VANDERBILT UNIVERSITY MEDICAL CENTER

Category	Clinical Practice
Protocol: Burn ICU Approach to Antifungals	
Approval Date:	12/17/2019 (CMT)
Review Date:	1/2022

Applicable to						
☒ VUH	☐ Children's	☐ DOT	☐ VMG Off-site locations	☐ VMG	☐ VPH	☐ Other

Team Members Performing						
☐ All faculty & staff	☒ Faculty & staff providing direct patient care or contact	☒ MD	☒ House Staff	☒ APRN/PA	☐ RN	☐ LPN
☐ Other:						

Content Experts	
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I. Purpose:

Provide standardization in the use of antifungals in the Burn ICU. Provide standardization in the care of GI bleeding.

II. Population:

Adult patients admitted to Vanderbilt Regional Burn Center

A. Identify Patients at Risk for Invasive Candida Infection

Major risk factors include:

- Previous bacterial infection and therapy with multiple antibiotics
- Isolation of Candida from > 2 sites
- Immunosuppression
- Hemodialysis
- Previous surgical procedures (e.g., deep abdominal or cardiac)
- Extensive burns or severe trauma

Other risk factors include:

- Tunneled venous catheters
- Urinary catheters
- Diarrhea
- Parenteral nutrition
- Mechanical ventilation
- Prolonged ICU stay
- Malignancies

*mucosal Candida infections-especially those involving oropharynx, esophagus and vagina-were not previously considered invasive but are listed separately

III. Diagnosis

A. Initiate studies to diagnose Candidiasis
- Obtain cultures from oropharynx, sputum, stool, urine, drain sites, and blood
- Obtain two sets of blood cultures for 2 days (or longer if the patient remains febrile)
- Consider serologic tests and histologic analyses

B. Look for findings that may signal hematogenous candidiasis
- Endophthalmitis
- Suppurative thrombophlebitis
- High-grade *candiduria* without instrumentation of the bladder or the renal pelvis

C. Exclude other possible causes of persistent fever

IV. Treatment

A. Blood Culture Positive

1. Blood cultures are positive for Candida, or clinical or laboratory signal of potential hematogenous candidiasis is present
   a. Initiative presumptive therapy
      1) For ICU patients, begin treatment with Fluconazole, 800mg (12mg/kg) loading dose, then 400mg (6mg/kg) daily
      2) Follow up cultures should be drawn every day or every other day to establish date of clearance
   b. Non-Neutropenic patient:
      - Remove CVC if presumed source and can be safely removed
      - Dilated eye exam by ophthalmologist within first week of diagnosis
      - Test for azole susceptibility
      - Test for echinocandin susceptibility in patients with prior treatment in and those infected with *C. glabrata* or *C. parapsilosis*
        - For C. glabrata, increase fluconazole to 800mg (12mg/kg) daily or voriconazole 200mg BID
      - Lipid amphotericin B (3-4mg/kg daily) is reasonable if intolerant or resistant to other antifungals
      - Voriconazole is recommended for oral stepdown therapy for *C.krusei*
      - Treat for 2 weeks after documented clearance of *Candida* from bloodstream and disappearance of all signs and symptoms of infection

B. Negative cultures but suspicion for intra-abdominal *Candidiasis*
   - Suspicion based on recent abdominal surgery/anastomotic leak or necrotizing pancreatitis
   - Follow empiric treatment recommendations for drugs selection
   - Pursue source control with drainage or debridement
   - Duration of therapy is determined by adequacy of source control and clinical response

C. Empiric treatment in non-neutropenic patients in the ICU
   - Consider in ICU patients with risk factors and no other known cause of fever
   - Start as soon as possible in patients with risk factors and clinical signs of septic shock
   - Fluconazole 800mg (12mg/kg) loading dose, then 400mg (6mg/kg) daily is the preferred initial treatment
   - If patient shows improvement after initiation of treatment, duration is similar as for documented *candidemia* (2 weeks)

- If patient shows NO clinical response to empiric therapy at 4-5d, and negative culture or diagnostic assay, consider stopping antifungal

D. Other positive C*andida* cultures

a. Respiratory tract: usually indicates colonization and rarely requires treatment with antifungal therapy

b. Endocarditis: lipid amphotericin B 3-5mg/kg daily or micafungin 150mg daily for initial therapy. Stepdown to fluconazole 400-800mg daily for susceptible *Candida* isolates. Valve replacement recommended with extended rx treatment

c. Urinary tract:

1) Asymptomatic-eliminate indwelling catheter if feasible; Treatment NOT recommended unless neutropenic or undergoing urologic manipulation
2) Symptomatic Cystitis- treat with oral fluconazole 200mg daily x 2 weeks

d. Oropharyngeal:
1) Mild disease- nystatin suspension QID
2) Moderate/severe disease- oral fluconazole 100-200mg daily x 7-14 days

V. References:

Clinical Practice Guideline for the Management of Candidiasis: 2016 Update by the Infectious Diseases Society of America.*Clinical Infectious Diseases*, Volume 62, Issue 4, 15 February 2016, Pages e1–e50, accessed October 2019. https://doi.org/10.1093/cid/civ933