

## Illinois *Candida auris* Surveillance Report, January 2016 – December 2020

### Introduction

*Candida auris* is an emerging fungal pathogen that can exhibit resistance to all three major classes of antifungals [1,2]. In addition to high levels of resistance, *C. auris* is extremely persistent in the health care environment, posing a high risk of health care-associated transmission to patients [2,3,4]. Illinois was among the first in the United States to report cases of *C. auris* in May 2016 and remains among the states with the highest burden [5].

In response to the local emergence of *C. auris*, Illinois began reporting all cases in the Extensively Drug Resistant Organism (XDRO) registry in 2017, a statewide web-based interface for reporting and interfacility notification of XDROs. Facilities are encouraged to query the database or enroll in automated alerts upon patient admission to identify patients with prior evidence of colonization or infection with *C. auris* and other XDROs and implement infection control precautions.

To support ongoing *C. auris* containment efforts in Illinois, this report examines the trends and patterns of *C. auris* reported to the XDRO registry from the first identified cases in 2016 through December 31, 2020.

### Key Points

- ❖ *C. auris* cases have rapidly increased since its first detection in Illinois in 2016.
- ❖ Most *C. auris* cases have been reported from Cook County, but a growing number have been detected in other regions of the state, highlighting a need for statewide detection and response efforts.
- ❖ IDPH, local public health, and health care partners are working to improve the *C. auris* response through public health containment responses, improving the utility of the XDRO registry, and increasing infection prevention capacity.

### Methods



#### Reporting and surveillance procedures

#### Reporting requirements

All Illinois health care facilities (including inpatient, outpatient, and long-term care facilities) and laboratories are required to report all colonized or clinical cases of *C. auris* to their local health department. IDPH enters the first *C. auris* colonized and the first *C. auris* clinical isolate per patient into the XDRO registry.

### *Inclusion criteria*

- All *C. auris* reports from January 1, 2016 through December 31, 2020 submitted to the XDRO registry were included in this summary.

### *Case Definition*

- *C. auris* case – the first positive specimen, by specimen collection date, per patient from January 1, 2016-December 31, 2020, meeting the CSTE case definition for a confirmed or probable *C. auris* case [6]. If the first positive specimen is a screening specimen, the first subsequent positive clinical specimen is also included as a case; screening specimens submitted after a clinical specimen are not considered as a new case.
- *Colonization case* – a *C. auris* case from a specimen source used for screening (rectal or skin swab)
- *Clinical case* – a probable or confirmed *C. auris* case from a specimen obtained from an individual in the course of clinical care (e.g., blood, respiratory, or wound specimens).



### **Deduplication**

- Patients were de-duplicated over the entire reporting period by patient last name, first initial, and date of birth. The report with the earliest culture date per patient was included.
- For case-level analysis, the first report by culture date per person was included; the first clinical case was also included if it followed a screening case (see case definition above).



### **Rate Calculations**

#### *Acute Care Hospital Rates*

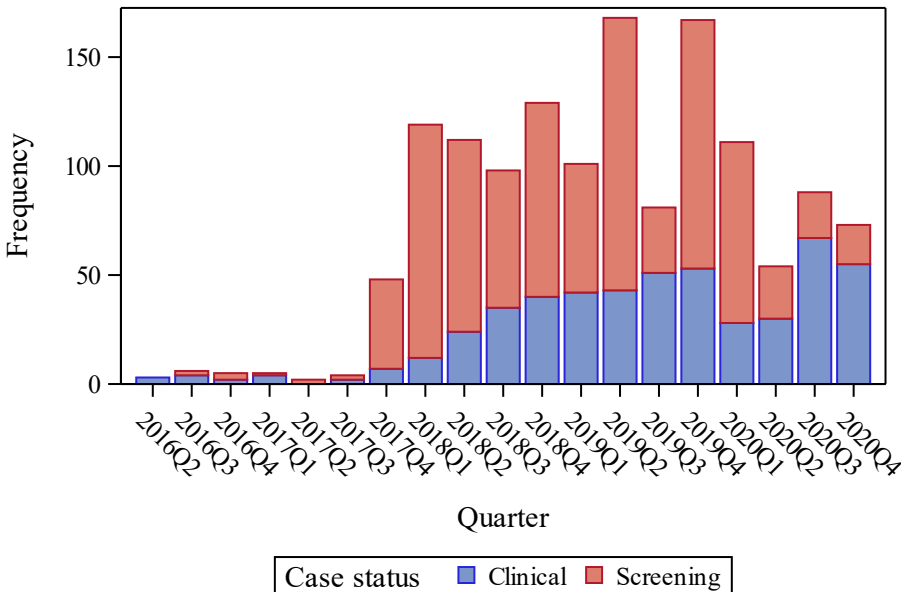
- *C. auris* rates at acute care hospitals were calculated as the number of cases per 100,000 patient days.
- Cases were only included if the culture was reported by an acute care hospital and was not marked as belonging to an outpatient.
- Facility-wide inpatient-days were obtained from data reported by hospitals to the National Healthcare Safety Network (NHSN), a nationwide surveillance system for health care-associated infections (HAIs) administered by the Centers for Disease Control and Prevention (CDC), as described in [7].
- Incidence rates were calculated only for cases identified at acute care hospitals due to the lack of patient stay information for other facility types.

### **Geographic Analyses**

- For geographic analyses, cases were classified according to the location of the facility that collected the specimen.

## Surveillance Data

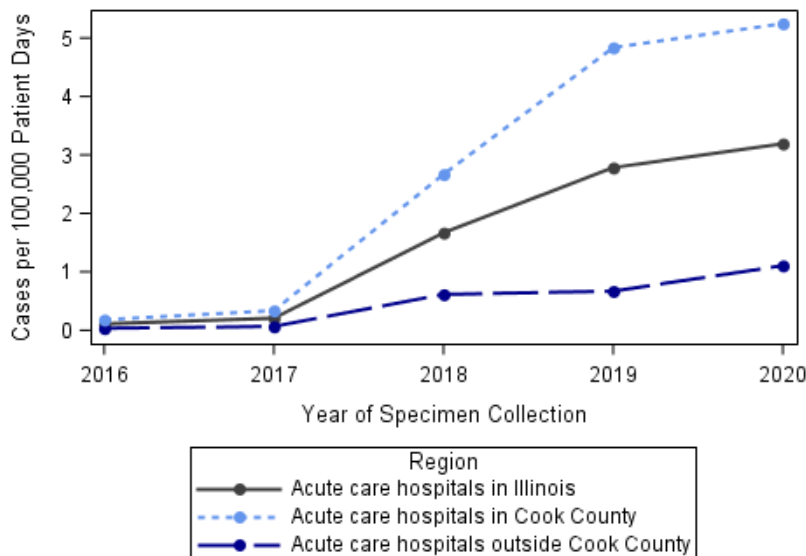
**Figure 1.** *C. auris* cases<sup>1</sup> reported to the Illinois XDRO registry by date of earliest specimen collection, 1/1/2016-12/31/2020



- ❖ A total of 1,334 cases of *C. auris* were reported to the XDRO registry between January 1, 2016 and December 31, 2020.
- ❖ Of reported cases, 846 (63%) were screening cases and 488 (37%) were clinical cases.

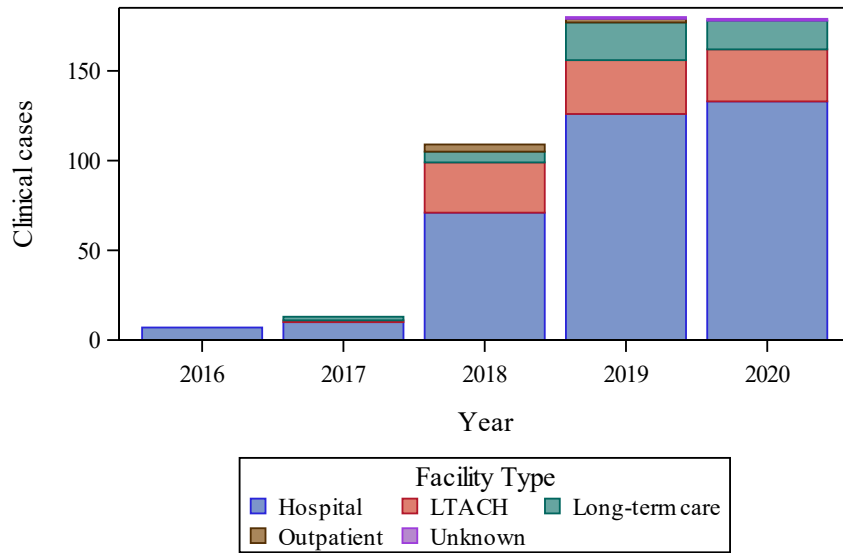
<sup>1</sup> Cases include 99 (7%) colonized to clinical cases.

**Figure 2.** Incidence of clinical *C. auris* cases among inpatients in acute care hospitals, 2016-2020.



- ❖ Incidence of *C. auris* among acute care hospitals increased through 2019 before plateauing in 2020.
- ❖ This plateau may be due to decreased detection or differing patient populations during the COVID-19 pandemic.

**Figure 3.** Facility type<sup>2</sup> where the specimen was obtained for incident clinical *C. auris* cases, by year of culture (N=488)



- ❖ Most cases were identified in patients at short-term acute care hospitals (347/488, 71%).
- ❖ This may reflect higher capacity for detection in these facilities relative to long-term care.

<sup>2</sup> Hospital = short-term acute care hospital, LTACH = long-term acute care hospital

**Box 2. Patient characteristics**

- ❖ Between 2016 and December 31, 2020, 1,235 unique individuals were reported to the registry with a colonization or clinical *C. auris* case.
- ❖ The median age among individuals with *C. auris* cases was 63 (interquartile range: 54-73).
- ❖ Most (781/1235, 63%) patients were male.
- ❖ Of 1,235 patients with a colonization or clinical *C. auris* case, 524 (42%) also had a carbapenem-resistant *Enterobacterales* (CRE; 102, 25%) isolate reported to the XDRO registry between November 2013 and December 2020.

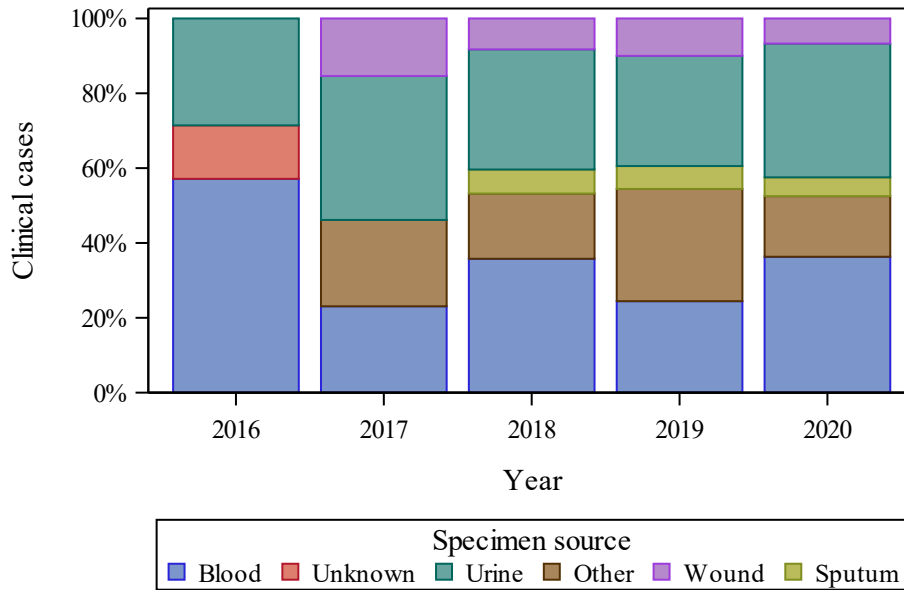
**Table 1. Antifungal resistance, 2016-2020 (N = 416)**

Resistance	N (%)
Fluconazole only	45 (10.8%)
Amphotericin B only	1 (0.2%)
Fluconazole & Amphotericin B	1 (0.2%)
Micafungin, Caspofungin, Fluconazole	1 (0.2%)
Micafungin, Anidulafungin, Caspofungin	1 (0.2%)
<b>Total</b>	<b>49 (11.8%)</b>

Data source: CDC and ARLN antifungal susceptibility testing

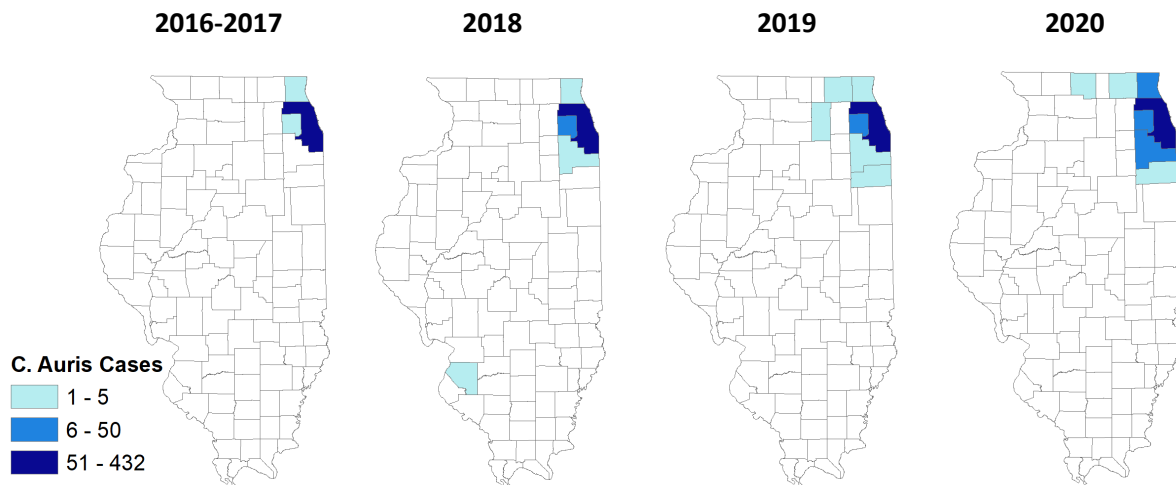
- ❖ Most (365/416, 88%) patients with antifungal susceptibility results did not display any resistance.
- ❖ This low prevalence of resistance differs significantly from national surveillance data indicating 90% of isolates in the U.S. displayed resistance to at least one antifungal, but is consistent with past findings that Illinois *C. auris* isolates primarily belong to a different clade from those in other states [8].

**Figure 4.** Specimen source for incident clinical *C. auris* cases, by year of culture (N=488)



❖ A majority of clinical *C. auris* cases were detected from urine (159/488, 33%) and blood (155/488, 32%) specimens.

**Figure 5.** *C. auris* by county of facility where specimen was obtained, 2016-2020



❖ Most *C. auris* cases reported were from facilities in Cook County (1,227/1,334, 92%).  
 ❖ This is likely due in part to targeted surveillance and testing efforts in the Chicago region.

## Discussion

The expansion of the XDRO registry to include Illinois residents with an identified case of *C. auris* has allowed for both interfacility communication of colonization status and monitoring of trends in *C. auris* detection. Since the initial detection of *C. auris* in Illinois in 2016, incidence of *C. auris* has increased rapidly in health care facilities and has been detected in eight counties in the state. *C. auris* cases also have been transferred to or have received care in facilities located in other counties, creating the potential for wider spread. This increasing burden and geographic spread both emphasize the importance of continued health care facility and public health containment efforts.

While *C. auris* reporting is mandatory and all *C. auris* cases reported to the state are included in the XDRO registry, variable capacity for *C. auris* screening and detection likely impact these data. In particular, the higher burden of clinical *C. auris* cases in acute care hospitals relative to long-term care settings likely reflects more intensive efforts and resource capacity to detect cases in these settings. Point prevalence surveys conducted in Chicago between 2016 and 2018 found the highest prevalence of *C. auris* in surveys of ventilator-capable skilled nursing facilities [9].

The COVID-19 pandemic impacted healthcare-associated infection reporting both through changes in the patient population receiving care in health care facilities and through its effects on the capacity of those facilities to conduct screenings and response activities. Screening of contacts and broader point prevalence surveys in outbreak settings are recommended by the CDC to control *C. auris* transmission by allowing prompt initiation of transmission-based precautions for colonized individuals [10]. While screening cases decreased 63% between 2019 and 2020, the number of clinical cases was comparable, suggesting this decline resulted from decreased capacity to conduct admission screenings, point prevalence surveys, and contact screenings following an initial case. This lack of screenings may lead to an increase in *C. auris* cases in the future if missed colonization cases lead to further transmission, highlighting the importance of focusing on *C. auris* prevention and containment as health care systems address the challenges of the COVID-19 pandemic. In addition, infection control resources were impacted with staffing shortages, increased turnover, and the extended use of personal protective equipment leading to lapses in infection control and increased opportunities for transmission [11].

IDPH, local health departments, and public health partners are working to continuously improve the *C. auris* response in Illinois through development of public health containment responses, data systems, and infection prevention capacity. Clinical cases of *C. auris* initiate a public health investigation, followed by contact screenings and infection control interventions to contain spread. Current efforts to improve the utility of the XDRO registry include expanding the number of facilities receiving automated alerts of admitted patients in the registry, along with extending this feature to long-term care facilities. At the facility level, IDPH aims to increase infection prevention capacity through facility infection prevention and control assessments and training opportunities for facility staff. In combination, these efforts will improve Illinois's ability to control both *C. auris* and other health care-associated infections.

## IDPH and XDRO Resources

- Additional information on reporting requirements for XDRO can be found at: <http://dph.illinois.gov/topics-services/prevention-wellness/patient-safety-quality/cre/reporting> and <https://www.xdro.org/index.html>
- Additional information on *C. auris*, including infection prevention resources and reporting requirements can be found at: <https://dph.illinois.gov/topics-services/diseases-and-conditions/infectious-diseases/candida-auris>
- National surveillance data on *C. auris* along with additional CDC resources can be found at: <https://www.cdc.gov/fungal/candida-auris/index.html>
- Surveillance reports are also available for Carbapenem-Resistant *Enterobacteriales* and Carbapenem-Resistant *Acinetobacter baumannii* at: [http://www.healthcarereportcard.illinois.gov/contents/view/State\\_Reports\\_of\\_Current\\_Interest](http://www.healthcarereportcard.illinois.gov/contents/view/State_Reports_of_Current_Interest)
- For questions about this report or assistance with reporting, contact [DPH.XDRORegistry@illinois.gov](mailto:DPH.XDRORegistry@illinois.gov)

## References

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