

# Welcome

Office for State, Tribal, Local and Territorial Support  
*presents...*

## *CDC Vital Signs*

### Stopping Carbapenem-Resistant Enterobacteriaceae Infections: Making Health Care Safer

March 12, 2013  
3:30–4:30 pm (EDT)



Centers for Disease Control and Prevention  
Office for State, Tribal, Local and Territorial Support

# Agenda

3:30 pm	Welcome & Introductions	<b>Judith A. Monroe, MD</b> Director, Office for State, Tribal, Local and Territorial Support Deputy Director, CDC
3:34 pm	Presentations	<b>Alexander J. Kallen, MD, MPH</b> Medical Epidemiologist and Outbreak Response Coordinator, Division of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), CDC  <b>Wendy Bamberg, MD</b> Medical Epidemiologist and Healthcare-Associated Infections Program Manager, Colorado Department of Public Health and Environment  <b>Zintars G. Beldavs, MS</b> Manager, Healthcare-Associated Infections, Oregon Public Health Division, Oregon Health Authority
4:00 pm	Q&A and Discussion	<b>Judith A. Monroe, MD</b>
4:25 pm	Wrap-up	<b>Judith A. Monroe, MD</b>
4:30 pm	End of Call	



**CDC**  
**Vital**signs™ Teleconference  
to support STLT efforts and build  
momentum around the monthly  
release of CDC *Vital Signs*





# CDC Vital Signs

## *Focus on Carbapenem-Resistant Enterobacteriaceae (CRE)*

Alex Kallen, MD, MPH  
Medical Officer

Division of Healthcare Quality Promotion  
Centers for Disease Control and Prevention



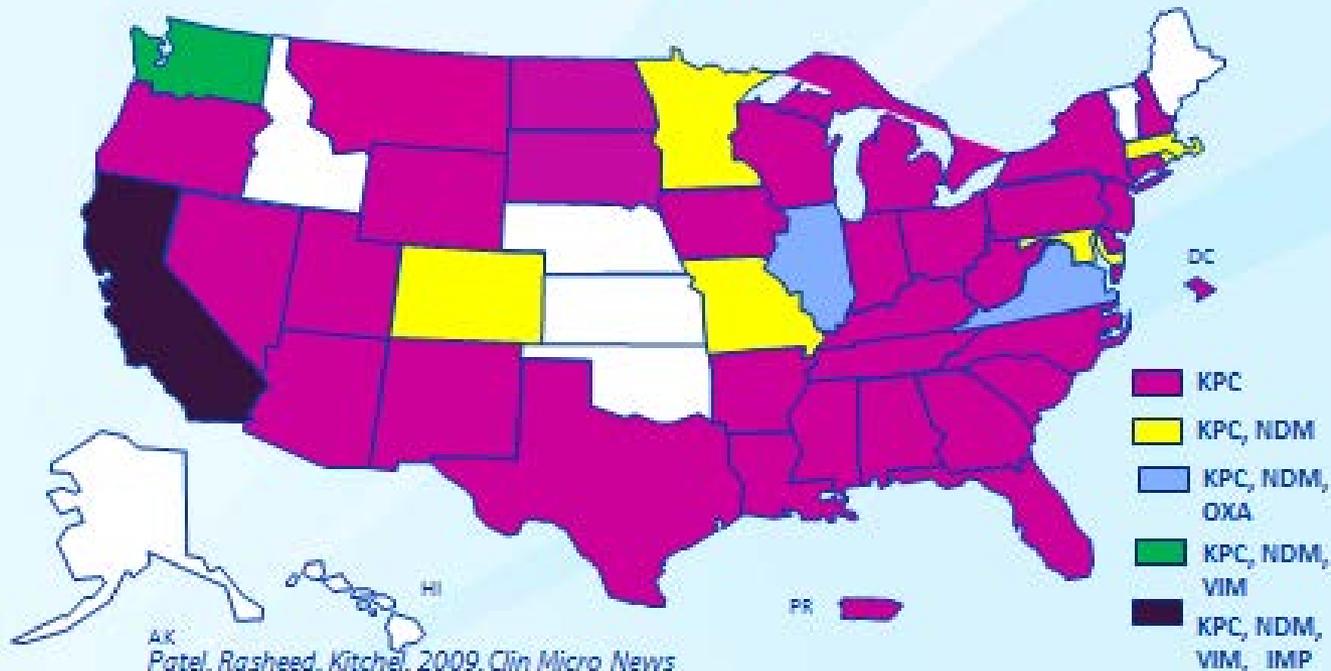
U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention

# Enterobacteriaceae

- ❑ Common cause of healthcare and community infections
- ❑ Resistance to many antibiotics has developed over the last several decades, but carbapenems have remained a treatment option
- ❑ Carbapenem resistance rare before 2000
- ❑ Emergence of new “carbapenemases” has resulted in spread of CRE across the US
  - KPC – *Klebsiella pneumoniae* carbapenemase
  - NDM – New Delhi metallo- $\beta$ -lactamase

# Spread of Carbapenemase Producers

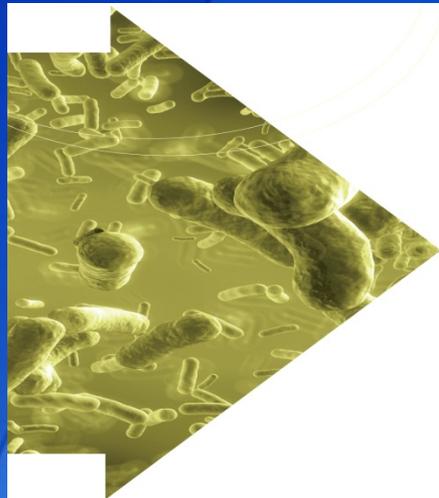
## Carbapenemase-producing CRE in the United States



Patel, Rasheed, Kitchel. 2009. *Clin Micro News*  
*MMWR Morb Mortal Wkly Rep.* 2010 Jun 25;59(24):750.  
*MMWR Morb Mortal Wkly Rep.* 2010 Sep 24;59(37):1212.  
CDC, unpublished data



# Epidemiologically Important



- ❑ Common cause of infection
- ❑ Multidrug-resistant, limited treatment options
- ❑ Capable of transferring resistance
- ❑ High mortality rates for invasive infections
- ❑ Potential to spread out of healthcare settings

# CRE Vital Signs: Key Points

## Making Health Care Safer

Stop Infections from Lethal  
CRE Germs Now

**4% & 18%** 

About 4% of US hospitals had at least one patient with a CRE (carbapenem-resistant Enterobacteriaceae) infection during the first half of 2012. About 18% of long-term acute care hospitals\* had one.

**42** 

One type of CRE infection has been reported in medical facilities in 42 states during the last 10 years.

**1 in 2** 

CRE germs kill up to half of patients who get bloodstream infections from them.

\*Long-term acute care hospitals provide complex medical care, such as ventilation or wound care, for long periods of time.

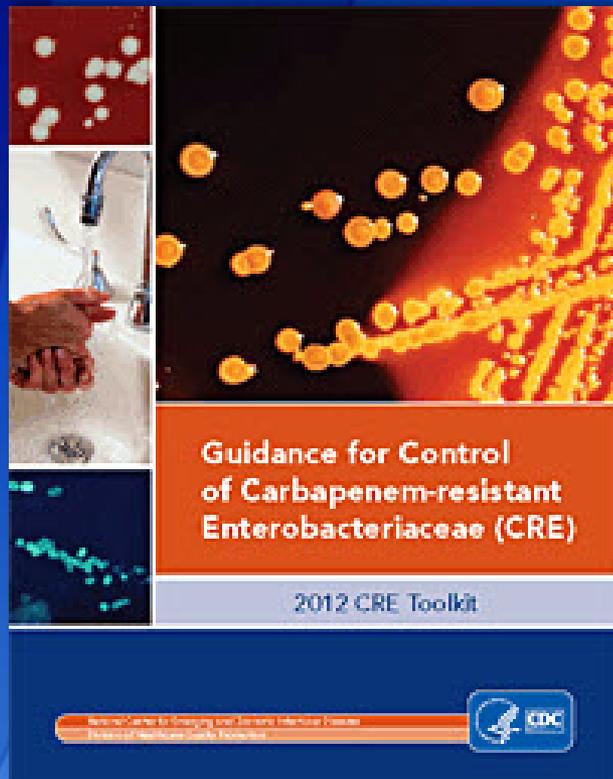
Source: CDC Vital Signs, March 2013 | [www.cdc.gov/vitalsigns](http://www.cdc.gov/vitalsigns)

- ❑ CRE are increasing
  - 1% to 4% overall
  - Over 10% of *Klebsiella* are CRE
- ❑ Most hospitals do not see CRE regularly
  - 4% of hospitals
  - 18% of LTACHs
- ❑ Most CRE are still healthcare-associated

# Preventing CRE Transmission

- ❑ Prevention strategy includes (detect and protect):
  - Identifying colonized or infected patients
  - Using appropriate transmission-based precautions
- ❑ Facilities have used CDC recommendations to control outbreaks of CRE
- ❑ Control requires action in individual facilities and across facilities in a region
  - Siouland VRE effort
  - Regional CLABSI prevention efforts
- ❑ Israel decreased CRE infection rates in all hospitals

# CDC CRE Toolkit

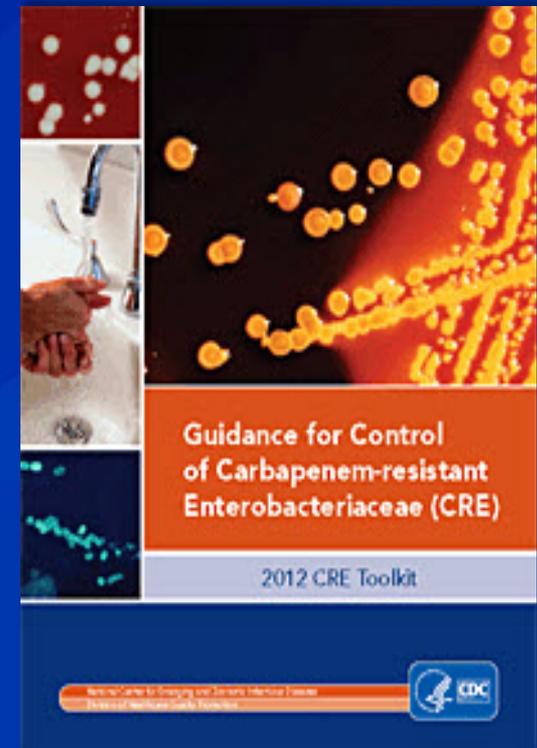


- ❑ Updates and expands 2009 guidance
- ❑ Provides recommendations for
  - Facilities
  - Regions

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

# Detect and Protect

- States can
  - Know CRE trends in their regions
  - Coordinate regional CRE tracking and control efforts
  - Require facilities to alert when transferring patients with CRE
  - Develop lab capacity to assist with CRE identification
  - Provide education about CRE prevention to facilities
  - Be proactive, if not yet or rarely affected by CRE



# CDC's Role

- ❑ Monitoring the presence of and risk factors for CRE infections through NHSN and EIP
- ❑ Providing CRE outbreak support
- ❑ Providing laboratory expertise
- ❑ Developing detection methods and prevention programs
- ❑ Helping improve antibiotic prescribing practices



# Carbapenem-Resistant *Enterobacteriaceae* (CRE): State Surveillance for Prevention

Wendy Bamberg, MD

Medical Epidemiologist, Infectious Diseases

Healthcare-Associated Infections Program Manager

Colorado Department of Public Health and Environment

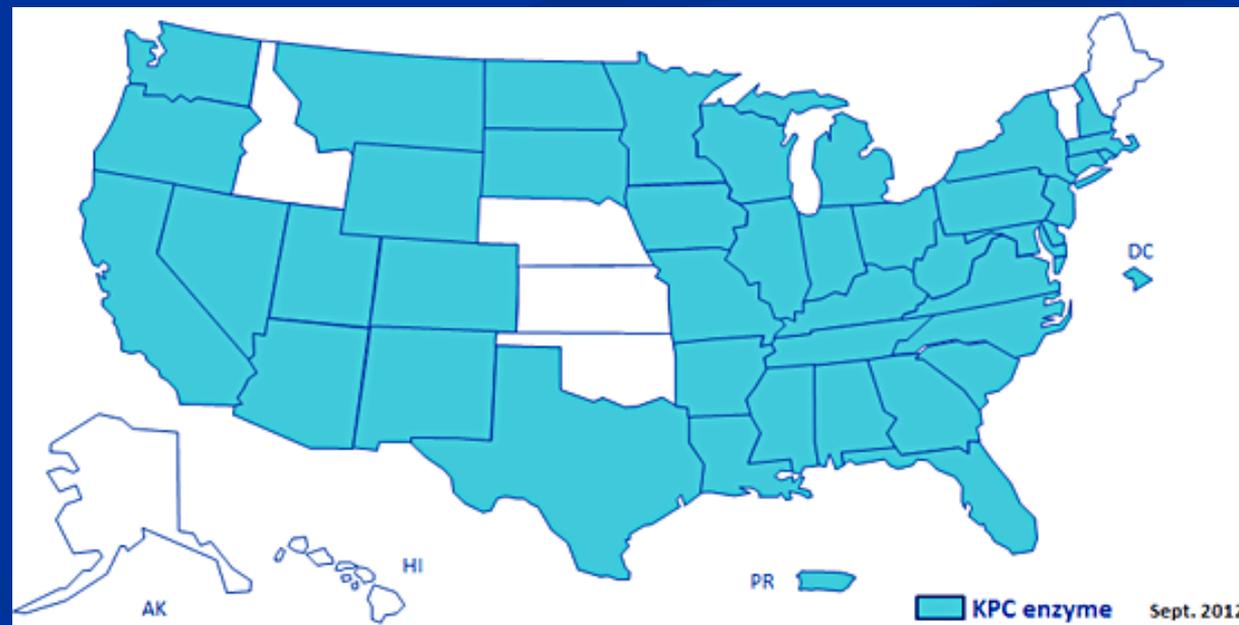


Colorado Department  
of Public Health  
and Environment

# CRE: A Public Health Problem

- Difficult to treat
- High mortality rates (up to half of patients with bloodstream infections)
- Identified in at least 42 states
- **Transmission is preventable** through appropriate infection control measures

**The prevalence and incidence of CRE in Colorado is unknown.**

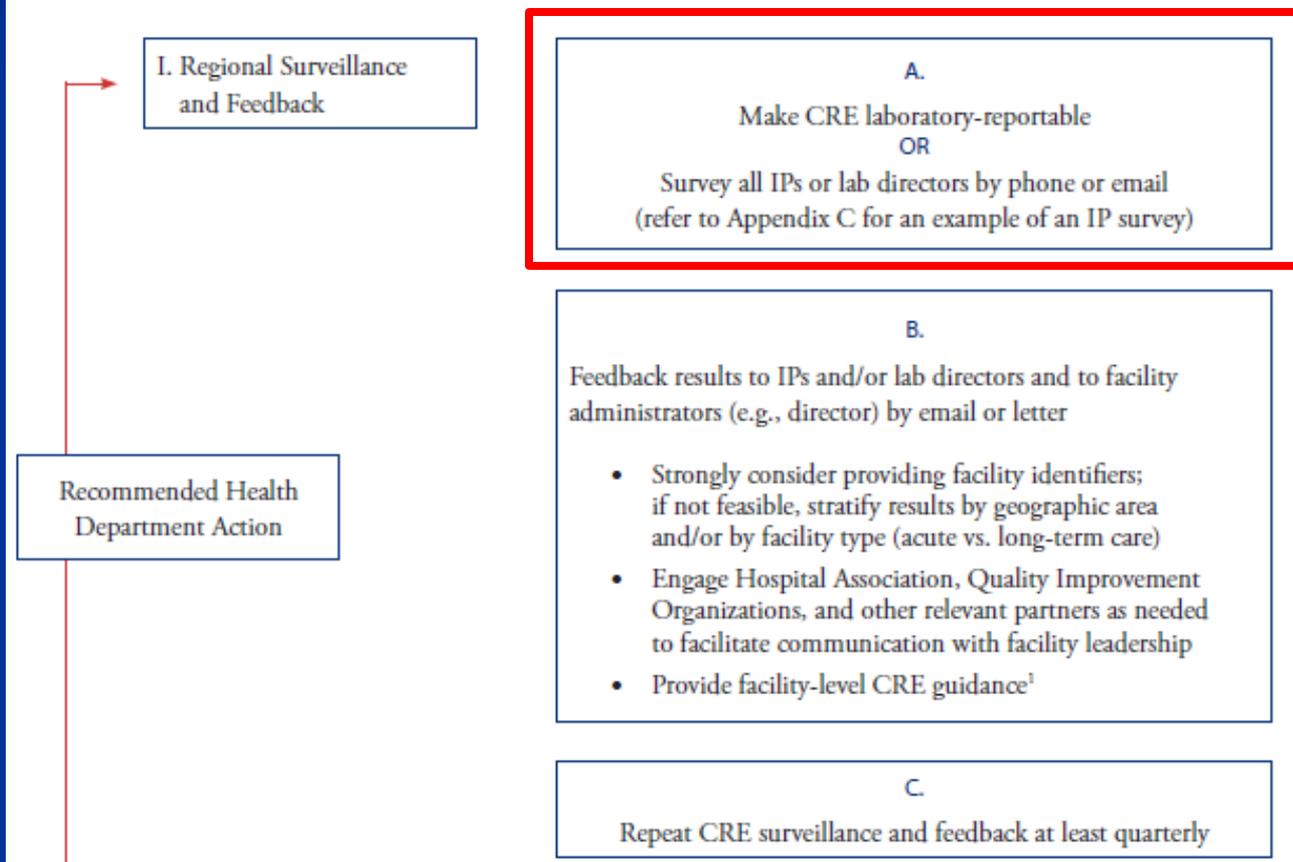


# CDC 2012 CRE Toolkit\*

“Health departments should understand the prevalence or incidence of CRE in their jurisdiction by performing some form of regional surveillance for these organisms.”

## Regions with Few CRE Identified

In regions where CRE have been identified but cases remain uncommon, an aggressive approach to prevention is needed to prevent further transmission and widespread emergence of CRE. This will require increased prevention efforts targeting select facilities in the region where CRE are found.



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

# Survey of Colorado Microbiology Laboratories—2011

- 63 Colorado laboratories were asked to complete a web-based survey and provide
  - Current methods used to detect CRE
  - Numbers or estimates of CRE over a 6-month period
- 25 laboratories (40%) statewide completed the survey
- Data extrapolated to provide rough estimates of CRE over a 1-year period: 418–620 isolates of CRE per year in Colorado
- Confusion over the definition of CRE indicated that estimates were likely inaccurate and too high

# Engaged Partners

- Formed a working group to determine the best next steps for detecting and preventing the transmission of CRE
  - Physicians, infection control experts, pharmacists, laboratorians, public health officials, and the hospital association
  - Recommended systematically tracking CRE in Colorado
  - Very interested in seeing accurate data on CRE in Colorado and regionally
- Engaged laboratories, healthcare facilities, and providers in the process of making CRE a reportable condition in Colorado
- The process increased awareness of the public health importance of CRE

# CRE Outbreak

- August 2012, Hospital A reported 2 cases of carbapenem-resistant *Klebsiella pneumoniae* to the health department
- Hospital A had been part of CRE working group
- 6 additional cases were found
- Cases were positive for the New Delhi metallo-beta-lactamase (NDM) enzyme
- First NDM in Colorado; largest NDM outbreak in the US to date

# CRE Reportable—Definition

November 30, 2012

- *Escherichia coli*, *Klebsiella* species, and *Enterobacter* species that are intermediate or resistant to at least one carbapenem (including imipenem, meropenem, doripenem, or ertapenem) AND resistant to all third-generation cephalosporins tested (ceftriaxone, cefotaxime, and ceftazidime)

OR

- *Escherichia coli*, *Klebsiella* species, and *Enterobacter* species that test positive for carbapenemase production (by any method [e.g., the Modified Hodge Test, disk diffusion, or PCR])

# Objectives of Performing CRE Surveillance

- Colorado early in the emergence of CRE—opportunity for prevention
- Provide facility-specific education
  - Each new case—opportunity to provide education and guidance to the facility in real time
  - Laboratories—provide education about CRE
- Provide statewide and regional data
- Develop ability to track rates over time
- Develop ability to detect outbreaks
- Develop ability to detect new community onset cases

# Preliminary Colorado CRE Surveillance Data\*

	December 2012	January 2013	Total*
<i>Enterobacter aerogenes</i>	2	3	5
<i>Enterobacter cloacae</i>	6	6	12
<i>Klebsiella pneumoniae</i>	0	2	2
<i>Klebsiella oxytoca</i>	1	0	1
<i>Escherichia coli</i>	1	1	2
<b>Total</b>	<b>10</b>	<b>12</b>	<b>22</b>

The majority of reported cases are from urine cultures (n=16).

\*These data are preliminary and will likely change as surveillance continues.

# Contact information

**Wendy Bamberg, MD**

Medical Epidemiologist

Healthcare-Associated Infections Program Manager

Communicable Disease Epidemiology Program

Colorado Department of Public Health and  
Environment

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303-692-2491





# Can We Get the Drop on CRE Before It Gets the Drop on Us?

CRE Vital Signs

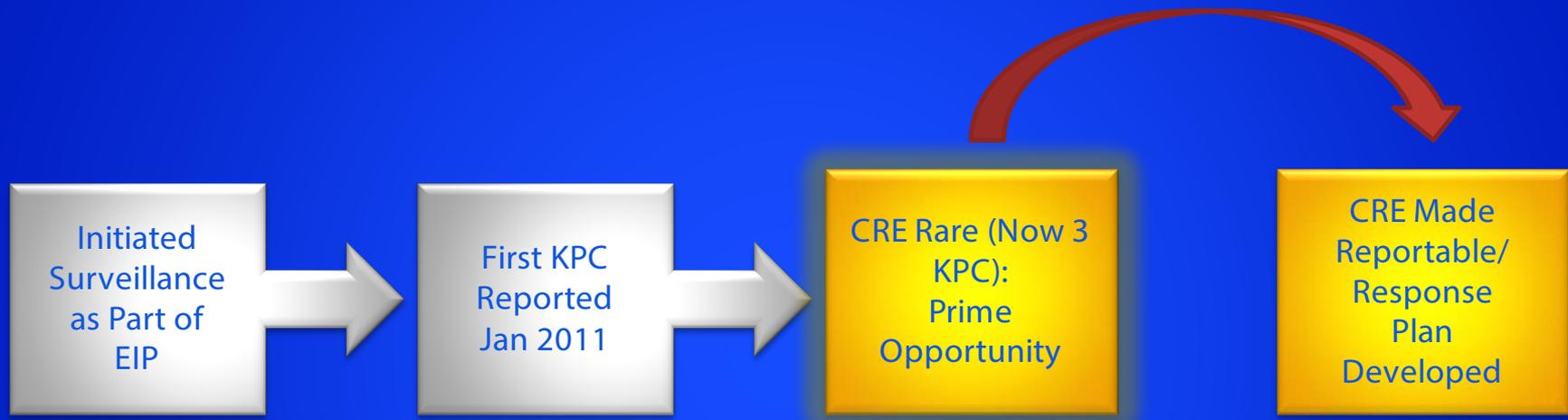
*Zintars Guntis Beldavs, MS*

*Healthcare-Associated Infections Program Manager, Oregon Public Health Division, Oregon Health Authority*

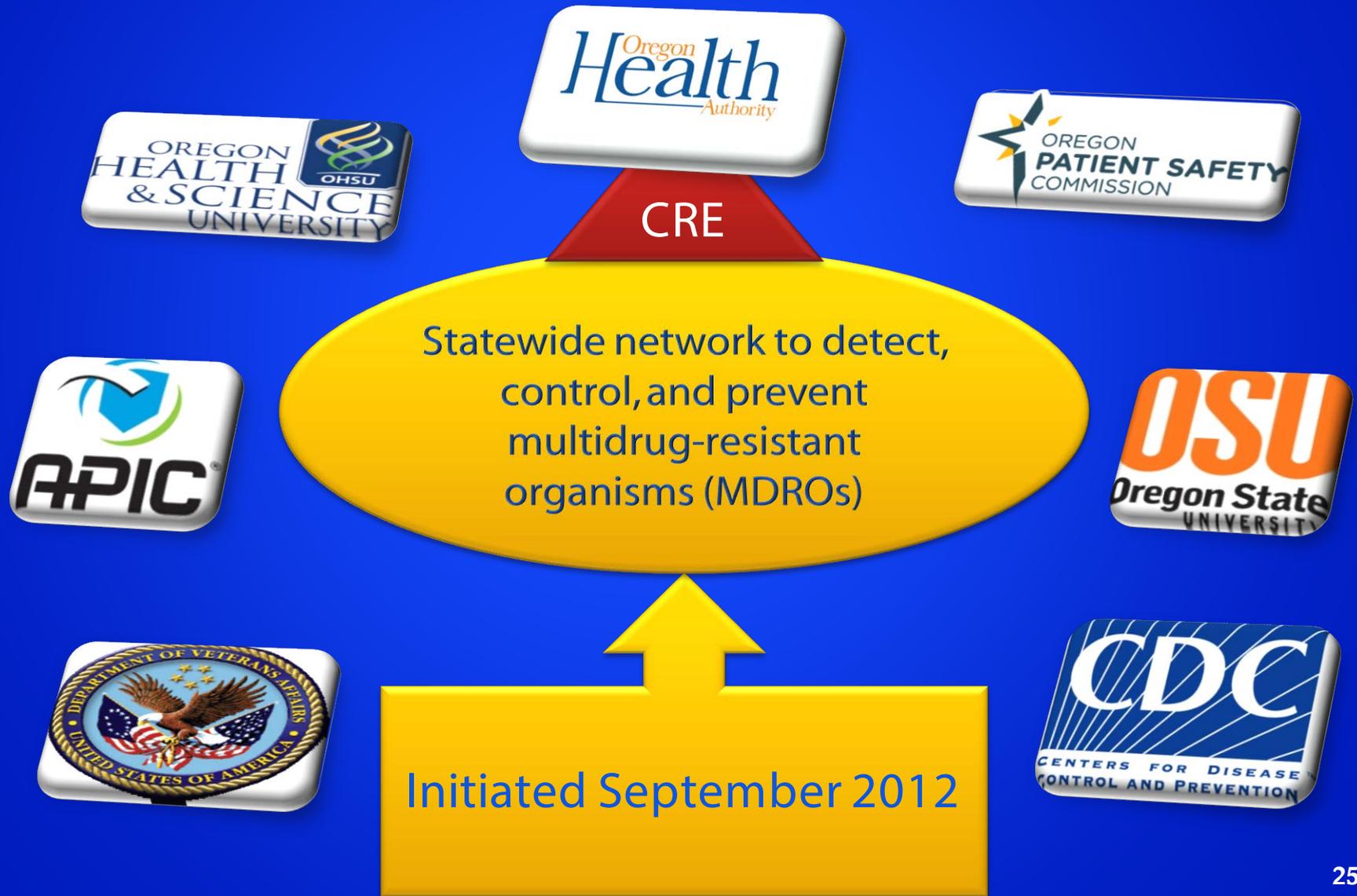
*March 12, 2013*



# Background



# Drug-Resistant Organism Prevention and Coordinated Regional Epidemiology (DRO-PCRE) Network



# DROP-CRE Network 2012–13 Plan: Assessment of Capacity

## Lab Needs Assessment: Testing Practices

Only 7/37 (19%) labs are using new CLSI breakpoints

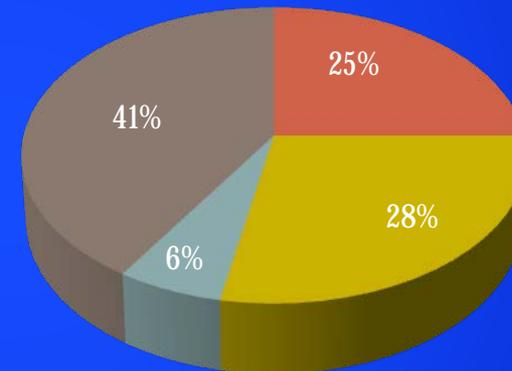
7/37 (19%) use Modified Hodge Test

No responding labs use PCR for detection

## LTCF Needs Assessment

50% had not heard of CRE

## IP Needs Assessment: Facility-specific definitions for MDR-GNR

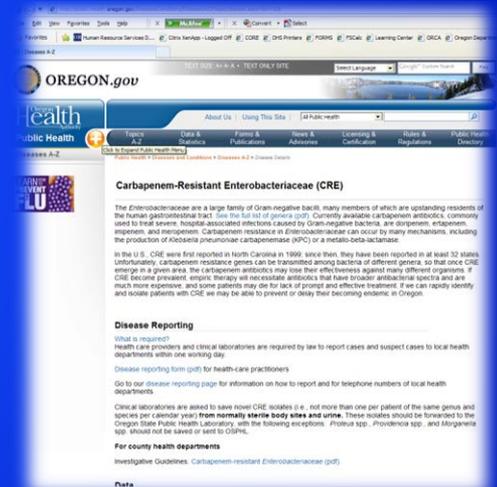


■ Resistant to at least 3 classes of antimicrobials  
■ Resistant to at least 2 classes of antimicrobials  
■ Susceptible to only 2 classes of antimicrobials  
■ Other

- Awareness
  - 55% agree that their facility is aware of patients' MDRO status upon admission
  - 58% agree that a receiving facility is made aware of patients' MDRO status upon discharge

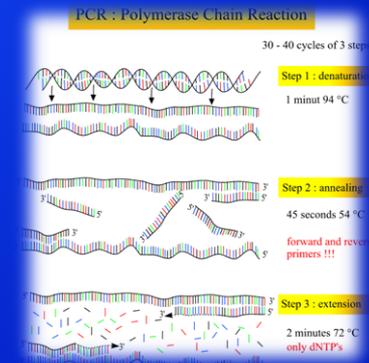
# DROP-CRE Network 2012–13 Plan: Education

Information Handouts for  
Patients and Staff



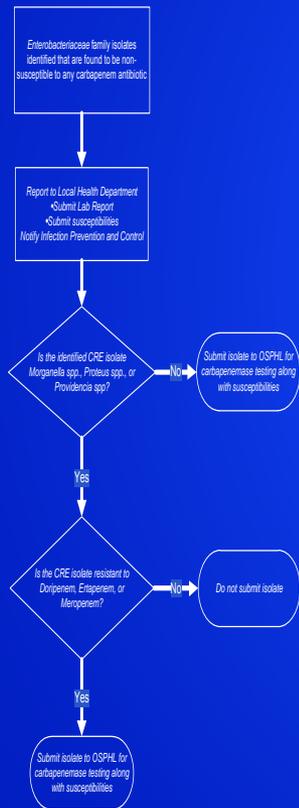
# CD Summary

# DROP-CRE Network 2012–13 Plan: Enhancing Laboratory Capacity

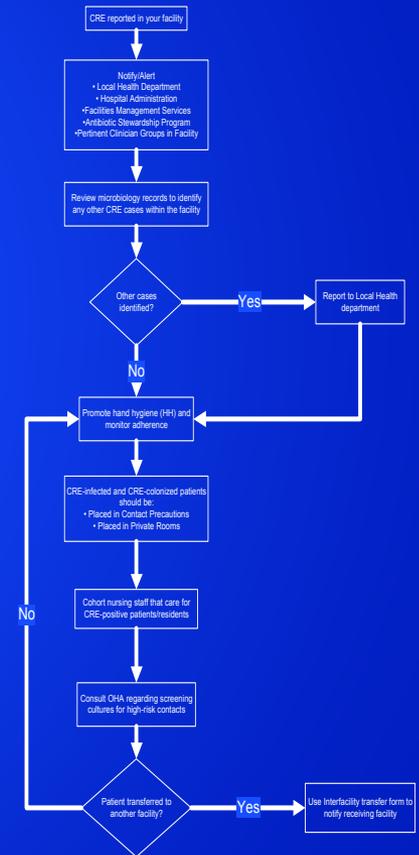


# DROP-CRE Network 2012–13 Plan: Assisting with Standardized Response

CRE Response Diagram for Laboratories



CRE Response Diagram for Infection Control



Assisted with response to newly identified KPC+ highly resistant *Acinetobacter baumannii* outbreak



# DROP-CRE Network 2012-13 Plan: Tracking CRE



**Case Entry** Development Version

HOME LIST PRINT

**Ima Resistant** DOB: 06/08/36 76F Clackamas C Carbapenem-Resistant Enterobacteriaceae Onset: 11/23/12 ID 349418

Basics Labs Clinical Risks Followup EpiLinks Contacts Notes Vaccine More

**Identifiers** (first, middle, last) Person

Ima MI Resistant  
1234 Main St  
Happy Valley OR 97086  
CLACKAMAS Special Housing

Home: 503 885 7805  
Type: Phone Number

Small or alternate contact info

**Demographics**

Race:  White  Black  Asian  Pacific Is.  ALIAN  Unknown  Refused  Other

DOB: 6/8/1936  
Age: 76 Years  
Sex:  F  M

Lang: English  
Born: Country of Birth  
Work: Worksite / School  
Occ: Occupation / Grade  
Subproc:

**Disease** Status: Carbapenem-Resistant Confirmed  
Stage: Stage  
Subtype/Serogroup: Klebsiella  
Sub-Subtype: Sub-Subtype  
Date: Date

Complete Oregon Case Form

RFI Ris Bil Ins Pag Bm Wt VORC

**Providers, Facilities & Labs**

Local ep: Tasha Poissant Keep Active   
Date Requir. Received by LHD: 12/4/2012  
LHD Completion Date: 12/4/2012  
State Completion Date: State Completion Date

OK to contact Patient:

Add a Quick Note

**Note History** Orpheus Users Print All Notes  
Tue, Dec 4, 2012, 1:58 pm # (0 min ago)  
Tasha Disease [DPH] Changed 'Hospitalized' from [Empty] to Yes

State Use: MDRO Entry

Medical Rec. Requested Date:  Yes  No 12/4/2012  
Medical Rec. Reviewed Date:  Yes  No

March 1, 2013 [LONG TERM CARE FACILITY TRANSFER FORM]

Use this form when transferring a resident with a Carbapenem-resistant *Enterobacteriaceae* infection (CRE). Examples include: *E. coli*, *Enterobacter spp.*, and *Klebsiella spp.* For more information on CRE, please visit: <http://tinyurl.com/aogfwbh>

**TRANSFERRING FACILITY:** Please send this completed form with the EMS transporters  
**RECEIVING FACILITY:** Please provide completed form to your facility's infection preventionist

Resident name (Last, First, MI) \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_  
DOB \_\_\_\_/\_\_\_\_/\_\_\_\_

Transferring facility name: \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Transferring facility contact: \_\_\_\_\_ Phone \_\_\_\_\_

Receiving facility name: \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**CRE Information**

Name of bacteria (genus and species): \_\_\_\_\_  
Date of last documented positive culture for CRE: \_\_\_\_\_  
The resident has an active infection with the above organism:  Yes  No  Unk  
The resident is colonized with the above organism:  Yes  No  Unk  
Location of infection (i.e., body site): \_\_\_\_\_  
The patient is currently on antibiotics:  Yes  No  Unk

The resident is currently on any precautions:  Yes  No  Unk  
If yes, type of precaution:  Contact  Droplet  Isolation  Airborne  Other \_\_\_\_\_

COMMENTS:

1/8/2013: Version 1 (tmp)



DATA BASE



# DROP-CRE Network Personnel

- **Advisory Committee**

- Dianna Appelgate, MS, MPH, CIC (Sacred Heart, Springfield)
- Avanthi Doppalapudi, MD (Providence, Medford)
- Ronald Dworkin, MD (Providence, Portland)
- Kendra Gohl, RN, BSN, CIC (Columbia, Astoria)
- Alex Kallen, MD, MPH (CDC, Atlanta GA)
- Margret Oethinger, MD, PhD (Providence, Portland)
- Robert Pelz, MD, PhD (PeaceHealth, Springfield)
- Kathy Phipps, RN, BSN, CPUR (Acumentra, Portland)
- Mary Post, RN, MS, CNS, CIC (OPSC, Portland)
- Pat Preston, MS (McMinnville)
- Sheryl Ritz, RN, BSN (Vibra, Portland)
- Susan Sharpe, PhD, DABMM, FAAM (Kaiser, Portland)
- Sarah Slaughter, MD (Providence, Portland)
- Cathy Stone, MT, CIC (Good Sam, Corvallis)

- **DROP CRE Core Group**

- **OHA**

- Zintars Beldavs, MS
- Genevieve Buser, MD (also EIS)
- Margaret Cunningham, MPH
- Tasha Poissant, MPH
- Ann Thomas, MD, MPH

- **OHSU/PVAMC: Chris Pfeiffer, MD, MHS**

- **OSU: Jon Furuno, PhD**

- **OHSU: John Townes, MD**

**Thank you!**

# CDC *Vital Signs* Electronic Media Resources

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<http://tools.cdc.gov/syndication/search.aspx?searchURL=www.cdc.gov%2fvitalsigns>

*Vital Signs* interactive buttons and banners

[www.cdc.gov/vitalsigns/SocialMedia.html](http://www.cdc.gov/vitalsigns/SocialMedia.html)

# Public Health Practice Stories from the Field

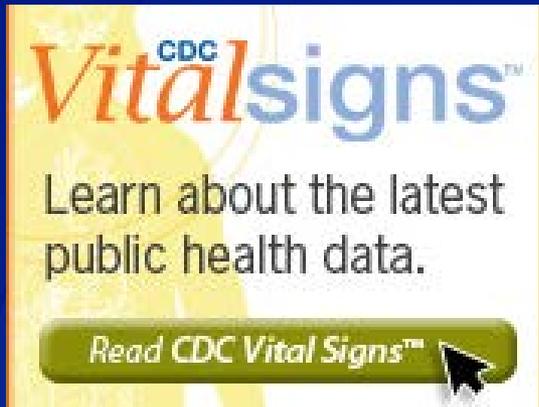
- Stories about the implementation of public health practices in the field



[www.cdc.gov/stltpublichealth/phpracticestories](http://www.cdc.gov/stltpublichealth/phpracticestories)

Provide feedback on this teleconference:

[OSTLTSFeedback@cdc.gov](mailto:OSTLTSFeedback@cdc.gov)



Please mark your calendars for the next  
**OSTLSTown Hall Teleconference**

**April 9, 2013**

**2:00–3:00 pm (EDT)**

For more information, please contact Centers for Disease Control and Prevention.

1600 Clifton Road NE, Atlanta, GA 30333  
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348  
Email: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) Web: [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



Centers for Disease Control and Prevention  
Office for State, Tribal, Local and Territorial Support