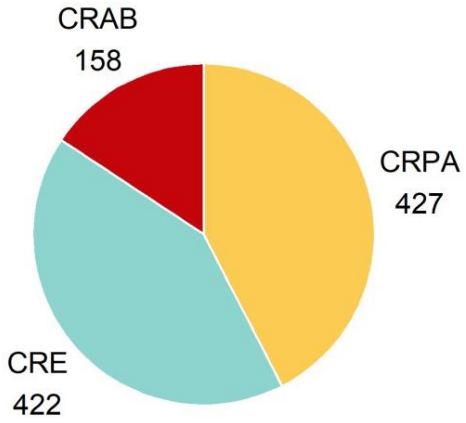
Antimicrobial Resistance Laboratory Network
Wisconsin Surveillance Data, 2024

Antimicrobial resistance (AMR) surveillance is essential for tracking the emergence and spread of resistant pathogens, guiding effective treatment strategies, and informing public health interventions. By monitoring resistance patterns, healthcare systems can detect outbreaks early, optimize antibiotic use, and support the development of new antimicrobial agents. This proactive approach is critical to preserving the efficacy of existing treatments and protecting global health.

Testing at the Wisconsin State Laboratory of Hygiene (WSLH)

- Surveillance to further characterize isolates from Wisconsin clinical laboratories.
  - Carbapenem-resistant Enterobacterales (**CRE**) isolates
  - Carbapenem-resistant *Acinetobacter baumannii* (**CRAB**) isolates
  - Carbapenem-resistant *Pseudomonas aeruginosa* (**CRPA**) isolates that are non- susceptible to cefepime and/or ceftazidime

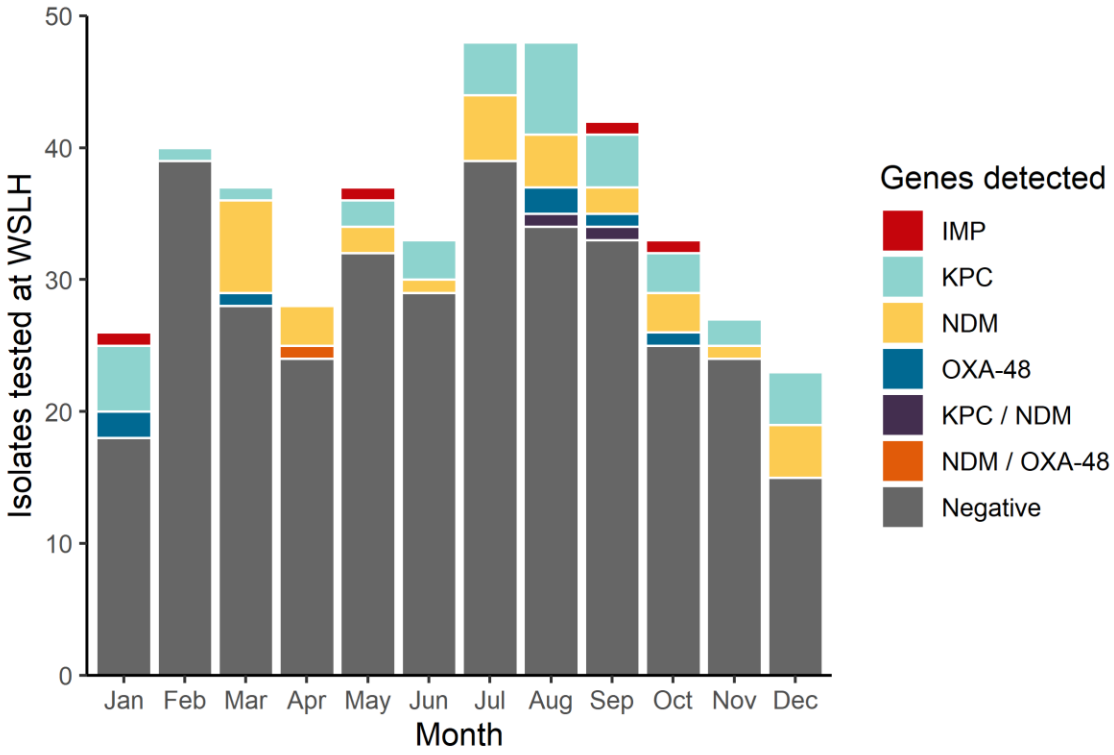


2024 WI Surveillance Data

- Colonization screening to identify colonized patients
  - Skin swabs from patients within a facility where Carbapenem resistant infections have been reported. Referred to as point-prevalence surveys (PPS), this testing can detect potential transmission between patients or identify the source of infection when a new case is identified.
  - Skin swabs from patients on admission to ensure colonized individuals are placed in appropriate transmission-based precautions.

Carbapenem-resistant Enterobacterales (CRE) testing in 2024

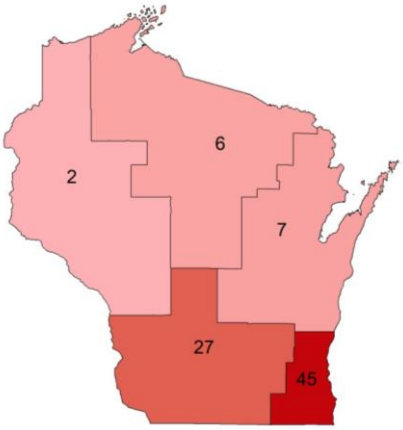
These are the results of all CRE isolate testing. Of the isolates tested, 82 (19.4%) tested positive for a carbapenemase by PCR at WSLH. 3 (0.7%) of these isolates had multiple carbapenemase genes detected. These data do not de-duplicate multiple isolates from the same patient.



All carbapenemase-producing CRE (CP-CRE) by gene detected

This table lists all of the carbapenemase genes detected in either isolates or colonization specimens. 5 (5.7%) of these cases were detected by colonization screening.

Carbapenemase	n	%
NDM	37	42.5%
KPC	36	41.4%
OXA-48	7	8.0%
IMP	4	4.6%
KPC / NDM	2	2.3%
NDM / OXA-48	1	1.1%

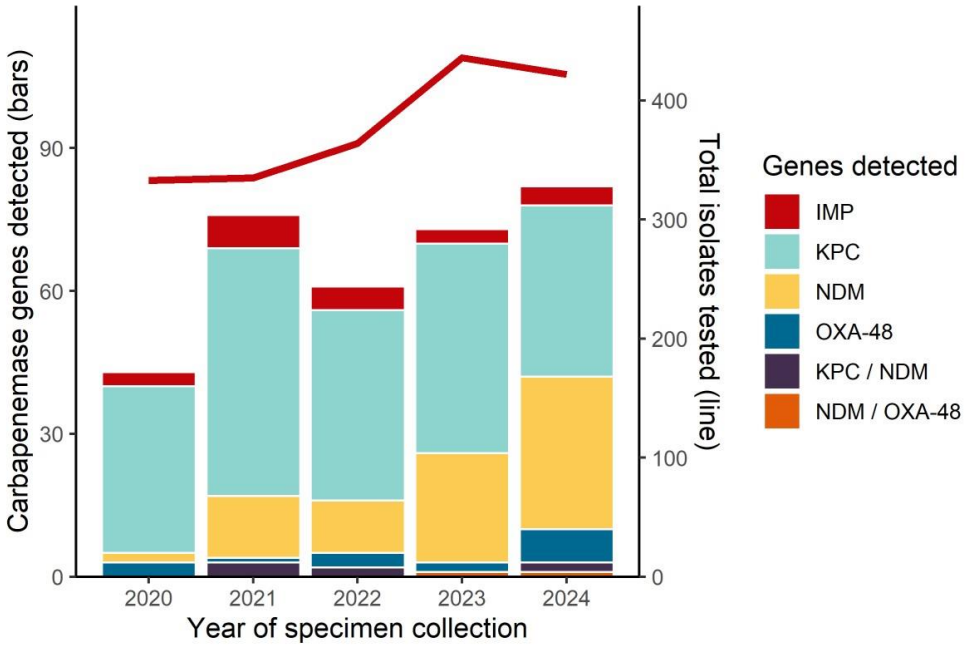


CP-CRE detection by region

This map shows where cases were detected in Wisconsin, by public health region of the submitting facility. In cases where an isolate is sent to a central clinical laboratory, the submitting facility will be that central laboratory.

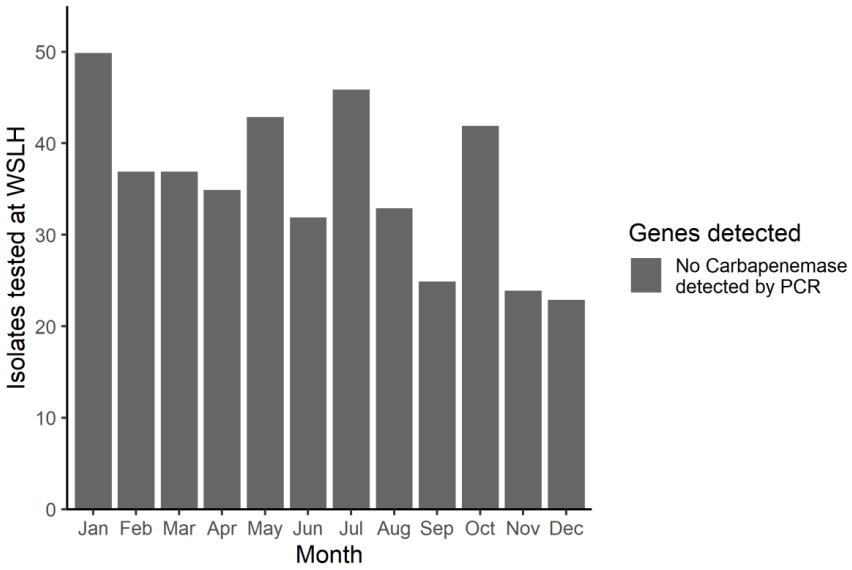
Historical Testing Data for CRE, 2020-2024

KPC remains one of the most predominant carbapenemases. We see sporadic cases of IMP or OXA-48-like CP-CRE. Dual mechanism isolates (where more than one carbapenemase is detected) accounted for only 9 (0.5%) cases, and are usually associated with healthcare abroad.



Over the past two years we have noticed an increase in isolates that are positive for NDM, which was previously uncommon in Wisconsin. WSLH and the Wisconsin Healthcare-associated Infection (HAI) Prevention Program at the Wisconsin Division of Public Health are investigating these cases.

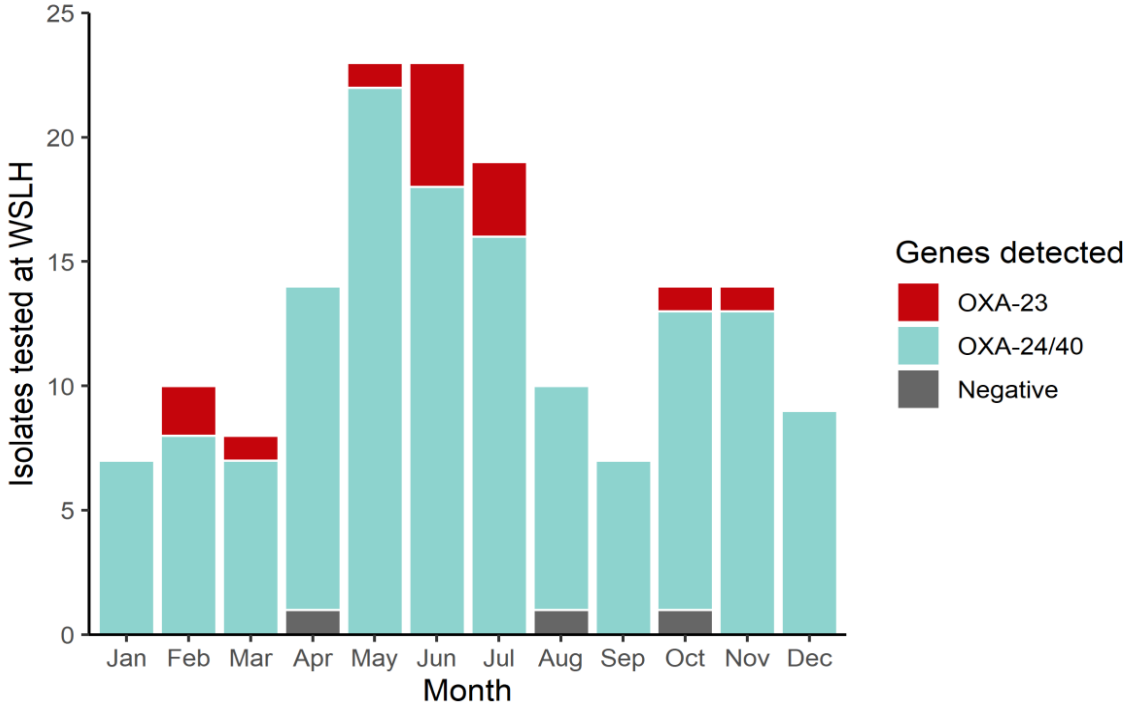
Pseudomonas aeruginosa isolates, 2024



These are the results of all CRPA isolate testing. In 2024, no isolates tested positive for a carbapenemase by PCR at WSLH, indicating that carbapenem resistance is due to other resistance mechanisms in these *P. aeruginosa* isolates. These data do not de-duplicate multiple isolates from the same patient.

Acinetobacter baumannii isolates, 2024

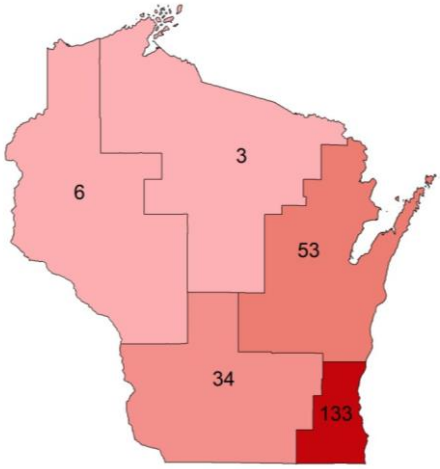
These are the results of all CRAB isolate testing. Of these, 155 (98.1%) tested positive for a carbapenemase by PCR at WSLH. The most common carbapenemases detected were OXA-23 and OXA-24/40. These data do not de-duplicate multiple isolates from the same patient.



All carbapenemase-producing CRAB (CP-CRAB) by gene detected

This table lists all of the carbapenemase genes detected in either isolates or colonization specimens. 74 (32.3%) cases were detected from colonization screening.

Carbapenemase	n	%
OXA-24/40	210	91.7%
OXA-23	19	8.3%

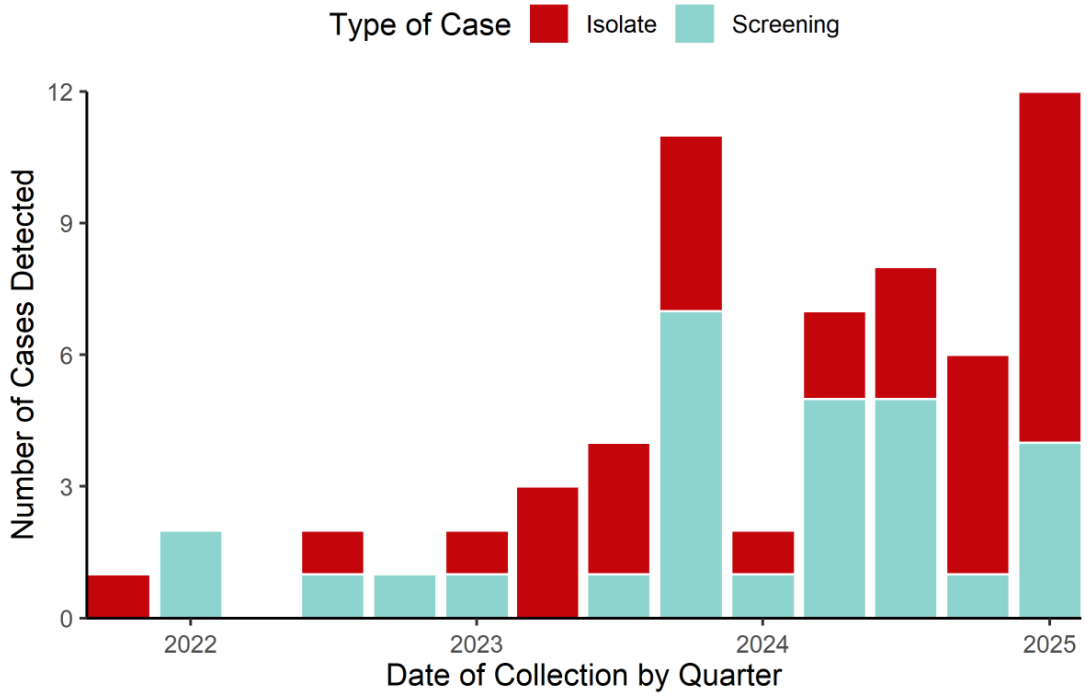


CP-CRAB detection by region

This map shows where cases were detected in Wisconsin, by public health region of the submitting facility. In cases where an isolate is sent to a central clinical laboratory, the submitting facility will be that central laboratory.

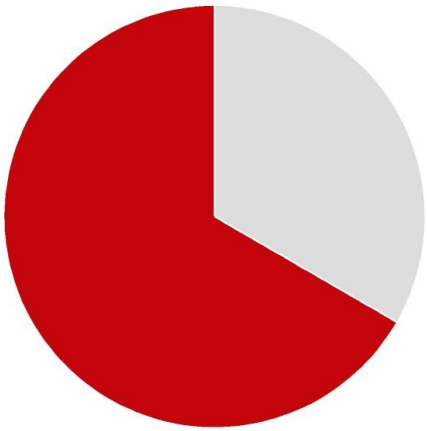
Candida auris

Since the first detected case in late 2021/early 2022, Wisconsin has seen a steady increase of *Candida auris* cases. Many of these are detected on screening, either of healthcare facilities with a known case or during admission screening. In 2024 WSLH received 27 *Candida* isolates from clinical labs for further testing. Of those, 18 (66.7%) were confirmed to be *Candida auris*.



Antifungal susceptibility testing (AFST)

15 (83.3%) *Candida auris* isolates had AFST performed. Of those, 10 (66.7%) were resistant to at least one antifungal. In Wisconsin, all of our resistant isolates were resistant to fluconazole, and none were resistant to any echinocandins or Amphotericin B.



Whole genome sequencing

WSLH has begun whole genome sequencing of *Candida auris* isolates in order to look for resistance genes and determine which of the six clades isolates belong to.

Of 2024 Wisconsin isolates, 33 (91.7%) were from Clade IV, which is the most common clade in the Chicago area.

The other 3 (8.3%) isolates were from Clade I and were epidemiologically linked to healthcare exposure abroad or in other states.