Fever with severe neutropenia (ANC <0.5 x 10^9/L) in children aged 6 months and older

Ill-appearing?

Yes → Assess airway, breathing, circulation and stabilize as needed. Exit pathway

No

Perform initial evaluation including:
- Complete history and physical exam
- Peripheral blood culture
- Consider urine culture or other investigations as needed

Any one risk factor present (as per Table 1)?

Yes

High risk for IBI

Individualized care is warranted

No

Low risk for IBI

- Empiric antimicrobials are not usually required. Consider an antibiotic if ANC is between 0 and 0.2 x 10^9/L
- Organize close out-patient follow up within 24 to 48 h
- Provide clear discharge instructions for follow-up, including when to seek medical attention urgently
- Consider a consult with paediatrician or paediatric hematologist

- Repeat CBC in 4 to 6 weeks. If neutropenia persists, refer case to a paediatrician or paediatric hematologist
- Until neutropenia resolves, urgent medical care should be sought when new fever develops

Fever with mild to moderate neutropenia
- Manage children with ANC ≥1.0x10^9/L as per those with normal ANC
- For children with ANC 0.5 to <1.0 x 10^9/L, empiric antimicrobials are not routinely required. Arrange for repeat CBC in 1 to 3 months

Table 1. Risk factors associated with invasive bacterial infections (IBI) in children and youth with neutropenia

Medical History:

Immunocompromised status
- **Malignancy or post-transplant**
- **Primary immunodeficiency**
- **Immunosuppressant therapy (including chronic steroid use)**
- **Aplastic anemia or other bone marrow failure**

History of neutropenia
- **Prior episodes**
- **Congenital or cyclical neutropenia**
- **Autoimmune neutropenia**

Previous severe or recurrent infection (e.g., meningitis, severe pneumonia, sepsis, recurrent abscesses, osteomyelitis, cellulitis)

Intravascular device

Significant co-morbidities
- **Chronic medical condition (e.g., sickle cell disease, chronic lung disease, cardiomyopathy)**
- **Known or suspected genetic condition**
- **Failure to thrive or short stature**

Vaccines for encapsulated bacteria not up to date (pneumococcal, meningococcal, *Haemophilus influenzae* type b)

Family History:
- **Known immunodeficiency**
- **Chronic neutropenia**
- **Bone marrow failure**
- **Leukemia**

Physical exam:

Ill appearing
Hepatosplenomegaly or diffuse lymphadenopathy
Dysmorphic features or congenital abnormalities

Investigations:

Suppression of other cell lines (thrombocytopenia, lymphopenia, or unexplained anemia)
High mean corpuscular volume

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Source: Management of febrile neutropenia in immunocompetent children and youth, Acute Care Committee, 2023. Available at www.cps.ca