

National Center for Emerging and Zoonotic Infectious Diseases



State and Regional Lab Breakout Session

Division of Healthcare Quality Promotion

March 19, 2018



General Antibiotic Resistance Lab Network (ARLN) Overview

Stephanie Gumbis

March 19, 2018

Antibiotic Resistance Laboratory Network

Nationwide lab capacity to detect AR threats.

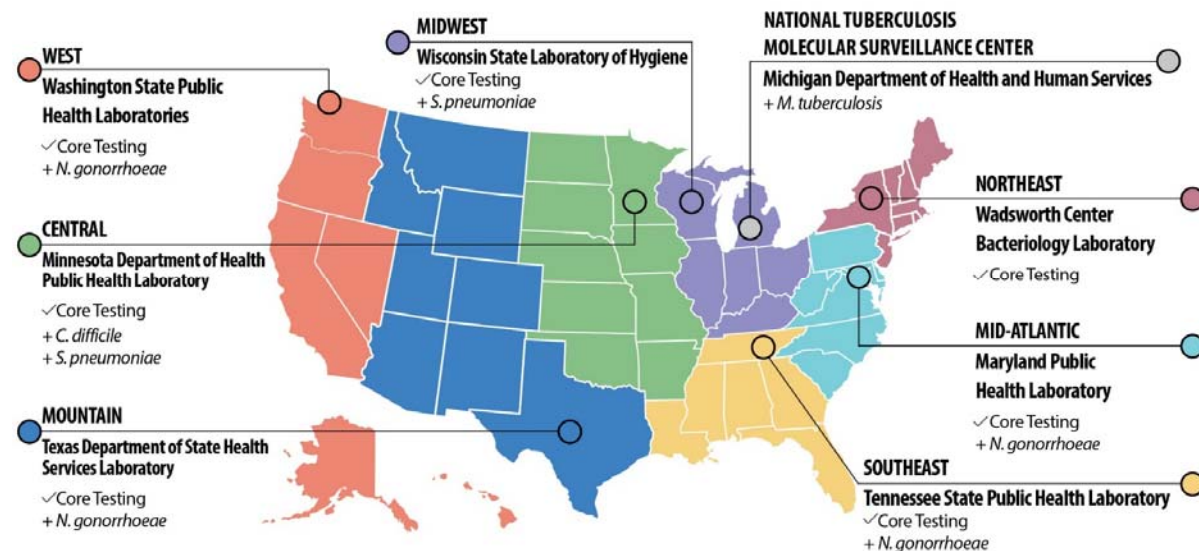
Tracks resistance to identify outbreaks faster, stop spread, and protect people.

56 state and local labs

7 Regional Laboratories

CDC lab expertise

Coordination of public health response



AR Lab Network Core Testing



CRE/CRPA Isolate Characterization

Targeted surveillance

- Carbapenem-R *Acinetobacter* spp.
- ESBL-producing *Enterobacteriaceae*
 - Isolate testing for *mcr*-mediated colistin resistance

Outbreak Response CRE Colonization Screening



Confirms CRE
Submits to HAI Coordinator



Identifies Patient Contacts
Coordinates Swab Collection



CRE Colonization Screening
from Rectal Swabs



Results to Facility,
Epidemiologist, and Lab in 2
Days

AR Lab Network Core Testing

***Candida* testing**

- Expansion to all Regional Labs in FY17
- Antifungal susceptibility testing for resistant *Candida* such as *C. glabrata*, *C. haemulonii*, and *C. auris*
- *C. auris* species confirmation, or “rule-out”
- *C. auris* colonization screening



AR Lab Network Supplemental Testing

- ***Neisseria gonorrhoeae***
 - 4 regional labs
 - Objective: 20,000 isolates
- ***Streptococcus pneumoniae***
 - 2 regional labs
 - Objective: 1,000 isolates
- ***Clostridium difficile***
 - 1 regional lab
- ***Mycobacterium tuberculosis***
 - National TB Center (Michigan)
 - Every domestic TB isolate is sequenced



Neisseria gonorrhoeae



Streptococcus pneumoniae



Clostridium difficile



Mycobacterium tuberculosis

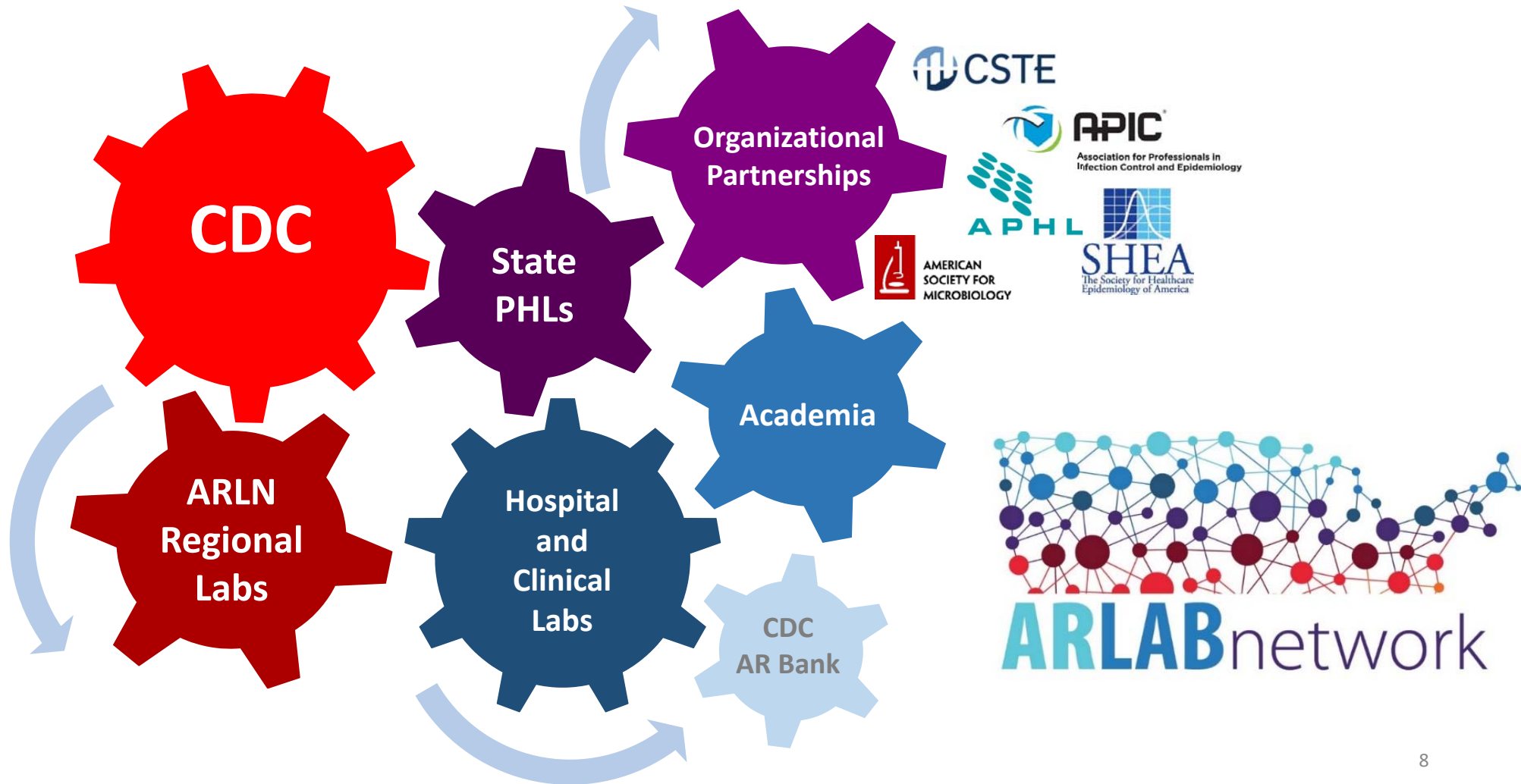
AR Lab Network Testing Data

January to December 2017

- ***Neisseria gonorrhoeae***
 - 8,037 isolates tested (AST)
 - 605 isolates sequenced
- ***Candida***
 - 468 isolates tested (AST) ... 169 identified as *C. auris*
- ***Streptococcus pneumoniae***
 - 318 isolates serotyped with AST
- ***Clostridium difficile***
 - 510 isolates sequenced
 - 271 isolates cultured



AR Lab Network: Partnerships Make it Possible





Update on CRE and CRPA testing in ARLN

Sarah Malik, PhD

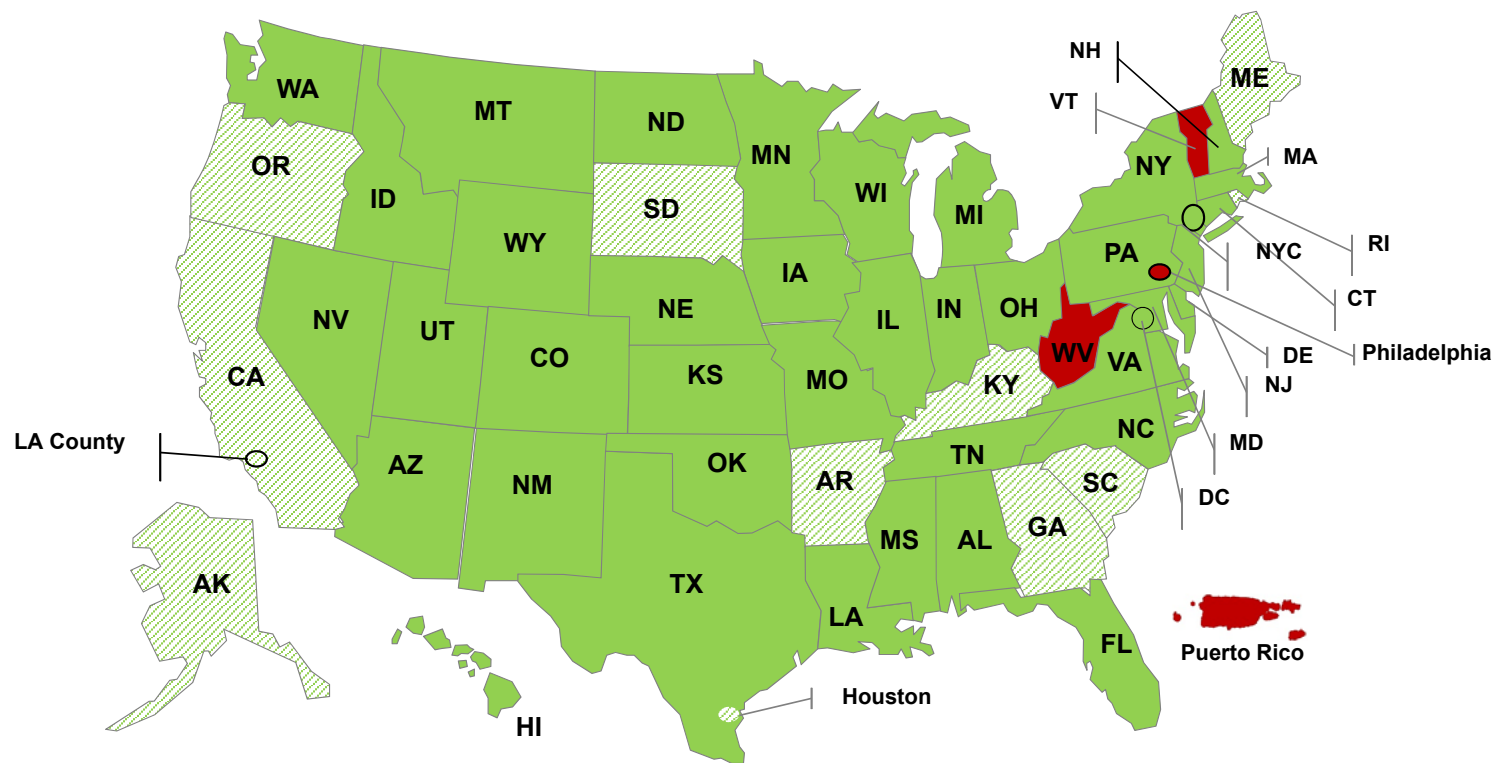
ARLN Activities Lead

AR Capacities and Special Studies Team

Division of Healthcare Quality Promotion

ELC Grantees Meeting, 19th March 2018

State CRE/CRPA Testing Summary – April 2018



-  Full testing
-  Partial testing
-  Coming online in 2018

Preliminary data



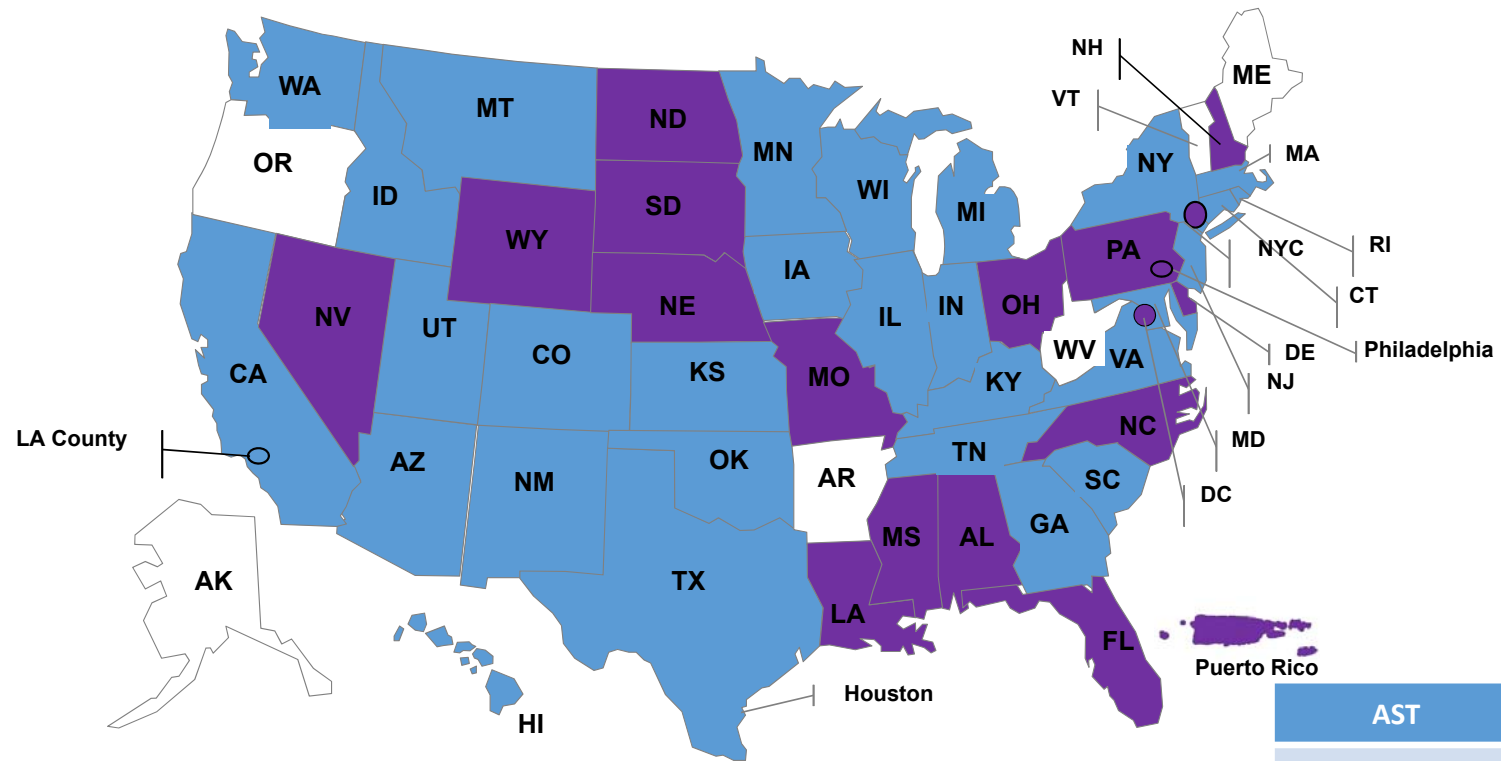
ARLN State Lab Capacity*

	Organism ID	AST	Carbapenemase production testing	Carbapenemase gene identification						<i>mcr testing</i>	
				KPC	NDM	OXA-48	VIM	IMP-1	IMP+	<i>mcr-1</i>	<i>mcr-2</i>
Regional labs	All	All	All	All	All	All	All	All	All	All	All
State/local labs	56	50	54	55	55	55	55	40	19	23	19

*Validated or validating as of March 2018

Preliminary data

State Lab Capacity – AST

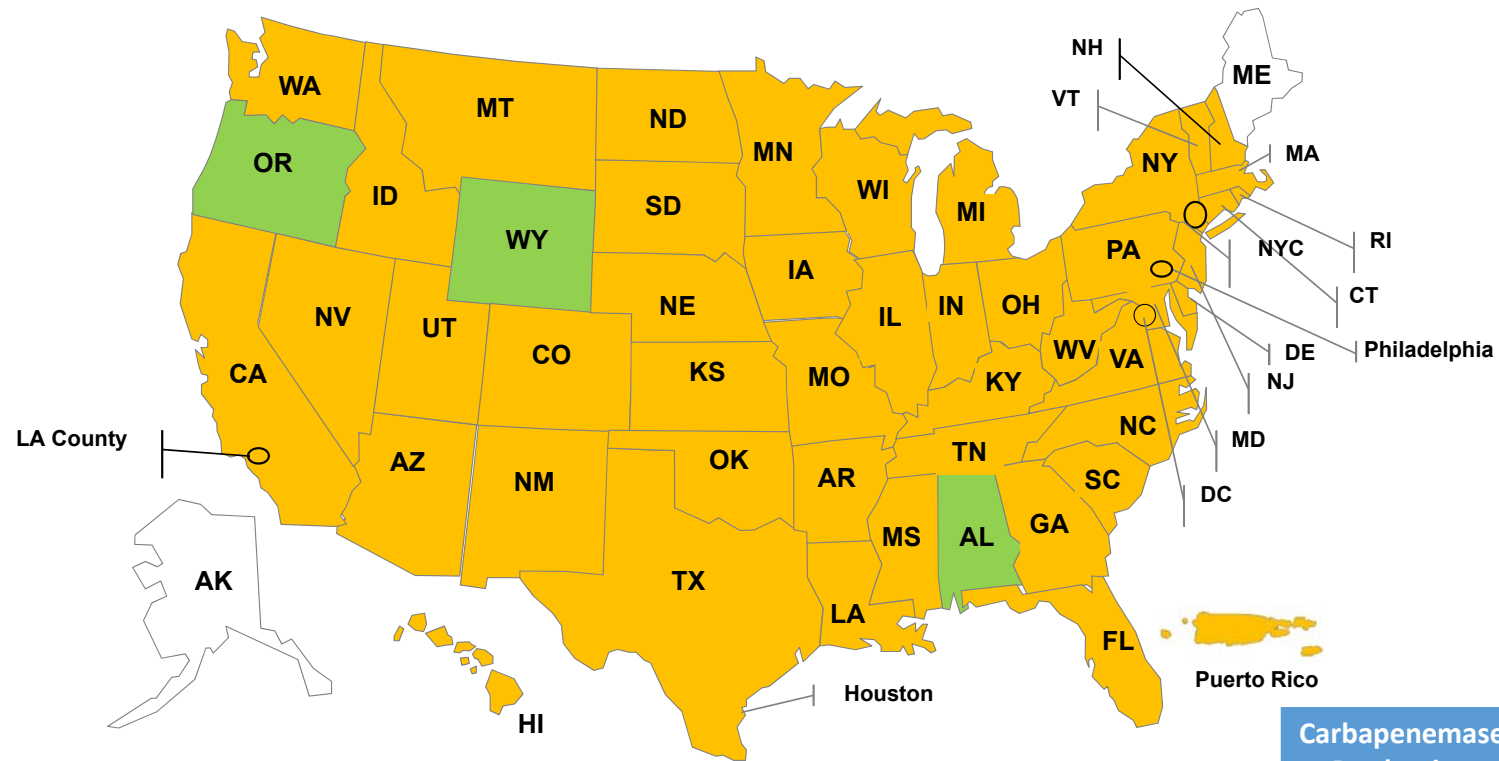


- Broth microdilution
- Other
- Not testing

AST	Number of Labs
BMD	30
Disk diffusion	25
Etest	23

Preliminary data

State Lab Capacity – Carbapenemase Production Testing

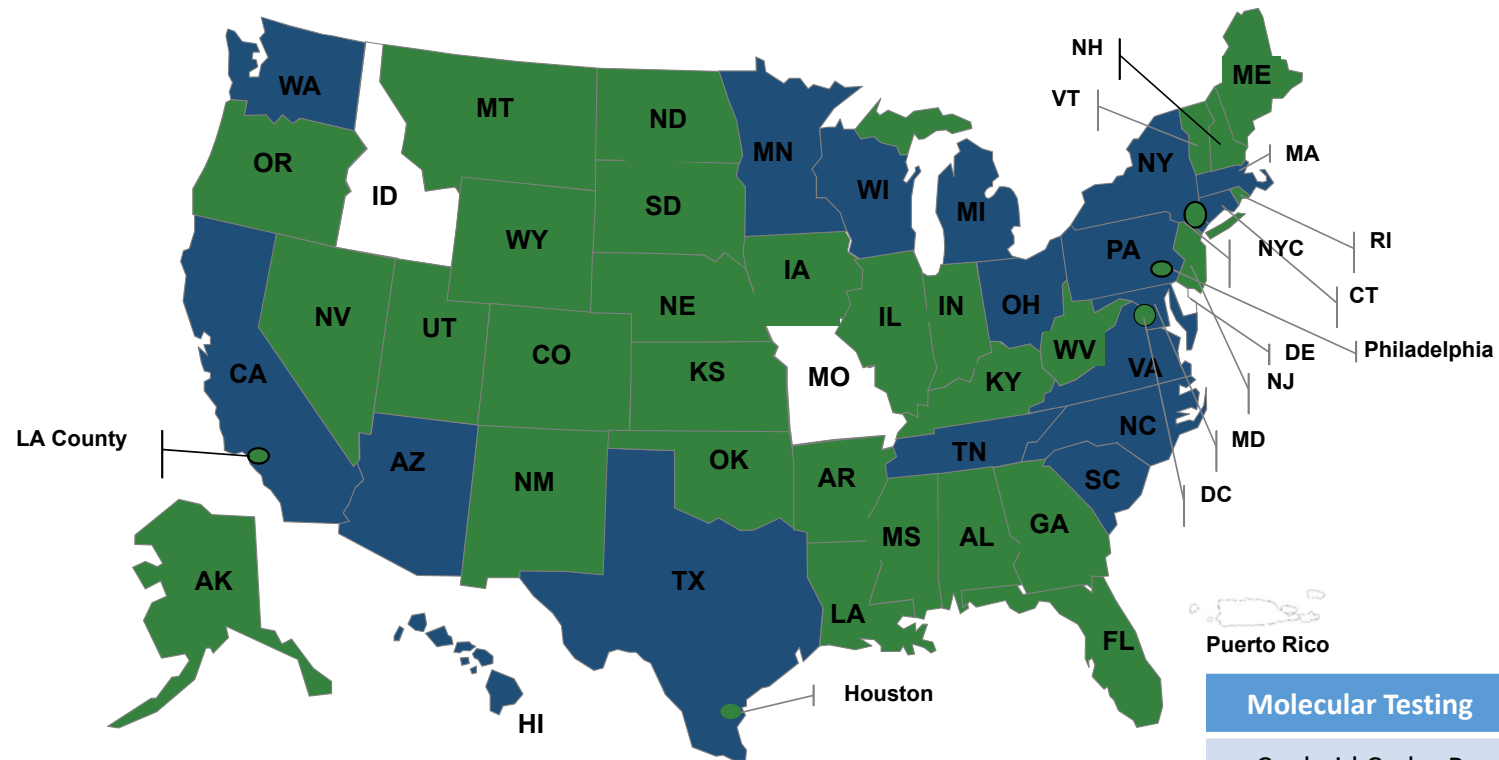


- mCIM/mCIM+CarbaNP
- CarbaNP
- Not testing

Carbapenemase Production	Number of Labs
mCIM	50
CarbaNP	15

Preliminary data

State Lab Capacity – IMP and IMP+ Testing

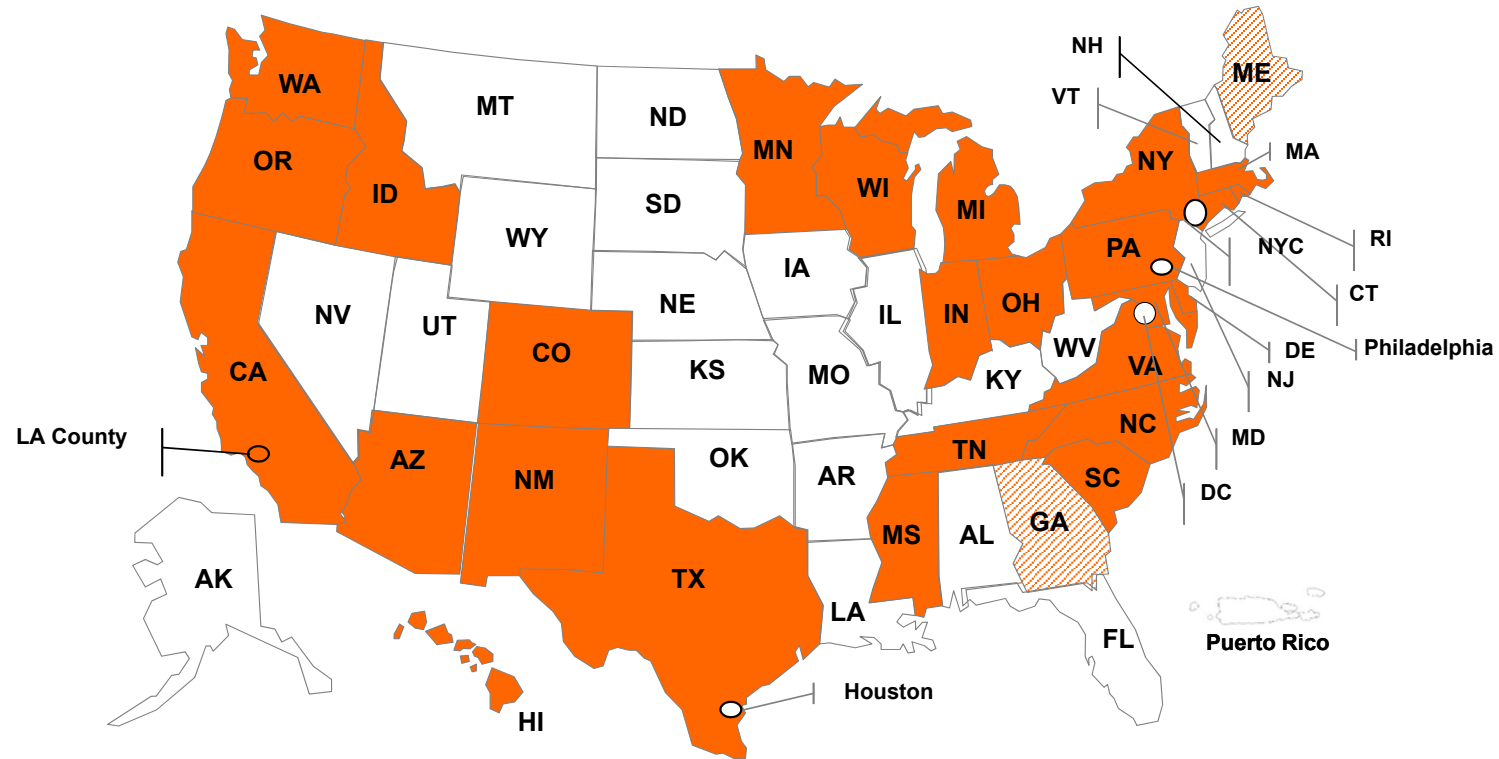


- IMP-1 testing
- IMP+ testing
- Not testing

Molecular Testing	Number of Labs
Cepheid Carba-R	34
CDC PCR	31
Other PCR	14

Preliminary data

State Lab Capacity – *mcr-1* and *mcr-2* Testing



 *mcr-1* testing
 *mcr-1* and *mcr-2* testing
 No *mcr* testing

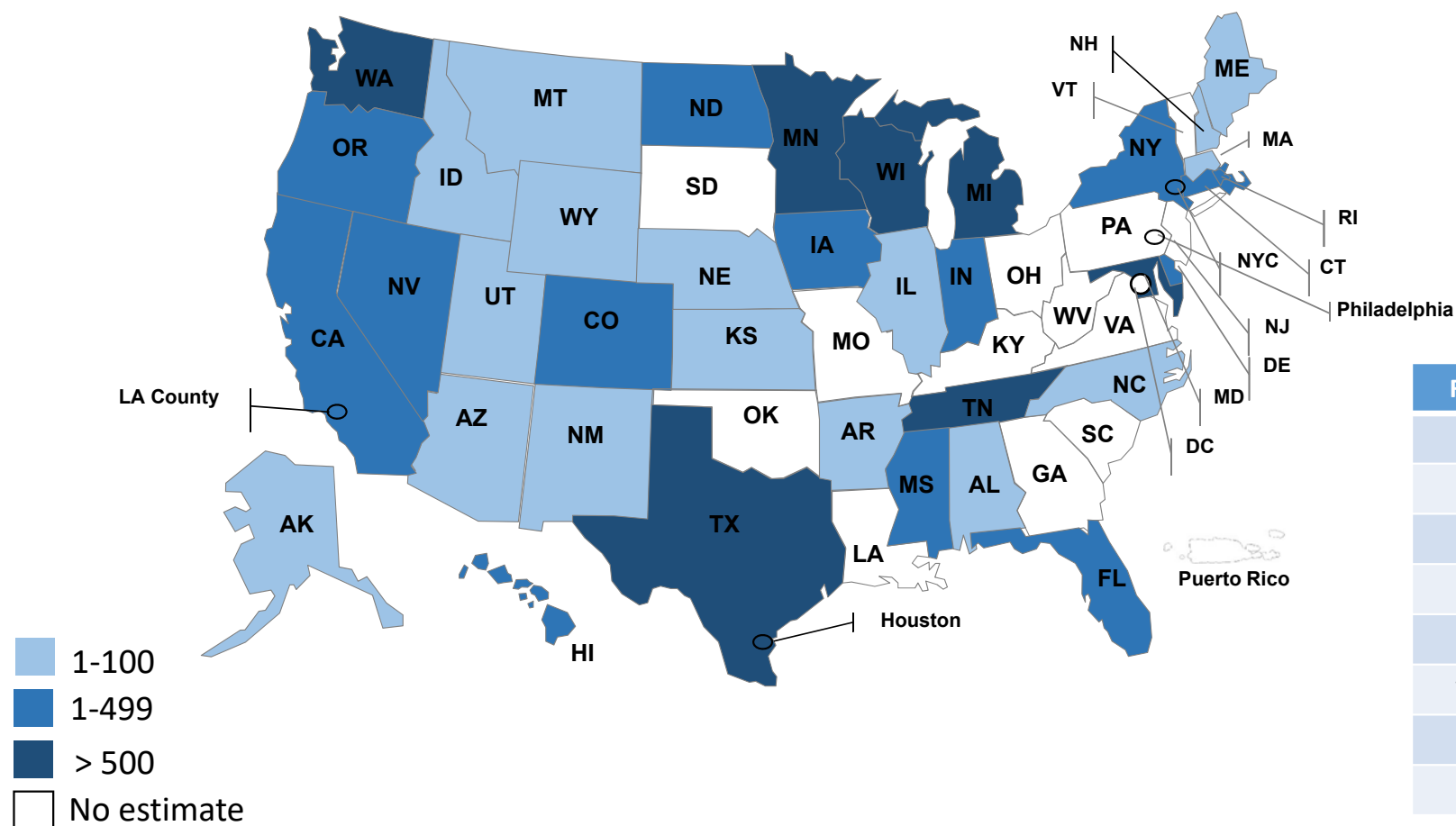
Preliminary data



CRE/CRPA Testing Summary – Jan 2017 to Feb 2018

- Number of isolates tested: 10,458
 - CRE: 6,893; CP-CRE 2,279 (33%)
 - CRPA: 3,565; CP-CRPA 105 (2.9%)
- Number of ARLN alerts received: 606

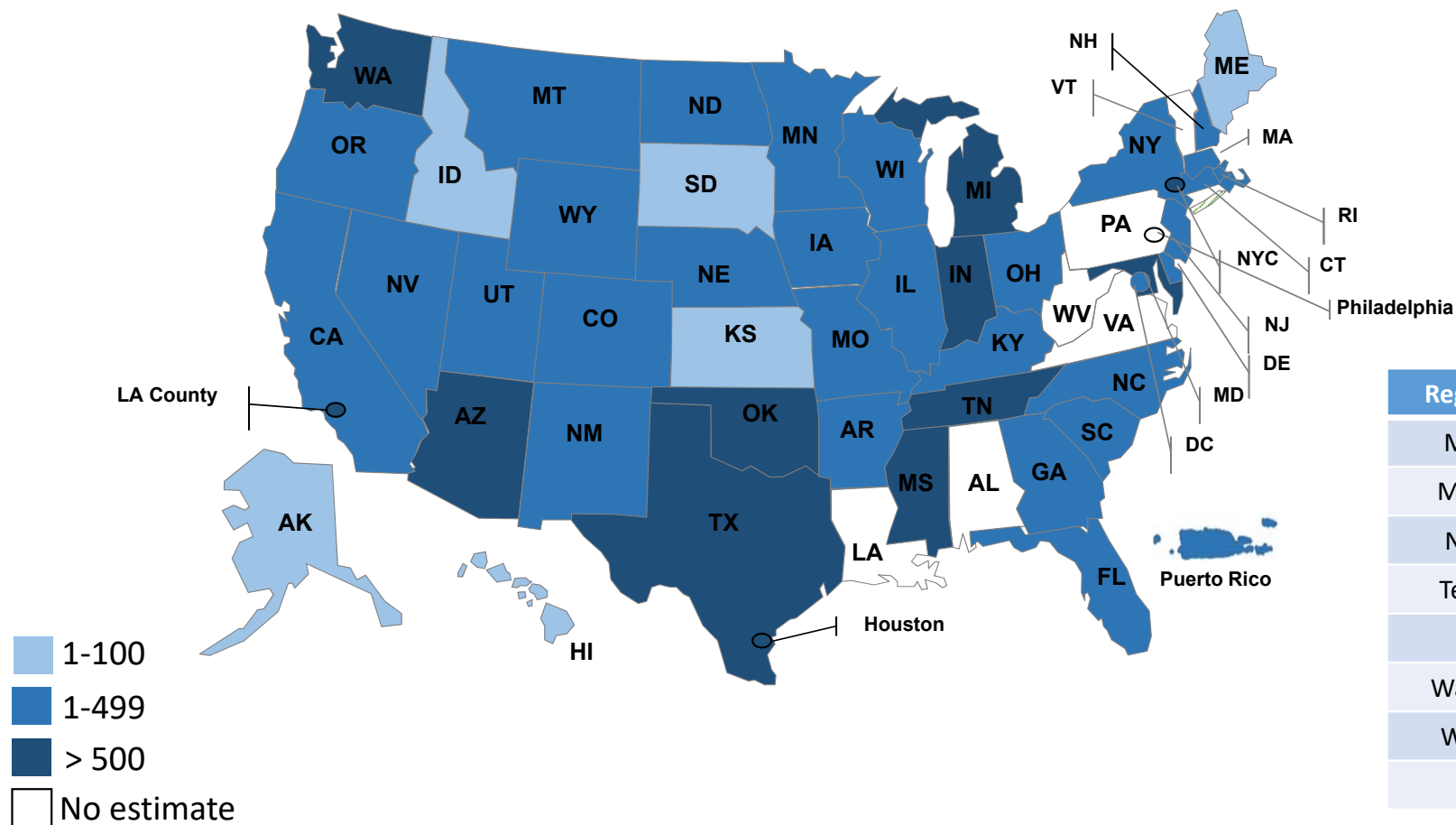
State CRE/CRPA Testing: Summary – 2017



Regional Lab	Isolates Tested
Maryland	2,044
Minnesota	1,019
New York	469
Tennessee	1,974
Texas	1,100
Washington	1,197
Wisconsin	2,393
Total	10,454

Preliminary data

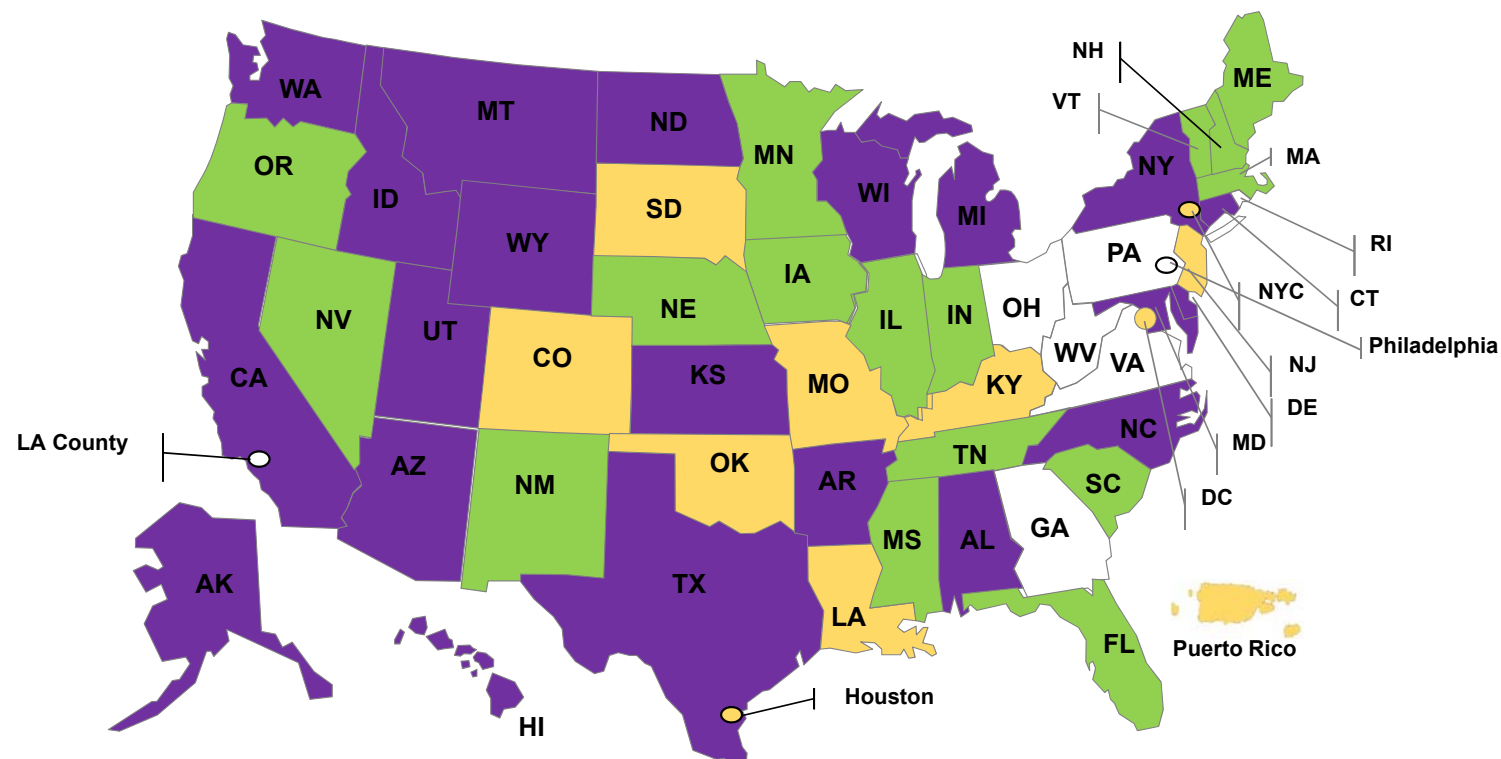
State CRE/CRPA Testing: Projections



Regional Lab	Projected Isolates
Maryland	2,263
Minnesota	2,220
New York	2,400
Tennessee	5,000
Texas	4,094
Washington	1,810
Wisconsin	3,110
Total	20,897

Preliminary data

State CRE/CRPA Testing: Status of Data Reporting



■ CSV upload ■ Excel spreadsheets ■ Implementing plan □ Not reporting

Preliminary data

Summary of State CRE/CRPA Testing

- As of March 2018, 54 state/local public health labs will be online with testing
- Total isolates tested:
 - CRE/CRPA: 10,458
 - Colonization screening swabs: 1,603
 - Targeted surveillance: 237
- ARLN alerts:
 - 606 since January 2017 with 35 labs sending alerts
 - 90 public health responses resulting from ARLN alert notifications
 - All KPC cases should be reported to your local HAI coordinator

ELC Progress Metrics

- Number of laboratory personnel trained and proficient (i.e., able to perform independently and without supervision) in performing all phenotypic testing for CRE and CRPA in their test directory [Activity 4a]
 - Number of laboratory personnel trained and proficient in performing all molecular testing for CRE and CRPA in their test directory [Activity 4a]
 - Proportion of clinical laboratories in the jurisdiction submitting isolates of CRE and CRPA for testing [Activities 5a and 5b]
 - Number of each type of healthcare facility associated with submitting clinical laboratories (e.g., acute care, long-term acute care, long-term care, etc.)
 - Proportion of acute care and long-term acute care facilities represented by submitting clinical laboratories. [Activities 5c-5e]
 - Number of isolates received from participating clinical laboratories [Activities 5c-5e]
 - Number of isolates tested
 - Number of carbapenemase-producing isolates that initiated colonization testing in collaboration with HAI coordinator(s) and ARLN regional laboratory
 - Number of isolates stored
 - Number of isolates transported, upon request, to CDC
 - Proportion of test results communicated to submitting clinical laboratory within 48 hours
 - Proportion of test results with alert values communicated to local public health authorities and CDC within 24 hours
 - How have your laboratory and your health department's HAI coordinator engaged with each other, as well as other prevention partners, to provide and discuss timely updates on CRE/CRPA initiatives, test results, and resulting activities? [Activities 5a and 5b]
 - How have your public health laboratory and HAI coordinator/program worked together to engage your CRE/CRPA network of participating clinical laboratories and associated healthcare facilities for reasons not directly related to reporting test results? [Activities 5c and 5d]
 - Describe any challenges you've faced with reporting CRE/CRPA results back to clinical laboratories within 2 working days of testing. [Activity 4e]
 - Describe any challenges you've faced with reporting results identified as an "alert" value (e.g., new or emerging resistance) to state HAI coordinator and CDC within 1 working day of testing). [Activity 5e]
 - Describe your most important success(es) made possible through ELC HAI/AR K1A funding during the past project year. Include a brief description about what you did, the results of your efforts, and what you learned. Additional details will be included in a CDC-provided reporting tool. [All Activities]
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Goals for 2018

- Testing
 - Develop and integrate new testing protocols and capacities (OXA-23 multiplex, mcr3/mcr4 multiplex, custom AST panels for new drugs)
 - Reporting
 - Have all states uploading data to APHL AIMS portal
 - Programmatic
 - Focus on increasing awareness and use of colonization screening
 - Increase testing for targeted surveillance targets
 - Improve partnerships: between lab and epi, among states within each region, among regions, with professional organizations
 - Use ARLN data to improve containment and prevention activities
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Table Assignments for Break-out Discussions

Please use the table below to locate your table assignment. We understand that not all States/Jurisdictions listed may have funded laboratory activities and/or lab representation, but are including in case an epi partner is interested in participating.

