



FOR  
Health Professionals

# Leukopenia: Trivial or Trouble

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# Disclosures

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## **FINANCIAL DISCLOSURE**

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**Speaker bureau/Honoraria:** No conflict

**Consulting fees:** Pfizer, Lundbeck

# Objectives

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1. Have a working approach to leukopenia
2. Know when leukopenia is a sign of a serious disorder
3. Appreciate when leukopenia requires urgent hematologic consultation
4. Be able to give advice to patients about the risks and management of neutropenia

# Normal Leukocytes ( $\sim 4.5\text{--}11.0 \times 10^9/\text{L}$ )

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- Neutrophils (1.8–5.4)  
“Polymorphs”/“segmented cells”
- Eosinophils (0–0.4)
- Basophils (0–0.1)
- Lymphocytes (1.3–3.2)
- Monocytes (0.3–0.8)



Granulocytes



# Normal Leukocytes ( $\sim 4.5-11.0 \times 10^9/L$ )

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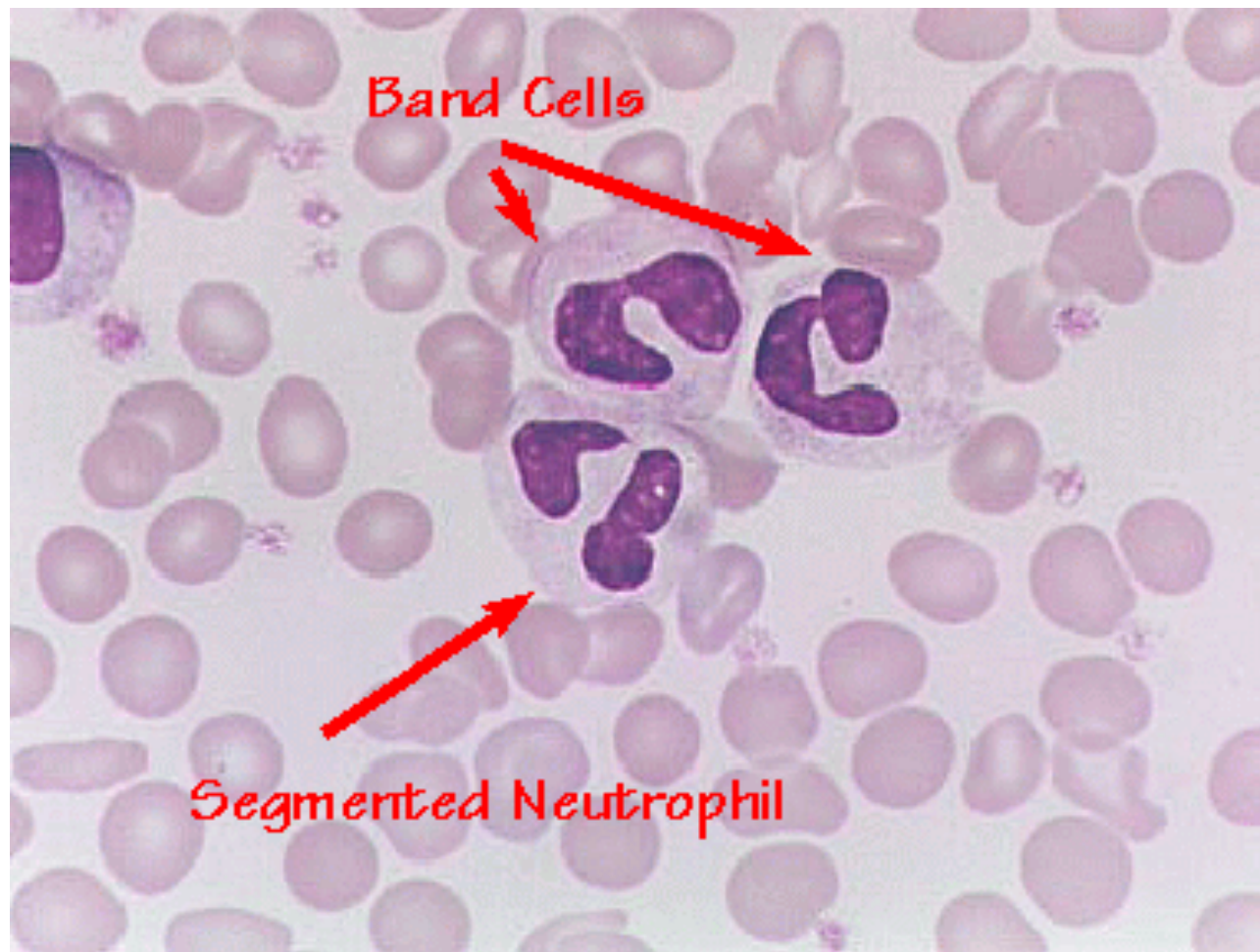
- Neutrophils (1.8–5.4)  
+“Bands”

} Absolute Neutrophil  
Count (ANC)

- Eosinophils (0-0.4)
- Basophils (0-0.1)
- Lymphocytes (1.3–3.2)
- Monocytes (0.3–0.8)

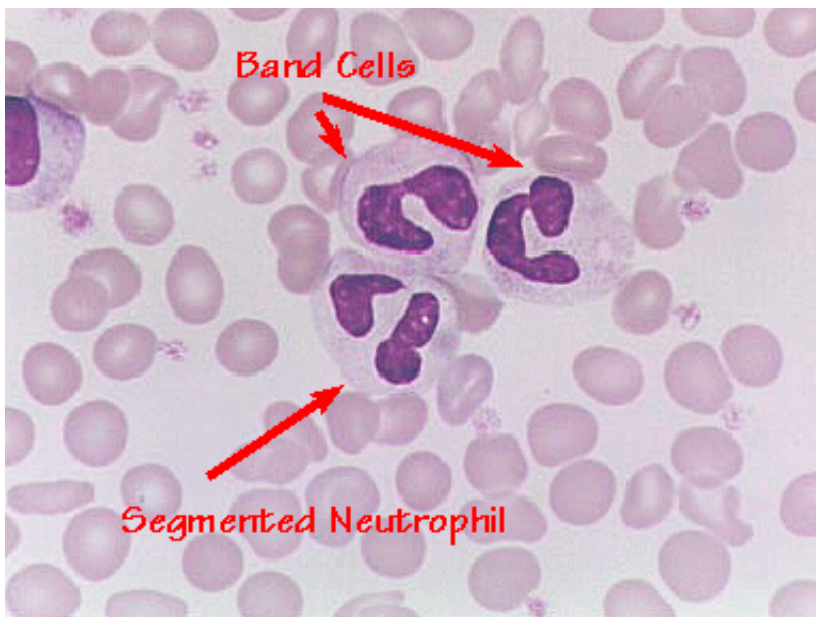
# Neutrophils- key first responders

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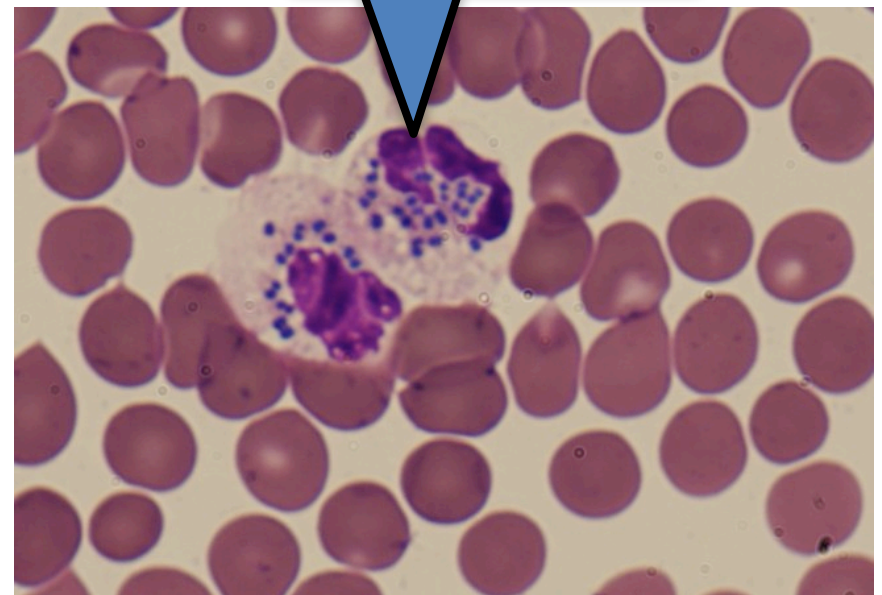


# Neutrophils- key first responders

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S. Aureus





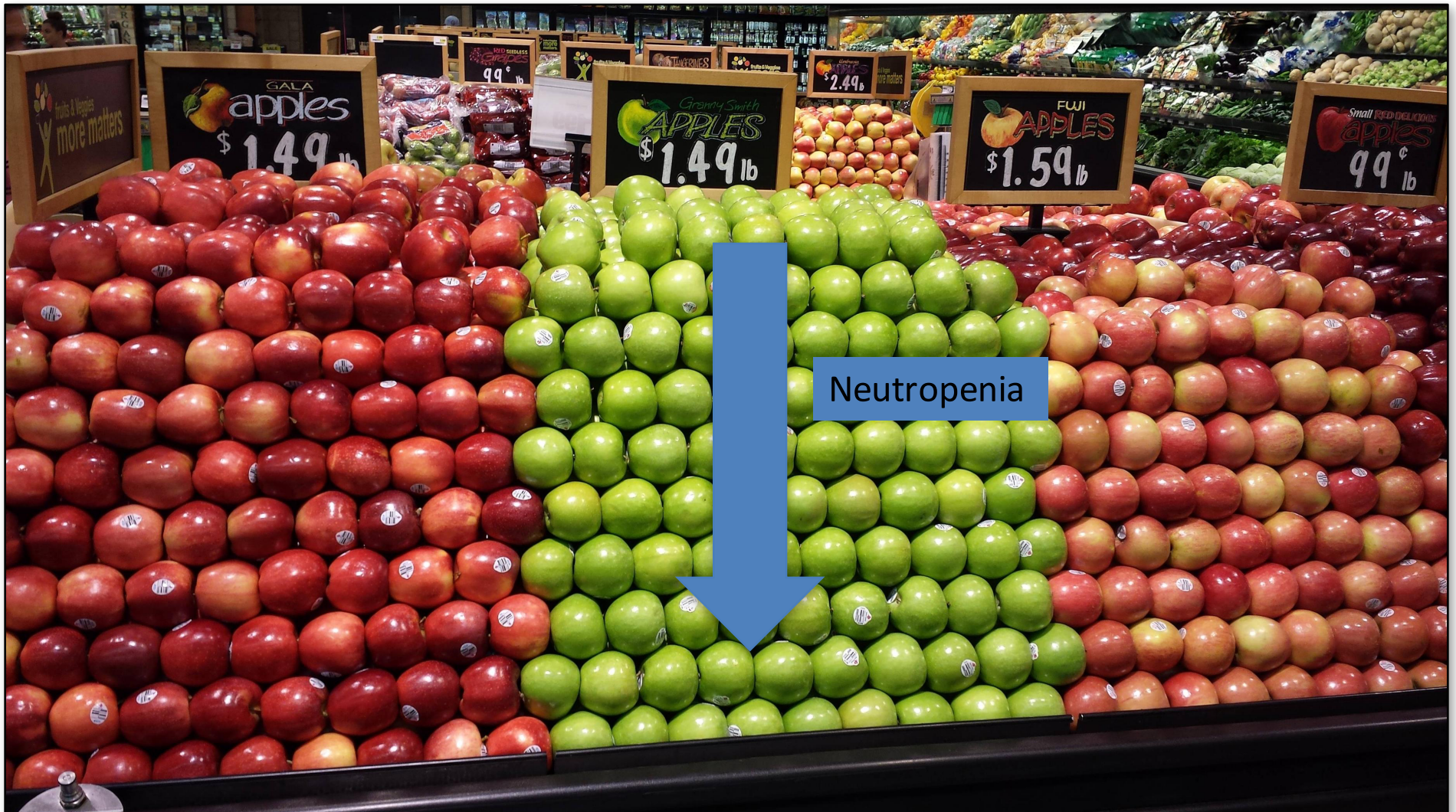
# What do apples have to do with Neutropenia?

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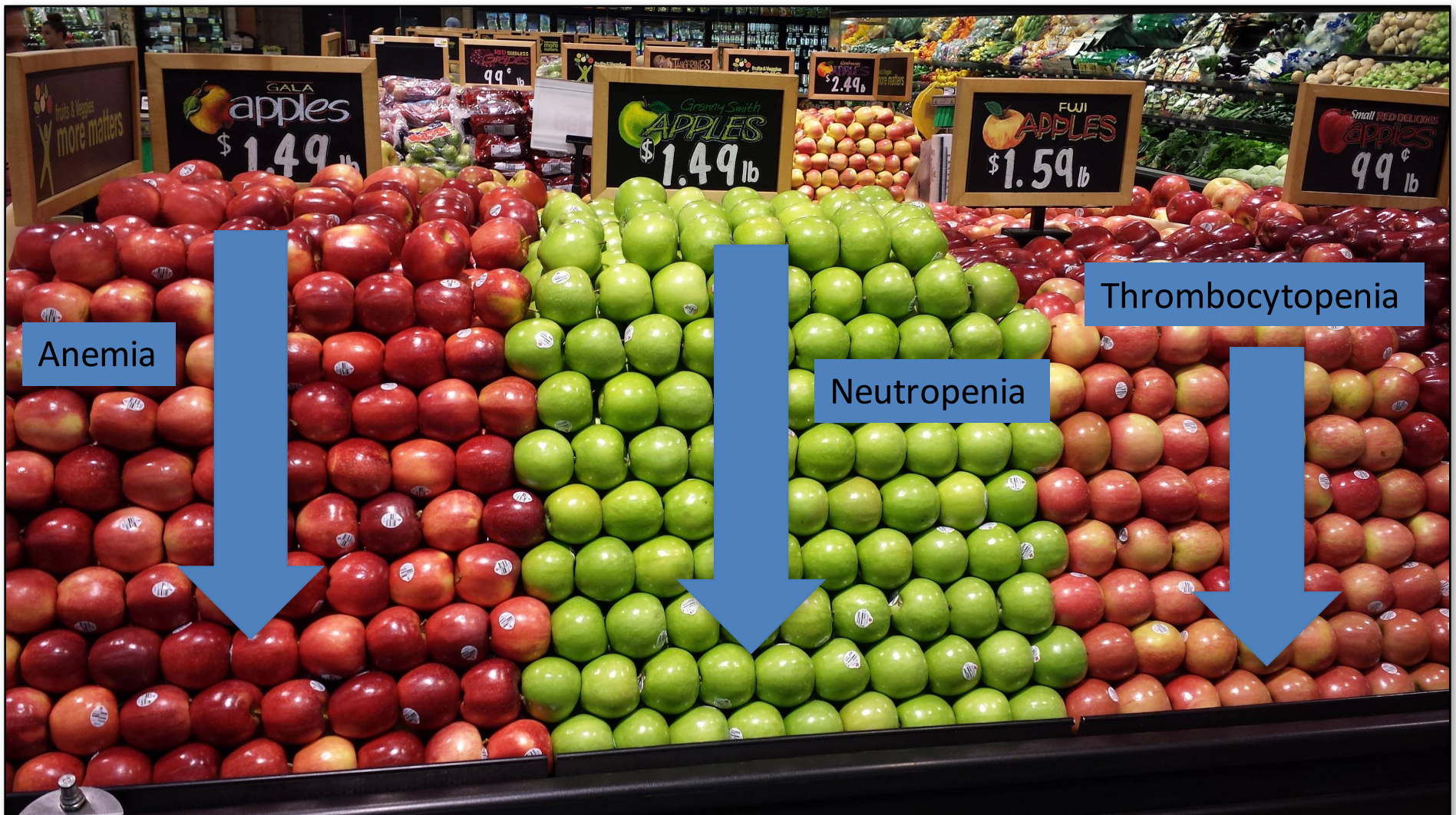


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# Neutropenia – mechanisms & causes

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## 1. Decreased Production

External exposures:

Drugs, radiation

Nutritional (e.g. B12 deficiency)

Infiltrative (e.g. leukemia, MDS, solid tumours)

Congenital

Immune

Post-infectious

## 2. Shift (“Margination” or “sequestration”)

Constitutional (“benign ethnic”)

Splenomegaly

## 3. Immune Destruction

Drugs

Collagen Vascular/Autoimmune disorders

# Neutropenia – mechanisms & causes

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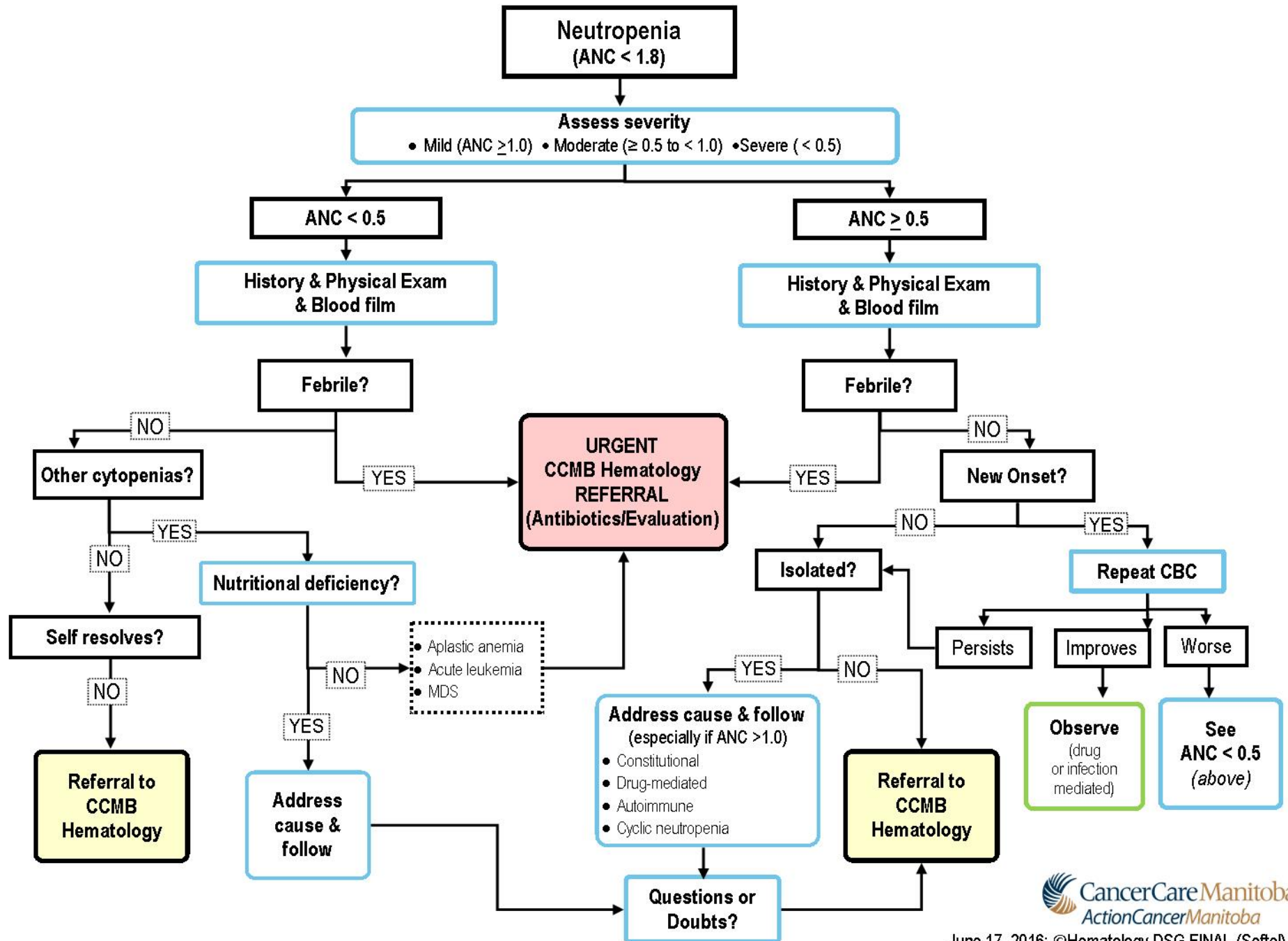
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# Work-Up of NEUTROPENIA



Pathways are subject to clinical judgment and actual practice patterns may not always follow the proposed steps in this pathway.



# Advice to the Neutropenic Patient

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1. Mild/moderate chronic neutropenia
  - Report a fever or new constitutional symptoms
  - Alert caregiver team before invasive procedures
2. New onset and/or severe neutropenia
  - Immediate attention for febrile illnesses
  - Specialist consultation (ID and/or Hem) before invasive procedures
3. Sensible diet and handwashing for all risk categories

## Take Home Messages: Leukopenia/Neutropenia

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- The most important component of leukopenia is neutropenia
- Neutropenia with fever is a medical emergency
- Clinical stability, tempo, presence of other cytopenias determine work-up and management
- Not all patients need specialist hematology review

# Questions?

[mseftel@cancercare.mb.ca](mailto:mseftel@cancercare.mb.ca)

Ref: Gibson & Berliner.

**How we evaluate and treat neutropenia in adults.**

*Blood 2014 124:1251-1258*

Question: In primary care practice, the most common cause of isolated mild leukopenia is:

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1. Constitutional neutropenia
2. Severe Aplastic Anemia
3. Systemic chemotherapy
4. Vitamin B12 deficiency
5. Acute Leukemia



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