



Healthcare Happenings: IPC Highlight

Extended Spectrum Beta-Lactamase (ESBL)- producing Enterobacterales

WHAT IS IT?

Enterobacterales are a large order of bacteria that commonly cause infections both in healthcare settings and in communities. Examples of Enterobacterales include *Escherichia coli* and *Klebsiella pneumoniae*.

Enterobacterales cause life-threatening infections most commonly in people with exposure to healthcare settings, such as hospitals and nursing homes, including urinary tract infections (UTI), pneumonia, blood stream infections (BSI), and wound infections. They can also cause infections (commonly UTI) in healthy people who have not recently been in healthcare settings.

Some Enterobacterales can produce ESBL enzymes. ESBL enzymes break down some commonly used antibiotics like penicillin and cephalosporins, making these drugs ineffective for treating ESBL infections. In 2020, ESBL-producing Enterobacterales had a threat estimate of 197,500 cases among hospitalized patients and 9,300 estimated deaths in the U.S. Patients can either be colonized or infected with ESBL producing organisms.

ESBL-producing Enterobacterales have increased resistance to antibiotics, which means that there are fewer treatment options available for these infections. Carbapenems are some of the few remaining antibiotics that can treat infections caused by ESBL-producing Enterobacterales.

What you need to know

- ESBL-producing organisms can cause life threatening illnesses including UTI, pneumonia, BSI, and wound infections.
- In 2020, ESBL-producing Enterobacterales had a threat estimate of 197,500 cases among hospitalized patients and 9,300 estimated deaths in the U.S.
- ESBL enzymes break down some commonly used antibiotics and make these drugs ineffective for treating infections.

TRANSMISSION

ESBL-producing Enterobacterales can be transmitted from one person to another in healthcare settings through contaminated hands and surfaces.

DIAGNOSIS AND TREATMENT

A diagnosis can be established by culture and susceptibility testing. A swab may be used around the rectum (perirectal) for colonization testing.

Infections caused by ESBL-producing Enterobacterales are treated with antibiotics, but because they are resistant to many commonly prescribed antibiotics, treatment options may be limited. Carbapenem antibiotics, which are typically reserved for highly resistant infections, are often used to treat serious ESBL-producing Enterobacterales infections.

REPORTING

ESBL-producing Enterobacterales is not a [reportable condition](#) in any U.S. state and is not [nationally notifiable](#).

IPC RECOMMENDATIONS

TRANSMISSION-BASED PRECAUTIONS:

- ESBL patients should be placed on **contact precautions** or **enhanced barrier precautions** (nursing homes/SNFs only) and in a **private room** for the duration of all current and future healthcare stays. Patients can be cohorted if they have the same organism and same resistance mechanism (if known).
- Patients may remain colonized for more than one year - **do not discontinue precautions when the infection has been treated.**
- Inter-facility transfer: Prior to patient transfer, the transferring facility should notify the receiving facility of ESBL colonization or infection using the [PDPH inter-facility transfer form](#) or another established method that captures the same information.

DISINFECTION GUIDANCE:

- Reusable equipment should be dedicated to the colonized or infected patient whenever possible
- Shared reusable medical equipment should be disinfected **immediately** after use
- Disinfect with products that are effective against ESBL
- Disinfect areas in close proximity to the patient, high-touch surfaces in the room, and surfaces around sinks and toilets daily
- Immediately clean and disinfect equipment or surfaces contaminated with blood, urine, feces, and other bodily fluids or infectious materials
- Terminal cleaning should consist of thorough wet cleaning and disinfection

References:

ESBL-producing Enterobacterales in Healthcare Settings. Centers for Disease Control and Prevention. <https://www.cdc.gov/hai/organisms/ESBL.html>

Shah, A. A., Hasan, F., Ahmed, S., & Hameed, A. (2004). Extended-spectrum β -lactamases (esbls): Characterization, Epidemiology and Detection. *Critical Reviews in Microbiology*, 30(1), 25–32. <https://doi.org/10.1080/10408410490266429>