

Researchers help spearhead changes to global anemia guidelines

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A still captured from a previous iron trial led by Professor Sant-Rayn Pasricha in Bangladesh, one of the countries included in the data analysis study that was conducted for this new research. Credit: WEHI

The way anemia is diagnosed worldwide could change for the first time

in 50 years, following a landmark study led by WEHI researchers.

The findings have been used by the World Health Organization (WHO) to revamp its global guidelines for the condition, which could change the [anemia](#) diagnosis for millions of people across the world.

Anemia affects over 1.5 billion people around the world, including about 1 in 20 Australians.

It occurs when a person lacks oxygen-carrying [red blood cells](#) (hemoglobin) and iron.

The blood disorder is a major public health concern that mainly affects low and [middle-income countries](#), where the condition remains one of the most avoidable causes of illness and death.

While symptoms commonly include severe fatigue and shortness of breath, if left untreated, the condition can also cause heart problems, pregnancy complications and even death.

In 2014, WEHI researchers began a study at the request of the WHO, to formally review its global anemia guidelines that were last updated in 1968.

Study lead and Acting WEHI Deputy Director, Professor Sant-Rayn Pasricha, said while anemia can be diagnosed by measuring the amount of hemoglobin in the blood, there is currently no consensus on the thresholds that should be used to define the condition.

"Currently, a patient can be diagnosed with anemia at one clinic but not the other—even within the same city," Prof Pasricha, also a hematologist and the Head of WEHI's Anemia Research Lab, said.

"As people living with anemia often need ongoing treatment, every anemia misdiagnosis causes unnecessary costs and pain."

"While the WHO guidelines are a key resource for [health professionals](#) in treating anemia, experts also depend on other sources like medical textbooks and leading medical societies to guide patient treatment—but these resources can have varying information."

The revised WHO guidelines help to alleviate this critical challenge by providing a clear set of hemoglobin thresholds that could, for the first time, be uniformly used to harmonize the diagnosis and treatment of anemia for billions of people worldwide.

"We hope these new guidelines will be adopted as the new global advice and help to reduce the health burden that continues to be inflicted by anemia across the world," Prof Pasricha said.

Unprecedented data

While some of the previous WHO guidelines remain unchanged, there could be significant changes to the way children and people of different ethnic backgrounds are screened for anemia.

To define the new hemoglobin thresholds, researchers analyzed the data of hundreds of thousands of healthy individuals from countries like the United States, the Netherlands, Bangladesh, the United Kingdom, and Australia.

"Children weren't included in the 1950's study that underpinned the previous anemia guidelines, highlighting how limited this data was," Prof Pasricha said.

"Having included healthy children in our study, we found that the

hemoglobin threshold for kids should be slightly reduced."

"This may seem like a small change, but it will translate to millions of children no longer being classified as anemic and needing treatment."

The researchers also conducted one of the largest genetic studies of its kind in collaboration with WEHI's Professor Melanie Bahlo.

"Some countries in Asia and Africa have queried whether they should have separate hemoglobin thresholds due to the common belief that people from these ethnic backgrounds are at higher risk of anemia," Prof Pasricha said.

"We found no solid evidence to support changing the current recommendation based on ancestral background."

Reducing the health burden

The World Health Organization hopes to halve the global prevalence of anemia by 2025.

Dr. Maria Nieves Garcia-CasaI, a scientist at the WHO's Department of Nutrition and Food Safety, says the new guidelines will be a critical step towards achieving this.

"The WHO has prepared these guidelines following a rigorous process for gathering and analyzing evidence while incorporating the perspectives of experts from around the world," she said.

"We recognize that the alleviation of anemia falls within many fields of public health—including nutrition, disease control, healthy pregnancies, blood donations, transfusion medicines, and genetics. These guidelines will be influential across all of these domains."

The [new guidelines](#) are published [on the WHO website](#). A commentary piece by Prof Pasricha's team that provides further insight into the changes is also [published](#) in *The Lancet*.

The study, "Haemoglobin thresholds to define anaemia from 6 months to 65 years," is [published](#) in *The Lancet Haematology*.

More information: Sabine Braat et al, Haemoglobin thresholds to define anaemia from age 6 months to 65 years: estimates from international data sources, *The Lancet Haematology* (2024). [DOI: 10.1016/S2352-3026\(24\)00030-9](#)

Sant-Rayn Pasricha et al, Measuring haemoglobin concentration to define anaemia: WHO guidelines, *The Lancet* (2024). [DOI: 10.1016/S0140-6736\(24\)00502-6](#)

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