Candida auris: Infection Prevention Guidance for Dialysis Facilities

April 29, 2025

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

NE ICAP

NEBRASKA INFECTION CONTROL ASSESSMENT AND PROMOTION PROGRAM

Juan Teran, MD
Nebraska ICAP

Chris Cashatt BSN, RN, CIC

NE ICAP

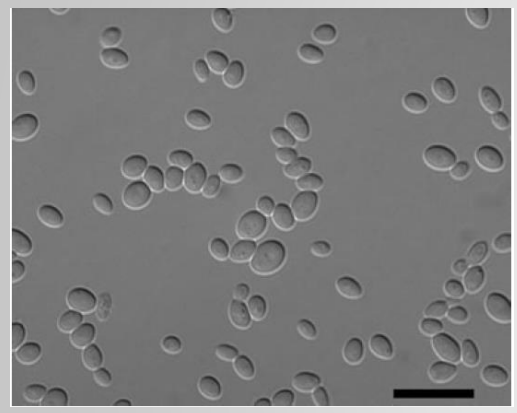
Objectives

- Brief Introduction to C. auris
- Importance
- Basic Infection Control and Prevention

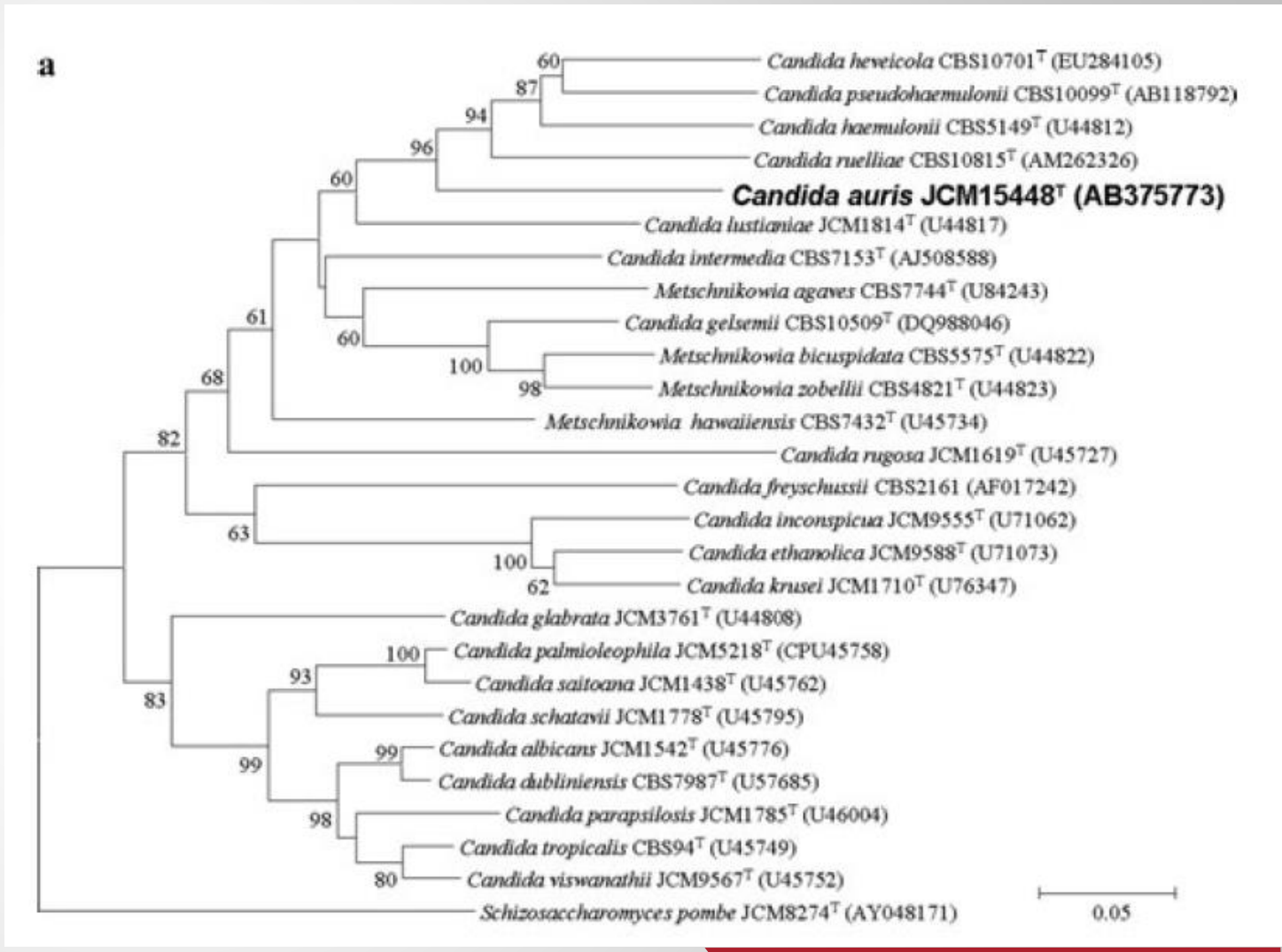
Introduction to C. auris

NE ICAP

Candida auris sp. nov., a novel ascomycetous yeast isolated from the **external ear canal** of an inpatient in a Japanese hospital



- No pseudohyphae on cornmeal agar
- Slow growth at 42˚ Celsius
- Inositol, nitrate, and erythrol are not assimilated



Satoh et al. *Microbiol Immunol*. 2009;53(1):41-44

NE ICAP

First seven cases of c. auris in the united states

CDC issues an alert in June 2016

Patient	Isolation month/ year	State	Site of *C. auris* isolation	Underlying medical condition(s)	Outcome*
1	May 2013	New York	Blood	Respiratory failure requiring high-dose corticosteroids	Died
2	July 2015	New Jersey	Blood	Brain tumor and recent villous adenoma resection	Died
3	April 2016	Maryland	Blood	Hematologic malignancy and bone marrow transplant	Died
4	April 2016	New York	Blood	Hematologic malignancy	Died
5	May 2016	Illinois	Blood	Short gut syndrome requiring total parenteral nutrition and high-dose corticosteroid use	Survived
6	July 2016	Illinois	Urine	Paraplegia with long-term, indwelling Foley catheter	Survived
7	August 2016	New York	Ear	Severe peripheral vascular disease and skull base osteomyelitis	Survived

Vallabhaneni S, Kallen A, Tsay S, et al. MMWR Morb Mortal Wkly Rep 2016;65:1234–1237

NE ICAP

FIRST SEVEN CASES OF C. AURIS IN THE UNITED STATES

Median time 18 days (range 0 – 231)

2 experienced recurrence (3 and 4 m)

All positive BCx had a central line

5/7 cultures were initially misidentified
As *C. haemulonii* or not identified beyond *Candida spp*.

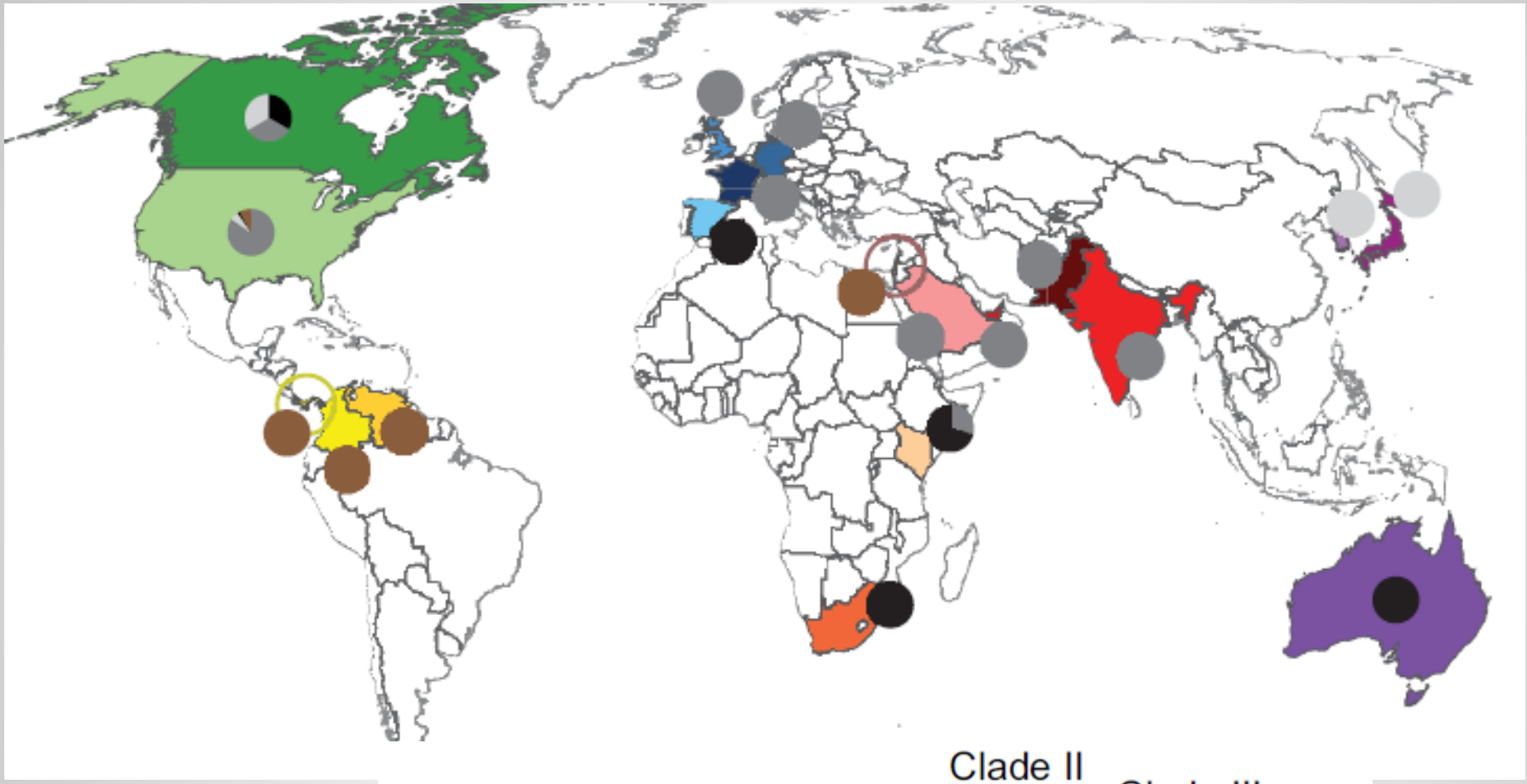
All received echinocandins, one also received amphotericine B

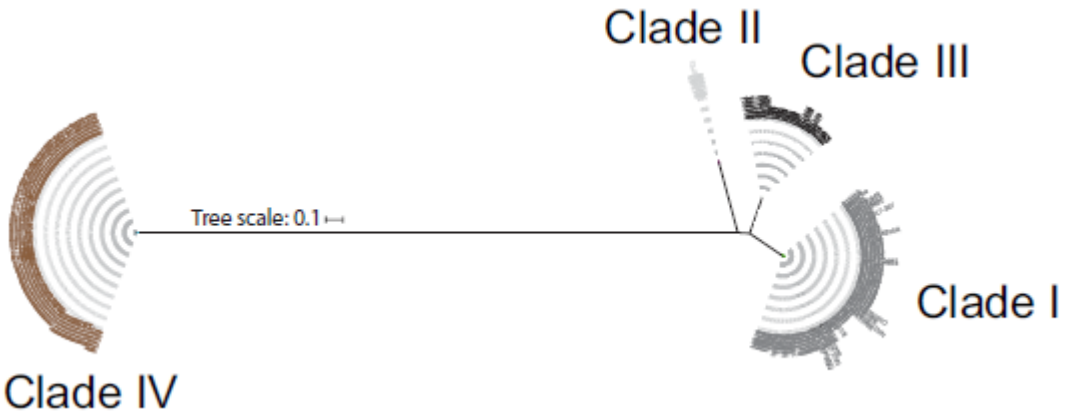
3 patients were tested for colonization
All tested positive

6 patients had WGS
MD, NY, NJ were closer to each other (< 70 SNPs) and related to isolates in South Asia
2 IL samples were almost identical (< 10 SNPs) and related to isolates in South America

Vallabhaneni S, Kallen A, Tsay S, et al. MMWR Morb Mortal Wkly Rep 2016;65:1234–1237

EVOLUTIONARY HISTORY AND GLOBAL EXPANSION





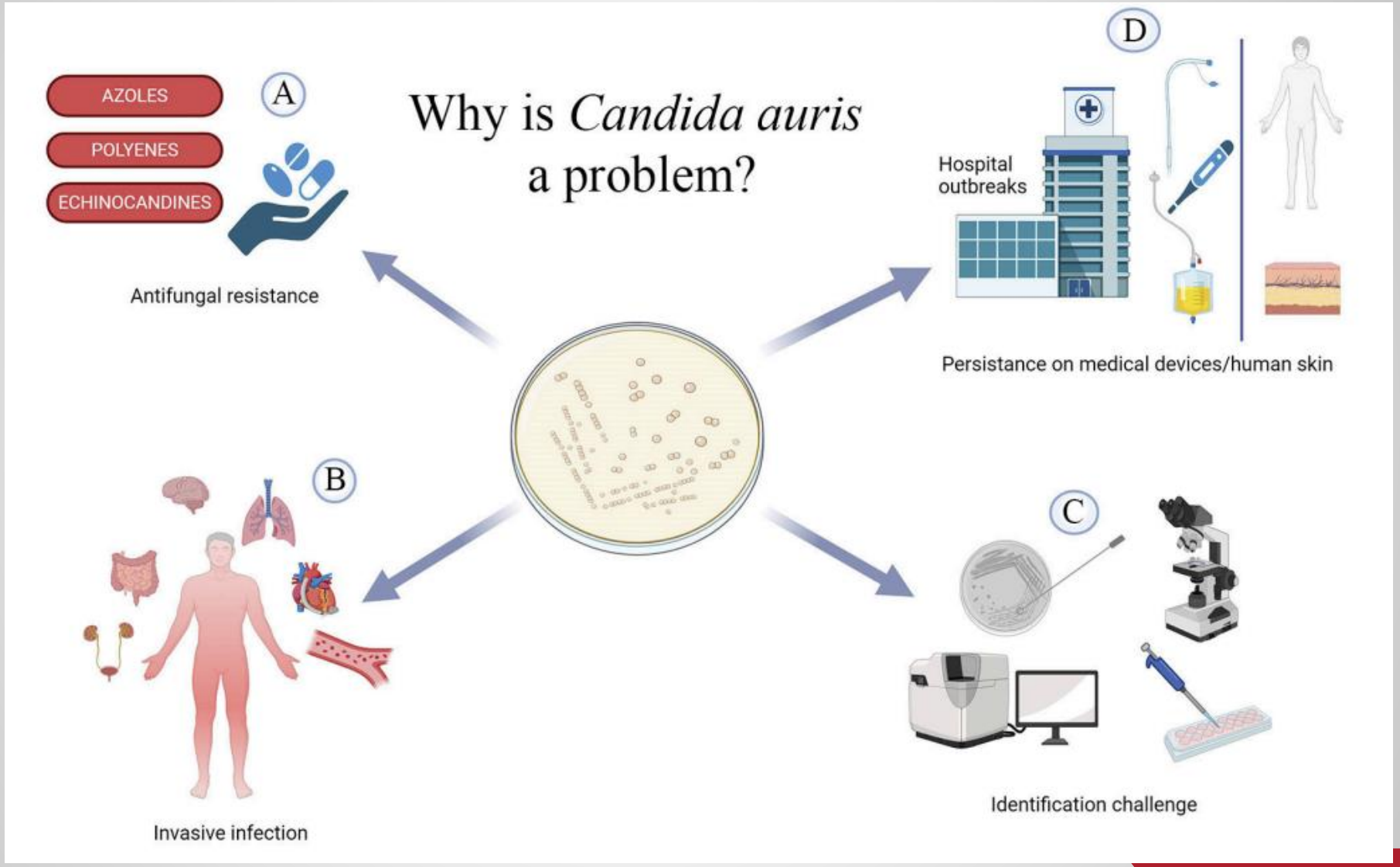
Chow et al. *mBio*. 2020;11(2):e03364-19

ICAP

Importance

NE ICAP

Challenges Related to C. auris

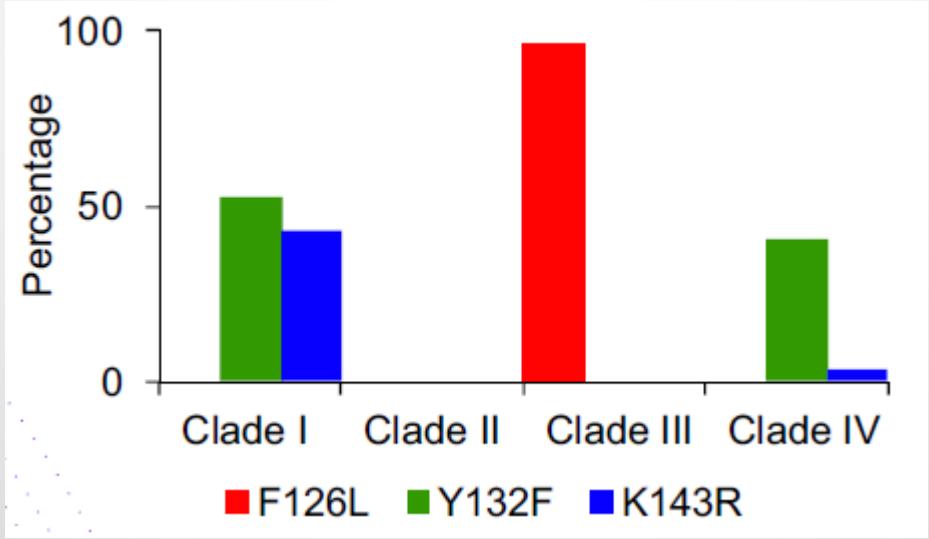


De Gaetano S et al. Microorganisms 2024, 12, 927.

ANTIFUNGAL RESISTANCE

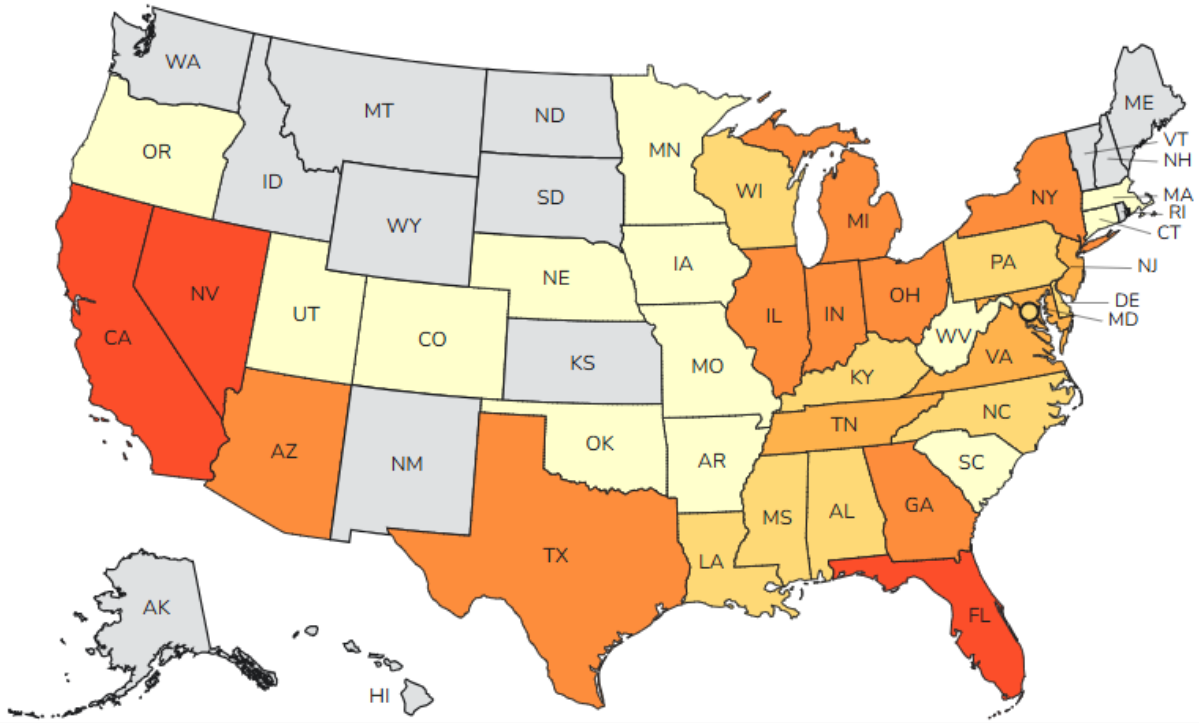
TABLE 1 Frequency of antifungal drug resistance among *Candida auris* isolates by clade

	Frequency (%) of antifungal drug resistance in isolates (*n*)					
Clade (*n*)	Susceptible	Fluconazole resistant	Amphotericin B resistant	Micafungin resistant	MDR[a]	XDR[b]
Clade I (118[c])	3 (4)	97 (114)	47 (54)	6 (7)	45 (53)	3 (4)
Clade II (7)	86 (6)	14 (1)	0 (0)	0 (0)	0 (0)	0 (0)
Clade III (51)	2 (1)	98 (50)	0 (0)	8 (4)	8 (4)	0 (0)
Clade IV (120)	31 (37)	59 (71)	11 (13)	9 (11)	10 (12)	0 (0)
Total (296)	16 (48)	80 (236)	23 (67)	7 (22)	23 (69)	1 (4)



Chow et al. *mBio*. 2020;11(2):e03364-19

New Clinical Cases of C. auris Reported in the U.S in 2023



Legend

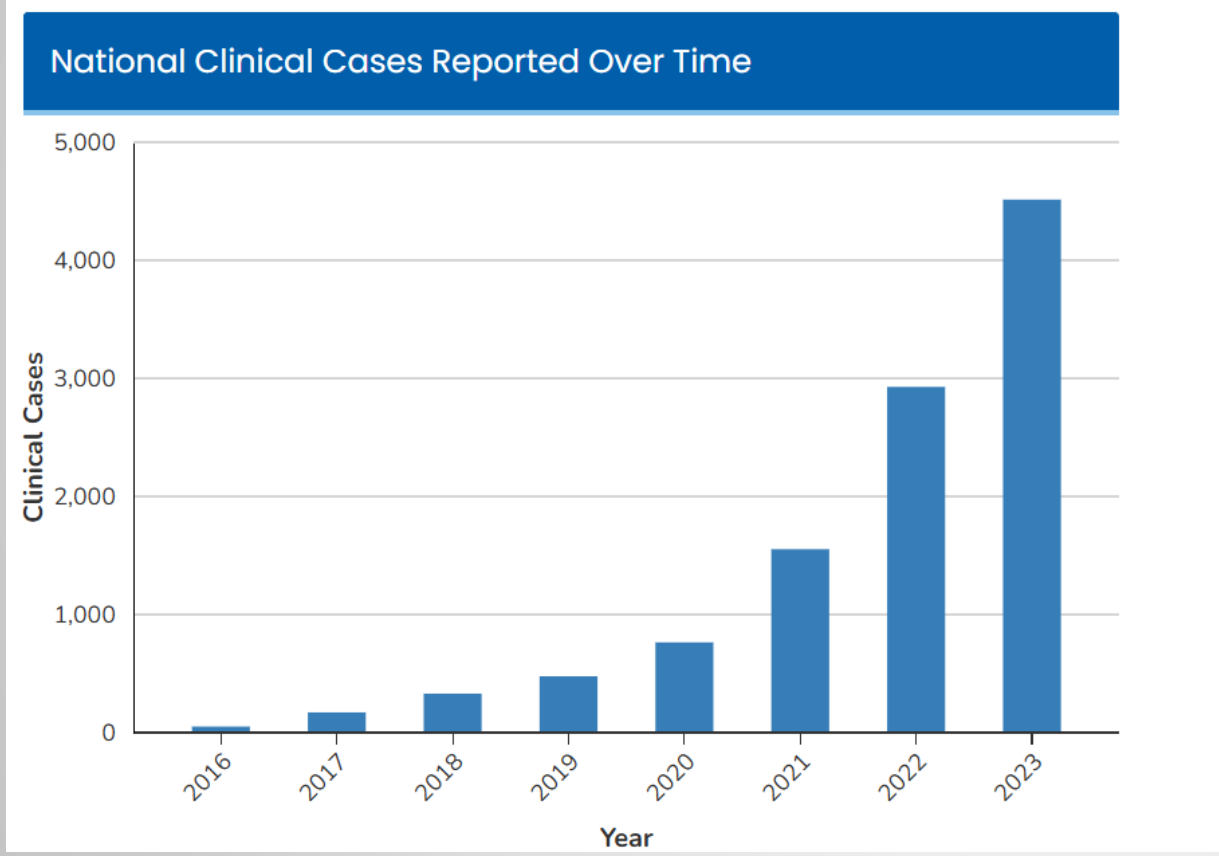
In 2023, there were 4,514 clinical cases. There were an additional 9,287 screening cases not shown on the map.

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

Tracking C. auris | Candida auris (C. auris) | CDC

NE ICAP

Tracking C. auris



Tracking C. auris | Candida auris (C. auris) | CDC

NE ICAP

Multidrug-Resistant Organisms (MDRO) Tiers for Nebraska

Tier	Definition of Included Organisms and Mechanisms	Examples (not all inclusive) of organisms/mechanisms for Nebraska	Transmission-Based Precautions Recommendations
Tier 1	Never (or very rarely) been identified in the United States and for which experience is extremely limited	Novel Carbapenemases	Contact precautions until otherwise recommended by HAI/AR team
Tier 2	Primarily associated with healthcare settings and are not commonly identified in the region (i.e., not been previously identified in the region or have been limited to sporadic cases or small outbreaks), corresponding to "not detected" or "limited to moderate spread" epidemiologic stages. No current treatment options exist (pan not-susceptible) and potential to spread more widely.	Pan-resistant organisms* *Candida auris* Carbapenemase (e.g., KPC, NDM, OXA-48, VIM, IMP) producing organisms (CPO) • Enterobacterales • *Pseudomonas aeruginosa* • *Acinetobacter Baumannii*	Contact Precautions *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) recommended for colonized resident(s)**
Tier 3	Include MDROs targeted by the facility or region for epidemiologic importance that have been identified frequently across a region, indicating advanced spread, but are not considered endemic	• Extended spectrum beta-lactamase (ESBL) producing organisms • Carbapenem-resistant *Enterobacterales* (CRE) • Carbapenem-resistant *Pseudomonas aeruginosa* (CRPA) • Carbapenem-resistant *Acinetobacter Baumannii* (CRAB)	Contact Precautions *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) considered for colonized resident(s)**
Tier 4	Endemic in a region and have been targeted by public health for their clinical significance and potential to spread rapidly	• Methicillin-resistant Staphylococcus aureus (MRSA) • Vancomycin-resistant Enterococci (VRE)	Contact precautions per facility risk assessment *Long-term Care Facilities (LTCF):* Enhanced barrier precautions (EBP) considered for colonized resident(s)**

* Contact tracing and colonization screening may not be indicated for these organisms
**Contact precautions for acute/active infections or uncontained drainage/secretions

1

Updated 5.29.2024 https://dhhs.ne.gov/HAI%20Documents/Nebraska%20MDRO%20Tiers.pdf

NEBRASKA Good Life. Great Mission. DIVISION OF PUBLIC HEALTH

Nebraska DHHS HAI/AR

MDRO Tiers for Nebraska

NE ICAP

Dialysis

	OR (95% CI)	*P* Value
Pitt score (by 1-point increase)	0.85 (0.69–1.06)	.15
Age > 65 y	0.45 (0.20–1.03)	**.06**
HD/CVVH	0.15 (0.05–0.43)	**<.001**
CVC as potential source	5.76 (1.99–16.67)	**.001**
Immunosuppressed	2.26 (0.78–6.54)	.13
Echinocandin with prior 48 h	0.46 (0.16–1.34)	.16

Jimenez et al. Clinical Infectious Diseases, Volume 79, Issue 5, 15 November 2024

Table 2.

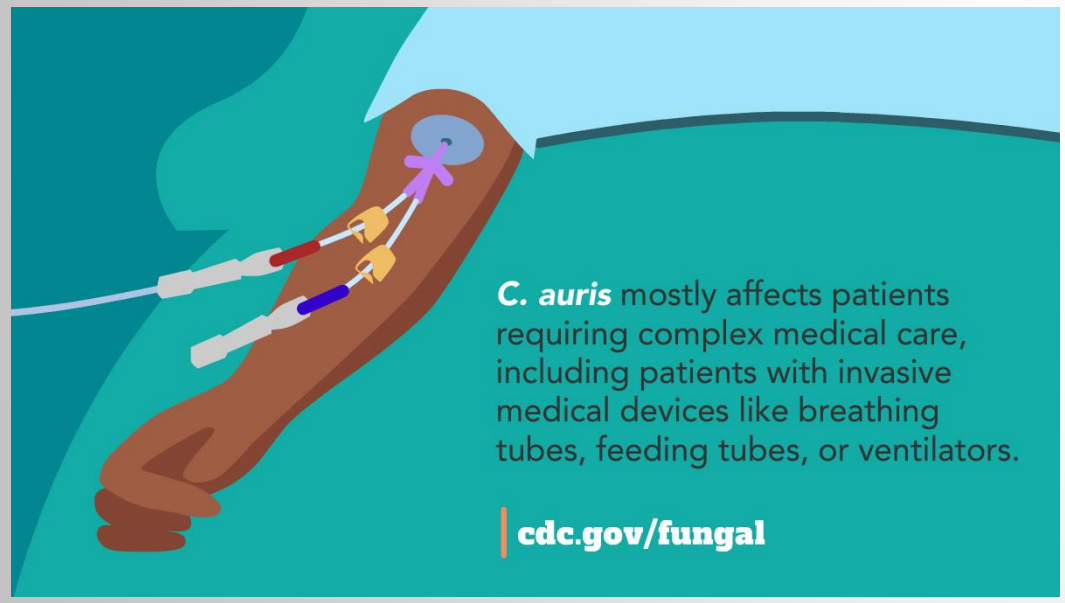
Factors Associated With Death/Hospice Discharge—Multivariable Analysis[a]

	OR (95% CI)	*P* Value
Pitt score (by 1-point increase)	1.19 (1.01–1.40)	**.037**
Age > 65 y	0.85 (0.38–1.89)	.68
HD/CVVH	3.08 (1.27–7.50)	**.013**
Palliative performance scale on admission		
Bed bound	reference	
In between	0.83 (0.30–2.34)	.72
Ambulatory	0.61 (0.21–1.80)	.37
Concurrent bacteremia	1.55 (0.67–3.60)	.31
LOS to index culture (by 1-d increase)	1.01 (1.00–1.02)	**.015**
Days from culture to active agent (by 1-d increase)	1.00 (1.00–1.00)	.54
CVC as potential source	0.96 (0.40–2.35)	.93
Immunosuppressed	0.96 (0.36–2.52)	.93

Infection Prevention and Control

NE ICAP

Colonization



How it Spreads

- Onto nearby surfaces or objects from the colonized patient through the hands of other individuals.

Risk Factors that put individuals at increased risk of infection

- Invasive medical devices
- Underlying medical conditions
- Long-term overuse of antimicrobials

Healthy individuals are not at risk (healthy immune system)

Duration of Precautions

- Often remain colonized with C. auris for months, or indefinitely

NE ICAP

Infection Control and Prevention Strategies: Dialysis

Hand Hygiene

Inform & Educate

Transmission-based Precautions

Environmental Cleaning

Infection Control Guidance: Candida auris | Candida auris (C. auris) | CDC

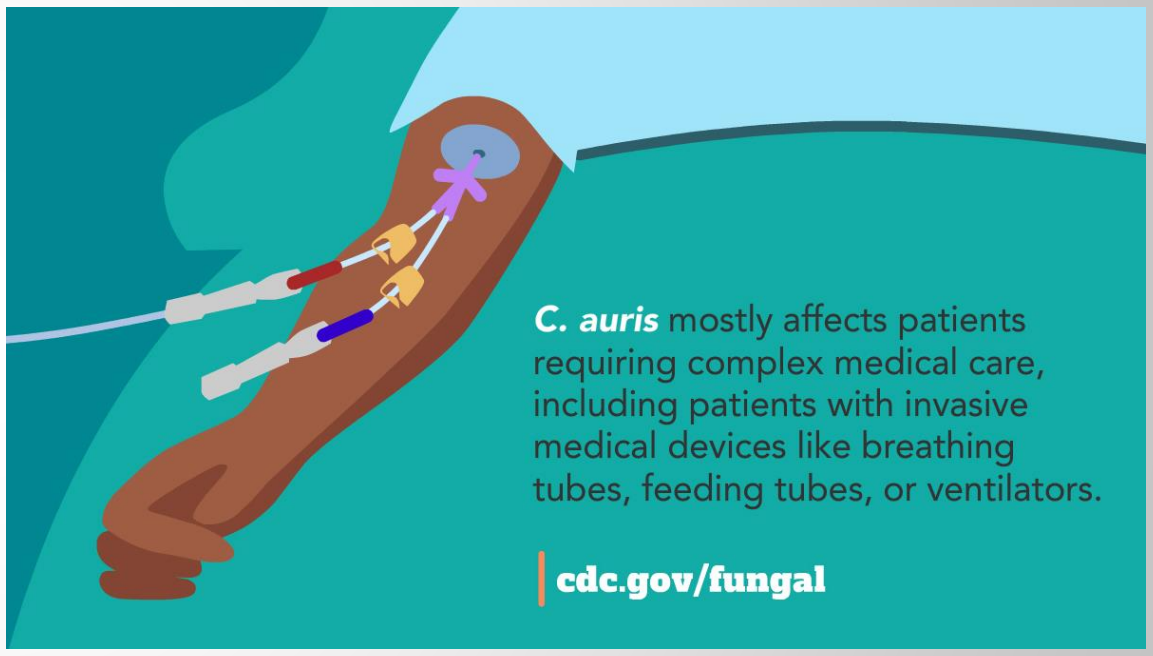
NE ICAP

Hand Hygiene

- Follow standard hand hygiene practices
  - Alcohol-based hand sanitizer is preferred for C. auris when hands are not visibly soiled.
  - Soap and water should be used if hands are visibly soiled.
  - Wearing gloves is not a substitute for hand hygiene.
- Ensure that adequate supplies are available.
- Perform infection control audits, monitor for adherence, and provide feedback

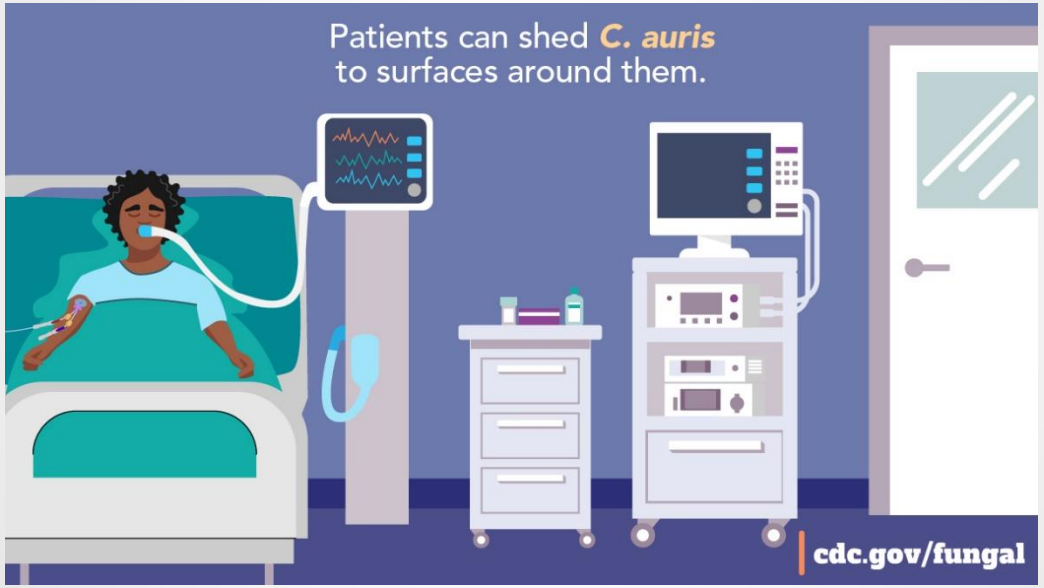
Inform & Educate

- Communicate C. auris infections/colonization to healthcare staff.
- Educate staff about C. auris and the importance of appropriate precautions.
    - Education
        - Hand Hygiene for Infection Prevention in a Dialysis Setting | Infection Control | CDC's Project Firstline | AMA Ed Hub
- Flag the chart
- Notify receiving facilities when transferring patients.
- If a facility accepts a new C. auris patient from outside of their state, notify your department of public Health HAI/AR Department as soon as possible.



Transmission-Based Precautions: PPE Use

Wear gowns and gloves using proper donning and doffing techniques when caring for patients with *C. auris* or touching items at the dialysis station.



Remove gowns and gloves, dispose of them carefully, and perform hand hygiene **when leaving the patient's station**.

Infection Control Guidance: Candida auris | Candida auris (C. auris) | CDC

NE ICAP

Transmission-Based Precautions: Minimizing Transmission

- Designate an area where patients with *C. auris* receive their dialysis treatment. Preferably at a station away from others, with as few adjacent stations as possible (utilize dedicated isolation room if available and not in use by Hepatitis B patients).
- Limit patient movement in facility upon entry.
  - Entry-weigh patient
  - Dialyze on the last shift of the day.
  - Maintain separation from other patients.
- Cohort positive patients if more than one.
- Clean & Disinfect
  - Reusable equipment (even dedicated equipment)
  - The station immediately after use.
  - Any areas the patient used: restroom, hand hygiene sinks,
  - Change mop head, clean clothes, or use disposable after disinfecting the station.

NE ICAP

EPA Registered Antimicrobials Effective Against C. auris-List P

CDC recommends using an Environmental Protection Agency (EPA)–registered hospital-grade disinfectant effective against *C. auris*. See EPA's List P for a current list of EPA-approved products for *C. auris*.

If the products on List P are not accessible or otherwise suitable, facilities may use an EPA-registered hospital-grade disinfectant effective against *C. difficile* spores (List K).

It is important to follow all manufacturer's directions for use, including applying the product for the correct contact time for all product

Check your current cleaning and disinfectant product labels. C. auris may already be the list of organisms that it is effective against.

EPA's Registered Antimicrobial Products Effective Against Candida auris [List P] | US EPA

NE ICAP

Dialysis Facility Resources - ICAP

https://icap.nebraskamed.com/facilities/dialysis/dialysis-facility-resources/

Home - ICAP | Dashboard ‹ ICAP... | APIC NE | All Apps | Adobe | APIC | One Chart | Patient... | UMR | Vision Insurance | M... | ASHA | American Sc... | QR Code Generator... | Unum | findhelp.org, by find... | Secure Access Mana... | REDCap | SAMS

Nebraska ICAP Dialysis Tools

Respiratory Season Tools +

Dialysis Resources +

C. auris Tool for NE Dialysis Facilities ×

C. auris Tool for NE Dialysis Facilities

IPC Regulations and Best Practices +

Safe and Effective Use of Bleach for Disinfection in Healthcare +

NEBRASKA INFECTION CONTROL ASSESSMENT AND PROMOTION PROGRAM ICAP

Candida auris is an emerging multidrug-resistant fungus that can cause invasive infections associated with high mortality due to its high resistance to antifungals. *C. auris* has been in the U.S. since 2016 and other states have been successfully providing care to patients with *C. auris*.

NE ICAP and the DHHS HAI/AR program are ready to support any facility with the resources and education needed to provide safe care to all patients.

- Infection Control Guidance: Candida auris | Candida auris (C. auris) | CDC

Recommended precautions for dialysis facilities with patients with C. *auris*

- ❑ Communication: Flag chart and notify receiving facilities.
- ❑ Educate all staff, including environmental services.
  - Reinforce hand hygiene practices.
  - Appropriate precautions
  - Re-educate on doffing and donning procedures.
- ❑ Hand Hygiene:
  - Monitor hand hygiene compliance-increase observations.
  - ABHR is the preferred method unless hands are visibly dirty or soiled.
- ❑ Minimizing exposure/Contact Isolation (Transmission based precautions).
  - Designate an area where patients with *C. auris* receive their dialysis treatment. Preferably at a station away from others, with as few adjacent stations as possible (utilize dedicated isolation room if available and not in use by Hepatitis B patients).
  - Healthcare providers should wear gloves and an isolation gown over their clothing while caring for patients with *C. auris*.
  - Reuse or extended use of PPE is not recommended when taking care of patients with *C. auris*. Remove PPEs when leaving the designated *C. auris* treatment area, and don new PPE when returning to the patient.
  - Dedicate reusable equipment for the patient (stethoscope, blood pressure cuffs, thermometers, blood glucose meters).
  - Limit patient movement in facility upon entry.
    - Entry-weigh patient
    - Dialyze on the last shift of the day.
    - Maintain separation from other patients.
- ❑ Environmental Cleaning and Disinfection
  - Utilize an EPA-approved disinfect for *C. auris* and assure it is used according to instructions for use and for the recommended contact time.
    - List P: Antimicrobial Products Registered with EPA for Claims Against Candida Auris | US EPA
      - Sodium Hypochlorite 1000 ppm: 2-minute contact time.
  - Clean and disinfect reusable equipment (even dedicated equipment)

Nebraska ICAP | 988173 Nebraska Medical Center | Omaha, NE 68198-8173
PH: 402.552.2881 | nebraskaicap@nebraskamed.com
icap.nebraskamed.com
Nebraska ICAP is funded by the Nebraska DHHS HAI/AR Program through a CDC grant.

General Dialysis Resources

Infection Prevention and Control Program Infrastructure +

Training, Competency and Audits +

View on Facebook

Nebraska ICAP & ASAP
2 days ago

Dialysis Facility Resources - ICAP

NE ICAP

Key Points

Education's Role in Reducing C. auris Transmission:
Highlight how educating staff on proper infection control measures can significantly reduce the spread of *Candida auris*.

Communicating C. auris Colonization to Staff and Receiving Facilities:
Outline effective methods for informing staff and receiving healthcare facilities when a patient is colonized with *C. auris*, ensuring timely and coordinated care.

Importance of Adhering to Transmission-Based Precautions in Outpatient Dialysis:
Emphasize the critical need to follow transmission-based precautions for patients colonized with *C. auris* in outpatient dialysis settings to prevent further spread.

Identifying Effective EPA-Registered Disinfectants for C. auris:
Provide guidance on how to identify EPA-approved disinfectants that are proven effective against *C. auris* to maintain a safe environment.

NE ICAP

Resources

- Tracking C. auris | Candida auris (C. auris) | CDC
- Candida auris Playbook – APIC
- CORHA | Candida auris
- Infection Control Guidance: Candida auris | Candida auris (C. auris) | CDC
- Candida auris in Hemodialysis Facilities
- healthcare-associated-infection/hai-candida/provide-hemodialysis.pdf
- Candida auris in Hemodialysis Facilities
- Communication and Educational Materials | Fungal Diseases | CDC
- Candida auris–Associated Hospitalizations, United States, 2017–2022 - Volume 29, Number 7—July 2023 - Emerging Infectious Diseases journal - CDC