

# Epidemiology of Candidemia: Can *Candida* Spread from Patient to Patient in the Hospital?

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## Background

- Recent global emergence of *Candida auris* is a significant concern, owing to high rates of antibiotic resistance and outbreaks of candidemia in ICUs, causing serious infections.
- In addition, this organism shows person-to-person transmission and persistent survival on fomites.
- Our study aimed to determine if hospital transmission of diverse *Candida* species is occurring similar to what is seen in *C. auris*.
- We analyzed all candidemia infections for evidence of nosocomial transmission including geographical, and temporal clustering of the same species.
- Here we present our preliminary data from December 2019 - May 2020.

## Results

- 37 patients were identified (Tables 1 and 2).
- Species clusters of candidemia were seen in the months of January (*C. parapsilosis*, 3 patients), February (*C. glabrata*, 3 patients), March (*C. albicans*, 5 patients) and April (*C. glabrata*, 3 patients).
- 33/37 (89%) had a central line prior.
- Lines were removed in 73% (24/33) of these patients, the remaining patients were deceased before lines could be removed.
- Pancreatic pathology was seen in 15/37 (40.5%) patients.
- 25/37 (67.5%) had an Ophthalmology consult.

Characteristic	Frequency	Percentage
<b>Age distribution</b>		
<1y	4	10.8
1-30 y	1	2.7
30-50 y	8	21.6
50-70 y	15	40.5
>70 y	9	24.3
<b>Sex distribution</b>		
Male	16	43.2
Female	20	54.0

Table 1. Patient demographics

Species	Frequency	Percentage	Mortality (%) Overall 12/36 (33)	Amphotericin B Sensitivity	Fluconazole Sensitivity	Micafungin Sensitivity	Voriconazole Sensitivity
<i>Candida albicans</i>	12	32.4	5 (41.7)	No interpretation available	12 / 12 Sensitive	12 / 12 Sensitive	12 / 12 Sensitive
<i>Candida glabrata</i>	11	29.7	3 (27.2)	No interpretation available	2 / 11 Intermediate, 2 / 11 Resistant	1 / 11 Resistant	No interpretation available
<i>Candida parapsilosis</i>	7	18.9	2 (28.5)	No interpretation available	7 / 7 Sensitive	7 / 7 Sensitive	7 / 7 Sensitive
<i>Candida tropicalis</i>	2	5.4	0	No interpretation available	1 / 2 Resistant	Sensitive	Sensitive
<i>Candida kefyr</i>	1	2.7	1 (100%)	No interpretation available	No interpretation available	No interpretation available	No interpretation available
<i>Candida krusei</i>	1	2.7	1 (100%)	No interpretation available	1 / 1 Resistant	1 / 1 Sensitive	1 / 1 Sensitive
<i>Candida dubliniensis</i>	1	2.7	0	No interpretation available	No interpretation available	No interpretation available	No interpretation available
<i>Candida orthopsilosis</i>	1	2.7	0	No interpretation available	1 / 1 Sensitive	1 / 1 Sensitive	1 / 1 Sensitive
<i>Candida utilis</i>	1	2.7	0	No interpretation available	No interpretation available	No interpretation available	No interpretation available

Table 2. Epidemiology of Candidemia

## Methods

- This is a prospective and retrospective analytical observational study.
- Patients with candidemia were identified with the help of the Clinical Microbiology Lab at a University Medical Center.
- Data were collected on all identified patients by retrospective chart review.
- Data were described in terms of frequency distributions and percentages, and analyzed using SPSS
- Isolates have been stored prospectively as glycerol stocks at -80 C for ongoing analyses.

## Conclusions

- We plan to use Whole Genome Sequencing to determine clonality among these isolates.
- The association of candidemia with pancreatic pathology was curious. It is to be evaluated whether this was simply a confounder or an actual risk factor.
- Rates of Ophthalmology consults to evaluate for endophthalmitis need to be improved in our setting.
- We hope that this study would prove valuable for infection control efforts and help us be better prepared to tackle emerging pathogens of this genus.

