SOUTH DAKOTA DEPARTMENT OF HEALTH

Trends in Drug Resistant Organisms – Health Department's Role in Preventing and Responding

September 13, 2018

Joshua Clayton, PhD, MPH

Disclosure

I disclose that I have nothing to disclose.

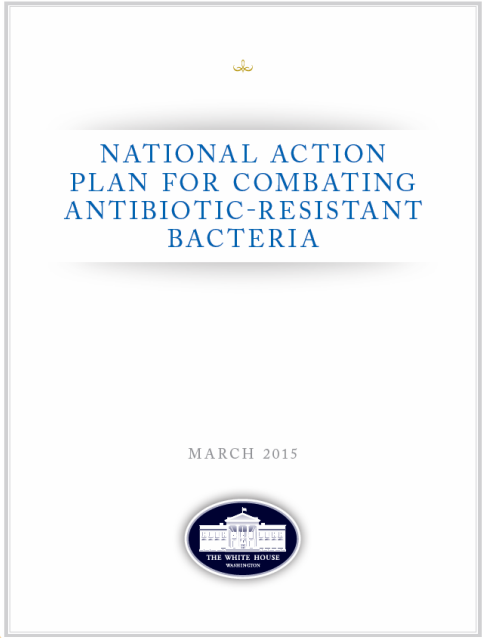
Outline

- Renewed focus on antibiotic resistance
- Strategies to prevent and control
- What are multi-drug resistant organisms?
- Surveillance in the US and SD
- Response activities
- Resources

Renewed Focus

- Purpose to guide activities by the U.S. Government to address urgent and serious drug-resistant threats that affect people in the U.S. and around the world

- Goals
  1. Slow emergence of resistant bacteria
  2. Strengthen One Health surveillance
  3. Advance diagnostic tests to identify resistant bacteria
  4. Accelerate new antibiotic development
  5. Improve international collaboration

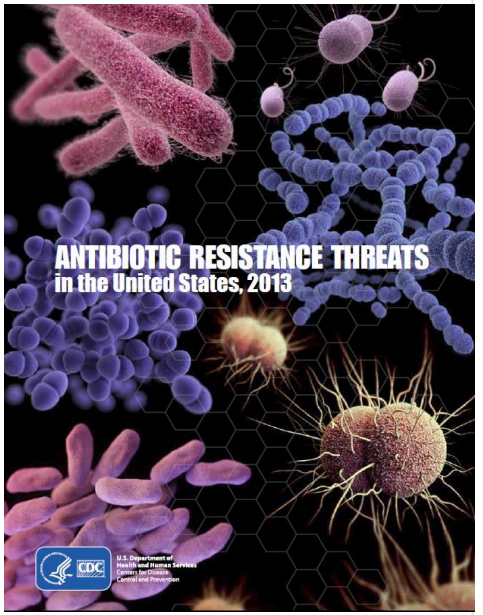


CDC Focus

- Purpose to increase awareness of threat antibiotic resistance poses and encourage action

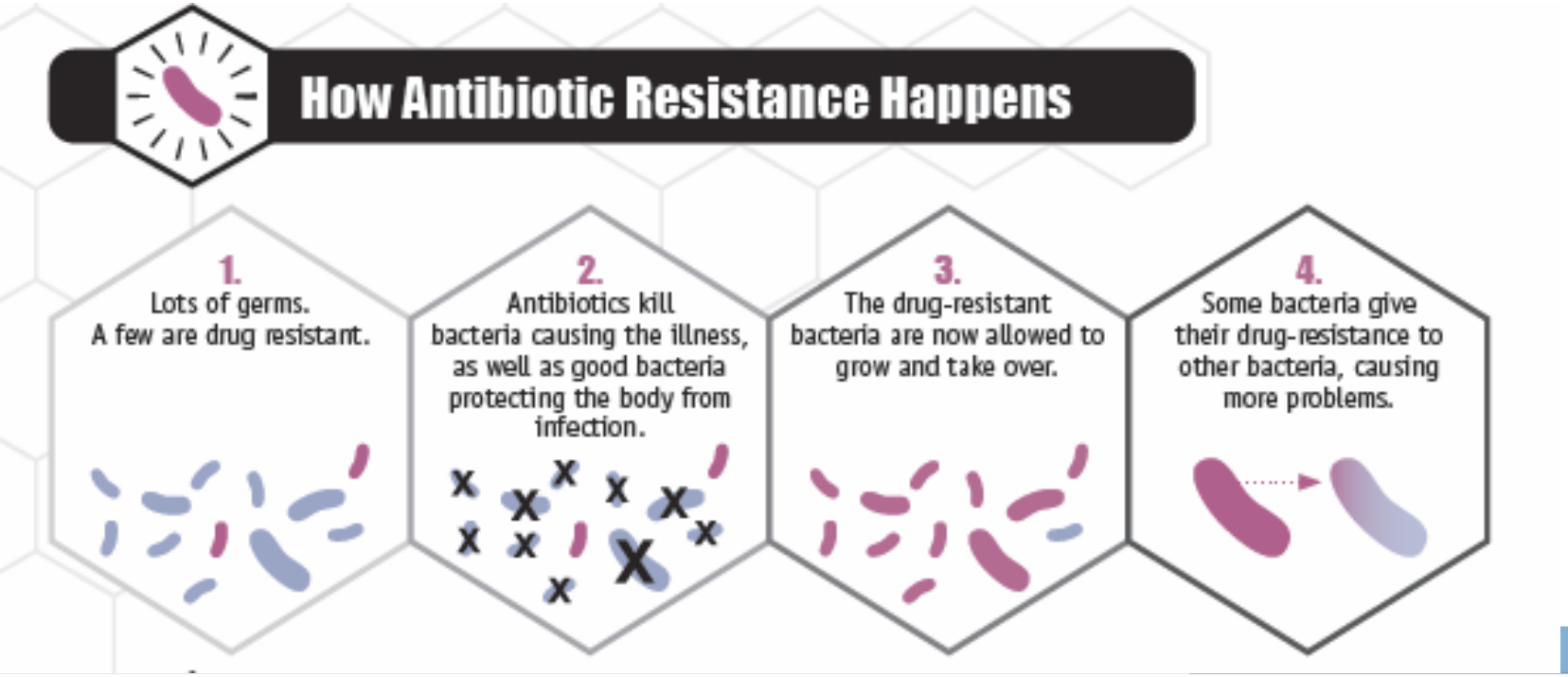
- >2 million individuals ill annually with 23,000 deaths
- $20 billion in excess direct healthcare costs
- $15 billion in lost productivity

- Categorized CDC concern levels
  - Concerning
  - Serious
    - Fluconazole-resistant *Candida*
  - Urgent
    - Carbapenem-resistant Enterobacteriaceae



Four core actions to fight drug resistant infections

- Preventing infections, preventing the spread of resistance
- Track resistant bacteria
- Improve antibiotic prescribing/stewardship
- Develop new antibiotics and diagnostic tests



HAZARD LEVEL
URGENT

These are high-consequence antibiotic-resistant threats because of significant risks identified across several criteria. These threats may not be currently widespread but have the potential to become so and require urgent public health attention to identify infections and to limit transmission.

Clostridium difficile (C. difficile), Carbapenem-resistant Enterobacteriaceae (CRE), Drug-resistant *Neisseria gonorrhoeae* (cephalosporin resistance)

HAZARD LEVEL
SERIOUS

These are significant antibiotic-resistant threats. For varying reasons (e.g., low or declining domestic incidence or reasonable availability of therapeutic agents), they are not considered urgent, but these threats will worsen and may become urgent without ongoing public health monitoring and prevention activities.

Multidrug-resistant *Acinetobacter*, Drug-resistant *Campylobacter*, Fluconazole-resistant *Candida* (a fungus), Extended spectrum β-lactamase producing Enterobacteriaceae (ESBLs), Vancomycin-resistant *Enterococcus* (VRE), Multidrug-resistant *Pseudomonas aeruginosa*, Drug-resistant Non-typhoidal *Salmonella*, Drug-resistant *Salmonella* Typhi, Drug-resistant *Shigella*, Methicillin-resistant *Staphylococcus aureus* (MRSA), Drug-resistant *Streptococcus pneumonia*, Drug-resistant tuberculosis (MDR and XDR)

HAZARD LEVEL
CONCERNING

These are bacteria for which the threat of antibiotic resistance is low, and/or there are multiple therapeutic options for resistant infections. These bacterial pathogens cause severe illness. Threats in this category require monitoring and in some cases rapid incident or outbreak response.

Vancomycin-resistant *Staphylococcus aureus* (VRSA), Erythromycin-resistant *Streptococcus* Group A, Clindamycin-resistant *Streptococcus* Group B

Gaps in Knowledge

- Limited capacity to detect and respond
- No systemic international surveillance
- Antibiotic use in healthcare and agriculture not systematically collected
- Programs to improve antibiotic prescribing not widely used
- Limited availability of advanced molecular diagnostics for identification

Limited capacity to detect and respond

CDC's Antibiotic Resistance (AR) Solutions Initiative

Investing to Defend the United States against Antibiotic Resistance

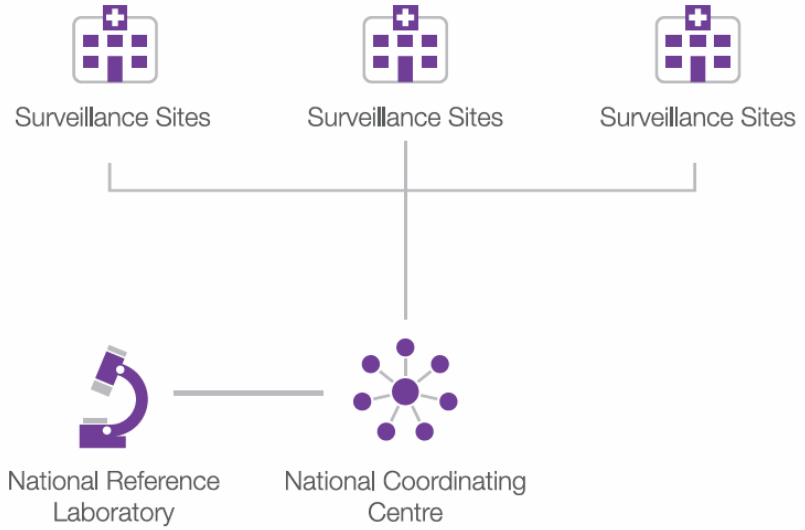
CDC distributes funding to all 50 states to increase capacity for rapid detection and response to outbreaks and emerging resistance related to healthcare-associated infections, and foodborne bacteria.

www.cdc.gov/ARinvestments

South Dakota: $384,498
$353,712 for Rapid Detection and Response
$30,786 for Food Safety

No systemic international surveillance

GLASS
Global AMR
Surveillance System



8 bacteria

- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Acinetobacter* spp.
- *Staphylococcus aureus*
- *Streptococcus pneumoniae*
- *Salmonella* spp.
- *Shigella* spp.
- *Neisseria gonorrhoeae*

4 specimen types

- blood
- urine
- stool
- genital swabs

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Antibiotic use in healthcare and agriculture not systematically collected

Flow of AU Data: From Bedside to NHSN

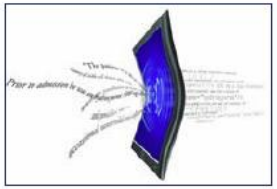
eMAR/BCMA & ADT

Vendor/Homegrown System

- Monthly summary
- Location specific & FacWideIN
  - 89 antimicrobials
  - Days present & admissions

Report in standard format

NHSN Servers



Local access of data: NHSN web interface – analysis, visualization and data sharing

Pharmacists & Physicians compare and target education/interventions

Risk adjusted comparisons for specific locations, groupings of antimicrobials

Antibiotic use in healthcare and agriculture not systematically collected

#209

Guidance for Industry

The Judicious Use of Medically Important Antimicrobial Drugs in Food-Producing Animals

Submit comments on this guidance at any time. Submit written comments to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852. Submit electronic comments on the guidance at http://www.regulations.gov. All written comments should be identified with the Docket No. FDA-2010-D-0094.

For further information regarding this document, contact William T. Flynn, Center for Veterinary Medicine (HFV-1), Food and Drug Administration, 7519 Standish Place, Rockville, MD 20855, 240-276-9084. E-mail: william.flynn@fda.hhs.gov.

Additional copies of this guidance document may be requested from the Communications Staff (HFV-12), Center for Veterinary Medicine, Food and Drug Administration, 7519 Standish Place, Rockville, MD 20855, and may be viewed on the Internet at either http://www.fda.gov/AnimalVeterinary/GuidanceComplianceEnforcement/GuidanceforIndustry/default.htm or http://www.regulations.gov.

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Veterinary Medicine
April 13, 2012

Contains Nonbinding Recommendations

#213

Guidance for Industry

New Animal Drugs and New Animal Drug Combination Products Administered in or on Medicated Feed or Drinking Water of Food-Producing Animals: Recommendations for Drug Sponsors for Voluntarily Aligning Product Use Conditions with GFI #209

Submit comments on this guidance at any time. Submit written comments to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852. Submit electronic comments to http://www.regulations.gov. All written comments should be identified with the Docket No. FDA-2011-D-0889.

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U.S. Department of Health and Human Services
Food and Drug Administration
Center for Veterinary Medicine
December 2013

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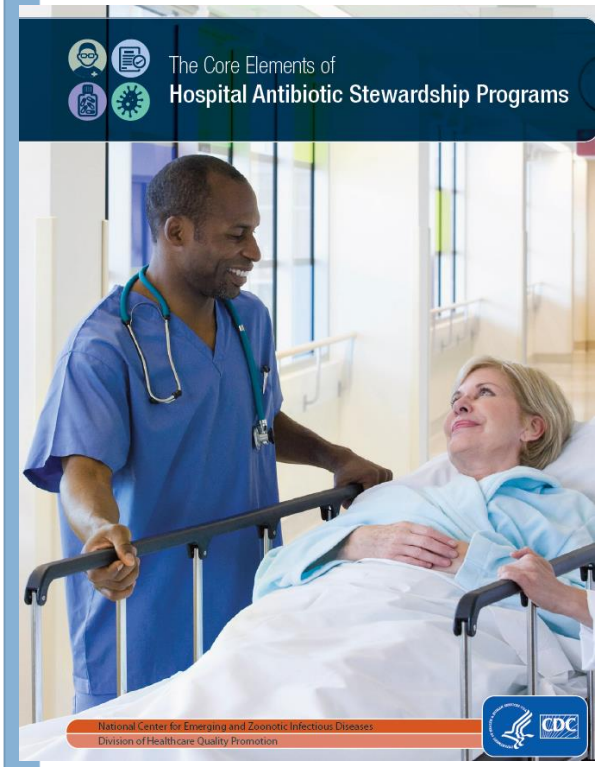
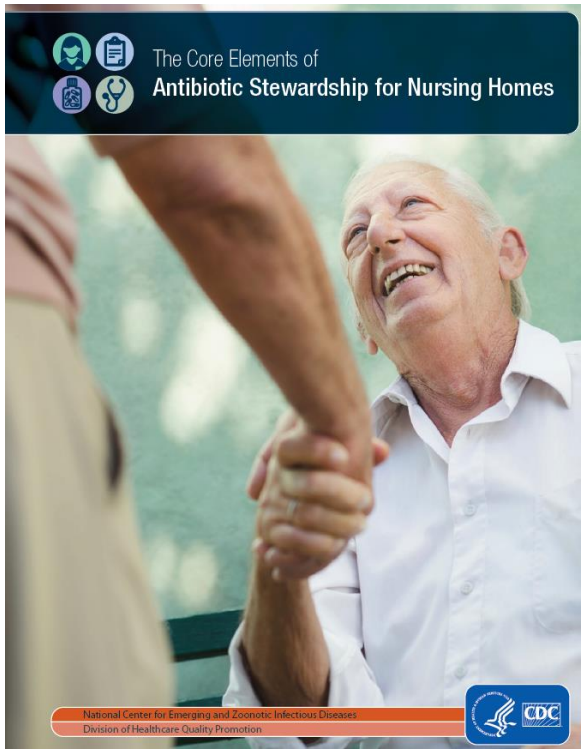
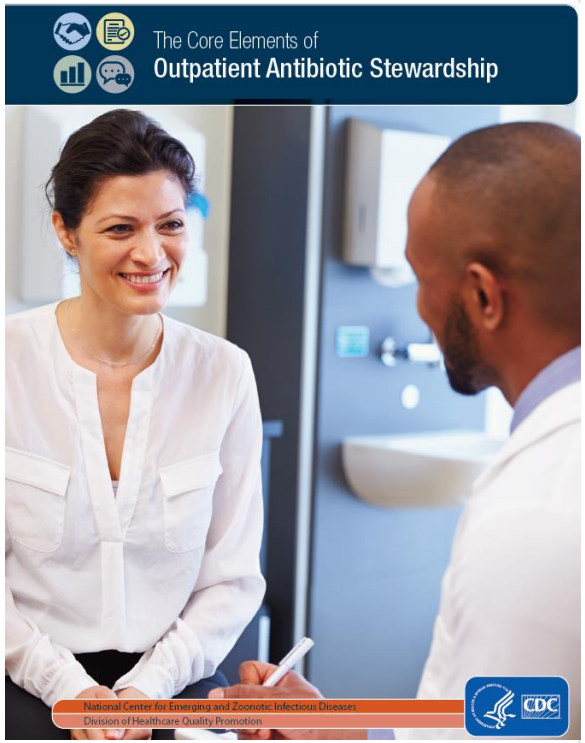
Programs to improve antibiotic prescribing not widely used



2014



2015



2016

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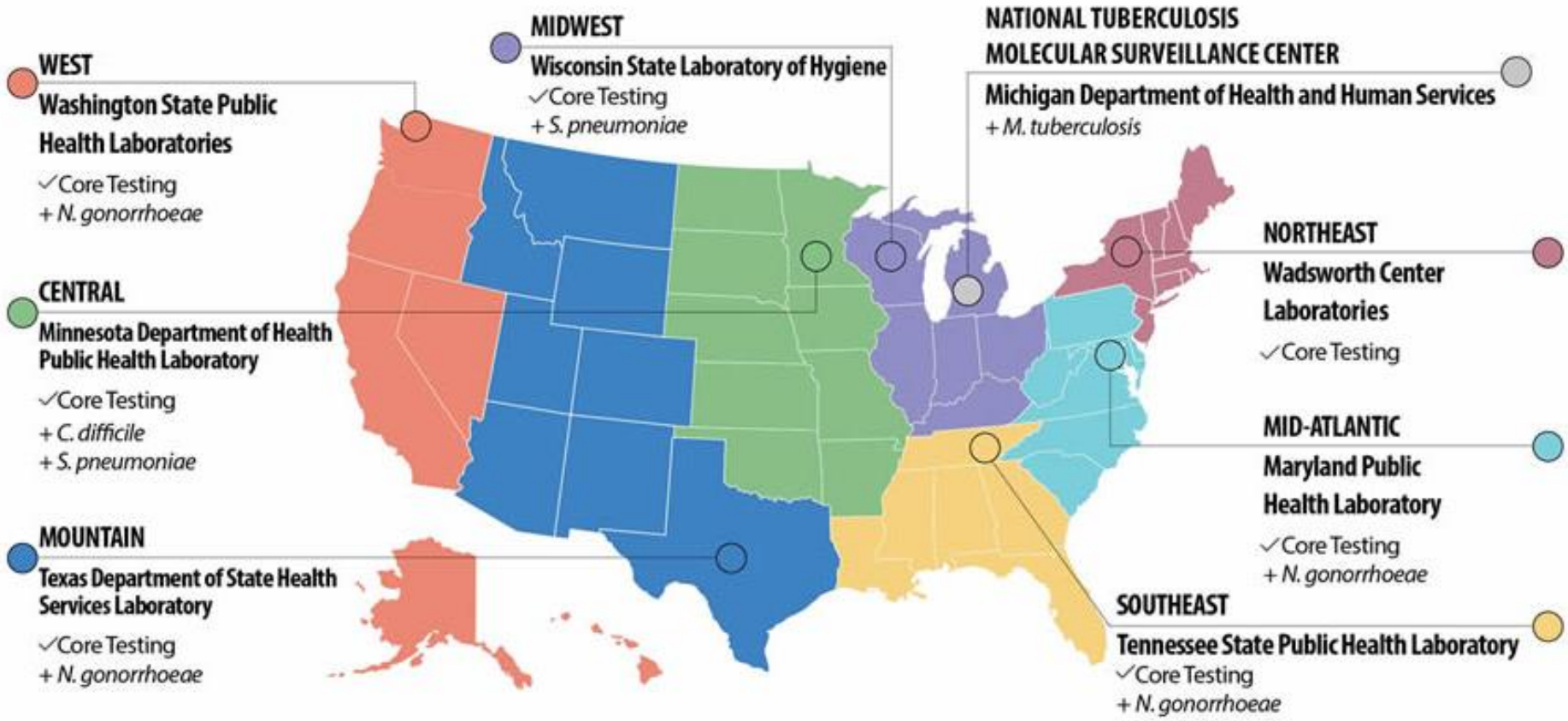
Limited availability of advanced molecular diagnostics for identification



Multi-drug Resistant Organisms (MDROs)

- Carbapenemase-producing, Carbapenem resistant *Enterobacteriaceae* (CP-CRE)
- *Candida auris*

C. auris culture

Enterobacteriaceae

- Normal human gut flora and environmental organisms
- More than 70 species
    - *Enterobacter* species
    - *Escherichia coli*
    - *Klebsiella* species
- Range of human infections: UTI, wound infections, pneumonia, bacteremia
- Important cause of healthcare-and community associated infections
- Some of the most common organisms encountered in clinical laboratories

Carbapenem Resistant *Enterobacteriaceae*

Enterobacteriaceae that are:

- Resistant to one of the following carbapenems:
  - Doripenem
  - Ertapenem
  - Meropenem
  - Imipenem

OR

- Documentation that the isolate possesses a Carbapenemase

Carbapenemases

Definition: are enzymes produced by bacteria that break down Carbapenems and make them ineffective. They are often contained on mobile genetic elements that facilitate transfer of resistance among *Enterobacteriaceae* and other gram-negative organisms.

Carbapenemase-producing Carbapenem Resistant *Enterobacteriaceae* (CP-CRE)

- CP-CRE is a subset of CRE
- Ability to spread rapidly by transfer of Carbapenemase-encoding plasmid
- Resistance mechanisms include:
  - KPC: Klebsiella pneumoniae Carbapenemase
  - NDM: New Delhi metallo-β-lactamase
  - OXA-48: oxacillinase-48
  - VIM: Verona integron-encoded metallo-β-lactamase
  - IMP: imipenemase

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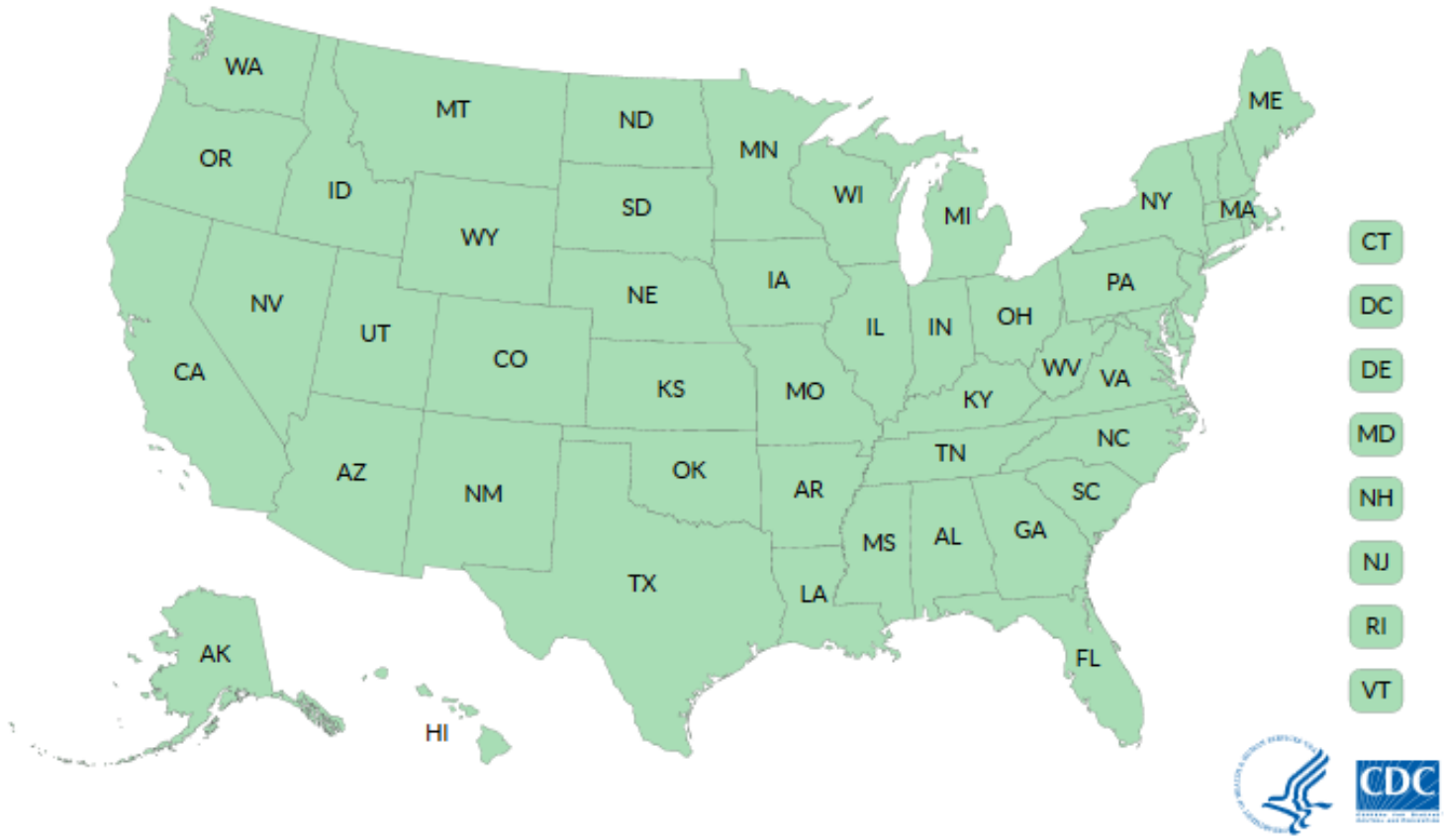
Surveillance for CP-CRE

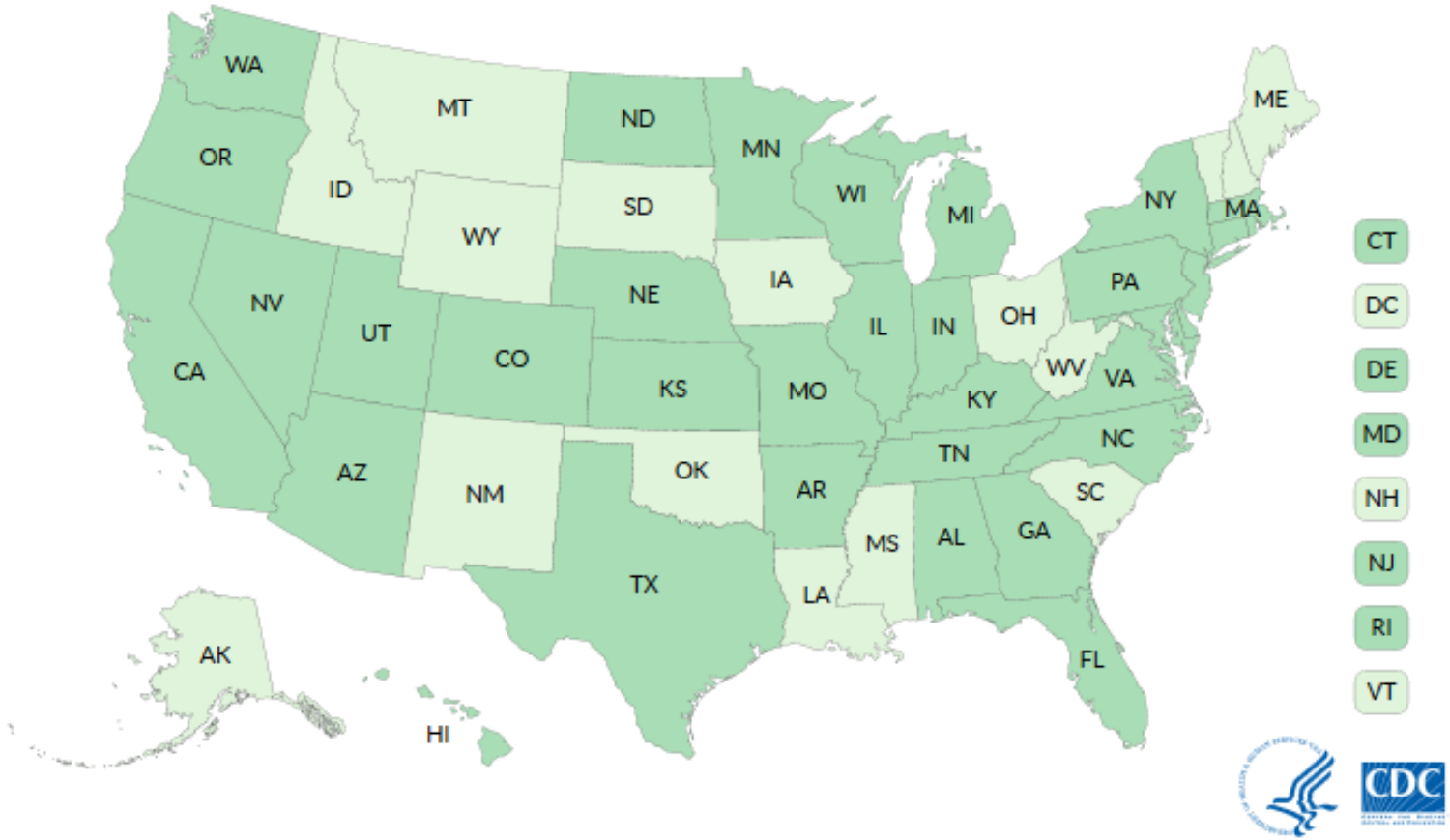
KPC Detected in all 50 States

Patients with KPC-producing *Carbapenem-resistant Enterobacteriaceae* (CRE) reported to the Centers for Disease Control and Prevention (CDC) as of December 2017, by state



NDM Detected in all 34 States (N=379)

Patients with NDM-producing *Carbapenem-resistant Enterobacteriaceae* (CRE) reported to the Centers for Disease Control and Prevention (CDC) as of December 2017, by state



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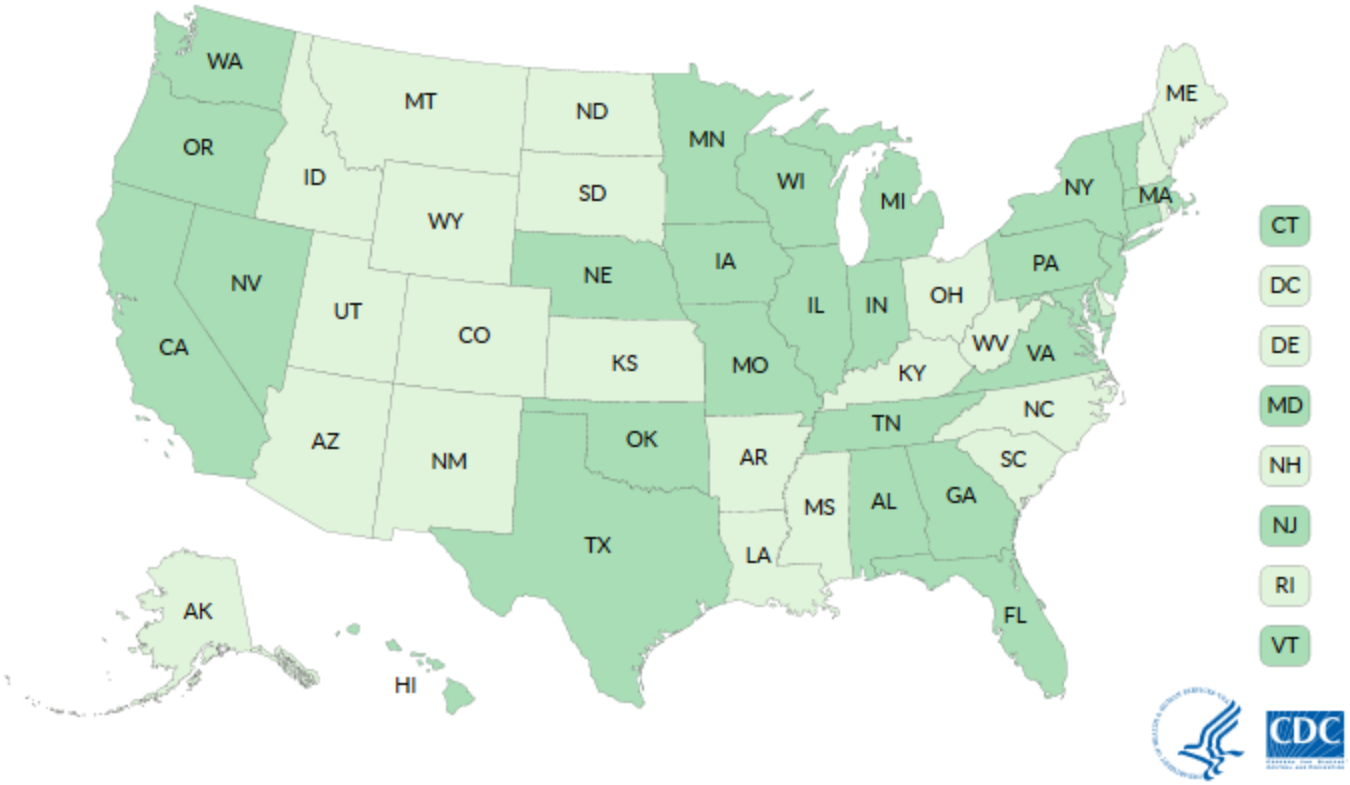
OXA-48 Detected in all 27 States (N=146)

Patients with OXA-48-Type-producing *Carbapenem-resistant Enterobacteriaceae* (CRE) reported to the Centers for Disease Control and Prevention (CDC) as of December 2017, by state



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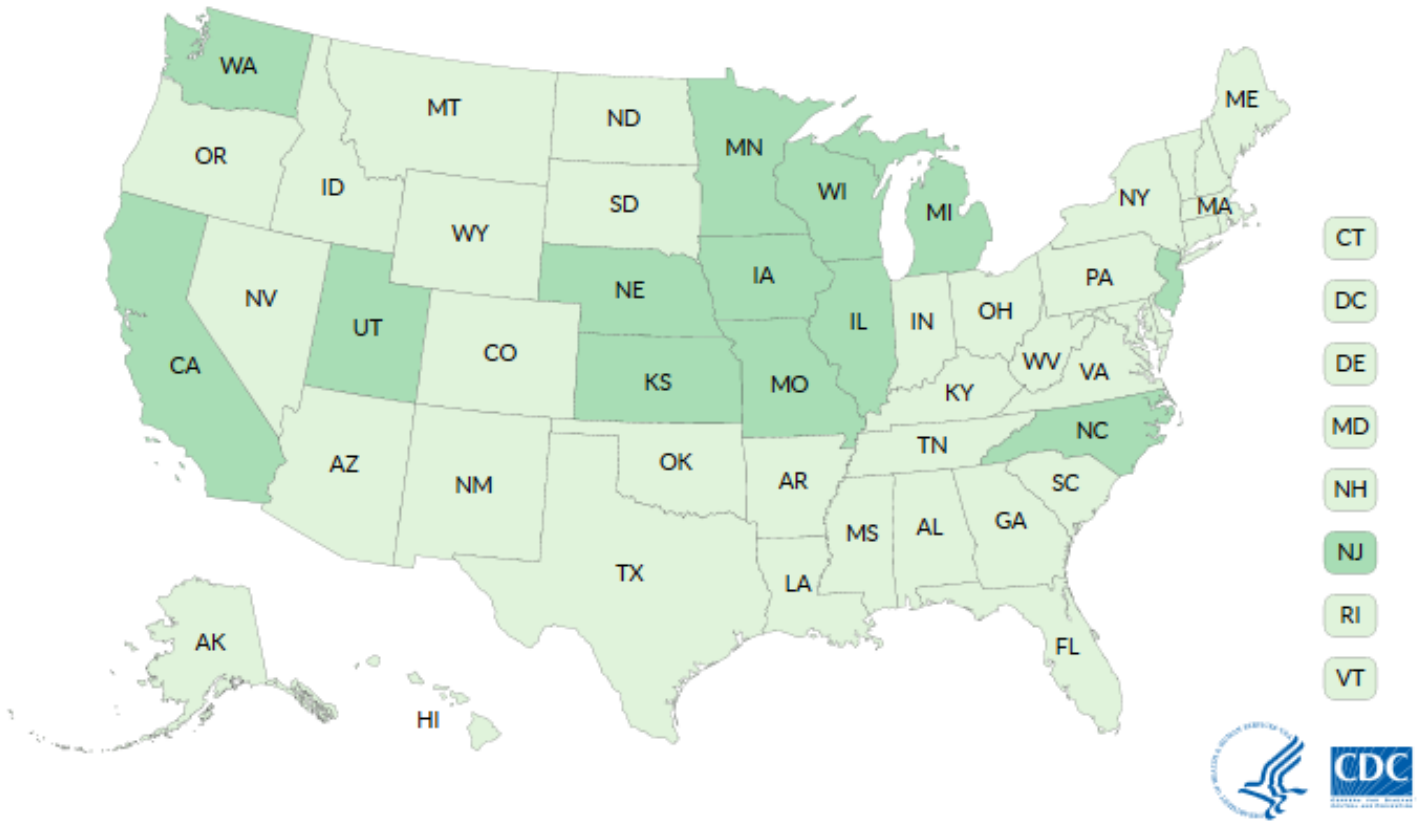
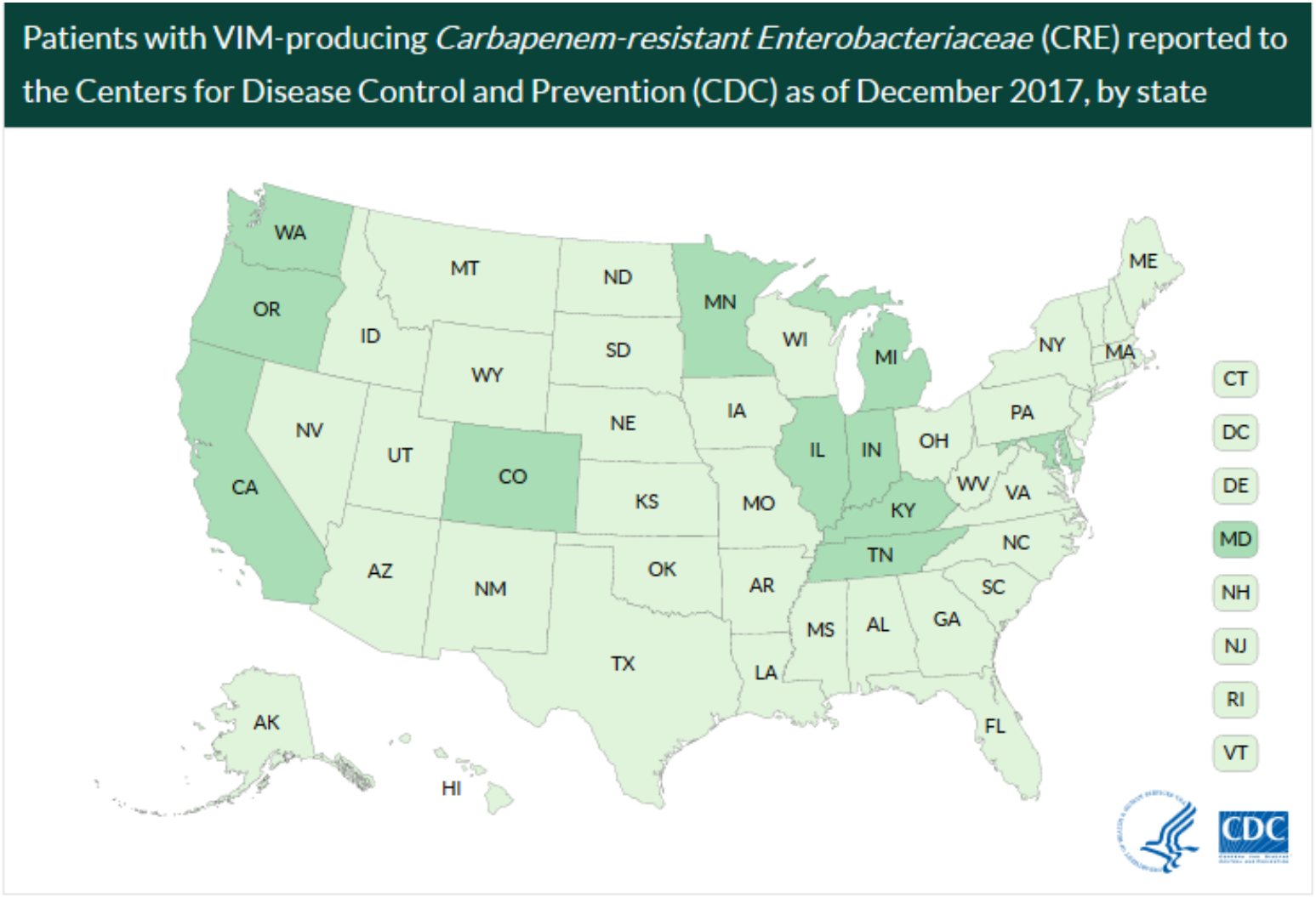
IMP Detected in all 13 States (N=36)

Patients with IMP-producing *Carbapenem-resistant Enterobacteriaceae* (CRE) reported to the Centers for Disease Control and Prevention (CDC) as of December 2017, by state



VIM Detected in all 11 States (N=57)



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CRE Epidemiology in SD

Reportable Diseases – South Dakota

+Category I diseases: *Report immediately* on suspicion of disease
Category II diseases: Report within 3 days
★ Send isolate to South Dakota Public Health Laboratory

Effective 1 January 2017

+Anthrax (*Bacillus anthracis*★)
Anaplasmosis (*Anaplasma phagocytophilum*)
Arboviral encephalitis, meningitis and **infection** (West Nile, Zika, St. Louis, Eastern equine, Western equine, Chikungunya, California, Japanese, Powassan, LaCrosse, Colorado tick fever)
Babesiosis (*Babesia* spp)
+Botulism (*Clostridium botulinum*)
+Brucellosis (*Brucella* spp★)
Campylobacteriosis (*Campylobacter* spp)
Carbon monoxide poisoning
Chancroid (*Haemophilus ducreyi*)
Chicken pox / Varicella (*Herpesvirus*)
Chlamydia infections (*Chlamydia trachomatis*)
Cholera (*Vibrio cholerae*)
Coccidioidomycosis (*Coccidioides* spp)
+*Coronavirus* respiratory syndromes, such as MERS (Middle East respiratory syndrome) and SARS (Severe acute respiratory syndrome)
Cryptosporidiosis (*Cryptosporidium* spp)
Cyclosporiasis (*Cyclospora cayetanensis*)
Dengue viral infection (*Flavivirus*)
+Diphtheria (*Corynebacterium diphtheriae*★)
Drug resistant organisms:
- **Carbapenem-resistant *Enterobacteriaceae*** (CRE)
- **Methicillin-resistant *Staphylococcus aureus*** (MRSA), invasive
- **Vancomycin–resistant *Staphylococcus aureus*** (VRSA)★

+*E. coli*, shiga toxin-producing (*Escherichia coli*★), includes *E. coli O157:H7, O26, O111, O103* and others
Ehrlichiosis (*Ehrlichia* spp)
Giardiasis (*Giardia lamblia / intestinalis*)
Gonorrhea (*Neisseria gonorrhoeae*)
***Haemophilus influenzae*★**, invasive disease
Hantavirus pulmonary syndrome or **infection**
Hemolytic uremic syndrome
Hepatitis, viral, acute **A**, **B** and **C**; chronic **B** and **C**; and perinatal **B**

Human immunodeficiency virus (HIV) **infection**, also including:
- Stage III, Acquired immunodeficiency syndrome, (AIDS)
- CD4 counts in HIV infected persons
- HIV viral loads, and
- pregnancy in HIV infected females

+Influenza, novel strains★
Influenza: including hospitalizations, deaths, lab confirmed cases (culture, DFA, PCR), weekly aggregate totals of rapid antigen positive (A and B) and total tested
Lead, elevated blood levels
Legionellosis (*Legionella* spp)
Leprosy / Hansen's disease (*Mycobacterium leprae*)
Leptospirosis (*Leptospira*)
Listeriosis (*Listeria monocytogenes*★)
Lyme disease (*Borrelia burgdorferi*)
Malaria (*Plasmodium* spp)
+Measles / Rubeola (*Paramyxovirus*)
+Meningococcal disease, invasive (*Neisseria meningitidis*★)
Mumps (*Paramyxovirus*)
Pertussis / Whooping cough (*Bordetella pertussis*)
Pesticide-related illness and **injury**, acute
+Plague (*Yersinia pestis*★)
+Poliomyelitis, paralytic and nonparalytic (*Poliovirus*)
Psittacosis (*Chlamydophila psittaci*)
Q fever (*Coxiella burnetii*)
+Rabies, human and animal (*Rhabdovirus*)
+Rubella and congenital rubella syndrome (*Togavirus*)
Salmonellosis (*Salmonella* spp★)
Shigellosis (*Shigella* spp★)
Silicosis
+Smallpox (*Variola*★)

Spotted fever rickettsiosis (*Rickettsia* spp)
Streptococcus pneumoniae, invasive
Syphilis (*Treponema pallidum*) including primary, secondary, latent, early latent, late latent, neurosyphilis, late non-neurological, stillbirth, and congenital
Tetanus (*Clostridium tetani*)
Toxic shock syndrome (Streptococcal and non-Streptococcal)
Transmissible spongiform encephalopathies, such as Creutzfeldt-Jakob disease
Trichinosis (*Trichinella spiralis*)
+Tuberculosis, active disease (*Mycobacterium tuberculosis*★ *or Mycobacterium bovis*★)
Tuberculosis, latent infection (only in certain high risk persons: foreign-born <5 yrs in US, close contacts, diabetes, renal dialysis, children <5 yrs, and certain medical conditions)
+Tularemia (*Francisella tularensis*★)
Typhoid (*Salmonella typhi*★)
Vaccine Adverse Events
+Viral Hemorrhagic Fevers (Crimean-Congo Hemorrhagic Fever virus, Ebola virus, Lassa virus, Lujo virus, Marburg virus, New World Arenavirus – Guanarito virus, Junin virus, Machupo virus, Sabia virus)
Vibriosis (*Vibrionaceae*)
+Yellow fever (*Flavivirus*)

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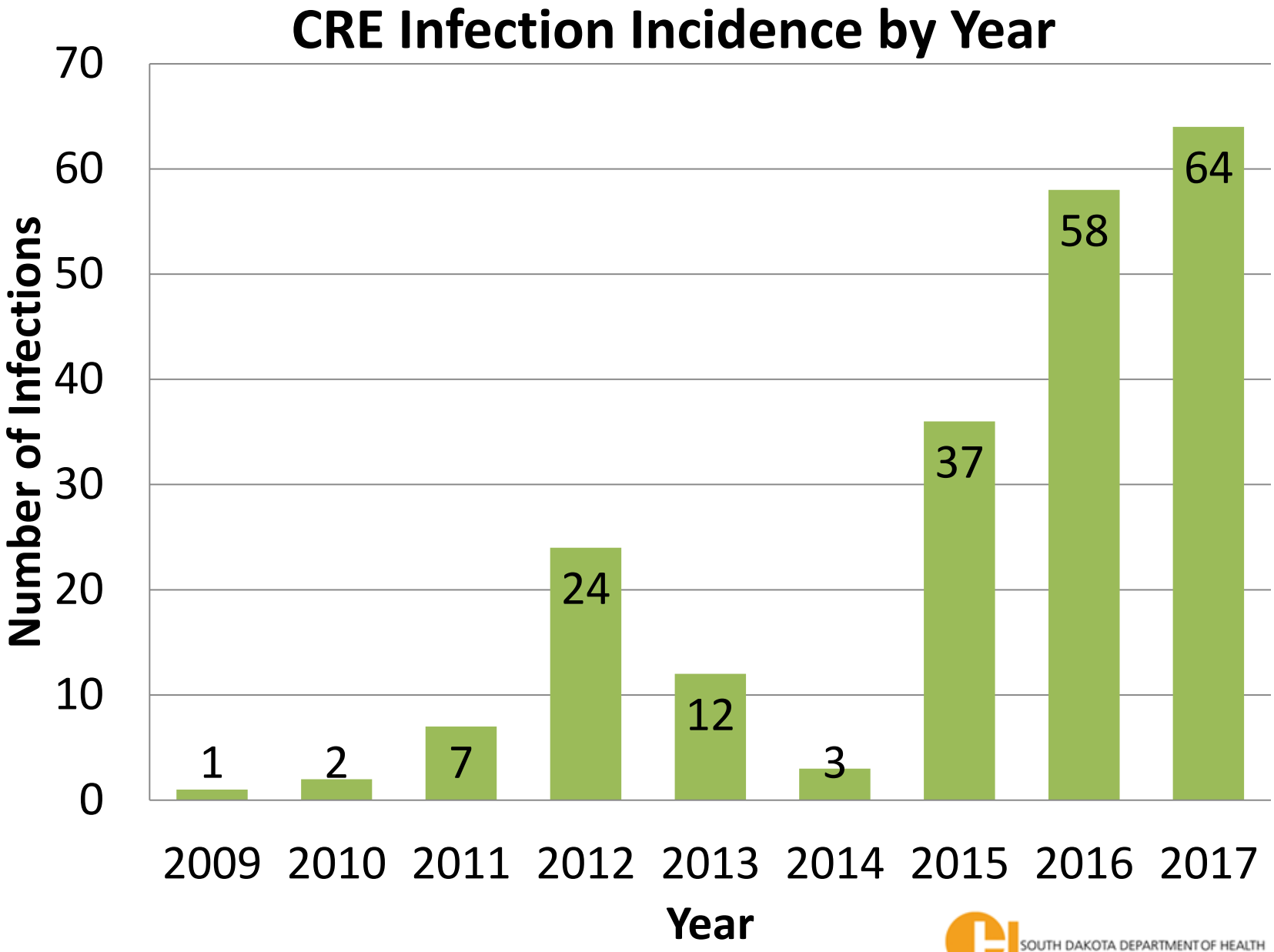
+Outbreaks of:
+Acute upper respiratory illness
+Diarrheal disease
+Foodborne disease
+Healthcare-associated infections
+Illnesses in child care setting
+Rash illness
+Waterborne disease

+Syndromes suggestive of **bioterrorism** and other **public health threats**
+Unexplained illnesses or **deaths** in human or animal

How to Report CRE in SD

- CRE became reportable in 2013

- Report CRE via:
  - **Secure website:** http://sd.gov/diseasereport
  - **Telephone: 605-773-3737** or **800-592-1861**
  - **Fax: 605-773-5509**
  - **Mail** or **courier, 615 East 4th Street**
    Pierre, SD 57501



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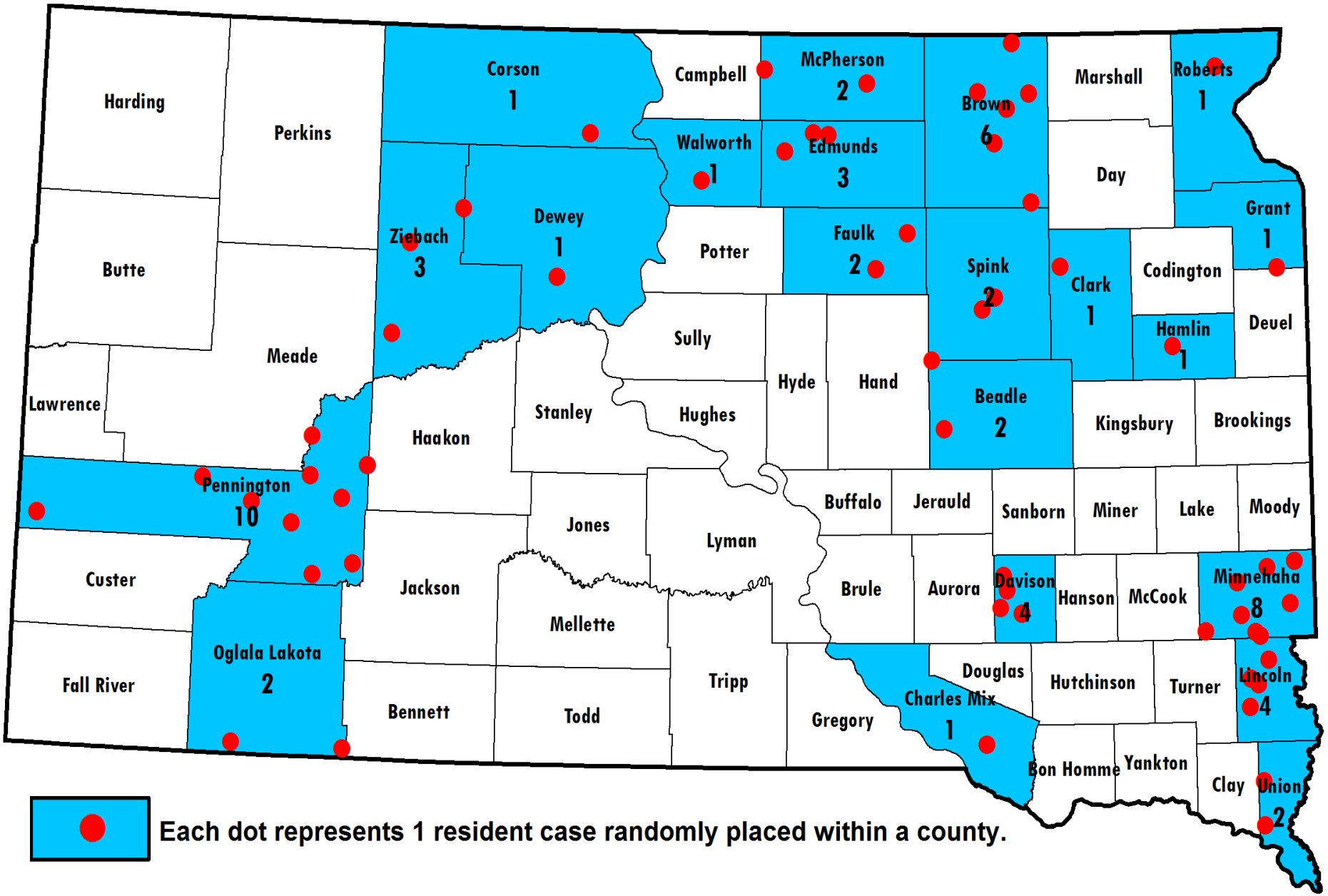
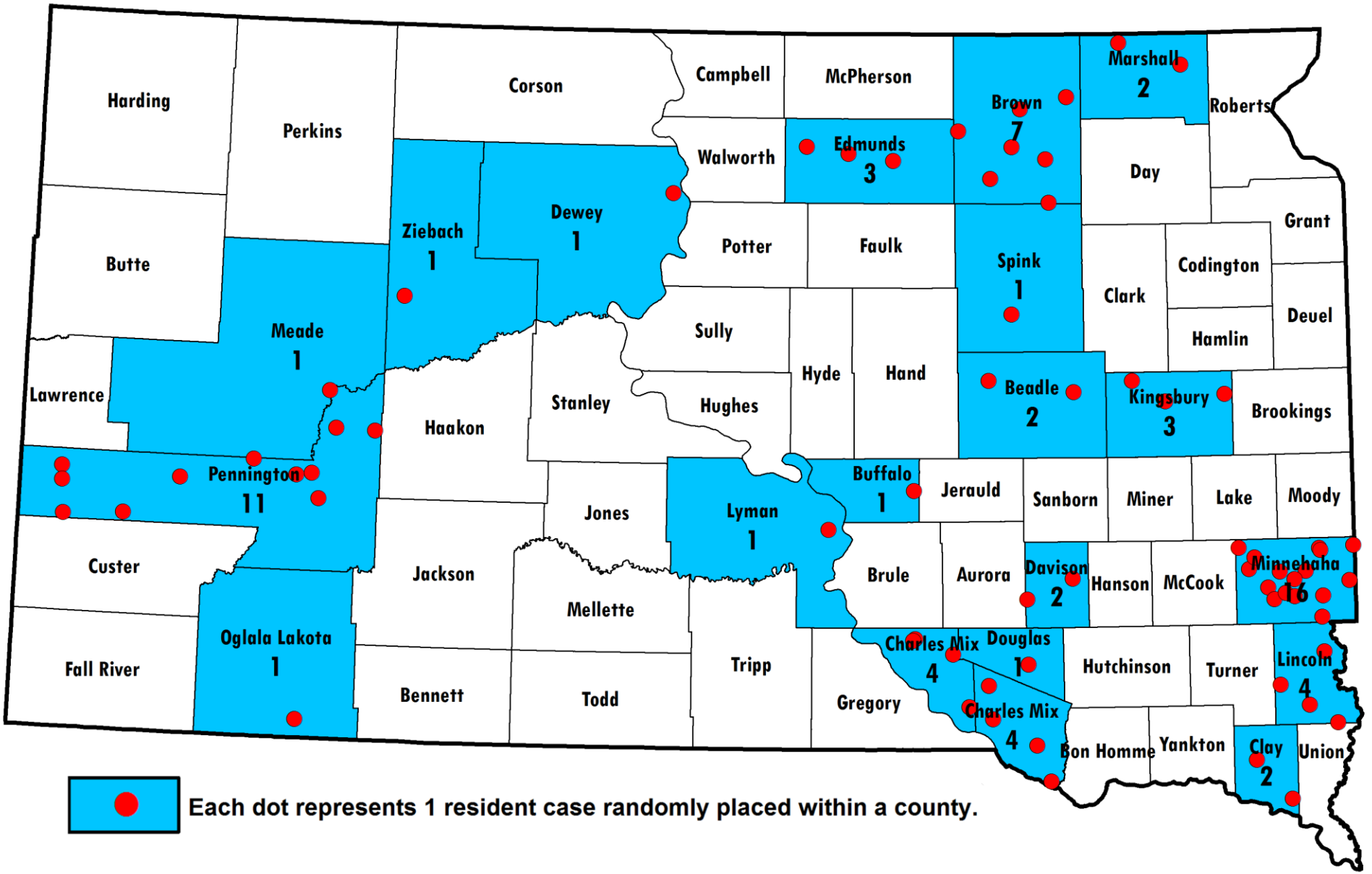
CRE (Carbapenem-resistant Enterobacteriaceae) Cases Reported, South Dakota 2016 (n = 58)

Infections

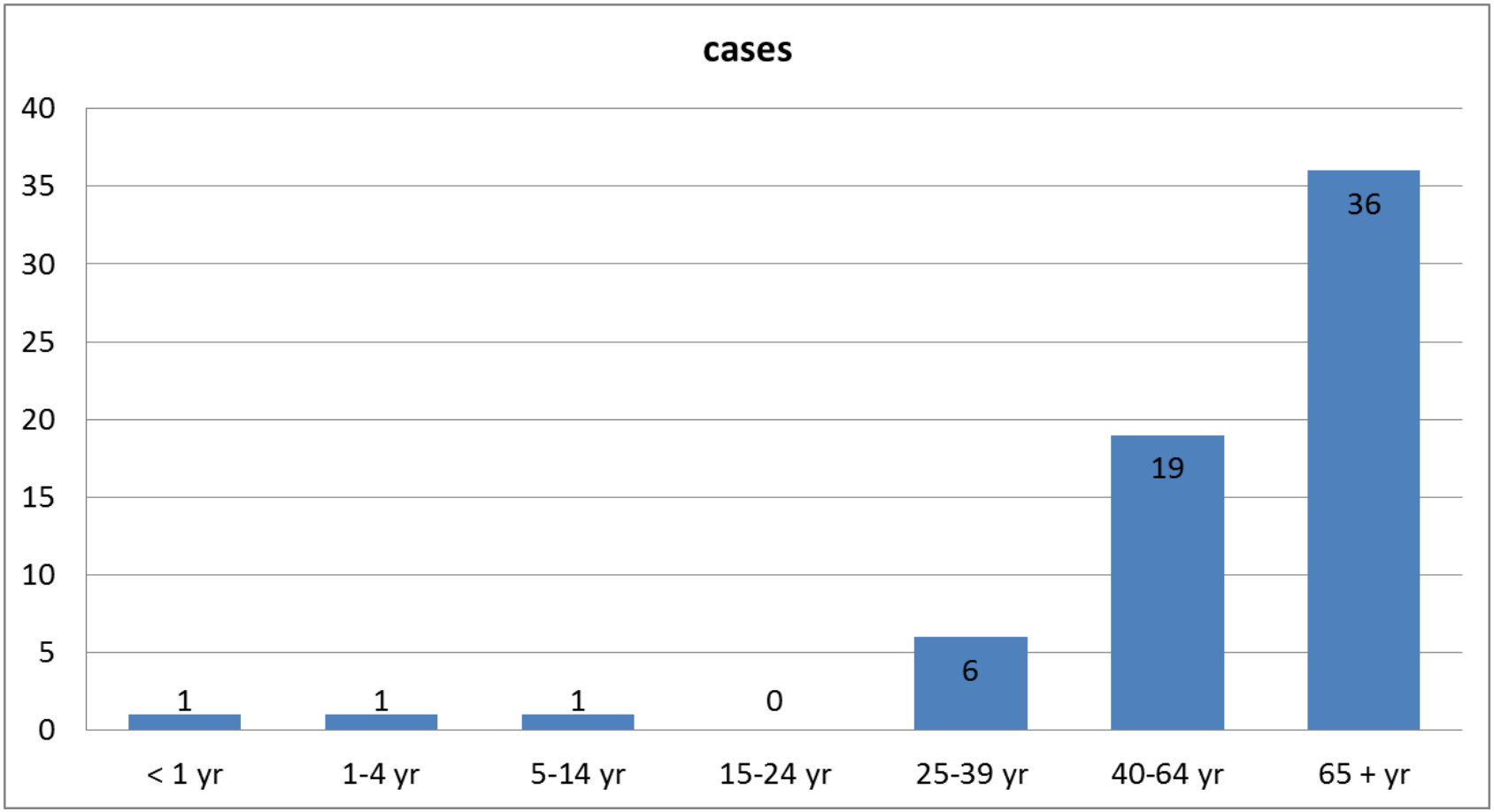


Each dot represents 1 resident case randomly placed within a county.

CRE (Carbapenem-resistant Enterobacteriaceae) Cases Reported, South Dakota 2017 (n = 64)



Age of CRE Cases, 2017



Age Group

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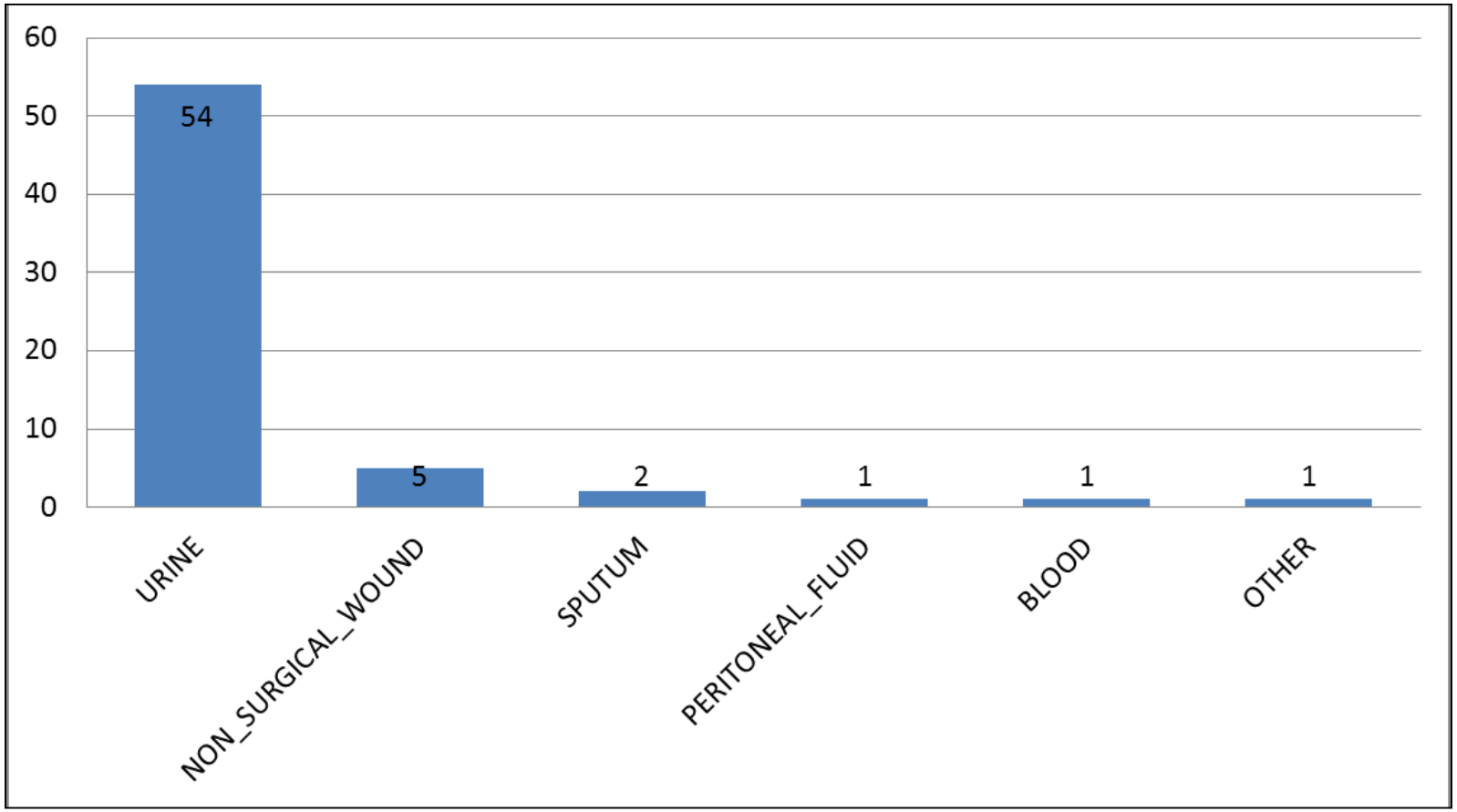
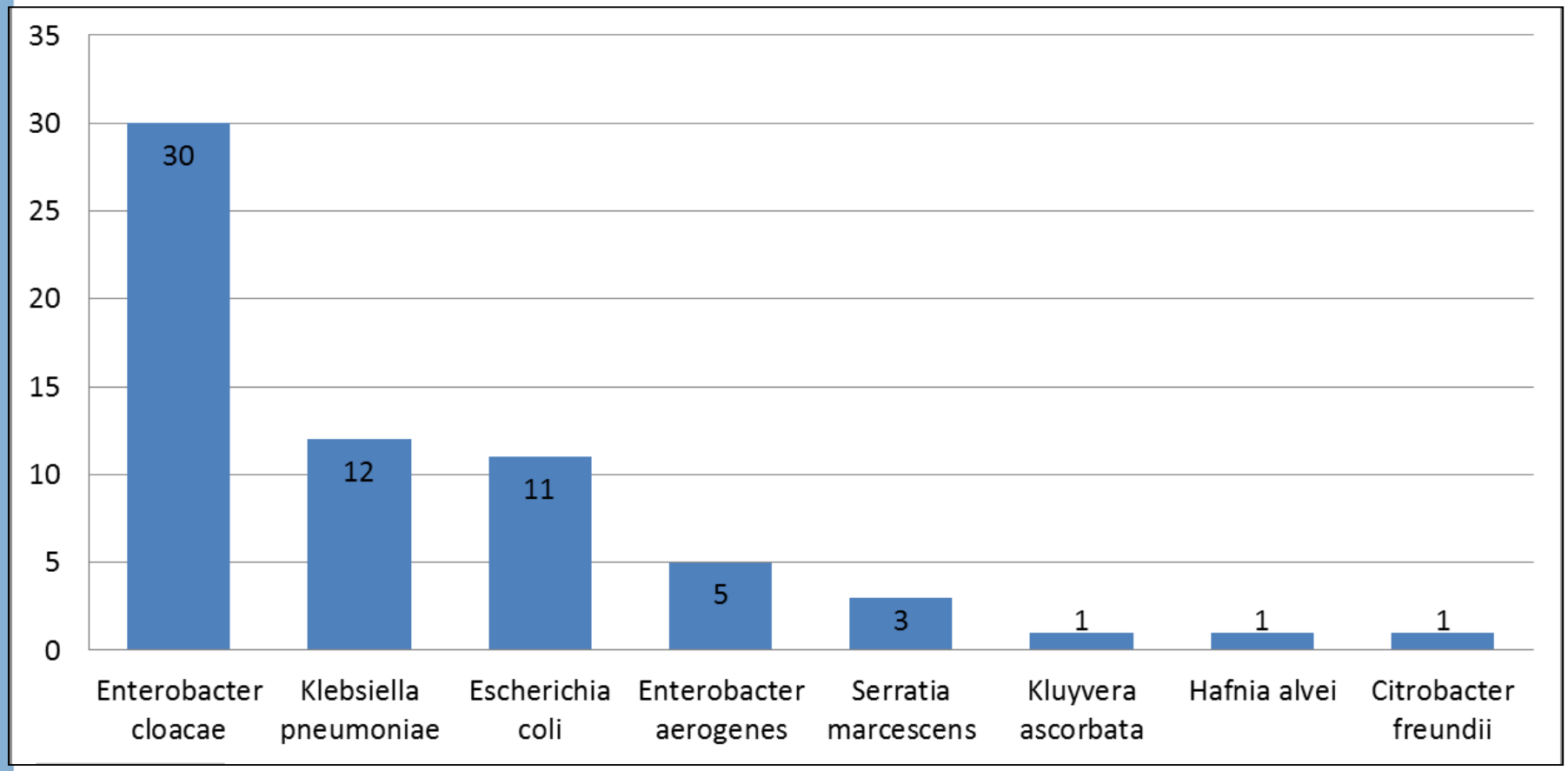
Specimen Source, 2017

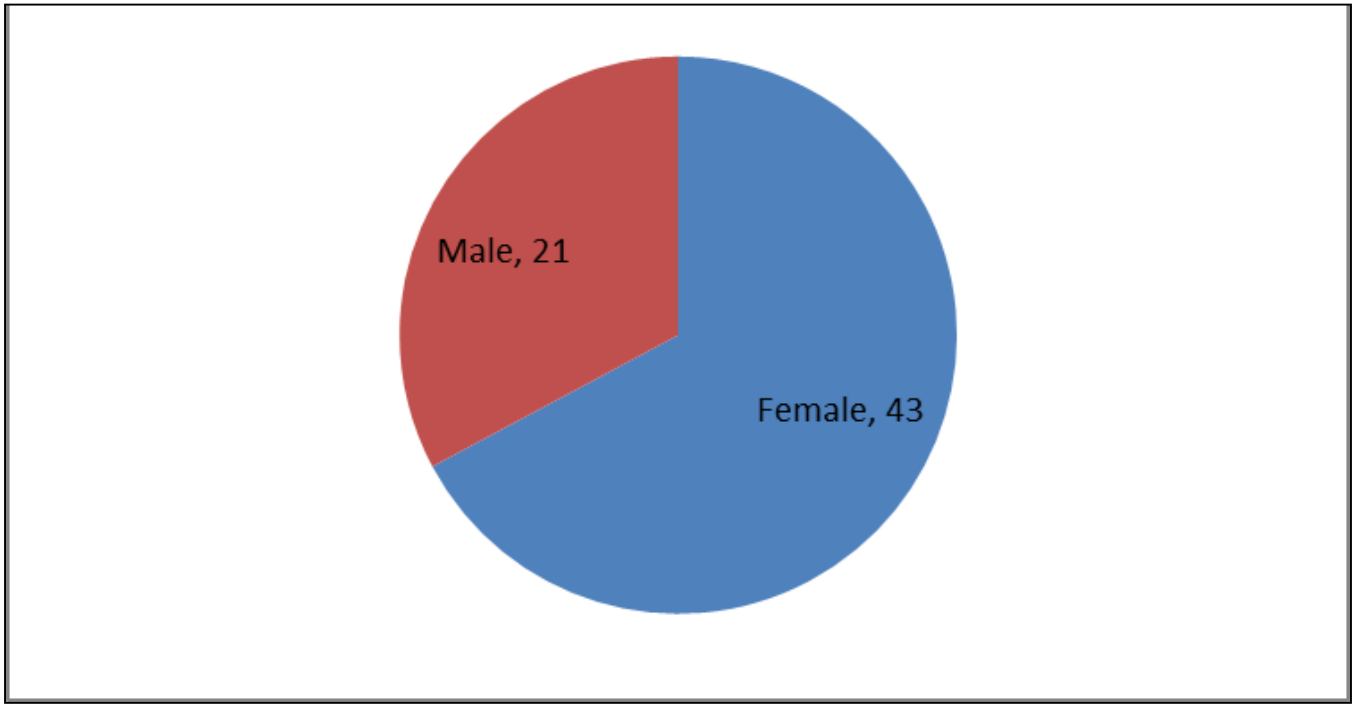


Organism Identified, 2017



Sex, 2017

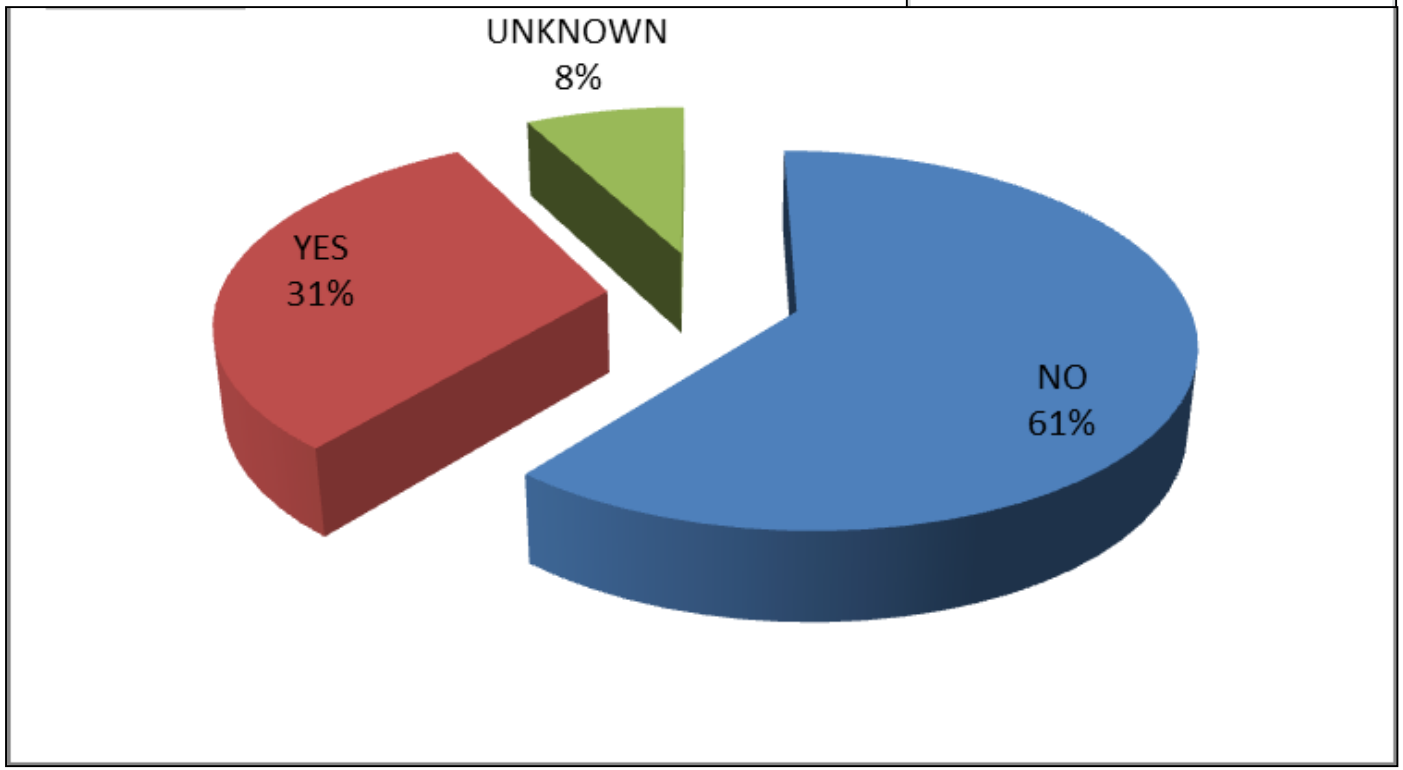
67% Female; 33% Male



Carbapenemase Production, 2017

100% KPC mechanism

NO	39
YES	20
UNKNOWN	5



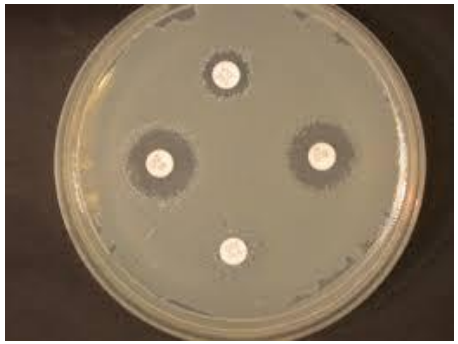
First NDM CP-CRE Detection in 2018

- Patient had outpatient visit on April 25
- Outpatient procedure for cystoscopy on May 1
- Presented to emergency dept. on May 2
- Admitted directly to ICU
- SD Public Health Lab resulted NDM (+) E. coli on May 4
  - Urine culture (OP1)
  - Urine culture (OP2)
  - Blood culture (ED)
- SD-DOH notified on May 4
- Patient placed in contact precautions same day
- SD-DOH consulted with CDC and admitting hospital

SD-DOH Response Capacity

SDPHL Detection of Carbapenemases

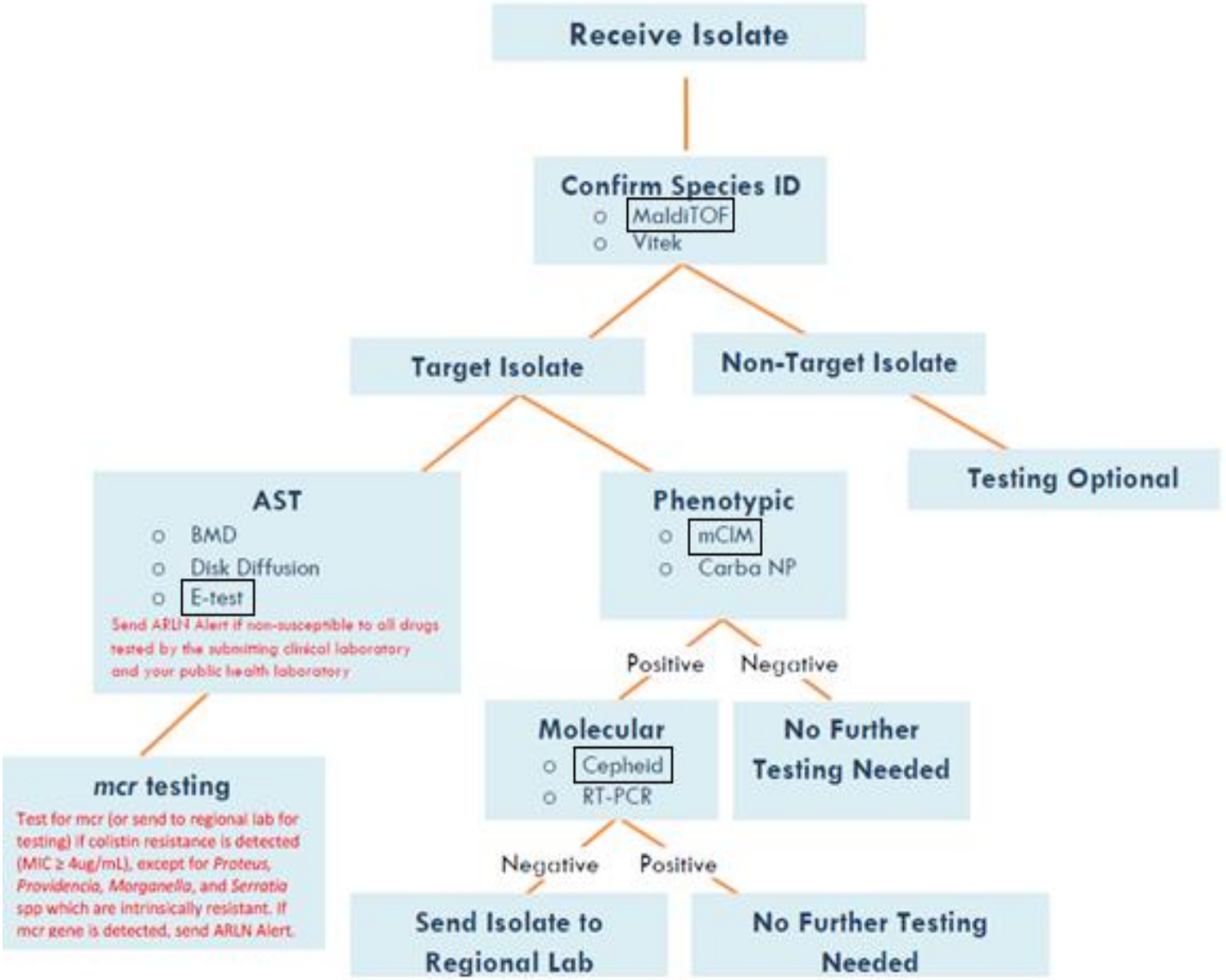
- Phenotypic:
  - Modified Hodge Test (MHT) - - discontinuing
  - Modified Carbapenem Inactivation Method (mCIM) - - preferred method
- Molecular:
  - Cepheid Xpert Carba-R



mCIM

Cepheid

SDPHL CRE Laboratory Testing Flowchart

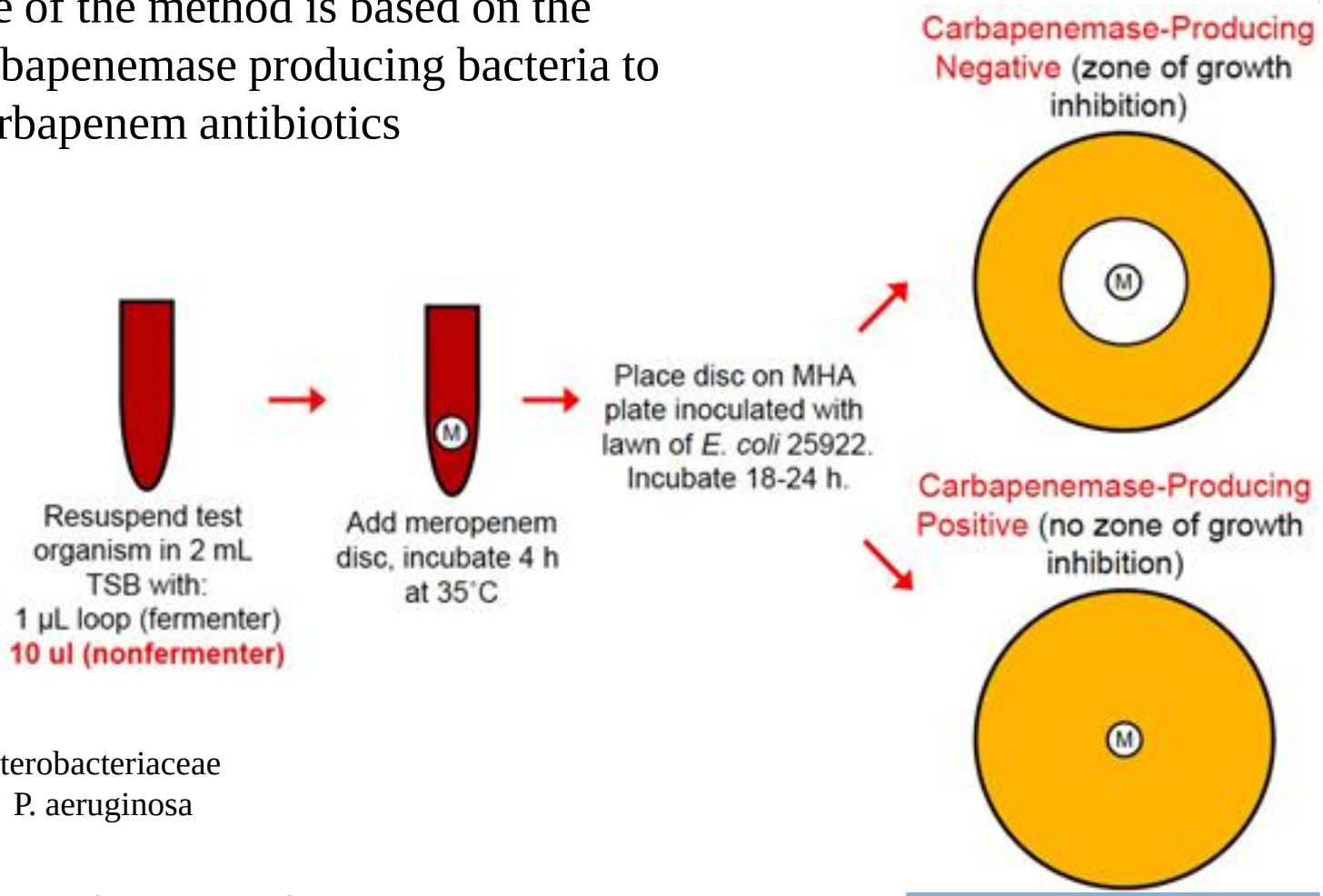


Phenotypic Carbapenemase Testing

- Modified Carbapenemase Inactivation Method (mCIM)
  - Phenotypic screening procedure for the detection of carbapenemase-producing *Enterobacteriaceae* (CPE) and *P. aeruginosa* (CPPA)
  - Detects known and previously unidentified carbapenemase producing enzymes
  - Positive mCIM reflexed to molecular methods to determine gene variant

Overview of mCIM

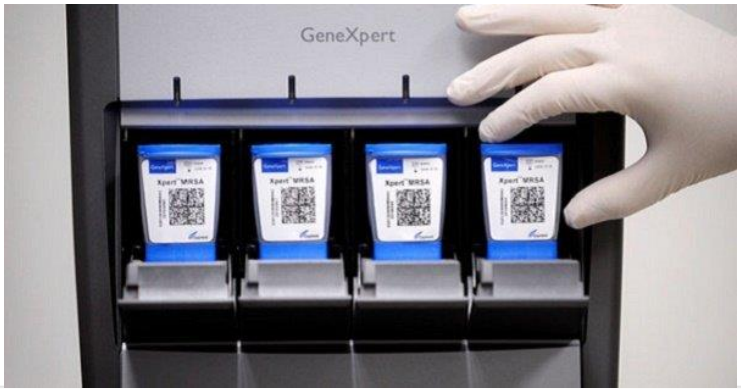
The principle of the method is based on the ability of carbapenemase producing bacteria to inactivate carbapenem antibiotics



Fermenter: Enterobacteriaceae
Nonfermenter: P. aeruginosa

Molecular Detection of Carbapenemases

- Cepheid Gene Xpert Carba-R
  - RT-PCR
  - Detects carbapenemase producing enzymes: KPC, NDM, VIM, IMP, OXA-48 like
  - Performed on:
    - mCIM positive isolates
    - Rectal swabs for screening and outbreak testing



HAI Program

- Technical Assistance – Non Regulatory
- Focus on Infection control and Prevention
  - Ebola Hospital Assessments
    - Designated Ebola Assessment Facility
  - Infection Control Assessments LTC
  - Improved Competency
    - Training and Certification in IC
- Reduction of HAIs in Healthcare Settings
- Detect, Prevent, and Contain
  - NHSN Data Surveillance, Reporting and Validation
- HAI and MDRO/XDRO Outbreak Response
- Antimicrobial Stewardship

SD-DOH HAI Program
Response and Outbreak Consultation

- Data collection and surveillance
- Identify at-risk individual(s)/population(s)
- Perform focused surveillance if appropriate
- Implement appropriate infection control precautions
- Continue surveillance and/or intervention until resolution of outbreak

SD-DOH Uses CDC Guidelines

Goals:

- Identify if transmission /dissemination occurring
- Identifying affected patients
- Ensuring appropriate control measures are promptly initiated/implemented to contain spread
- Characterize organism/mechanism to guide response action, patient management, and responses

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

Tiered Response

- Tier 1: Novel/Rare (VRSA)
- Tier 2: Uncommon (NDM)
- Tier 3: Common (KPC)

Tier 2 Organism

- Notification: caregiver, healthcare staff, health dept.
- **Implement appropriate infection control measures**
- Inform patient and family
- Consider index patient screening cultures
  - Impact patient care
  - >1 month has passed
- **Conduct healthcare investigation: review interactions**
- **Conduct contact investigation**
- Environmental cultures generally not recommended
- **Ensure adherence to infection control**

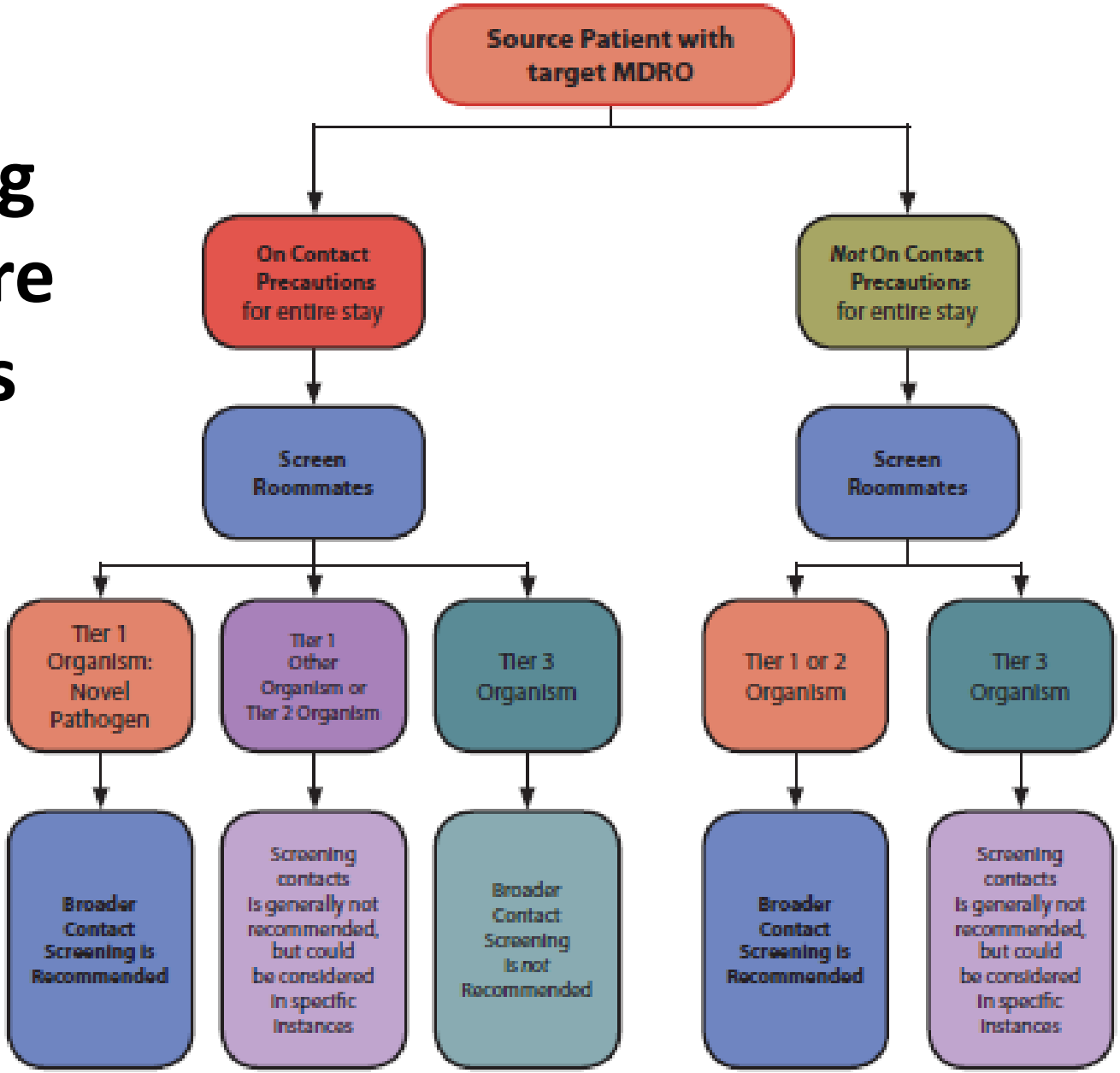
Tier 2 Organism Contact Investigation

- Focus on previous month unless expanded
- Culture epi-linked patients
  - Roommates (even if discharged)
  - High risk contacts (if patient not on contact precautions entire stay)
    - Overlap with patient ≥3 days, AND
    - Risk factor for MDRO
      - Bedbound
      - Require higher level of care
      - Receiving antibiotics
      - Mechanically ventilated
    - Consider Point Prevalence Survey of unit

Tier 2 Organism Contact Investigation (2)

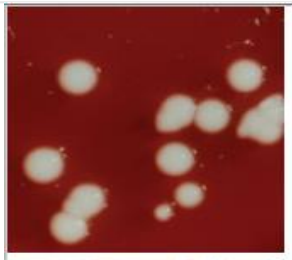
- Wider surveys warranted if:
  - Suspicion of ongoing risk
  - Initial screen of high-risk patients identifies spread
- Generally not needed to screen:
  - Healthcare providers
  - Household contacts
- Initiate surveillance in laboratory for similar organisms or resistance patterns
  - Prospective and retrospective

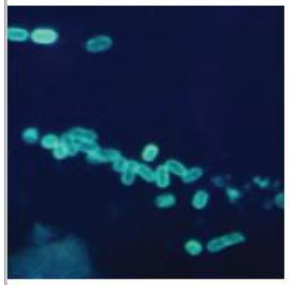
Screening Healthcare Contacts

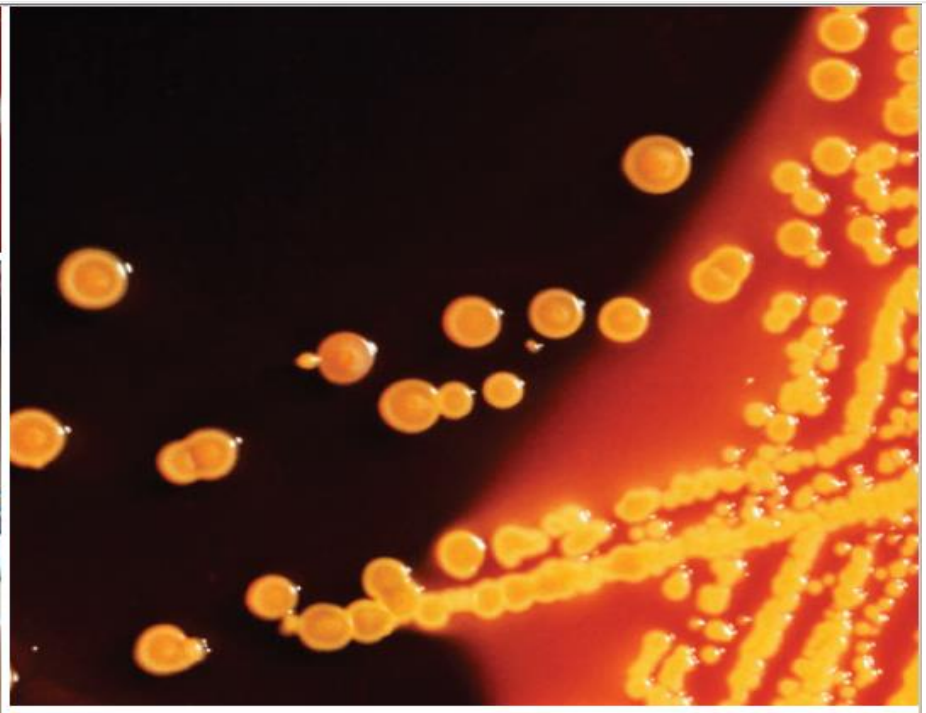


Implementation and Adherence to Infection Control Measures

- Educate and inform appropriate healthcare personnel and visitors
- Ensure adequate supplies available to implement precautions
- Monitor adherence to infection control practices (index patient)
- Notification of index patient results for health care continuity
- Inter-facility transfer form used during transfer







Facility Guidance for Control of Carbapenem-resistant *Enterobacteriaceae* (CRE)

November 2015 Update - CRE Toolkit

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

CDC

SOUTH DAKOTA DEPARTMENT OF HEALTH

Content of CDC Facility Guidance

1. Hand hygiene
2. Contact Precautions
3. HCP education
4. Minimizing device use
5. Laboratory notification
6. Communication
7. Antimicrobial Stewardship
8. Environmental cleaning
9. Cohorting
10. Supplemental
    - Screening
    - CHG bathing

CDC Environmental Checklist for Monitoring Terminal Cleaning[1]

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional):[2]	

Evaluate the following priority sites for each patient room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls			
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate			
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink			
Toilet seat			
Toilet flush handle			
Toilet bedpan cleaner			

Evaluate the following additional sites if these equipment are present in the room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
IV pump control			
Multi-module monitor controls			
Multi-module monitor touch screen			
Multi-module monitor cables			
Ventilator control panel			

Mark the monitoring method used:

☐ Direct observation ☐ Fluorescent gel
☐ Swab cultures ☐ ATP system ☐ Agar slide cultures

[1]Selection of detergents and disinfectants should be according to institutional policies and procedures
[2]Hospitals may choose to include identifiers of individual environmental services staff for feedback purposes.
[3]Sites most frequently contaminated and touched by patients and/or healthcare workers

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

CDC

http://www.cdc.gov/HAI/toolkits/Environmental-Cleaning-Checklist-10-6-2010.pdf

SOUTH DAKOTA DEPARTMENT OF HEALTH

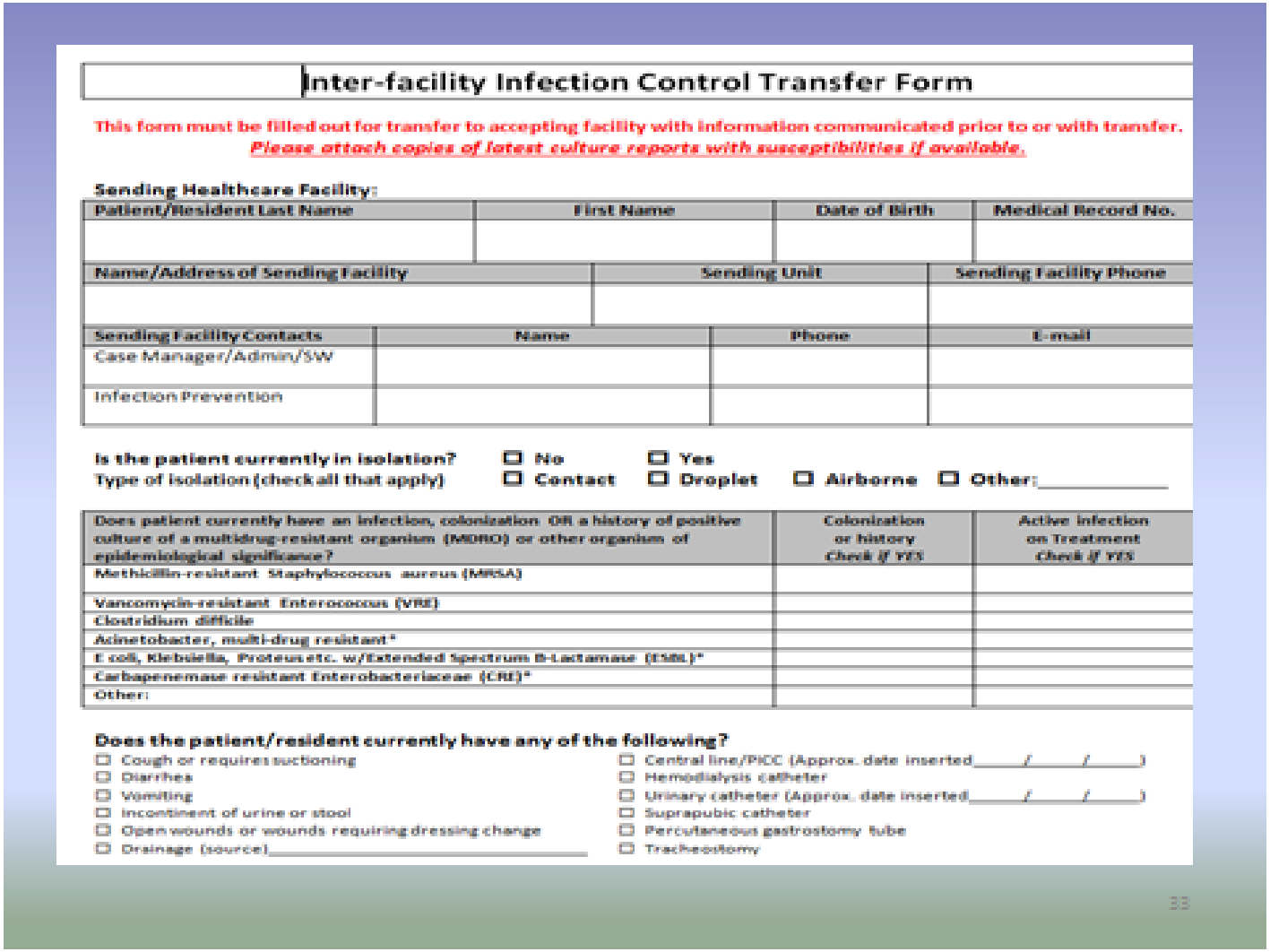
Steps Clinicians Should Take

- Know if patients under your care are at risk of CRE
  - Facility CRE infection rates?
  - Patient received medical care internationally?
  - Overnights stay in healthcare facility outside U.S. in prior 6 months?
- Apply contact precautions for patients current or previously colonized or infected with CRE
  - Dedicated room, equipment and staff, if possible
- Wear a gown and gloves during patient care
- Perform hand hygiene before and after contact with patient or their environment

Steps Clinicians Should Take (2)

- Complete inter-facility transfer form
- Ensure labs immediately alert clinical and infection prevention staff when CRE identified
- Prescribe and use antibiotics wisely
- Discontinue devices once no longer necessary

Inter-facility Transfer Form



Inter-facility Infection Control Transfer Form

This form must be filled out for transfer to accepting facility with information communicated prior to or with transfer.
Please attach copies of latest culture reports with susceptibilities if available.

Sending Healthcare Facility:

Patient/Resident Last Name	First Name	Date of Birth	Medical Record No.

Name/Address of Sending Facility	Sending Unit	Sending Facility Phone

Sending Facility Contacts	Name	Phone	E-mail
Case Manager/Admin/SW			
Infection Prevention			

Is the patient currently in isolation? ☐ No ☐ Yes
Type of isolation (check all that apply) ☐ Contact ☐ Droplet ☐ Airborne ☐ Other:_____

Does patient currently have an infection, colonization OR a history of positive culture of a multidrug-resistant organism (MDRO) or other organism of epidemiological significance?	Colonization or history *Check if YES*	Active infection on Treatment *Check if YES*
Methicillin-resistant Staphylococcus aureus (MRSA)		
Vancomycin-resistant Enterococcus (VRE)		
Clostridium difficile		
Acinetobacter, multi-drug resistant*		
E coli, Klebsiella, Proteus etc. w/Extended Spectrum ß-Lactamase (ESBL)*		
Carbapenemase resistant Enterobacteriaceae (CRE)*		
Other:		

Does the patient/resident currently have any of the following?

- ☐ Cough or requires suctioning
- ☐ Diarrhea
- ☐ Vomiting
- ☐ Incontinent of urine or stool
- ☐ Open wounds or wounds requiring dressing change
- ☐ Drainage (source)_____
- ☐ Central line/PICC (Approx. date inserted____/____/____)
- ☐ Hemodialysis catheter
- ☐ Urinary catheter (Approx. date inserted____/____/____)
- ☐ Suprapubic catheter
- ☐ Percutaneous gastrostomy tube
- ☐ Tracheostomy

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http://doh.sd.gov/diseases/hai/CRE.aspx

SOUTH DAKOTA DEPARTMENT OF HEALTH

Steps Facilities Should Take

- Require and strictly enforce CDC guidance for CRE detection, prevention, tracking, and reporting
- Make sure their lab can accurately identify CRE
- Promote antimicrobial stewardship
- Recognize resistant organisms as important to patient safety
- Understand their prevalence in the facility and region
- Identify colonized and infected patients in the facility and ensure precautions are implemented
- Require Inter-facility Transfer Form for patients
- Participate in Regional and facility-based efforts to stop transmission of these organisms
- Notify health department of outbreaks

Steps Patients Should Take

- Tell your doctor if hospitalized in another country
- Take antibiotics only as prescribed
- Expect all doctors, nurses, and care providers to wash their hands before touching you
- Clean your own hands often
  - Before preparing or eating food
  - Before touching your eyes, nose, or mouth
  - Before and after changing dressings/bandages or handling medical devices
  - After using bathroom
  - After blowing nose, coughing, or sneezing
- Ask questions and participate in your care

Steps Health Department Should Take

- Conduct surveillance to determine incidence or prevalence of CRE
- Increase awareness of CRE prevalence among healthcare facilities
- Provide a standardized Inter-facility Transfer Form
- Consider adding CRE as a reportable condition
- Include a range of facility types when developing regional prevention projects
- Be a resource for healthcare facilities on appropriate infection prevention measures and antimicrobial stewardship

Summary

- There are bad bugs out there
- You are not alone in the fight
- Let us know what we can do to further support you

Thank You!

Joshua Clayton, PhD, MPH
State Epidemiologist
SD Department of Health
615 East 4th Street
Pierre, SD 57501
605-773-3737
Joshua.Clayton@state.sd.us

https://doh.sd.gov/diseases/hai/