GUIDELINES FOR TREATMENT OF CANDIDEMIA AND CANDIDIASIS IN PEDIATRICS

General Recommendations for all patients:
- Yeast in a blood culture should NOT be considered a contaminant
- An Infectious Diseases consultation is strongly recommended in all cases of candidemia
- Blood cultures should be repeated every 24-48 hours until clearance has been documented
- Remove all intravascular catheters in patients with candidemia
- Patients should have a dilated fundoscopic exam performed to rule out endophthalmitis
- Exception: In neutropenic patients, repeat ophthalmological exam should be considered once neutropenia has resolved
- Additional evaluation for metastatic foci (e.g., echocardiogram, renal ultrasound) should be performed for neonates or in patients with persistently positive blood cultures
- Duration of therapy:
  - Patients with no evidence of metastatic complications should be treated for 14 days following the first negative blood culture
  - Patients with metastatic complications (e.g., endophthalmitis, endocarditis) should be treated a minimum of 4-6 weeks

### Empiric Therapy for Pediatrics

<table>
<thead>
<tr>
<th>Clinical Setting</th>
<th>Primary Therapy</th>
<th>Alternative Therapy</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinically stable</strong> Mild to moderate illness</td>
<td><strong>Micafungin</strong> 5 mg/kg/dose IV daily (max: 150 mg/dose)</td>
<td><strong>Fluconazole</strong> 12 mg/kg/dose IV daily</td>
<td>Patients at high risk of <em>C. krusei</em> or <em>C. glabrata</em> should not receive empiric fluconazole: patients with malignancies, patients with diabetes, patients with a previous history of <em>C. krusei</em> or <em>C. glabrata</em> Micafungin should not be used for meningitis, endocarditis (native or prosthetic), endophthalmitis, OR candiduria</td>
</tr>
<tr>
<td><strong>Clinically unstable</strong> Moderate to severe illness</td>
<td><strong>Micafungin</strong> 5 mg/kg/dose IV daily (max 150 mg/dose)</td>
<td><strong>Liposomal amphotericin B</strong> 5 mg/kg/dose IV daily</td>
<td>Micafungin should not be used for meningitis, endocarditis (native or prosthetic), endophthalmitis, OR candiduria</td>
</tr>
</tbody>
</table>

### DEFINITIVE THERAPY IN PATIENTS WITH POSITIVE BLOOD CULTURES

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>First Line Therapy</th>
<th>Alternative Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Candida albicans</em></td>
<td><strong>Micafungin</strong> 5 mg/kg/dose IV daily (max: 150 mg/dose)</td>
<td>For patients with fluconazole-susceptible isolates, transition to fluconazole once clinically stable and no longer candidemic</td>
</tr>
<tr>
<td><em>Candida dubliniensis</em></td>
<td></td>
<td>Preferred:</td>
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<tr>
<td><em>Candida parapsilosis</em></td>
<td></td>
<td><strong>Fluconazole</strong> 12 mg/kg/dose IV/PO daily</td>
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<tr>
<td><em>Candida tropicalis</em></td>
<td></td>
<td>Alternative (if unable to take or intolerant of azole antifungals):</td>
</tr>
<tr>
<td><em>Candida lusitaniae</em></td>
<td></td>
<td><strong>Liposomal Amphotericin B</strong> 5 mg/kg/dose IV daily (<em>C. lusitaniae</em> is considered resistant to Amphotericin B)</td>
</tr>
</tbody>
</table>
| **Candida glabrata** | Microwave 5 mg/kg/dose IV daily (max: 150 mg/dose) | Transition to fluconazole or voriconazole in patients in whom an oral option is needed once they are clinically stable, are no longer candidemic

**Preferred (if fluconazole MIC ≤8):**
- Fluconazole 12 mg/kg/dose IV/PO daily

**Alternative (if fluconazole MIC >8 and voriconazole MIC is ≤0.5):**
- Voriconazole 7-9 mg/kg/dose IV BID

**OR (if unable to take or intolerant of azole antifungals):**
- Liposomal Amphotericin B 5 mg/kg/dose IV daily |

| **Candida krusei**  
(intrinsically resistant to fluconazole) | Microwave 5 mg/kg/dose IV daily (max: 150 mg/dose) | Transition to voriconazole within 5-7 days is appropriate in patients who are clinically stable, are no longer candidemic, and who have voriconazole-susceptible isolates

**Preferred:**
- Voriconazole 7-9 mg/kg/dose IV BID

**Alternative (if unable to take or intolerant of azole antifungals):**
- Liposomal Amphotericin B 5 mg/kg/dose IV daily |

<p>| “Other yeast” | Consult ID | Consult ID |</p>
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<td>Empiric therapy for patients with unexplained fever or other signs of infection and who are at high risk for invasive candidiasis: High risk for Candida infection: 1) Invasive Candida infection in the past 6 months OR 2) ICU-level patient with central venous catheter AND 2 or more of the following: more than 3 days broad spectrum antibiotics in past 2 weeks, TPN, short bowel syndrome, or neutropenia due to chemotherapy or stem cell transplant</td>
<td><strong>Micafungin</strong> 5 mg/kg/dose IV daily (max: 150 mg/dose)</td>
<td><strong>Fluconazole</strong> 12 mg/kg/dose IV/PO daily (for patients who have had no recent azole exposure and not colonized with azole-resistant <em>Candida</em> species)</td>
</tr>
</tbody>
</table>

**Preferred:**

**Fluconazole** 12 mg/kg/dose IV/PO daily (for patients who have had no recent azole exposure and not colonized with azole-resistant *Candida* species)

**Alternative (if unable to take or intolerant of azole antifungals):**

**Liposomal Amphotericin B** 5 mg/kg/dose daily

*Stop antifungals if no clinical response to therapy in 4-5 days or have no subsequent evidence of invasive candidiasis

**Preferred Alternative for Non-CNS Disease:**

**Fluconazole** 12 mg/kg/dose IV/PO daily

**Alternative:**

**Liposomal Amphotericin B** 5 mg/kg/dose daily (use with caution in the presence of urinary tract involvement)

**Add on:**

For patients who have not had a clinical response to initial Amphotericin B therapy, as *salvage therapy* the addition of **fluocytosine** 25 mg/kg/dose QID may be considered (adverse effects are frequent)

**Step-down (after patient responded to initial treatment):**

**Fluconazole** 12 mg/kg/dose PO daily

**Duration:**

For patients without obvious metastatic complications - 2 weeks (after clearance of *Candida* species from the bloodstream and resolution of signs)

IDSA guidelines recommend fluconazole doses of 12 mg/kg/dose daily for preterm and full-term neonates. However, some experts recommend 12 mg/kg q48h for neonates ≤7 days of life and 12 mg/kg q24h for neonates ≥8 days of life.
Table Comments:

- Micafungin-resistant *C. glabrata* is emerging at UMHS. Prior exposure is highly correlated to the development of resistance. In critically ill and neutropenic patients, empirical treatment with liposomal amphotericin B may be preferred in patients with recent exposure to echinocandins.
- Micafungin and systemic amphotericin B are not recommended for the treatment of endophthalmitis due to poor vitreous penetration. Intravitreal antifungal therapy for patients with severe endophthalmitis and vitritis may be necessary.
- Fluconazole requires dose adjustment in patients with renal insufficiency. Please refer to [Renal Dosing Recommendations](#).