

# Febrile Neutropenia



NEUTROPENIA: Absolute Neutrophil Count (ANC) < 0.5 x 10<sup>9</sup> cells/L

Fever and neutropenia is a medical emergency



Febrile neutropenia is a common complication in children receiving chemotherapy for cancer

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# ETIOLOGY OF FEVER

- Bacterial: bacteremia, line infection, meningitis, pneumonia, UTI, etc.
   Gram positive (most common): Coagulase-negative Staphylococcus, Staphylococcus aureus, Streptococcus viridans
   Gram negatives: E.coli, Klebsiella, Pseudomonas
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   Viral: respiratory viruses, Herpes simplex, Varicella zoster
- Fungi: Candida, Aspergillus, Cryptococcus
- Non-infectious: drug fever, cancer-related, deep vein thrombosis/ pulmonary embolism, transfusion reaction
  - There may be no etiology of fever found!

## HISTORY

- Infectious symptoms:
- Site-specific symptoms of localized infection
- Headache, skin changes, oral ulcers, sore throat, cough, SOB, abdominal pain, vomiting, diarrhea,
- perianal lesions, dysuria, rashes • Sick contacts

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Immunization history

- Past medical history:
- Underlying diagnosis
- Established central line
   Date of last chemotherar
  - Date of last chemotherapy
- Most recent ANC count
- Previous febrile neutropenia, infections, & antibiotics

## Medications & allergies:

- Recent antipyretics
- Antimicrobial prophylaxis and compliance

#### **Highest risk**: chemotherapy **High risk**: ill-appearing child with neutropenia (any cause), aplastic anemia, severe

**ETIOLOGY OF NEUTROPENIA** 

- congenital neutropenia (ex: Kostmann syndrome)
- Low-moderate risk: chronic benign neutropenia, cyclic neutropenia
- Low risk: well-appearing transient neutropenia (ex: viral or drug-induced)

# PHYSICAL EXAM

### Careful physical examination to determine <u>site of infection</u>. *Findings may be subtle or <u>none at all</u>!*

- Vitals: tachycardia & tachypnea often accompany fever
- Skin: erythema, temperature, central venous catheter
- **HEENT**: gingivitis, oral ulcers, pharyngitis, cervical lymphadenopathy, meningismus
- Respiratory: work of breathing, signs of pneumonia
- Cardiovascular: new murmur, cap refill, pulses
- Abdomen: tenderness, distension, masses, hepatosplenomegaly
- Perineum: perianal and labial lesions

## INVESTIGATIONS

INITIAL LABS				OTHER CONSIDERATIONS	
-	CBC with differential Blood cultures from central line	<ul><li>Electrolytes</li><li>Urea</li><li>Creatinine</li></ul>	<ul> <li>CRP</li> <li>Type &amp; Screen</li> </ul>	<ul> <li>+/- urine culture</li> <li>+/- swab sites with purulent drainage</li> <li>+/- stool cultures</li> </ul>	<ul> <li>+/- chest x-ray</li> <li>+/- NP swab if respiratory symptoms present</li> </ul>



For non-cancer neutropenia, management is determined by level of risk. Consider Pediatric or Pediatric Hematology consultation.
 The recurrence of fever in a neutropenic host should be approached as a new fever and be re-evaluated.

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