and care providers should be encouraged to limit the resident's exposure to antimicrobials and invasive devices.
- Staff at the facility, particularly those caring for the resident, should receive education about CRE and appropriate infection prevention measures.
- If the resident is placed on contact precautions, clearly visible signage must be placed outside the resident's room. Consider adding language requiring equipment and sufficient supplies to be readily available to facilitate compliance.
- Families and visitors of the CRE-infected or colonized resident should be educated about basic infection control principles including hand hygiene.
- Families and visitors of other residents of the facility do not routinely need to be informed of a case of CRE in the facility.

External

- For counties where facilities infrequently identify CRE (i.e., on a monthly basis or less), local public health may request that facilities report any CRE-infected or colonized resident admitted to a LTCF.
- For counties where facilities frequently identify CRE (i.e., where the majority of facilities have identified CRE, and CRE is detected on a weekly basis), facilities may contact local public health with questions, and should report when CRE transmission is suspected, e.g., when two or more cases are newly identified in residents who have resided in the facility for >1 week prior to identification.

Infection Control Measures

- It is critical that there be a high level of compliance with hand hygiene as it is the single most important means of preventing the spread of CRE and other MDROs. Performing hand hygiene is particularly important upon leaving the room of a patient on contact precautions. Hand hygiene products (e.g., soap and water or alcohol-based hand rub) must be readily available for all staff in all resident care areas.
- Place CRE colonized or infected residents who are at higher risk for CRE transmission in contact precautions. Examples of higher risk residents include those who:
 - Receive post-acute care and are still debilitated by recent hospitalization;
 - Are totally dependent on assistance for activities of daily living (ADLs);
 - Are ventilator-dependent;

- Are incontinent of stool or urine and stool or urine cannot be reliably contained; or
- Have wounds with drainage that is difficult to control.
- Are cognitively unable to maintain personal hygiene
- Contact precautions may not be necessary for lower risk CRE colonized or infected residents who:
 - Are continent of stool and urine;
 - Are less dependent on staff for activities of daily living;
 - Cognitively able to follow instructions to perform hand hygiene; and
 - Do not have draining wounds.
 - These residents need not be restricted from common gatherings in the facility.
- Contact precautions consist of gowns and gloves for all resident contact, as well as contact with environmental surfaces in the resident's room.
- In situations where contact precautions have been relaxed, standard precautions should still be observed, including use of gloves and/or gowns when contact with colonized/infected sites or body fluids is possible, such as bathing, assisting with toileting, changing briefs, performing wound dressings, or manipulating devices.
- If the resident is dependent on staff for assistance with ADLs (e.g., toileting, bathing), consideration should be given to maintaining contact precautions. At a minimum, gowns and gloves should be worn when staff are providing this type of assistance.
- The determination to discontinue contact precautions should be made on a case-by-case basis, depending on the clinical and functional status of the resident, i.e., when the resident's secretions or drainage can be contained, and how dependent the resident is on staff for activities of daily living. Repeated bacterial culturing to demonstrate CRE clearance is not necessary to discontinue contact precautions.
- Unless clinically indicated, repeated bacterial culturing to demonstrate CRE clearance is not generally recommended since CRE colonization may persist for a prolonged period of time and CRE may be intermittently shed.
- In counties where CRE are infrequently identified, local public health may request that they be contacted by facilities to determine the extent and duration of contact precautions for each CRE positive resident on a case-by-case basis.
- Daily resident care equipment such as blood pressure cuff, pulse oximeter, thermometer, glucometer, and stethoscope should be dedicated for use by only the resident with CRE. Non-dedicated equipment should be disinfected after use and before leaving the CRE resident's room.
- If more than one CRE infected or colonized resident is identified at a facility, staff caring for residents with CRE should be cohorted, if feasible (i.e., staff caring for residents with CRE should not care

for residents who do not have CRE on the same shift).

- o Staff in facilities with a resident with CRE should have the importance of appropriate precautions specifically explained to them.
- o As a supplemental measure, daily chlorhexidine bathing should be considered for all LTCF residents in facilities with a resident with CRE, particularly if there are multiple cases of CRE. If residents with CRE are cohorted to one ward, chlorhexidine use may be confined to that ward.

Room Placement

- o Residents known to be infected or colonized with CRE should be placed in a private room with private bathroom whenever feasible; priority for a private room should be given to residents with CRE who are at higher risk for transmission (see Infection Control Measures) and those being treated for active CRE infection.
- o If private rooms are not available, efforts should be made to cohort residents with CRE with otherwise compatible residents who also have CRE, or with otherwise compatible residents who are at the lowest risk for acquiring CRE (e.g., residents that do not have indwelling devices, do not have open wounds, and are less dependent on staff for activities of daily living).

Environmental Considerations

- o Alert facilities management services (or housekeeping equivalent) to the room number of any CRE infected or colonized resident.
- o Ensure thorough daily (or more frequently, if visibly soiled) cleaning and disinfection of high-touch surfaces in the room, particularly those near the resident (e.g., bed, bed rails, bed table), and outside the room in common areas.
- o Ensure that cleaning and disinfection are performed using a product registered as an EPA detergent/disinfectant, and that the manufacturer's recommendations for dilution and contact time are followed.
- o If feasible, monitor the thoroughness of cleaning (e.g., UV fluorescence marker, ATP bioluminescence monitor, etc.).

Epidemiologic assessment

- o Facilities with a resident with CRE should review all residents' microbiology records for the past year and every 6-12 months to identify any other CRE cases.
- o Facilities should identify any residents who shared a room with a resident with newly identified CRE during the preceding 6 months. Facilities should screen these residents for CRE on a one-time basis with a rectal swab culture.
- o Whenever possible, any CRE isolate identified in an LTCF

resident should be tested for the presence of carbapenemase production (e.g., a modified Hodge Test, CarbaNP, or polymerase chain reaction). CP-CRE are most likely to spread and are a priority for infection control and public health measures. Local public health departments in need of assistance in determining where specimens can be sent for mechanism testing are encouraged to contact the CDPH HAI program.

Inter-facility Transfer

- o Before any transport of a resident with CRE to a different healthcare facility, the receiving facility and transport team must be notified of the resident's CRE status.
- o Facilities with ongoing CRE outbreaks should inform facilities where they transport or transfer residents about the presence of CRE in their resident population. Receiving facilities may screen such residents for CRE and place them in pre-emptive contact precautions pending the result.