



Overview of *Candida auris* and Emerging Resistant *Candida*

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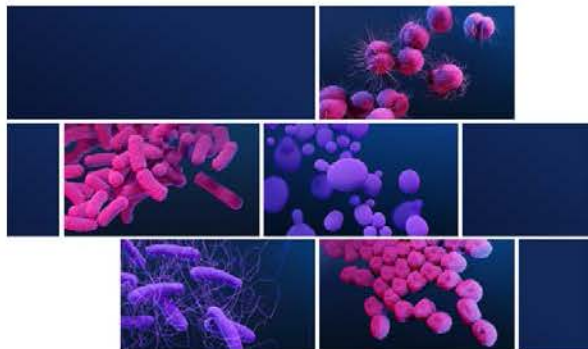
FDA Public Workshop

Development Considerations of Antifungal Drugs to Address Unmet Medical Need

August 2020

ANTIBIOTIC RESISTANCE THREATS
IN THE UNITED STATES

2019



Urgent Threats

These germs are public health threats that require urgent and aggressive action:



CARBAPENEM-RESISTANT
ACINETOBACTER



CANDIDA AURIS



CLOSTRIDIOIDES DIFFICILE



CARBAPENEM-RESISTANT
ENTEROBACTERIACEAE



DRUG-RESISTANT
NEISSERIA GONORRHOEAE

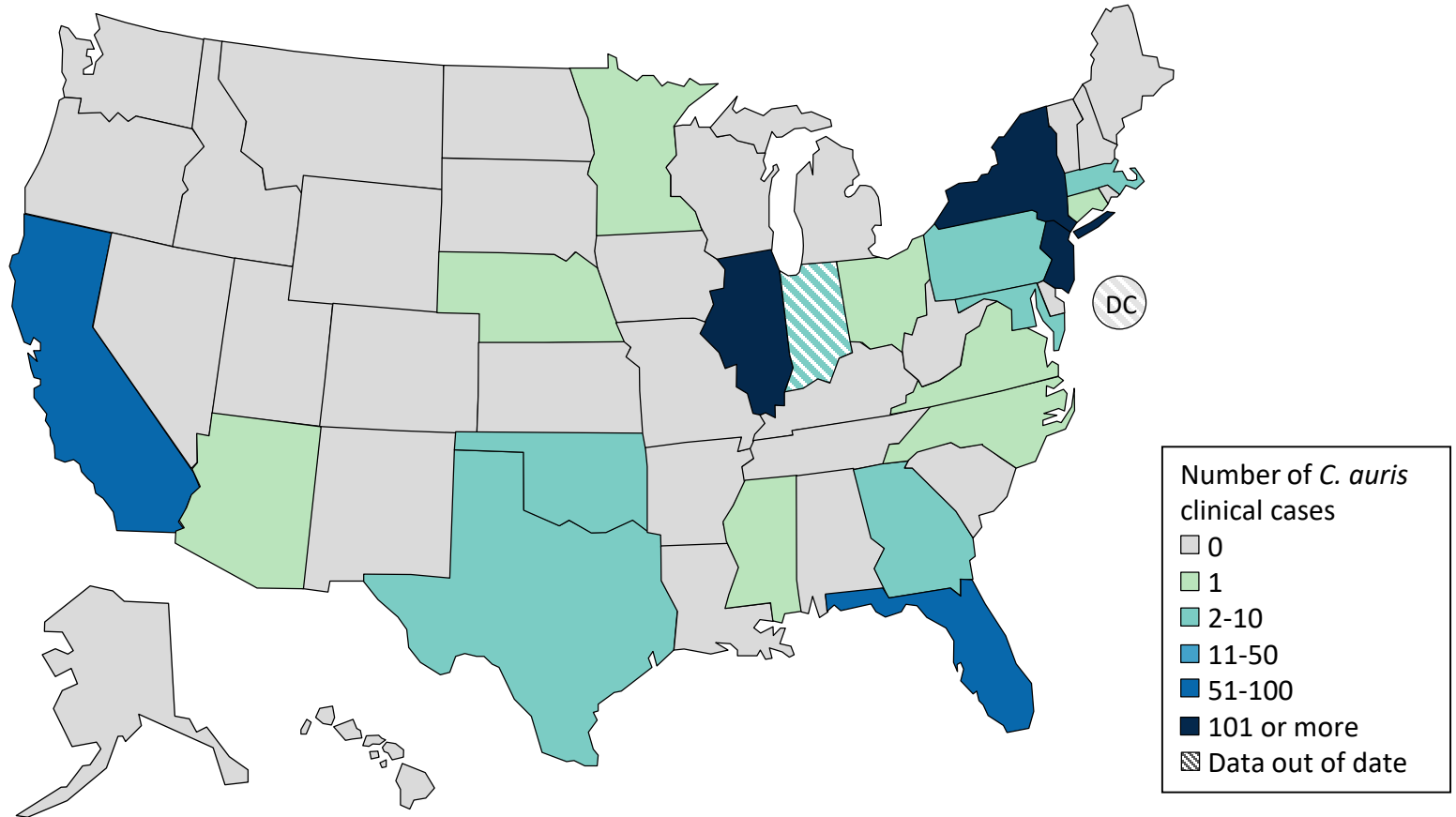
A petri dish containing a bacterial culture of Candida. The growth is visible as numerous white, fuzzy, and stringy colonies that have spread across the surface of the agar. The colonies are dense and have a characteristic yeast-like appearance.

A paradigm shift for *Candida* infections

A yeast that acts like a bacteria!

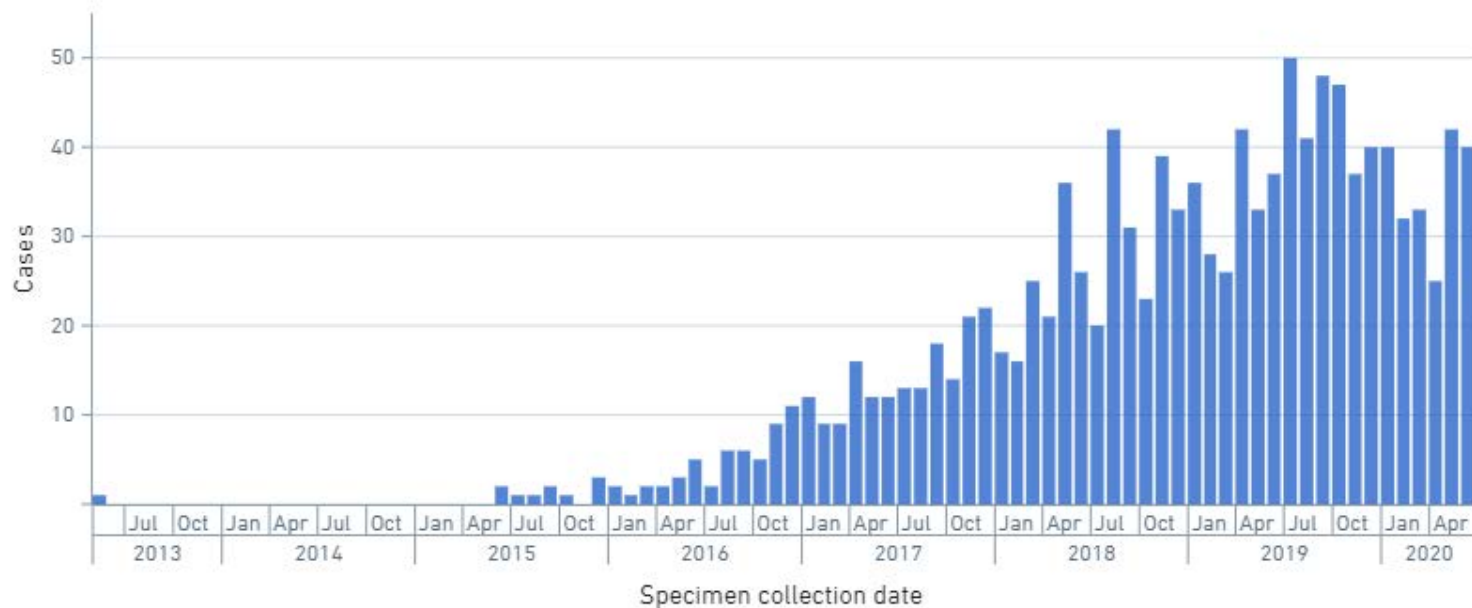
- Resistance is the norm
- Thrives on skin
- Contaminates patient rooms
- **CAN SPREAD IN HEALTHCARE SETTINGS**

C. auris clinical cases — United States, 2013–June 2020



C. auris clinical cases— United States, as of June 2020

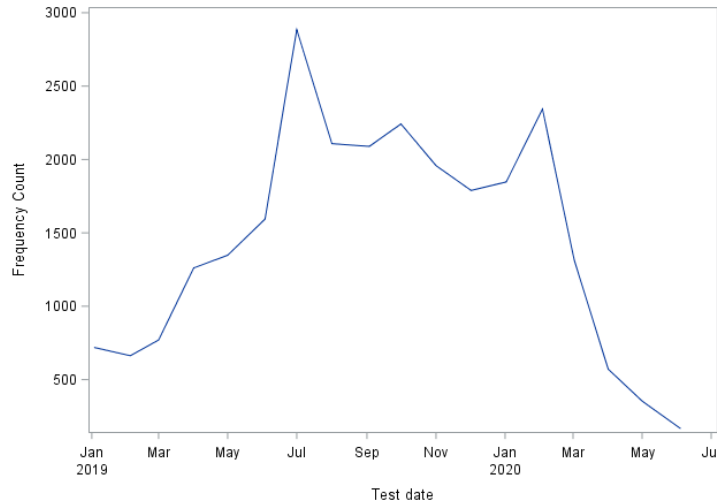
- Over 1200 clinical cases
- About 2400 screening cases



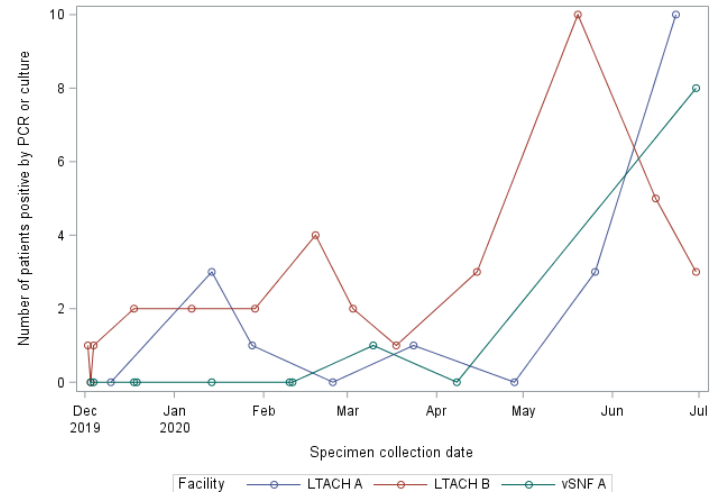
COVID-related challenges

- Decreased screening
- Reporting delays
- Changes in patient movement patterns
- Widespread empiric antimicrobial use

C. auris colonization swabs tested through AR Lab Network



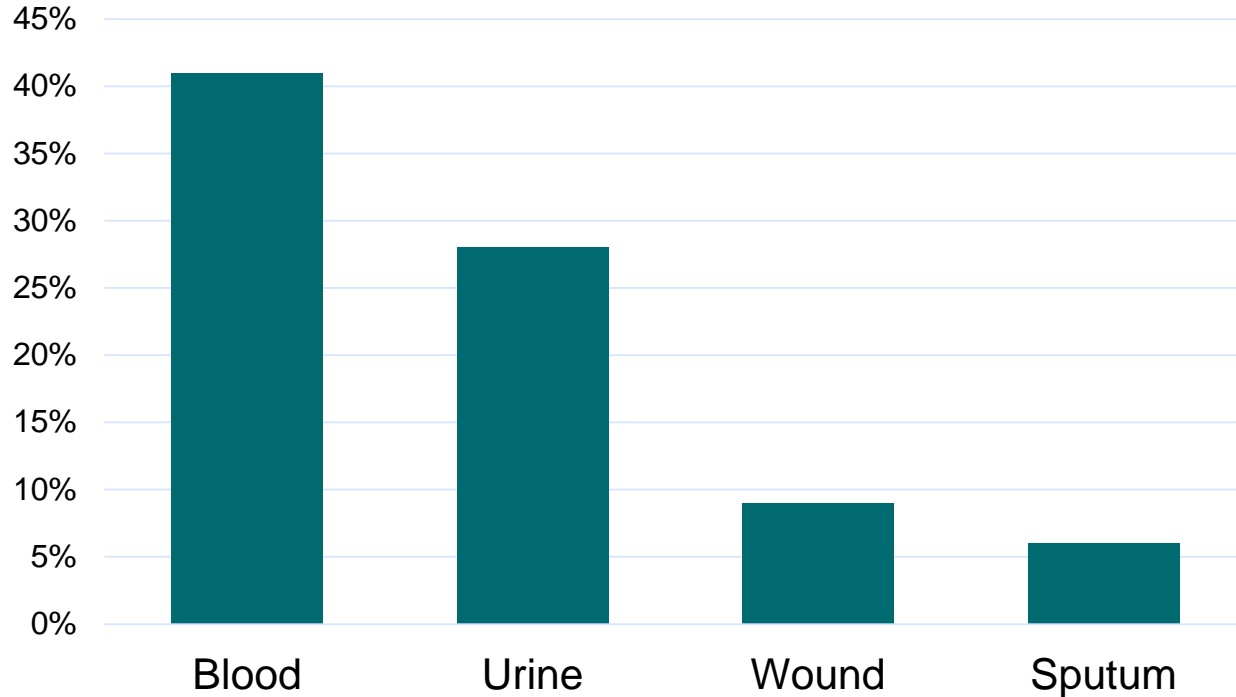
C. auris sharply increased in recent months in some long-term care facilities with COVID cases



Changing epidemiology?

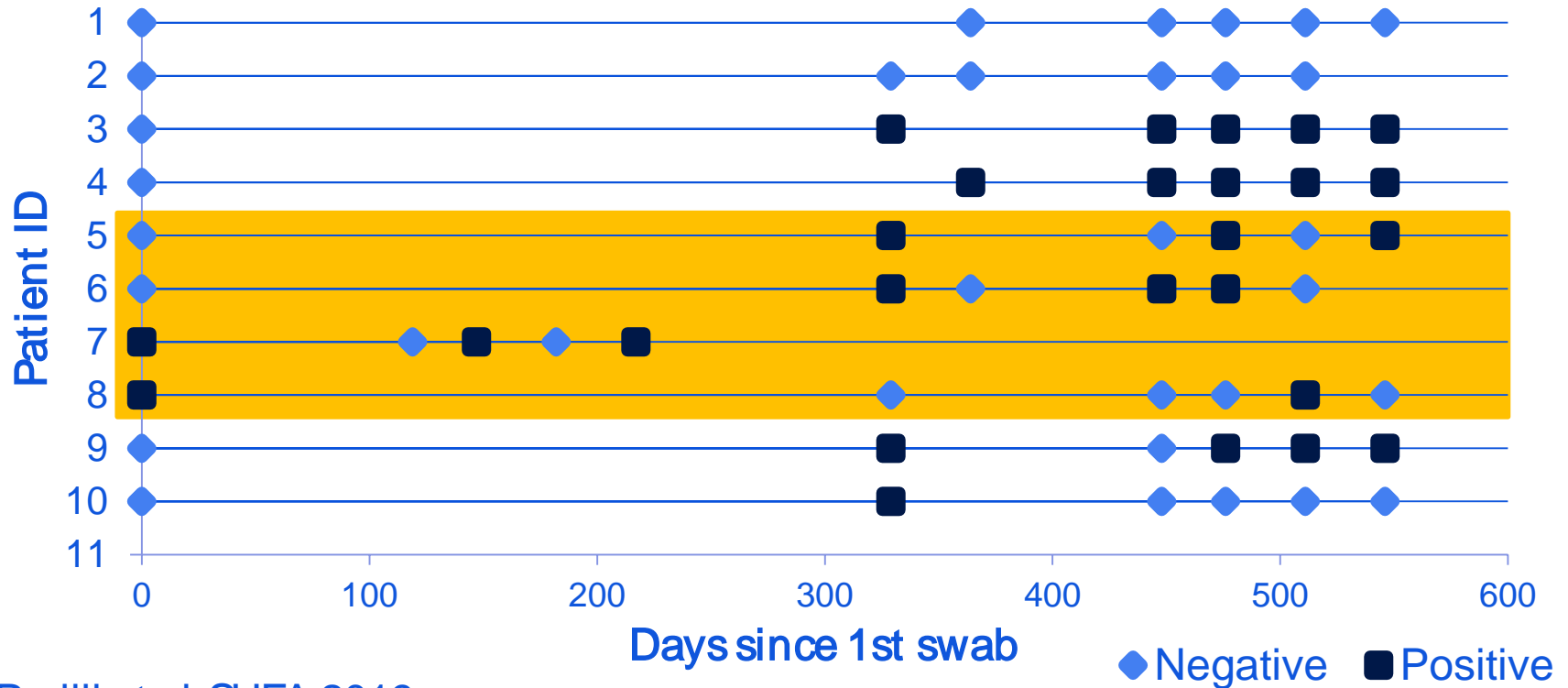
- Outbreaks happening in previously well-contained areas of the country
 - Southern California
 - Mid-Atlantic
- Cases identified without links to known cases or healthcare abroad
- Transmission seen in acute care hospitals and regular skilled nursing facilities
 - Though most transmission remains in LTACHs and skilled nursing facilities with ventilator care

Most common specimen sources of clinical cases*



* Cases may be included under multiple specimen sources

Long term Colonization



Resistance (n=1634 US isolates)



80%

Azoles



31%

Polyenes



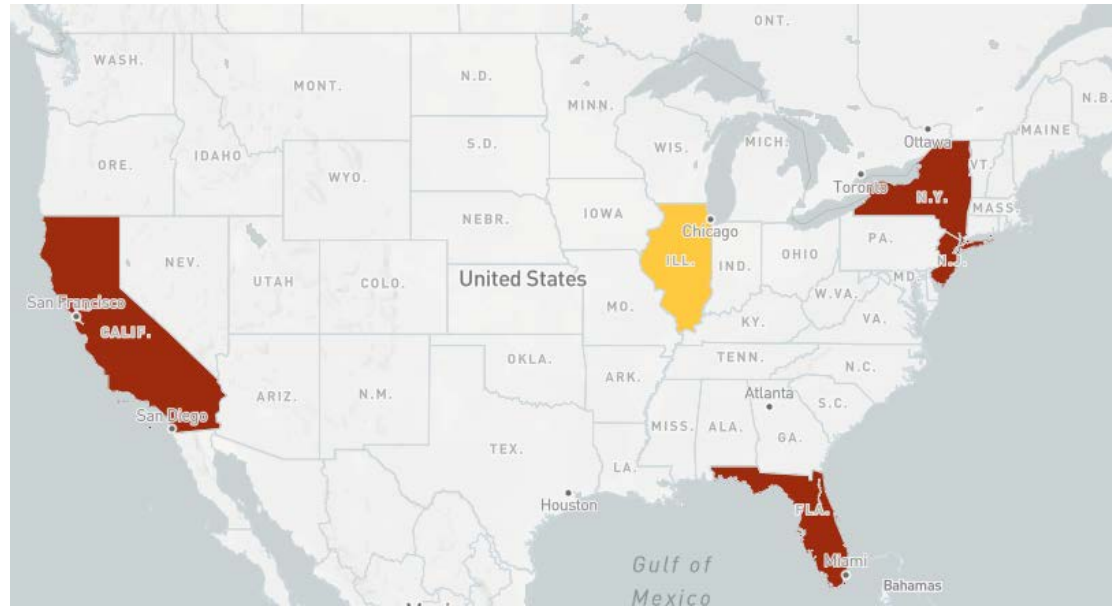
1%

Echinocandins

- 31% multidrug-resistant
- Pan-resistance found in 2 states, but still rare
- Major differences by clade

C. auris resistance varies geographically - Azole

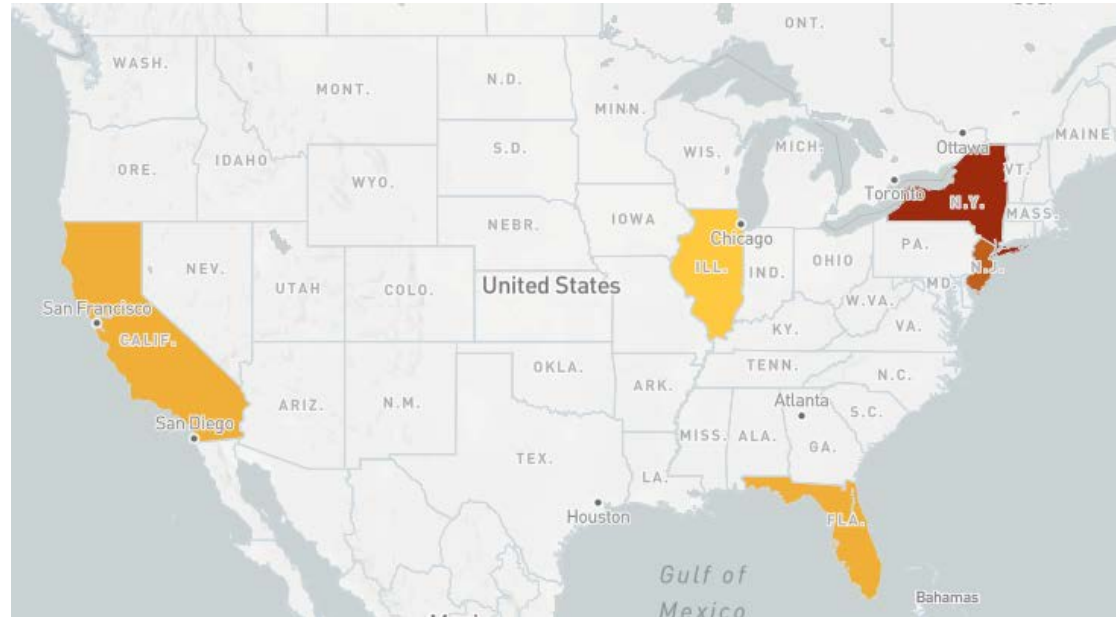
- Azole resistance*
 - South Asian Clade
 - >99% in NY
 - >99% in NJ
 - African Clade
 - 99% in CA
 - 92% in FL
 - South American Clade
 - 7% in IL



* Clades indicate the predominant clade in that state

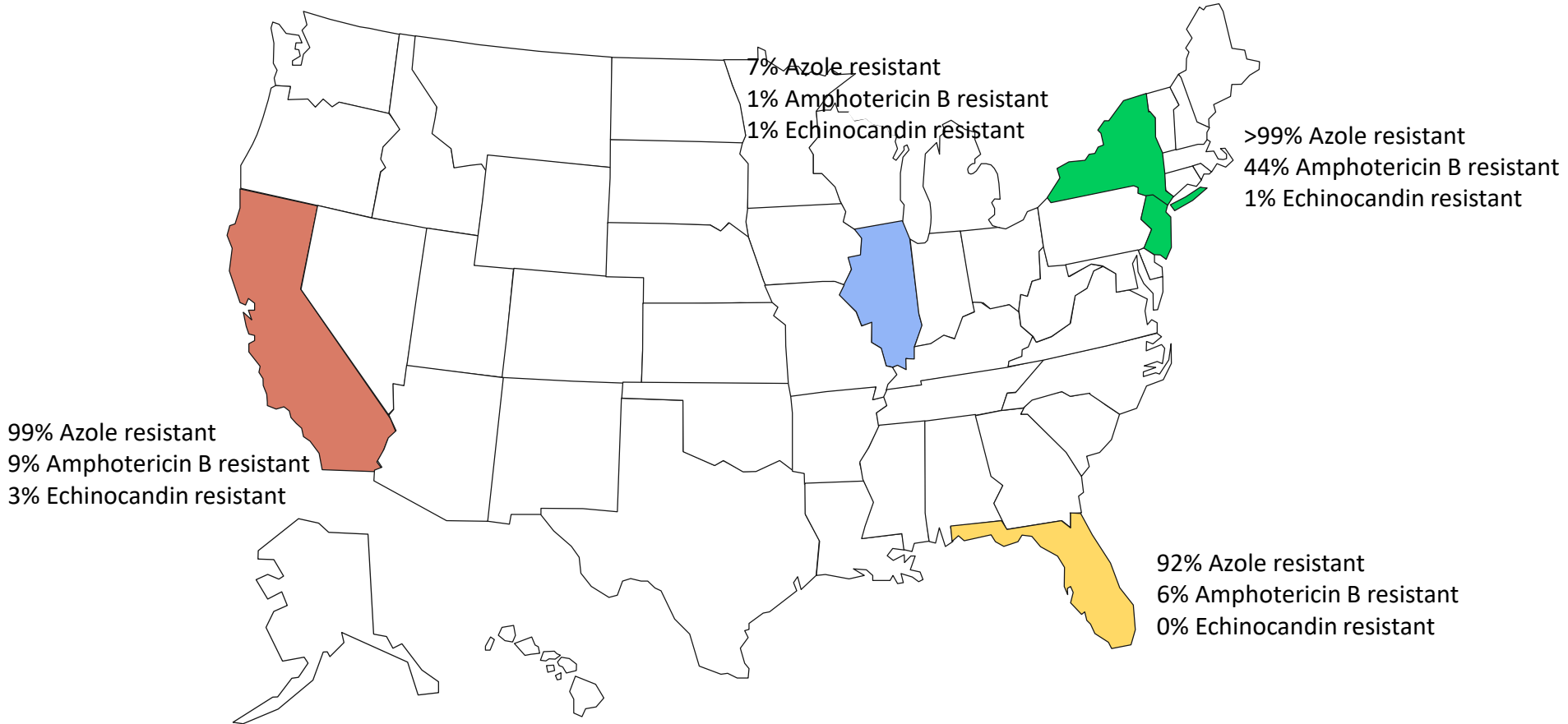
C. auris resistance varies geographically – Amphotericin B

- Amphotericin B resistance*
 - South Asian Clade
 - 46% in NY
 - 32% in NJ
 - African Clade
 - 9% in CA
 - 6% in FL
 - South American Clade
 - 1% in IL



* Clades indicate the predominant clade in that state

Antifungal Resistance by Region



Pan-resistant *C. auris*

- 4 unrelated cases reported with resistance to all 3 antifungal classes
 - 3 from New York
 - 1 from Maryland
- None had recent international travel or healthcare
- All were mechanically ventilated and had been in long-term care facilities
- All cases initially had *C. auris* sensitive to echinocandins, but developed resistance after treatment

Candida glabrata

- 12 years of surveillance, >2500 isolates
- 8.6% Fluconazole^R
- 3.2% Echinocandin^R
- Among Flu^R isolates, 10% also echino^R
- Among echino^R isolates, 25% also flu^R



Familiar *Candida* species:

- *Candida parapsilosis* – fluconazole resistance in US approaching 10%
- *Candida guilliermondii* species complex – some very high fluconazole MICs in our surveillance

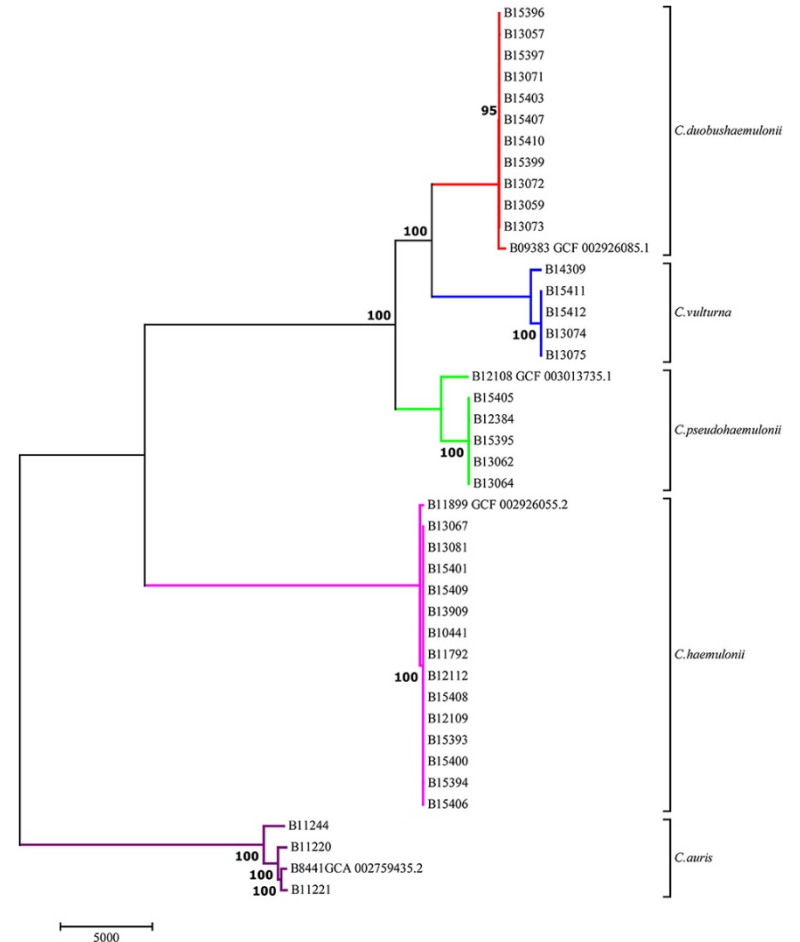


Emerging *Candida* species:

- *Candida haemulonii* - some fluconazole resistance
- *Candida duobushaemulonii* – some fluconazole resistance, high amp B resistance
- *Candida kefyr* – a few high fluconazole MICs

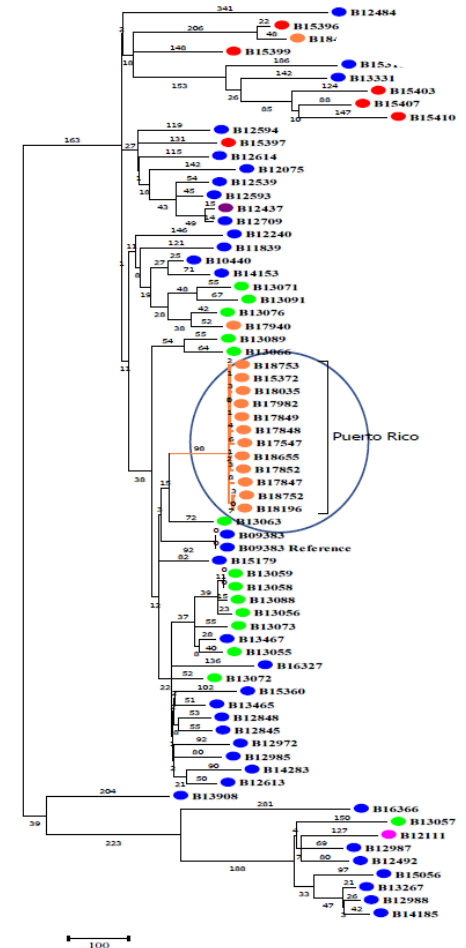
Related *C. haemulonii* species complex transmission

- Whole genome sequencing
- Detected transmission of *C. haemulonii* and *C. duobushaemulonii* in Panama



Related species *C. duobushaemulonii* outbreak in Puerto Rico detected

- Whole genome sequencing
 - 12 isolates from 11 patients <10 SNPs apart
 - 10 isolates from 1 facility
- Collected over a 1.5 years
- Blood & abscess specimens



Resources

- <https://www.cdc.gov/fungal/candida-auris>
 - Guidance
 - Fact sheets & FAQs
 - PCR and swabbing protocols
 - Sample screening script
 - Interfacility transfer form
- <https://www.cdc.gov/drugresistance/laboratories.html>
 - AR Lab Network contact info
 - AR Lab Network flyer

Candida auris:
A drug-resistant germ that spreads in healthcare facilities

Why is Candida auris a problem?

- It causes serious infections. C. auris can cause bloodstream infections and ear, skin, particularly in hospital and nursing home patients with serious medical problems. More than 7 in 10 patients with invasive C. auris infection die because of sepsis, a critical blood infection that leads to organ failure.
- It's often resistant to most antifungal medicines.
- It's becoming more common in hospitals and nursing homes.
- It's difficult to identify. C. auris is a fungus that can look like yeast. It can spread from person to person, but it's often hard to tell if it's C. auris or another type of yeast.
- It can spread in hospitals. C. auris can spread through contact with surfaces in healthcare facilities.

How do I know if I have a C. auris infection?

C. auris can live on the skin of healthy people. People with C. auris on their skin are often healthy and do not need treatment. However, if C. auris enters the bloodstream, it can cause a serious infection. If you have a fever and chills, or if you have a wound that won't heal, or if you have a sore throat, you may have a C. auris infection. Talk to your doctor if you have any of these symptoms.

Candida auris Colonization Information for Patients

Candida auris is a drug-resistant fungus that can spread in healthcare facilities. It can spread from person to person, but it's often hard to tell if it's C. auris or another type of yeast. Patients can carry C. auris on their skin for a long time, even if it's not causing them any problems. This is called colonization. When people in hospitals and nursing homes are colonized, C. auris can spread from their bodies and can get on other people or nearby objects, allowing the fungus to spread in healthcare facilities.

What does it mean to be colonized?

Colonization is being colonized with C. auris. It means that a sample from the fungus was found on your body, but does not have an infection or any signs of infection. It always has to be done to see who is colonized with C. auris. People who are colonized with C. auris may not know they have the fungus in another place. Patients colonized with C. auris might not get sick from the fungus, but healthcare providers should continue to keep you away from other people.

- Washing your hands with soap and water often.
- Wearing headgear and other protective gear when you are in the hospital.
- Changing the room with different patients from usual.
- Wearing gloves, gowns and masks when you are in the hospital.
- Following other rules that you see in the hospital to keep you safe.

What can I do to help keep C. auris from spreading?

Patients and family members should clean their hands thoroughly before and after visiting the patient in the hospital. Patients, particularly when leaving a hospital room.

Although the risk of C. auris infection in otherwise healthy people is low, patients and their family members should continue to practice good hand hygiene after leaving the hospital. If family members are going to continue with C. auris, they should consider wearing disposable gloves when providing certain types of care that are likely to spread the fungus, or when touching the patient's body.

If you are colonized with C. auris, tell your healthcare provider when visiting healthcare facilities and when admitted to hospitals and nursing homes.

Want to learn more?
www.cdc.gov/fungal/candida-auris

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For more information, contact CDC
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TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

