

NIGHTMARE BACTERIA

A Fundamental Threat to Public Health and Healthcare



What are “nightmare bacteria”?

Nightmare bacteria refer to pathogens with the power to resist most antibiotics. These organisms, typically multi-drug resistant gram negatives, are not new; however, with the recent aggressive testing being performed by state laboratories and supported by the US Centers for Disease Control and Prevention (CDC), the realization of the prevalence of the organisms even within asymptomatic individuals is quite staggering.

Some of the most notable bacteria that fall under this group are Carbapenem-Resistant Enterobacteriaceae (CRE) and Carbapenem-Resistant *Pseudomonas aeruginosa* (CRPA). CRE are a family of bacteria that are difficult to treat because they have high levels of resistance to antibiotics. *Klebsiella* species and *Escherichia coli* (*E. coli*) are examples of Enterobacteriaceae, a normal part of the human gut bacteria, which can become carbapenem-resistant.

CRE and CRPA are a serious threat to public health. Infections with CRE/CRPA are difficult to treat and have been associated with mortality rates as high as 40-50%¹. Due to the movement of patients throughout the healthcare system, if CRE or CRPA are a problem in one facility, then typically they can become a problem in other facilities in the region as well.

What infections are associated with CRE and CRPA?

In healthcare settings, these infections most commonly occur among patients who are receiving treatment for other conditions. Patients whose care requires devices like ventilators (breathing machines), urinary (bladder) catheters, or intravenous (vein) catheters, and patients who are taking long courses of certain antibiotics are most at risk for CRE/CRPA infections.

If not new, why the recent concern?

The CDC Antibiotic Resistance Laboratory Network (ARLN) identified previously undetected transmission reflecting higher numbers in post-acute care facilities that provide care for higher acuity patients². Post-acute facilities are challenged with several issues that may promote transmission such as: long duration of stay, less use of transmission-based precautions, increased staff turnover, and often less training in infection prevention. These facilities have previously been considered as potential amplifiers of CRE transmission, although, all healthcare facilities need to acknowledge the importance of improved adherence to infection prevention practices and screening for asymptomatic carriers.

Infection Prevention and Control Practices

The importance of environmental disinfection, hand hygiene, and transmission-based precautions cannot be emphasized enough when dealing with antibiotic resistant organisms.



Steps Clinicians Should Take (from the US Centers for Disease Control and Prevention)³:

- Know if patients with CRE are hospitalized at your facility, and stay aware of CRE infection rates. Ask if a patient has received medical care somewhere else, including another country.
- Place patients currently or previously colonized or infected with CRE on Contact Precautions. Whenever possible, dedicate rooms, equipment, and staff to CRE patients.
- Wear a gown and gloves when caring for patients with CRE.
- Perform hand hygiene – use alcohol-based hand rub or wash hands with soap and water before and after contact with patient or his/her environment.
- Alert the receiving facility when you transfer a CRE patient, and find out when a patient with CRE transfers into your facility.
- Make sure labs immediately alert clinical and infection prevention staff when CRE are identified.
- Prescribe and use antibiotics wisely.
- Discontinue devices like urinary catheters as soon as no longer necessary.

Is My Disinfectant Effective Against CRE?

CRE is not a specific microorganism, but rather a microbial class. Different CRE organisms include bacteria that are classified as Carbapenem Resistant, ESBL producing, NDM-1 positive, and KPC-2 positive organisms. A disinfectant must demonstrate efficacy against one or more of these bacteria classes in order to be considered effective against CRE organisms.



SUGGESTED PDI PRODUCTS

The following PDI surface disinfectants have demonstrated efficacy against bacteria which reside in the CRE family:

Sani-Cloth® AF3 Germicidal Disposable Wipes:

Klebsiella pneumoniae-Carbapenem Resistant, *Klebsiella pneumoniae*-NDM-1 positive, *Escherichia coli*-NDM-1 positive, ESBL Resistant *Escherichia coli*, ESBL Resistant *Klebsiella pneumoniae*

Sani-Cloth® Bleach Germicidal Disposable Wipes:

Enterobacter cloacae-NDM-1 positive, *Escherichia coli*-NDM-1 positive, *Klebsiella pneumoniae*-Carbapenem Resistant, *Klebsiella pneumoniae*-NDM-1 positive, ESBL Resistant *Escherichia coli*, ESBL Resistant *Klebsiella pneumoniae*

Super Sani-Cloth® Germicidal Disposable Wipes:

Enterobacter cloacae-NDM-1 positive, ESBL producing *Escherichia coli*, *Klebsiella pneumoniae*-KPC-2 positive

Sani-Cloth® Prime/Sani-Prime® Germicidal Disposable Wipes and Spray:

Escherichia coli-Carbapenem Resistant, ESBL Resistant *Escherichia coli*, ESBL Resistant *Klebsiella pneumoniae*, *Klebsiella pneumoniae*-Carbapenem Resistant, *Enterobacter cloacae*-NDM-1 positive, *Escherichia coli*-NDM-1 positive, *Klebsiella pneumoniae*-NDM-1 positive, MBL positive *Pseudomonas aeruginosa*

References:

1 CRE for Healthcare Professionals, Electronically Accessed from <https://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html#one>

2 Woodworth KR, Walters MS, Weiner LM, et al. Vital Signs: Containment of Novel Multidrug-Resistant Organisms and Resistance Mechanisms — United States, 2006–2017. *MMWR Morb Mortal Wkly Rep* 2018;67:396-401. DOI: <http://dx.doi.org/10.15585/mmwr.mm6713e1>.

3 <https://www.cdc.gov/hai/organisms/cre/cre-clinicians.html>