

Randall Children's Hospital

Co-Management and Referral Guidelines

Evaluating a Child with Neutropenia

Phone: 503-276-9300

Randall Children's Cancer and Blood Disorders Program

Fax: 503-276-9351

A department of Legacy Emanuel Medical Center

Introduction

Neutropenia (low neutrophil count) can put a child at risk for severe bacterial and fungal infections. Fortunately, self-limited viral infections are the most common causes of neutropenia in childhood. Individuals of certain populations, such as African-Americans, Yemenite Jews and Ethiopians, can normally have slightly lower white blood counts (WBC) and absolute neutrophil counts (ANC) and still be healthy.

Absolute Neutrophil Count (ANC) = WBC X (% bands + % neutrophils)

- **Severe Neutropenia** = ANC < 500/ μ L
- **Moderate Neutropenia** = ANC 500–999/ μ L
- **Mild Neutropenia** = ANC 1,000–1,500/ μ L

See table of common causes of neutropenia on the next page.

Evaluation and Management

History to elicit regarding the child and any affected family members

- Recent viral infections
- History of cellulitis, abscess, stomatitis, pneumonia, perirectal infections, aphthous ulcers, gingivitis
- Any unusual or difficult-to-treat infections
- Recurrent fevers
- Failure to thrive or developmental delay
- Drugs/toxins
- Stool pattern suggestive of malabsorption
- Any previous blood draws or episodes of neutropenia

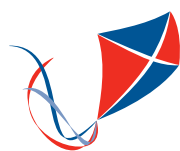
Labs to consider

- Hepatitis (A, B, C), HIV, Parvovirus, EBV, CMV if clinically indicated
- Repeat CBC with differential in 3–4 weeks to see if neutropenia was self-limited (likely a result of recent viral infection).

Management while awaiting appointment

- Avoid rectal medications and temperature taking (to avoid risk of perirectal cellulitis).
- Careful physical exam including growth parameters, developmental assessment, lymph node/liver/spleen size, nailbeds (looking for paronychia), gums and perianal area (checking for swelling or tenderness)
- If febrile with severe neutropenia, admit to hospital to "rule out sepsis." The child should receive IV antibiotics and possible fluid bolus after CBC with manual differential and blood cultures are collected.

(continued)



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When to refer

- Serious infection and neutropenia
- Congenital neutropenia
- Neutropenia and diarrhea suggestive of malabsorption
- Neutropenia with other abnormal cell lines (could suggest aplastic anemia, leukemia, lymphoma or metastatic solid tumor)
- Persistent, severe or recurrent neutropenia

Referral process

Randall Children's Cancer and Blood Disorders Program

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Phone: **503-276-9300** or toll-free **877-KIDS-ONC / 877-543-7663**

Fax: **503-276-9351**

For urgent referrals, call Legacy One Call Consult & Transfer: 1-800-500-9111 to speak with the on-call pediatric hematologist/oncologist.

With all referrals, please fax pertinent lab results, unless visible via Epic Care Everywhere.

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Additional Resources

Walkovich K. and Boxer A. How to Approach Neutropenia in Childhood. *Pediatrics in Review*. 2013;34;173.

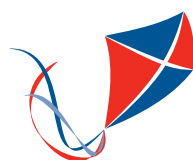
<http://pedsinreview.aappublications.org/content/34/4/173.full> (requires subscription)

Select causes of pediatric neutropenia

Aplastic anemia	All cell lines depressed
Chronic benign neutropenia of childhood (autoimmune)	Usually resolves spontaneously; infectious complications usually mild
Congenital neutropenia	Can be associated with bone marrow or metabolic disease
Cyclic neutropenia	Neutropenia recurs roughly every three to four weeks; the child is at risk for severe infections
Human immunodeficiency virus	May also have hypergammaglobulinemia; relative lymphopenia (more common than neutropenia)
Kostmann syndrome	Arrested myeloid maturation with severe neutropenia
Leukemia/malignancy	2–3 cell lines depressed and may have blasts on smear review
Schwachman-Diamond syndrome	Also associated with malabsorption/diarrhea
Viral suppression	Usually self-limited

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Find this and other co-management/referral guidelines online at: www.legacyhealth.org/randallguidelines



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