



Department of Health
Wadsworth Center



Northeast Region Antimicrobial Resistance Laboratory Network

**Wadsworth Center
2024 Newsletter**

New Staff:



Quinn Kimery
AR Bacteriology
Program Assistant

Quinn joined the Antimicrobial Resistance (AR) bacteriology team at the Wadsworth Center in February 2025. They earned their master in public health from Texas Tech University Health Sciences Center in December 2024. Prior to graduation, they held two student leadership roles and served as a public health intern in a rural Texas health department. In their role at Wadsworth, Quinn assists with managing data, shipping test kits, coordinating internal and external partner meetings, and supporting other program deliverables. Their work contributes to the CDC's National Action Plan to detect and respond to antibiotic-resistant bacterial pathogens.



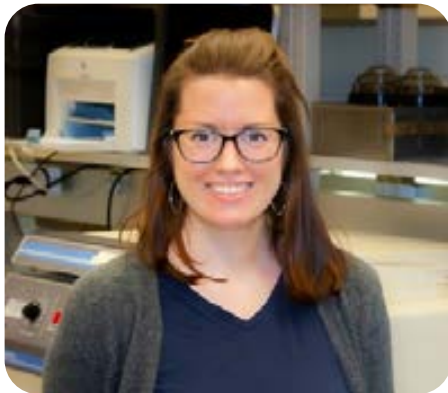
Michelle Reitman
AR Mycology
Program Assistant

Michelle graduated *summa cum laude* from the State University of New York (SUNY) at Albany with a Bachelor of Arts in communication studies. As program assistant for the Mycology Laboratory, she provides administrative and logistical support. She assists with lab operations, supply shipping/coordination, and facilitating communication between scientists and public health partners. Before coming to the Wadsworth Center in December 2024, she worked in the shipping and logistics industry for UPS. She is grateful to have met exceptional mentors throughout her career and has fostered a strong commitment to safety, excellence, and continuous growth. She is always ready to tackle new challenges and eager to learn more about the ever-evolving field of public health. Outside of work, her hobbies include hiking, music production, and taking photos of her pets, Ginger and Cookie Man.



Spencer Kennedy
AR Bacteriology
Assistant Research Scientist

Spencer Kennedy is an assistant research scientist who joined the Wadsworth Center in September of 2024. He received his Bachelor of Science in biochemistry and molecular biology at the University of California, Davis before moving to Seattle. In Seattle, he worked on a clinical trial for a genetically attenuated *Plasmodium falciparum* malaria vaccine. As part of the AR Bacteriology Lab, his work focuses on identifying the presence of carbapenemase genes in gram-negative bacteria. He also tests their resistance to antimicrobial drugs. Spencer has been an avid tennis player his entire life and a volunteer at youth homeless shelters. He hopes to continue this here in Albany.



Ashley Marcinkiewicz
AR Bacteriology
Research Scientist

Ashley earned her Bachelor of Arts in biology from Wells College in Aurora, NY, and her Master of Science in microbiology from the University of New Hampshire in Durham, NH. As a graduate researcher, Ashley identified genetic and ecological variation influencing the population structure of the foodborne pathogen *Vibrio parahaemolyticus*. Ashley joined the Wadsworth Center in 2016. She investigated the evolutionary interplay of protein variation and host adaptation within the zoonotic cycle for the Lyme disease-causing bacteria *Borrelia burgdorferi*, and used this variation to inform vaccine development. Ashley's efforts are currently applied within the AR Bacteriology Laboratory, surveilling carbapenemase-producing organisms as part of the CDC's AR Laboratory Network initiative. She has taken a particular interest in how effectively screening assays are able to capture variation within carbapenem-resistance genes. Outside of her scientific pursuits, Ashley enjoys playing drums, working on never-ending projects around the house, knitting, painting, and going on adventures with her family.



Vinay Vaida
AR Mycology
Research Scientist

Vinay Vaida earned his Master of Science in data science from the State University of New York (SUNY) at Albany. As a research scientist in the AR Mycology Laboratory at the Wadsworth Center, Vinay leads genome sequencing and sequence alignment projects. He develops a dashboard for tracking *Candida auris* trends, creates antibiograms for antifungal data, and generates maps to track *C. auris* spread. He is also applying statistical tests to establish Epidemiological Cutoff (ECOFF) Values for antifungals. In his role, Vinay crafts Bio python algorithms that drastically speed up the sequence alignment process. He also integrates machine learning models into his pipeline to achieve much faster run times compared to traditional methods. He manages the mycosnp pipeline on Google Cloud Platform, boosting the lab's pathogen genomics capabilities. His research includes identifying mutations in the FKS1 gene that contribute to antifungal resistance in *C. auris*. Before joining the Wadsworth Center, Vinay developed a machine learning model at the New York State Department of Health that flags invalid facility submissions. He is also a certified Azure Data Engineer and has certifications in Azure AI. His deep expertise in artificial intelligence and machine learning informs his work. Beyond professional pursuits, Vinay enjoys hiking, helping others organize data for machine learning, advancing his healthcare AI knowledge, photography, and traveling. These interests contribute to his personal growth and professional excellence.



JinJing Zhao
AR Mycology
Research Scientist

Jinjing Zhao holds M.D. and Ph.D. degrees obtained from Dalian Medical University, Dalian, China 1990 and Capital Medical University, Beijing, China 2008. She finished her five years postdoctoral training at the University of Rochester, Aab Cardiovascular Research Institute in 2013. Since then, she had worked on transcriptional regulation research of vascular smooth muscle cells as a faculty member at Albany Medical College. She published her research works in many prestigious journals, including *Circulation*. Most recently, in 2022, she started to work on vaccine development against *Pseudomonas aeruginosa*, a multidrug resistant bacterium, in the Department of Immunology and Microbial Disease at Albany Medical College. Since she joined the Mycology Laboratory at the Wadsworth Center in August, 2024 as a research scientist, Jinjing has been deeply involved in *Candida auris* surveillance. She performs BD MAX testing to detect *C. auris*. In the meantime, she is working on a research project aimed to develop a novel molecular assay which can rapidly detect emerging dermatophytes-*Trichophyton indotineae* and *Trichophyton mentagrophytes genome VII*. This work will significantly improve patient outcomes and support epidemiological studies. She plans to present some of her research results at the conference held by the American Society of Microbiology in June 2025. Beyond her professional life, she enjoys swimming, playing pickleball, traveling, exploring!



Majie Foster
AR Bacteriology
APHL-CDC Fellow

Majie joined the AR Bacteriology Lab at Wadsworth Center in January 2024. She earned her doctorate in microbiology and immunology from Georgetown University, Washington, D.C. where she studied mechanisms behind murine and mammalian innate immune response to Hepatitis Delta Virus. Other research endeavors have included viral protein optimization through synonymous genetic mutation and the initiation of novel bacterial secondary metabolites with the use of bioinformatics and promoter insertion. Currently, Majie is focused on expanding her laboratory experience to incorporate clinical testing and investigating the credibility of carbapenemase-producing organism colonization screening using naris, axillary, and groin composite swabs.

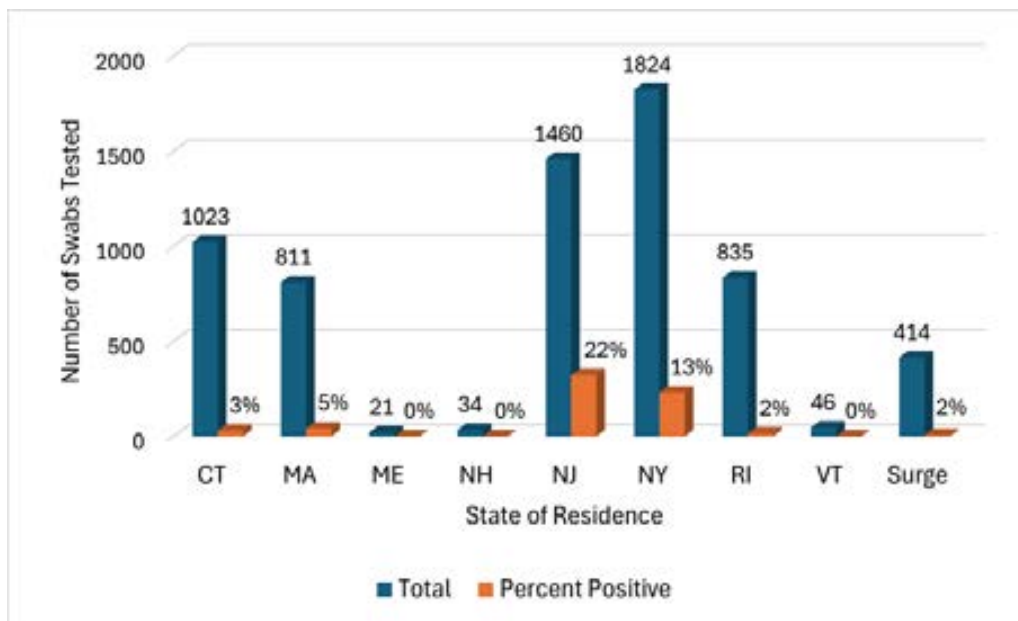


Delia O'Brien
AR Mycology
APHL-CDC Fellow

Delia is an APHL-CDC fellow currently developing a *C. auris* clade melt curve analysis which will expedite clade detection, resulting in efficient tracking of clade prevalence. She previously worked in the Sui lab, where she gained experience in protein purification, electron microscopy grid preparation, and mammalian cell culturing. In May of 2024, Delia earned her Bachelor of Science in neuroscience from Tulane University. At Tulane, she worked in a behavioral neuroscience lab and contributed to elucidating a fear pathway from the dorsal peduncular prefrontal cortex to the central nucleus of the amygdala. Outside of her professional work, Delia enjoys hiking, crocheting, and baking.

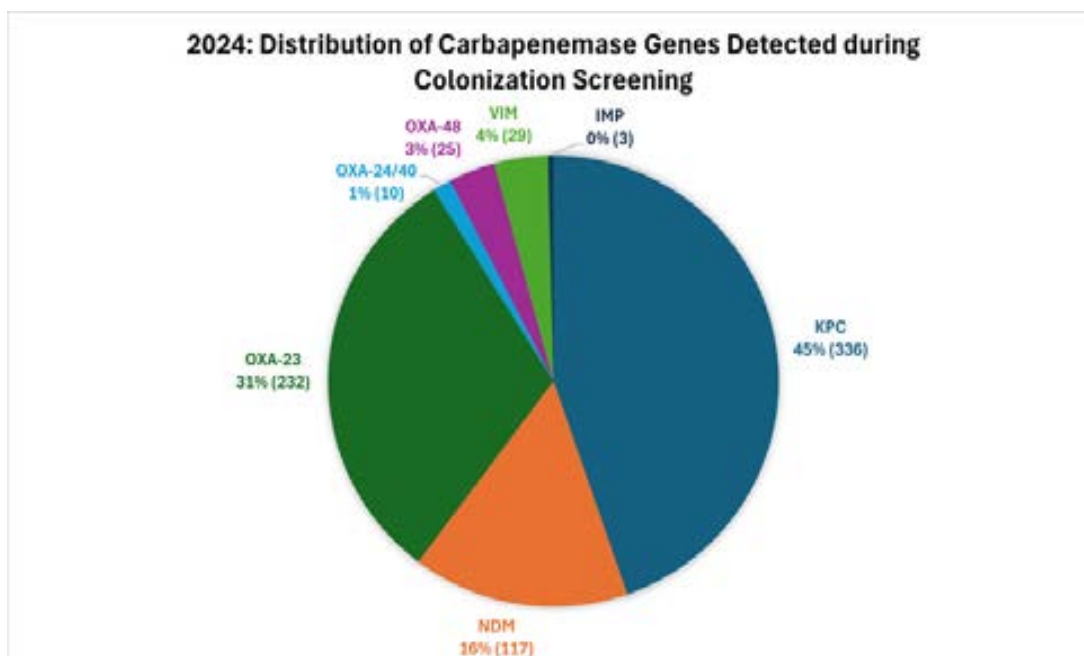
Wadsworth Center Carbapenemase-Producing Organism (CPO) Colonization Screening: 2024

Figure 1: Number of swabs submitted for carbapenemase-producing organism (CPO) screening by state with percent positive: 2024



Note: A total of 6,468 swabs were tested in 2024 with an average percent positive of 10%. Surge states included NC, PA, SC, and VA.

Figure 2: Distribution of Carbapenemase genes identified from colonization screenings: 2024



Note: Metallo- β -lactamase genes include: Verona integron-encoded (VIM), New Delhi (NDM), and Imipenemase (IMP). *Klebsiella pneumoniae* carbapenemase (KPC) is a serine- β -lactamase gene. OXA-type genes are found in *Acinetobacter baumannii*.

Wadsworth Center Carbapenemase-Producing Organism (CPO) Colonization Screening of Pediatric Patients: 2024

Figure 3: Number of swabs submitted for carbapenemase-producing organism (CPO) screening in pediatric patients: 2024

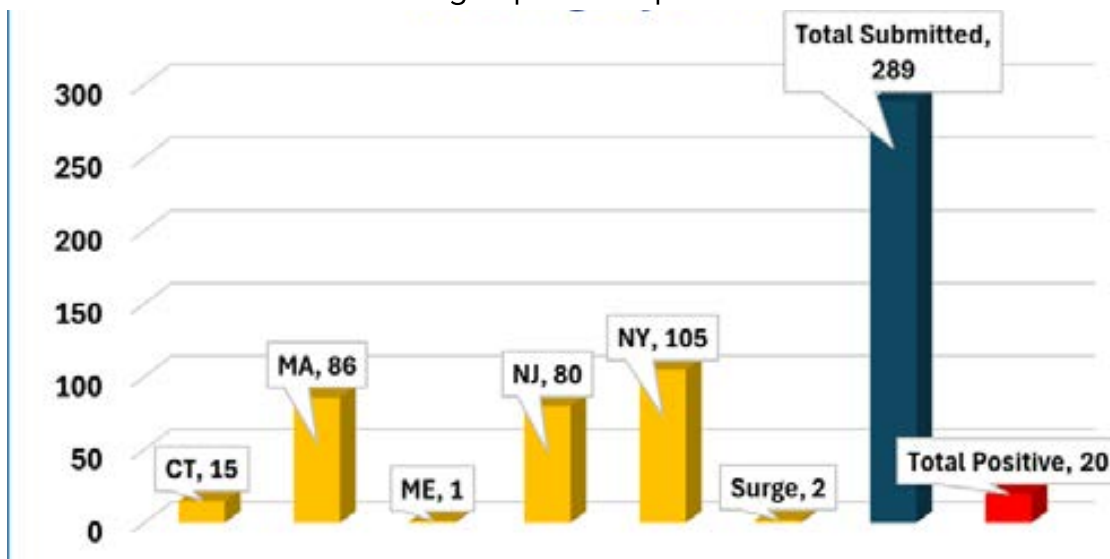
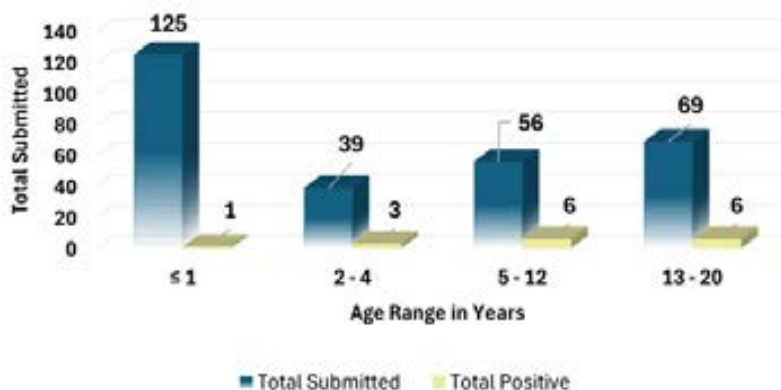


Figure 4: Distribution of Carbapenemase genes identified from pediatric CPO colonization screenings: 2024



Figure 5: Distribution of patient age and sample positivity identified from pediatric CPO colonization screenings: 2024



Wadsworth Center Carbapenem-Resistant Organism (CRO) Isolate Testing: 2024

Figure 6: Total isolates recovered from positive colonization screenings: 2024

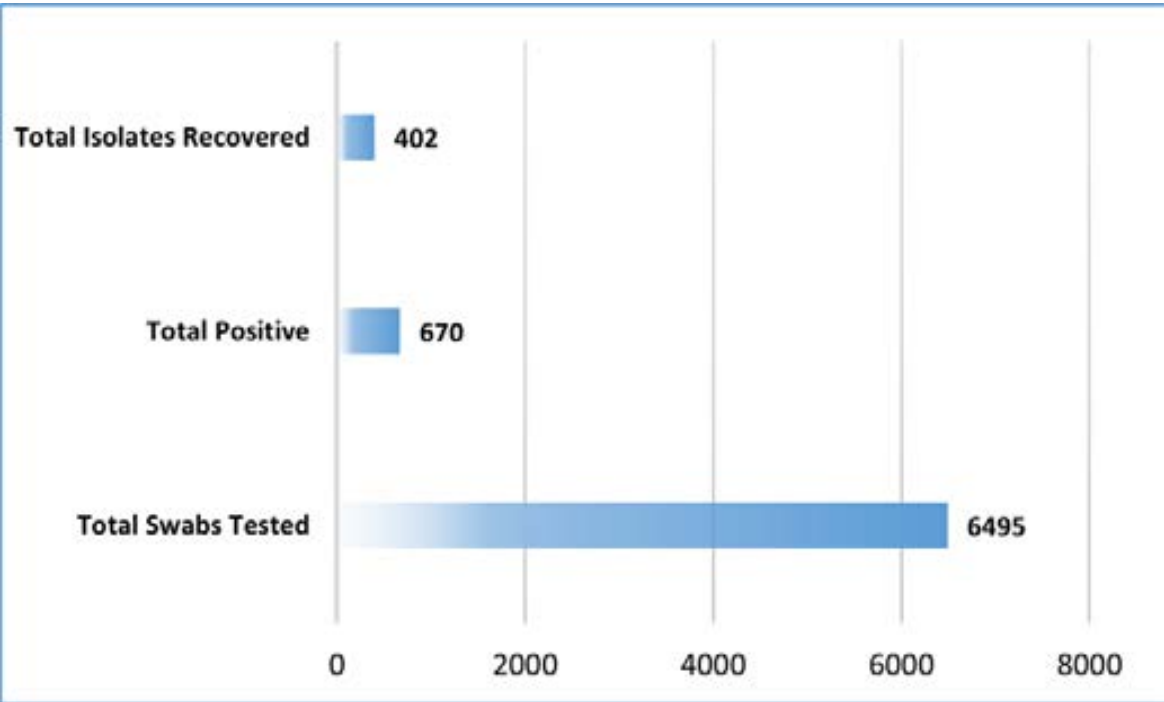
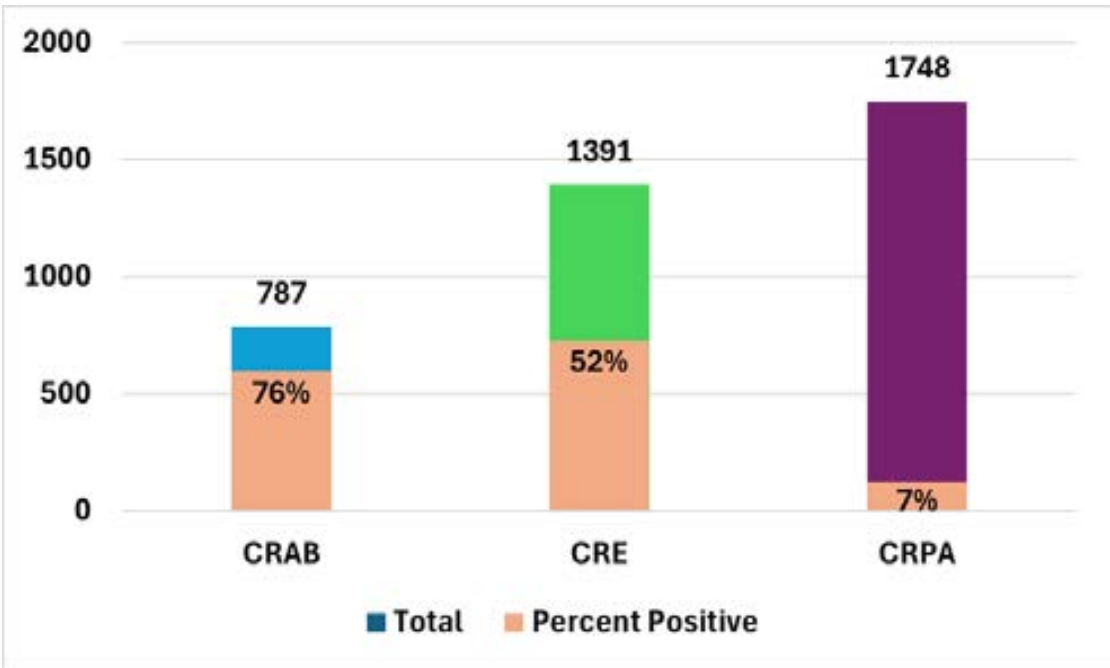


Figure 7: Isolates submitted to Wadsworth Center for carbapenem-resistance testing by organism, with percentages of carbapenemase-producing gene positive results: 2024



Note: CRPA: Carbapenem-resistant *Pseudomonas aeruginosa*, CRE: Carbapenem-resistant *Enterobacterales*, CRAB: Carbapenem-resistant *Acinetobacter baumannii*.

Expanded Antimicrobial Susceptibility Testing for Hard-to-Treat Infections

Antimicrobial susceptibility testing for Enterobacterales producing a metallo-beta-lactamase (MBL)



ExAST fact sheet [here](#)

Since 2019, the Wadsworth Center has been providing expanded antimicrobial susceptibility testing for Enterobacterales producing a metallo-beta-lactamase (MBL) and demonstrating resistance to both Aztreonam and Ceftazidime-avibactam. Isolate submission requires preapproval by contacting ARLNCORENY@health.ny.gov.

Figure 8: Number of isolates submitted for Aztreonam-Avibactam testing by state: 2024

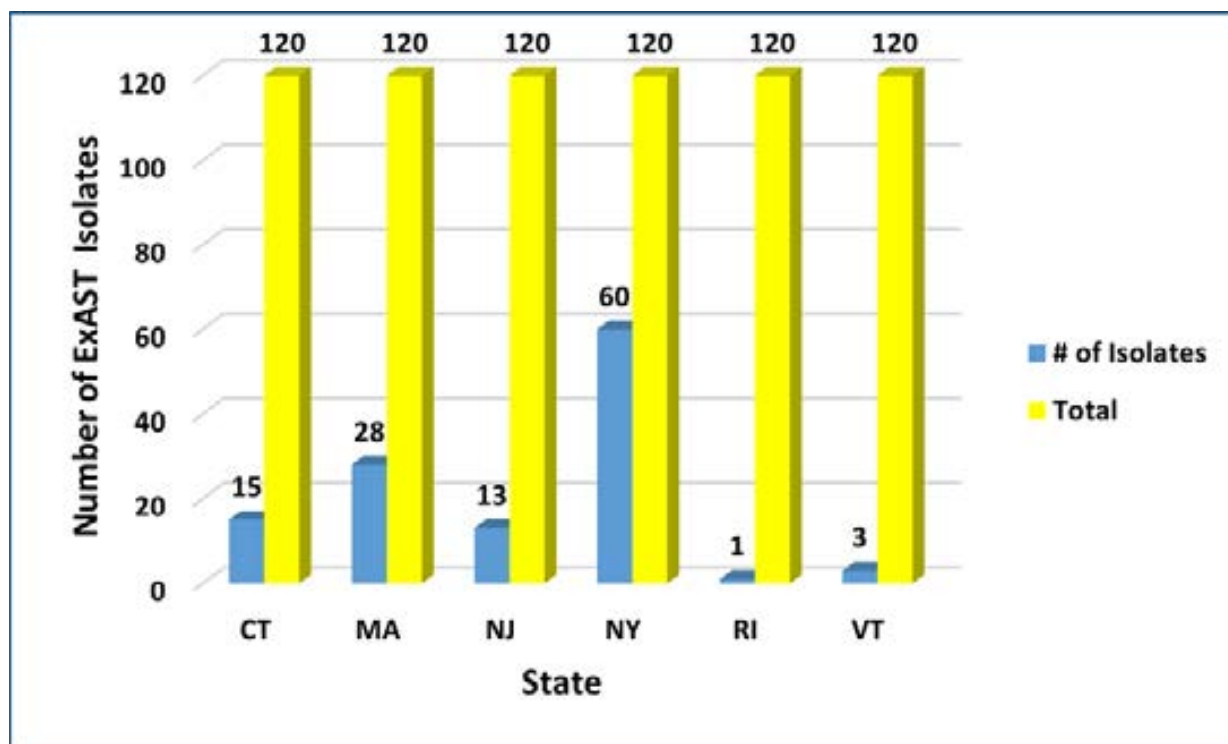


Figure 9: Number of isolates submitted for Aztreonam-Avibactam testing by organism: 2024

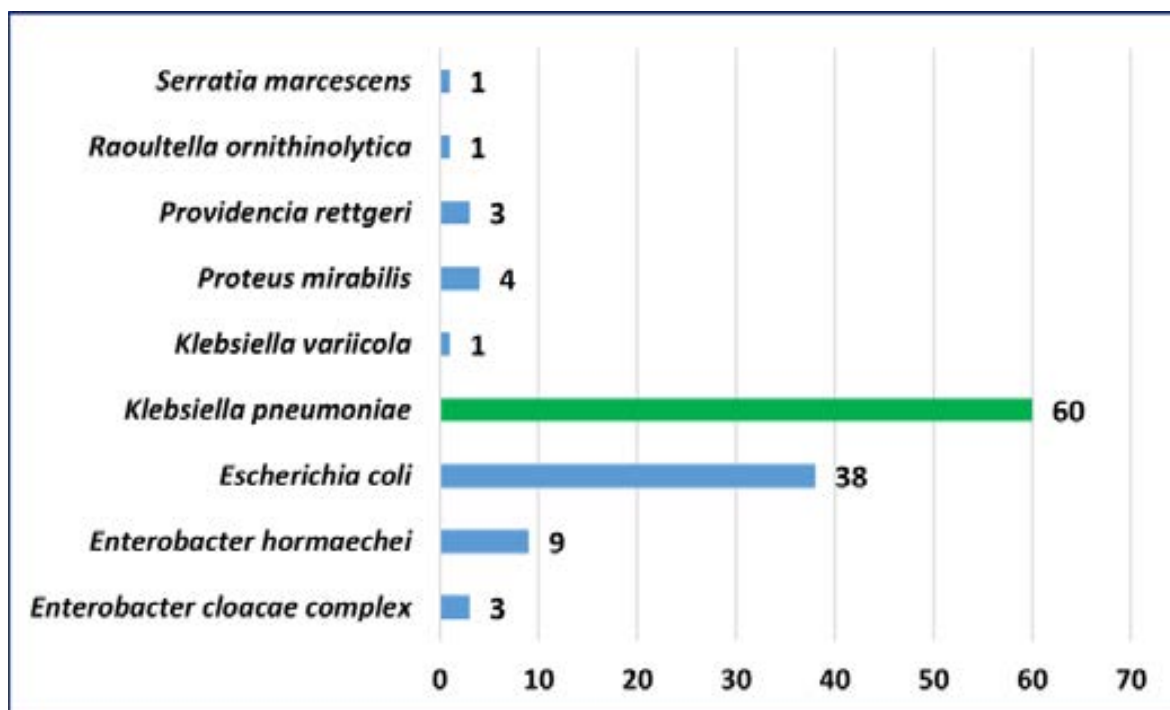


Figure 10: Distribution of Aztreonam-Avibactam Mean Inhibitory Concentrations (MICs) from Enterobacterales submitted: 2024

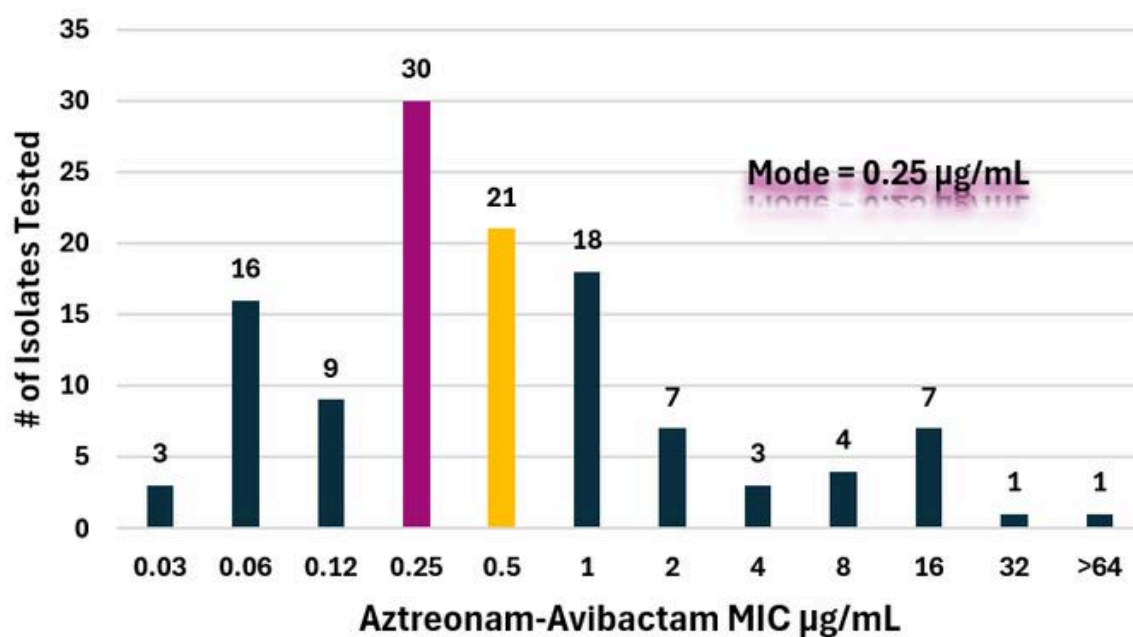
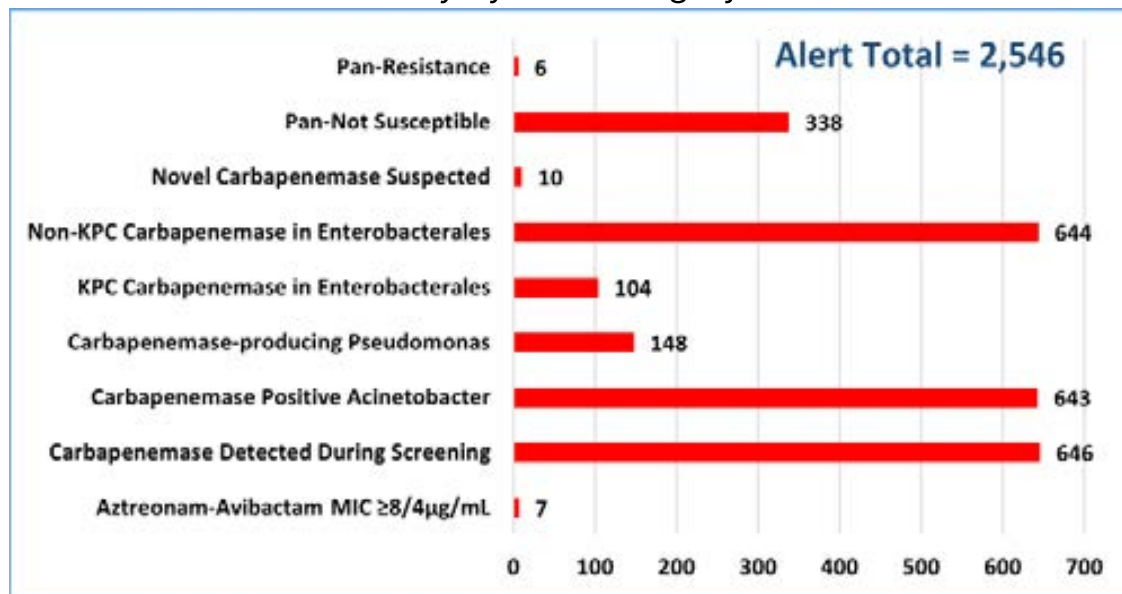


Figure 11: Number of alerts reported to CDC and HAI by the Northeast Regional Laboratory by alert category: 2024



Note: CDC requires test results from isolates or colonization screenings that fall into "Alert Categories" be entered into the REDCap Alert database and an email notification sent to State HAI Coordinators within one day of reporting the result.

Wadsworth Center AR CPO Whole Genome Sequencing (WGS): 2024

Figure 12: Top 6 most prevalent multilocus sequence type (MLST) & carbapenemase gene variant combinations identified by WGS in CRAB isolates: 2024

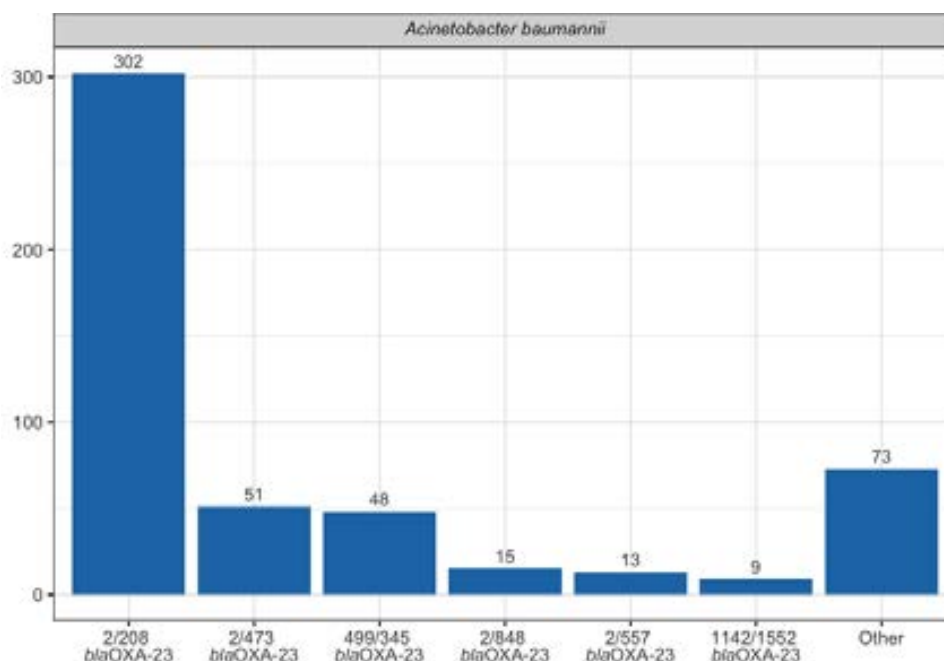


Figure 13: Top 6 most prevalent MLST & carbapenemase gene variant combinations identified by WGS in *Enterobacter cloacae* isolates: 2024

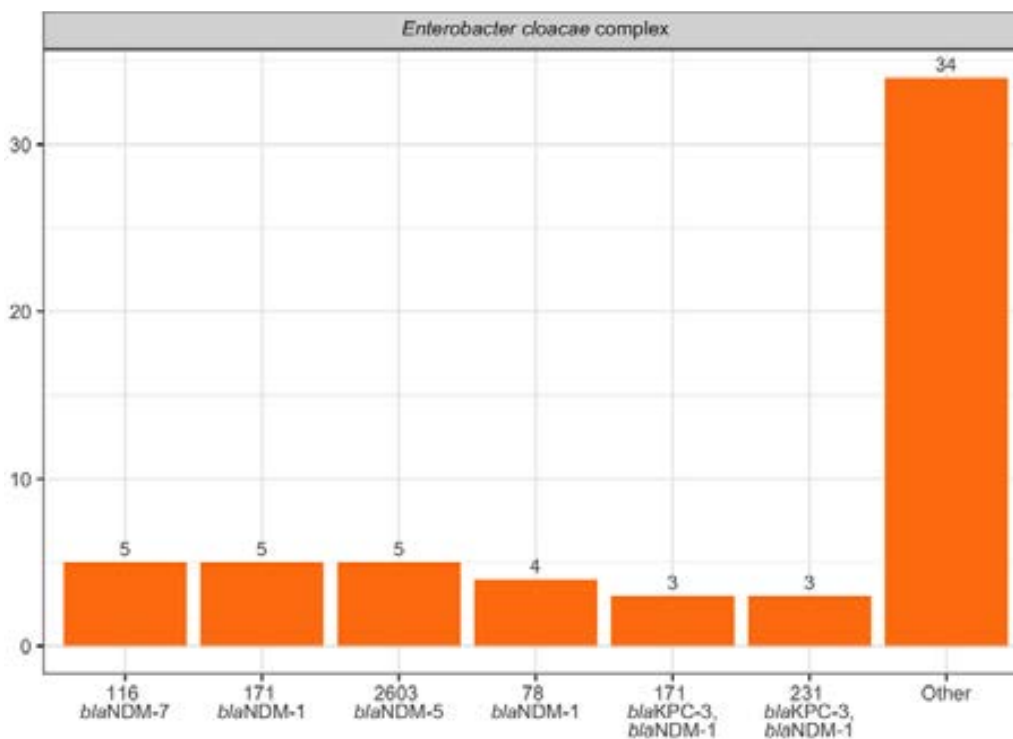


Figure 14: Top 6 most prevalent MLST & carbapenemase gene variant combinations identified by WGS in *Escherichia coli* isolates: 2024

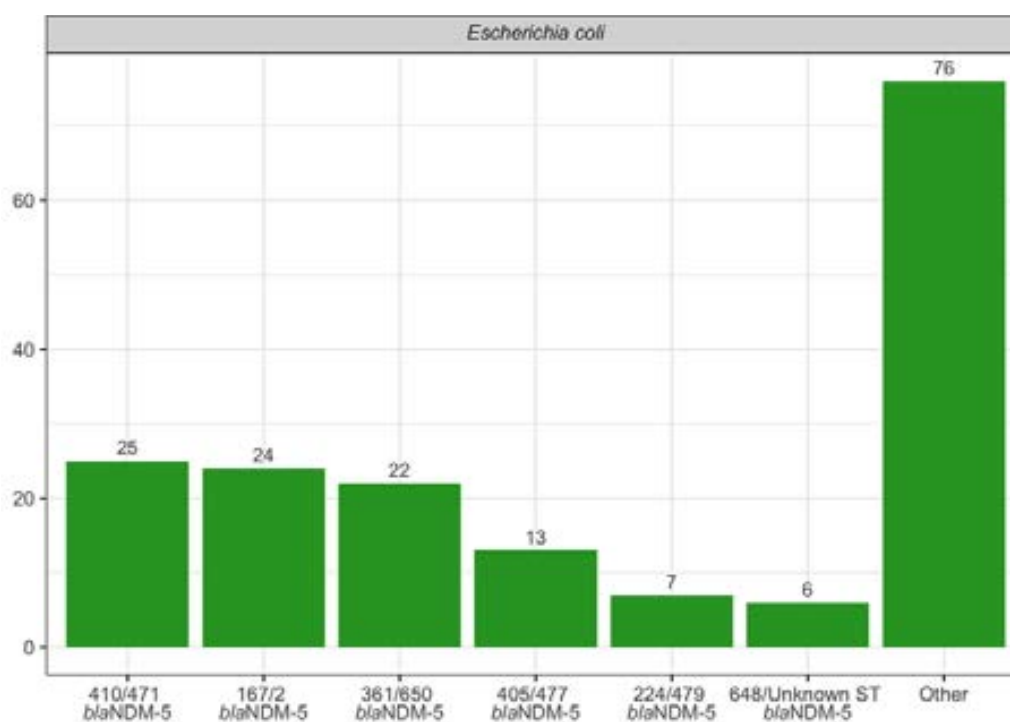


Figure 15: Top 6 most prevalent MLST & carbapenemase gene variant combinations identified by WGS in *Klebsiella pneumoniae* isolates: 2024

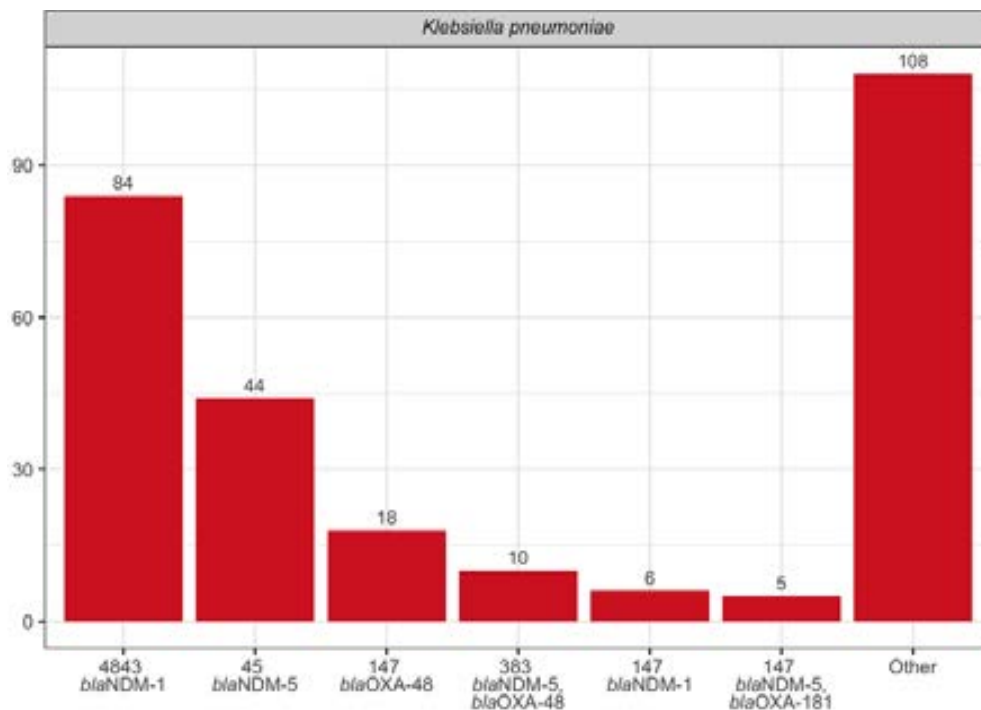


Figure 16: Top 6 most prevalent MLST & carbapenemase gene variant combinations identified by WGS in CRPA isolates: 2024

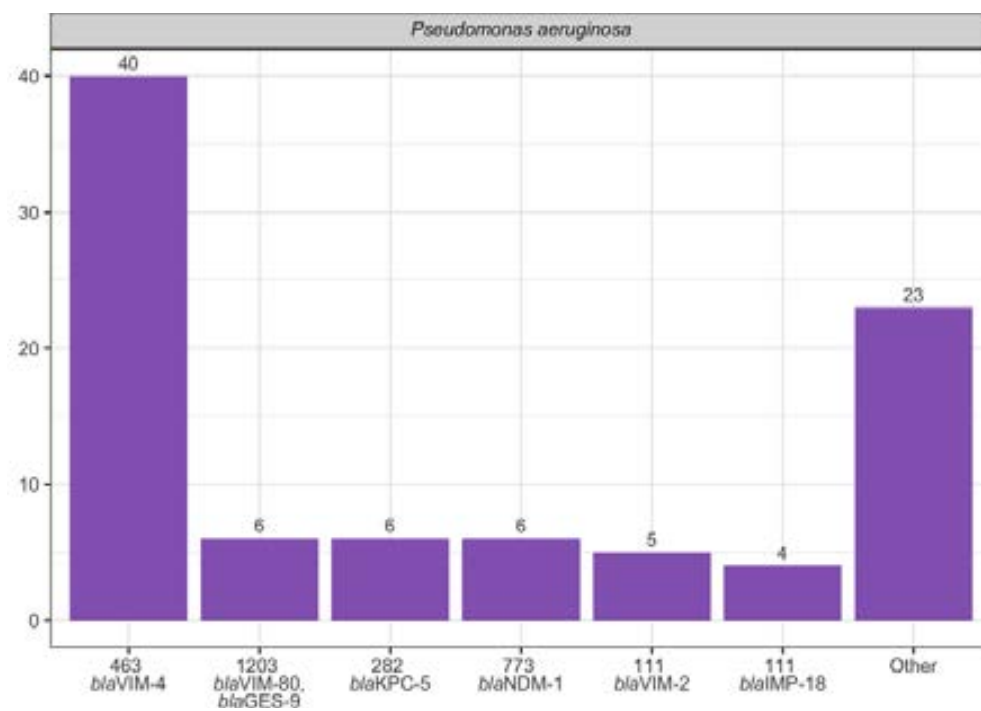


Figure 17: Number of WGS relatedness analysis requests by state: 2024

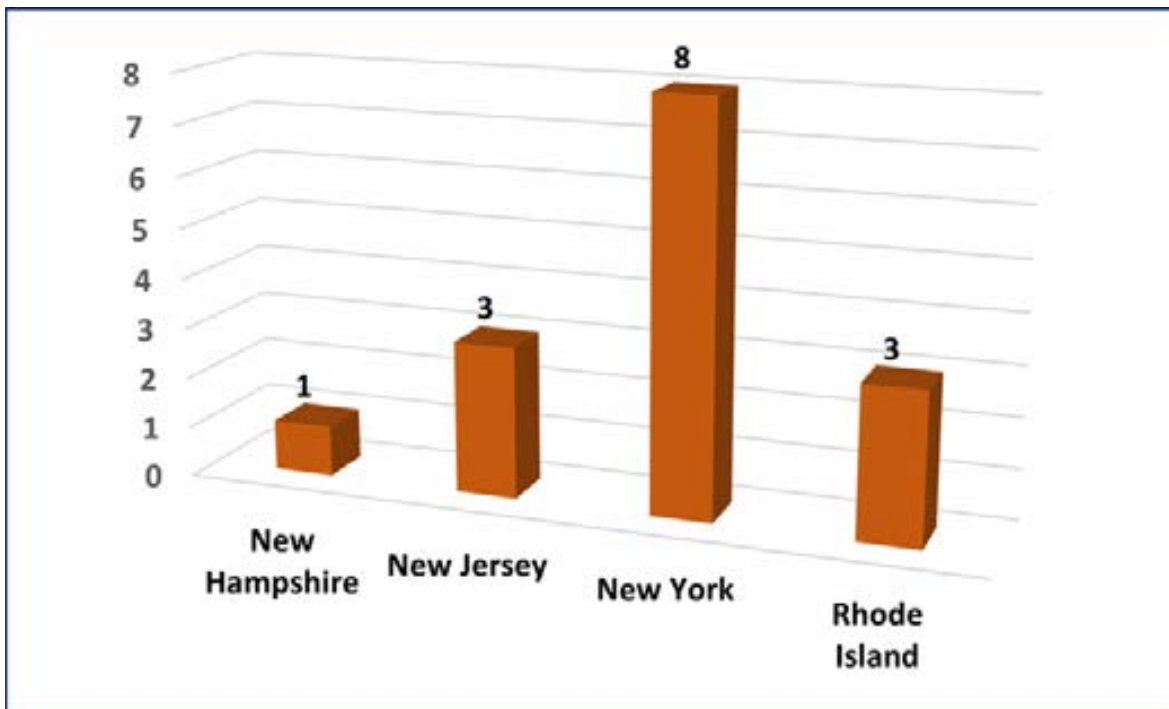
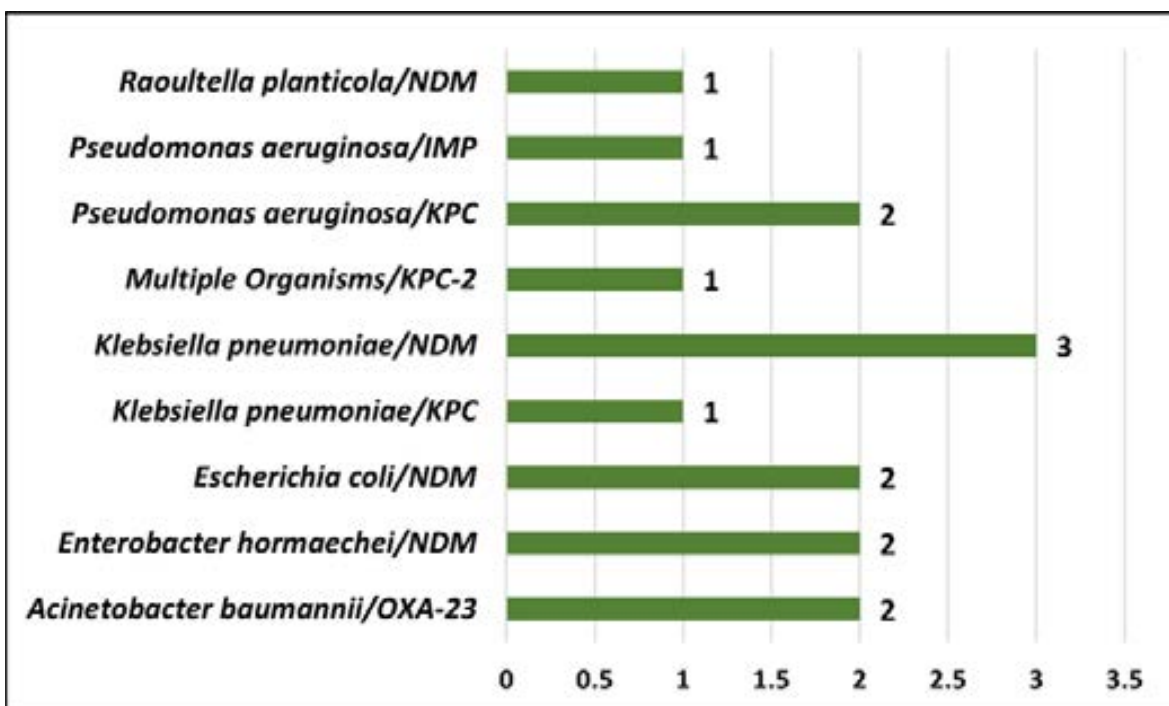


Figure 18: Number of AR WGS relatedness analysis by organism and carbapenemase: 2024



Wadsworth Center AR Bacteriology - News & Highlights

Advances & Developments

- Wadsworth Center validated rectal swab CPO colonization screening for pediatric patient populations in 2023, and remains the only provider of CPO colonization screening for pediatric patients in the United States. 337 swabs from five states' pediatric patients were tested in 2023, with 21 positive for a carbapenemase-producing gene, at a percent positive of 6%. While the overall total of swabs from pediatric patients decreased in 2024, the percent positive increased slightly to 7%.

Awards and Honors

2024 McKnight Prize for Healthcare Outbreak Heroes

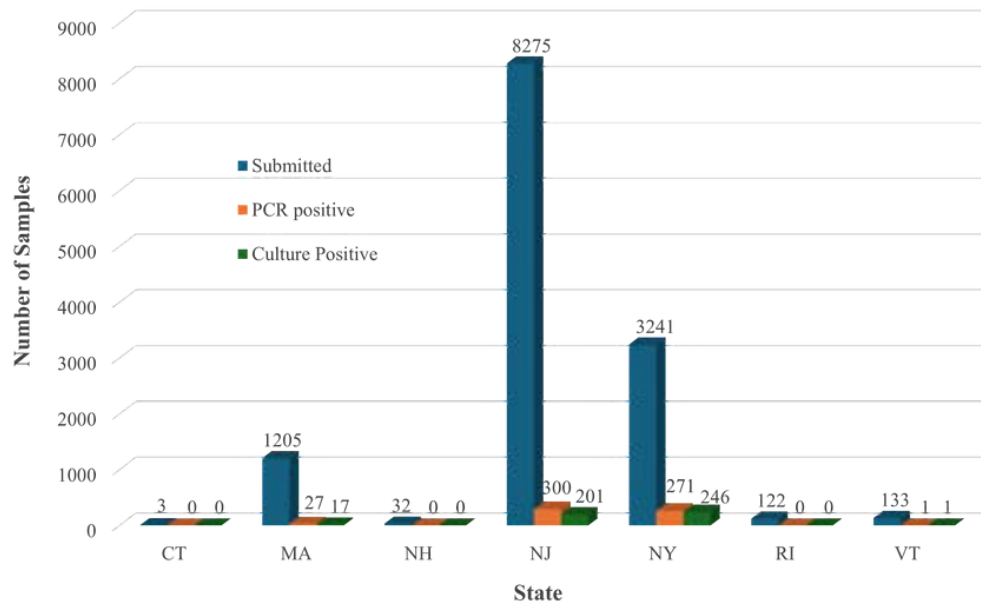
- Elizabeth Nazarian accepted the 2024 McKnight Prize for Healthcare Outbreak Heroes award on behalf of the Wadsworth Center's AR Laboratories. The award was presented at the Association for Professionals in Infection Control and Epidemiology (APIC) 2024 Annual Conference in San Antonio, TX, on June 5th, 2024. This award recognized Wadsworth Center's exceptional leadership during a complex multistate outbreak which led to rapid case identification and infection control interventions, determining the outbreak's cause early on and reducing the scope of the outbreak to ultimately save lives.

Conference Presentations:

- Kate Prussing presented "Long-read sequencing for healthcare-associated infection investigations: Challenges in interpretation and communication of results with epidemiologists" at the APHL 2024 conference in Milwaukee, WI, on May 6-9, 2024.
- Kailee Cummings presented "Assessing carbapenemase-producing bacteria in wastewater samples in New York state: A pilot study" at ASM Microbe 2024 in Atlanta, GA, on June 13-17, 2024.
- Kim Musser presented "Data visualization connecting genomic analysis, test result data and patient demographics for carbapenemase-producing organisms and *Mycobacterium tuberculosis*," at the American Society for Microbiology Conference on Rapid Applied Microbial Next-Generation Sequencing and Bioinformatic Pipelines (ASM NGS) Conference on October 13-16, 2024, in Washington, D.C.
- Kate Prussing presented "Pilot project report: Wastewater testing for carbapenemase producing organisms" at the NYS Wastewater Biannual Fall Team Meeting in November 2024, at Blue Mountain Lake, NY.
- Kate Prussing presented "Oxford nanopore whole genome sequencing workflow for carbapenemase-producing organisms" at the AR Lab Network ELC Meeting in November 2024, in Atlanta, GA.

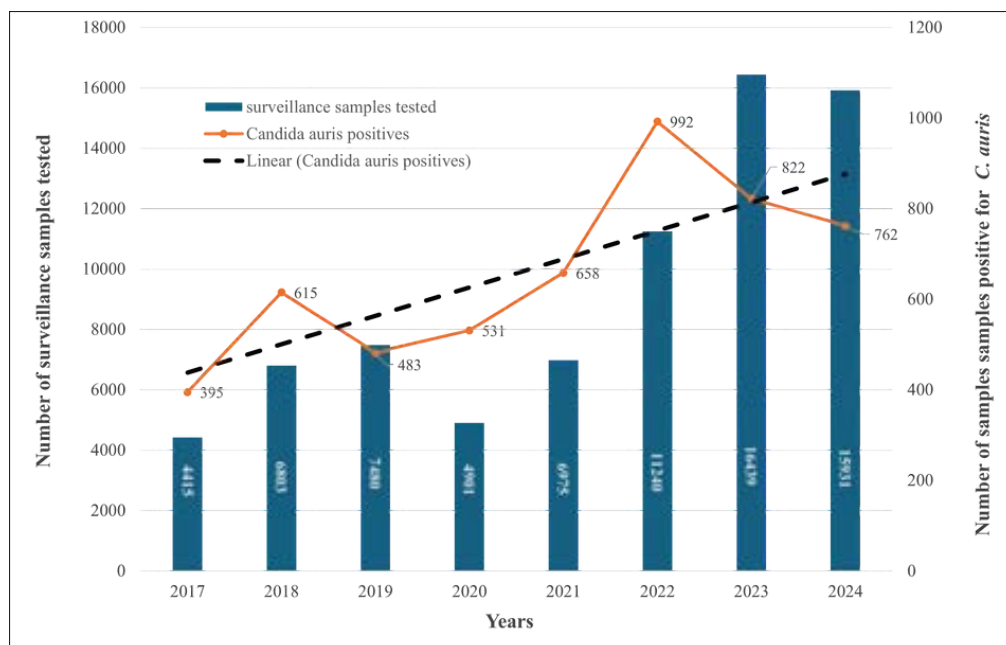
Wadsworth Center AR Mycology Lab Data:

Figure 1: Number of surveillance samples submitted by states for *Candida auris* colonization screening from January 2024 to December 2024



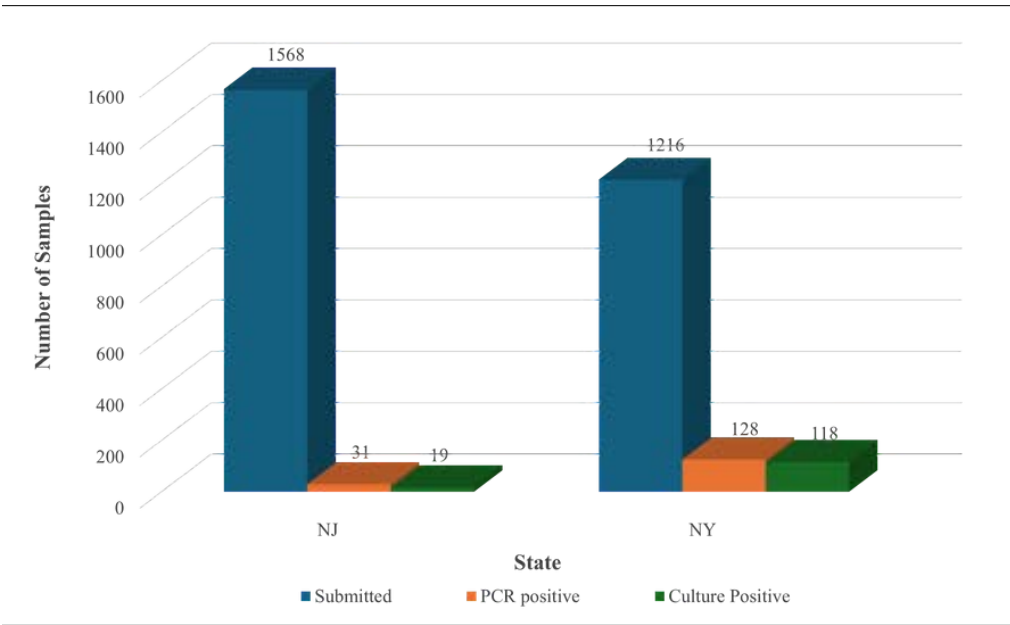
Note: The percent positivity of *C. auris* surveillance samples ranged from 0% to 9% in different states.

Figure 2: *Candida auris* surveillance testing at Wadsworth Center from January 2017 to December 2024



Note: The trendline shows a four-fold increase in surveillance sample submission over the years, with an alarming rise in *C. auris*-positive samples.

Figure 3: Number of admission screening samples submitted by states for *Candida auris* colonization screening from January 2024 to December 2024



Note: Seven facilities from NJ and 11 from NY adopted admission screening to control the spread of *C. auris*. The percent positivity of *C. auris* admission screening samples ranged from 2% (NJ) to 11%(NY), further emphasizing NY as a focal point of the *C. auris* outbreak.

Figure 4: Number of *Candida* and other isolates submitted by states for species level identification from January 2024 to December 2024

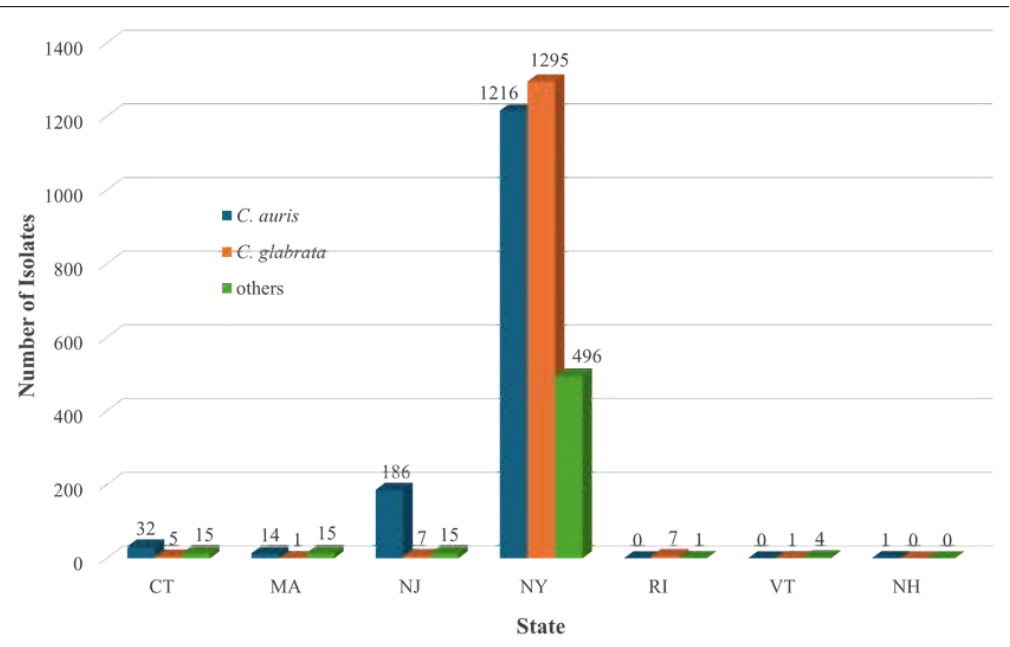
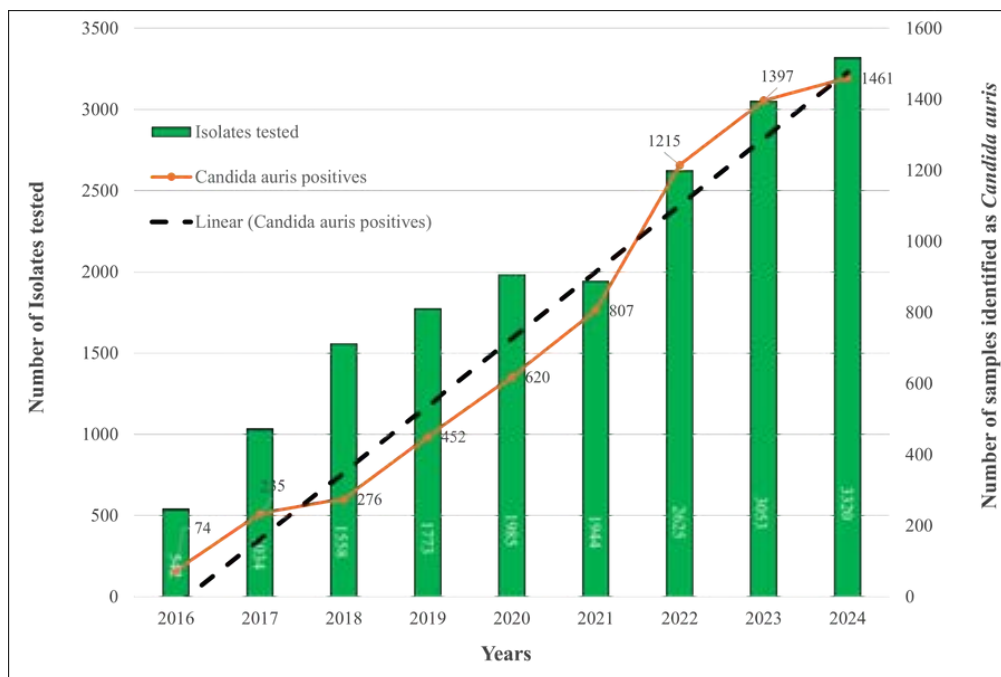
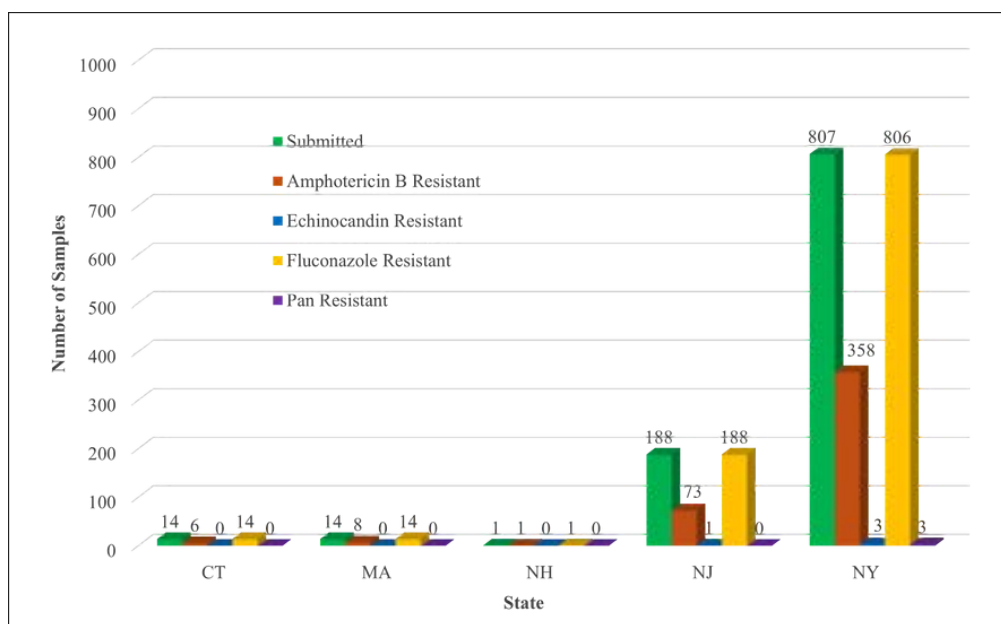


Figure 5: *Candida auris* isolate testing at the Wadsworth Center - January 2016 to December 2024



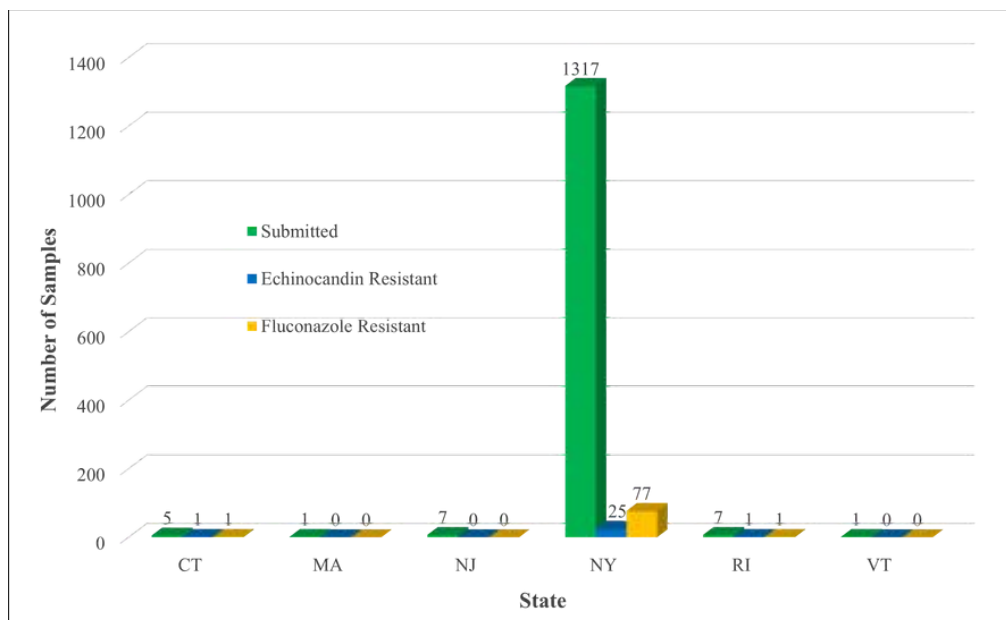
Note: A linear trendline shows a threefold increase in clinical isolate submissions from the Northeast over the years, and an alarming rise in *C. auris* positive isolates from the region.

Figure 6: Number of *Candida auris* isolates exhibiting resistance to various antifungals identified from January 2024 to December 2024



Note: Approximately 0.3 - 0.5% of *C. auris* isolates from NJ and NY were resistant to echinocandins. Approximately 40% – 60% of *C. auris* isolates from CT, MA, NJ, and NY were resistant to Amphotericin B. In NY only, a small proportion of *C. auris* isolates exhibited pan-resistance.

Figure 7: Number of *Candida glabrata* isolates exhibiting resistance to various antifungals identified from January 2024 to December 2024



Note: Approximately 20% and 1.9% of *C. glabrata* isolates were resistant to echinocandins from CT and NY, respectively. Since CT only sends suspected resistant isolates for confirmation, the 20% may not reflect the actual resistance pattern in the state.

Figure 8: Number of REDCap alerts submitted to CDC for *Candida auris* isolates from low-burden regions from January 2024 to December 2024

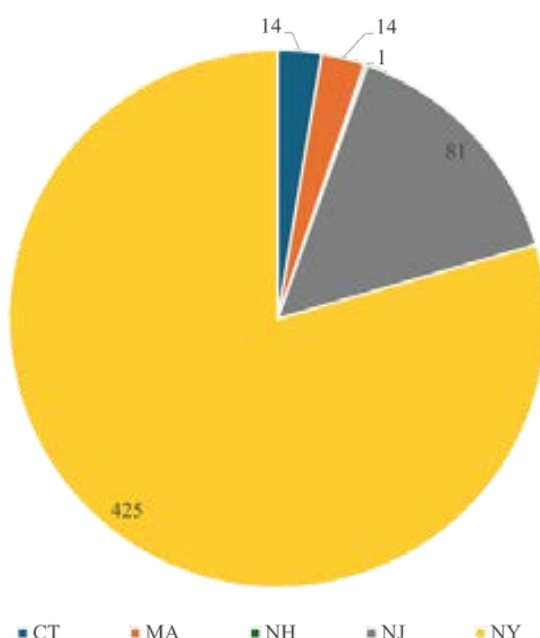


Figure 9: Number of REDCap alerts pertaining to antifungal resistance submitted to CDC from January 2024 to December 2024

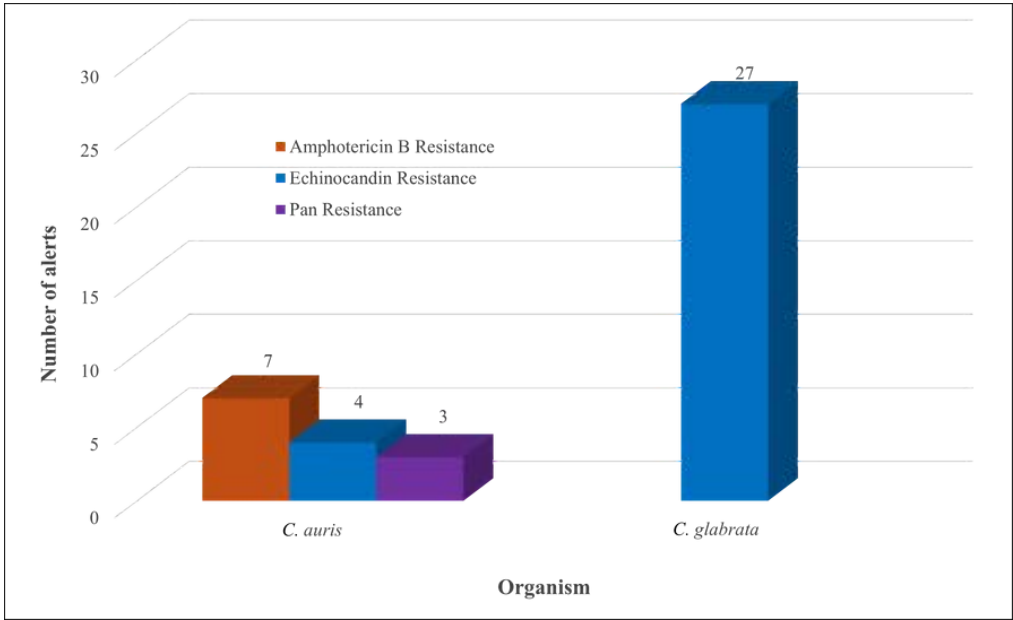
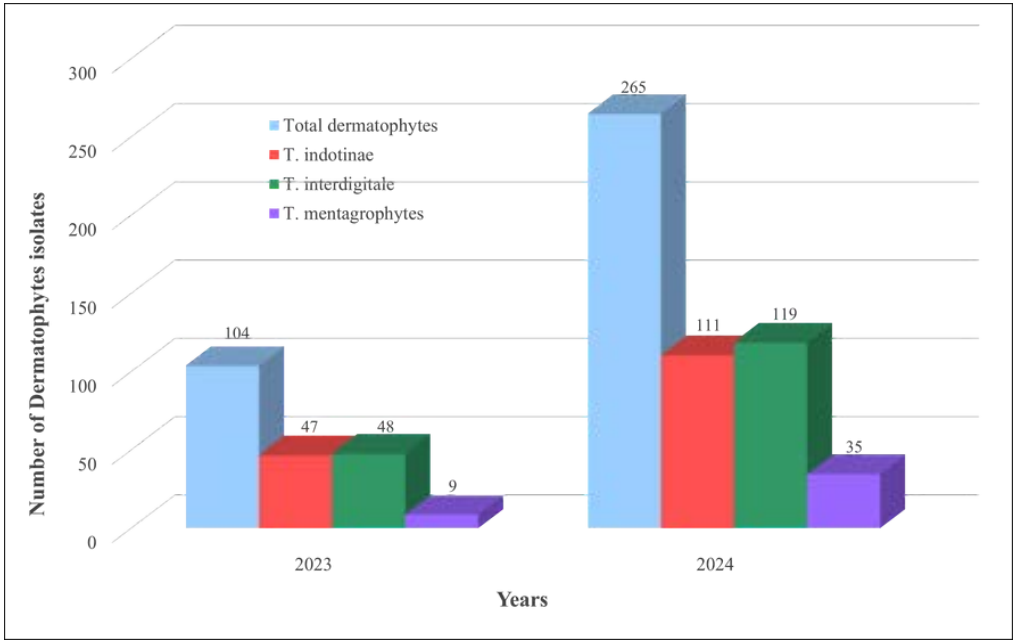
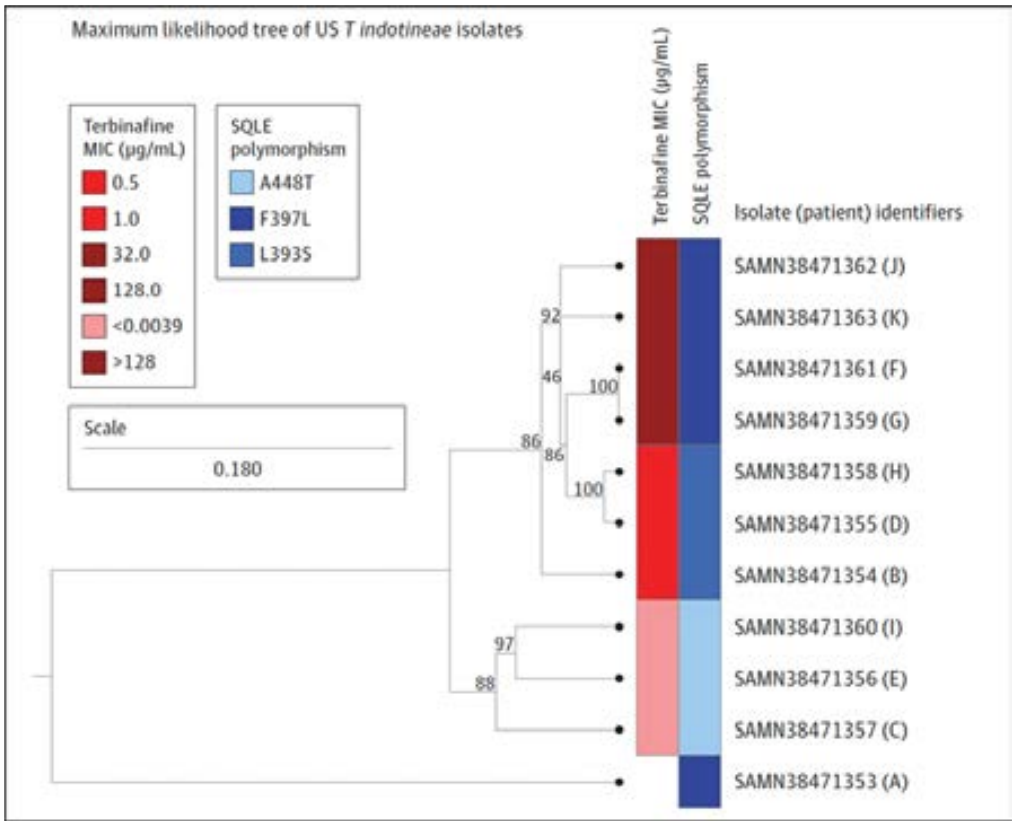


Figure 10: Number of REDCap alerts pertaining to antifungal resistance to CDC from January 2024 to December 2024



Note: During this period, 369 dermatophytes were tested. The emergence of drug-resistant and community-acquired *T. indotinae* and sexually transmitted *T. mentagrophytes* is noted.

Figure 11: Relatedness among New York City *Trichophyton indotineae* isolates using Whole-Genome Sequencing approach



Note: The whole-genome sequencing analysis of first 11 cases of *T. indotineae* revealed both household transmission and independent acquisition.

Wadsworth Center Mycology Lab - News & Highlights:



***C. auris* Surveillance Using Whole Genome Sequencing**

Since 2023, the Mycology Lab has been using whole genome sequencing (WGS) to monitor *C. auris* outbreaks in the northeast. Most recently, WGS has been used to investigate emerging multidrug resistant *C. auris* cases especially in new facilities or nonendemic areas. Relatedness information, along with epidemiological investigation, has been used to inform possible *C. auris* transmission pathways in hospital settings. Clonality remains an area of interest for future exploration.

Conferences

- At AMD Days in Atlanta, GA from September 23-25 2024, Sudha Chaturvedi presented a poster on “The emergence of superficial dermatophytosis due to *Trichophyton indotineae* and *Trichophyton mentagrophytes* genotype VII in the United States: A need for comprehensive testing approaches.” Sudha Chaturvedi, Gabrielle Todd, Brittany O'Brien
- ELC Program I Antimicrobial Resistance Laboratory Network (AR Lab Network) Participants Meeting November 6-8, 2024: Sudha Chaturvedi and Mayuri Vaidya attended this meeting. Sudha Chaturvedi was also invited by CDC AR Coordination and Strategy Unit (ARX) to participate in 'What is AR Lab Network' session and provided her viewpoint on progress made over the years of AR Lab Network for Candida testing.
- The 2024 CDC-APHL AR Lab Network (AR Lab Network) Regional Laboratory In-Person Meeting was held December 3-6, 2024. Sudha Chaturvedi and Mayuri Vaidya attended this meeting. Sudha Chaturvedi's travel was sponsored by APHL. She was also one of the speakers in the 'Repeat and Redundant Testing' session. She provided her viewpoint on how we can reduce testing without impacting the overall goals of the AR Lab Network (detect, respond, contain, and prevent resistant infections across healthcare settings and communities). The session was well received.
- Gabrielle Todd, Ph.D. and Emily Cotnoir, Ph.D. attended ISHAM Fungal Diagnostics Working Group Training Session on December 4-5, 2024.

Featured Posters

Posters can be viewed on the Wadsworth Center's
ARLN - Publications/Presentations page [here](#)

- Cummings K, Connors J, Prussing C, et al. Assessing carbapenemase-producing bacteria in wastewater samples in New York State: A pilot study. Poster presented at: ASM Microbe; June 13-17, 2024; Atlanta, GA.
- Greenko JA, Kogut S, Cummings K, et al. Outbreak of New Delhi Metallo- β -lactamase producing *Escherichia coli* in a neonatal intensive care unit, New York State. Poster presented at: SHEA Conference; April 15-19, 2024; Houston, TX.
- Peifer A, Owuor E, Sankaranarayanan K, et al. Surveillance of *Neisseria meningitidis* drug resistance in New York State. Poster presented at: ASM Microbe; June 13-17, 2024; Atlanta, GA.
- Marathe A,, Chaturvedi S. MALDI-TOF MS library enrichment of medically important rare yeasts in a clinical laboratory. Poster presented at: APHL Annual Conference; May 6-9, 2024; Milwaukee, WI.
- O'Brien B, Zhu Y, Chaturvedi S. Development and validation of a multiplex real-time PCR assay for rapid detection of *Blastomyces dermatitidis*, *B. gilchristii*, and *Histoplasma capsulatum*. Poster presented at: APHL Annual Conference; May 6-9, 2024; Milwaukee, WI.
- Prussing C, Cummings K, Morris S, et al. Carbapenemase-producing organism whole-genome sequencing in the Antimicrobial Resistance Laboratory Network Northeast Region: Laboratory Information Management System integration and data visualization. Poster presented at: APHL Annual Conference; May 6-9, 2024; Milwaukee, WI.
- Randall L, Peifer A, Sankaranarayanan K, et al. Surveillance of *Neisseria gonorrhoeae* drug resistance in New York State. Poster presented at: ASM Microbe; June 13-17, 2024; Atlanta, GA.
- Vaidya M, Chaturvedi S. Comparative study of the Sensititre YeastOne Panel against the CLSI Reference Panel for Antifungal Susceptibility Testing of *Candida auris*, *Candida glabrata* and rare *Candida* species. Poster presented at: ASM Microbe; June 13-17, 2024; Atlanta, GA.

Featured Publications

- Banik S, Ozay B, Trejo M, et al. A simple and sensitive test for *Candida auris* colonization, surveillance, and infection control suitable for near patient use. *J Clin Microbiol*. 2024;62(7):e0052524. doi:10.1128/jcm.00525-24 [PubMed Link](#)
- Caplan AS, Sikora M, Strome A, et al. Potential sexual transmission of *Tinea pubogenitalis* from TMVII. *JAMA Dermatol*. 2024;160(7):783-785. doi:10.1001/jamadermatol.2024.1430 [PubMed Link](#)
- Caplan AS, Todd GC, Zhu Y, et al. Clinical course, antifungal susceptibility, and genomic sequencing of *Trichophyton indotineae*. *JAMA Dermatol*. 2024;160(7):701-709. doi:10.1001/jamadermatol.2024.1126 [PubMed Link](#)
- Grossman MK, Rankin DA, Maloney M, et al. Extensively drug-resistant *Pseudomonas aeruginosa* outbreak associated with artificial tears. *Clin Infect Dis*. 2024;79(1):6-14. doi:10.1093/cid/ciae052. [Article Link](#)
- Rhodes J, Jacobs J, Dennis EK, et al. What makes *Candida auris* pan-drug resistant? Integrative insights from genomic, transcriptomic, and phenomic analysis of clinical strains resistant to all four major classes of antifungal drugs. *Antimicrob Agents Chemother*. 2024;68(10):e0091124. doi:10.1128/aac.00911-24 [PubMed Link](#)
- Sabour S, Bantle K, Bhatnagar A, et al. Descriptive analysis of targeted carbapenemase genes and antibiotic susceptibility profiles among carbapenem-resistant *Acinetobacter baumannii* tested in the Antimicrobial Resistance Laboratory Network-United States, 2017-2020. *Microbiol Spectr*. 2024;12(2):e0282823. doi:10.1128/spectrum.02828-23 [PubMed Link](#)
- Yang AF, Sherman A, Nazarian E, et al. Evidence of transmission of New Delhi metallo- β -lactamase-producing *Klebsiella pneumoniae* through a gastrointestinal endoscope without an elevator channel. *Infect Control Hosp Epidemiol*. 2024;45(8):973-978. doi:10.1017/ice.2024.55 [PubMed Link](#)
- Zucker J, Caplan AS, Gunaratne SH, et al. Notes from the Field: *Trichophyton mentagrophytes* genotype VII - New York City, April-July 2024. *MMWR Morb Mortal Wkly Rep*. 2024;73(43):985-988. Published 2024 Oct 31. doi:10.15585/mmwr.mm7343a5 [Article Link](#)

Acknowledgments:

Wadsworth Center AR Bacteriology Lab

- Janine Bodnar
- Kailee Cummings
- Nicola Faraci
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- Christine Jacobsen
- Spencer Kennedy
- Mohammad Yasir Khan
- Quinn Kimery
- Ashley Marcinkiewicz
- Kara Miller
- Shannon Morris
- Kimberlee Musser
- Elizabeth Nazarian
- Catherine Prussing

Wadsworth Center Mycology Lab:

- Sudha Chaturvedi
- Joseph Chernek
- Emily Cotnoir
- Karla Lehtonen
- Anuradha Marathe
- Delia O'Brien
- Michelle Reitman
- Gabrielle Todd
- Vinay Vaida
- Mayuri Vaidya
- JinJing Zhao
- YanChun Zhu

Happy Retirement to Shirley Kelly-Parson!

Background images sourced from the CDC's Public Health Image Library (PHIL)

- Rossow, S. Medical illustration ID#23239 of *C. auris* from CDC's *Antibiotic Resistance Threats in the United States, 2019 (AR Threats Report)*. CDC PHIL; Antibiotic Resistance Coordination and Strategy Unit. Created 2019. Accessed July 28, 2026.
- Rossow, S. Medical illustration ID#23241 of CRE bacteria from CDC's *AR Threats Report 2019*. CDC PHIL; Antibiotic Resistance Coordination and Strategy Unit. Created 2019. Accessed July 28, 2026