

## VCMC/SANTA PAULA HOSPITAL CLINICAL PRACTICE GUIDELINE Fever in Pediatric Cancer Patients

The contents of this clinical practice guideline are to be used as a guide. Healthcare professionals should use sound clinical judgment and individualize patient care. This CPG is not meant to be a replacement for training, experience, CME or studying the latest literature and drug information.

Infection is a major determinant of morbidity and mortality among pediatric cancer patients. In most fever is the only sign of infection and deterioration to septic shock may be rapid. (Modified from Fairfield et al. (2011) Clinical Practice Guideline for the Use of Antimicrobial Agents in Neutropenic Patients with Cancer: 2010 Update by the Infectious Diseases Society of America). *Clin Infect Dis* 52:e56-e93)

1. Purpose: To limit morbidity and mortality in pediatric cancer patients with neutropenia and infection.
2. Definitions:
  - a. Pediatric cancer patients include those newly suspected and previously diagnosed children ages 0-18.
  - b. Neutropenia: Absolute neutrophil count (ANC)  $<1000/\text{mm}^3$ .
  - c. ANC: a product of the WBC # and the (neutrophil+bands)%
  - d. Fever: Oral temperature greater than 100.0 F/37.7 C in a 1-hour period or a single reading of 100.4° F/38° C or higher.
    - i. A history of fever is sufficient to treat as fever
    - ii. No rectal temperatures or anything per rectum
  - e. High risk patient: ANC  $< 100/\text{mm}^3$ ; Expected neutropenia  $> 7$  days; Treatment for AML; Remission induction for ALL; High dose solid tumor therapy
  - f. Comorbidity: Hypotension/shock; DIC; Respiratory distress; Altered mental status; Severe mucositis; Treatment for AML; Remission induction for relapsed ALL
3. Clinical Care in the Emergency Department
  - a. Rapidly identify febrile pediatric patients with a potential immune deficiency and fever or infection.
  - b. Perform a complete assessment; including mental status, peripheral perfusion and airway status within first 0-5 minutes per PALS guidelines.
  - c. Obtain vascular access if none available
  - d. Draw CBC with differential and basic metabolic panel. If the patient has a Central Venous Catheter (CVC), blood cultures MUST be drawn from the CVC. If there is more than one CVC lumen, cultures must be drawn from each lumen separately and labeled as such.
    - i. Peripheral blood cultures are generally not required unless there is no CVC present.
  - e. Give first dose of antibiotic (see 5.b.i) intravenously through the CVC
    - i. IV antibiotics (IVAB) should be initiated within 60 minutes of checking in to the Emergency Department
    - ii. ~~Attempt to split the first dose and give simultaneously through all lumens of the CVC.~~
  - f. Evaluate for source of infection: eg. CXR, urine culture, wound culture, stool culture, abdominal exam.

- g. Neutropenic children with fever are admitted for further treatment. If a child is determined NOT to be neutropenic; Ceftriaxone 50-75mg/kg IV can be administered with patient follow-up next day.
- 4. Evaluate and treat severe sepsis and septic shock
  - a. Any sign of hypoperfusion should prompt fluid resuscitation
  - b. Signs include altered mental status, low urine output, cool extremities, thready pulse, unexplained tachycardia and hypotension
  - c. Initial fluid resuscitation is normal saline 20 ml/kg IV bolus over 5-15 minutes. Repeat until **all** signs corrected.
  - d. Obtain chemistry panel, venous blood gas, lactate, DIC panel, T&C
- 5. Clinical Care in the Pediatric Ward
  - a. Newly febrile:
    - i. Neutropenic patients newly febrile on the ward (or the Pediatric Ambulatory Infusion Unit) should be cared for as in the ED (3a-f) EXCEPT
    - ii. ~~Antibiotics should be administered within ONE HOUR of the notation of fever~~
  - b. Continuation of care for patients admitted from ED or PAIU
    - i. Recommended empiric IV antibiotics: Cefepime (50mg/kg/dose q8 hr)  
 High risk: add Tobramycin (2.5 mg/kg/dose q8 hr)  
 Comorbidity: add Tobramycin and Vancomycin (15mg/kg/dose q8 hr)  
 β-Lactam allergic: Aztreonam (30 mg/kg/dose q8 hr) or Levofloxacin (10mg/kg/dose q24 hr)  
 Abdominal or anaerobic source: Meropenem (20mg/kg/dose q8 hr)
    - ii. Alternate antibiotic administration through each lumen of CVC. Obtain levels for Tobramycin and Vancomycin
    - iii. Continue empiric antibiotics until patient no longer febrile AND no longer neutropenic
      - 1. Discontinue all empiric antibiotics if no infection  $ANC > 500/mm^3$  and afebrile
    - iv. Discontinue tobramycin and vancomycin after 48 hours if no organism is identified that requires their administration
    - v. Antibiotics should be adjusted based on clinical status and culture results BUT careful to maintain empiric antibiotics in febrile patients
    - vi. A blood culture from each lumen of CVC should be obtained when patients are febrile.
      - 1. More than one set of cultures are usually unnecessary in the same calendar day.
    - vii. If the blood culture is positive, a repeat blood culture will be obtained daily even in the absence of fever.
    - viii. Obtain CBC with differential daily to document degree of neutropenia
    - ix. If febrile and neutropenic for more than 3 days, reassessment of source, treatment and consideration for anti-fungal treatment should be initiated.