



**ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
PUBLIC HEALTH DEPARTMENT**

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Caring for Patients with Carbapenem-resistant Enterobacteriaceae (CRE) in Acute-Care facilities

COVER SHEET

Thank you for reporting the CRE case(s) at your facility. The recommendations in this packet should be implemented immediately for any patient with a current or past infection or colonization with Carbapenem-resistant Enterobacteriaceae (CRE). This guidance is being provided under the direction of the Alameda County Health Officer, as a supplement to recommendations made by the California State Department of Public Health (CDPH) and the Centers for Disease Control and Prevention (CDC).

To: _____ Date: _____
Email: _____ From: _____
Fax: _____ Email: AcuteCD@acgov.org

Patient Name: _____
Patient DOB: _____

CRE organism species:

Is this a Carbapenemase producing CRE (CP-CRE): **Yes*** **No**** **Unknown**

*CP-CRE: Any *Enterobacteriaceae* that is resistant to Carbapenem antibiotics AND produces carbapenemase (or is suspected of producing carbapenemase). Assume any CRE *Klebsiella pneumoniae* is CP-CRE until proven otherwise by laboratory testing.
**non-CP-CRE: Any *Enterobacteriaceae* that is resistant to Carbapenem antibiotics and tests negative for the production of carbapenemases or the presence of carbapenemase genes.

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Note: Privacy Rule (HIPAA) permits covered entities to disclose PHI without authorization to public health authorities or other entities who are legally authorized to receive such reports for the purpose of preventing or controlling disease. This includes the reporting of disease, conducting public surveillance, investigations, or interventions.

Dear Infection Control Practitioner(s),

You are receiving this packet because you have reported:

- a patient with a positive admission screening culture for CRE, OR
- a patient newly identified with a positive surveillance screening culture or a positive clinical culture for CRE during hospitalization, OR
- receipt of a patient with a previously identified CRE infection or colonization

Carbapenem-resistant Enterobacteriaceae (CRE) was designated by the CDC in 2013 as one of the three most urgent drug resistant threats in the United States. CRE are a group of bacteria that are resistant to carbapenem antibiotics and nearly all available antibiotics. They can cause serious illness and death. Invasive bloodstream infections are fatal in 40% -50% of cases. An estimated 9,000 CRE infections caused 600 deaths yearly in the U.S.

CRE are easily transmitted from infected or colonized patients to other patients via hands of health care workers and/or contaminated equipment or environments. CRE that produce carbapenemases, enzymes that rapidly destroy carbapenem antibiotics, are of special concern. These organisms, known as Carbapenemase-producing CRE (CP CRE), can rapidly spread their drug resistance genes in health care settings.

CRE has increasingly been recognized in Alameda County and the San Francisco (SF) Bay Area, with cases, clusters, and outbreaks being reported, both in health care settings and the community. On June 15th, 2017, Alameda County issued a health officer order which requires health care providers and laboratories to report all CRE cases and positive laboratory results for CRE defined as *E. coli*, *Klebsiella* spp, and *Enterobacter* spp that are:

- resistant to any carbapenem antimicrobial, with a MIC of ≥ 4 $\mu\text{g/ml}$ for doripenem, imipenem, or meropenem; or ≥ 2 $\mu\text{g/ml}$ for ertapenem; OR
- documented to produce a carbapenemase, demonstrated using a CDC-accepted test (modified Hodge, Carba-NP, metallo- β -lactamase); OR
- demonstrated to possess a carbapenemase gene (such as KPC, NDM, VIM, IMP, OXA-48-type) using a CDC-accepted test (PCR, Whole Genome Sequencing)

Alameda County Public Health is committed to providing guidance and recommendations, facilitating interfacility communications, and supporting our healthcare partners to promote safe patient care.

Infection control designees in healthcare settings can help reduce the spread of CRE by ensuring that their facility has policies/protocols in place to enable implementation of proper infection control measures, intra and inter-facility communications, and reporting of CRE cases to Alameda County Public Health Department.

In addition to ensuring that patient care practices are consistent with internal policies and protocols, Alameda County Public Health strongly urges that the implementation of the recommendations contained in this packet.

Respectfully,

Acute Communicable Diseases Team
Alameda County Public Health

[See recommendations and resources on the following five pages]

Recommendations Checklist for Acute Care Facilities

Recommendations are subject to change on a case-by-case basis and are advised as of date sent

CP-CRE* SPECIFIC RECOMMENDATIONS	
To be implemented with all known and presumed CP-CRE cases (colonized or infected)	
<input type="checkbox"/>	a) Provide 1:1 staff to patient ratio (or greater) when caring for a patient with CP-CRE
<input type="checkbox"/>	b) Patients with CP-CRE must be isolated to their room while in Acute Care settings
<input type="checkbox"/>	c) Transfer of patients with CP-CRE within the facility should be minimized and coordinated with input from infection control staff.
<input type="checkbox"/>	d) In coordination with ACD, screen additional patients who may have been exposed to a CP-CRE case (see section 1.c.ii below)
<input type="checkbox"/>	e) Chlorhexidine bathing is highly recommended for CP-CRE patients in Acute Care settings

Carbapenemase-producing CRE (CP-CRE)*, are a higher public health priority and require enhanced infection prevention & control measures. However, all CRE, including non-carbapenemase producers (non-CP-CRE), are considered multi-drug resistant & require intervention.

PATIENT CARE RECOMMENDATIONS	
To be implemented with all CRE (non-CP-CRE and CP-CRE) cases (colonized or infected)	
1) Contact Precautions	
<input checked="" type="checkbox"/>	a) CRE patients must always be on Contact Precautions in Acute Care settings.
<input checked="" type="checkbox"/>	b) Personal Protective Equipment (PPE) including gloves and gowns should: <ul style="list-style-type: none"> i. be used, every time, by all staff and visitors entering the patient’s room, ii. be available outside the patient’s room and donned before entering, iii. be properly doffed (removed) and discarded directly before leaving a patient’s room, iv. also include masks and eye protection or face shields as indicated per standard precautions for MDROs (see section V.A.5.a/b. of https://www.cdc.gov/infectioncontrol/guidelines/mdro/index.html).
<input checked="" type="checkbox"/>	c) If this patient was not on Contact Precautions at time of admission (ED or inpatient), identify other patients who were potentially exposed to the CRE case, either directly or through shared rooms, bathrooms, equipment, or common healthcare personnel prior to implementation of Contact Precautions and take the following actions: <ul style="list-style-type: none"> i. For non-CP-CRE cases: Consider screening the patients identified above, especially those who shared a room or bathroom with the patient for extended periods. ii. For CP-CRE cases*: Send a list of patients, identified with MRN, type of contact, and duration of contact to ACD to determine who should be screened for CRE.
<input checked="" type="checkbox"/>	d) Ensure staff is following your facilities policies regarding transport of patients on Contact Precautions
(CONTINUED ON FOLLOWING PAGE)	

2) Isolation and Cohorting	
<input type="checkbox"/>	a) Patients with CRE (infection or colonization) should be provided private/single rooms whenever possible.
<input type="checkbox"/>	b) If single rooms are limited, prioritize private/single rooms for CP-CRE cases and CRE patients who are at increased risk of transmitting CRE to others including those with recent ICU admission, ventilator dependence, dependence on staff to perform ADLs, incontinence of stool or urine, draining wounds, or cognitive impairment that prevents maintenance of personal hygiene.
<input type="checkbox"/>	c) If unable to place patients in a private/single room, cohorting decisions should be made in collaboration with the CDPH Hospital Acquired Infection (HAI) Liaison's Office (HAIProgram@cdph.ca.gov or 510-412-6060).
<input type="checkbox"/>	d) If more than one patient with CRE is currently in the facility, contact the CDPH HAI Liaison's Office to determine if it is appropriate to cohort staff to care for multiple CRE cases.
<input type="checkbox"/>	e) Rooms with CRE patients should be cleaned/disinfected according to the facility policy for Contact Precautions and terminally cleaned upon transfer or discharge.
3) Communicate CRE status clearly whenever transferring or discharging patient	
<input type="checkbox"/>	a) If discharging/transferring patient to another facility , use the Interfacility Infection Control Transfer Form (IICTF) to notify the receiving facility, the transport company, and the Alameda County Public Health Department.
<input type="checkbox"/>	b) If discharging/transferring patient to home with home health referral , use the Interfacility Infection Control Transfer Form (IICTF) to notify the home health agency, the transport company, and the Alameda County Public Health Department.
<input type="checkbox"/>	c) If discharging/transferring patient to home without home health referral , use the Interfacility Infection Control Transfer Form (IICTF) to notify the transport company, and the Alameda County Public Health Department.
<p>The IICTF is included in this packet and available at: http://www.acphd.org/media/500766/acphd-infection-control-transfer-form.pdf</p>	
4) Staff Education	
<input type="checkbox"/>	<p>Care Staff: Like other infectious diseases such as C. diff and MRSA, staff should be familiar with CRE and why aggressive infection control measures are needed to prevent transmission.</p> <ul style="list-style-type: none"> • Existing policies for CRE/MDRO management, Contact Precautions, equipment/room disinfection, and patient transfers should be reinforced regularly. • Staff should be supported in providing patients and visitors with appropriate materials and education (see below). • Staff should be comfortable must also be trained in filling out the Interfacility Infection Control Transfer Form and notifying the appropriate people when planning to transfer or discharge a patient with CRE. <p>Care Staff Education Materials/Resources:</p> <ul style="list-style-type: none"> • Carbapenem-resistant Enterobacteriaceae in Healthcare Settings: http://www.cdc.gov/HAI/organisms/cre/index.html • CDC CRE Toolkit: http://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf <p style="text-align: center;">(CONTINUED ON FOLLOWING PAGE)</p>

<input type="checkbox"/>	<p>Environmental Services (EVS) Staff:</p> <ul style="list-style-type: none"> • Provide in-service/education to EVS staff to reinforce and refresh on cleaning/disinfecting policies for Contact Precautions and/or CRE cases. • Ensure all patient care staff are educated regarding the appropriate cleaning of critical equipment used for patients <p>EVS Staff Education Materials/Resources:</p> <ul style="list-style-type: none"> • Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/index.html <p>a) CDC Environmental Checklist for Monitoring Terminal Cleaning (CDC, 2010) https://www.cdc.gov/hai/pdfs/toolkits/Environmental-Cleaning-Checklist-10-6-2010.pdf</p>
5) Patient, Family, and Visitor Education	
<input type="checkbox"/>	b) Educate CRE patients regarding their diagnosis of infection/colonization with CRE and steps that they can take to prevent spread such as notifying healthcare providers of CRE/MDRO diagnosis.
<input type="checkbox"/>	c) Educate family and visitors on the importance of gowning/gloving and on proper donning and doffing of PPE.
<input type="checkbox"/>	d) Resources for educating patients and families about CRE: https://www.cdc.gov/hai/organisms/cre/cre-patients.html

In addition to CRE specific recommendations described above, the following facility wide infection control strategies are recommended for acute care facilities in Alameda County based on our current MDRO incidence.

FACILITY WIDE RECOMMENDATIONS	
General Infection Control Strategies Recommended for Acute Care Facilities	
1) Promote hand hygiene	
<input type="checkbox"/>	More information and resources are available at http://www.cdc.gov/handhygiene/
2) Minimize the use of Invasive Devices	
<input type="checkbox"/>	<p>CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011 http://www.cdc.gov/hicpac/pdf/guidelines/bsi-guidelines-2011.pdf</p> <p>HICPAC Guideline for Prevention of Catheter-associated Urinary Tract Infections 2009 http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf</p>
3) Promote Antimicrobial Stewardship	
<input type="checkbox"/>	<p>Core Elements of Hospital Antibiotic Stewardship Programs http://www.cdc.gov/getsmart/healthcare/pdfs/core-elements.pdf</p>
4) Flag patients with CRE infection or colonization	
<input type="checkbox"/>	<p>Flagging a patient’s CRE status in the EHR helps prevent lapses in infection control measures. CRE cases should be placed on Contact Precautions upon every re-admission. Re-screening to “clear” patients is NOT recommended.</p> <p style="text-align: center;">(CONTINUED ON FOLLOWING PAGE)</p>

5) Consider active surveillance for CRE cases such as admission screening and pre-emptive isolation of patients at higher risk of CRE	
☒	Risk factors for CRE colonization or infection include history of receiving healthcare in a foreign country, history of extended hospitalizations, high antimicrobial use, presence of indwelling devices (such as endotracheal tubes, feeding tubes, and catheters), open wounds, and multiple medical problems.
6) Chlorhexidine Bathing	
☒	Chlorhexidine bathing has been shown to prevent HAIs and reduce levels of colonization in certain MDROs including CRE. Consider daily chlorhexidine bathing of patient in high risk settings such as ICUs and for patients with indwelling medical devices.

Links to Resources

- Alameda County CRE Health Officer Order: <http://www.acphd.org/media/464182/health-officer-order-reporting-cre-20170613.pdf>
- CDC Hand Hygiene Resources: <http://www.cdc.gov/handhygiene/>
- Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008: <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/index.html>
- CDC Environmental Checklist for Monitoring Terminal Cleaning (CDC, 2010) <https://www.cdc.gov/hai/pdfs/toolkits/Environmental-Cleaning-Checklist-10-6-2010.pdf>
- Antimicrobial Stewardship Resources: <http://www.cdc.gov/getsmart/healthcare/pdfs/core-elements.pdf>
- General Infection Control Resources: <https://www.cdc.gov/infectioncontrol/guidelines/MDRO/index.html>
- Contact Precaution Resources: <https://www.cdc.gov/mrsa/healthcare/clinicians/precautions.html>
- CDC CRE in Healthcare Settings website: <http://www.cdc.gov/HAI/organisms/cre/index.html>
- CDC CRE Toolkit: <http://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf>



INFECTION CONTROL TRANSFER FORM





This form should be sent with the patient/resident upon transfer. It is NOT meant to be used as criteria for admission, only to foster the continuum of care once admission has been accepted.

Affix patient label here

Demographics

Patient/Resident (Last Name, First Name):		
Date of Birth:	MRN:	Transfer Date:
Sending Facility Name:		
Contact Name:	Contact Phone:	
Receiving Facility Name:		

Precautions and PPE

 Currently in Isolation Precautions? <input type="checkbox"/> Yes If Yes, check: <input type="checkbox"/> Contact <input type="checkbox"/> Droplet <input type="checkbox"/> Airborne <input type="checkbox"/> Other:	PERSONAL PROTECTIVE EQUIPMENT CONSIDERATIONS    <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> CHECK ALL PPE TO BE CONSIDERED AT RECEIVING FACILITY		
	<input type="checkbox"/> No isolation precautions (currently)		

Organisms

If the patient currently or in the past had a culture positive for a multi-drug resistant (MDR) organism or other organism of significance to infection control/prevention, indicate organism details below and send culture report with susceptibilities to receiving facility.

Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)‡	<input type="checkbox"/>	<input type="checkbox"/> No known MDR organism or communicable diseases
Vancomycin-resistant <i>Enterococcus</i> (VRE)‡	<input type="checkbox"/>	
MDR <i>Acinetobacter</i> species, resistant to carbapenem antibiotic(s) ‡	<input type="checkbox"/>	
MDR _____ resistant to carbapenem antibiotic(s) without carbapenemase production (non-CP-CRE)‡ <small>(organism name)</small>	<input type="checkbox"/>	
Carbapenemase-producing _____ resistant to carbapenem antibiotic(s) (CP-CRE)# <small>(organism name)</small>	<input type="checkbox"/>	
<i>Enterobacteriaceae</i> † resistant to expanded-spectrum beta-lactam antibiotics (ESBL)‡	<input type="checkbox"/>	
<i>Clostridium difficile</i> (C. diff)	<input type="checkbox"/>	
Other (identify) ^:	<input type="checkbox"/> (current or ruling out*)	

*Additional information if known:

Symptoms/Risk Factors for Transmission

Check yes to any that currently apply**: <input type="checkbox"/> Concerning rash (e.g., vesicular) <input type="checkbox"/> Cough/uncontrolled respiratory secretions <input type="checkbox"/> Acute diarrhea or incontinent of stool <input type="checkbox"/> Incontinent of urine <input type="checkbox"/> Draining wounds <input type="checkbox"/> Vomiting <input type="checkbox"/> Other uncontained bodily fluid/drainage **NOTE: Appropriate PPE required if incontinent/drainage/rash NOT contained.	<input type="checkbox"/> No Symptoms requiring additional PPE
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Other MDRO Risk Factors

Is the patient currently on antibiotics? Yes No

Antibiotic:	Dose, Frequency:	Treatment for:	Start date:	Stop date:

Does the patient currently have any of the following devices? Yes No

<input type="checkbox"/> Tracheostomy/Endotracheal tube	<input type="checkbox"/> Suprapubic catheter	<input type="checkbox"/> Colostomy
<input type="checkbox"/> Central line/PICC, Date inserted:	<input type="checkbox"/> Percutaneous gastrostomy tube	<input type="checkbox"/> Rectal tube
<input type="checkbox"/> Urinary catheter, Date inserted:	<input type="checkbox"/> Hemodialysis catheter	

†includes *E.coli*, *Enterobacter*, *Klebsiella*, *Proteus*, *Serratia*, *Citrobacter* and others
 ‡MDRO infection prevention precautions: <https://www.cdc.gov/infectioncontrol/guidelines/mdro/index.html>
 #Intensified MDRO Control Efforts: <https://www.cdc.gov/infectioncontrol/guidelines/mdro/table3-2-intensified-control.html>
 ^e.g. lice, scabies, disseminated shingles, norovirus, influenza, TB