Nebraska Department of Health and Human Services

HEALTH ALERT NETWORK Advisory

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

TO: Nebraska Healthcare Providers, Infection Preventionists, Laboratories, Public Health, Directors of Nursing, Hospital and Long Term Care Administrators

FROM: Thomas J. Safranek, M.D.
State Epidemiologist
PHONE: 402-471-2937

Maureen R. Tierney, M.D. MSc
Healthcare Associated Infections/
Antimicrobial Resistance Program Lead
PHONE: 402-471-6549

RE: Detection and Management of Highly Resistant Antimicrobial Organisms

DATE: November 15, 2018

- Bacteria that develop resistance to multiple antibiotics, although still uncommon, are increasing in incidence in Nebraska.
- **Resistance can be controlled with Detection, Investigation, Containment, Communication** and **Prevention**.
- The Nebraska Department of Health and Human Services (NDHHS) Healthcare Associated Infection (HAI) Program and the Nebraska Public Health Laboratory (NPHL) perform surveillance for highly resistant bacteria in order to **Detect** highly resistant micro-organisms.
- **Investigation** will be undertaken by the Nebraska HAI Team and any facility with a detected resistant organism.
- **Containment** including isolation, contact precautions and colonization screening may be necessary to minimize spread of resistance.
- **Communication** between facilities upon transfer of patients with resistant organisms is an essential aspect of containment.
- Antibiotic Stewardship is crucial to **prevent** the development of resistance.

Although all multidrug resistant organisms (MDROs) are difficult to treat and need to be contained, there are some especially concerning patterns of resistance. Resistance to the carbapenem class of antibiotics via the production of a carbapenemase enzyme is highly concerning since it can spread from species to species via plasmid. This increases the likelihood for development of a pan resistant strain, no longer susceptible to any antimicrobial agent. Acinetobacter species resistant to colistin are treatable by very few antibiotics. *Candida auris* is a new yeast which is resistant to many antifungals and to many environmental cleaning methods. The mortality rate for systemic infections related to highly resistant organisms is significantly higher than with antimicrobial susceptible organisms. Although the incidence in Nebraska is currently low, it is rising.

The organisms of greatest concern are:

- **Carbapenem-Resistant Enterobacteriaceae, especially Carbapenemase producers**
- **Colistin and Carbapenem Resistant Acinetobacter**
- ***Candida auris***

Risk factors for the acquisition of these types of resistance include:

- Prolonged or recurrent courses of antibiotic therapy
- Healthcare received outside of the United States
- Prolonged stays in a healthcare facility (especially from areas of the US with higher prevalence such as the New York or Chicago metropolitan areas)
- For *C. auris*, hospital care in Pakistan, Venezuela, United Arab Emirates, South Africa, India and Kuwait

These organisms may be detected from:

- The bacterial culture of a clinical isolate
- Colonization screening
- Surveillance of laboratory reports submitted by electronic lab reports (ELR) of the organisms likely to harbor carbapenemases -see table below
- Admission screening for those patients with risk factors as described above

Multi-Drug Resistant Organism Management Plan-Greater Detail is provided in the guidance documents below the table.

Reporting of Relevant Organisms	In accordance with Nebraska Title 173, the following organisms when detected should be reported immediately: ▪ Carbapenem resistant Enterobacteriaceae or Acinetobacter, ▪ Colistin Resistant Acinetobacter, ▪ Pan resistant organisms, ▪ Suspected or confirmed *Candida auris*, and ▪ Vancomycin intermediate or resistant *S. aureus.*
Submission of Isolates	Submit isolates that are non-susceptible to any of the carbapenems or vancomycin or are pan resistant, in accordance with NPHL guidelines (see link below).
Reporting of Possible Resistant Organisms by ELR	The following organisms (which have the ability to carry resistance to carbapenems, colistin, or vancomycin) should be reported by those labs which perform ELR. *Acinetobacter* spp, *Citrobacter* spp, *Enterobacter* spp, *Enterococcus* spp, *Escherichia coli, Klebsiella* spp, *Pseudomonas aeruginosa, Staphylococcus aureus,* and *Streptococcus pneumoniae. Serratia, spp., Providencia spp., and Morganella spp. Proteus spp. w*ill soon be added to this group.
Investigation	NDHHS HAI personnel will conduct an investigation. Epidemiologic information will be collected for all submitted CRE, possible *C.auris* and pan resistant isolates including: ▪ History of contact with healthcare facilities, *esp. out of the country,* ▪ Antibiotic treatment courses and durations, ▪ Procedures with reusable devices (e.g. endoscopes), and ▪ Any other information that might be determine the source.
Containment	Place patient in Private Room and on Contact Precautions-see link to CRE Response Guidelines below.
Interfacility communication	A written transfer communication should accompany any patient **infected or colonized** with a MDRO, esp. CRE, VISA or VRSA or with other communicable disease upon transfer so the receiving facility can prepare the necessary precautions. A link to an example of a transfer form is included below.
Screening for Colonization	Screening of patient contacts will be considered as part of a containment strategy in the event that a highly resistant organism is identified from a patient currently admitted to a hospital, long-term care facility or similar institution. The determination of which patient contacts will need screening will be decided by the NDHHS HAI program and NPHL in conjunction with infection preventionist(s) at

	the facility. The Colonization *Screen Protocol* below details how to obtain and submit the screening swabs.
Screening on Admission	The CDC recommends that healthcare facilities, especially tertiary care centers consider screening, upon admission, patients in the following high-risk factors for CRE: ▪ Healthcare received outside of the United States ▪ Prolonged stays in a healthcare facility (especially from areas of the US with higher prevalence such as the New York or Chicago metropolitan areas) ▪ For *C.auris*, hospital care in Pakistan, Venezuela, United Arab Emirates, South Africa, India and Kuwait. Use the Colonization Screening Protocol link below.

Links to Nebraska tools:

HAI Antimicrobial Resistance Information for Healthcare Providers
http://dhhs.ne.gov/publichealth/HAI/Pages/ResistanceHCP.aspx

CRE Investigation Response Guidelines
http://dhhs.ne.gov/publichealth/HAI/Documents/CRE%20Investigation%20Response%20Guidelines.pdf

CRE Case Investigation Form
http://dhhs.ne.gov/publichealth/HAI/Documents/CRECaseInvestigationForm.pdf

Colonization Screening Protocol
http://dhhs.ne.gov/publichealth/HAI/Documents/NE%20CRE%20Colonization%20Screen%20Protocol.pdf

Transfer Form
http://dhhs.ne.gov/publichealth/HAI/Documents/Interfacility%20Infection%20Control%20Transfer%20Form.pdf

NPHL Molecular Detection of Carbapenemase Supplemental Form
http://www.nphl.org/documents/NPHL%20CRE_CPE%20Supplemental%20Form110518.pdf

NPHL Microbiology Requisition
http://www.nphl.org/documents/500005%20NPHL%20Test%20Request%20Form110518.pdf

Additional Resources

CDC. Guidance for Control of Carbapenem-Resistant *Enterobacteriaceae*. 2012 CRE Toolkit.
https://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf

Rutala WA and Weber DJ and HICPAC. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008. https://www.cdc.gov/hai/pdfs/Disinfection_Nov_2008.pdf

FDA Duodenoscope Surveillance Sampling & Culturing
https://www.fda.gov/downloads/MedicalDevices/ProductsandMedicalProcedures/ReprocessingofReusableMedicalDevices/UCM597949.pdf