

Responding to New Forms of Antibiotic Resistance

Background

Healthcare facilities, local and state health departments, and CDC all play critical roles in preventing the emergence and spread of new forms of antibiotic resistance. The rapid spread of bacteria with novel resistance mechanisms or highly resistant susceptibility profiles, like Enterobacteriaceae producing the *Klebsiella pneumoniae* carbapenemase (KPC), demonstrates what happens when limited or no action is taken. Through timely coordinated action, the spread of highly resistant organisms can be constrained. Although resistant organisms may be first identified at a single facility, preventing further spread of the organism is the responsibility of all the stakeholders in a region. It is critical to understand that everyone has a role and responsibility to act since antimicrobial resistance is a regional problem and limiting its spread requires a coordinated response that benefits all the interconnected facilities in a region.

The organisms that are considered prevention priorities might vary from region to region, but will need to include bacteria with an uncommon resistance profile or mechanism that is either epidemiologically (e.g., high potential for epidemic spread) or clinically important (e.g., severely limits treatment options). Examples might include vancomycin-resistant *Staphylococcus aureus* (VRSA) and carbapenemase-producing gram-negative bacilli (e.g., CRE). This document summarizes the roles that each stakeholder should take when these organisms are identified in a region or community of connected healthcare facilities.

Healthcare Facility

When **healthcare facilities** identify patients/residents colonized or infected with these organisms they should:

- Institute recommended organism or mechanism-specific infection control precautions to prevent spread. These generally include:
 - Standard and Contact Precautions;
 - Cohorting patients and dedicating staff and equipment;
 - Enhanced environmental cleaning.
- Notify the health department.
- Save isolates and consider need for additional testing.
- Consider screening tests for contacts with substantial levels of exposure to the patient/resident to identify transmission that might be from the patient/resident. Contacts could include roommates, patients/residents on the same healthcare facility unit, or those identified as having another common exposure.
- Conduct surveillance to identify additional isolates. At a minimum, prospective surveillance of clinical cultures for isolates with a similar phenotype should be conducted. Surveillance is often done for one to several months after the initial identification of the organism of interest. Facilities might also consider a retrospective review of laboratory results to identify previously unrecognized cases.

- If the patient/resident is transferred to another facility: Notify the accepting facility, as soon as the transfer is considered and again at the time the patient/resident is transferred, that the patient/resident is colonized/infected with the organism. Provide assistance to determine the level of precautions needed at the accepting facility.
- If patient/resident was transferred from another facility: Notify the sending facility that the patient/resident is infected/colonized with the organism and consider the need for interventions at that facility.
- Implement a method to identify known colonized/infected patient(s)/residents(s) at future admissions, such as flagging the medical record, so appropriate precautions can be instituted immediately upon readmission.



Approach To Novel Resistance (continued)

Local and State Health Department

When facilities identify patients/residents colonized or infected with these organisms **local and state health departments** should:

- Provide technical support to involved facilities to ensure use of appropriate infection control precautions. Assist with inter-facility communication, and enhanced case finding (including at other facilities in the region). If the patient/resident was transferred from and/or to another healthcare facility, facilitate communication with the involved healthcare facilities and provide technical support to these facilities. Provide on-site assistance as needed.
- Facilitate collection and processing of surveillance cultures, if needed (particularly when multiple facilities are involved).
- Provide laboratory support, if needed; if not available consult with CDC.
- Consult with the Division of Healthcare Quality Promotion at CDC, as needed.
- Assist facilities with internal and external communications strategies including communication with facilities with which they share patients and with patients (e.g., patient notification).
- Provide situational awareness about the presence of the novel resistance to facilities in the region or care network, as well as to other relevant local/state health departments. This could vary from general notifications of the presence of a single isolate to stakeholders (e.g., listservs of facilities) to targeted outreach to facilities that share patients with the affected facility. Outreach should include information or education around specific interventions (e.g., admission screening), diagnostic testing strategies, and communication strategies.
- Ensure ongoing follow up to identify additional cases at the affected facility and the facilities with which they share patients/residents. This might be time-limited (e.g., two to three months). Ensure infection control practices are maintained throughout the care of the patient.

Federal Stakeholders

When facilities identify patients/residents colonized or infected with these organisms **federal stakeholders** should:

- Provide technical assistance to state and/or the facility, including recommendations about infection control interventions and case finding. Provide on-site assistance as needed.
- Provide laboratory support as needed, such as confirmation of the resistance mechanism and/or resistance profiles.
- Assist with communication strategies.
- Assist with identifying facilities that share patients/residents.

For guidance on specific MDROs:

Carbapenem-resistant Enterobacteriaceae:

CRE Toolkit:

<http://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html>

Vancomycin-resistant *Staphylococcus aureus*:

VRSA Investigation Guide:

http://www.cdc.gov/hai/pdfs/VRSA-Investigation-Guide-05_12_2015.pdf

Coordinated Regional Approach to controlling antimicrobial Resistance:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a4.htm>

For more information, please contact

1-800-CDC-INFO (232-4636)

TTY: 1-888-232-6348

www.cdc.gov

Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Combine infection control actions with every patient to prevent infections in health care.



Prevent infections from catheters and after surgery. +



Prevent bacteria from spreading. +



Improve antibiotic use.