

# Neutropenia

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## 1 Neutropenia is seen in 5%–10% of healthy people

Based on absolute neutrophil count, neutropenia is commonly defined as mild ( $1.0\text{--}1.5 \times 10^9/\text{L}$ ), moderate ( $0.5\text{--}0.9 \times 10^9/\text{L}$ ) or severe ( $< 0.5 \times 10^9/\text{L}$ ).<sup>1</sup> However, the reference interval is specific to the population. Mild asymptomatic neutropenia per the above definition is common in people of sub-Saharan African, Arab or West Indian ancestry,<sup>2</sup> and is strongly associated with the Duffy-null phenotype of red blood cells that protects against *Plasmodium vivax* malaria.

## 2 Common causes include medications, infection, nutritional deficiency, malignant disease and autoimmune disease

Causes include underproduction (e.g., myelodysplastic syndrome), immune-mediated destruction or redistribution of neutrophils to the endothelium and reticuloendothelial system. Antithyroid, anti-infective and psychotropic drugs, as well as chemotherapy, are causes of drug-induced neutropenia.<sup>3,4</sup> Transient neutropenia may occur after acute viral infection and typically resolves within 2 weeks. Joint swelling, rash, bony pain, splenomegaly or lymphadenopathy may suggest malignant or autoimmune disease.

## 3 Investigation should begin with a repeat complete blood count and peripheral blood film

Neutropenia is often identified incidentally. Persistent and unexplained neutropenia requires further work-up for a range of causes, including chronic viral infection (e.g., hepatitis, HIV) and nutritional deficiency (e.g., vitamin B<sub>12</sub>) (Appendix 1, available at [www.cmaj.ca/lookup/doi/10.1503/cmaj.220499/tab-related-content](http://www.cmaj.ca/lookup/doi/10.1503/cmaj.220499/tab-related-content)).

## 4 Treatment of mild neutropenia should be directed at the underlying cause

Patients with mild neutropenia are not at substantially increased risk of infection.<sup>5</sup> The neutrophil count should be checked every 3–6 months for at least 1 year to rule out progression to more severe neutropenia.

## 5 Patients with moderate-to-severe neutropenia for more than 6 months should be referred to a specialist

Patients with recurrent or severe bacterial infections (e.g., requiring hospital admission or intravenous antibiotics), abnormalities on peripheral blood films (e.g., circulating blasts, hairy cells, large granular lymphocytes, dysplastic granulocytes) or pancytopenia also warrant referral to a specialist (e.g., hematologist, internist, pediatrician).<sup>1</sup> Febrile neutropenia (absolute neutrophil count  $< 0.5 \times 10^9/\text{L}$  and an oral temperature  $> 38.0^\circ\text{C}$  sustained over 1 h) requires immediate treatment with broad-spectrum antibiotics.

## References

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