The XDRO Registry and CRE burden in Illinois

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Disclosure

- I have no actual or potential conflict of interest in relation to this program or presentation.

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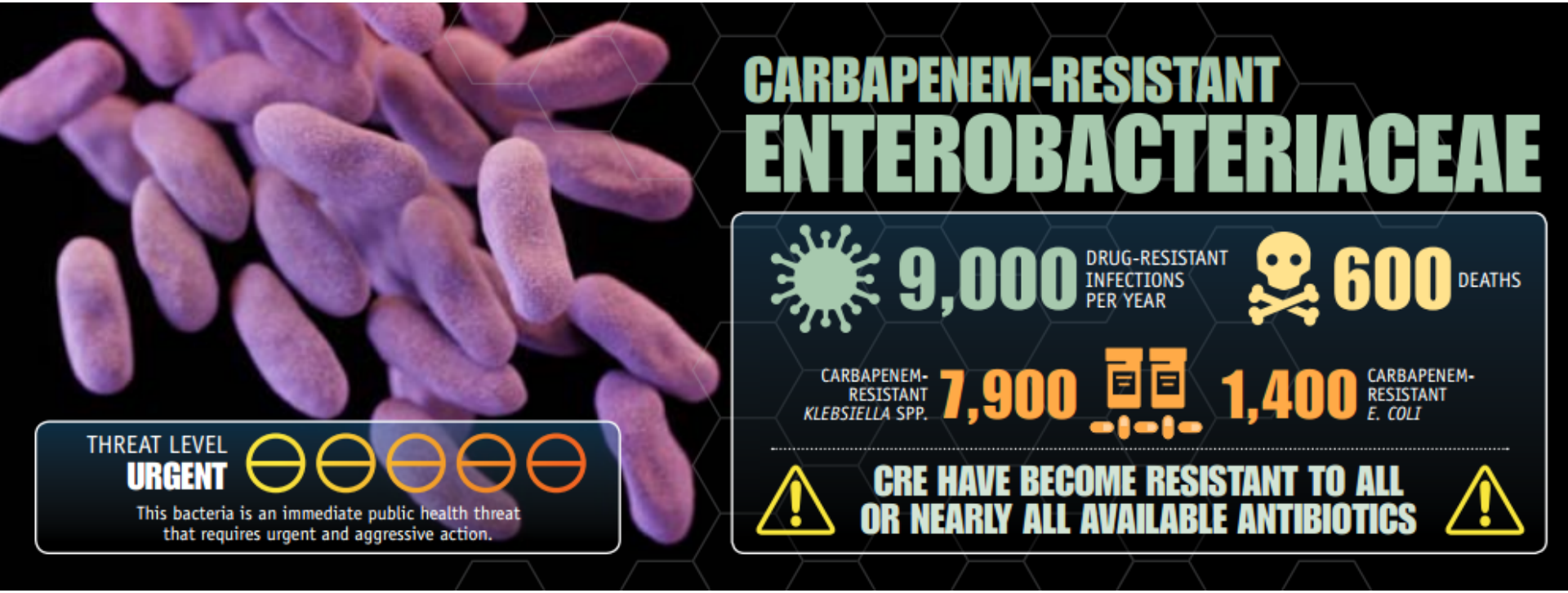
Why are we talking about CRE and the XDRO registry at the AMS summit?



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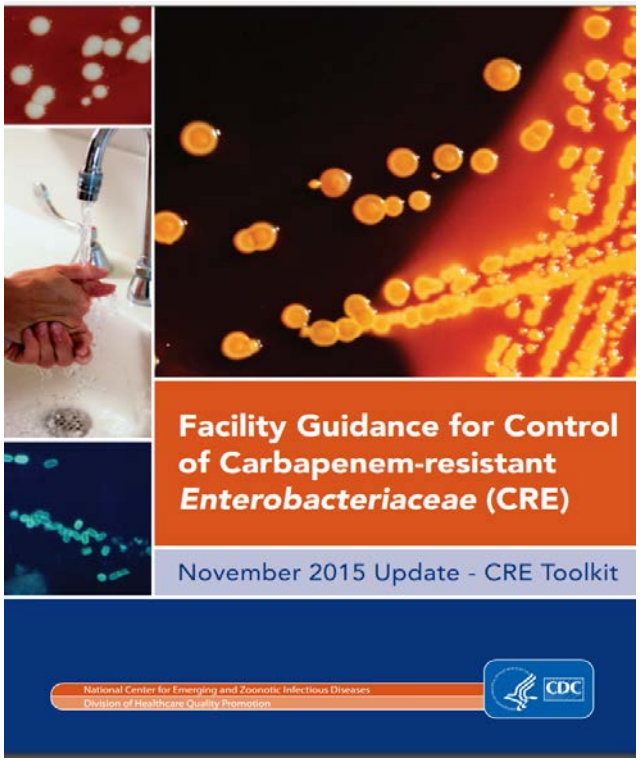
CRE Prevention Strategies



1. Hand Hygiene
2. Contact Precautions
3. Healthcare Personnel Education
4. Device use
5. Laboratory notification
6. Inter-facility communication
7. **Antimicrobial stewardship**
8. Environmental Cleaning

"Multiple antimicrobial classes have been shown to be a risk for CRE colonization and/or infection."

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Potential to reduce MDRO incidence

Recent systematic review and meta-analysis found that ASPs reduced incidence of:

- MDR Gram-negative bacteria (**51%**)
- ESBL Gram-negative bacteria (**48%**)
- MRSA (**37%**)
- CDI (**32%**)

Baur, D, et al., Lancet 2017

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Mandatory CRE Reporting in Illinois

Start Date: November 1, 2013

Required Reporters:

acute care hospitals

long-term acute care hospitals

long-term care facilities

laboratories

How to report: Extensively Drug-Resistant Organism (XDRO) Registry

When to report: Within 7 days of test confirmation

Amendment to the Control of Communicable Diseases Code (77 Ill. Adm. Code 690)

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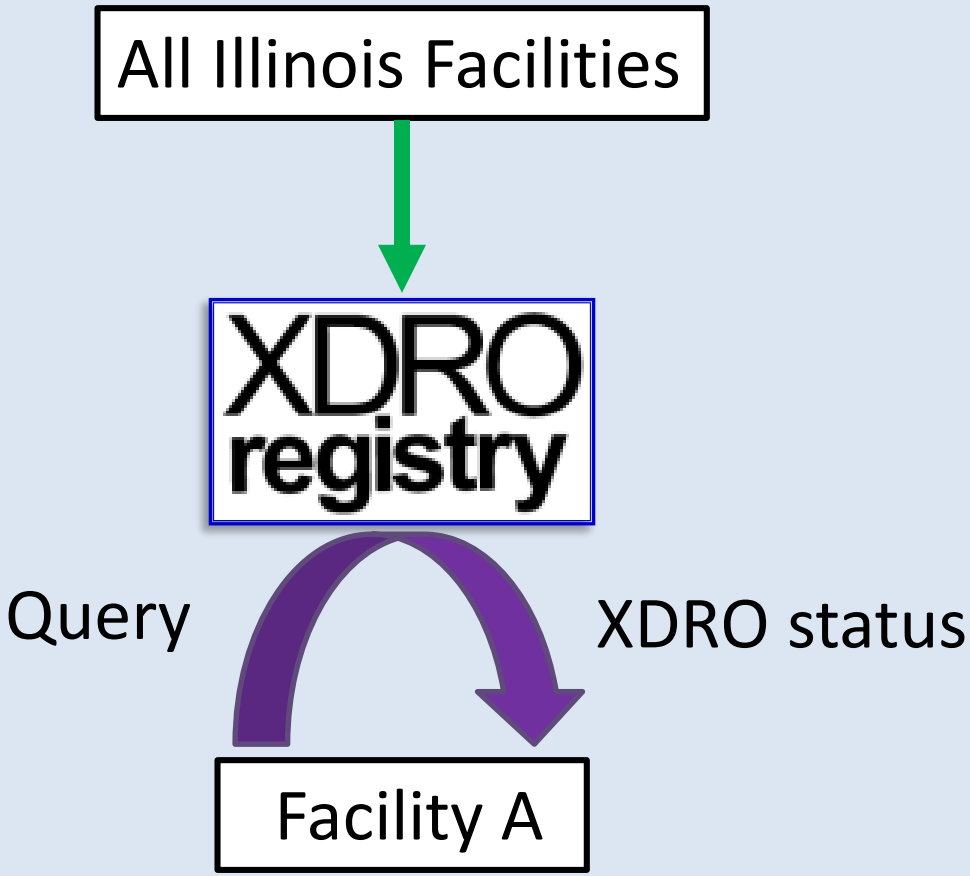
XDRO registry, 2013

1. Mandatory CRE reporting



2. Information exchange

Adapted from: Trick, WE et al., EID 2015

CRE reported to XDRO registry, 2014-15

	n	(%)
Organism[1]		
K. pneumoniae	2567	(84)
E. coli	180	(6)
Enterobacter spp.	170	(6)
Other	142	(4)
Mechanism of Resistance[2]		
KPC	636	(90)
NDM	29	(4)
OXA-48-like	6	(<1)
IMP	1	(<1)

[1]Out of 3059 reports

[2]Out of 709 isolates with molecular testing

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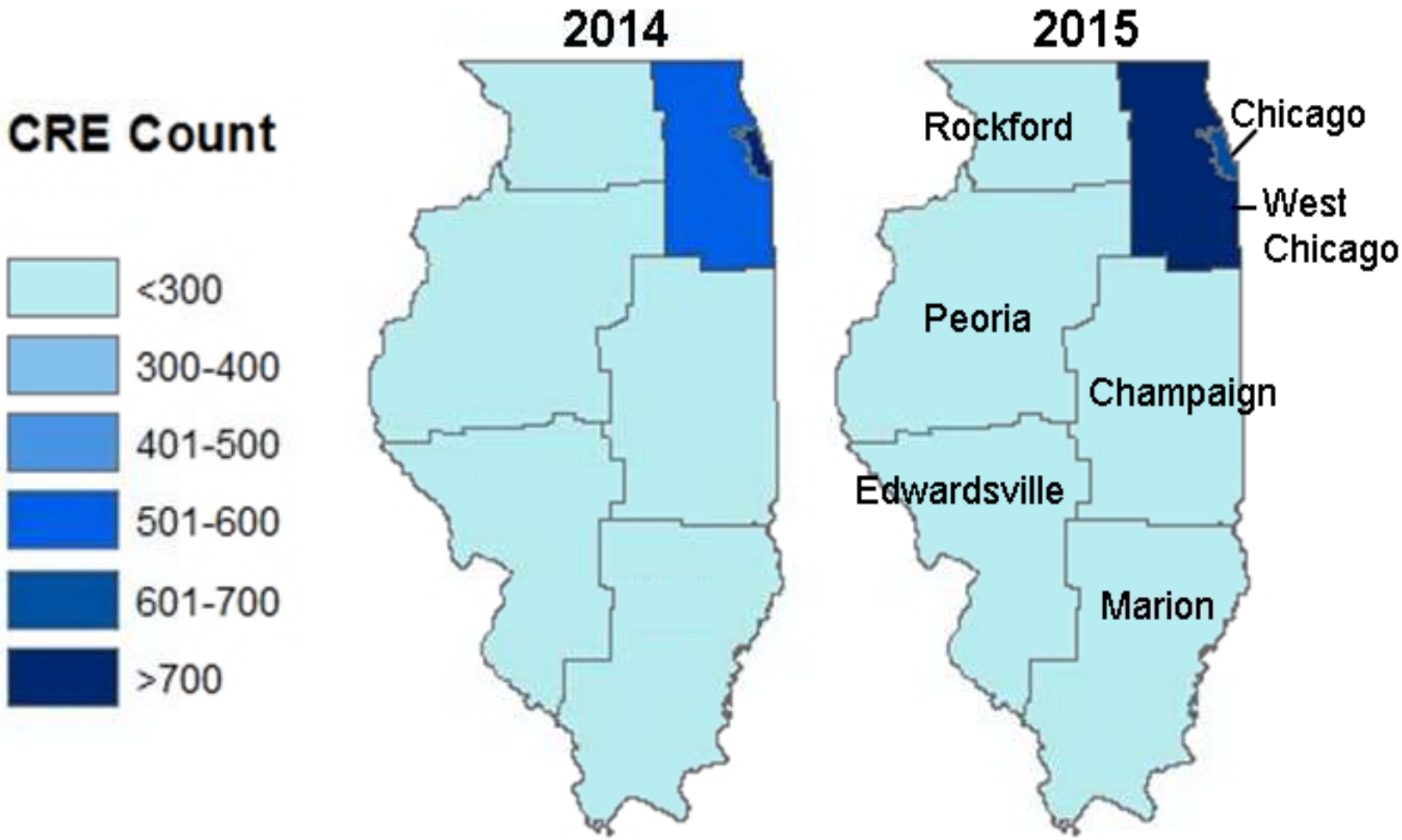
CRE by IDPH Region, 2014-15



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CRE in states bordering IL

KPC, **OXA**, **IMP**

KPC, **NDM**, **OXA**

KPC, **NDM**, **OXA**, **VIM**

KPC, **NDM**, **OXA**

KPC, **NDM**, **VIM**

Data reported to CDC as of 1/6/17
https://www.cdc.gov/hai/organisms/cre/trackingcre.html

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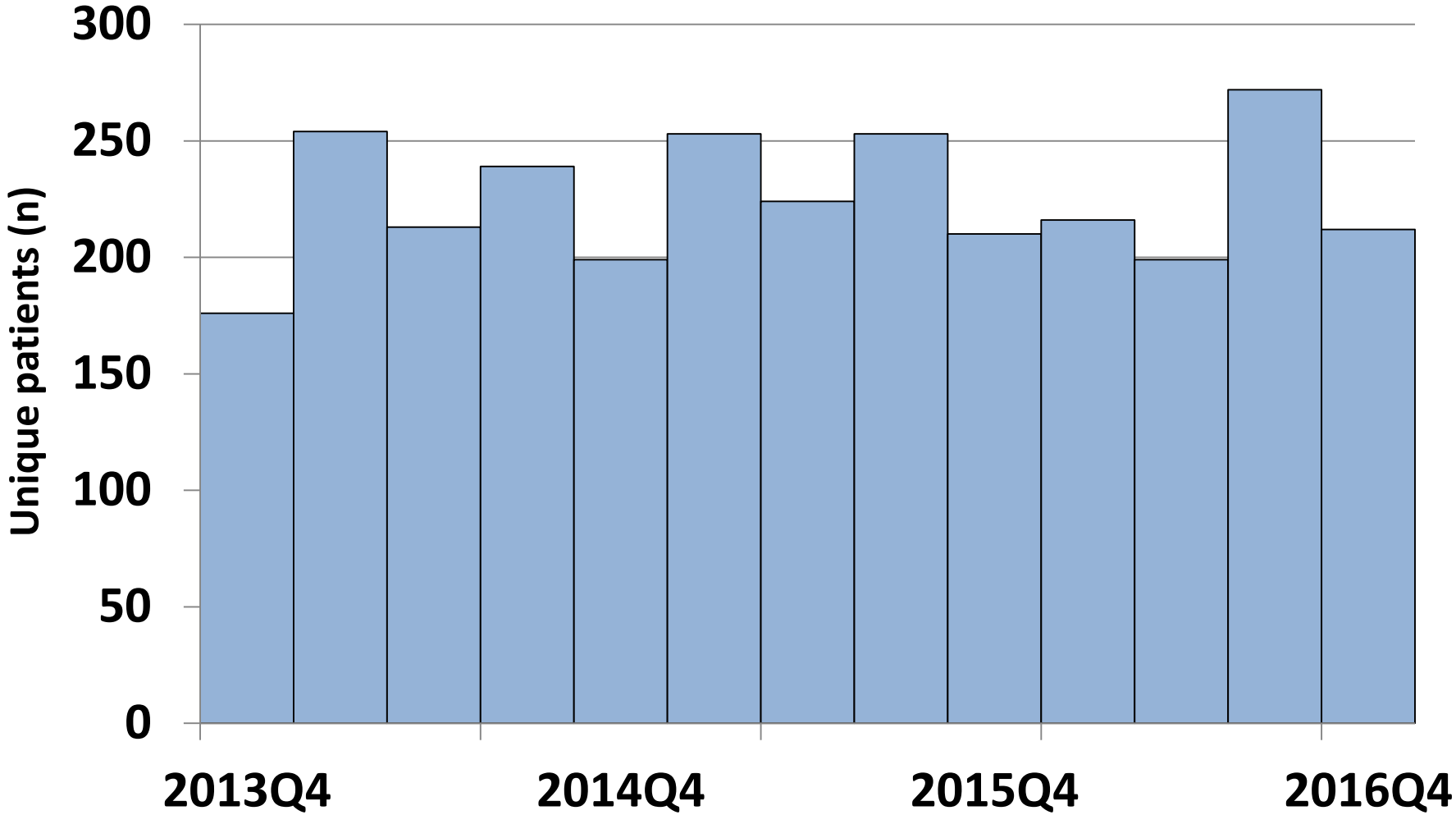
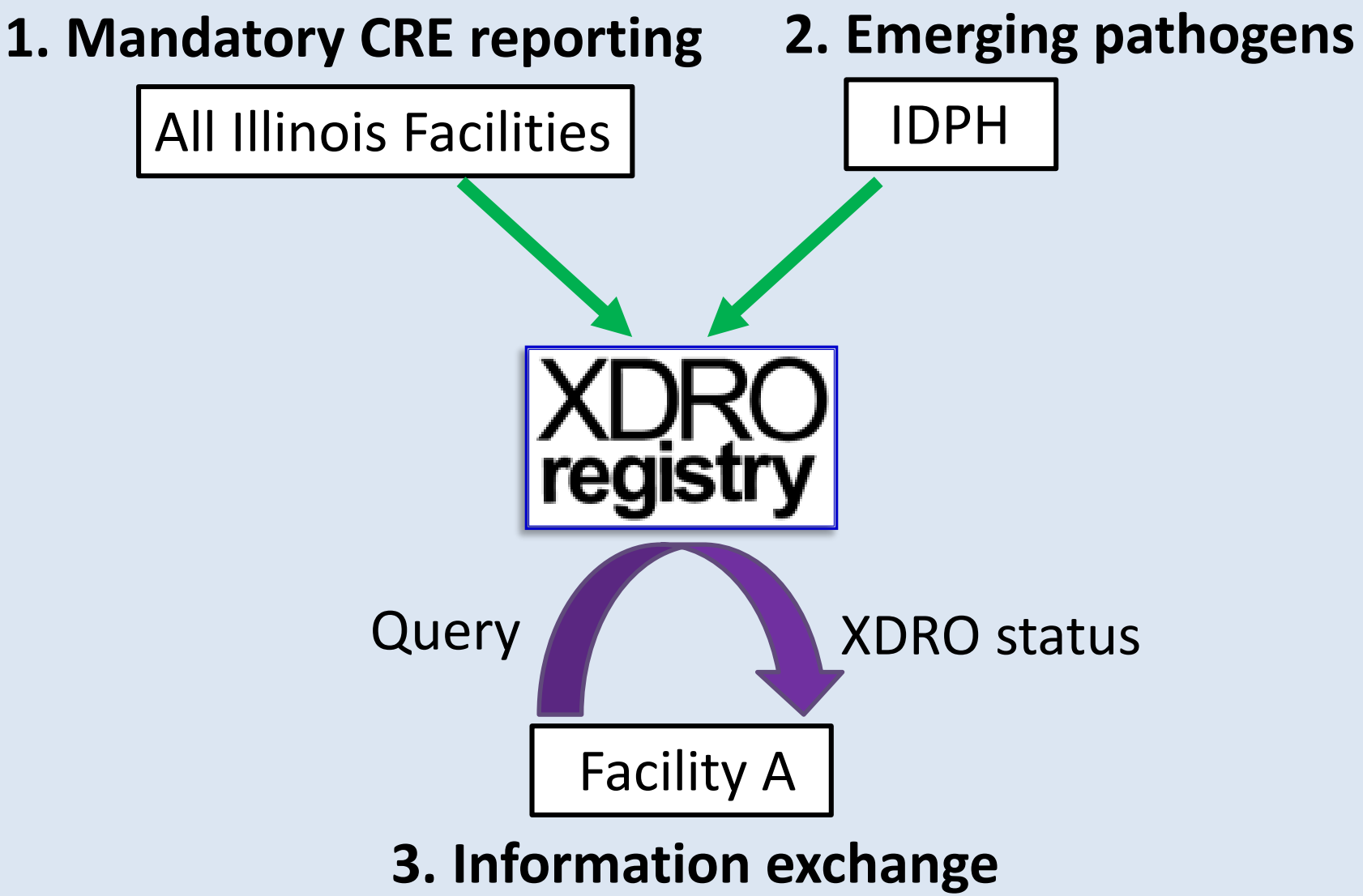
Unique patients reported to the XDRO registry, by quarter of earliest CRE clinical culture, 11/2013 – 12/2016 (N=2920)



Adding emerging organisms



Candida auris

Clinical Alert to U.S. Healthcare Facilities - June 2016

Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast *Candida auris*

Summary: The Centers for Disease Control and Prevention (CDC) has received reports from international healthcare facilities that *Candida auris*, an emerging multidrug-resistant (MDR) yeast, is causing invasive healthcare-associated infections with high mortality.

- Emerging multidrug-resistant yeast
- Potential to cause outbreaks in healthcare settings
- Difficult to detect with conventional lab methods

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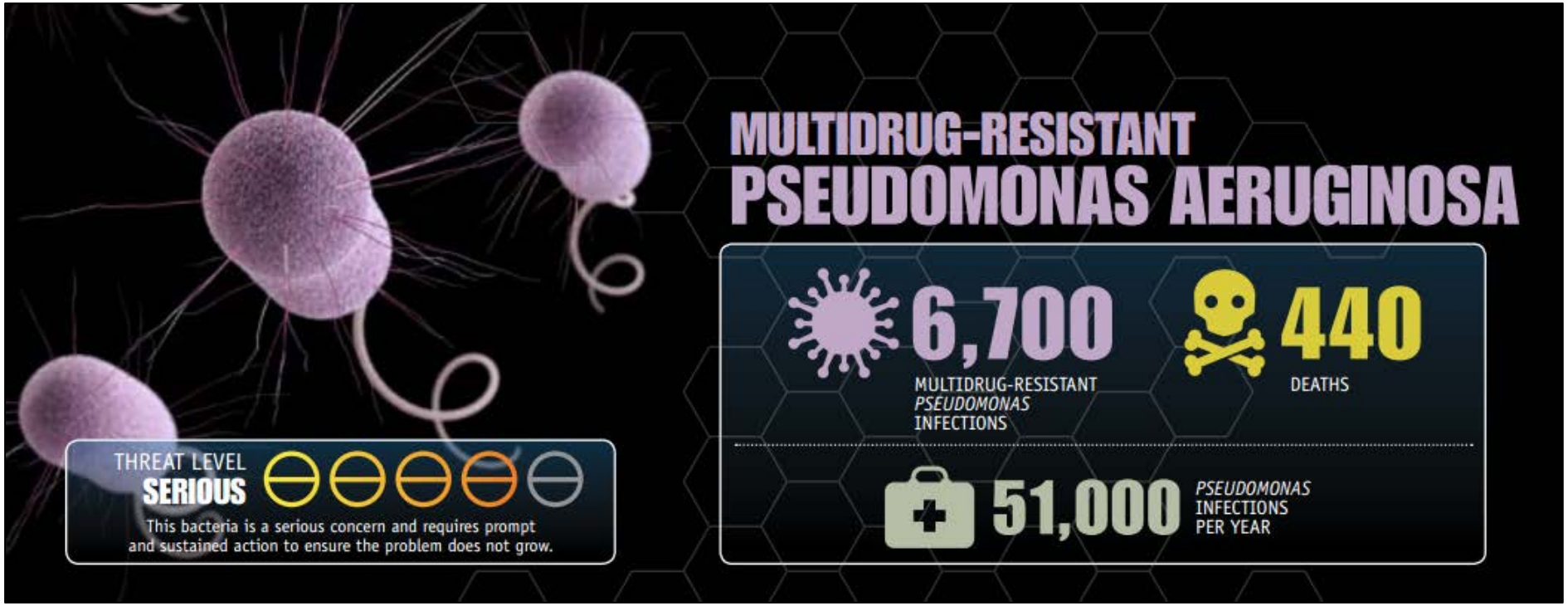
Carbapenemase-producing *Pseudomonas aeruginosa*



- VIM–PA outbreak detected in Chicago area
- KPC and IMP later identified (very rare)
- Currently only PA with carbapenemase identified are being entered by IDPH

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Inter-facility communication

1. Mandatory CRE reporting

All Illinois Facilities

2. *C. auris*, CP-PA

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XDRO registry

ADT Feed/
Manual query

XDRO
status

Facility A

3. Information exchange

Manual searches

XDRO registry

Sample Hospital change facility

Test User1 Home Help Go Back Logout

Submit Report

Search Registry

Facility Submission History

Facility Alert History

XDRO Dashboard

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Need last name and DOB to conduct query

XDRO registry

Sample Hospital change facility

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Search Patient

* Last name: bird

* Date of birth: 03 / 04 / 2000

First name:

Query

Search Instructions

a. Available fields

Last name (required), first name (optional), DOB (required).

b. Search algorithm

i. If you enter all 3 fields, then attempt to match (exact; case insensitive) on all 3 fields.

ii. If no match returns on 3 fields, then attempt to match (exact; case insensitive) on last name and DOB (ignore first name completely).

c. Results display

i. In general, you will see the search results for exactly how you entered the information. If there are no exact matches for last name and dob, you will see a NULL result.

Patient Match

XDRO registry

Sample Hospital change facility

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Search Patient

* Last name: bird

* Date of birth: 03 / 04 / 2000

First name:

Query

Showing results for bird, DOB 3/4/2000 (**FIRST NAME IGNORED**):

Name	Date of Birth	SSN	Organism	Culture Date	Last Transaction	Facility
Bird, Tweety	03/04/2000		*Klebsiella pneumoniae*	01/01/2017	submitted,05/31/2017	Sample Hospital..

Disclaimer: A match on name and date of birth only may not be 100% accurate. We recommend that you verify XDRO status with the patient or by contacting the facility that entered the result.

Note: As of January 2017, the Illinois Department of Public Health is entering Candida auris cases into the XDRO registry; such patients can be identified through the above search query. Patients with C. auris should be placed on standard and contact precautions and, when possible, in single rooms. More information is available on CDC's Questions and Answers and Interim Recommendations pages.

As of April 2017, IDPH is entering carbapenemase-producing Pseudomonas aeruginosa cases into the XDRO registry. More information is available on CDC's website .

XDRO registry

Sample Hospital change facility

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XDRO Report - Sample Hospital

Patient information

Patient name: Bird, Tweety
MRN: 1234567
Admission date: 12/31/2016
Date of birth: 03/04/2000
SSN (last 4):
Gender: male
Race: Other
Ethnicity: Not Hispanic or Latino
Address: 12345 Main St, Anycity, Cass, IL 60000

XDRO culture information

Organism: *Klebsiella pneumoniae*
Culture date: 01/01/2017
XDRO criterion: Molecular test
Specimen source: Urine
Mechanism of resistance: KPC
Comments:

Submitted by Vicky Gao, 05/31/2017, Sample Hospital

Go Back | Edit | Delete | Print

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XDRO Auto Alerts

- **Inpatient Admission Feed:** Every 15-30 min
- **Pager/SMS texts (optional feature):**
  - Real-time alerts from 8 am-8 pm;
  - Off-hours alerts queued until 8 am next day

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Sample XDRO alert email

Subject: Alert notification from XDRO registry (AID 123)

The XDRO registry has identified that a patient recently admitted to <hospital name> may carry an organism that is highly resistant to antibiotics. Please log in to the XDRO registry (dph.partner.illinois.gov) for details.

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Sample alert text message

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Log in to the registry to view alerts

XDRO registry

Sample Hospital change facility

Test User1 Home Help Go Back Logout

Submit Report

Search Registry

Facility Submission History

Facility Alert History

XDRO Dashboard

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Facility Alert Page

Sample Hospital Alert

Please click here to confirm your alert contact information and facility

First name | Last name | Date of birth mm / dd / yyyy | Search

Alerts Tracking

Acknowledge	AID	Name	Date of Birth	Organism	Matching	▼Alert Date
By A.T. 06/01/2016 09:23	323	Submission, Test	01/02/1934	Klebsiella pneumoniae	Full Match	05/23/2016
By R.L. 04/09/2015 15:47	3	E, Ds	11/11/1982	Enterobacter aerogenes	Partial Match	03/21/2014
Acknowledge	2	Bug, Super	01/01/1914	Klebsiella pneumoniae	Full Match	03/20/2014

Disclaimer: A match on name and date of birth only may not be 100% accurate. We recommend that you verify XDRO status with the patient or by contacting the facility that entered the result.

Note: Full match: There was a complete match on first name, last name, and date of birth.

Partial match: There was a match on last name and date of birth; the first name was matched only on the first initial.

As of January 2017, the Illinois Department of Public Health is entering Candida auris cases into the XDRO registry; such patients can be identified through the above search query. Patients with C. auris should be placed on standard and contact precautions and, when possible, in single rooms. More information is available on CDC's Questions and Answers and Interim Recommendations pages.

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Tracking Alert Outcomes

XDRO registry

Sample Hospital change facility

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Sample Hospital Alert Tracking

AID | Last name | Date of birth mm / dd / yyyy | Search

Alert History

Action	AID	Patient	Alert Date	Not Inpatient	Correct Patient?[a]	Known CRE?[b]	Previous positive at our facility?[c]	Communicated by other facility?[c]	Already on contact precautions?[d]
Save	323	T.S.	05/23/2016	☐	select:	select:	select:	select:	select:
Edit	3	D.E.	03/21/2014	☑	—	—	—	—	—
Edit	2	S.B.	03/20/2014	☐	Yes	Yes	Unknown	Yes	Yes

a. Sometimes a name and date of birth do not match up to the correct patient, especially if there is a partial match (using date of birth, last name, first initial). Occasionally, you may need to confirm the identity of the patient using additional information (for example, home address).

b. Prior to receiving the CRE alert, did you know that the patient was CRE colonized?

c. If the patient is already a "known CRE", how did you find out? (Answer only if "Known CRE?"= Yes)

d. At the time you acknowledged (viewed) the alert, was the patient already on contact precautions?

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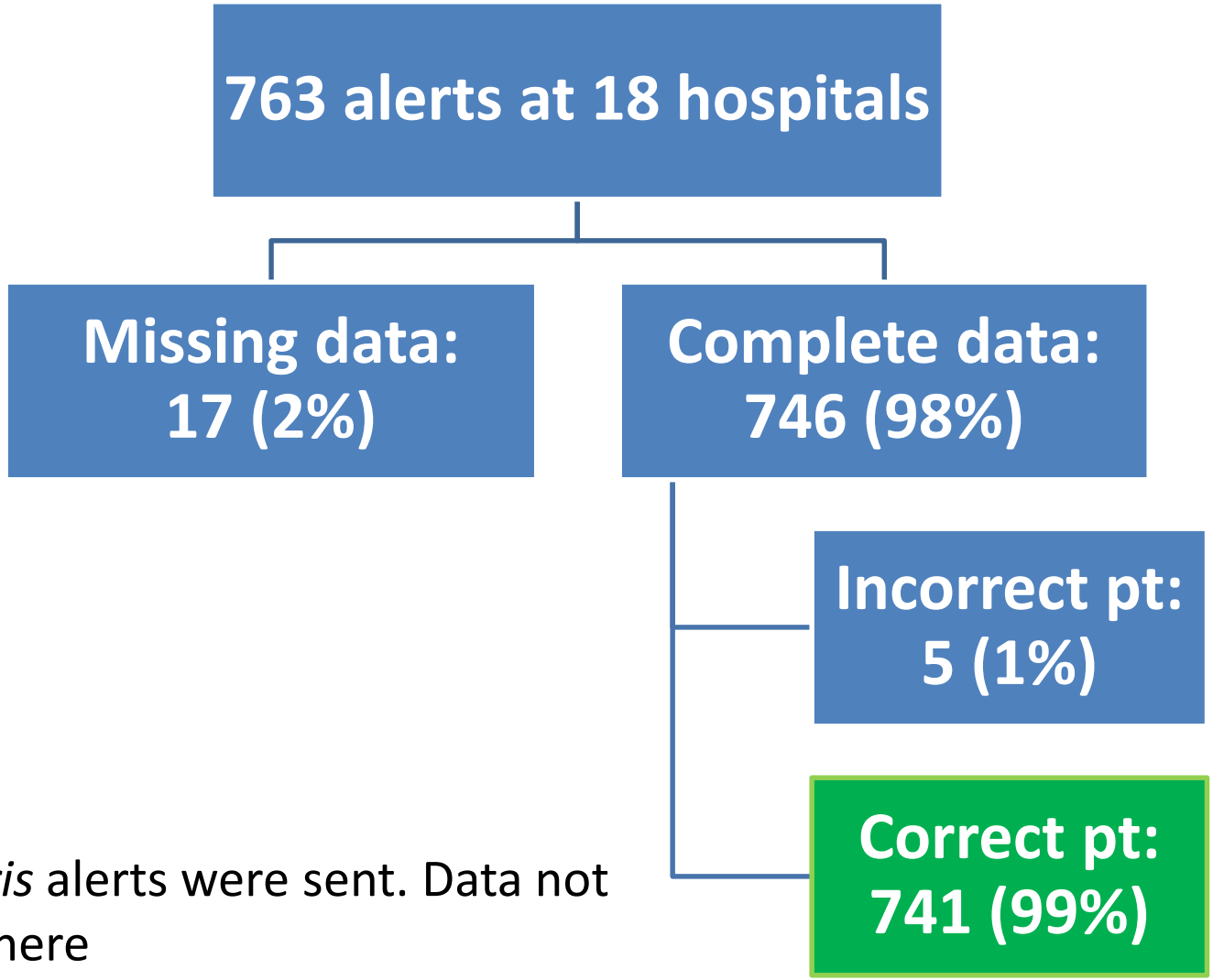
CRE Alert Outcomes, 1/7/15 – 5/28/17



Notes:

- 2 *C. auris* alerts were sent. Data not shown here
- 1 hospital has not received an alert yet

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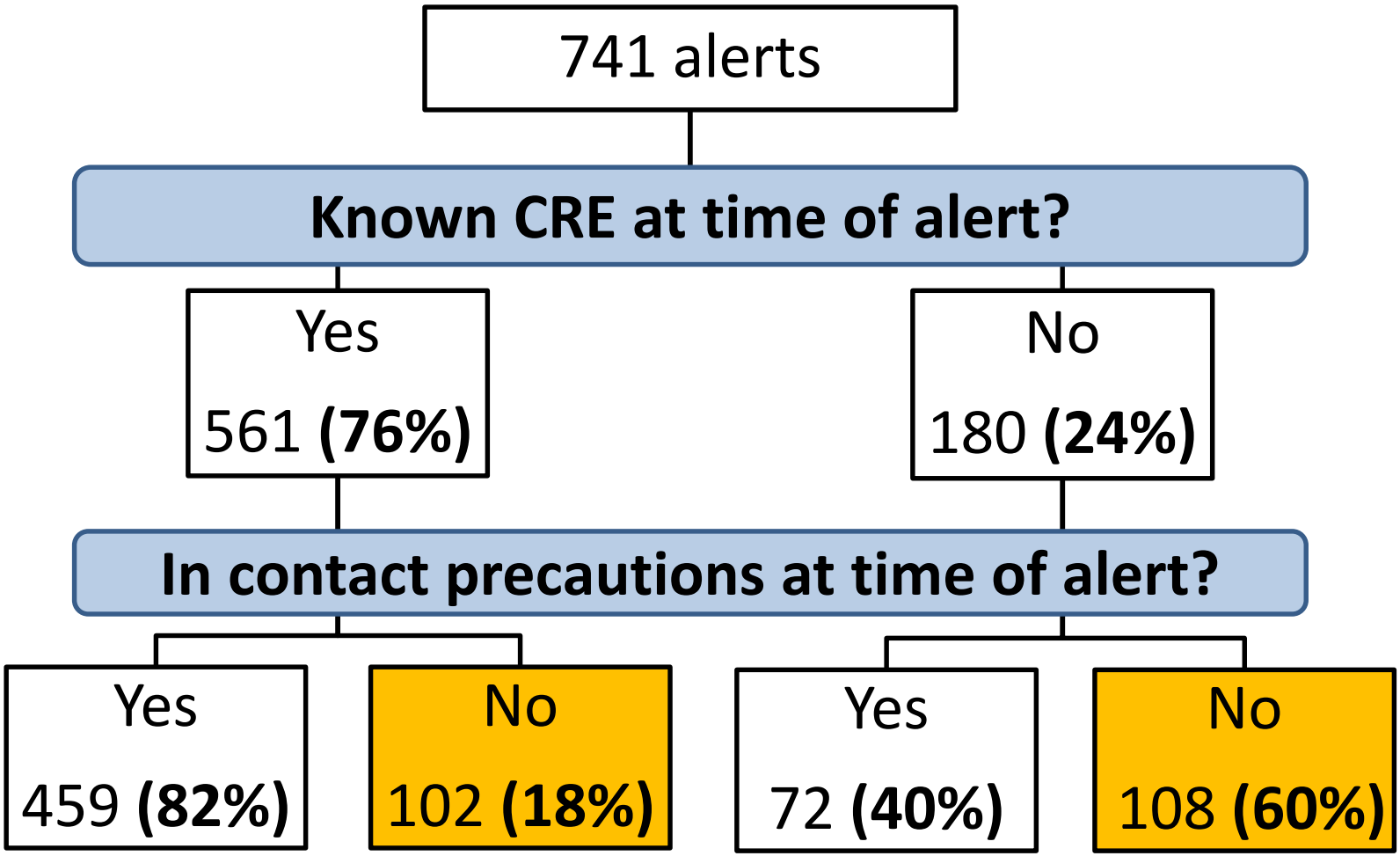
Alert Outcomes:
All correct inpatient CRE alerts, 1/7/15 – 5/28/17



Adapted from: Mike Lin, Rush University Medical Center/Chicago CDC Prevention Epicenter

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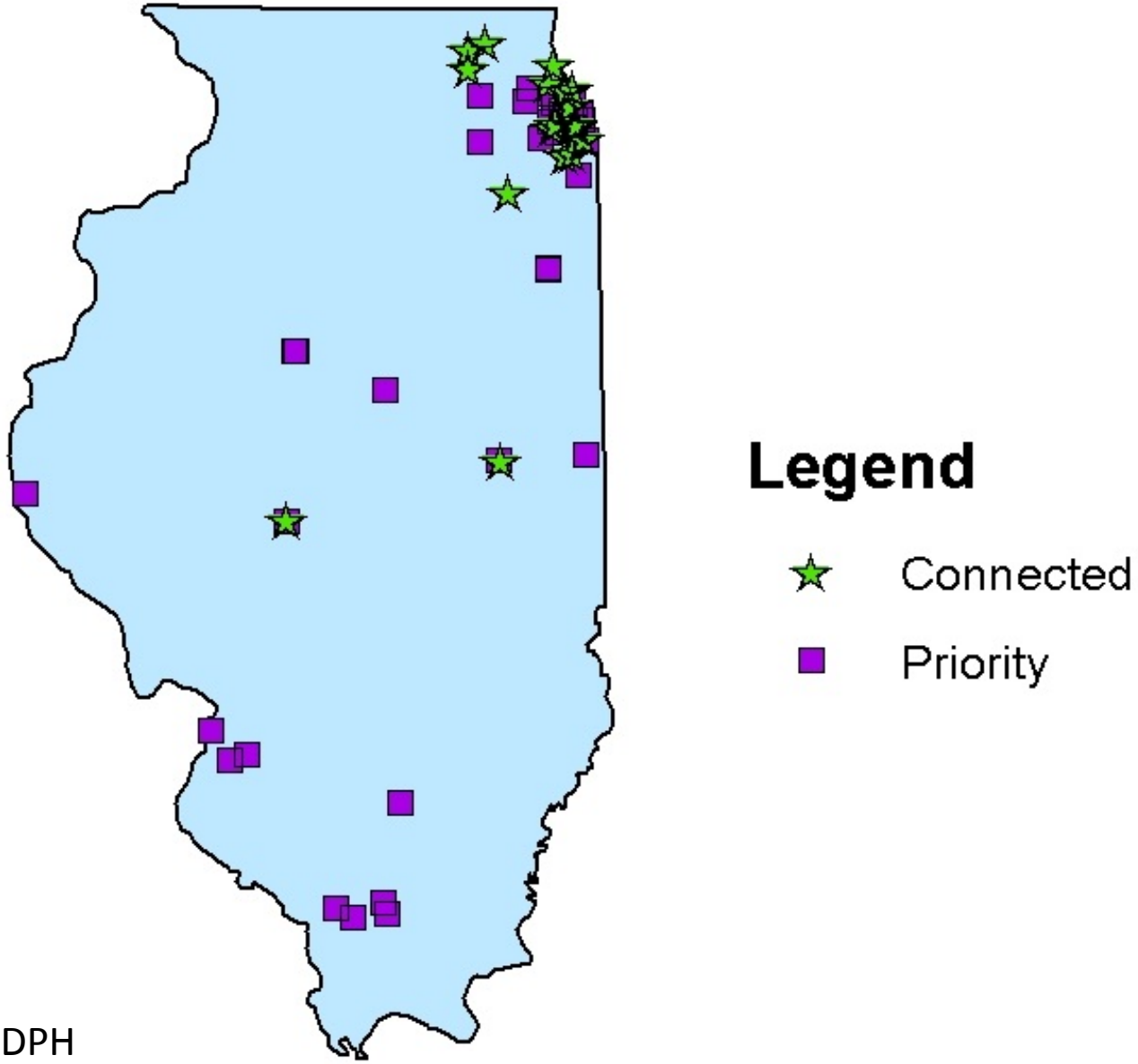
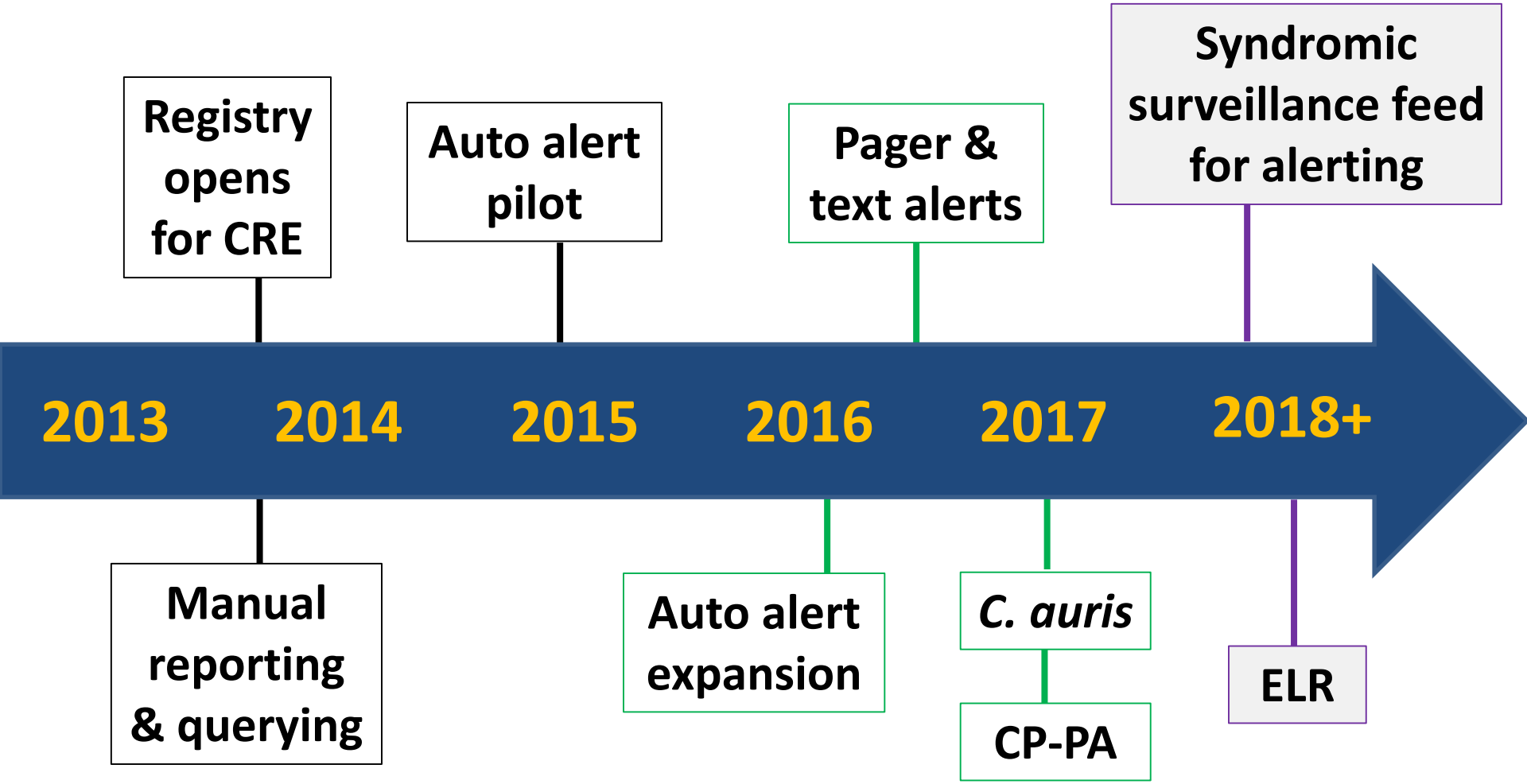
XDRO auto alert progress (statewide)



Credit: Emily Augustini, IDPH

XDRO registry developments



CP-PA= Carbapenemase-producing *Pseudomonas aeruginosa*;
ELR= Electronic Laboratory Reporting

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PI: Dr. Mike Lin, Rush University Medical Center/Chicago CDC Prevention Epicenter

CRE Testing at IDPH – New in 2017!

1) Unusual resistance mechanism
2) Suspected outbreak

Report to XDRO registry

Contact LHD for authorization

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Select CRE Prevention Strategies

Strategy	Illinois Initiative
Hand Hygiene	Project PROTECT
Contact Precautions	Project PROTECT
Healthcare Personnel Education	CRE Campaign
Laboratory Detection	IDPH Lab Testing
Inter-facility communication	XDRO registry
Antimicrobial stewardship	**AMS Summit, PDSB Campaign, Facility ASPs**

Acknowledgments

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- Erica Runningdeer
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- George Markovski

BD/MedMined

- Vikas Gupta
- Autumn Langford

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IL Hospital IPs

For more information:
www.xdro.org
DPH.XDROregistry@illinois.gov

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