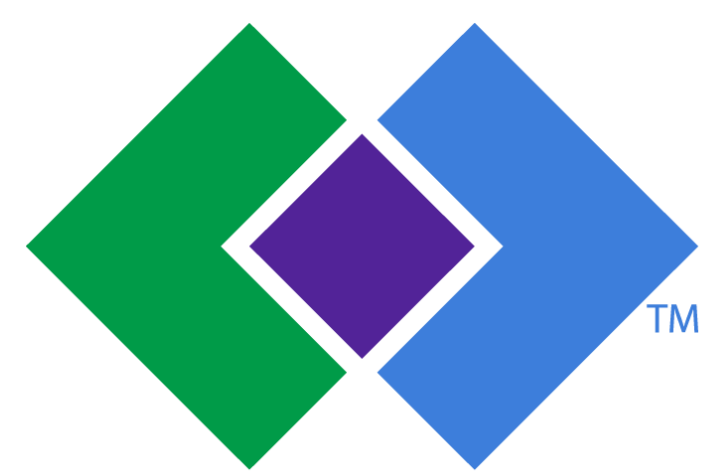


Investigation and Containment of New Delhi Metallo-beta-lactamase(NDM)-producing Carbapenem-resistant Enterobacteriaceae (CRE) in a Hospital Intensive Care Unit



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BACKGROUND

- Emerging multidrug resistant organisms (MDROs) or “superbugs” are unique because they are resistant to all or most antibiotics tested and can carry special resistance mechanisms that can be spread between organisms.
- Superbugs are increasing due to medical tourism and exposure to international healthcare. Examples include New Delhi Metallo-beta-lactamase (NDM)-producing Carbapenem-resistant Enterobacteriaceae (CRE) and *Candida auris*.
- NDM-CRE was 1st detected in the US in 2010 and more common in other parts of the world
- Since 2013, Methodist Hospital has had a CRE admission screening protocol in place to put patient in Contact Isolation and collect rectal swab for CRE culture if they have been hospitalized in last 6 months outside the US.

In April 2019, hospital was notified that NDM CRE was identified in a patient who had been transferred to another hospital after being an inpatient in our hospital for three weeks.

METHODS

- Used CDC Interim Guidance for Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs) – Tier 2 Strategy
- Infection Prevention, Minnesota Department of Health, Nursing Administration and Leaders, and Lab determined to only screen patients who had been in ICU > 24 hours since patient was already transferred.
- Sent to MDH to ARLN for CRE and *C. auris* testing

RESULTS

- All 7 patients negative for CRE and *C. auris*
- No further transmission of CRE
- Patient had ambulatory surgery outside the US in March 2019
- MDH ICAR Assessment:

POSTIVE FEEDBACK	OPPORTUNITIES
Isolation procedures	Separation of clean and dirty in soiled utility room
Cleaning products: sporicidal disinfectant for all rooms, UV-C pulsed Xenon light for discharges	CRE admission screen only capturing those hospitalized in last 6 months outside US
Hand hygiene product easily accessible	

Screen patients who have had exposure to international healthcare* in last year for superbugs to prevent possible outbreak and contain spread.

*overnight hospital stay, dialysis, surgery

Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)

Updated January 2019
<https://www.cdc.gov/od/oc/media/press/2019/s011901.html>

Table 1: Summary of Response Recommendations for MDRO Containment by Tier			
Description	Tier 1 Resistance mechanisms never or very rarely identified in the United States; pan-resistant organisms with the potential for wider spread in a region	Tier 2 Resistance mechanisms never or very rarely identified in the United States; pan-resistant organisms with the potential for wider spread in a region	Tier 3 Resistance mechanisms never or very rarely identified in the United States; pan-resistant organisms with the potential for wider spread in a region
Healthcare Investigation ¹	Always	Always	Always
Review the patient's healthcare exposures prior to and after the positive culture	Always	Always	Always
Contact Investigation ¹	Always	Always	Always
Screening of healthcare roommates	Always	Sometimes ²	Sometimes
Broader screening of healthcare contacts ¹	Always	Always	Always
Prospective lab surveillance ¹	Always	Always	Sometimes
Retrospective lab surveillance ¹	Always	Always	Sometimes
Household contact screening	Sometimes	Rarely	Rarely
Environmental sampling	Sometimes	Rarely	Rarely
Healthcare personnel screening	Sometimes	Rarely	Rarely
Evaluate potential spread to healthcare facilities that regularly share patients with the index healthcare facility ¹	Sometimes	Sometimes	Rarely
Infection Control Measures	Always	Always	Always
Prompt notification of healthcare providers and patient and implementation of appropriate transmission-based precautions	Always	Always	Always
Clear communication of patient status with transferring facilities	Always	Always	Always
On-site infection control assessment with observations of practice, such as Epidemiology and Laboratory Capacity (ELC) Infection Control Assessment and Response (ICAR)	Always	Always	Sometimes

MDH Recommendation – April 2019

Strongly recommends that Minnesota hospitals screen on admission inpatients with a history of an overnight stay in a healthcare facility, ambulatory surgery or hemodialysis outside the United States in the previous 12 months for carbapenemase-producing organisms (CPOs) and *C. auris*.

CDC Antibiotic Resistance Laboratory Network (ARLN) supports rapid detection of antibiotic resistance to prevent spread. Minnesota a regional site and can provide free testing.

