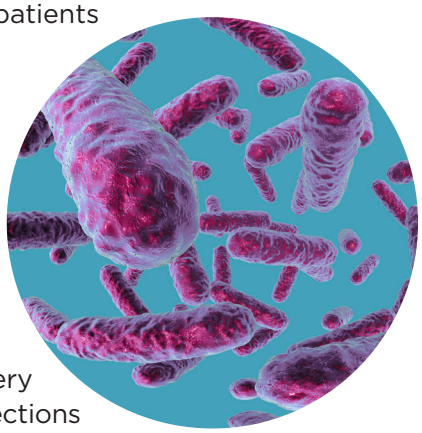
PATHOGENS & INFECTION PREVENTION INFO

Carbapenem-resistant Enterobacteriaceae (CRE)

CLOROX HEALTHCARE™

What are CRE?

Carbapenem-resistant Enterobacteriaceae (CRE) [also known as carbapenemase-producing Enterobacteriaceae (CPE)] can cause life-threatening infections in hospitalized patients and are a major concern in healthcare.



CRE is the collective name for a family of microorganisms that have high levels of resistance to antibiotics. Three well-known CRE include KPC (*Klebsiella pneumoniae* carbapenemase), NDM (New Delhi Metallo-beta-lactamase) and OXA-48.

CRE are resistant to many antibiotics, with some being resistant to all or almost all antibiotics. As a result, infections are very difficult to treat, and CRE bloodstream infections can kill 1 in 2 patients.

Why are CRE a concern?[1]

- Some are resistant to multiple classes of antibiotics and not just carbapenemases.
- Mortality rates from some CRE infections are as high as 50%.
- CRE cause infections in both community and healthcare settings.

Who is at risk of CRE infections?

Risk factors include:

- Having a compromised immune system.
- Having invasive devices such as catheters or mechanical ventilators going into the body.
- Using certain types of antibiotics (such as carbapenems, cephalosporins, fluoroquinolones and vancomycin).[2]
- Receiving healthcare in countries where CRE is present.

How are CRE spread?

- Person to person transmission.
- Contaminated surfaces and equipment, which could contaminate healthcare personnel, and then be transmitted to patients.
- Hospital sink drains can be CRE reservoirs. Studies have shown that contaminated sinks were the source of CRE outbreaks.[4, 5]

Infection control measures

The CDC provides useful guidance and resources for CRE Infection Control Measures.[6]

1. **Implement contact precautions:** Infected or colonized patients should be placed on contact precautions.
2. **Minimize the use of devices:** Indwelling devices should be reviewed regularly.
3. **Inter-facility communication:** Notify receiving facilities of a patient's CRE status.
5. **Educate personnel:** Clinical and EVS Staff should be educated on CRE.
5. **Antimicrobial stewardship:** Use the proper antibiotic for the appropriate duration.
6. **Environmental cleaning and disinfection:** Perform daily cleaning of patient rooms, especially the areas around the patient bed.

Clorox Healthcare products with EPA-approved claims against CRE

A number of Clorox Healthcare disinfectants have EPA-approved claims against some common CRE:

Product	EPA Reg. No.	Klebsiella pneumoniae (KPC)	Klebsiella pneumoniae (NDM-1)	Escherichia coli (carbapenem-resistant)	Escherichia coli (NDM-1)	Enterobacter cloacae (NDM-1)
Clorox Healthcare® Bleach Germicidal Wipes 	67619-12	30 sec	30 sec		30 sec	
Clorox Healthcare® Bleach Germicidal Cleaner Spray 	56392-7	1 min	1 min		1 min	1 min
Clorox Healthcare® Fuzion® Disinfectant Cleaner 	67619-30	1 min	1 min			1 min
Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant 	67619-24	30 sec	30 sec		30 sec	
Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant Wipes 	67619-25	30 sec	30 sec		30 sec	
Clorox Healthcare® VersaSure® Wipes 	67619-37	2 min		2 min		
Clorox® Total 360® Disinfecting Cleaner 	67619-38		2 min			

1. Centers for Disease Control and Prevention. Carbapenem-resistant Enterobacteriaceae (CRE) Infection: Clinician FAQs. https://www.cdc.gov/hai/organisms/cre/cre-clinicianfaq.html.
2. Bhargava A et al. Risk Factors for Colonization due to Carbapenem-Resistant Enterobacteriaceae among Patients Exposed to Long-Term Acute Care and Acute Care Facilities. Infection Control and Hospital Epidemiology, 2014; 35(4): 398-405.
3. Kizny A et al. The Hospital Water Environment as a Reservoir for Carbapenem-Resistant Organisms Causing Hospital-Acquired Infections—A Systematic Review of the Literature. Clinical Infectious Diseases. 2018; 64:1435-1444.
4. De Geyter A et al. The sink as a potential source of transmission of carbapenemase-producing Enterobacteriaceae in the intensive care unit. Antimicrobial Resistance and Infection Control, 2017; 6:24-29.
5. Regev-Yochay G et al. Sink traps as the source of transmission of OXA-48–producing Serratia marcescens in an intensive care unit. Infection Control & Hospital Epidemiology 2018; 39:1307–1315.
6. Centers for Disease Control and Prevention. Carbapenem-resistant Enterobacteriaceae (CRE) Infection: Clinicians https://www.cdc.gov/hai/organisms/cre/cre-clinicians.html

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