



SHARPPS Program

MDRO Containment and Response

SHARPPS Team
Communicable Disease Branch
North Carolina Division of Public Health

September 5, 2019





What to report for CRE and *Candida auris*

For the purposes of reporting, Carbapenem-Resistant *Enterobacteriaceae* (CRE) are defined as:

(1) *Enterobacter* spp., *E.coli* or *Klebsiella* spp. positive for a known carbapenemase resistance mechanism or positive on a phenotypic test for carbapenemase production

or

(2) *Enterobacter* spp., *E.coli* or *Klebsiella* spp. resistant to any carbapenem in the absence of carbapenemase resistance mechanism testing or phenotypic testing for carbapenemase production.

What to report - CRE

- **Identification of CRE from a clinical specimen associated with either infection or colonization –AND –**
- **All susceptibility results (if available) – AND –**
- **All phenotypic or molecular test results (if conducted and available)**

What to report – *Candida auris*

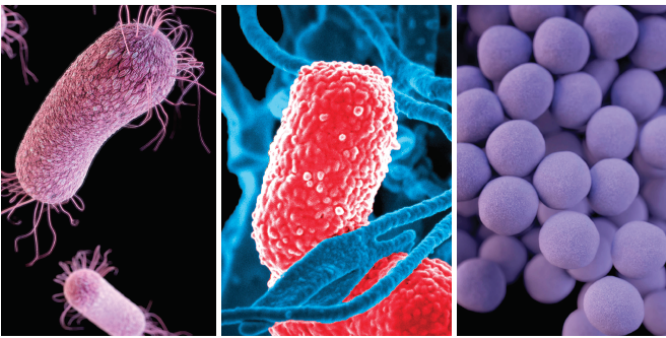
Any patient or laboratory finding that meets either of the following criteria

- Detection of *C. auris* in a specimen using either culture or culture independent diagnostic test (CIDT) (e.g., Polymerase Chain Reaction [PCR])

-OR-

- Detection of an organism that commonly represents a *C. auris* misidentification (refer to table of common misidentifications based on the identification method used located at <http://www.cdc.gov/fungal/candida-auris/recommendations.html>) in a specimen by culture

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



- Updated January 2019
- In depth explanation of Tiered Response to MDROs including CRE
- Excellent resource for local health departments and facilities conducting CRE investigations

<https://www.cdc.gov/hai/containment/guidelines.html>



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases

Updated January 2019

<https://www.cdc.gov/hai/containment/guidelines.html>



Tier 3 Organisms:

Organisms identified numerous times in a region but not considered to be endemic (e.g. KPC CRE)

Initial response measures

- **Notify NC DPH, the local health department, and/or infection preventionists**
- **Notify patient, patient caregiver, and other healthcare staff**
- **Implement appropriate precautions (e.g. Contact Precautions) – varies by facility setting**
- **Discontinuing appropriate precautions is performed in consultation with NC DPH**

Conduct a healthcare investigation

- **Review patient's current healthcare exposures (overnight stays in healthcare facilities)**

Conduct a contact investigation

- **Any roommates or those that shared bathrooms with the index case should be screened for colonization**
- **If there is evidence of transmission:**
 - **Wider surveys and ongoing point prevalence surveys extending beyond roommates and high risk patients are recommended**
 - **Generally, if there are 2 consecutive screenings that identify no new cases, discontinuation of screenings is considered**

Implement a system to ensure adherence of infection control measures

- Educate and inform the HCP and visitors to the index patient about the organism and recommended interventions
- **If transmission is identified**, health departments and other experts should conduct on-site visits and use a standard assessment tool to evaluate infection control practices at facilities that have cared for the index case
- Healthcare facilities should conduct ongoing adherence monitoring
- Should ensure index patient's MDRO status is communicated during transfers
- The patient's record should be flagged for appropriate precautions upon re-admission
- Discontinuation of precautions should be made in consultation with NC DPH

Tier 2 Organisms:

Organisms that are primarily associated with healthcare settings and are not commonly identified in the region (e.g. novel carbapenemase producers)

Conduct a healthcare investigation

- Review patient's healthcare exposures prior and after initial positive culture
- Healthcare exposures in the **preceding 30 days should be investigated**
 - Overnight stays in healthcare settings **outside the US** are of particular interest

Conduct a contact investigation

- Any roommates or those that shared bathrooms with the index case should be screened for colonization
- If adherence to precautions is not high, the index case is high risk for transmission, or the index case was not on Contact Precautions, screening beyond roommates is recommended
- High risk contacts that have been discharged should be flagged for screening on admission in the following 6 months
- If there is evidence of transmission:
 - Wider surveys and ongoing point prevalence surveys extending beyond roommates and high risk patients are recommended
 - Generally, if there are 2 consecutive screenings that identify no new cases, discontinuation of screenings is considered



Tier 1 Organisms:

Pan-resistant organisms and resistance mechanisms very rarely seen in the United States (eg *Candida auris*)

Initial response measures

- **Notify NC DPH, the local health department, and/or infection preventionists**
 - **Notify patient, patient caregiver, and other healthcare staff**
 - **Implement appropriate precautions (e.g. Contact Precautions) – varies by facility setting**
 - **Conduct periodic testing of index patient and/or others found to be colonized**
 - **Minimum criteria: 2 consecutive screenings where there is failure to detect the organism or mechanism of resistance**
 - **Discontinuation of precautions is performed in consultation with NC DPH**
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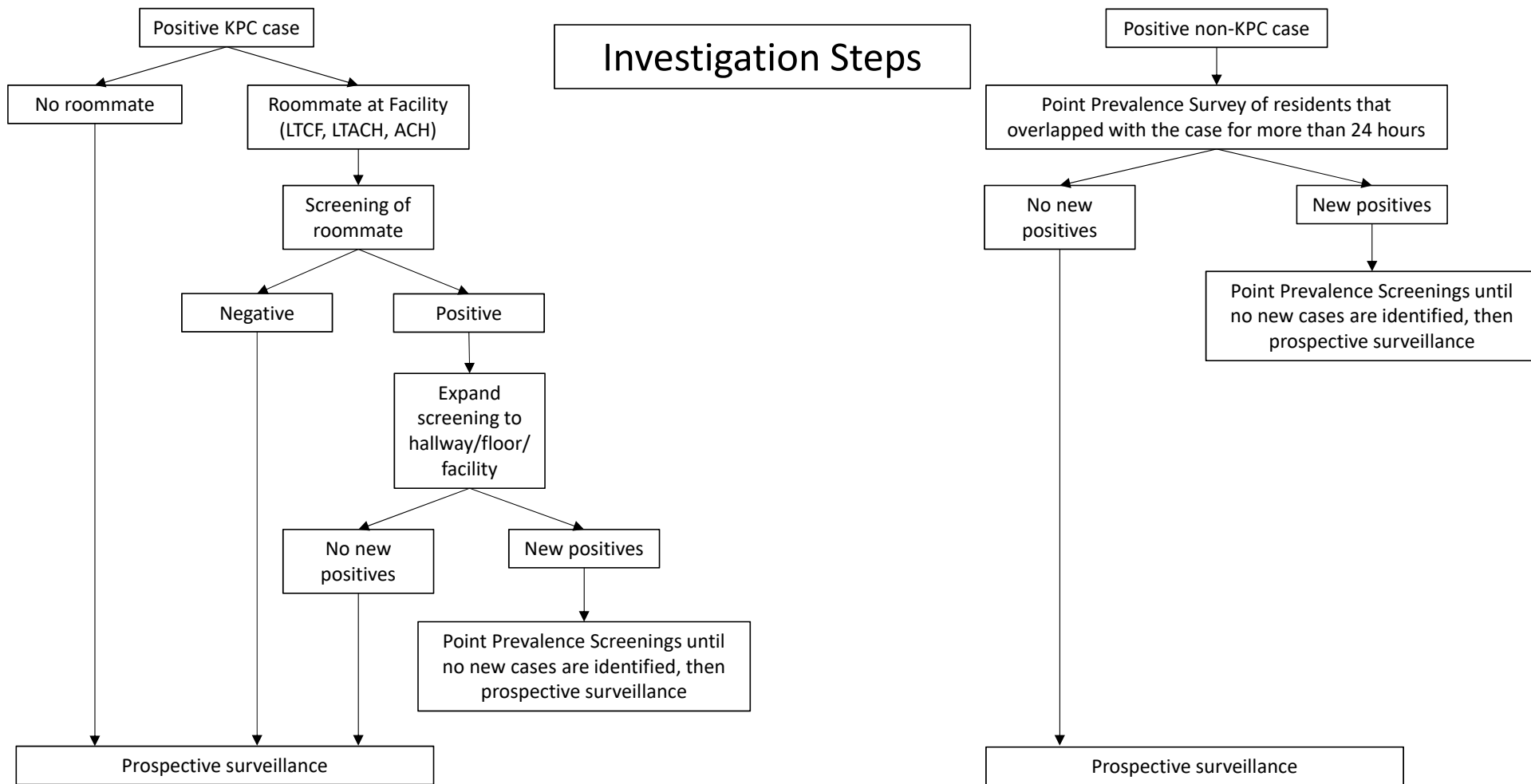
Conduct a contact investigation

- Perform colonization screening of epidemiologically linked patients
- **At minimum: screen roommate(s) and patients that shared a bathroom regardless of whether or not the index case was on Contact Precautions**
- Patients that overlapped with the index case for **3 or more days** that have been discharged should be flagged for screening on admission in the following 6 months
- If there is evidence of transmission:
 - Wider surveys and ongoing point prevalence surveys extending beyond roommates and high risk patients are recommended
 - Admission screening may be warranted
 - An investigation should be initiated in facilities known to regularly share patients in facilities where transmission occurred



Screening Protocol

Investigation Steps



Site Visit: Observations

- **Hand hygiene**
- **Direct patient care (including wound care)**
- **Environmental health**
- **General infection prevention**

Contact Investigation: Screening

- In consultation with DPH,
 - Screen roommates, potentially the hall/unit, that are epidemiologically linked because of healthcare exposure
 - A screen is a rectal swab

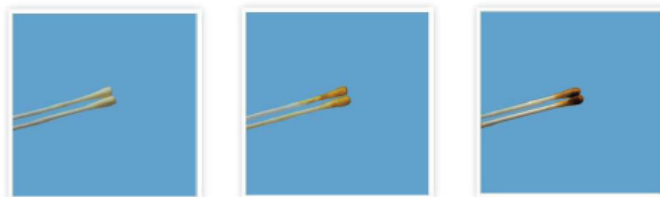


Contact Investigation: Screening

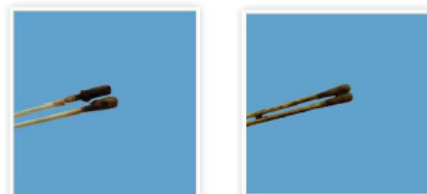
Specimens: Swabbing

- Cepheid testing for CRE performed on rectal or fecal swabs

Acceptable Specimens



Unacceptable Specimens



Acceptable packaging of multiple swabs in one bag



Site Visit: Control Measures

Communicate CRE status to transferring and receiving facilities




<https://epi.publichealth.nc.gov/cd/hai/docs/InterfacilityTransferInstructionsandForm.pdf>

INTERFACILITY TRANSFER FORM

Transferring Facility Name*: _____
 Transferring Facility Address*: _____
 Transferring Facility Phone*: _____ Fax: _____

Transferred to*: _____ Reason for transfer*: _____
 Transfer date/time*: _____ / _____ Attending physician*: _____ Phone*: _____

Patient/resident demographics and vital signs (date/time taken _____ / _____)
 Last Name*: _____ First Name*: _____ DOB*: _____ MRN: _____
 BP*: _____ P*: _____ R*: _____ T(F)*: _____ O₂: _____ SAT*: _____ HT(in): _____ WT(lb): _____ Diabetic? _____ Glucose: _____
 Language English Other: _____ Mental status* Alert Oriented Other: _____
 Allergies* None Yes: _____ Pain Level (0-10): _____ Site: _____
 At risk alerts* None Falls Aspiration Pressure ulcers Seizures Elopement Other: _____
 Advanced directives* DNR DNI MOST Living Will Proxy, Contact _____

Current isolation precautions*required PPE (Check, if indicated)
 No Yes, specify Contact Droplet Airborne
 PPE, specify   

Organisms / infections* None Yes, specify type/date

Current infection	Hx/Colonized	Pending result
Date	Date	Date
Multi-drug resistant organisms (MDROs)		
Methicillin-resistant Staphylococcus aureus (MRSA)	<input type="checkbox"/>	<input type="checkbox"/>
Vancomycin-resistant Enterococci (VRE)	<input type="checkbox"/>	<input type="checkbox"/>
Acinetobacter not susceptible to carbapenems	<input type="checkbox"/>	<input type="checkbox"/>
Enterobacteriaceae resistant to carbapenems (i.e. CRE)	<input type="checkbox"/>	<input type="checkbox"/>
Extended-spectrum beta-lactamase producer (ESBL)	<input type="checkbox"/>	<input type="checkbox"/>
Clostridium difficile (C. diff)	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____ (e.g. Group A Streptococcus (GAS), lice, scabies, disseminated shingles, norovirus, flu, TB, etc.)	<input type="checkbox"/>	<input type="checkbox"/>

Current or recent (last 7 days) symptoms None Yes, specify
 Draining wounds Concerning rash (e.g. vesicular) Cough/uncontrolled respiratory secretions
 Vomiting Acute diarrhea or incontinence of stool Other: _____

Sensory status and activities of daily living*

Vision	Hearing	Speech	Ambulate	Transfer	Toileting	Meals	Hygiene	Dressing
<input type="checkbox"/> Good <input type="checkbox"/> Poor	<input type="checkbox"/> Good <input type="checkbox"/> Poor	<input type="checkbox"/> Good <input type="checkbox"/> Difficult	<input type="checkbox"/> Self <input type="checkbox"/> Assist	<input type="checkbox"/> Self <input type="checkbox"/> Assist	<input type="checkbox"/> Self <input type="checkbox"/> Assist	<input type="checkbox"/> Self <input type="checkbox"/> Assist	<input type="checkbox"/> Self <input type="checkbox"/> Assist	<input type="checkbox"/> Self <input type="checkbox"/> Assist
<input type="checkbox"/> Blind	<input type="checkbox"/> Deaf	<input type="checkbox"/> Aphasia	<input type="checkbox"/> Not able	<input type="checkbox"/> Not able	<input type="checkbox"/> Incontinent	<input type="checkbox"/> Tube	<input type="checkbox"/> Not able	<input type="checkbox"/> Not able
Sfy: _____	Sfy: _____				Sfy: _____	Date: _____		

Current devices / recent (last 90 days) procedures* None Yes, specify
 Tracheostomy tube Hemodialysis catheter Procedure, specify type _____ and date _____
 Gastrostomy tube Urinary catheter (date inserted) _____ Central line/PICC (date inserted) _____

Current medications* None Yes, refer to attached MAR

Vaccination / test history* None Yes, specify

Vaccine/test	Influenza (seasonal)	Pneumococcal	Zoster	Td	Tdap	Tuberculin skin test
Date administered						
Self-report vaccine/test receipt?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Result: <input type="checkbox"/> Pos <input type="checkbox"/> Neg

Personal items sent with patient/resident None Specify (e.g. glasses, etc.): _____

Contact information _____

Notes: _____

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