

## EVIDENCE-BASED PRACTICE RECOMMENDATIONS

### Pediatric Fever And Neutropenia: An Evidence-Based Approach

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This issue of *Pediatric Emergency Medicine Practice* focuses on the challenges of evaluating and treating the pediatric patient who presents with a fever and neutropenia. For a more detailed and systematic look at the latest evidence on pediatric NIV as well as additional information such as clinical pathways and other information not noted here, see the full text article at [www.ebmedicine.net](http://www.ebmedicine.net).

Key Points	Comments
Don't overlook the absolute neutrophil count (ANC). Neutropenia is defined by this measurement, and the ANC is often more clinically significant than the total white blood cell count. <sup>7</sup>	The ANC is calculated by adding the percentage of neutrophils to the percentage of bands and multiplying this sum by the total WBC count. <sup>7</sup>
Consider neutropenia in patients older than 1 year with an ANC < 1500/μL. ANC 1000-1500/μL is classified as mild, ANC 500-1000/μL as moderate, ANC < 500/μL as severe, and ANC < 100/μL as profound.	ANC will vary by age and race. Factors such as maternal hypertension, prematurity, and sepsis will also alter the expected ANC in a neonate. <sup>7-11</sup>
Perform a thorough history and physical to help elucidate a cause for neutropenia as well evaluate for a source of infection.	Further studies (eg, chest radiograph) should be ordered based on the patient's history and the findings from the physical examination. <sup>46,76</sup>
Admit toxic-appearing pediatric patients or pediatric patients with an ANC < 500/μL and a fever (temperature > 38.5°C [101.3°F]); obtain blood, urine, and other appropriate cultures; and administer antimicrobial therapy. <sup>21,57</sup>	These are important measures as neutropenia may place a patient at increased risk for invasive bacterial infection. <sup>21,57</sup>
Initiate broad-spectrum antibiotics early in patients with chemotherapy-induced neutropenia. <sup>77</sup>	Early initiation of empiric, broad-coverage antimicrobial therapy has reduced infection-related mortality rates to 2% to 5% in patients with chemotherapy-induced fever and neutropenia. <sup>77</sup>
Do not use procalcitonin or IL-6, and/or IL-8 to differentiate children at high risk for bacterial sepsis as a complication of fever and neutropenia, as insufficient data exist to support this practice at this time. <sup>46</sup>	Relevant studies include those by Abrahamsson, <sup>113</sup> de Bont et al, <sup>110,114</sup> Diepold, <sup>111</sup> Engel, <sup>112</sup> Fleischhack et al, <sup>115</sup> Gendrel et al, <sup>116</sup> and Stryjowski et al. <sup>117</sup>
Admit pediatric patients with neutropenia based on the probability of a serious bacterial infection, the severity of the neutropenia, and the anticipated time frame of the neutropenia. <sup>8</sup>	For example, a patient with mild neutropenia and a suspected viral infection may be discharged to home safely, with outpatient follow-up for repeated laboratory evaluation of the neutropenia. <sup>9</sup> However, in a patient with severe neutropenia (ANC < 500/μL) but no underlying malignancy, broad-spectrum antibiotics and hospital admission may be warranted. <sup>8</sup>
Avoid the use of rectal thermometers and rectal medications in patients with a known underlying malignancy or neutropenia. <sup>44</sup>	Obtaining rectal temperatures or administering medications by the rectal route may disrupt the mucosa and introduce bacteria. These seemingly minor occurrences can cause a potentially life-threatening infection. <sup>44</sup>

\* See reverse side for reference citations.

# REFERENCES

*These references are excerpted from the original manuscript. For additional references and information on this topic, see the full text article at [ebmedicine.net](http://ebmedicine.net).*

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