

Madigan Army Medical Center Clinical Practice Guidelines

Fever in Patients with Neutropenia, Sickle Cell, Asplenia

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Madigan Army Medical Center
Maintained by Quality Services Division
Clinical Practice and Referral Guidelines Administrator

Last Review for this Guideline: **October 2010**
Clinical Guidelines require review every three years

Core Document

TITLE: Clinical Standard for evaluation and treatment of fever and neutropenia or Asplenia in a pediatric patient.

2. **INDICATIONS FOR THE CLINICAL STANDARD:** To standardize evaluation and treatment of pediatric patient with fever and neutropenia or Asplenia to prevent adverse outcomes.

3. **METRICS:** Metrics which will be used to measure the compliance with this Clinical Practice Recommendation will include the following:

4. Any pediatric patient, defined as military dependent children <23-years-old, with **(FOR ANY HEME/ONC PATIENT OR KNOWN NEUTROPENIC PATIENT DO NOT OBTAIN RECTAL TEMPERATURE)**

a. temperature ≥ 100.4 °F (38 °C) for ≥ 1 hr OR

b. two temperatures ≥ 100.4 °F measured in a 12 hr period OR

c. one temperature ≥ 101 ° F (38.3 °C)

AND

d. cell blood count (CBC) with an absolute neutrophil count (ANC) of < 500 cells/mm³

OR

e. CBC with an ANC < 1000 cells/mm³ with a predicted decrease to < 500 cells/mm³ (this applies to Pediatric Oncology patients and should be discussed with Pediatric Oncology on call).

OR

f. Asplenia (congenital, acquired, or functional). Sickle Cell patients have functional asplenia.

5. The patient should have a complete physical examination to include inspection of the oropharynx, genitourinary and peri-anal region (rectal temperatures, urethral catheterization or other manipulation of mucus membranes is contraindicated in neutropenic patients due to risk of bacterial translocation).

6. The following laboratory studies should be obtained:

a. Cell blood count (CBC) and differential. If neutropenia is newly diagnosed, a manual differential should be performed.

b. Aerobic and Anaerobic blood cultures. If the patient has a central line, all specimens should be obtained through the central line. Also have the lab hold for fungal cultures.

c. Urine culture should be performed using clean catch or bag method. **NO URETHRAL CATHETERIZATION FOR HEME/ONC PATIENT OR KNOWN NEUTROPENIC PATIENTS.**

7. Additional studies are recommended if clinically indicated:

a. If respiratory signs or symptoms are present, obtain chest radiograph. Sputum bacterial culture should be collected if patient is an older child or adolescent and capable of producing sputum.

b. If altered mental status or meningeal signs, lumbar puncture is recommended for cerebrospinal fluid evaluation and culture.

c. Clostridium difficile toxin assay should be obtained if diarrhea is present.

8. Pediatric or Family Practice inpatient service should be contacted for admission as febrile neutropenic patients should be hospitalized for a minimum of 48 hrs of antibiotic therapy and monitoring. Asplenic patients are hospitalized on a case by case basis.

9. Antibiotic therapy should be administered to febrile neutropenic patients **WITHIN ONE HOUR OF PRESENTATION FOR CARE** if neutropenic status is known. If neutropenia is newly diagnosed, antibiotic therapy should be administered **WITHIN ONE HOUR OF OBTAINING CBC RESULT. Antibiotic therapy should be administered WITHIN ONE HOUR OF PRESENTATION FOR CARE for asplenic patients with fever.**

a. Ceftazidime 50 mg/kg/dose every 8 hours (MAX 6 grams/24 hours) should be administered ALL febrile neutropenic patients. If allergic to cephalosporin, administer meropenem 40 mg/kg/dose every 8 hours (MAX dose 6 grams/24 hrs). **There is no need for ID approval for the first dose of any antibiotic in a Pediatric patient.**

b. Rocephin 50mg/kg/dose (max of 2grams/24hrs) every 12hrs should be given to ALL Asplenic patients.

10. Fax a hand written RX to the inpatient pharmacy with the name, social, medication and “Fever and Neutropenia” written on it. Call the inpatient pharmacy to let them know you are faxing it.

a. If the patient is ill appearing or presenting for care due to a known positive blood culture containing gram-negative organisms, additional antibiotic coverage for gram negative organisms with an aminoglycoside (i.e. gentamicin 2.5 mg/kg/dose every 8 hours OR tobramycin 2.5 mg/kg/dose every 8 hours) is recommended.

b. If patient has redness, discharge or pain around the central line site, evidence of skin infection, mucositis, hemodynamically unstable, or is presenting for care due to a blood culture containing gram-positive organisms, add 15mg/kg vancomycin every 8 hours (MAX 1 gram/dose). This can be done when they are an inpatient.

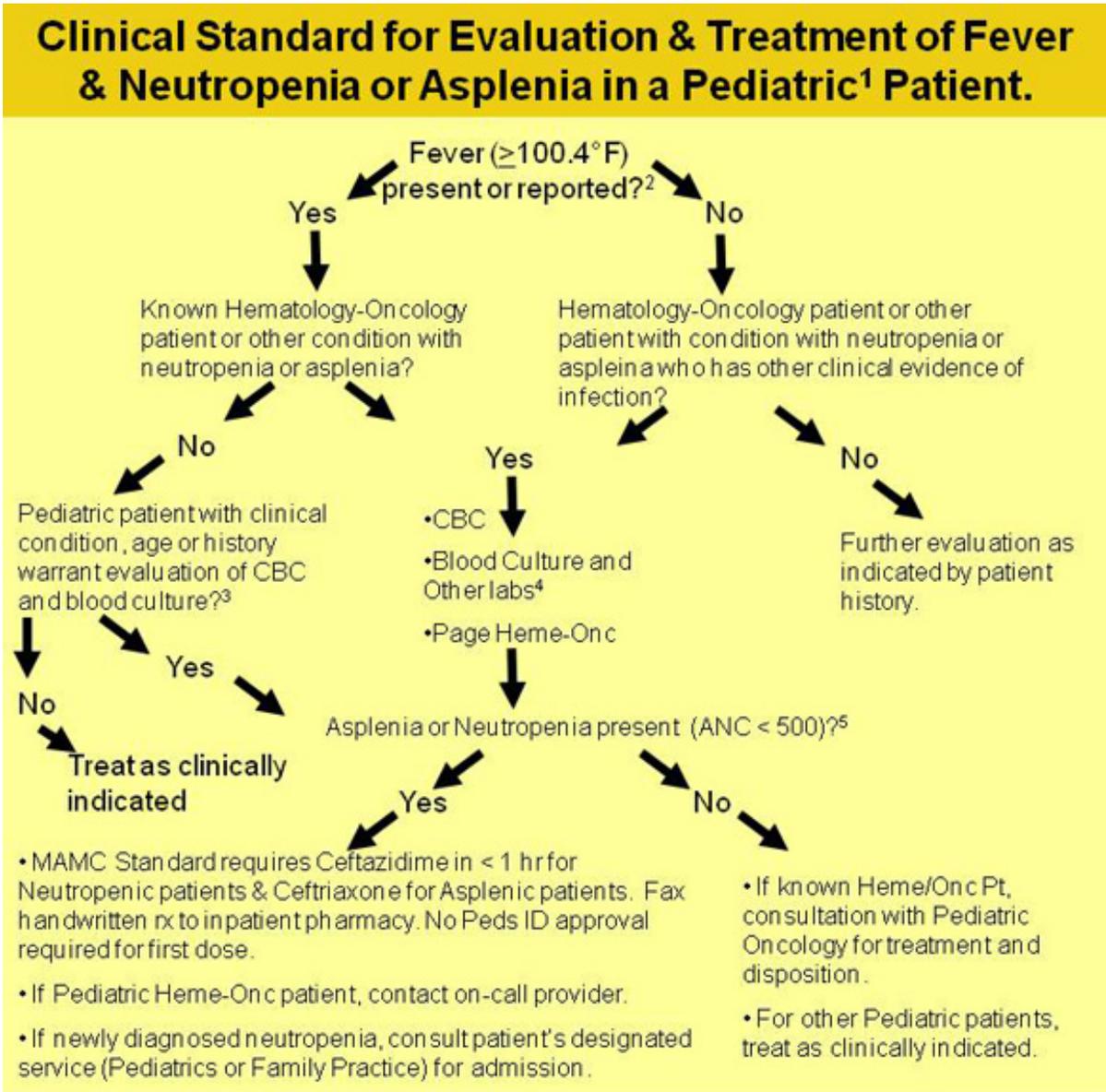
References

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Wolff, LJ, Ablin, AR, Altman, AJ, Johnson, FL. The management of fever. In: Supportive care of children with cancer: Current therapy and guidelines from the Children's Cancer Group, Ablin, AR (Ed), Johns Hopkins University Press, Baltimore 1997. p.23.

Clinical Guideline



1. Military dependent children age < 23-years-old.
2. If Heme-Onco patient, DO NOT OBTAIN RECTAL TEMPERATURE. Fever is present if temperature $\geq 100.4^{\circ}\text{F}$ (38°C) for ≥ 1 hr OR two temperatures $\geq 100.4^{\circ}\text{F}$ measured in a 12 hr period OR one temperature $\geq 101^{\circ}\text{F}$ (38.3°C).
3. This algorithm is not intended to dictate that EVERY pediatric patient with a fever is required to have a CBC. For infants < 90 days with fever, refer to [MAMC Clinical Practice Guidelines for Febrile Infants 0-90 days](#). For other infants and children, decision is based on historical and clinical data.
4. In KNOWN neutropenic patients, obtain a) manual CBC if new onset neutropenia; b) aerobic & anaerobic blood cultures (obtain all blood through central line if present; c) urine culture by clean catch or bag - NO URETHRAL CATHETERIZATION; d) CXR, sputum culture, CSF culture, *C. difficile* toxin stool assay if clinically indicated.
5. Absolute neutrophil count (ANC) of < 500 cells/mm³ OR ANC < 1000 cells/mm³ with a predicted decrease to < 500 cells/mm³ (this applies to Pediatric Oncology patients and should be discussed with Pediatric Oncology Physician on call).

Key Points

1. All pediatric patients with fever and neutropenia require immediate attention.
2. Pediatric patients with neutropenia may not have the ability to respond appropriately to bacterial infection; therefore, these patients are at risk for overwhelming sepsis and clinical deterioration even after initiation of antibiotic therapy.
3. Pediatric patients with neutropenia and serious bacterial infections may present initially with low-grade fever and nonspecific signs and symptoms.
4. Appropriate labs and studies need to be obtained as outlined in the Clinical Practice Recommendation.
5. Antibiotics should be administered **WITHIN ONE HOUR OF PRESENTATION FOR CARE** if neutropenic status is known. If neutropenia is newly diagnosed, antibiotics should be administered **WITHIN ONE HOUR OF CBC RESULT**.

Patient Education

Children’s Oncology Group and NCCN websites

[National Comprehensive Cancer Network](#)

[National Childhood Cancer Foundation Children's Oncology Group](#)