CDPH
California Department of Public Health

Multidrug-Resistant Organism (MDRO) Laboratory Surveillance: Best Practices for Healthcare Facilities

Healthcare-Associated Infections Program
Presented via webinar
August 5, 2025

Webinar reminders

This session is being recorded.

The slides will be distributed following the webinar.

Please stay muted.

Type questions or comments in the Q&A box. We will try to answer live. Any questions not covered will be included in a follow-up Q&A document.

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Objectives

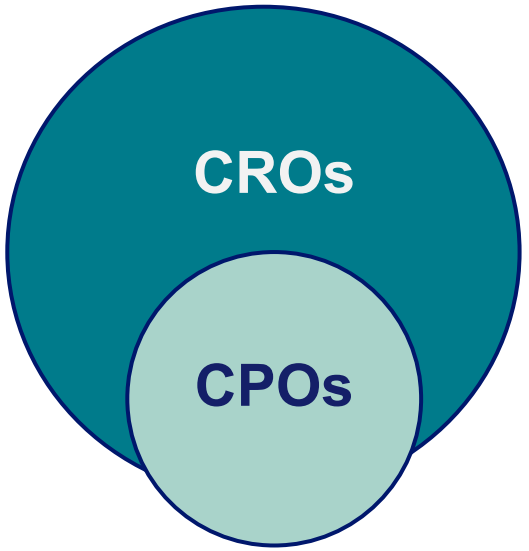
- Understand the goals of MDRO laboratory surveillance
- Describe how to read an antimicrobial susceptibility testing (AST) report
- Describe clinical isolate surveillance for priority MDROs
- Understand when to submit clinical isolates to public health for testing

Quick review of priority MDROs

What are priority MDROs?

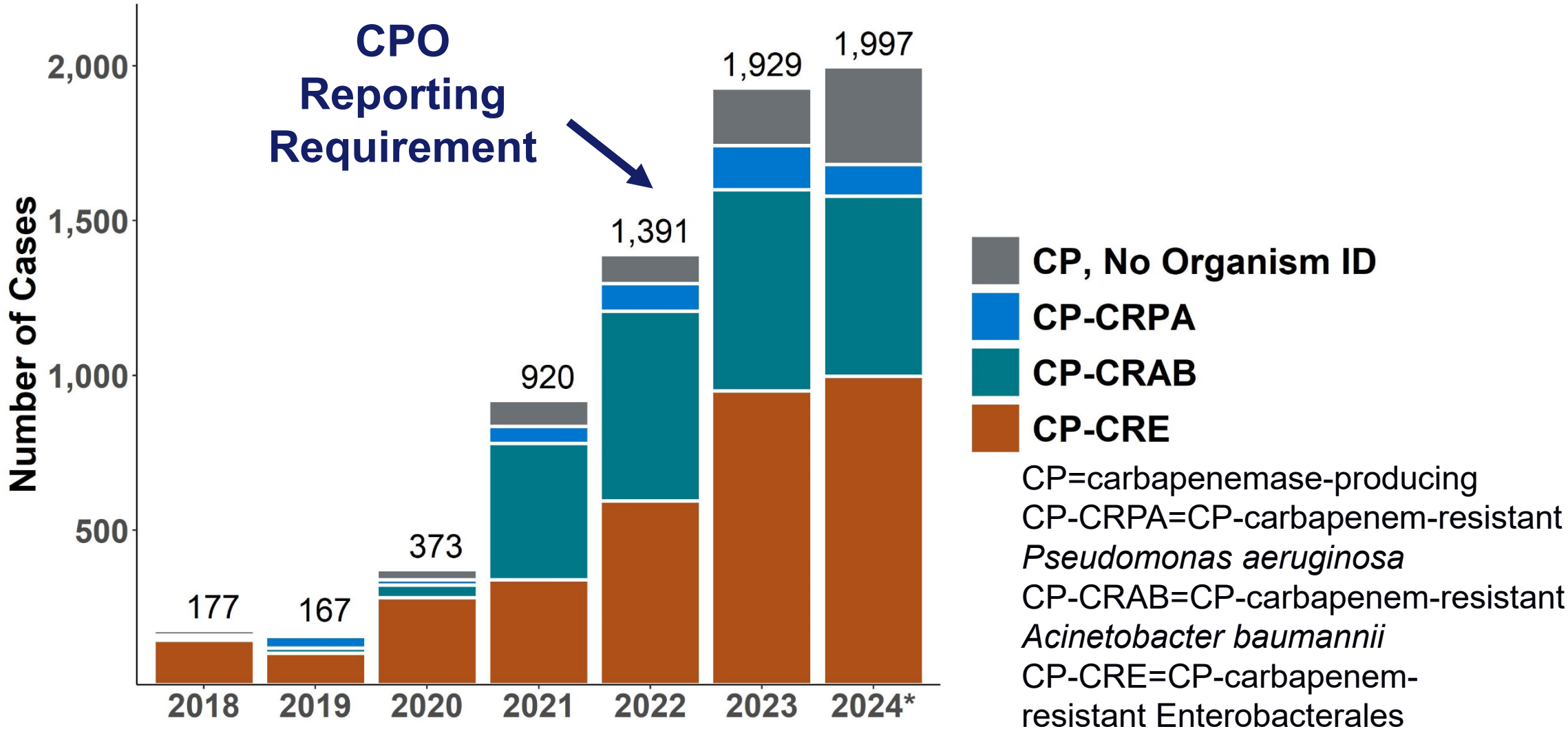
- *Candida auris* (*C. auris*) and carbapenemase-producing organisms (CPOs)
  - Cause substantial morbidity and mortality
  - Can spread rapidly within and among healthcare facilities
  - Can be contained through early and aggressive facility and public health efforts

Candida auris (*C. auris*)



CROs=carbapenem-resistant organisms
CPOs=carbapenmase-producing Enterobacterales, *Pseudomonas aeruginosa* and *Acinetobacter baumannii*[5]

CPO cases continue to increase



CP=carbapenemase-producing
CP-CRPA=CP-carbapenem-resistant *Pseudomonas aeruginosa*
CP-CRAB=CP-carbapenem-resistant *Acinetobacter baumannii*
CP-CRE=CP-carbapenem-resistant Enterobacterales

*2024 CPO data are preliminary

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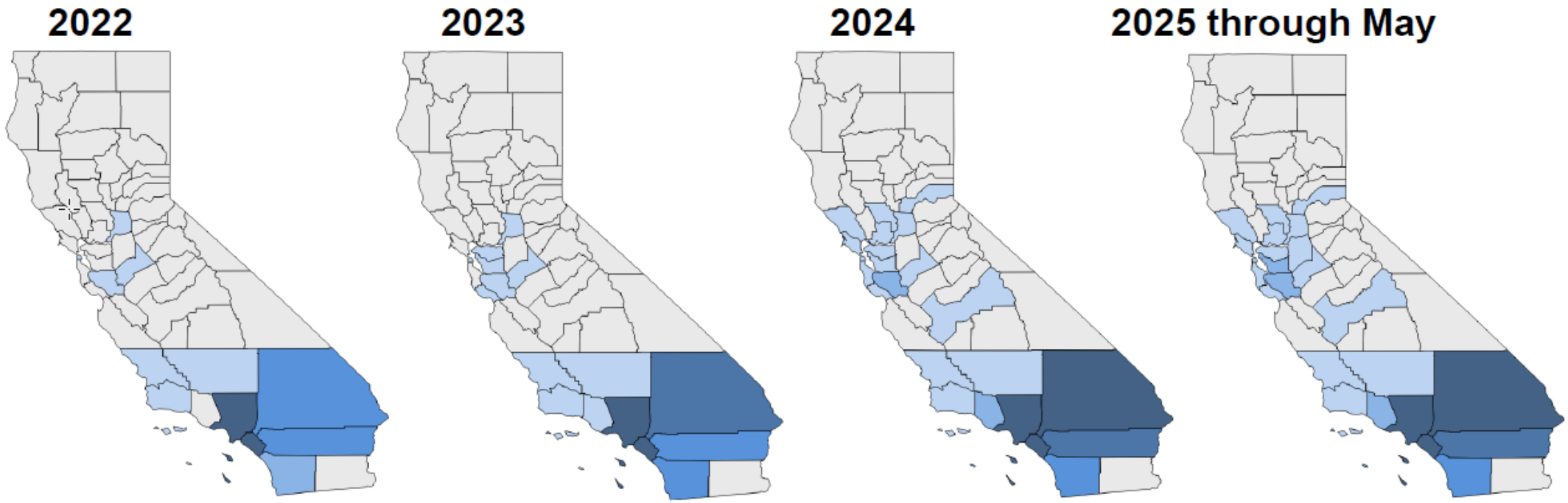
C. auris cases are increasing and spreading across California each year



Number of cumulative cases reported to CDPH by county, 2022-May 2025*

0 | 1-10 | 11-100 | 101-500 | 501-1000 | >1000

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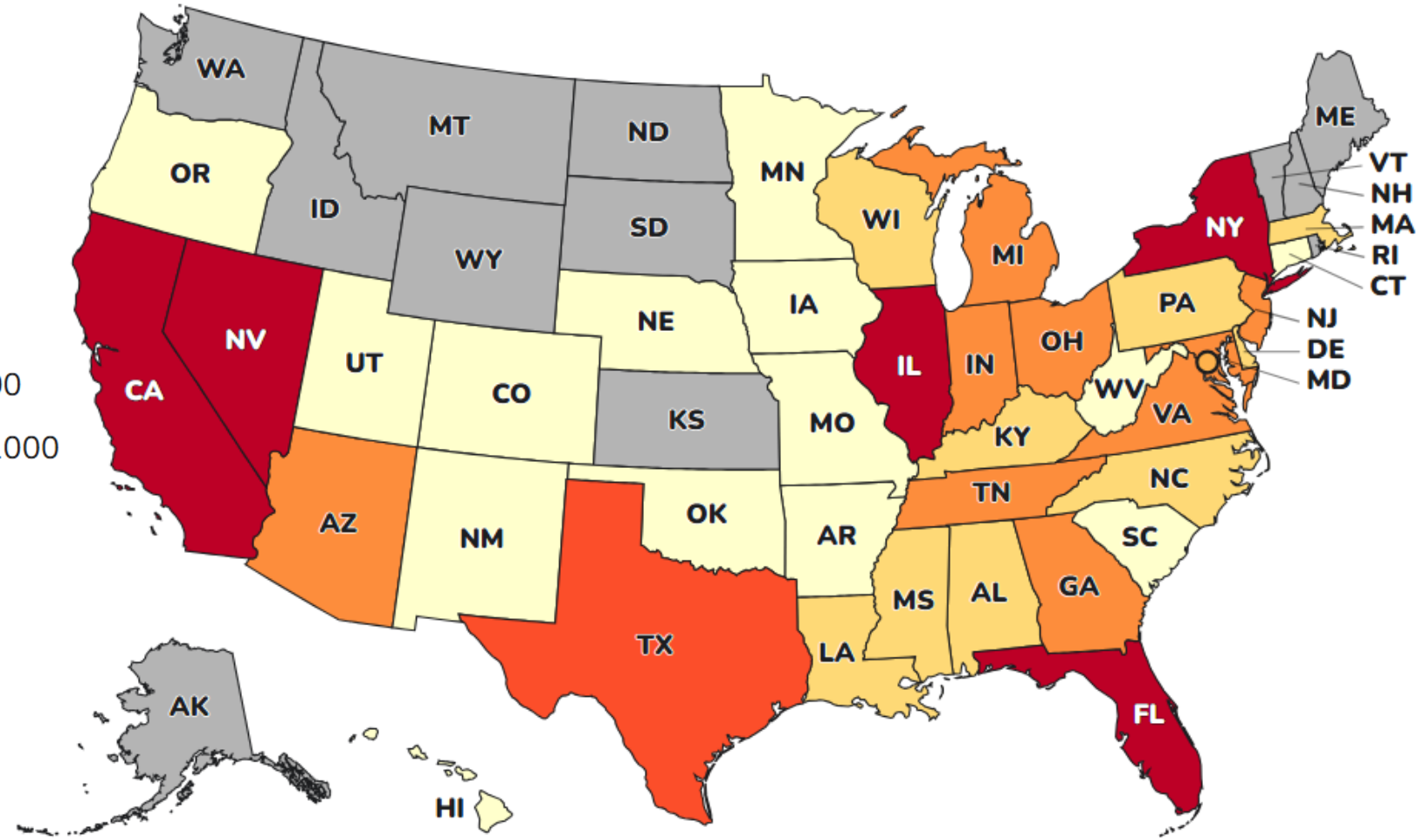
*Data preliminary, current through 5/30/25

Most states have identified *C. auris*[1]

C. auris clinical cases reported to CDC, 2016-2023

- No new clinical cases
- 11 to 50
- 101 to 500
- >1000
- 1 to 10
- 51 to 100
- 501 to 1000



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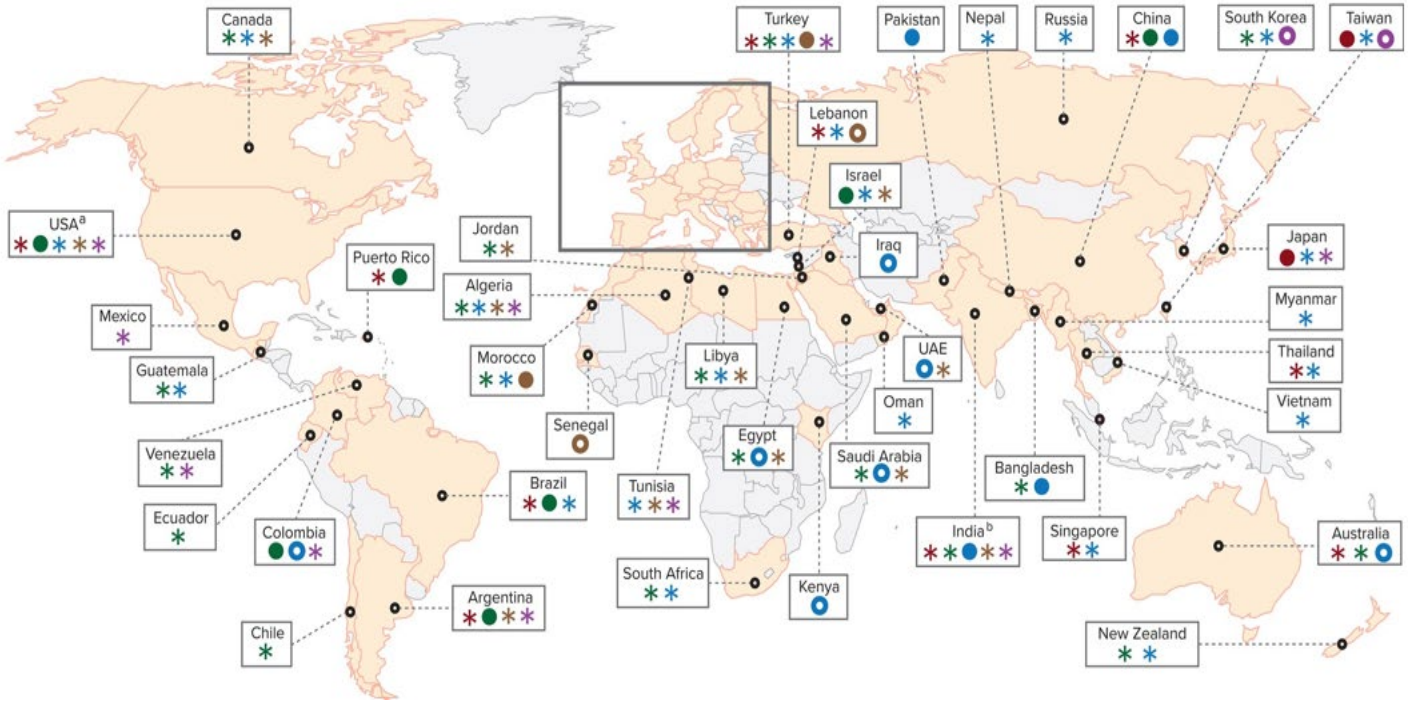
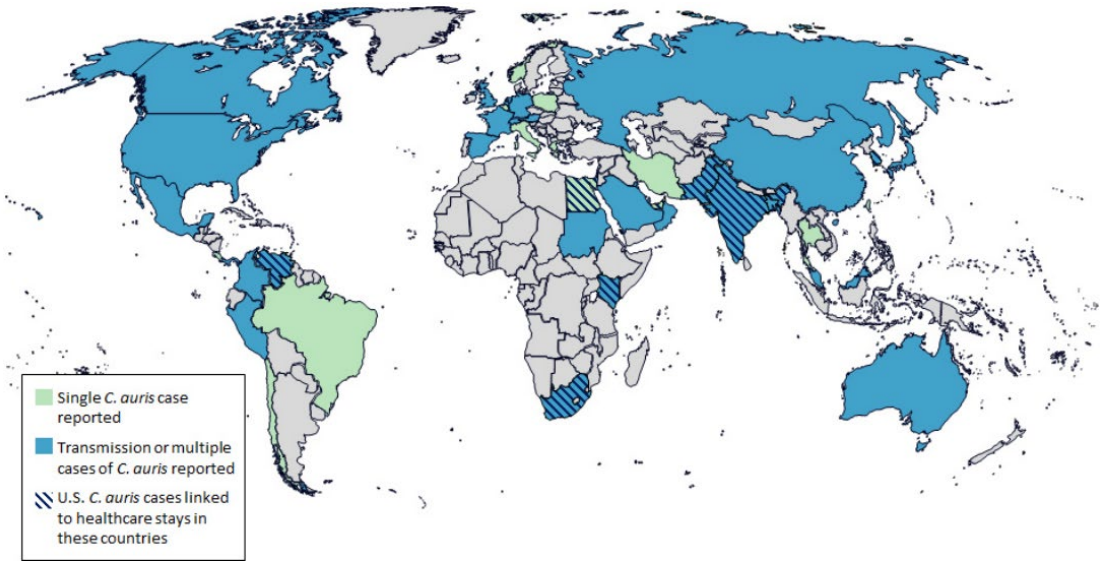
Many countries are reporting *C. auris* and CPO cases, outbreaks and endemicity[2,3]



	IMP	KPC	NDM	OXA	VIM
Endemic/nationwide distribution	●	●	●	●	●
Significant outbreaks/ regional spread	○	○	○	○	○
Sporadic outbreak/ occurences	*	*	*	*	*

CP-CRE, 2017

C. auris, 2021



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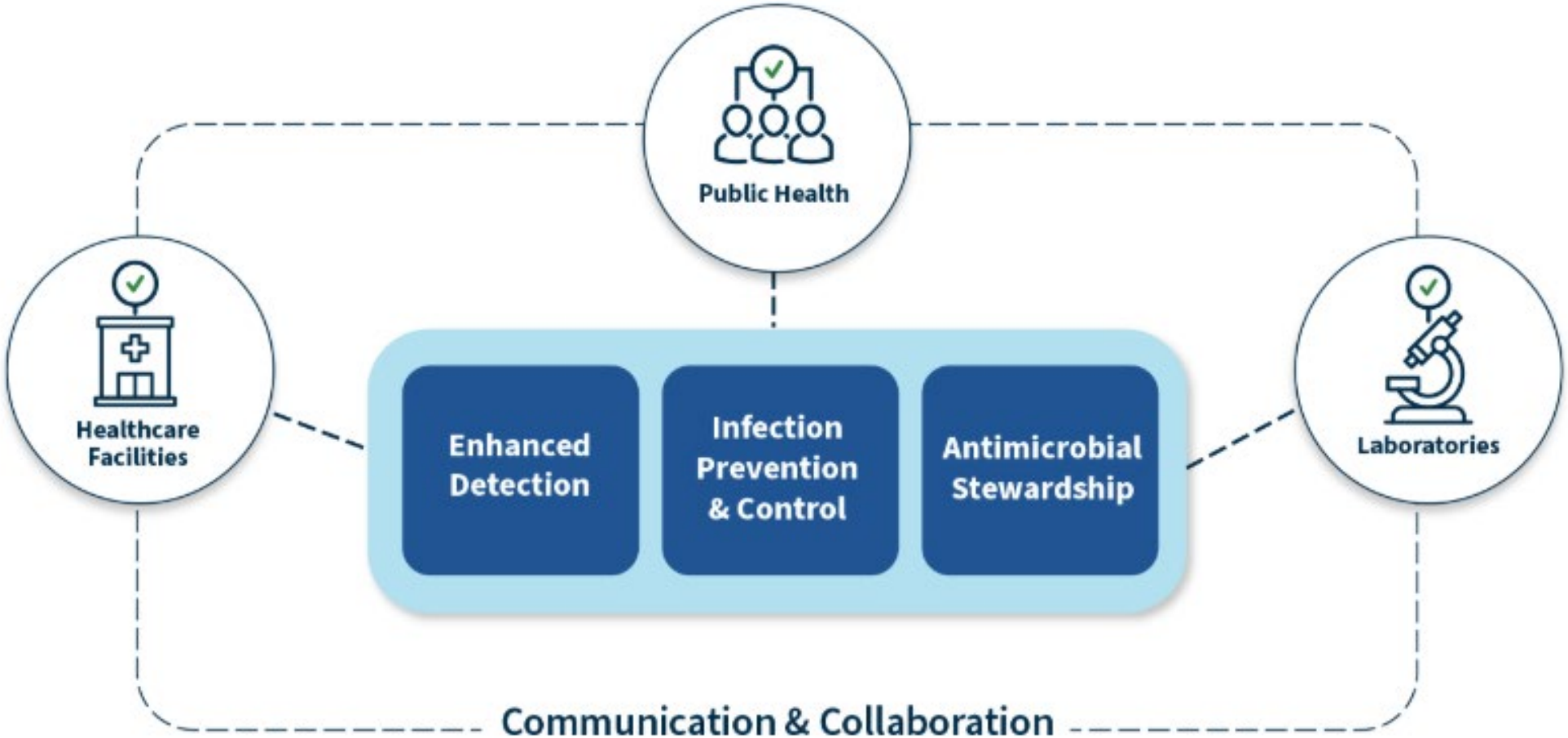
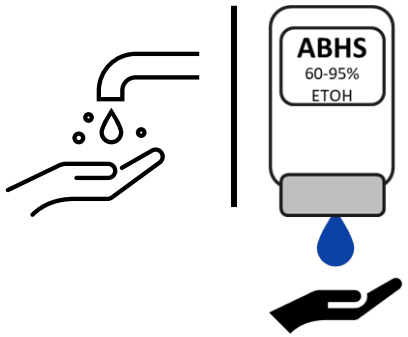
MDRO prevention and containment



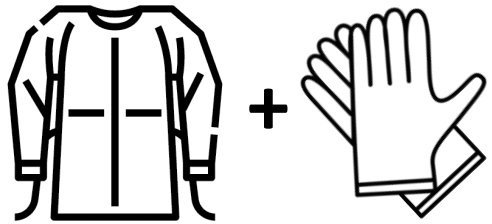
Infection prevention & control[4]

- Core IPC practices can prevent the spread of MDROs

Hand Hygiene



Personal Protective Equipment



Environmental Cleaning & Disinfection

+ observe and monitor compliance

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Antimicrobial stewardship

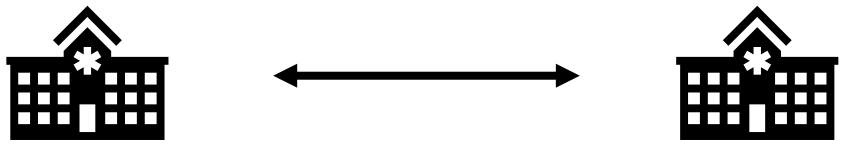
Promoting antimicrobial stewardship is critical for addressing antimicrobial resistance upstream

Antimicrobial Awareness webpage
(www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/AAResources.aspx)

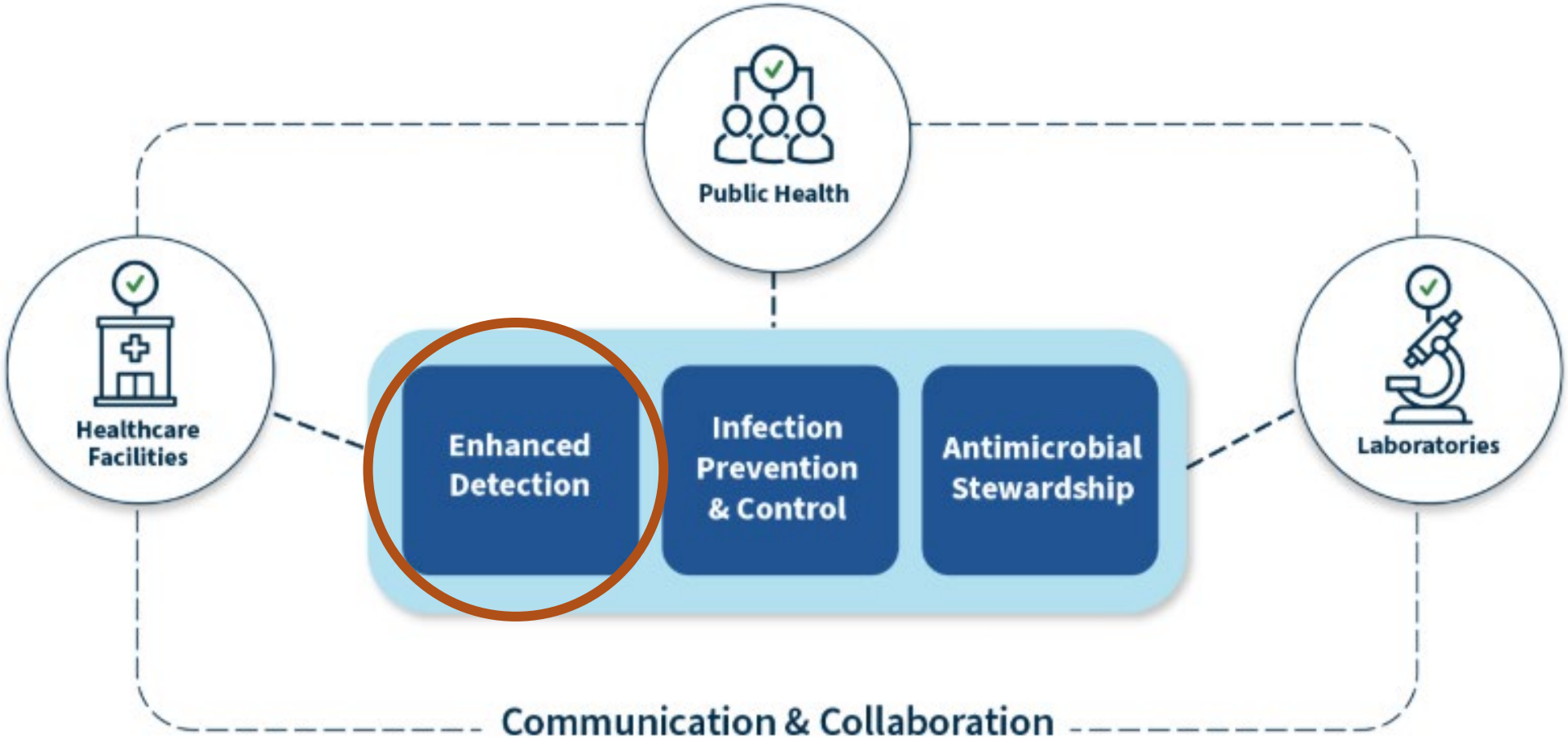
Communication & collaboration

- When transferring patients with priority MDROs to another healthcare facility, **communicate the patients' status to the receiving facility** at time of transfer.
- When receiving transferred patients, facilities should **actively seek information on MDRO status**.

- CDPH HAI provides an interfacility transfer form
  - CDPH Interfacility Transfer Communications (www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/InterfacilityCom munication.aspx)



Enhanced detection through lab surveillance



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Additional Resources

Introduction to Priority Multidrug-resistant Organisms (MDROs) Webinar Recording (www.youtube.com/watch?v=2CMFt7TUH4Y) and Webinar Slides (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/IntroToPriorityMDROs_022025.pdf)

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Priority MDRO laboratory surveillance

How can facilities improve their awareness of MDROs?

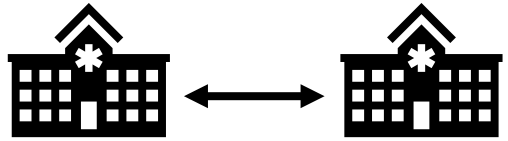
Priority MDRO lab surveillance recommendations for healthcare facilities

Admission and response screening

Proactive point prevalence surveys for long-term acute care hospitals (LTACHs) and ventilator-equipped skilled nursing facilities (vSNFs)

Clinical isolate surveillance

Interfacility transfer communication



Tracking patients with priority MDROs

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Admission screening

CDPH HAI provides recommendations for screening high-risk patients on admission for *C. auris* and CPOs by facility type

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Priority MDRO admission screening recommendations by facility type: LTACHs and vSNF ventilator units

- ☑ **Screen all patients on admission**
- ☑ **Conduct routine point prevalence surveys (PPSs) per public health guidance**

Priority MDRO admission screening recommendations by facility type: acute care hospitals

Screening recommended

For patients transferring from:

- LTACH or vSNF ventilator unit
- facility with known transmission

Screening recommended

For patients:

- with healthcare exposure abroad or in an endemic region in the past 12 months
- admitted to high-acuity units with prolonged lengths of stay (e.g., some ICUs, burn)

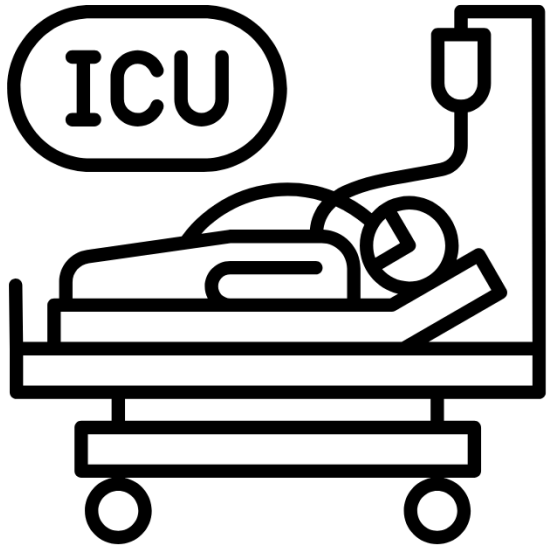
Consider screening

For patients:

- with indwelling devices, particularly those mechanically ventilated or trached
- colonized or infected with another priority MDRO

Acute care hospitals should consider screening patients on admission to the ICU for *C. auris*[5,6]

- Screening patients admitted to some ICUs catches vulnerable patients who might not have other risk factors
- Colonized patients are more likely to develop infections
- *C. auris* infections are most likely to occur in patients with complex medical conditions
- ICU patients often have prolonged stays and require extensive use of medical equipment, both risk factors for infection



ICU stay is a common risk factor for *C. auris* infections[7]

Clinical features of *C. auris* infections

- Median length of hospitalization was 13 days, and **75% involved an ICU stay**
- Median time from admission to first positive specimen collection was 2 days

C. auris infections: Clinical Features	Total, N = 192 (%)
Underlying Condition	
Sepsis	123 (64.1)
Diabetes	106 (55.2)
Chronic kidney disease	85 (44.3)
Pneumonia	83 (43.2)
Chronic respiratory failure	61 (31.8)
Liver disease	29 (15.1)
COVID-19	24 (12.5)
Solid organ malignancy	21 (10.9)
Medical devices	
Central venous catheter	111 (57.8)
Mechanical ventilation	83 (43.2)
Tracheostomy	29 (15.1)
Feeding tube	16 (8.3)
Urinary catheter	17 (8.9)
Total parenteral nutrition	17 (8.9)

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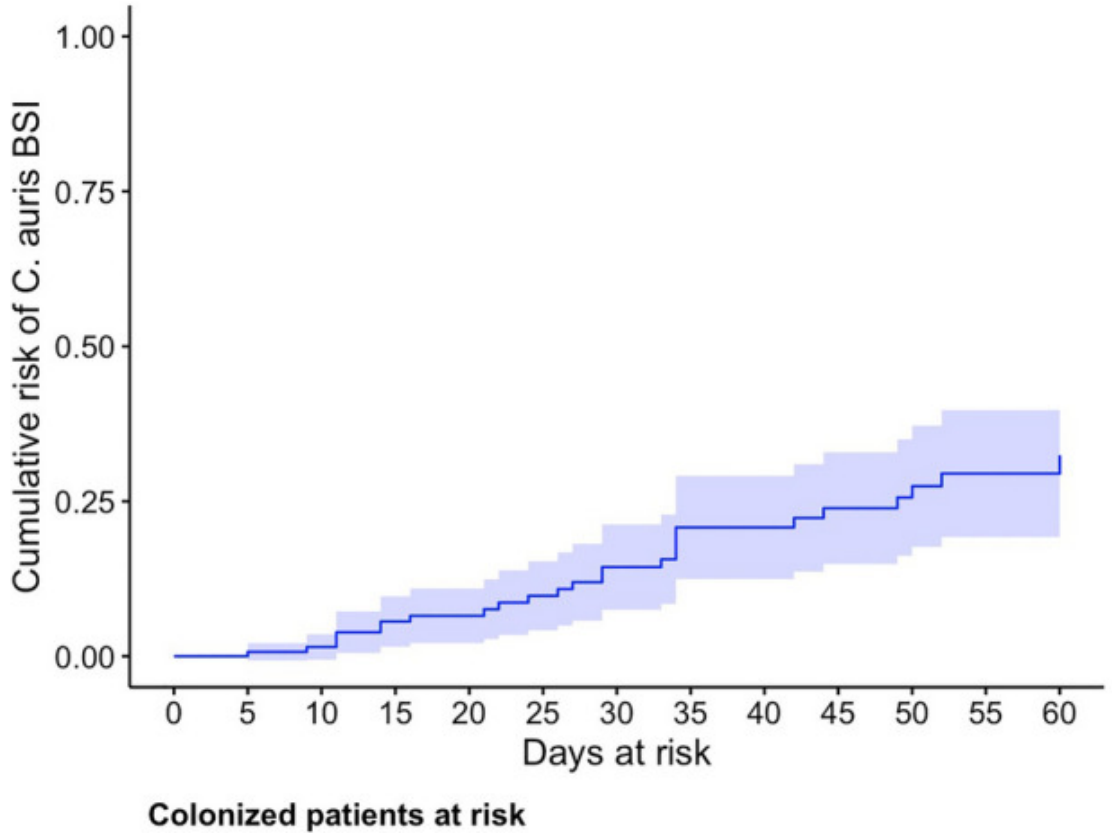
ICU patients colonized with *C. auris* can develop candidemia[8,9]

Studies have shown that 18-25% of ICU patients colonized with *C. auris* developed candidemia



Many California hospitals conduct *C. auris* admission screening

Admission screening has benefitted multiple facilities in Northern and Central California, particularly LTACHs, to:

- ☑ **identify colonized patients on admission**
- ☑ **avoid the costs associated with an outbreak investigation**

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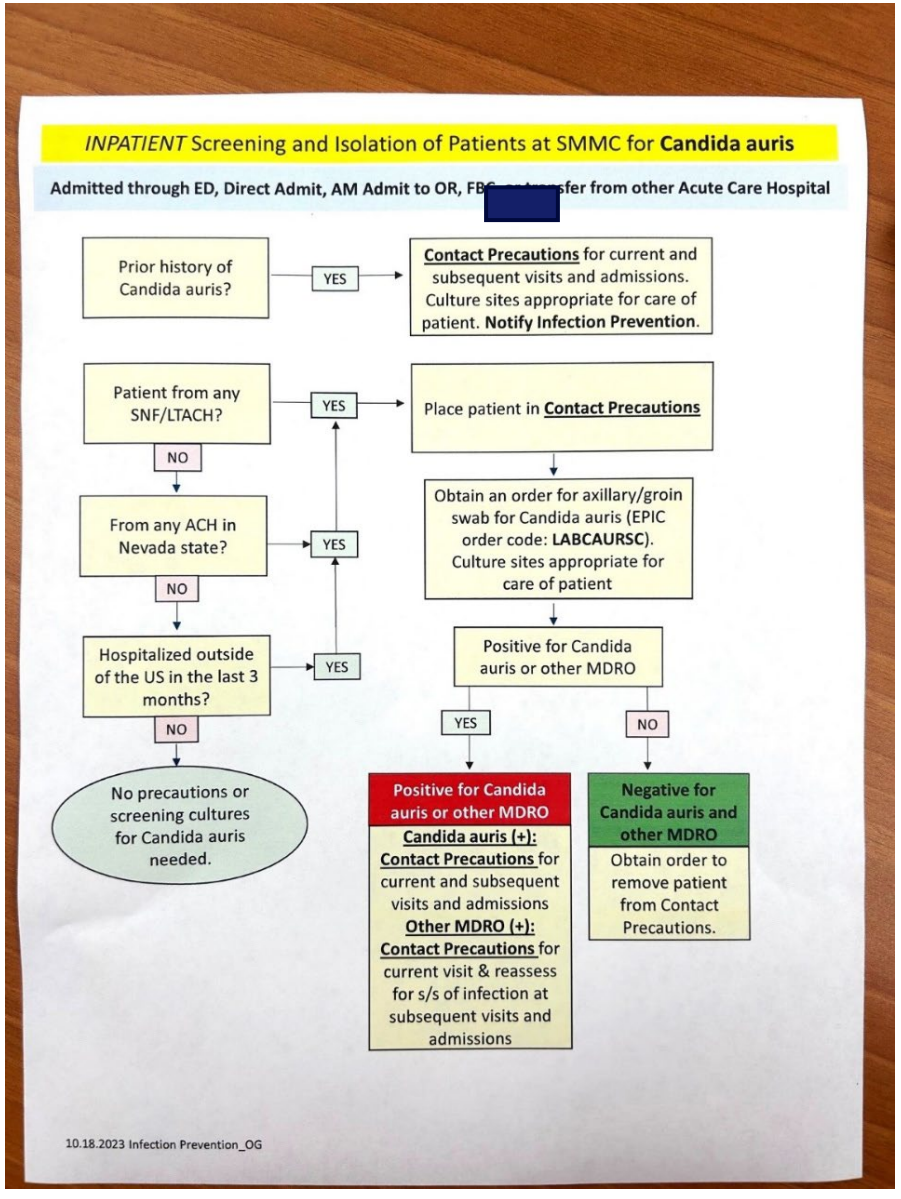
Example hospital admission screening protocol



INPATIENT Screening and Isolation of Patients at SMMC for **Candida auris**

Admitted through ED, Direct Admit, AM Admit to OR, FB[redacted]fer from other Acute Care Hospital

Prior history of Candida auris? — YES → **Contact Precautions** for current and subsequent visits and admissions. Culture sites appropriate for care of patient. **Notify Infection Prevention.**

Patient from any SNF/LTACH? — YES → Place patient in **Contact Precautions**

NO

From any ACH in Nevada state? — YES →

NO

Hospitalized outside of the US in the last 3 months? — YES →

NO

No precautions or screening cultures for Candida auris needed.

Obtain an order for axillary/groin swab for Candida auris (EPIC order code: **LABCAURSC**). Culture sites appropriate for care of patient

Positive for Candida auris or other MDRO

YES

Positive for Candida auris or other MDRO

Candida auris (+): **Contact Precautions** for current and subsequent visits and admissions

Other MDRO (+): **Contact Precautions** for current visit & reassess for s/s of infection at subsequent visits and admissions

NO

Negative for Candida auris and other MDRO

Obtain order to remove patient from Contact Precautions.

10.18.2023 Infection Prevention_OG

Response Screening

After identifying a patient with a priority MDRO, we can use response screening to look for transmission

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Priority MDRO response screening

- **Screen high-risk contacts**
  - Sharing a room or bathroom with the index patient
  - Occupying the bedspace immediately after the index patient
- **Other screening may be warranted**
  - Point prevalence survey of unit or facility
  - Additional epi-linked screening

Reach out to your local health department to determine appropriate response screening

How quickly can a patient become colonized?[10-15]

C. auris – as soon as 4 hours

CROs – as soon as 3 days

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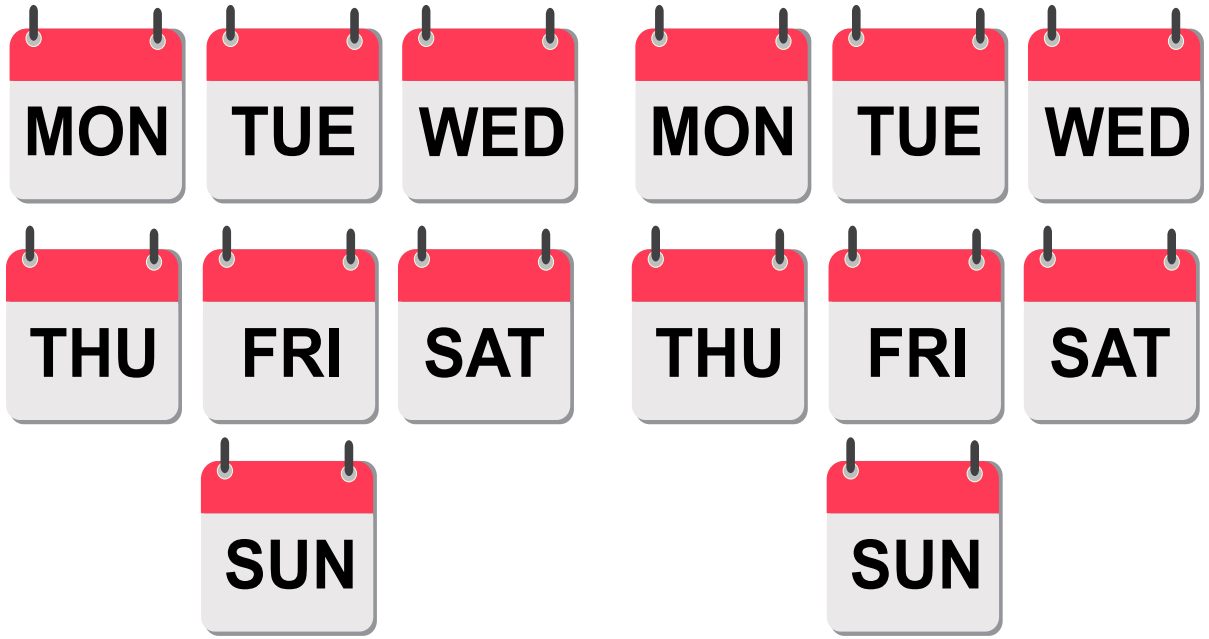
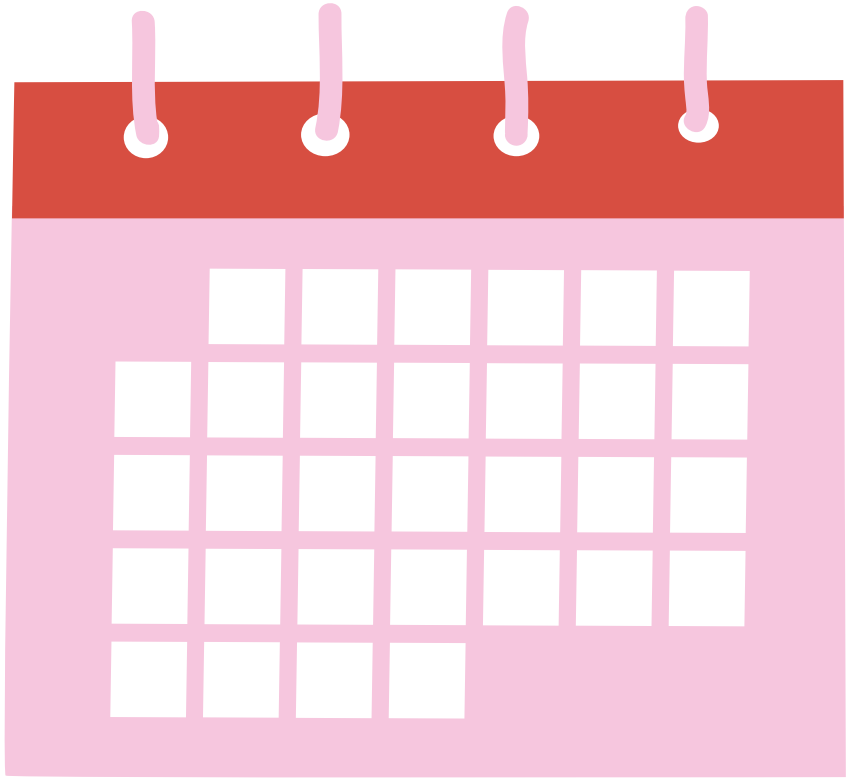
How long do MDROs live in the healthcare environment?[16-20]

C. auris can survive for 2+ weeks



CROs can survive for weeks to months



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Facility actions for patients or residents colonized or infected with a priority MDRO

In hospitals/LTACHs

- Flag chart in medical record for Contact Precautions
- Consider automating the creation of the interfacility transfer form
- Implement Contact Precautions

In skilled nursing facilities/vSNFs

- Keep a line list of residents colonized or infected with priority MDROs
- Prefill interfacility transfer form for emergent transfers
- Implement Enhanced Barrier Precautions

Implement appropriate IPC Practices

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Additional Resources

Review our *C. auris* admission screening webinar and Tier 2 Screening Decision Tree

- Admission Screening for *C. auris* in Acute Care Hospitals – 1/23/24
  - Slides (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/C_auris_AdmissionScreening_in_CA_ACHs_webinar_012324.pdf) and Recording (youtu.be/XrbrYGidFoc) (opens in YouTube)
- Tier 2: Pathogen Screening Decision Tree (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/Tier2_Pathogen_Screening_Decision_Tree.pdf)

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Isolate testing

Monitor for priority MDROs by reviewing antimicrobial susceptibility testing reports, testing for carbapenemases, and identifying *Candida* to the species level

Clinical and commercial labs play a critical role in MDRO surveillance

- Clinical and commercial labs should:
  - identify all *Candida* isolates from normally sterile sites to the species level
  - test patient specimens to determine antimicrobial resistance to carbapenems using current CLSI* breakpoints
  - test carbapenem-resistant organisms for carbapenemases

*Clinical Laboratory Standards Institute

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Careful use of carbapenems is essential to limit the emergence of resistance

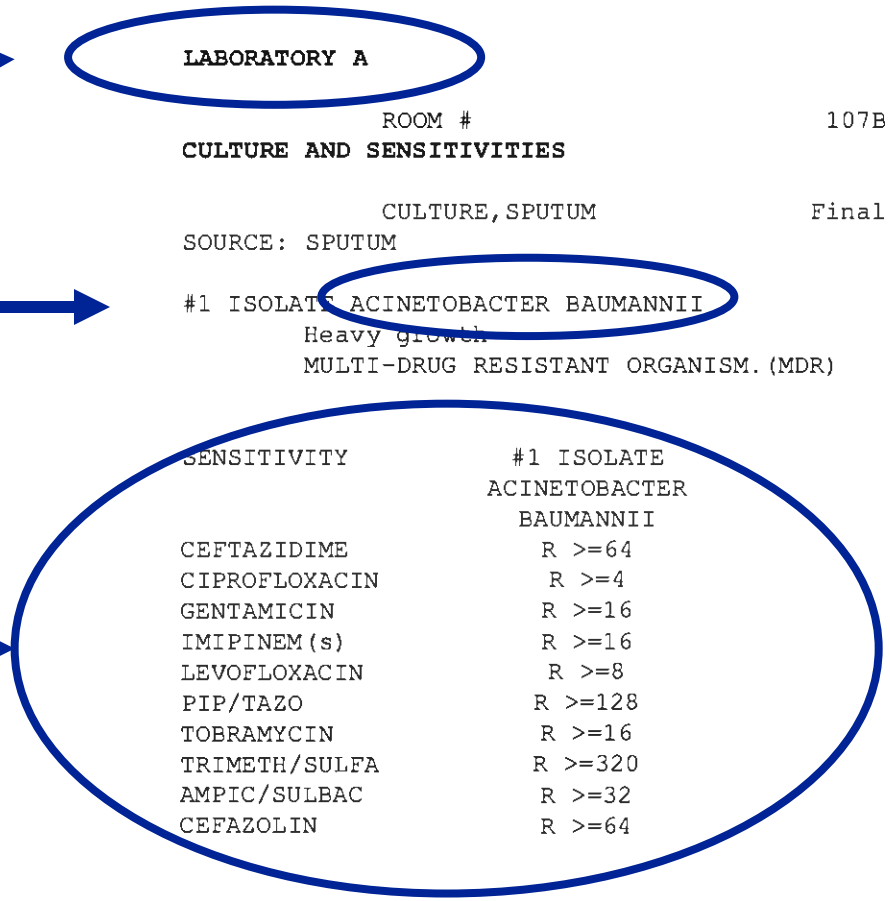
- Carbapenems are broad-spectrum antibiotics – they are effective against a wide range of bacteria
- When an organism is resistant to carbapenems, there are very few additional antibiotics that can be used
- Good antibiotic stewardship treats carbapenems as a drug of last resort

Carbapenems include:

- Imipenem
- Meropenem
- Ertapenem
- Doripenem (not used in the US)

Resistance is reported through an antimicrobial susceptibility testing (AST) report

- An AST report:
  - comes from a laboratory
  - identifies the organism
  - lists antimicrobials with an S, I, or R
    - Tells if we can treat the organism with this antimicrobial
      - **S**=susceptible → Yes
      - **I**=intermediate → Uncertain
      - **R**=resistant → No



LABORATORY A

ROOM # 107B

CULTURE AND SENSITIVITIES

CULTURE,SPUTUM Final

SOURCE: SPUTUM

#1 ISOLATE: ACINETOBACTER BAUMANNII
Heavy growth.
MULTI-DRUG RESISTANT ORGANISM.(MDR)

SENSITIVITY	#1 ISOLATE ACINETOBACTER BAUMANNII
CEFTAZIDIME	R >=64
CIPROFLOXACIN	R >=4
GENTAMICIN	R >=16
IMIPINEM(s)	R >=16
LEVOFLOXACIN	R >=8
PIP/TAZO	R >=128
TOBRAMYCIN	R >=16
TRIMETH/SULFA	R >=320
AMPIC/SULBAC	R >=32
CEFAZOLIN	R >=64

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Note: All reports are redacted to remove protected health information

Clinical breakpoints: standards for S, I, R interpretations on the AST report

The clinical breakpoint answers the question: will **this** amount of antimicrobial prevent growth of **this** organism?

Clinical breakpoints are set by the Clinical Laboratory Standards Institute (CLSI) and the Food and Drug Administration (FDA)

They change over time, and laboratories are responsible for updating their testing accordingly

Clinical and commercial labs should be using current CLSI breakpoints for AST[21]

- Clinical and commercial labs should test patient specimens to determine antimicrobial resistance to carbapenems **using current CLSI breakpoints**

Organism/Carbapenem-Current	Imipenem/ Meropenem			Ertapenem		
Interpretation	S	I	R	S	I	R
Enterobacterales	≤1	2	≥4	≤0.5	1	≥2
Pseudomonas aeruginosa	≤2	4	≥8	NA	NA	NA
Acinetobacter baumannii	≤2	4	≥8	NA	NA	NA

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Clinical breakpoints are set using the minimum inhibitory concentration (MIC)

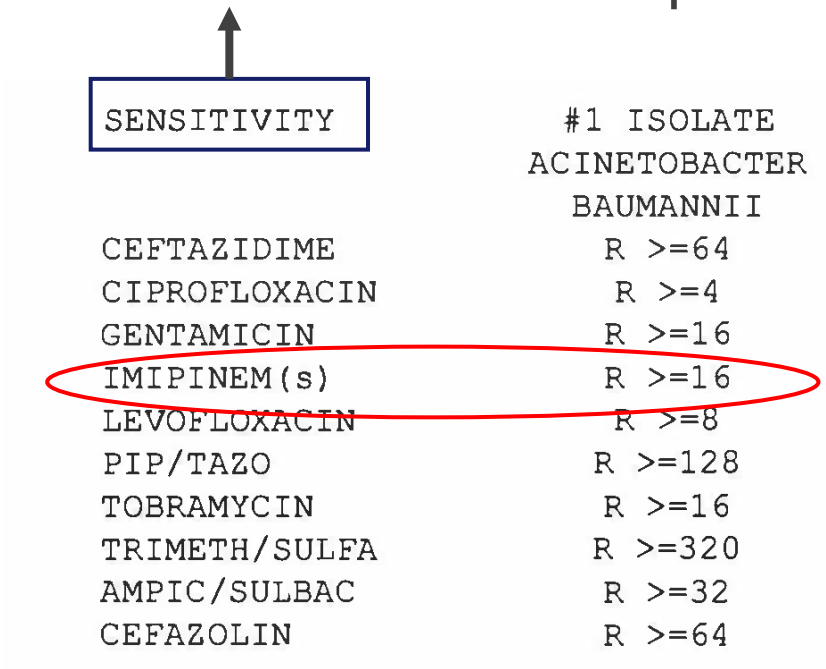
- The MIC is the **smallest** amount of the antibiotic needed to **prevent the growth** of the organism
- The MIC:
  - Is for a **specific** organism/antimicrobial (bug/drug) combination
  - Reflects how **that organism** interacts with **that specific antimicrobial**

AST reports describe a patient's specimen relative to the clinical breakpoints

- The AST reflects the testing of a particular patient's specimen
- The MICs for the patient's specimen are compared to the clinical breakpoints set by CLSI/FDA to determine if the patient's organism is susceptible, intermediate or resistant to the antimicrobial

Clinical breakpoints and MICs on an AST report - example

Another word for susceptibility



SENSITIVITY	#1 ISOLATE ACINETOBACTER BAUMANNII
CEFTAZIDIME	R >=64
CIPROFLOXACIN	R >=4
GENTAMICIN	R >=16
IMIPINEM(s)	R >=16
LEVOFLOXACIN	R >=8
PIP/TAZO	R >=128
TOBRAMYCIN	R >=16
TRIMETH/SULFA	R >=320
AMPIC/SULBAC	R >=32
CEFAZOLIN	R >=64

- This *Acinetobacter baumannii isolate* is resistant to imipenem
- It requires an MIC of **16 or more** to prevent it from growing
- For imipenem and *A. baumannii*, **any MIC above 8 is considered resistant** – 8 is the clinical breakpoint for resistance for this bug/drug combination

How is carbapenem resistance defined and which isolates should be tested?

In this next section, we will review each of the organisms and explain when they are considered carbapenem-resistant and should be tested for carbapenemases.

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When are Enterobacterales considered carbapenem-resistant (CRE)?[22]

There are many species of bacteria within the Enterobacterales order, which include but are not limited to: *E. coli, Klebsiella, Enterobacter, Salmonella, Serratia,* and *Citrobacter* species (spp.)

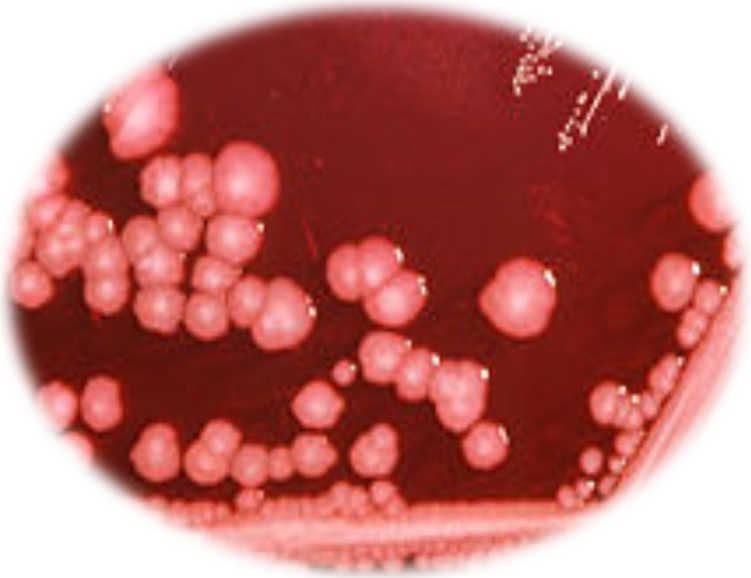
For Enterobacterales, "**carbapenem-resistant**" is

- MIC ≥ 4 µg/mL for imipenem or meropenem

OR

- MIC ≥ 2 µg/mL for ertapenem

Some Enterobacterales have intrinsic (natural) resistance to imipenem



For *Proteus*, *Providencia*, and *Morganella* spp.:

"**Carbapenem-resistant**" is

- MIC ≥ 4 µg/mL for meropenem

OR

- MIC ≥ 2 µg/mL for ertapenem

These organisms are naturally resistant to imipenem.

Labs should report AST results for other carbapenems to determine resistance.

When is *Pseudomonas aeruginosa* considered carbapenem-resistant (CRPA)?[22]

For *Pseudomonas aeruginosa:*

"**Carbapenem-resistant**" is

- MIC ≥ 8 µg/mL for imipenem or meropenem

Note: Ertapenem is not active against *P. aeruginosa.*

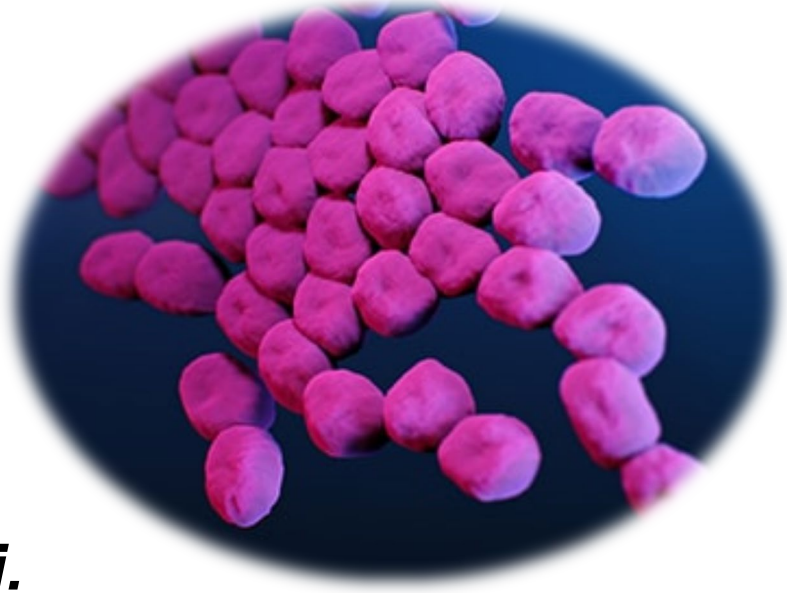
Labs should report AST results for other carbapenems to determine resistance.

When is *Acinetobacter baumannii* considered carbapenem-resistant (CRAB)?[22]

For *Acinetobacter baumannii*:

"Carbapenem-resistant" is

- MIC ≥ 8 µg/mL for imipenem or meropenem



Note: Ertapenem is not active against *A. baumannii.*

Labs should report AST results for other carbapenems to determine resistance.

Clinical and commercial labs should routinely test CROs for carbapenemases[23-24]

Identifying specific carbapenemases is helpful

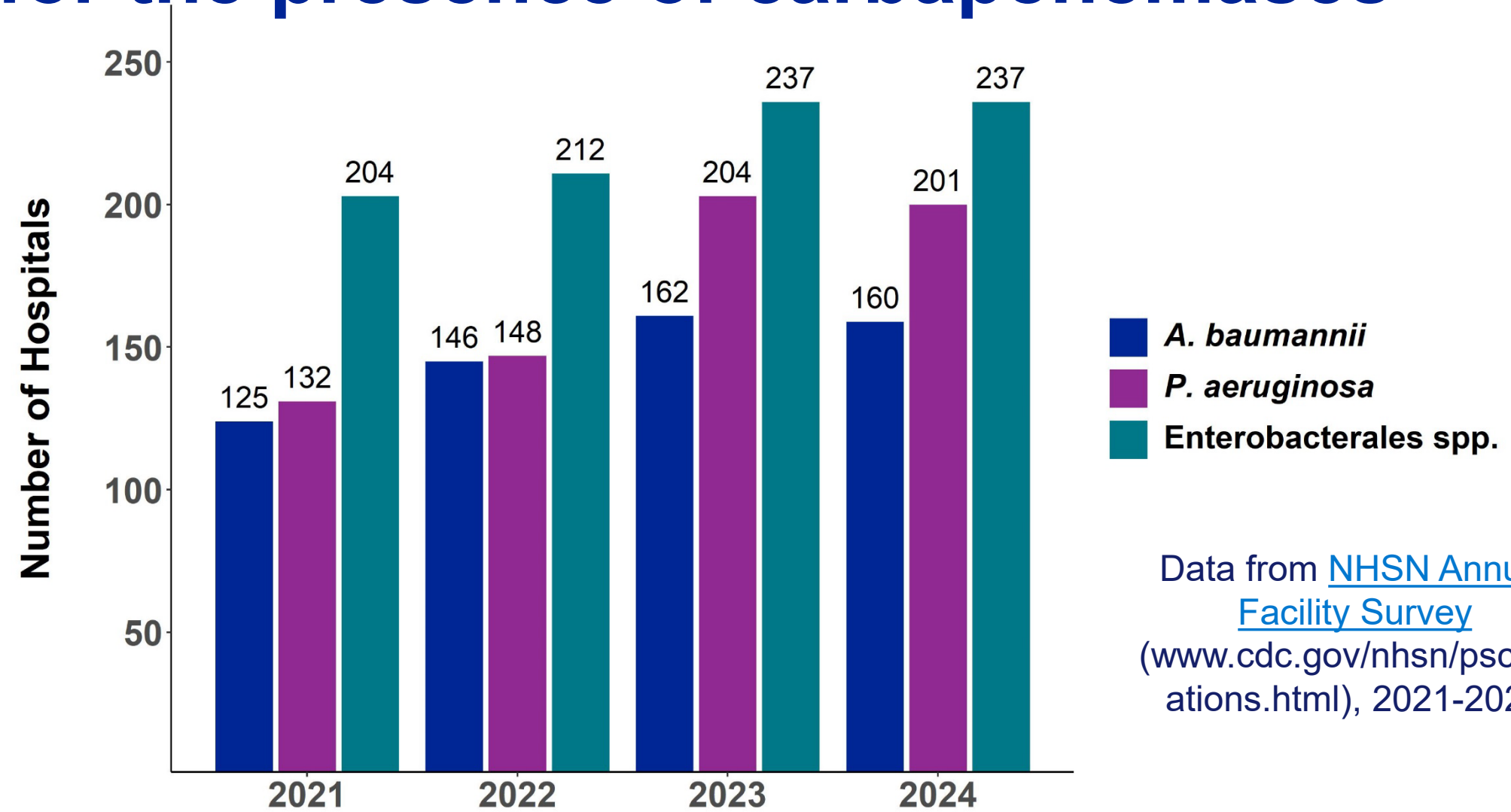
- Clinical treatment implications
  - IDSA guidelines (www.idsociety.org/practice-guideline/amr-guidance/#null)
- IPC implications
  - Cohorting
  - Response-based screening
  - Transmission-based Precautions

Per the National Healthcare Safety Network (NHSN), about 60% of hospitals in California perform carbapenemase testing

CLSI M100 2025[25] update on carbapenemase testing

- Laboratories **should** perform carbapenemase testing on CRE isolates
  - Assays should ideally differentiate specific carbapenemase type
  - Exception: *Proteus*, *Providencia*, and *Morganella* spp. only resistant to imipenem
  - Possible exception: *Enterobacter cloacae* and *Klebsiella aerogenes* mono-resistant to ertapenem (academic.oup.com/ofid/article/9/1/ofab643/6489041)
    - Resistance due to other mechanisms; carbapenemase production uncommon
    - Follow CDPH guidance for ACHs on duration of Contact Precautions for patients with CROs or CPOs (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/ContactPrecautionsDurationCRO.pdf)
      - Place patient on Contact Precautions; confirm isolate is non-carbapenemase-producing if considering discontinuing

Pathogens that California hospitals routinely test for the presence of carbapenemases



Data from NHSN Annual Facility Survey (www.cdc.gov/nhsn/psc/locations.html), 2021-2024

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When should labs submit CRO isolates to public health for testing?[22]

If your lab **is able** to obtain carbapenemase testing for CROs:

- Routinely test CRO isolates to inform treatment, IPC measures
- If only doing phenotypic testing, submit for identification of specific carbapenemase type
- Submit CPOs with a confirmed “Big 5” carbapenemase (i.e., IMP, KPC, NDM, OXA-48, VIM), excluding KPC-producing CRE, for whole genome sequencing using MDL’s standard AST form

When should labs submit CRO isolates to public health for testing?[22]

If your lab is not able to obtain carbapenemase testing for CROs:

- Consider adding carbapenemase testing
- Forward CROs meeting criteria* to the Microbial Diseases Lab (MDL) via local public health lab for carbapenemase testing

  *Reach out to us for more details on which isolates to submit to public health

Testing for carbapenemase production[26]

Detection of carbapenemase production (phenotypic tests)

- Examples: Modified Carbapenem Inactivation Method (mCIM), Star-CARBA, CarbaNP, BD Phoenix CPO Detect
- Results report whether the organism is producing a carbapenemase or not (e.g., yes/no)

Detection of carbapenemase type (molecular, other tests)

- Polymerase chain reaction (PCR) (e.g., Cepheid Xpert Carba-R), Hardy CARBA 5, whole genome sequencing)
- Results report which carbapenemase types are present (e.g., KPC, NDM)

Features of some carbapenemase tests[27]

Tests method	Accuracy	TAT	Relative Cost	Limitation	Accessibility
Penotypic					
Modified Hodge test	Moderate	Next day	$	**NOT RECOMMENDED**: Poor sensitivity for NDM and poor specificity with AmpC	Lab developed test
mCIM	High	Next day	$	For CRE and CRPA only	Lab developed test
CarbaNP	Moderate	Next day	$-$$$	For CRE and CRPA only, poor sensitivity for OXA-48	Commercial
STAR-Carba	High	Next day	$$-$$$$	Poor sensitivity for Class D OXAs (OXA-23, 24/40)	Lab developed test
Molecular (Other)					
Lateral flow assay (e.g., Carba5)	High	< 24 hrs	$$	Limited to specific carbapenemases, not validated for CRAB	Commercial
PCR (multiplex, real-time PCR)	High	< 24 hrs	$$$-$$$$	Limited to specific gene targets	Commercial or lab developed test
WGS	High	Several days	$$$$	Unable to detect novel carbapenemase	Lab developed test

Testing *Candida* isolates to determine the species

In this section, we'll discuss recommendations for testing isolates to determine *Candida* to the species level

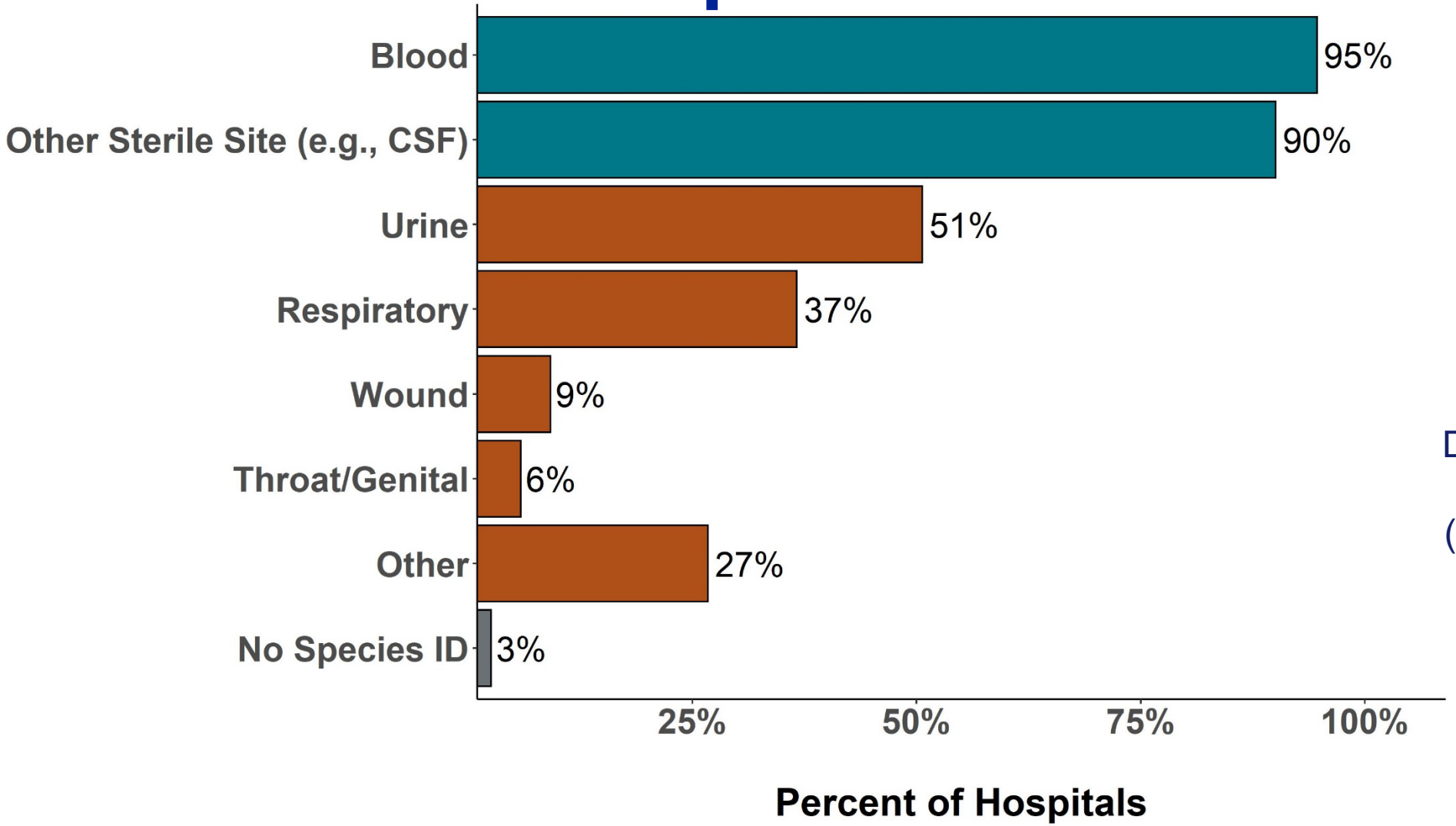
CDPH

Clinical and commercial labs should identify *Candida* isolates to the species level

Hospitals should consider species-level identification of all isolates (sterile and non-sterile) from patients at highest risk for *C. auris*

Per NHSN, 95% of hospitals in California routinely identify *Candida* isolates to the species level for blood specimens

Candida blood specimens are most likely to be identified to the species level



Data from NHSN Annual Facility Survey (www.cdc.gov/nhsn/psc/locations.html), 2024

Clinical labs should conduct surveillance for *C. auris*[28-29]

Culture

- On chromogenic media, *C. auris* can be differentiated from common *Candida* species
- All suspect colonies must be identified to the species level (public health accepts isolates for species identification)

Polymerase chain reaction (PCR)

- Real-time PCR is an accurate method for detecting *C. auris* and provides the fastest results for public health action
- PCR is recommended for admission screening

A comparison of the costs of these two methods is available from Verification, Analytical Sensitivity, Cost-effectiveness, and Comparison of 4 *Candida auris* Screening Methods

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When should labs submit *Candida* isolates for testing?

Labs that can identify *Candida* to the species level

- Submit sterile site, urine and unusual epidemiology* specimens for antifungal susceptibility testing (AFST)

***Unusual epidemiology** includes patients:
- With healthcare exposure abroad or outside of Southern California
- With echinocandin-resistant isolates
- <18 years old
- Without exposure in inpatient healthcare settings (e.g., outpatient clinic, prison)

When should labs submit *Candida* isolates for testing?

Labs that cannot identify *Candida* to the species level

- Submit non-*albicans Candida* for testing
  - Reach out to us for more details on submitting to public health

Additional Resources

Our website has webinars and resources you might find useful

- CPOs: CDPH Laboratory and Epidemiology Updates – 5/14/24
  - Webinar slides (PDF) and Webinar Recording
- *C. auris* Reporting, Surveillance, and Lab Testing – 11/9/22
  - Slides (PDF) and Recording
- Carbapenemase Testing for CROs: A Primer for Clinical and Public Health Laboratories (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CRO_PrimerTests_for_Carbapenemases.pdf)
- CPO Screening Implementation Guide (PDF) (www.aphl.org/aboutAPHL/publications/Documents/ID-CPO-Screening-Guide.pdf)

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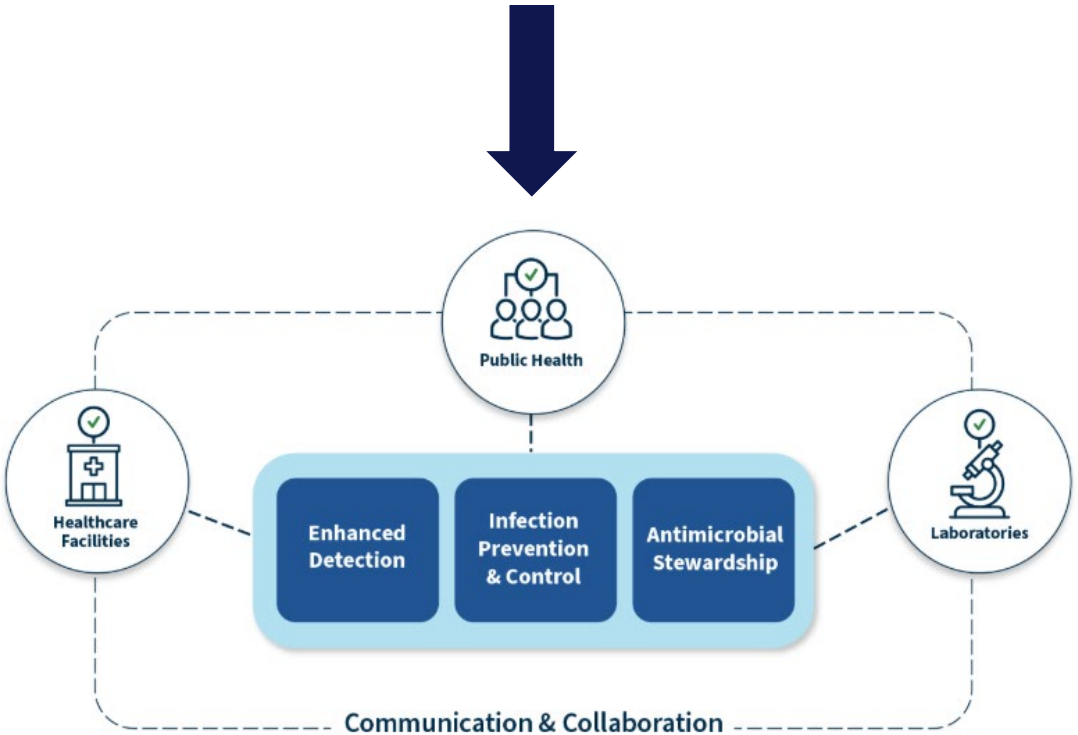
Summary

Testing and reporting help improve patient safety

MDRO lab surveillance allows for:

- timely case and outbreak detection
- implementation of appropriate infection prevention & control measures
- promotion of antimicrobial stewardship (www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/AntimicrobialStewardshipLandingPage.aspx) through informed treatment decision-making
- public health monitoring to understand epidemiology and implement focused prevention and response strategies

Thank you to all of our laboratory and healthcare facility partners!



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Resources

Resources: *C. auris*

- CDPH *C. auris* website (www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/Candida-auris.aspx)
- *C. auris* Quicksheet and Response Phases (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CaurisQuicksheet.pdf)
- CDPH *C. auris* Reporting FAQ (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CaurisReportingFAQ.pdf)
- EPA List P Agents (www.epa.gov/pesticide-registration/list-p-antimicrobial-products-registered-epa-claims-against-candida-auris

Resources: *C. auris*

- LACDPH List of Laboratories with *C. auris* Testing Capacity (PDF)
  (publichealth.lacounty.gov/acd/docs/List_C.aurisLabs.pdf)
- Admission Screening for *C. auris* in Hospitals Webinar Slides (PDF)
  (www.cdph.ca.gov/Programs/CHCQ /HAI/CDPH%20Document%20Library/
  C_auris_AdmissionScreening_in_CA_ACHs_webinar_012324.pdf)
- CDPH Interfacility Transfer Communication
  (www.cdph.ca.gov /Programs/CHCQ/HAI/Pages/
  InterfacilityCommunication .aspx)

Resources: CPOs

- CDPH CROs and CPOs website (www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/CarbapenemaseProducingOrganisms.aspx)
- CDPH CPO Quicksheet and Response Phases (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CPOQuicksheet.pdf)
- CDPH Prioritizing Carbapenemase Testing Algorithm (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document% 20Library/CPTestingPrioritizationAlgorithm.pdf)

Resources: CPOs

- CDPH CPO Reporting FAQ (PDF)
  (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CPOReportingFAQ.pdf)
- CDPH MDL Carbapenemase Testing FAQ
  (www.cdph.ca.gov/Programs/cls/idld/mdl/Pages/MDL-Expanded-Carbapenemase-Testing-Services-FAQs-2025.aspx)
- Carbapenemase Testing for CROs: A Primer for Clinical and Public Health Laboratories (PDF)
  (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/CRO_PrimerTests_for_Carbapenemases.pdf)

Resources: CPOs

CPO Screening Implementation Guide (PDF)
(www.aphl.org/aboutAPHL/publications/Documents/ID-CPO-Screening-Guide.pdf)

Resources: Other

Antimicrobial Stewardship
(www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/AntimicrobialStewardshipLandingPage.aspx)

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   (academic.oup.com/jid/article/215/suppl_1/S28/3092084)
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6. *Candida auris* Outbreak and Epidemiologic Response in Burn Intensive Care Unit, Illinois, USA, 2021–2023 - Volume 31, Number 3—March 2025 - Emerging Infectious Diseases journal – CDC (doi.org/10.3201/eid3103.241195)

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9. *Candida auris* Candidemia in Critically Ill, Colonized Patients: Cumulative Incidence and Risk Factors – PubMed
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15. Rapid Environmental Contamination With *Candida auris* and Multidrug-Resistant Bacterial Pathogens Near Colonized Patients – PubMed (pubmed.ncbi.nlm.nih.gov/38059527/)

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18. How long do nosocomial pathogens persist on inanimate surfaces? A scoping review - Journal of Hospital Infection (www.journalofhospitalinfection.com/article/S0195-6701(24)00072-0/fulltext)

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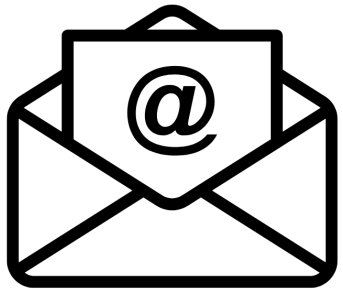
Thank You

Questions?



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