



Illinois' eXtensively Drug Resistant Organism (XDRO) Registry

Erica Runningdeer, MSN, MPH, RN

March 15, 2019

Antimicrobial Resistance Surveillance Task Force (ARSTF)
Workgroup 4: NHSN and Tracking AR in Healthcare Facilities

Disclaimers

- Many of these slides were borrowed from or developed in collaboration with my colleagues who work on the XDRO registry
 - (especially Angela Tang (IDPH), Mike Lin (CDC Prevention EpiCenter, Bill Trick (MRAIA), Amy Fealy (Hektoen), Stephanie Black & Massimo Pacilli (Chicago DPH)
- I have no actual or potential conflict of interest in relation to this program or presentation.
- Funding for the IDPH HAI/AR Prevention Program is made possible in part by the Centers for Disease Control and Prevention. The views expressed in these materials do not necessarily reflect the official policies of the Department of Health and Human Services, nor does the mention of trade names, commercial practices or organizations imply endorsement by the U.S. Government.

15 minute overview:

- CSTE 16-ID-09 Position Statement: Interfacility Communication to Prevent and Control Healthcare-Associated Infections and Antimicrobial Resistant Pathogens across Healthcare Settings
https://cdn.ymaws.com/www.cste.org/resource/resmgr/2016PS/16_ID_09.pdf
- The XDRO Registry experience
 - What is it & how does it work?
 - Successes & Challenges
 - Resources
 - Future Plans

CSTE 16-ID-09 Position Statement:

Interfacility Communication to Prevent and Control Healthcare-Associated Infections and Antimicrobial Resistant Pathogens across Healthcare Settings

https://cdn.ymaws.com/www.cste.org/resource/resmgr/2016PS/16_ID_09.pdf

The problem: communication failures regarding infection & colonization status leads to:

- **preventable transmission of pathogens**
- Missing & inaccurate data to inform
 - Appropriateness of antimicrobial therapies for patient
 - Infection control measures at facilities
 - Surveillance & quality improvement at facilities
 - Public health surveillance
 - CMS Quality reporting & reimbursement

CSTE 16-ID-09 Position Statement:

Interfacility Communication to Prevent and Control Healthcare-Associated Infections and Antimicrobial Resistant Pathogens across Healthcare Settings

https://cdn.ymaws.com/www.cste.org/resource/resmgr/2016PS/16_ID_09.pdf

Solution: Improve communication

- Clear **standardized** guidance on interfacility communication for multiple healthcare settings, transporters, CMS & State surveyors, & accreditation bodies
- Assure HL7 standards support continuity of care, partnerships with HIEs & public health agencies
- Examine and address root causes & barriers
- Integrate expectations for post-discharge interfacility communication into NHSN reporting
- Policy Options to promote or mandate interfacility communication

Example: XDRO registry to automate the process of notification

Commonly perceived barrier: HIPAA Privacy Rule

See 16-ID-09 Appendix 7: Facility/Provider to Facility/Provider Communications under HIPAA: Questions and Answers

A Call to Action

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.

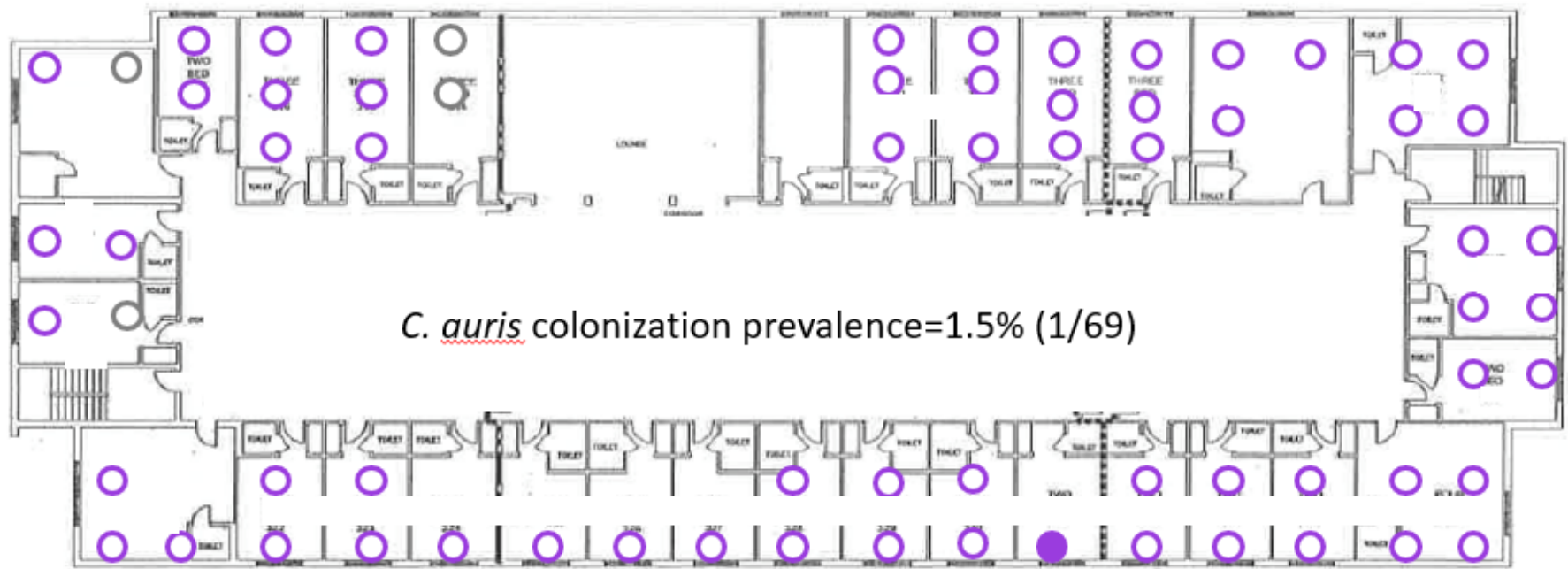


Ignorance is not bliss



vSNF A Ventilator/Trach Floor

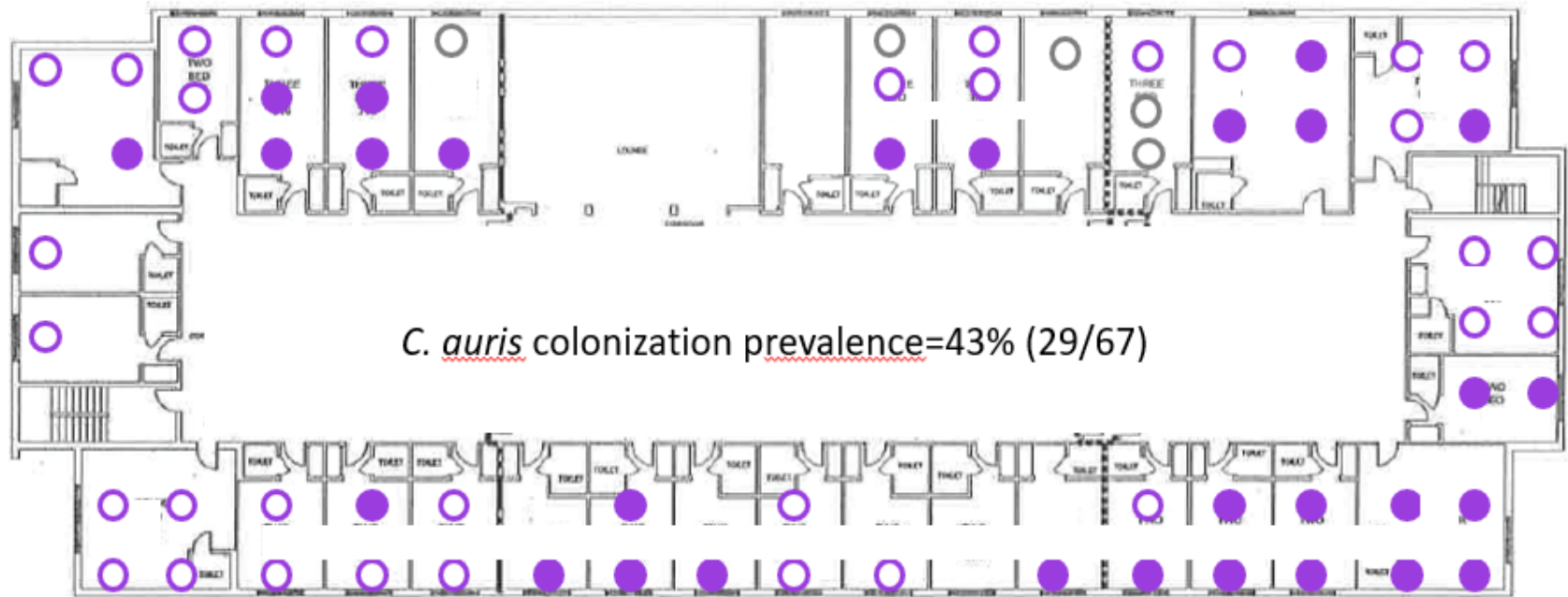
March 2017 *C. auris* PPS Results



- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

vSNF A Ventilator/Trach Floor

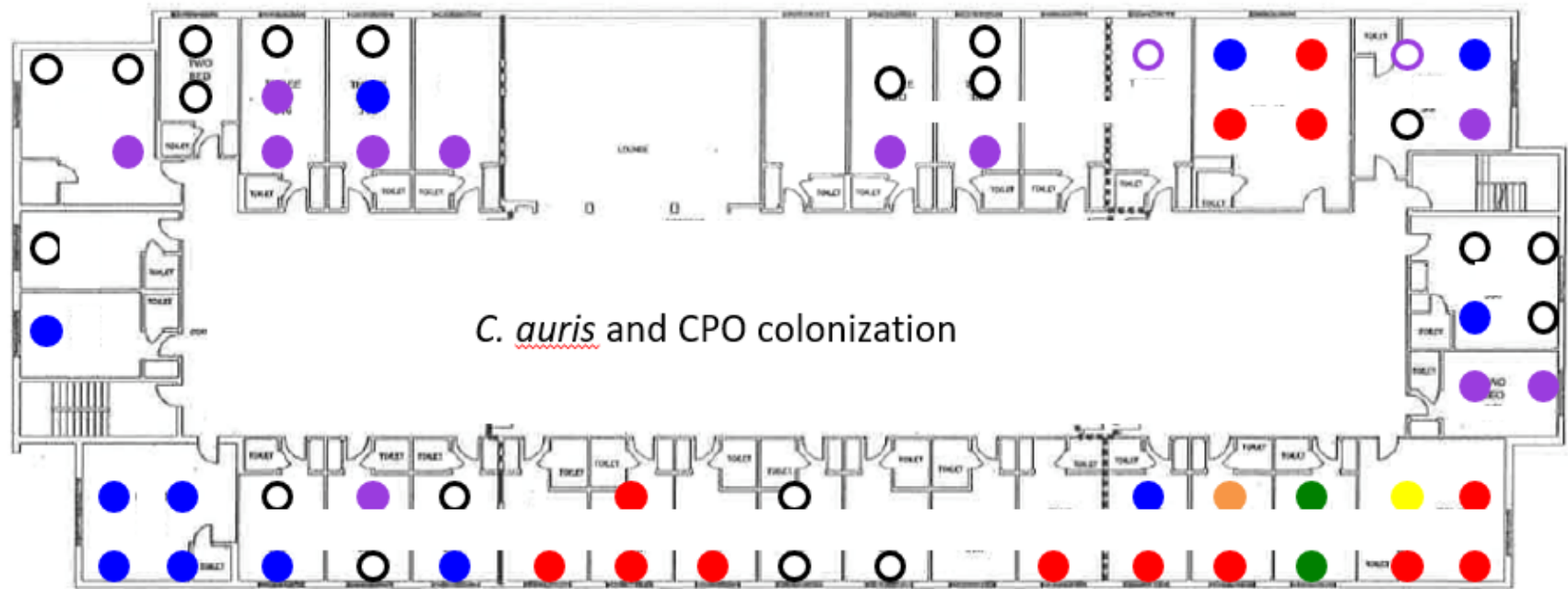
January 2018 *C. auris* PPS Results



- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

vSNF A Ventilator/Trach Floor

January 2018 CPO and *C. auris* PPS Results



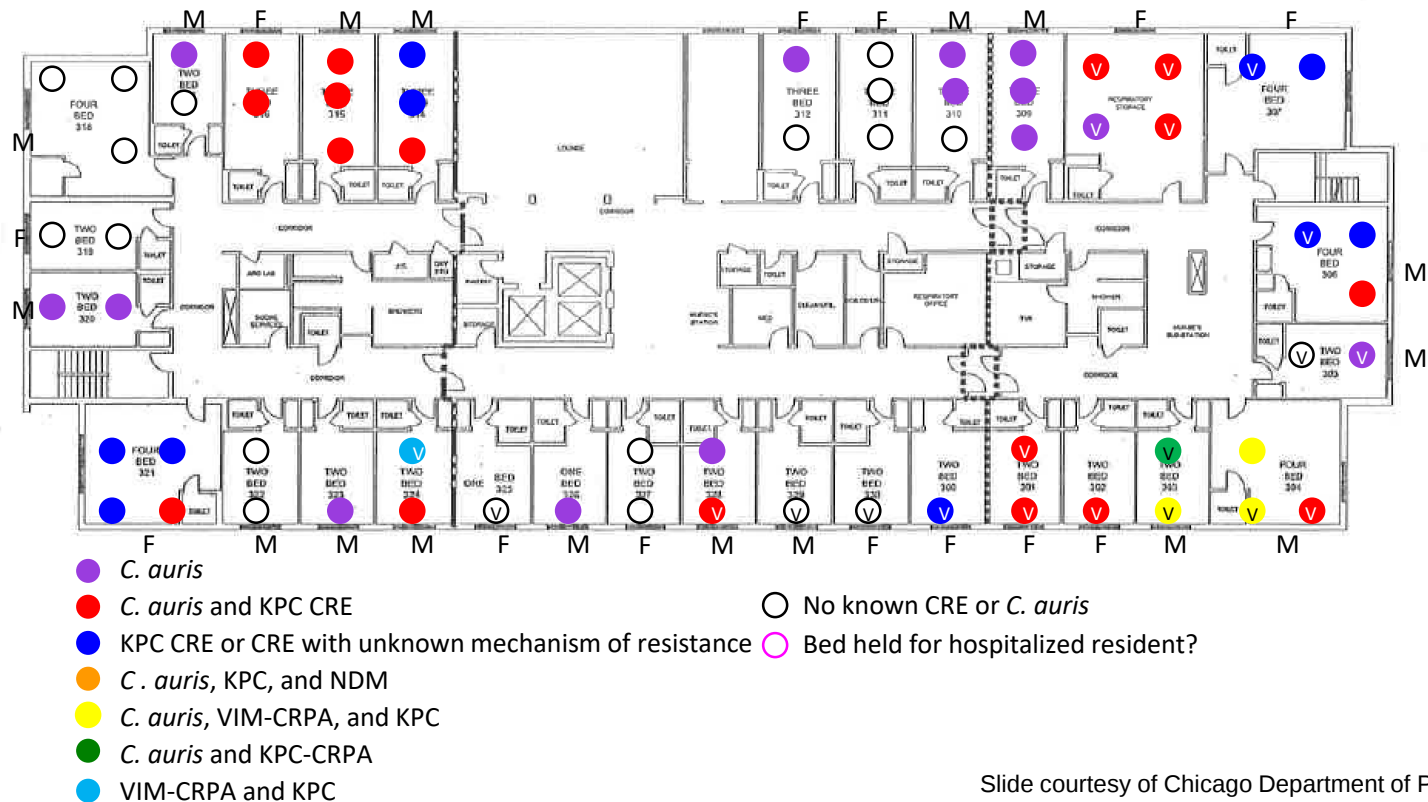
- *C. auris*
- *C. auris* and KPC
- KPC or CRE with unknown mechanism of resistance
- *C. auris*, KPC, and NDM
- *C. auris*, VIM-CRPA, and KPC
- *C. auris* and KPC-CRPA

- Screened negative for *C. auris*, but not tested for CRE
- Screened negative for CRE and *C. auris*

Slide courtesy of Chicago Department of Public Health.

vSNF A Ventilator/Trach Floor

March 2018 CPO and *C. auris* PPS Results



Slide courtesy of Chicago Department of Public Health.



CRE identified

**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

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

XDRO registry overview

1. Mandatory CRE reporting

All Illinois Facilities

2. *C. auris*, CP-CRPA

IDPH

**XDRO
registry**

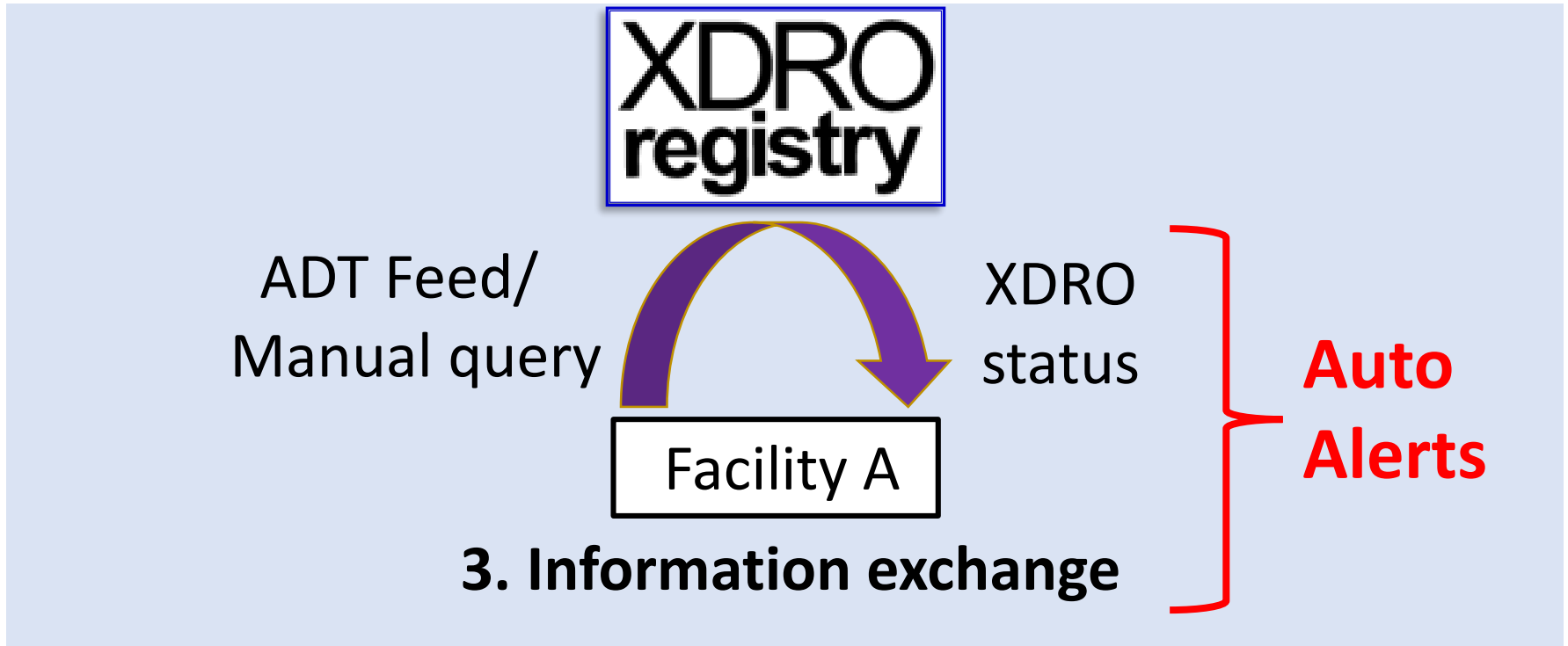
ADT Feed/
Manual query

XDRO
status

Facility A

**Auto
Alerts**

3. Information exchange



Log in from IDPH web portal



Welcome to the IDPH Web Portal

From here, you can:

- Find all your public health related information at one secure site.
- Join online communities to share files, discussions, calendars and more.
- Access Web-based applications.

To access the IDPH Web Portal, users must be running Internet Explorer 6.0 or higher. Some portal applications may not function properly with other browsers such as Mozilla Firefox.

Current Users: click here to access the portal: [Login](#)

I need to...

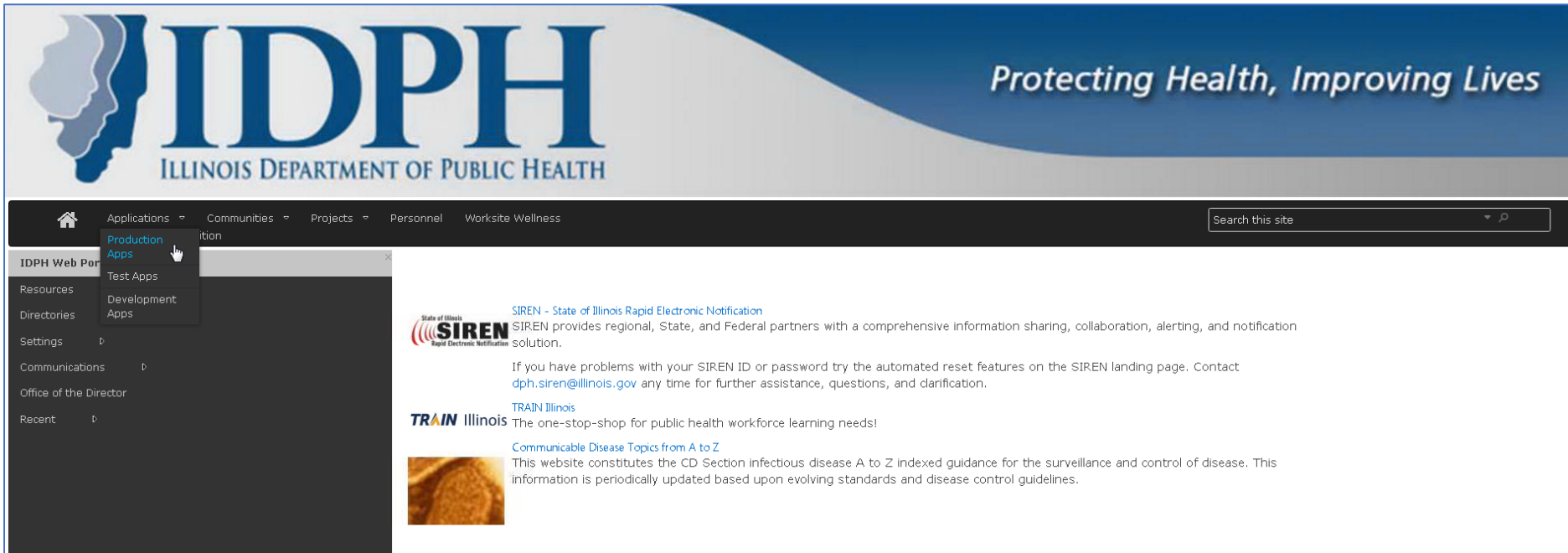
[Register for a Portal Account](#)

Contact Customer Service Center
1-800-366-8768

For assistance with IDPH portal access and web-based application support, contact the Customer Service Center at 1-800-366-8768, Option 1, then Option 1 for password reset assistance or Option 7 to reach support personnel for the Department of Public Health.

Please indicate to the CSC staff that you are an IDPH Health Alert Network (portal) user when placing the call to ensure you are routed to the correct support staff to resolve the problem. Include your name, phone number, and specific application name, detail of the issue and error messages, if any, in your description of the problem to ensure efficient resolution.

Select “Production Apps”



The screenshot displays the Illinois Department of Public Health (IDPH) website. The header features the IDPH logo and the tagline "Protecting Health, Improving Lives". A navigation bar includes links for Applications, Communities, Projects, Personnel, and Worksite Wellness. A search bar is located on the right. A sidebar on the left lists various resources, with a dropdown menu open under "Applications" showing "Production Apps", "Test Apps", and "Development Apps". The main content area highlights three key services: SIREN (State of Illinois Rapid Electronic Notification), TRAIN Illinois (public health workforce learning needs), and Communicable Disease Topics from A to Z (CD Section infectious disease A to Z indexed guidance).

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Protecting Health, Improving Lives

Applications ▾ Communities ▾ Projects ▾ Personnel Worksite Wellness

Search this site

IDPH Web Port

- Resources
- Directories
- Settings ▾
- Communications ▾
- Office of the Director
- Recent ▾

Production Apps

Test Apps

Development Apps

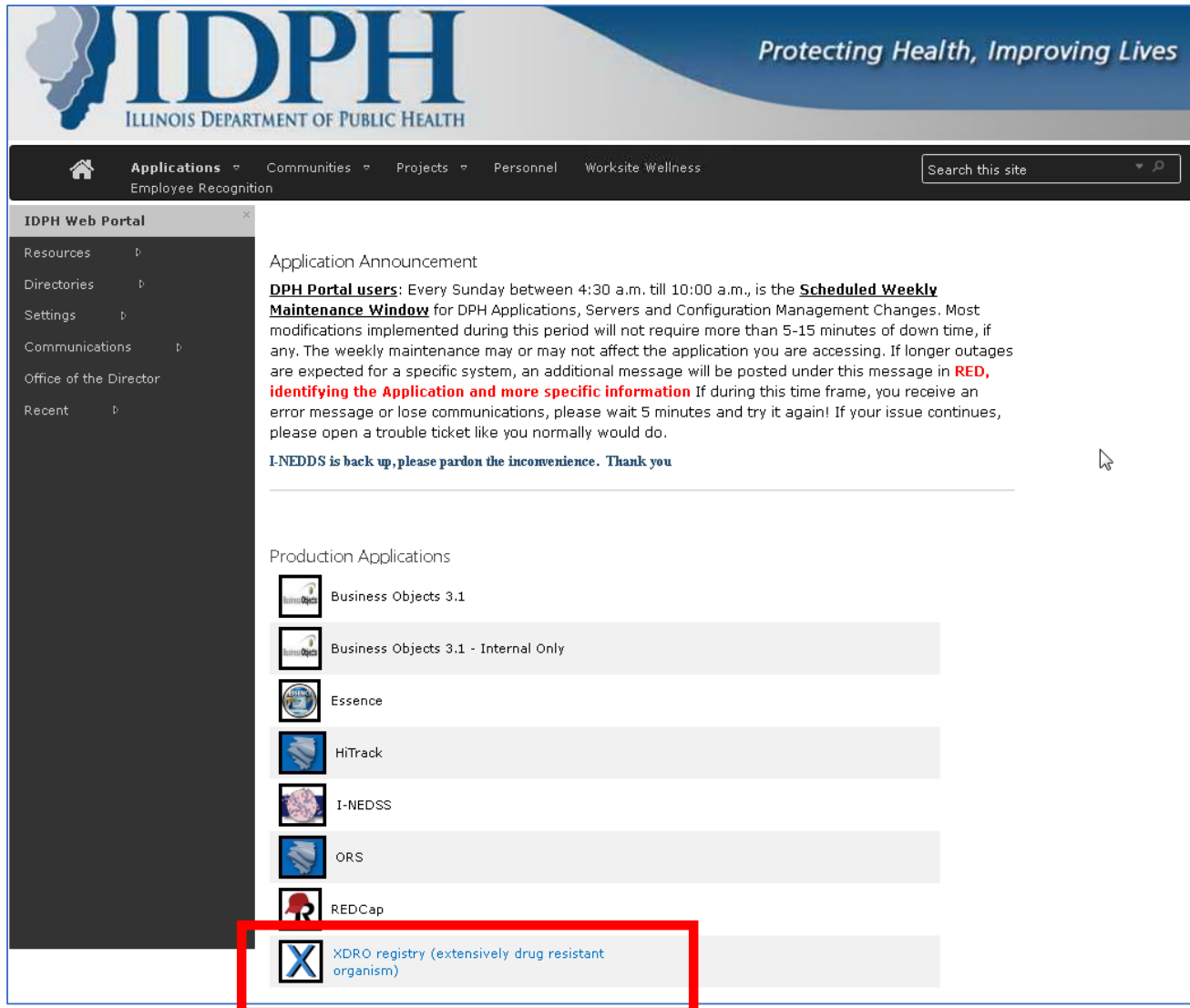
SIREN - State of Illinois Rapid Electronic Notification
SIREN provides regional, State, and Federal partners with a comprehensive information sharing, collaboration, alerting, and notification solution.

If you have problems with your SIREN ID or password try the automated reset features on the SIREN landing page. Contact dph.siren@illinois.gov any time for further assistance, questions, and clarification.

TRAIN Illinois
The one-stop-shop for public health workforce learning needs!

Communicable Disease Topics from A to Z
This website constitutes the CD Section infectious disease A to Z indexed guidance for the surveillance and control of disease. This information is periodically updated based upon evolving standards and disease control guidelines.

Select “XDRO registry”



The screenshot displays the IDPH (Illinois Department of Public Health) Web Portal. The header features the IDPH logo and the tagline "Protecting Health, Improving Lives". A navigation bar includes links for Applications, Communities, Projects, Personnel, and Worksite Wellness, along with a search bar. A left sidebar lists various portal sections like Resources, Directories, Settings, Communications, Office of the Director, and Recent. The main content area is titled "Application Announcement" and contains a message about the "Scheduled Weekly Maintenance Window" for DPH Applications, Servers and Configuration Management Changes. Below this, a section titled "Production Applications" lists several applications: Business Objects 3.1, Business Objects 3.1 - Internal Only, Essence, HiTrack, I-NEDSS, ORS, REDCap, and XDRO registry (extensively drug resistant organism). The XDRO registry application is highlighted with a red rectangular box.

IDPH Web Portal

Resources ▾
Directories ▾
Settings ▾
Communications ▾
Office of the Director
Recent ▾

Application Announcement

DPH Portal users: Every Sunday between 4:30 a.m. till 10:00 a.m., is the **Scheduled Weekly Maintenance Window** for DPH Applications, Servers and Configuration Management Changes. Most modifications implemented during this period will not require more than 5-15 minutes of down time, if any. The weekly maintenance may or may not affect the application you are accessing. If longer outages are expected for a specific system, an additional message will be posted under this message in **RED, identifying the Application and more specific information**. If during this time frame, you receive an error message or lose communications, please wait 5 minutes and try it again! If your issue continues, please open a trouble ticket like you normally would do.

I-NEDSS is back up, please pardon the inconvenience. Thank you

Production Applications

- Business Objects 3.1
- Business Objects 3.1 - Internal Only
- Essence
- HiTrack
- I-NEDSS
- ORS
- REDCap
- XDRO registry (extensively drug resistant organism)**

Click on the “X” to enter the XDRO registry

Welcome to the Illinois Extensively Drug-Resistant Organisms (XDRO) Registry

Use of the registry is restricted to authorized users. Access to the system is limited to those expressly authorized by a current written agreement with the XDRO registry security management. Any misuse of the system for anything other than its intended use and in accordance with the IDPH Web Portal User Agreement will be prosecuted to the fullest extent of applicable Illinois and/or federal laws.

Click on  to enter the XDRO registry.

This is the home page once logged in



Sample Hospital [change facility](#)

Test User1

[Home](#)

[Help](#)

[Go Back](#)

[Logout](#)

[Submit Report](#)

[Search Registry](#)

[Facility Submission History](#)

[Facility Alert History](#)

[XDRO Dashboard](#)

To submit a report

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

XDRO Report

XDRO culture information

* **Organism name**
(genus/species)

(Please Select Organism: ▼)

* **Specimen source**

(Please Select Specimen: ▼)

* **Date (culture acquisition)**

mm / dd / yyyy

* **XDRO criteria** (select all that apply)

[Reporting rule](#)

☐ **Molecular test** (e.g. PCR) specific for carbapenemase

☐ **Phenotypic test** specific for carbapenemase production

☐ **For E. coli and Klebsiella spp. only** (excluding K. aerogenes):

Resistant to ALL 3rd gen cephalosporins tested and non-susceptible (intermediate or resistant) to one carbapenem. Ignore ertapenem.

Facility information

Facility name

Sample Hospital

* **Patient MRN**

* **Date of admission/Encounter Date**

mm / dd / yyyy

☐ Culture obtained as outpatient

Patient demographics

* **First name**

Middle name(if applicable)

* **Last name**

* **Gender**

☐ Male ☐ Female

* **Date of birth(mm/dd/yyyy)**

mm / dd / yyyy

Social Security Number(last4)

Race

(Please Select One: ▼)

Ethnicity

☐ Hispanic or Latino
☐ Not Hispanic or Latino

* **Street address**

* **City**

* **County**

Select a County: ▼

* **State**

Illinois ▼

* **Zip code**

Comments

Include any information that may help infection preventionists who view your submission.
Comments are not routinely monitored by IDPH. To communicate directly with IDPH, please email
DPH.XDROregistry@Illinois.gov

CANCEL

SAVE DRAFT

SUBMIT

Closer look at report form

XDRO Report

XDRO culture information

*** Organism name (genus/species)**
Please Select Organism: ▼
Please Select Organism:
Citrobacter freundii
Citrobacter koseri
Citrobacter spp.
Enterobacter aerogenes
Enterobacter cloacae
Enterobacter spp.
Escherichia coli
Klebsiella aerogenes
Klebsiella oxytoca
Klebsiella pneumoniae
Klebsiella spp.
Morganella morganii
Pantoea agglomerans
Proteus mirabilis
Proteus spp.
Providencia stuartii
Providencia spp.
Salmonella spp.
Serratia marcescens

***XDRO criteria** (select all that apply)
[Reporting rule](#)
☒ **Molecular test** (e.g. PCR) specific for carbapenemase

*** Mechanism of resistance:** (check all that apply)
☐ KPC
☐ NDM-1 (New Delhi Metallo- β -lactamase)
☐ OXA
☐ VIM
☐ IMP
☐ Unknown

(molecular test required)

☐ **For E. coli and Klebsiella spp. only** (excluding K. aerogenes):
Resistant to ALL 3rd gen cephalosporins tested and non-susceptible (intermediate or resistant) to one carbapenem. **Ignore ertapenem.**

☒ **Phenotypic test** specific for carbapenemase production

Test type used to confirm this isolate:
☐ Carba NP
☐ Carbapenem inactivation method (CIM)
☐ Metallo- β -lactamase (e.g., Etest)
☐ Modified CIM (mCIM)
☐ Modified Hodge
☐ Other:

Submit Report

Search Registry



Facility Submission History

Facility Alert History

XDRO Dashboard

Search Patient

* Last name

* Date of birth

 / /

First name

Search Instruction

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.

XDRO Report - Sample Hospital

Patient information

Patient name: Duck, Daffy

MRN: 1234

Admission date: 02/13/2014

Date of birth: 11/13/1973

SSN (last 4):

Race: Other

Address: 122 S. Michigan, Chicago, IL 60603

XDRO culture information

Organism: Klebsiella pneumoniae

Culture date: 02/15/2014

XDRO criterion: Molecular test

Specimen source: Wound

Mechanism of resistance: KPC

Comments: Lab confirmed results by PCR testing from CDC.

[Submitted by ROBYNN LEIDIG, 05/06/2014, Sample Hospital](#)

[Go Back](#)[Edit](#)[Delete](#)[Print](#)

XDRO Auto Alerts



Pager/SMS texts (optional feature):

Real-time alerts from 8 am-8 pm;
Off-hours alerts queued until 8 am next day

ADT = Admission/Discharge/Transfer; IP = Infection Preventionist

Automated Queries and Alerts

Hospital A

Patient admission list
(inpatient only)

1. **Smith, John 1/5/67**
2. Doe, Jane 1/1/89
3. Patient, Test 1/2/77

Hashing
software

1. **15234234235235**
2. 23425252434325
3. 62624535363466

Query

XDRO registry

1. Duck, Daffy 3/5/71
2. Fudd, Elmer 11/3/50
3. **Smith, John 1/5/67**

Hash

1. 25234234235235
2. 23725252434325
3. **15234234235235**

Hospital A

IP logs into
registry to
view alert

Email alert
(Optional: text/
pager alert)

Sample alert email from xdro@mraia.org

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.

For questions, email DPH.XDROregistry@Illinois.gov.

E-MAIL CONFIDENTIALITY NOTICE: This electronic mail message, including any attachments, is for the intended recipient(s) only and may not be forwarded or shared with anyone other than the intended recipient(s). If you are not the named recipient or if you believe that you received this e-mail in error, you are not authorized to view the alert. Please [unsubscribe](#) from the automated alert system, and also notify DPH.Security@illinois.gov if you need to change your facility status.

If you are not the intended recipient, please be aware that any copying, distribution, dissemination, disclosure, or other use of this e-mail and any attachments is unauthorized and prohibited. This e-mail and any attachments contain information that is confidential, privileged and/or otherwise protected or exempt from disclosure under applicable law, including the Department of Public Health Act, the Communicable Disease Prevention Act, the Communicable Disease Report Act, the Control of Communicable Diseases Code, and the Health Insurance Portability and Accountability Act (HIPAA). Your receipt of this message is not intended to waive any applicable privilege or claim of confidentiality, and any prohibited or unauthorized disclosure is not binding on the sender or the Illinois Department of Public Health. Thank you for your cooperation.

This e-mail may be exempt from disclosure under the Illinois Freedom of Information Act (5 ILCS 140) pursuant to exemptions under sections 7(1)(f) and/or 7(1)(m).

Sample alert text message from xdro@mraia.org



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

Facility Alert Page

Sample Hospital Alert

Please click [here](#) to confirm your alert contact information and facility

First name

Last name

Date of birth

 / /

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.

Facility Alert Page

Sample Hospital Alert

Please click [here](#) to confirm your alert contact information and facility

First name

Last name

Date of birth

 / /

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.

XDRO Report - Test Nursing Home

Patient information

Patient name: Bug, Super

MRN: 1234

Admission date: 05/02/2014

Date of birth: 01/01/1914

SSN (last 4):

Race:

Address: 122 S Michigan Ave, Chicago, IL 60603

XDRO culture information

Organism: Klebsiella pneumoniae

Culture date: 06/02/2014

XDRO criterion: Phenotypic test, E. coli/Klebsiella resistance

Specimen source: Urine

Mechanism of resistance:

Comments:

Submitted by ANGELA TANG, 06/10/2014, Test Nursing Home

[Go Back](#)

[Print](#)

Alert Tracking Tool

Sample Hospital Alert

Please click [here](#) to confirm your alert contact information and facility

First name

Last name

Date of birth

 / /

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.

Alert Tracking Tool

XDRO
registry

Sample Hospital [change facility](#)

ANGELA TANG

[Home](#)

[Citations](#)

[Help](#)

[Go Back](#)

[Logout](#)

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).

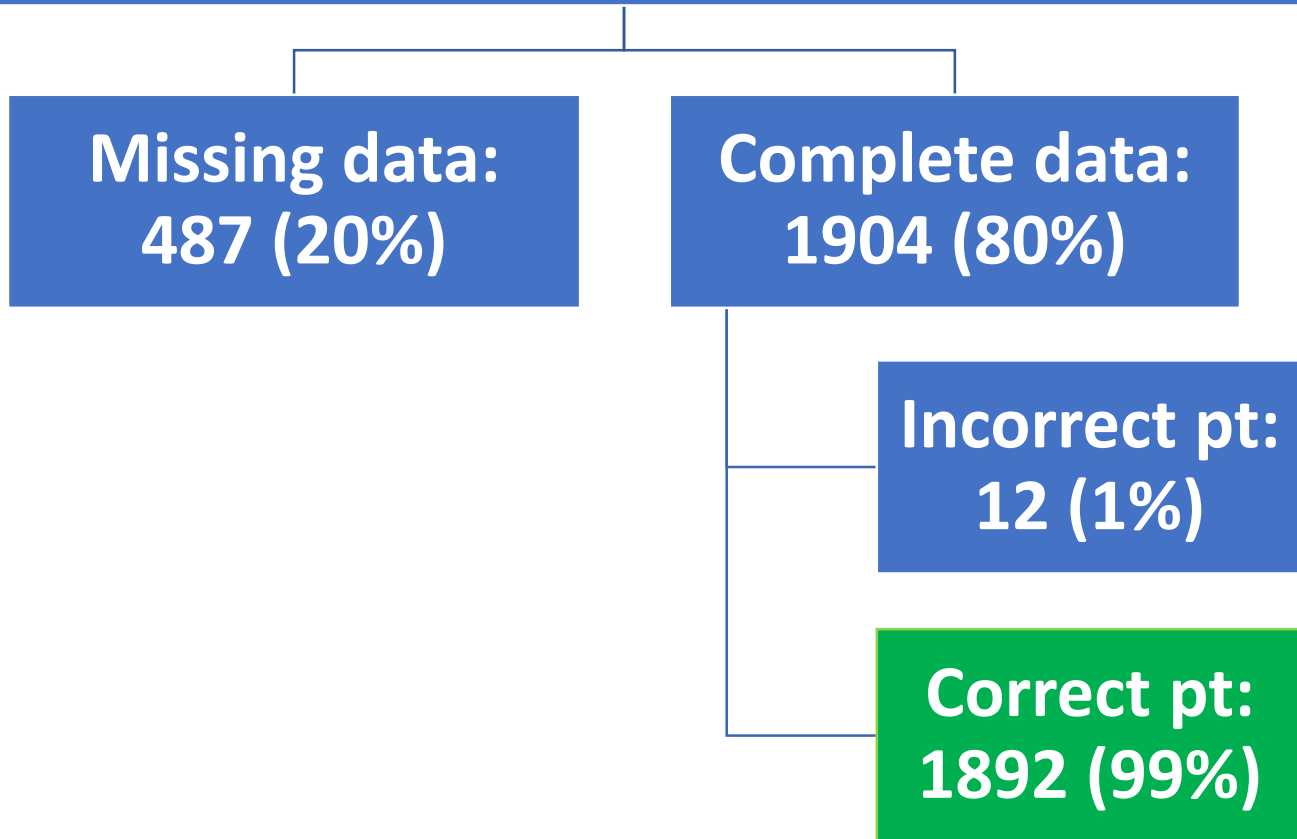
b. Prior to receiving the CRE alert, did you know that the patient was CRE colonized?

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?

Aggregate CRE Alert Outcomes, 1/7/15 – 8/12/18

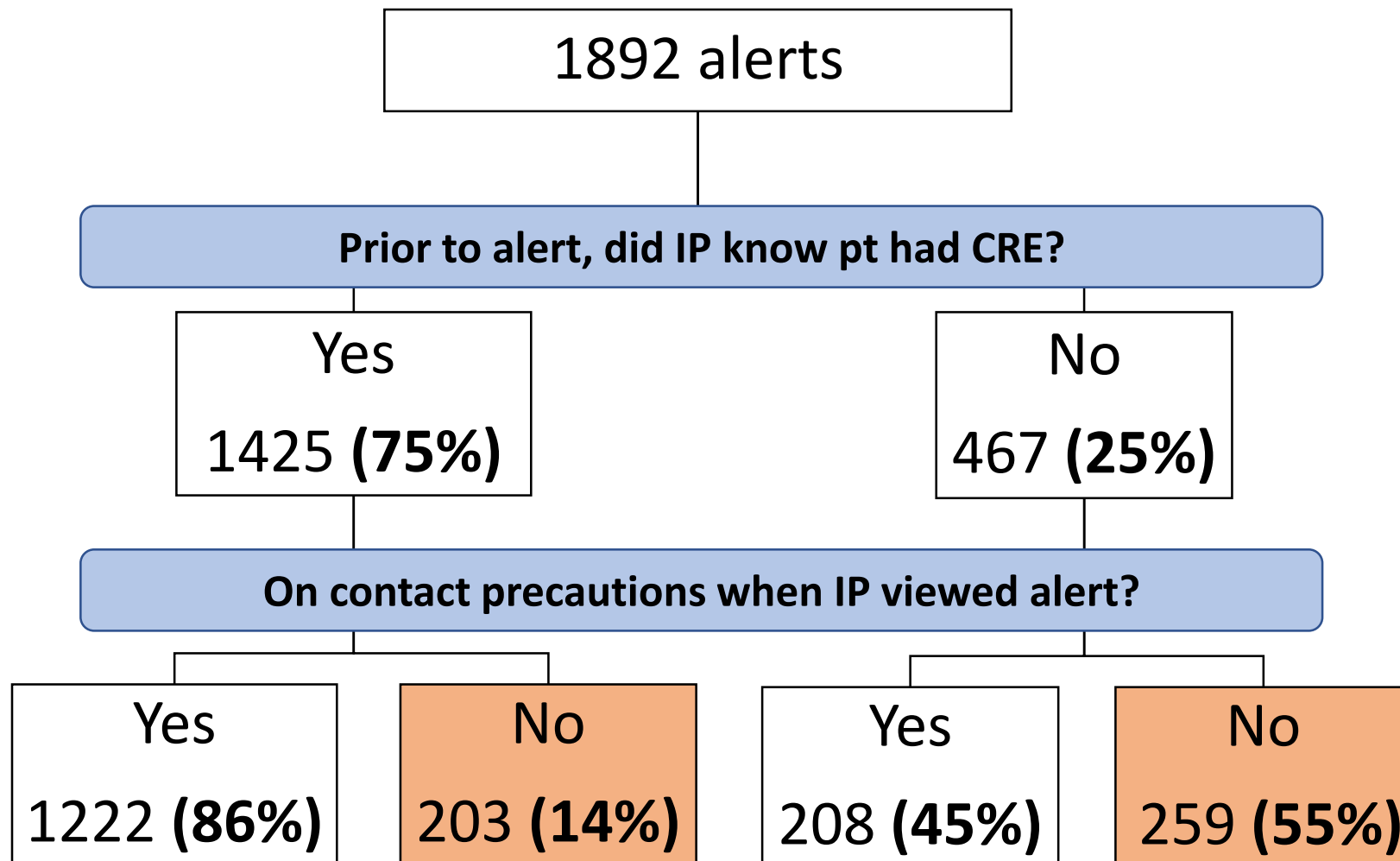
2391 Inpatient alerts at 45 hospitals



See notes below for additional details

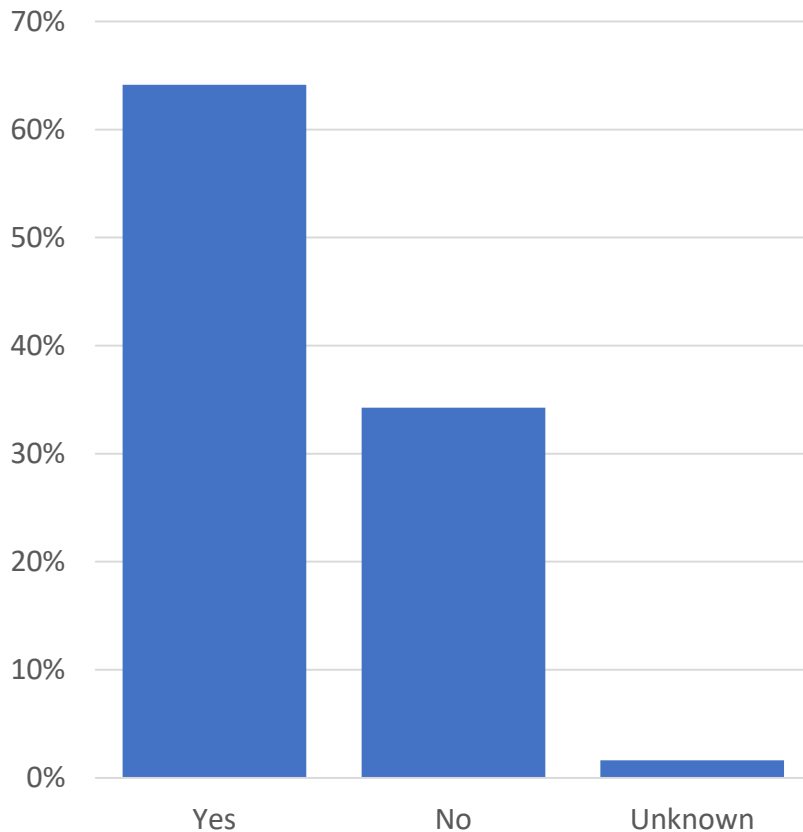
Alert Outcomes:

All correct inpatient CRE alerts, 1/7/15 – 8/12/18

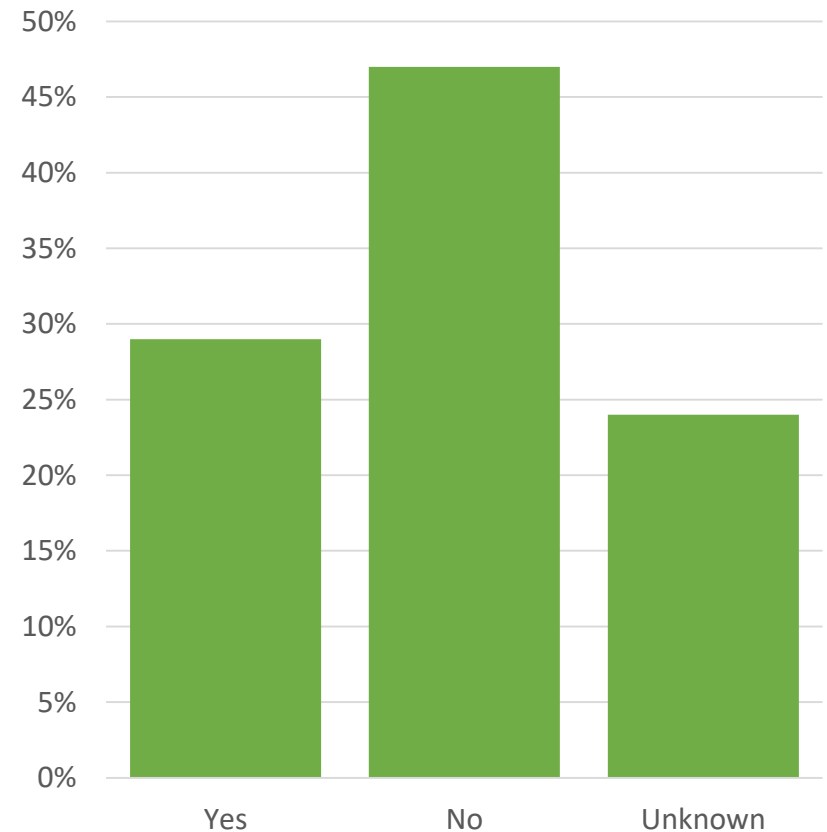


If the patient is already a “known CRE”, how did you find out? (N=1425)

Previous positive at our facility



Communicated by other facility



XDRO dashboard

XDRO
registry

Sample Hospital [change facility](#)

Test User1

[Home](#)

[Help](#)

[Go Back](#)

[Logout](#)

Submit Report

Search Registry

Facility Submission History

Facility Alert History

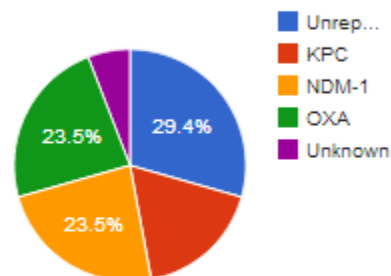


XDRO Dashboard

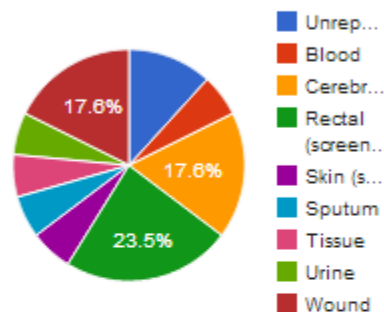
XDRO Report

Facility Data [a]

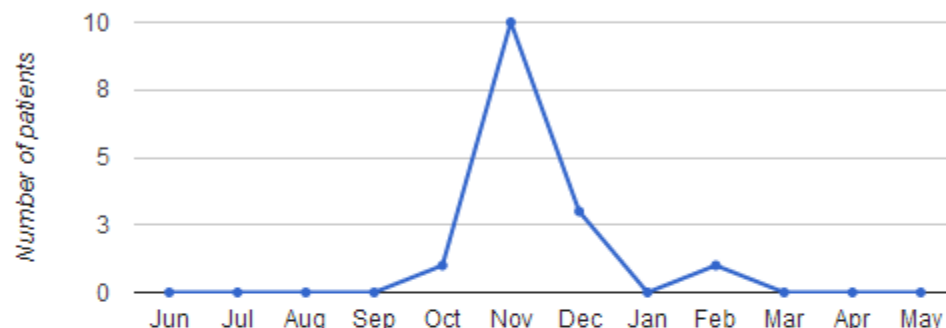
Resistance Mechanism



Specimen Source



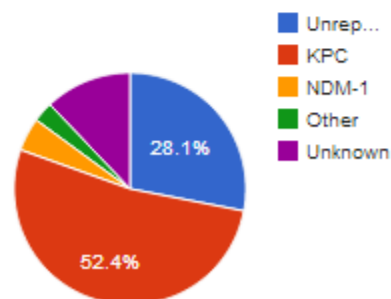
Trend, Last 12 Months



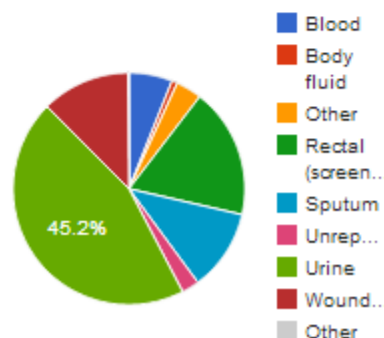
Entire Dataset

State Data [b]

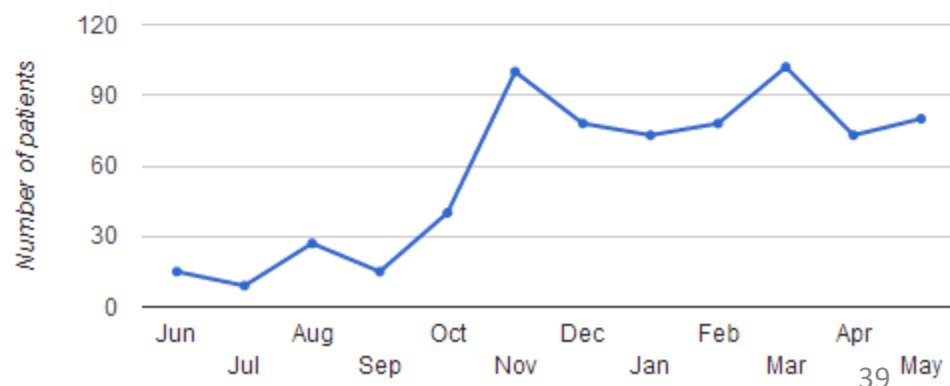
Resistance Mechanism



Specimen Source



Trend, Last 12 Months



Entire Dataset

Key Strategies & Cross-Cutting Topics



**Education &
training**



Policy



**Data &
Surveillance**



Communication



XDRO registry components

1. Web-based reporting registry (technical infrastructure)
2. Administrative management of registry
 - Data validation/quality control
 - Creation or updating of rules for data entry
 - Other quality improvement
3. User management
 - Pairing of users to facilities and authentication through a central service
 - Authorization or deletion of users for registry access
4. Site code management
 - Maintain updated list of facilities with unique site code
5. Automated alert system
 - Data preparation, data processing, hashing, data transfer, alert processing, email alerts

XDRO registry components

6. Training & customer service

- How to navigate registry, understand CRE definition, check auto alerts
- Help with reporting, accessing registry

6. Database for surveillance and quality analysis (e.g., Business Objects)

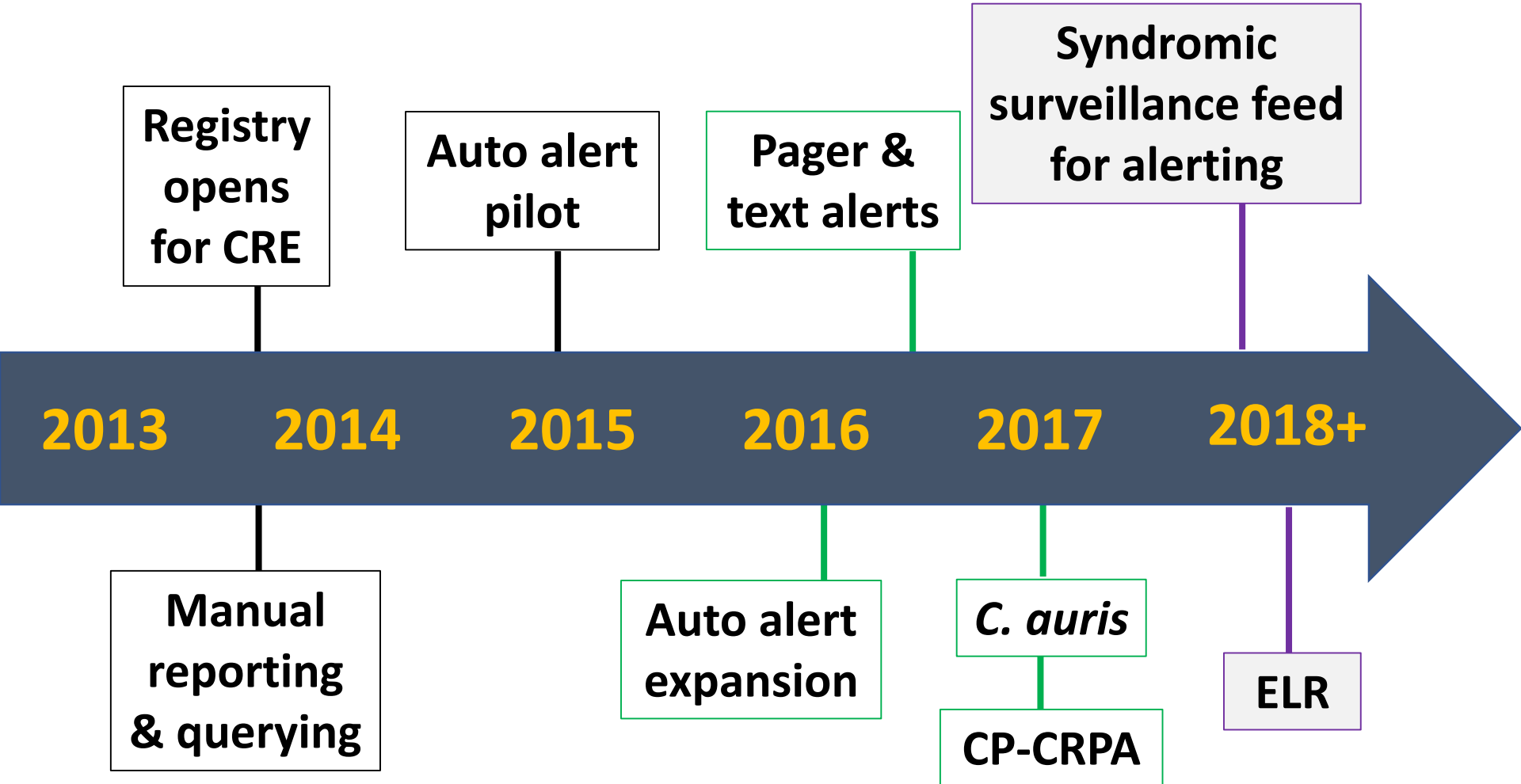
7. SaTScan (software for cluster detection) – optional

- Need updated list of facility geocodes mapped to site codes

8. Social network analysis – optional

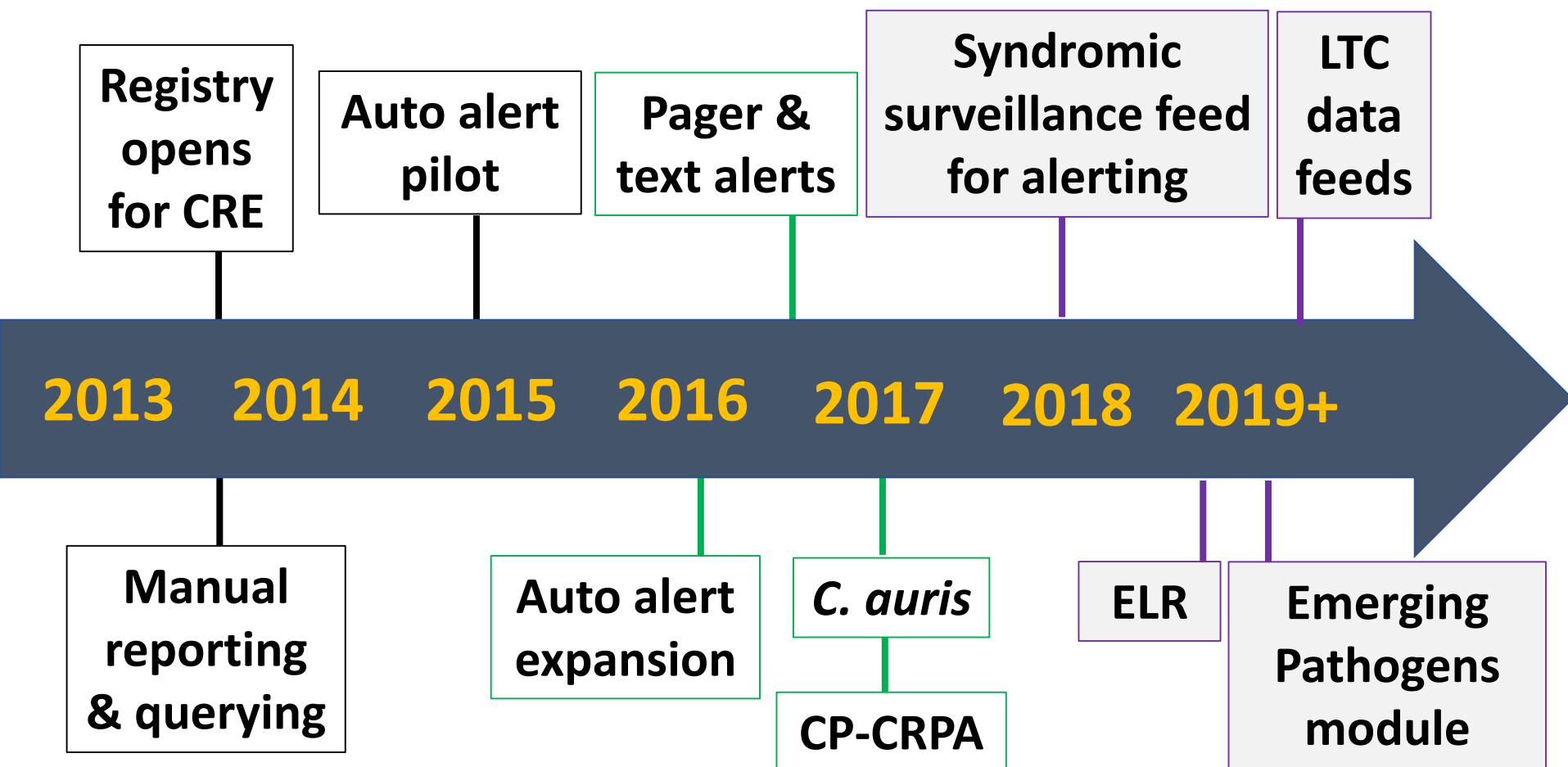
- For cluster detection within facility patient sharing networks or to prioritize automatic alerting

XDRO registry developments



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

XDRO registry developments



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

For more information

- Email: DPH.XDROregistry@illinois.gov
- XDRO website: <https://www.xdro.org>
- IDPH website: <http://dph.illinois.gov/topics-services/prevention-wellness/patient-safety-quality/cre>
- Trick WE, et al. Electronic public health registry of extensively drug-resistant organisms, Illinois, USA. *Emerg Infect Dis*. 2015 Oct.
<http://dx.doi.org/10.3201/eid2110.150538>