



HAI Update

CEDEP Meeting, Oct 7, 2015



Ebola Assessment Hospital (EAH) Assessments

Ebola Assessment Hospital (EAH) Responsibilities

- **Evaluating patients for Ebola Virus Disease risk**
- **Conducting testing for alternative diagnoses (e.g., malaria)**
- **Providing supportive treatment until the patient can be moved to an Ebola Treatment Facility (i.e., Emory University Hospital)**

Assessment Process

- 1. EAH will complete a self-assessment using the CDC v17 tool and upload supporting documents**
- 2. The TDH Assessment team (EP, EMS, Lab, HAI) will review both documents prior to on-site visit**
- 3. On-site visit to identify gaps**
- 4. TDH will work with the facility to develop mitigation plan**
- 5. Potential follow-up visit to confirm gaps mitigated**

CDC v17 Assessment Tool and Supporting Documents

5-18-2015 (v17) ***DRAFT, CONFIDENTIAL, NOT FOR DISTRIBUTION***

B. Staffing of Patient Care Team	
Elements to be assessed	
	Notes from facility, please feel free to refer to documents/plan with page number. Outline gaps or concerns.
1. A trained Patient Care Team has been pre-identified for management of the PUI/patient ² . Consider cross-training registered nurses or physicians to minimize number of staff with direct patient contact (e.g., phlebotomy, cleaning).	
2. Team members receive job-specific training and demonstrate competency on infection control practices, policies, and procedures for caring for a PUI or Ebola patient (see Section E).	
3. Qualified, trained staff members are identified for obtaining, handling, processing and testing of specimens from the PUI or Ebola patient.	
4. Hospital has identified additional team members ³ involved in consultation but who do not enter the PUI/patient room (e.g., audio/video conferencing may be used to communicate with patients or team members in room). Note: If consulting team members must enter the PUI/patient room, they receive job-specific training and demonstrate competency on infection control practices, policies and procedures, including appropriate use of PPE, prior to entering the patient room.	
5. A schedule of staffing for patient care is created in advance of a PUI/patient's arrival so that individuals on call are trained and have demonstrated competency, and can be quickly assembled when needed.	

- 1) Specific wording used at triage/registration desk to identify potential PUI for Ebola or MERS CoV.
- 2) Actions to be taken by triage/registration desk upon identification, including listing of public health and organizational contacts to be notified. Communication plans to physicians/other care staff of travel history
- 3) Describe route/protocol from ED (walk in or via EMS) or other point of entry to assessment/evaluation area for potential PUI/ attach maps if available
- 4) Log that will be used to document all personnel who may enter PUI's contaminated space to provide treatment or assessment
- 5) PPE donning and doffing checklist
- 6) Checklist for PUI being evaluated for Ebola virus disease (EVD)
- 7) Protocol for cleaning, disinfection of reusable equipment
- 8) Protocol for spill management of blood/body fluids
- 9) Protocol for cleaning of room/assessment/treatment area occupied by PUI
- 10) Protocol for management of waste generated in E.D and/or assessment area/laboratory including what supplies are available for waste management, internal transportation, where stored, any autoclaving, incineration.
- 11) Documentation of training, competency assessments for triage screening, PPE donning and doffing, cleaning, disinfection, decontamination of equipment/room, spill management of blood/body-fluids, packaging for various staff, including ED, ICU, waste management, laboratory staff, EMS
- 12) Log used to document all staff in contact with PUI/ who entered contaminated area to provide treatment/assessment
- 13) Protocol for collection of PUI laboratory specimens and transportation to laboratory (in house) for tests such as malaria, blood cultures and potential EVD tests
- 14) Protocol for labeling, storing, packing and shipping specimens to State public health laboratory for EVD testing
- 15) Agreement with Facility waste contractor and plan for contractor to request special permit from DOT

Hospital Assessment Summary

- **The Hospital Assessment Summary Form was created to summarize a hospital's overall Ebola readiness across 11 capability domains following an on-site assessment**
- **TDH used this form to create the Ebola Assessment Hospital database in REDCap.**

Ebola Assessment Hospital Capability Domain	Elements Required for Minimum Capability	Minimum Capability in Place? (Y/N)
Patient Transportation	<p><u>Inter-facility</u> Plans are in place that have been jointly determined by the state and local public health agency, emergency medical services, and hospital for inter-facility transfer/transport of:</p> <ul style="list-style-type: none"> • PUIs for EVD to an Ebola Assessment Hospital or Ebola Treatment Center: Y N • Patients with confirmed EVD to a designated Ebola Treatment Center: Y N <p>Plans include:</p> <ul style="list-style-type: none"> • Ground transport: Y N • Air transport*: Y N N/A • Identification of transportation provider(s) with appropriate training to safely transport a patient: Y N • Identification of transportation provider(s) with appropriate PPE to safely transport a patient: Y N <p><u>Intra-facility</u> Intra-facility plans for patient transport (e.g., from ambulance entrance to the designated ward or unit for patients under investigation) are in place: Y N</p> <p><i>*May be required for inter-facility transport in some scenarios; health dept. should determine if air transport to assessment or treatment hospital represents a minimum capability. Indicate 'N/A' (not applicable).</i></p>	Y N
Laboratory	<p>Diagnostic laboratory procedures and protocols are in place for:</p> <ul style="list-style-type: none"> • Testing of specimens for Ebola by the nearest Laboratory Response Network (LRN) laboratory capable of testing for Ebola: Y N • Space for clinical diagnostic testing: Y N • Minimal level of diagnostic testing capability* prior to availability of Ebola test results: Y N • Equipment and supply selection: Y N • Disinfection: Y N • Staffing: Y N • Specimen handoff and transport for routine clinical diagnostic testing at the facility: Y N 	Y N

2. Patient Transportation

Editing existing Record ID 1 Test Hospital A

Record ID 1

Plans are in place that have been jointly determined by the state and local public health agency, emergency medical services, and hospital for inter-facility transfer/transport of (applies to items 1 and 2):

1. PUIs for EVD to an Ebola Assessment Hospital or Ebola Treatment Center: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

2. Patients with confirmed EVD to a designated Ebola Treatment Center: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

3. Inter-facility transfer plans include Ground Transport Unsatisfactory Minimum requirement met Optimal
* must provide value reset

4. Inter-facility transfer plans include Air Transport Unsatisfactory Minimum requirement met Optimal Not applicable
* must provide value reset
May be required for inter-facility transport in some scenarios; Health Dept should determine if air transport to assessment or treatment hospital represents a minimum capability.

5. Plans include identification of transportation provider(s) with appropriate training to safely transport a patient: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

6. Plans include identification of transportation provider(s) with appropriate PPE to safely transport a patient: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

7. Intra-facility plans for patient transport (e.g., from ambulance entrance to the designated ward or unit for patients under investigation) are in place: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

Final Evaluation

Data sources used to evaluate this domain: REP Tool Onsite Observation Policies/SOP or other paper documentation
* must provide value

Section 2 minimum requirements met? Yes No
* must provide value reset

Form Status

Complete? reset

2. Patient Transportation

Editing existing Record ID 13 Buechel Medical Center

Record ID 13

Plans are in place that have been jointly determined by the state and local public health agency, emergency medical services, and hospital for inter-facility transfer/transport of (applies to items 1 and 2):

1. PUIs for EVD to an Ebola Assessment Hospital or Ebola Treatment Center: Unsatisfactory Minimum requirement met Optimal
* must provide value reset

a) Reason item was marked unsatisfactory Inadequate Facilities Inadequate Supplies/Equipment Inadequate Training Inadequate Staffing Inadequate Documentation/Protocol External Dependency

b) Additional comments regarding unsatisfactory score: Expand

c) Mitigation Requirements Expand

d) Anticipated date of Re-evaluation: M-D-Y

e) Actual date of Re-evaluation: M-D-Y

f) Mitigation satisfactory? Unsatisfactory Minimum requirement met Optimal reset

2. Patients with confirmed EVD to a designated Ebola Treatment Center: Unsatisfactory Minimum requirement met Optimal
* must provide value reset



Infection Control and Assessment Readiness (ICAR)

Infection Control Assessment and Readiness (ICAR)

- Expansion of infection control assessments beyond Ebola Assessment Hospitals
- HAI program will collaborate with ACH, LTCF, dialysis facilities, ASC, urgent care centers, to identify gaps in infection control practices/procedures by performing on-site assessments
- HAI team perform follow-up assessments if necessary to ensure identified gaps have been mitigated.
- ICAR assessments are non-regulatory

Organization of the ICAR tools

- **Section 1: Facility Demographics**
- **Section 2: Infection Control Program and Infrastructure**
- **Section 3: Direct Observation of Facility Practices**
- **Section 4: Infection Control Guidelines and Other Resources**

ICAR Assessment Agenda

- **Share assessment tool in advance of the visit**
 - **Give the facility time to review and mitigate gaps in advance of the visit**
 - **Ask the facility if there are any specific areas/issues they would like covered or audited during the assessment**
- **Likely $\frac{3}{4}$ of a day to complete the assessment**
 - **Should anticipate spending full day on initial visits while getting comfortable with the tool and process**

Example of Direct Observation of Facility Practices

Guide to Hand Hygiene Opportunities in Hemodialysis

Hand hygiene opportunity category	Specific examples
1. Prior to touching a patient	<ul style="list-style-type: none"> • Prior to entering station to provide care to patient • Prior to contact with vascular access site • Prior to adjusting or removing cannulation needles
2. Prior to aseptic procedures	<ul style="list-style-type: none"> • Prior to cannulation or accessing catheter • Prior to performing catheter site care • Prior to parenteral medication preparation • Prior to administering IV medications or infusions
3. After body fluid exposure risk	<ul style="list-style-type: none"> • After exposure to any blood or body fluids • After contact with other contaminated fluids (e.g., spent dialysate) • After handling used dialyzers, blood tubing, or prime buckets • After performing wound care or dressing changes
4. After touching a patient	<ul style="list-style-type: none"> • When leaving station after performing patient care • After removing gloves
5. After touching patient surroundings	<ul style="list-style-type: none"> • After touching dialysis machine • After touching other items within dialysis station • After using chairside computers for charting • When leaving station • After removing gloves

Please make note of the following during this session.

	Yes	No	Comments
There is a sufficient supply of alcohol-based hand sanitizer			
There is a sufficient supply of soap at handwashing stations			
There is a sufficient supply of paper towels at handwashing stations			
There is visible and easy access to hand washing sinks or hand sanitizer			



Making dialysis safer for patients

CS228827G

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion



Acute Care Hospital ICAR

Possible selection/ prioritization of assessments based on:

- Facilities with elevated HAI rates
- Facilities that have had outbreaks or complaints
- Facilities within networks or communities associated with high rates of multidrug-resistant organisms (e.g., CRE) or *Clostridium difficile* infection

Section 2: Infection Control Program and Infrastructure

I. Infection Control Program and Infrastructure		
Elements to be assessed	Assessment	Notes/Areas for Improvement
1. Hospital provides fiscal and human resource support for maintaining the infection prevention and control program.	<input type="radio"/> Yes <input type="radio"/> No	
2. The person(s) charged with directing the infection prevention and control program at the hospital is/are qualified and trained in infection control. Verify qualifications, which should include: <input type="checkbox"/> Successful completion of initial and recertification exams developed by the Certification Board for Infection Control & Epidemiology (CIC) <u>AND/OR</u> <input type="checkbox"/> Participation in infection control courses organized by recognized professional societies (e.g., APIC, SHEA)	<input type="radio"/> Yes <input type="radio"/> No	
3. Infection prevention and control program performs an annual facility infection risk assessment that evaluates and prioritizes potential risks for infections, contamination, and exposures and the program's preparedness to eliminate or mitigate such risks. <i>Note: Example of Facility Infection Risk Assessment Report and Plan is available in Section 4.</i>	<input type="radio"/> Yes <input type="radio"/> No	
4. Written infection control policies and procedures are available, current, and based on evidence-based guidelines (e.g., CDC/HICPAC), regulations, or standards. Verify the following: a. Respondent can describe the process for reviewing and updating policies (e.g., policies are dated and reviewed annually and when new guidelines are issued)	<input type="radio"/> Yes <input type="radio"/> No a. <input type="radio"/> Yes <input type="radio"/> No	
5. Infection prevention and control program provides infection prevention education to patients, family members, and other caregivers. Verify the following: a. Respondent can describe how this education is provided (e.g., information included in the admission or discharge packet, videos, signage, in-person training)	<input type="radio"/> Yes <input type="radio"/> No a. <input type="radio"/> Yes <input type="radio"/> No	

Long Term Care ICAR

D. The facility has a policy to assess healthcare personnel risk for TB (based on regional, community data) and requires periodic (at least annual) TB screening if indicated.	<input type="radio"/> Yes <input type="radio"/> No	
E. The facility offers Hepatitis B vaccination to all personnel who may be exposed to blood or body fluids as part of their job duties	<input type="radio"/> Yes <input type="radio"/> No	
F. The facility offers all personnel influenza vaccination annually.	<input type="radio"/> Yes <input type="radio"/> No	
G. The facility maintains written records of personnel influenza vaccination from the most recent influenza season.	<input type="radio"/> Yes <input type="radio"/> No	
H. The facility has an exposure control plan which addresses potential hazards posed by specific services provided by the facility (e.g., blood-borne pathogens). <i>Note: A model template, which includes a guide for creating an exposure control plan that meets the requirements of the OSHA Bloodborne Pathogens Standard is available at: https://www.osha.gov/Publications/OSHA3186.pdf</i>	<input type="radio"/> Yes <input type="radio"/> No	
I. All personnel receive training and competency validation on managing a blood-borne pathogen exposure at the time of employment. <i>Note: An exposure incident refers to a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an individual's duties.</i>	<input type="radio"/> Yes <input type="radio"/> No	
J. All personnel received training and competency validation on managing a potential blood-borne pathogen exposure within the past 12 months.	<input type="radio"/> Yes <input type="radio"/> No	
Resident Safety		
A. The facility currently has a written policy for to assess risk for TB (based on regional, community data) and provide screening to residents on admission.	<input type="radio"/> Yes <input type="radio"/> No	
B. The facility documents resident immunization status for pneumococcal vaccination <u>at time of admission</u> .	<input type="radio"/> Yes <input type="radio"/> No	
C. The facility offers annual influenza vaccination to residents.	<input type="radio"/> Yes <input type="radio"/> No	

III. Surveillance and Disease Reporting		
Elements to be assessed	Assessment	Notes/Areas for Improvement
Surveillance		
A. The facility has written intake procedures to identify potentially infectious persons at the time of admission. <i>Examples: Documenting recent antibiotic use, and history of infections or colonization with <i>C. difficile</i> or antibiotic-resistant organisms</i>	<input type="radio"/> Yes <input type="radio"/> No	

VERSION 1.0

- Possible selection/prioritization of assessments based on:
 - Facilities with significant infection control citations
 - Input from Quality Improvement organizations which are working with LTC facilities (often focus on 1 to 2 star facilities/poor performers)
 - Facilities that have had outbreaks or complaints
 - Facilities within networks or communities associated with high rates of multidrug-resistant organisms (e.g., CRE) or *Clostridium difficile* infection

Hemodialysis ICAR

- Possible selection/prioritization of assessments based on:
 - Input from state survey agencies and ESRD Networks
 - Facilities with outlier NHSN rates
 - Facilities that have had outbreaks or complaints
 - Best practice or high performing facilities

Section 2: Infection Control Program and Infrastructure

I. Infection Control Policies and Infrastructure		
Elements to be assessed	Assessment	Notes/Areas for Improvement
1. What training does the person in charge of infection control <i>at the facility</i> have?	<input type="radio"/> Certified in Infection Control (CIC) <input type="radio"/> Other (specify): _____ <input type="radio"/> N/A, no person in charge at the facility	
2. Is the facility participating in their ESRD Network HAI Quality Improvement Activity (QIA)?	<input type="radio"/> Yes <input type="radio"/> No	
3. Has the facility participated in the CDC Dialysis BSI Prevention Collaborative?	<input type="radio"/> Yes <input type="radio"/> No	
4. In the past 2 years, has the facility participated in any other intensive program focused on HAI prevention? (e.g., clinical trial, company-led quality improvement project)	<input type="radio"/> Yes (specify): _____ <input type="radio"/> No	
5. Does the facility have a system for early detection and management of potentially infectious persons at initial points of patient encounter? <i>Note: System may include taking a travel history, assessing for diarrhea or draining infected wounds, and elements described under respiratory hygiene/cough etiquette.</i>	<input type="radio"/> Yes, system applies at (or prior to) point of facility check-in <input type="radio"/> Yes, system applies when patient arrives in dialysis treatment area <input type="radio"/> No	

Outpatient Settings ICAR

IV. Surveillance and Disease Reporting		
Elements to be assessed	Assessment	Notes/Areas for Improvement
A. An updated list of diseases reportable to the public health authority is readily available to all personnel.	<input type="radio"/> Yes <input type="radio"/> No	
B. Facility can demonstrate knowledge of and compliance with mandatory reporting requirements for notifiable diseases, healthcare associated infections (as appropriate), and for potential outbreaks.	<input type="radio"/> Yes <input type="radio"/> No	
C. Patients who have undergone procedures at the facility are educated regarding signs and symptoms of infection that may be associated with the procedure and instructed to notify the facility if such signs or symptoms occur.	<input type="radio"/> Yes <input type="radio"/> No	

V.a. Hand Hygiene		
Elements to be assessed	Assessment	Notes/Areas for Improvement
A. All HCP are educated regarding appropriate indications for hand hygiene: <ul style="list-style-type: none"> i. Upon hire, prior to provision of care ii. Annually 	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No	
B. HCP are required to demonstrate competency with hand hygiene following each training	<input type="radio"/> Yes <input type="radio"/> No	
C. Facility regularly audits (monitors and documents) adherence to hand hygiene.	<input type="radio"/> Yes <input type="radio"/> No	
D. Facility provides feedback from audits to personnel regarding their hand hygiene performance.	<input type="radio"/> Yes <input type="radio"/> No	
E. Hand hygiene policies promote preferential use of alcohol-based hand rub over soap and water in all clinical situations except when hands are visibly soiled (e.g., blood, body fluids) or after caring for a patient with known or suspected <i>C. difficile</i> or norovirus.	<input type="radio"/> Yes <input type="radio"/> No	

VI.a. Personal Protective Equipment (PPE)		
Elements to be assessed	Assessment	Notes/Areas for Improvement
A. HCP who use PPE receive training on proper selection and use of PPE: <ul style="list-style-type: none"> i. Upon hire, prior to provision of care ii. Annually iii. When new equipment or protocols are introduced 	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No	
B. HCP are required to demonstrate competency with selection and use of PPE following each training.	<input type="radio"/> Yes <input type="radio"/> No	
C. Facility regularly audits (monitors and documents) adherence to proper PPE selection and use.	<input type="radio"/> Yes <input type="radio"/> No	
D. Facility provides feedback from audits to personnel regarding their performance with selection and use of PPE.	<input type="radio"/> Yes <input type="radio"/> No	

- Possible selection/prioritization of assessments based on:
 - Facilities that have had outbreaks or complaints
 - Facilities that perform invasive procedures (e.g., epidural injections, surgeries, endoscopies, chemotherapy)
 - Facilities that have never received any type of certification, accreditation, or licensing visit

Volunteers Welcome for ICAR Assessments



- We are currently accepting volunteers who are interested in participating in the ICAR Assessments.
- Great way to improve understanding of infection control in different settings
- Great way to build relationships
- If you are interested please email the HAI team at: HAI.health@tn.gov



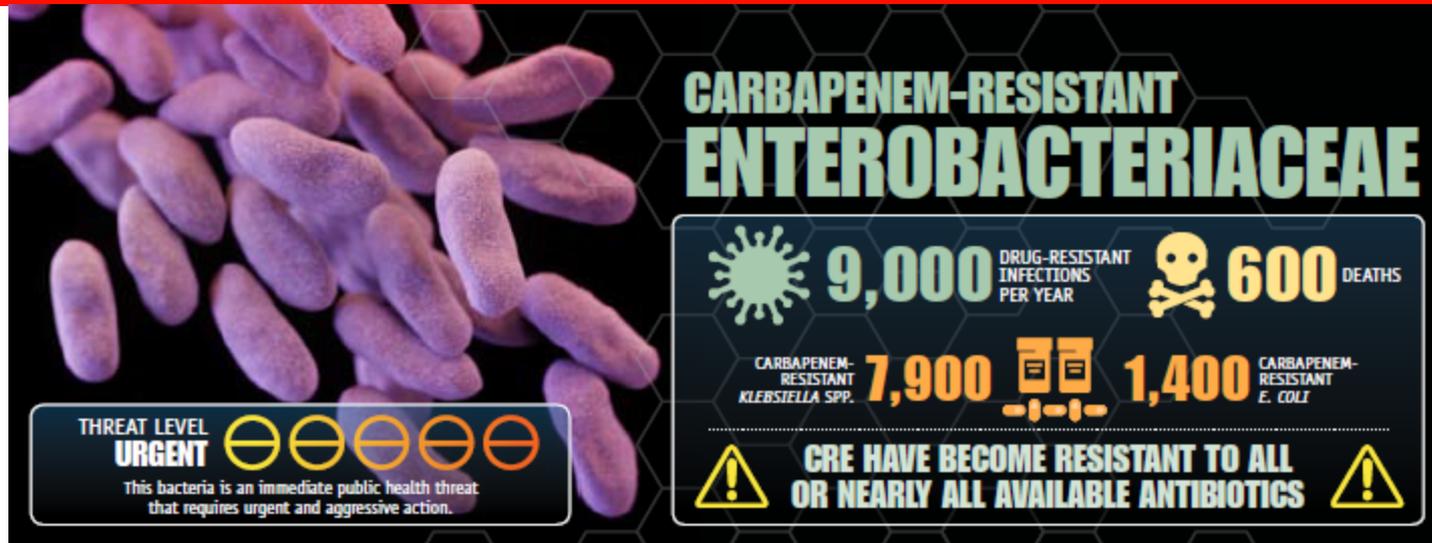
CRE

Acknowledgements

- Reporting partners: Labs, healthcare facilities, infection preventionists
- Hospital A
- Tennessee Department of Health [TDH]
 - ❑ Surveillance systems and informatics
 - ❑ Healthcare associated infections & antimicrobial resistance
 - ❑ Shannon Harney – CSTE fellow
 - ❑ State public health laboratory
- CDC
 - ❑ Technical support, esp. Alex Kallen, Brandi Limbago
 - ❑ Funding support : ELC, EIP, CSTE fellow

No conflicts of interest

Carbapenem-Resistant *Enterobacteriaceae*



- Family of common intestinal bacteria resistant to carbapenem antibiotics
- Blood stream infection mortality of 40-50%
- Resistance on mobile element → spread to other genera.

Coordinated Approach to Reduce MDROs

Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

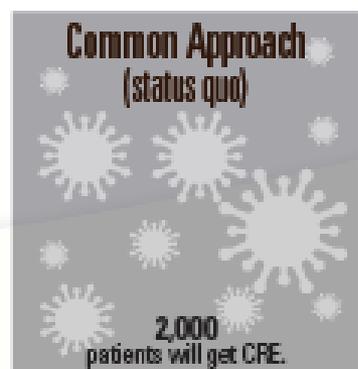
Early Release / Vol. 64

August 4, 2015

Vital Signs: Estimated Effects of a Coordinated Approach for Action to Reduce Antibiotic-Resistant Infections in Health Care Facilities — United States

More patients get infections when facilities do not work together.

(Example: 5 years after CRE enters 10 facilities in an area sharing patients)



CRE will impact **12%** of patients.

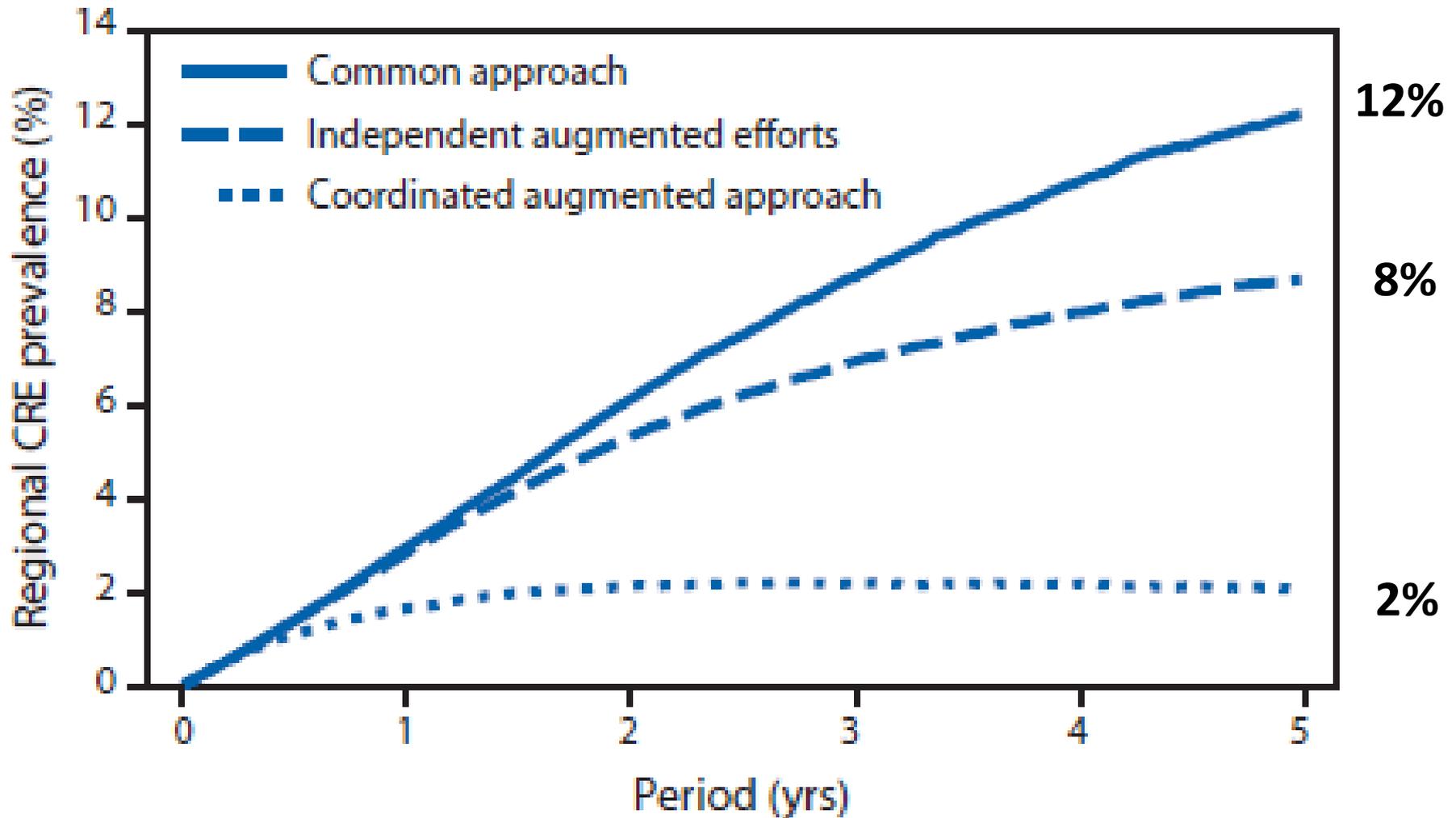


CRE will impact **8%** of patients.



CRE will impact **2%** of patients.

Vital Signs 2015: CRE 5 year, 10 facility model



Stopping Spread of Antibiotic Resistant Bacteria

Health care facility CEOs/ administrators can

- Implement systems to alert receiving facilities when transferring patients who have drug-resistant germs.
- Review and perfect infection control actions within your facility.
- Get leadership commitment to start or join HAI/antibiotic resistance prevention activities in the area.
- Connect with the public health department to share data about antibiotic resistance and other HAIs.
- Make sure clinical staff have access to prompt and accurate laboratory testing for antibiotic-resistant germs.

Prescribers and healthcare staff can

- Prescribe antibiotics correctly. Get cultures then start the right drug promptly at the right dose for the right duration. Know when to stop antibiotics.
- Be aware of antibiotic resistance patterns in your facility and area to protect your patients.
- Ask patients if they have recently received care in another facility.
- Follow hand hygiene and other infection control measures with every patient.

www.cdc.gov/handhygiene/

Coordinated Approach to Protect Patients

Facilities work together to protect patients.

Common Approach *(Not enough)*

- Patients can be transferred back and forth from facilities for treatment without all the communication and necessary infection control actions in place.

Independent Efforts *(Still not enough)*

- Some facilities work independently to enhance infection control but are not often alerted to antibiotic-resistant or *C. difficile* germs coming from other facilities or outbreaks in the area.
- Lack of shared information from other facilities means that necessary infection control actions are not always taken and germs are spread to other patients.

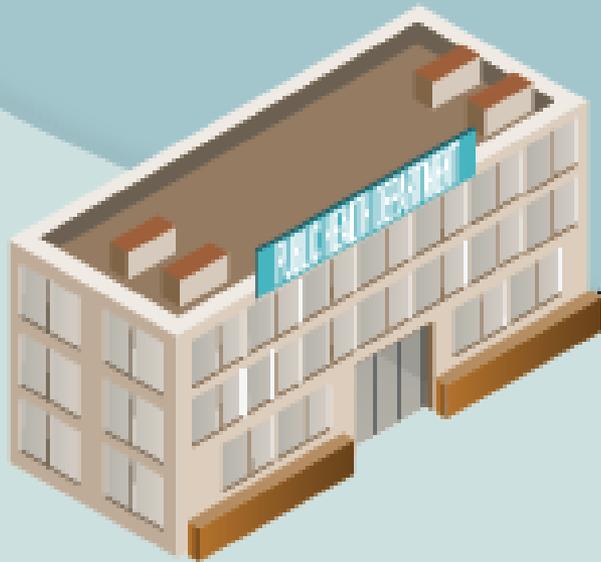
Coordinated Approach *(Needed)*

- Public health departments track and **alert** health care facilities to antibiotic-resistant or *C. difficile* germs coming from other facilities and outbreaks in the area.
- Facilities and public health authorities share information and implement shared infection control actions to stop spread of germs from facility to facility.



Public Health Should Lead Coordination

Take Steps Now! Public health departments should lead coordination.

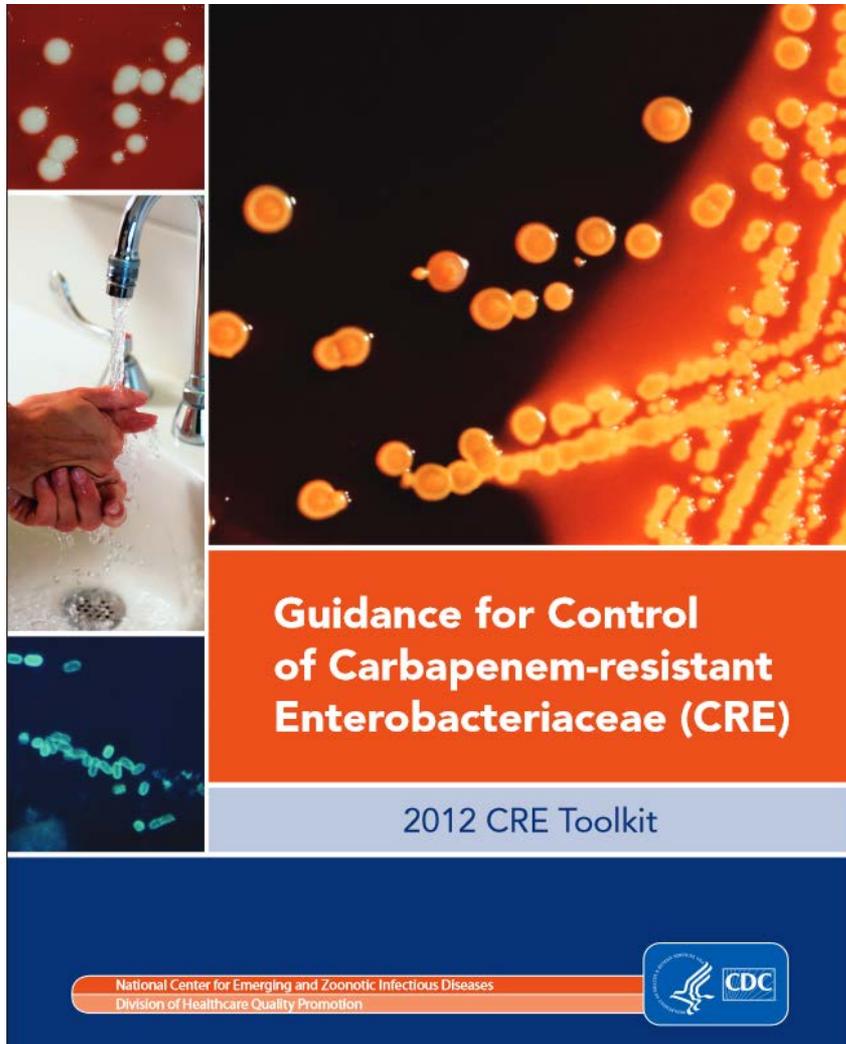


- Identify the health care facilities in the area and how they are connected.
- Dedicate staff to improve connections and coordination with health care facilities in the area.
- Work with CDC to use data for action to better prevent infections and improve antibiotic use in health care settings.
- Know the antibiotic resistance threats in the area and state.

2

SOURCE: CDC Vital Signs, August 2015.

CDC: 2012 CRE Toolkit



Regions with no CRE

Regions with few CRE

Regions where CRE are common

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

Case Definition: CRE



Council of State and Territorial Epidemiologists

15-ID-05

Committee: Infectious Disease

Title: Standardized definition for Carbapenem-resistant Enterobacteriaceae (CRE) and recommendation for sub-classification and stratified reporting

I. Statement of the Problem

Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE) are an emerging public health problem in the United States. Interventions to control the spread of CP-CRE require:

- 1) Comparable measures of CRE and CP-CRE both within and across public health jurisdictions to facilitate reporting of CRE and CP-CRE data to professional audiences, policy makers, and the public
- (2) Actionable epidemiology for healthcare facilities about CRE and CP-CRE detection and response

<http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/2015PS/2015PSFinal/15-ID-05.pdf>

Case Definition: CRE

2011-2014

[CDC 2012 toolkit, EIP]

- *Klebsiella* spp., or *E. coli*, or *Enterobacter* spp.
- **Non-susceptible** to at least one carbapenem (**excluding** ertapenem)
- Resistant to all of the third generation cephalosporins tested

2015

[CSTE , NHSN Lab ID]

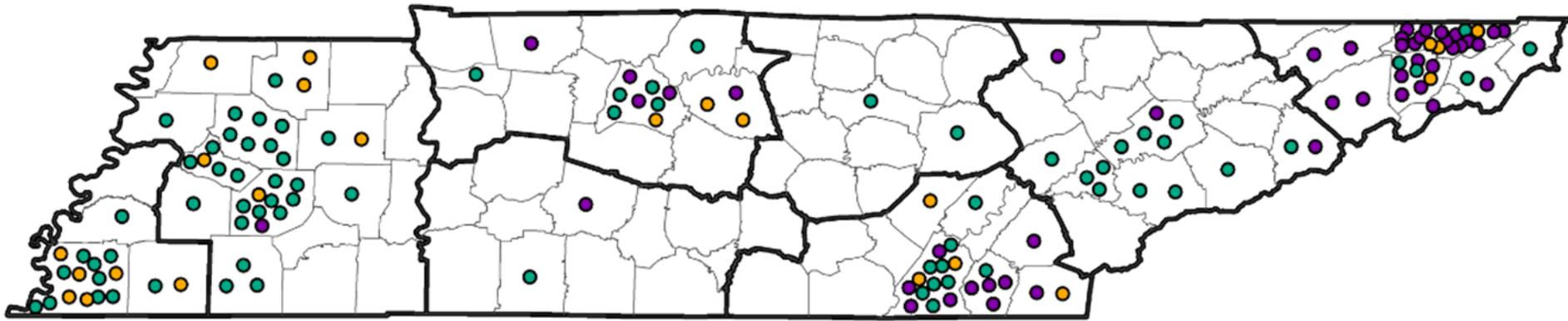
- *Klebsiella* spp., or *E. coli*, or *Enterobacter* spp.
- **Resistant** to at least one carbapenem (**including** ertapenem)
- ~~▪ Resistant to all of the third generation cephalosporins tested~~

Analysis of the TN Cases, 2014

● Case Criteria

- Specimen collection date: 01/01/2014 -12/31/2014
- Organism: *Klebsiella* spp., *E. coli*, or *Enterobacter* spp.
- Resistant to at least one carbapenem, including ertapenem (CSTE PS 15-ID-05; NHSN LabID 2015)
- Numeric MIC value using the 2012 CLSI breakpoints
 - ≥ 4 mcg/ml imipenem, meropenem, doripenem
 - ≥ 2 mcg/ml ertapenem
- Each person was counted once per organism for the calendar year (did not count multiple specimens > 30 days apart)

Cases by Genera and County of Residence, 2014



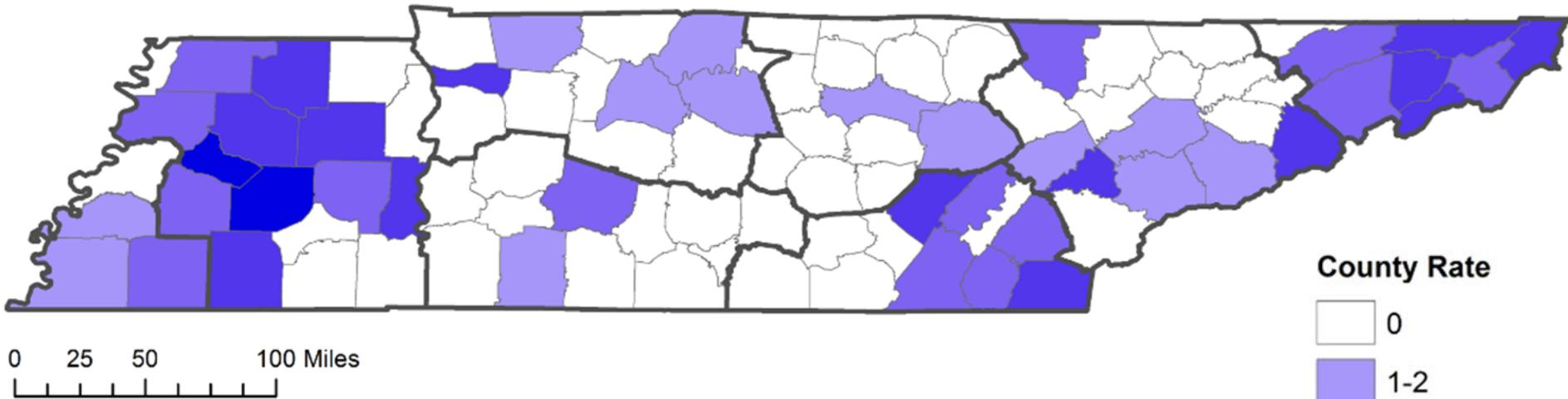
0 25 50 100 Miles

Cases are placed randomly within the boundaries of the county of residence. (n=143)

Genera

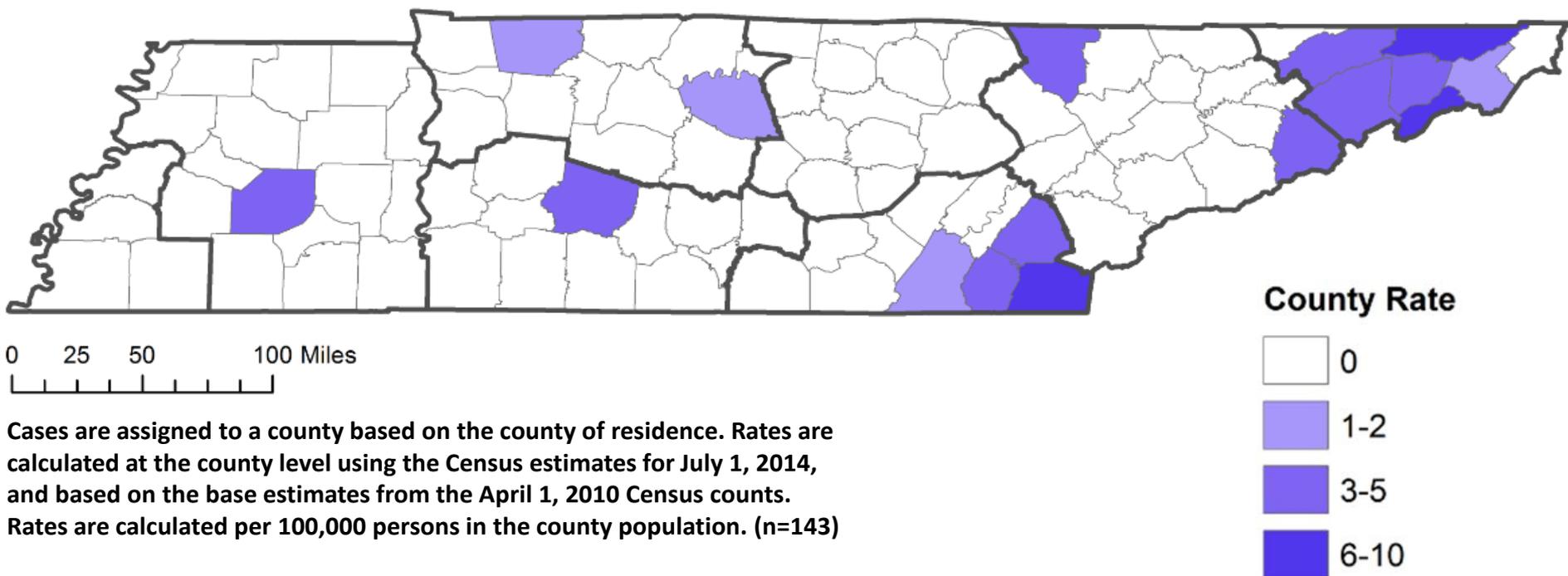
- Enterobacter spp.
- Escherichia coli
- Klebsiella spp.

Annual Incidence Rate by County: All Cases (2014)

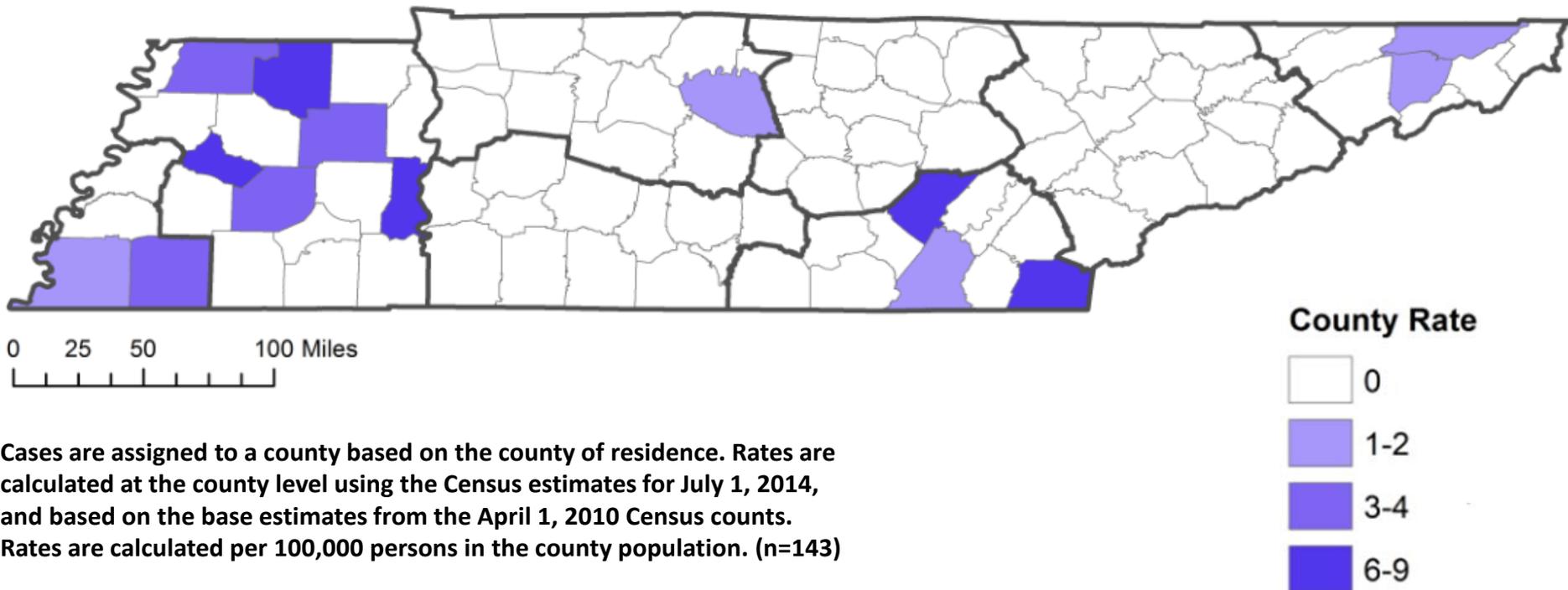


Cases are assigned to a county based on the county of residence. Rates are calculated at the county level using the Census estimates for July 1, 2014, and based on the base estimates from the April 1, 2010 Census counts. Rates are calculated per 100,000 persons in the county population. (n=143)

Annual Incidence Rate by County (2014): *Klebsiella* spp.

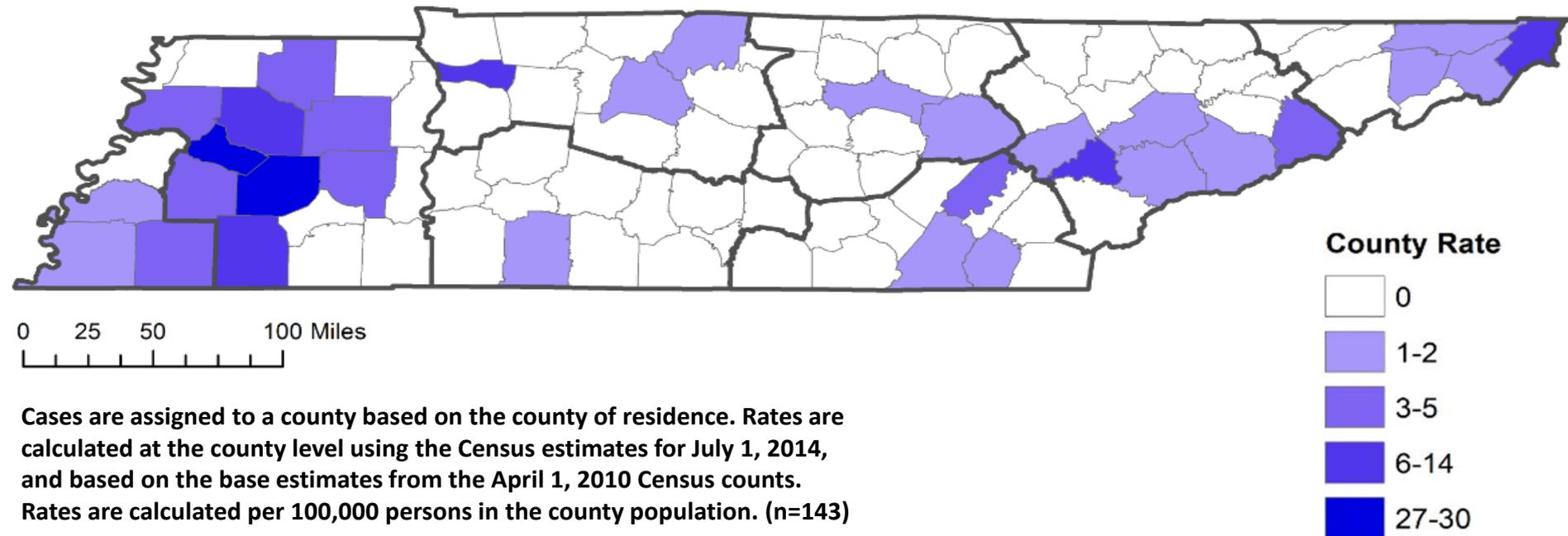


Annual Incidence Rate by County (2014): *Escherichia coli*

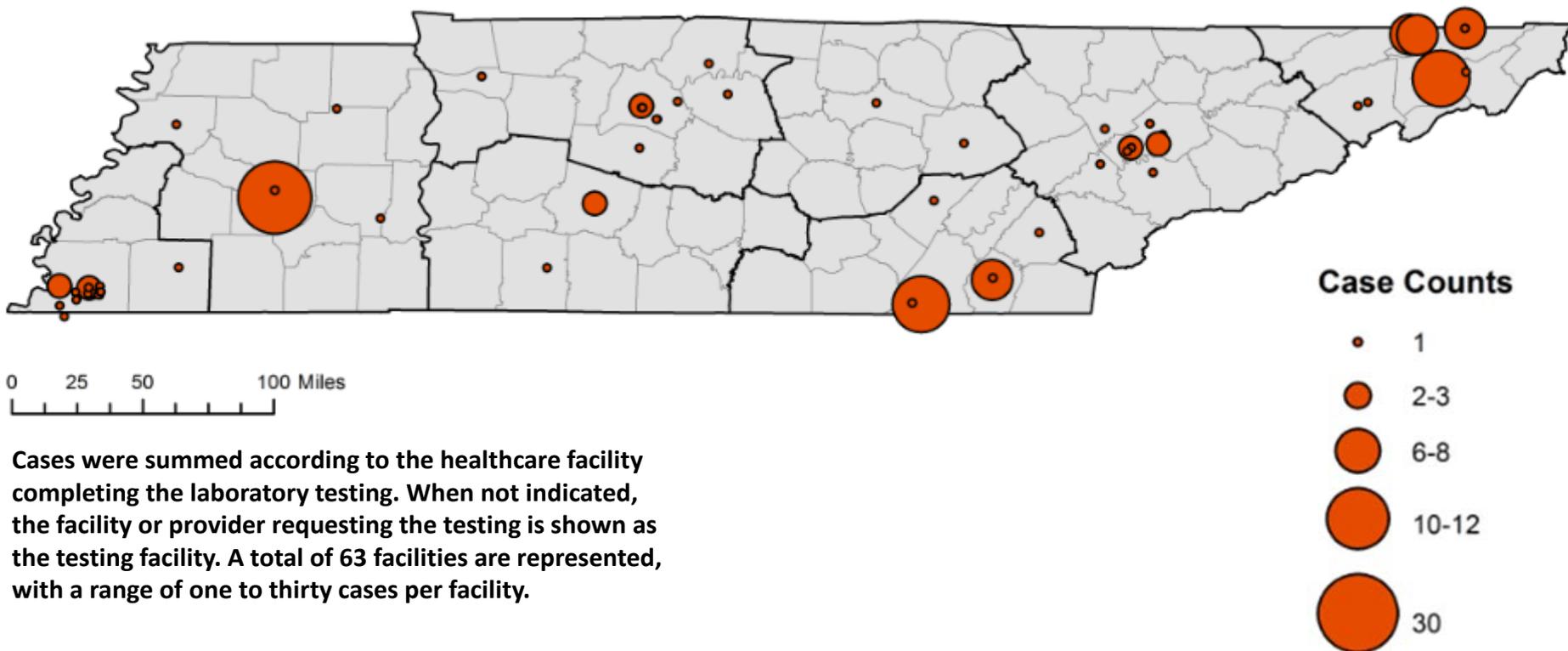


Cases are assigned to a county based on the county of residence. Rates are calculated at the county level using the Census estimates for July 1, 2014, and based on the base estimates from the April 1, 2010 Census counts. Rates are calculated per 100,000 persons in the county population. (n=143)

Annual Incidence Rate by County (2014): *Enterobacter* spp.



Cases by Healthcare Facility Laboratory, 2014



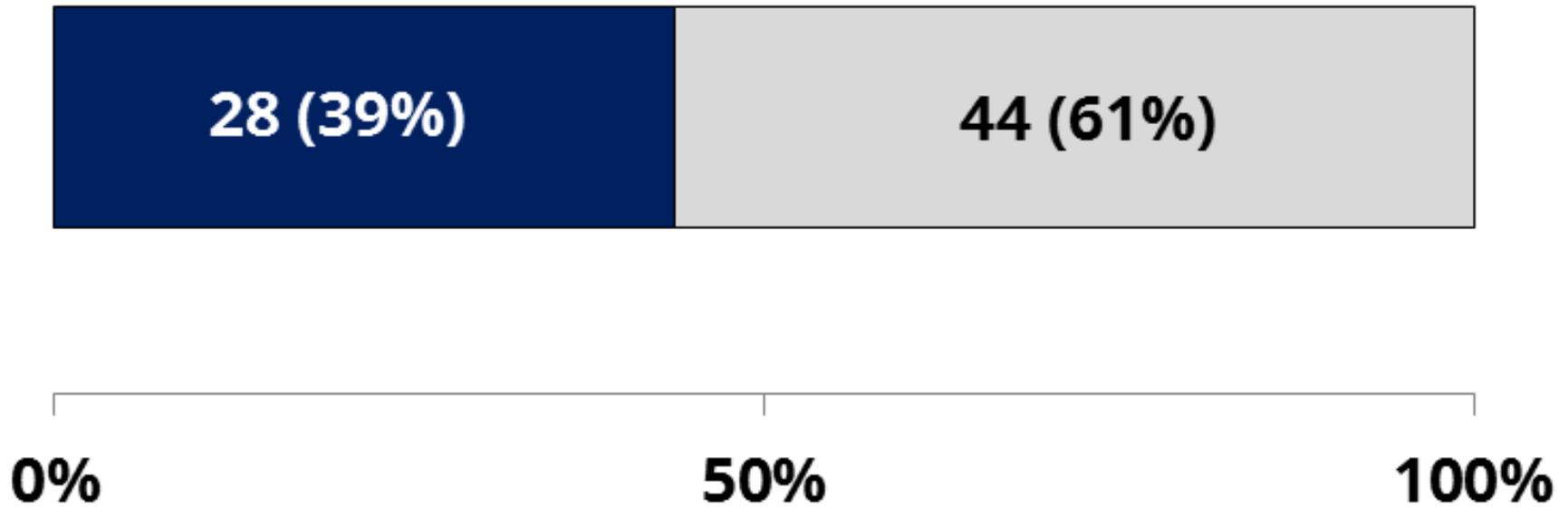
Cases were summed according to the healthcare facility completing the laboratory testing. When not indicated, the facility or provider requesting the testing is shown as the testing facility. A total of 63 facilities are represented, with a range of one to thirty cases per facility.

Analysis for Hospital A, 2014

Cases of CRE by Admission Status, Hospital A, 2014 (n=72)

■ Inpatient/ED

□ Outpatient



Analysis for Hospital A, 2014

Cases of CRE by Genus, Hospital A, 2014 (n=72)

■ ENTEROBACTER

■ ESCHERICHIA

■ KLEBSIELLA



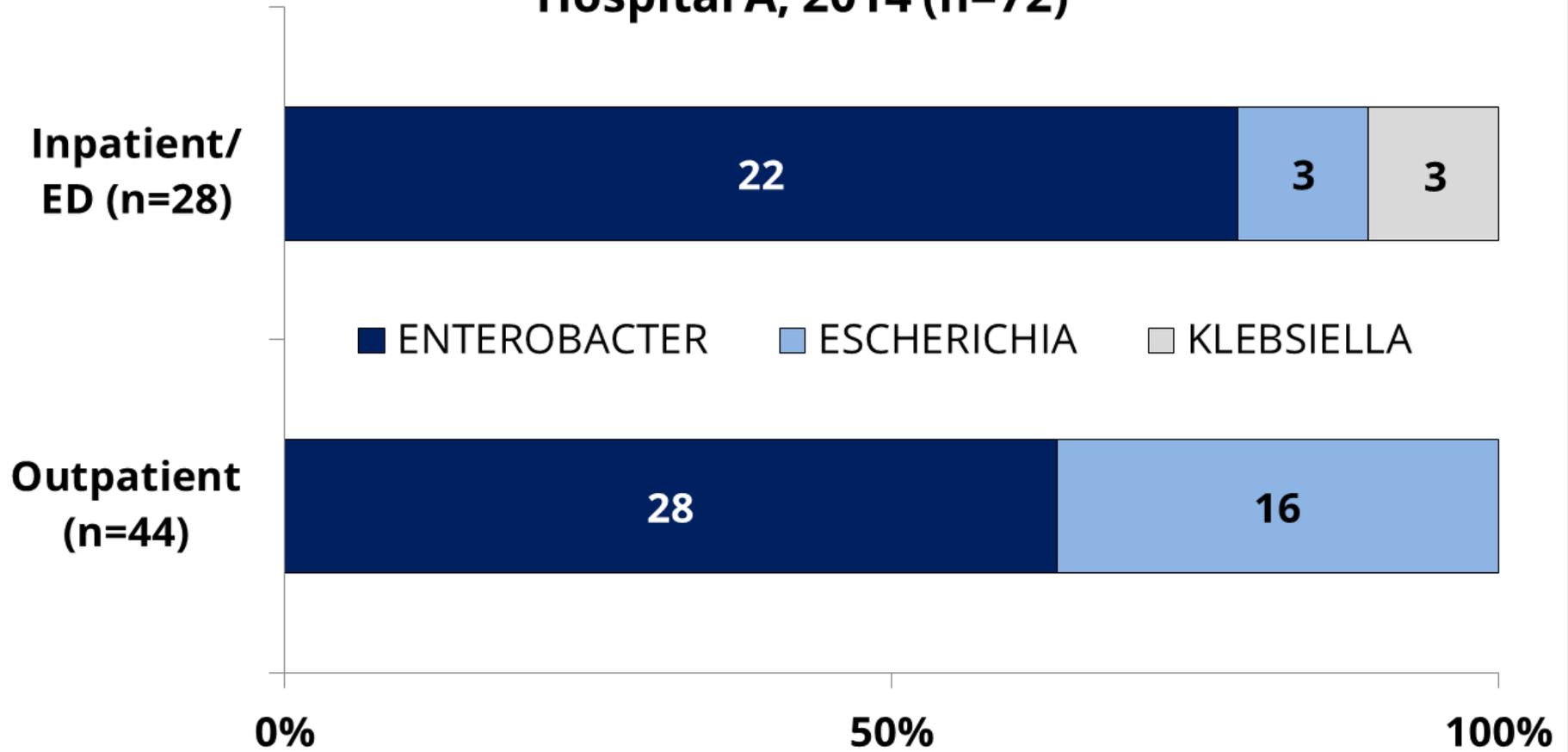
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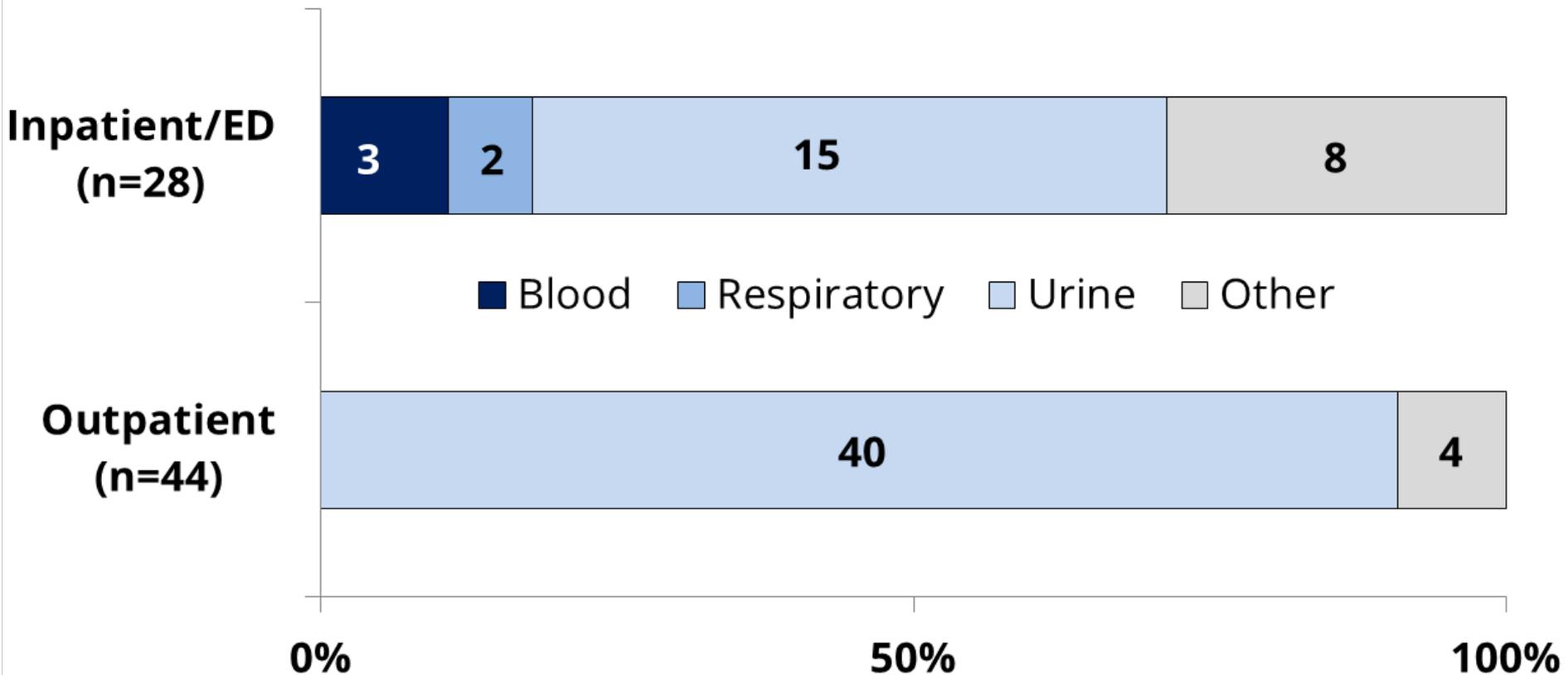
Analysis for Hospital A, 2014

Cases of CRE by Admission Status and Organism Genus, Hospital A, 2014 (n=72)



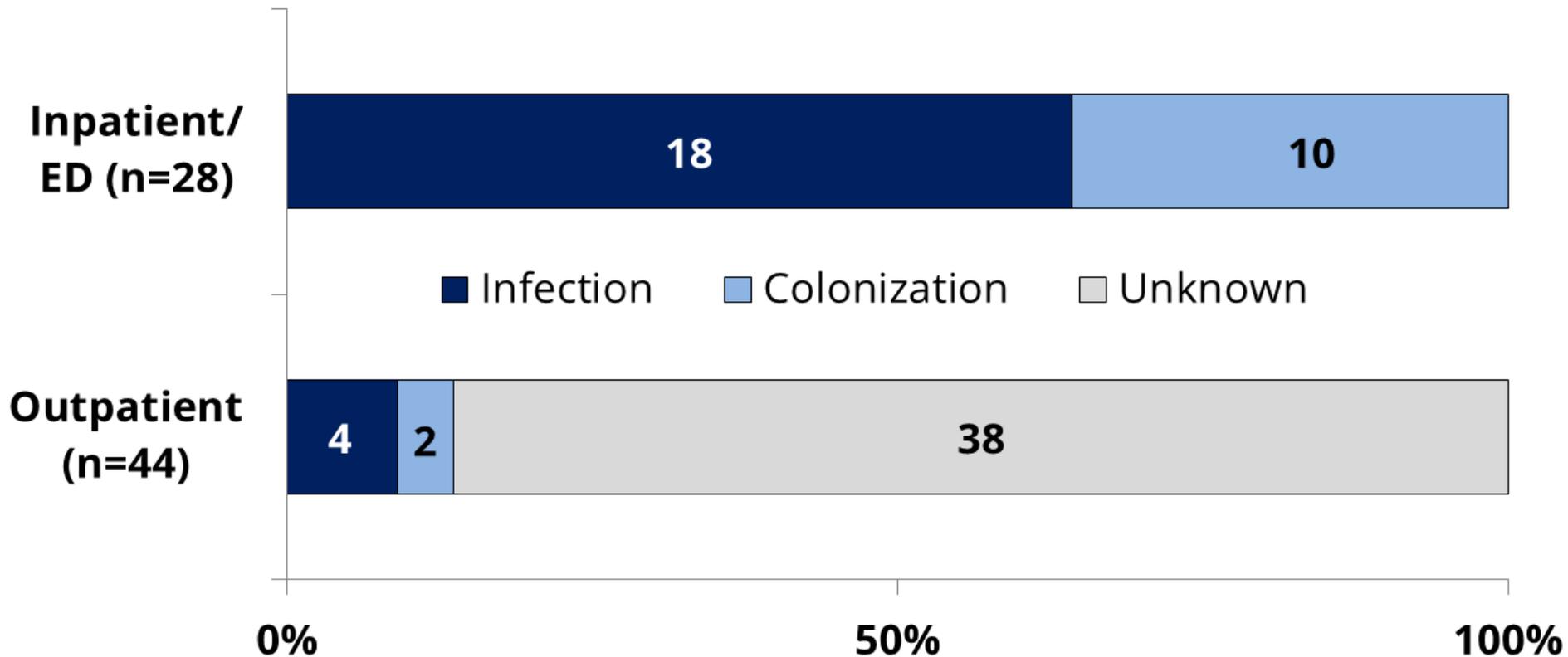
Analysis for Hospital A, 2014

Cases of CRE by Admission Status and Culture Type, Hospital A, 2014 (n=72)



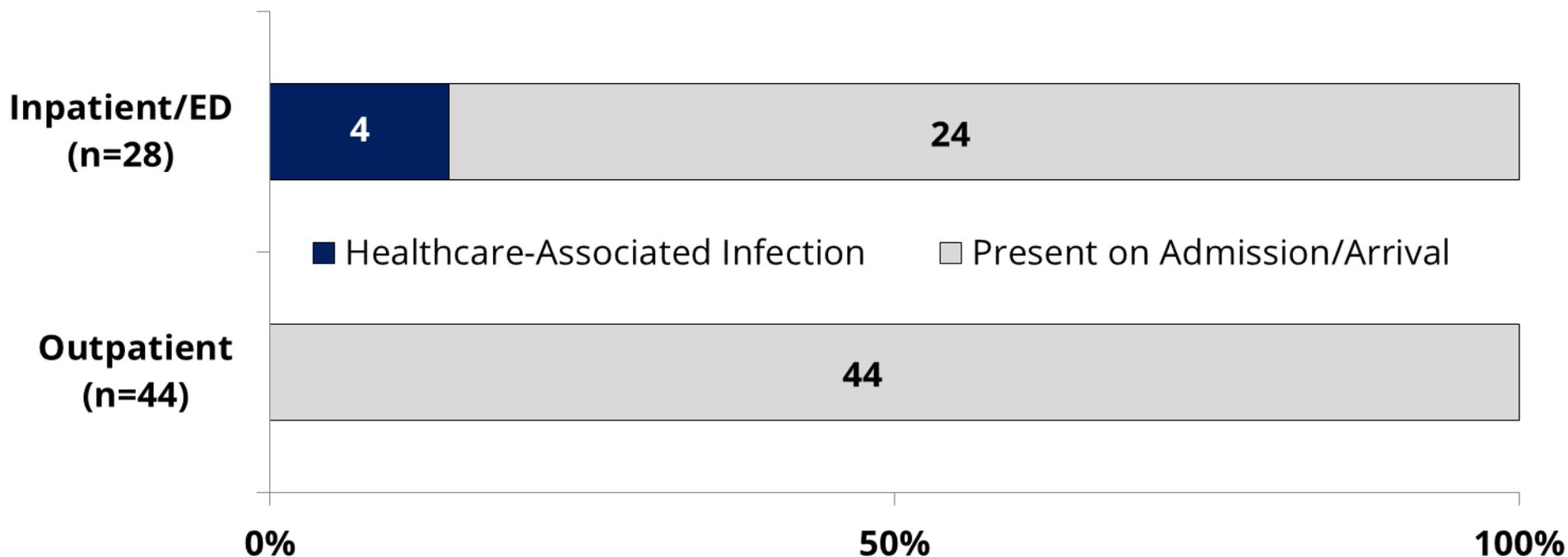
Analysis for Hospital A, 2014

Cases of CRE by Admission Status and Infection Type, Hospital A, 2014 (n=72)



Analysis for Hospital A, 2014

Cases of CRE by Admission Status and Infection Setting, Hospital A, 2014 (n=72)



Analysis for Hospital A, 2014

Cases of CRE by Nursing Home Status, Hospital A, 2014 (n=72)

■ Nursing Home Resident □ Non-Resident



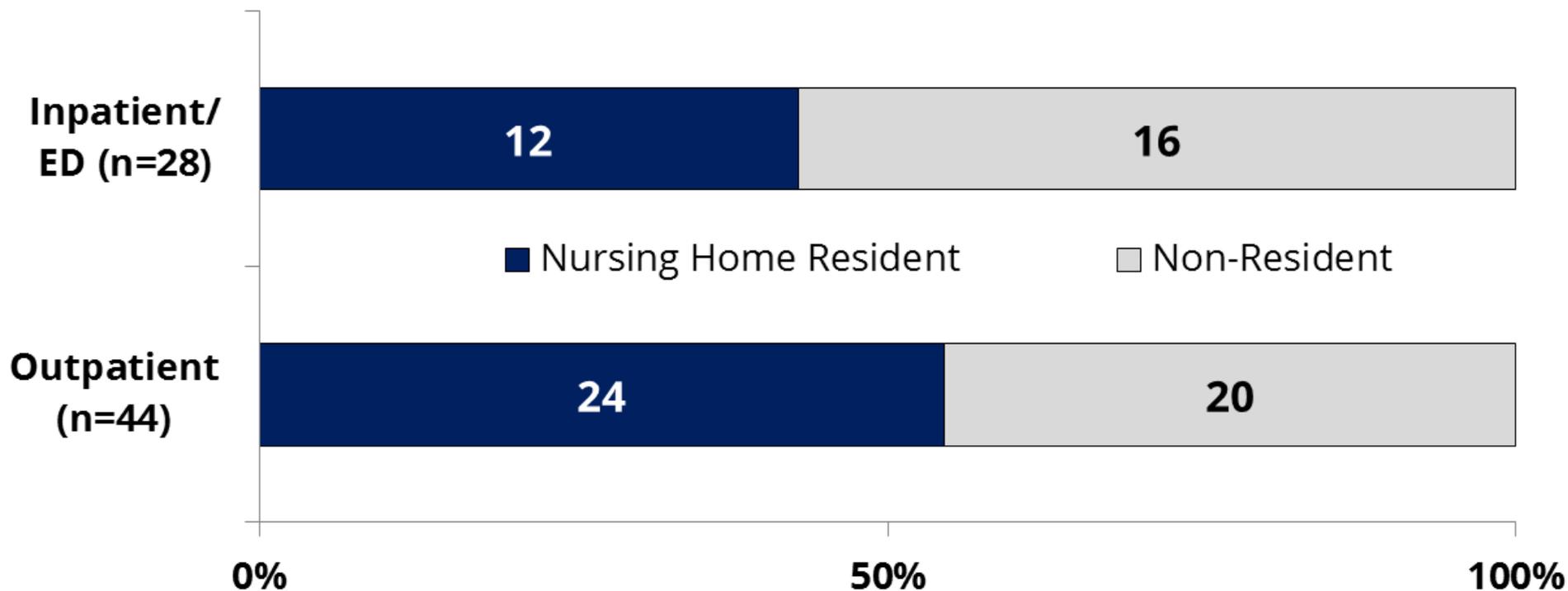
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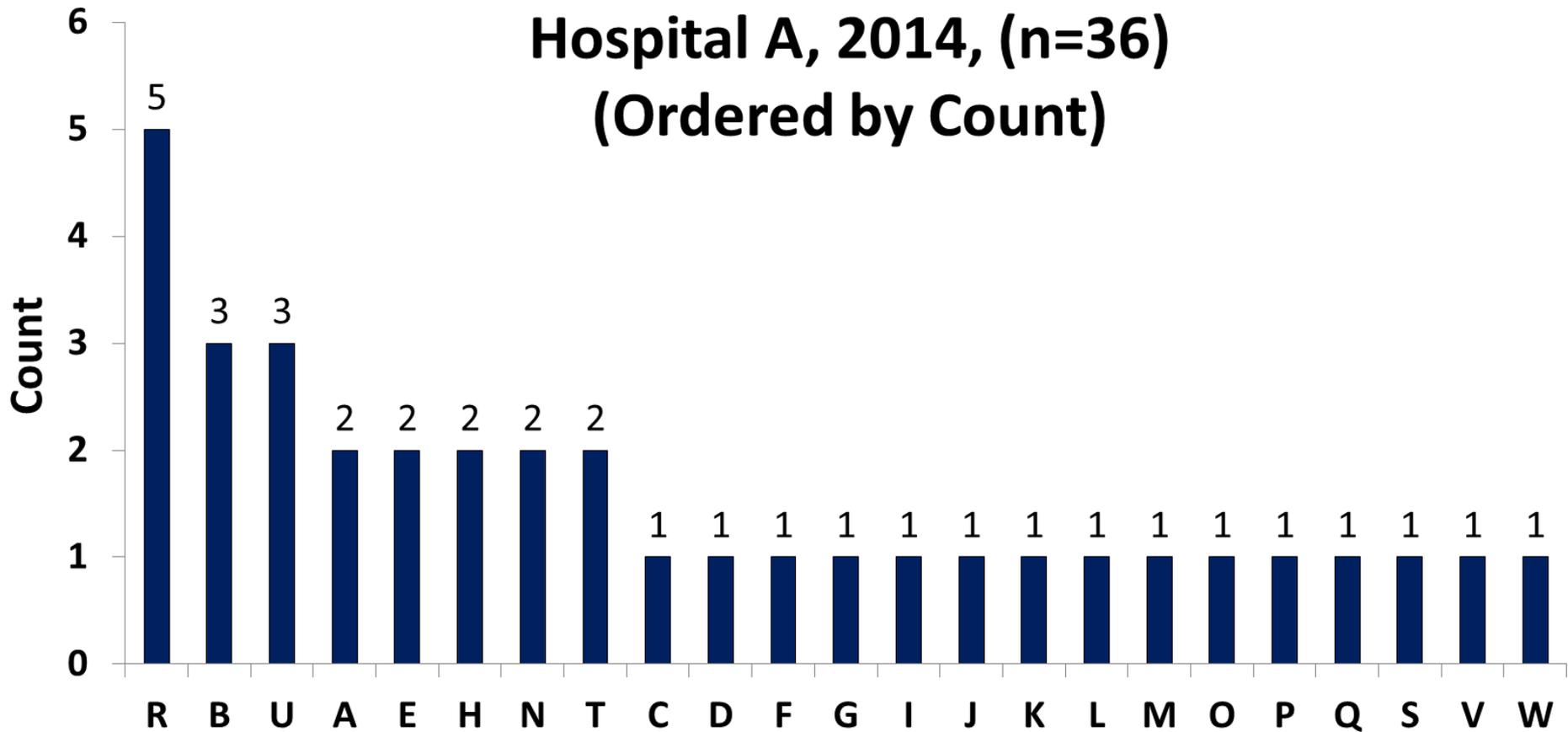
Analysis for Hospital A, 2014

Cases of CRE by Admission Status and Nursing Home Status, Hospital A, 2014 (n=72)



Analysis for Hospital A, 2014

**Cases of CRE by Nursing Home,
Hospital A, 2014, (n=36)
(Ordered by Count)**

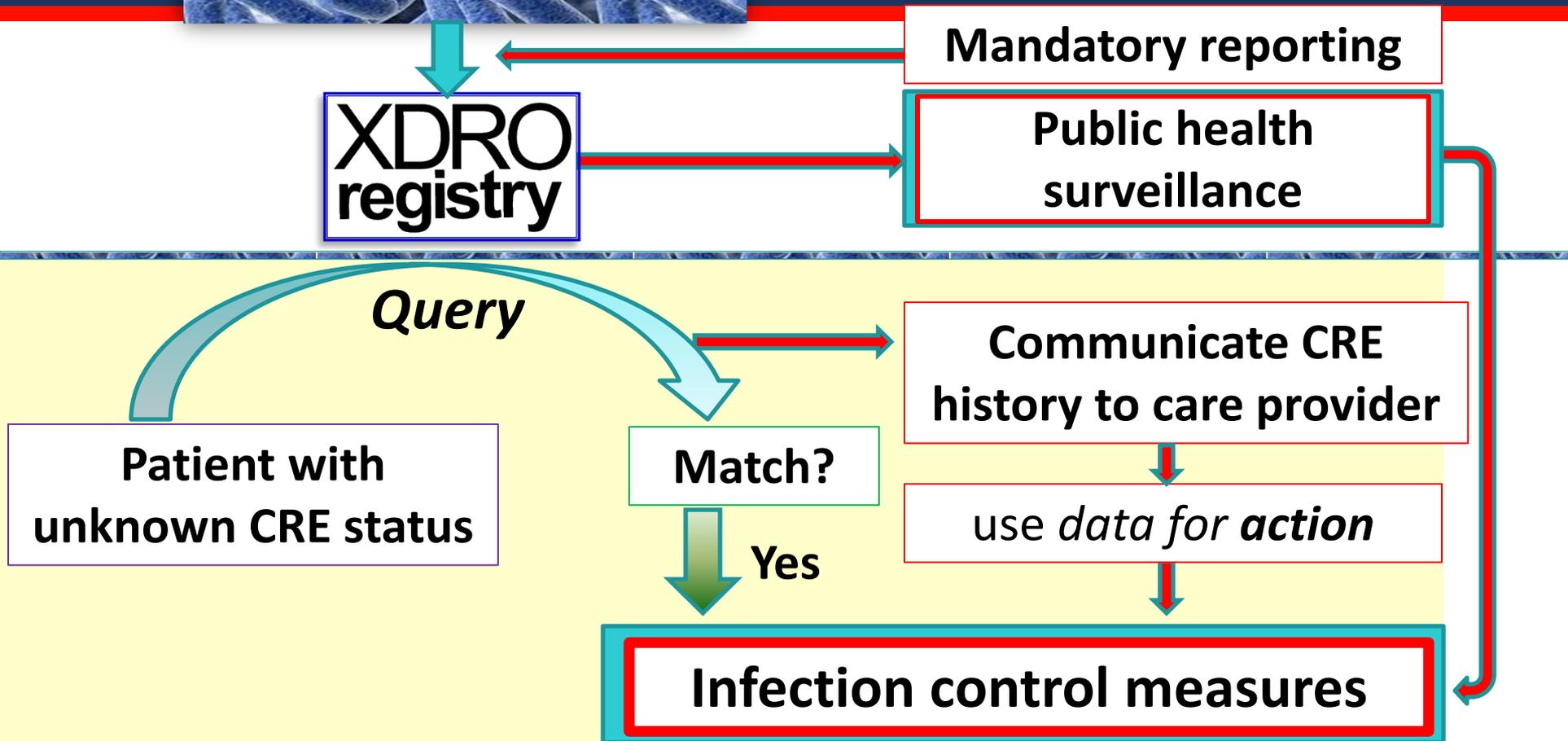


Next Steps: Epidemiology Capacity

- **Ongoing sharing of data for situational awareness and targeted interventions**
- **Expand the case report form (NBS) variables to focus on facility connectivity**
- **De-duplicate names of healthcare facilities and laboratories to improve analysis by healthcare facility**
- **Explore leveraging NBS data to create a XDRO registry similar to Illinois**

CRE identified

XDRO registry - Illinois



XDRO registry is a collaborative effort between IDPH, Chicago CDC Prevention Epicenter, & Medical Research Analytics and Informatics Alliance (MRAIA)

CRE identified

Conceptual adaptation for TN

NBS

XDRO registry

Mandatory reporting

Public health surveillance

Query

Patient with unknown CRE status

Match?

Yes

Communicate CRE history to care provider

use *data for action*

Infection control measures

Next Steps: Epidemiology Capacity

- **Improve understanding of interfacility connectivity (e.g., transfers from other hospitals or nursing homes)**
 - In Tennessee and neighboring states
 - Expand the reporting requirement from TN residents to anyone seeking care in a TN healthcare facility
- **Target interventions more specifically**
 - If a subset of facilities are highly interconnected (sharing of patients)
 - Facilities that appear to be amplifying/ disseminating CRE to other facilities in region

Next Steps: Laboratory Capacity

- **Expand resistance mechanism testing at State Public Health Laboratory**

**Resistant to at least
one carbapenem**

Carba NP plus OXA-48

KPC + NDM



Next Steps: Epi/ Lab Capacity

- **Classify (using CSTE position statement 15-ID-05):**
 - **Likely carbapenemase producing [CP-CRE]**
 - **Likely not CP-CRE**
 - **Unknown CP status**

- **Create maps:**
 - **Likely CP-CRE**
 - **By resistance mechanism (e.g., KPC, NDM)**



Clostridium difficile

ORIGINAL ARTICLE

Burden of *Clostridium difficile* Infection in the United States

- **453,000 incident infections in 2011**
 - First recurrences 83,000 (CO: 13.5%; HO: 20.9%)
 - Deaths (30 days): 29,300 (CO: 1.3%; HO: 9.3%)
 - Gender: F>M (rate ratio [RR]: 1.26)
 - Race: White (RR: 1.72)
 - Ages 65+ (RR: 8.65)

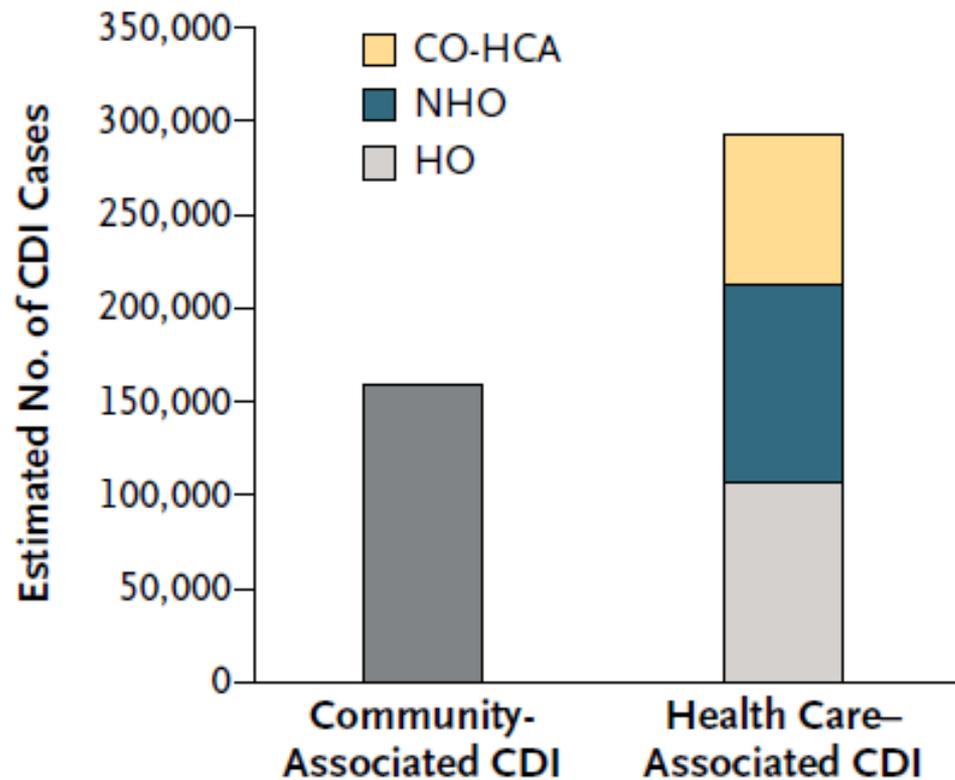


Figure 1. Estimated U.S. Burden of *Clostridium difficile* Infection (CDI), According to the Location of Stool Collection and Inpatient Health Care Exposure, 2011.

Of the estimated cases of community-associated CDI, 82% were estimated to be associated with outpatient health care exposure.¹¹ CO-HCA denotes community-onset health care-associated infection, HO hospital onset, and NHO nursing home onset.

**Only 24% had onset in hospitals
~ 107,600 hospital onset infections**

65.8% were healthcare associated

82% of community associated CDI visited outpatient healthcare settings: doctors or dentist's office

National Targets for CARB: 2020

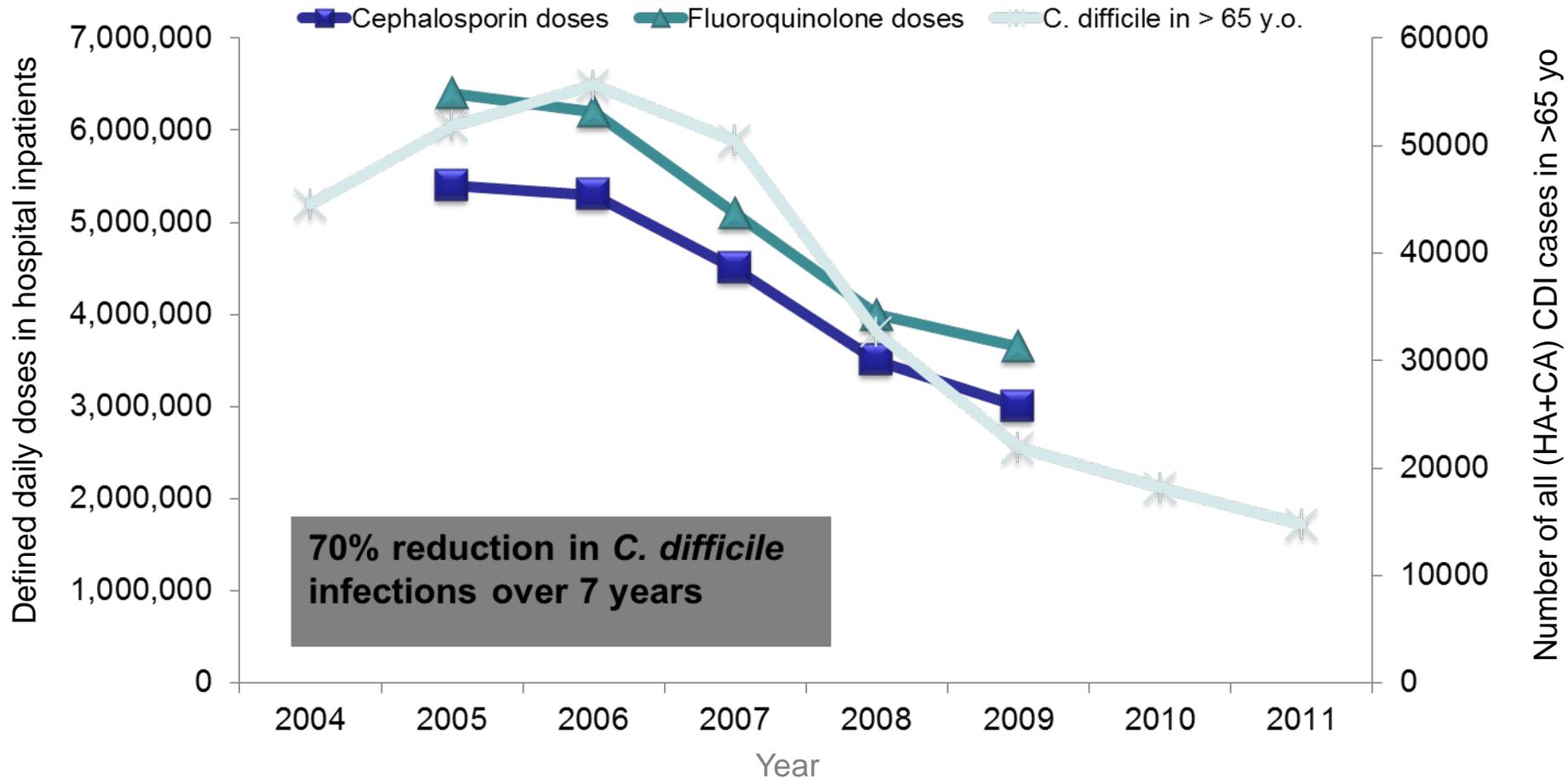
- **50% decrease in overall *C. difficile* (vs 2011)**
- **60% decrease in CRE acquired during hospitalization (vs 2011)**
- **Maintain prevalence of ceftriaxone resistant *N. gonorrhoea* <2% (vs 2013)**

HAZARD LEVEL

URGENT



Impact of Reductions in Antibiotic Prescribing on *C. difficile* in England

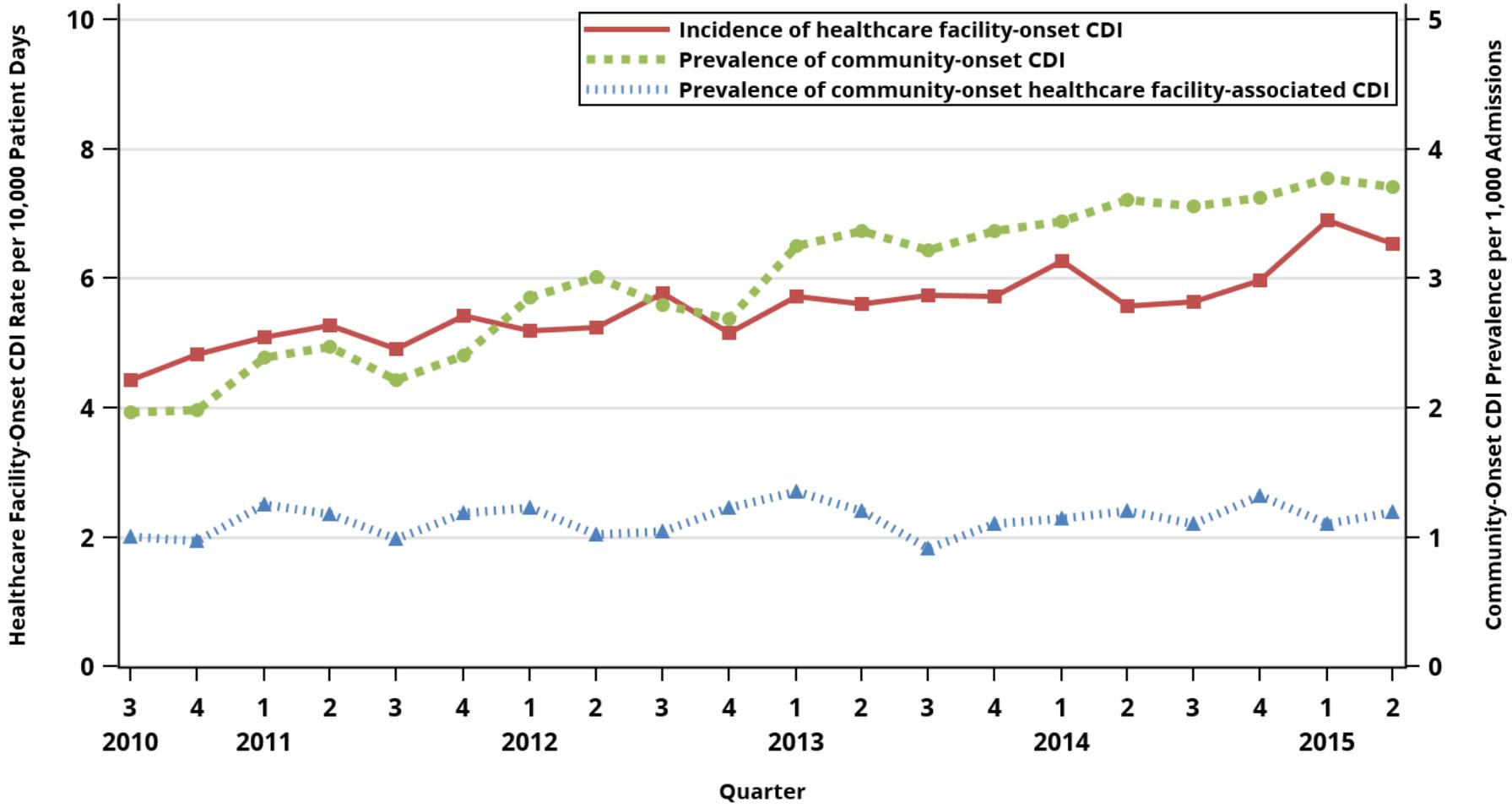


Ashiru-Oredope et al. J Antimicrob Chemother 2012; 67 Suppl 1: i51–i63

Wilcox MH et al. Clinical Infectious Diseases 2012;55(8):1056–63

<http://www.hpa.org.uk/web/HPAweb&Page&HPAwebAutoListName/Page/1179745282388>

CDI LabID Events (Acute Care) Rates, TN



Data Reported as of September 9, 2015



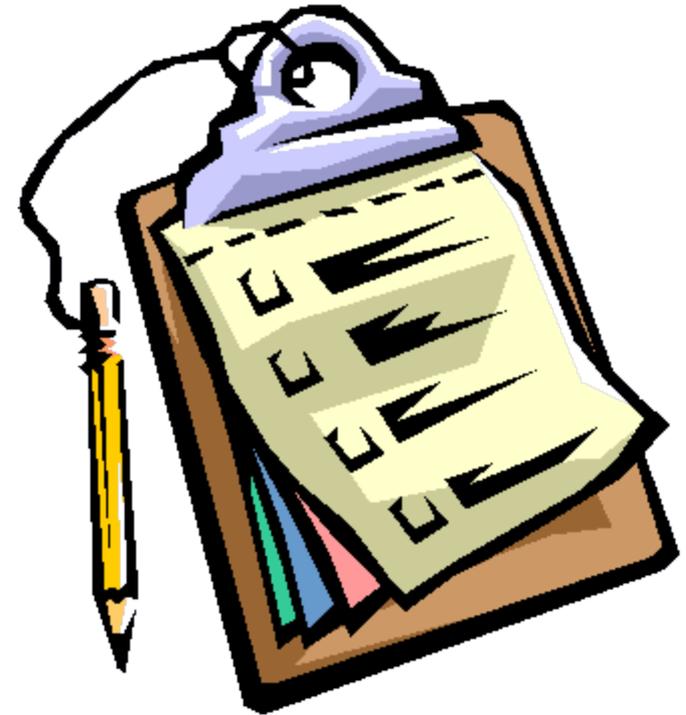
TN CDI Prevention Collaborative

A systematic
approach



TN Prevention Collaborative

- **Hospital Facility Assessment**
 - **Determination of potential gaps in infection prevention**
 - **General Infrastructure, Capacity, and Processes**
 - **Early Detection**
 - **Contact Precautions / Hand Hygiene**
 - **Environmental Cleaning**
 - **Antibiotic Stewardship**
 - **Laboratory Practices**



TN Prevention Collaborative

- **LTCF Facility Assessment**
 - Knowledge and Competency
 - Infection Prevention Policies and Infrastructure
 - Monitoring Practices
- **Within all three areas, early identification and rapid containment practices will be assessed.**



Assessment of Current CDI Prevention Activities:

EARLY IDENTIFICATION AND CONTAINMENT OF CDI

Advancing Excellence in America's Nursing Homes is a national campaign that began in September 2006. Our goal is to improve the quality of care and life for the 1.5 million people served by nursing homes in the United States. Nursing homes and their staff, along with residents and their families and consumers can join in this effort by working on the campaign goals that are designed to improve quality. We do this by providing tools and resources to help nursing homes achieve their quality improvement goals. To learn more about the campaign, visit www.nhqualitycampaign.org.

Current activities survey:

SECTION 1. KNOWLEDGE AND COMPETENCY		YES	NO	N/A
	Early identification			
Q1	Do direct care personnel* identify and communicate new or worsening diarrhea?			
Q2	Do nursing personnel* obtain a stool specimen for <i>C. difficile</i> testing only when a resident is having watery diarrhea?			
Q3	Do nursing personnel appropriately collect and submit a stool specimen for <i>C. difficile</i> testing?			
Q4	Do medical personnel* know the <i>C. difficile</i> testing (e.g., EIA "toxin" vs. molecular "PCR") being performed by the laboratory?			
	Rapid containment			
Q5	Do healthcare personnel* know the precautions used to prevent the spread of <i>C. difficile</i> ?			

TN Prevention Collaborative

- **Targeted Toolkit for each facility**
 - **Early Detection and Isolation**
 - **Appropriate Testing**
 - **Contact Precautions / Hand Hygiene**
 - **Environmental Cleaning**
 - **Antibiotic Stewardship**
- **Rather than tackling all areas within each facility, we will determine their largest gaps and address those first.**



TN Prevention Collaborative

- The biggest issue we'd like to address is the communication between acute care hospitals and long-term care facilities
- Adding information to discharge summaries (medication indications, contact precaution rationale, etc.)



TN Prevention Collaborative

LTCF Plan of Action

- **LTCFs will be enrolled into NHSN with our guidance and support**
- **LTCFs will be encouraged to report CDI data to NHSN**
- **Education provided on the correct diagnosis and management of UTIs (Antibiotic Stewardship)**



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Thank You!

