

# Researchers find correlation between blood type and susceptibility to severe malaria

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Abraham Degarege Mengist is making malaria his mission.

A [doctoral student](#) in [public health](#) with a concentration in epidemiology, Mengist came to the Robert Stempel College of Public Health & Social Work from his native Ethiopia to acquire training in epidemiological research methods from renowned faculty and a curriculum that would give him the research skills to advance health at home and globally.

Globally, an estimated 435,000 deaths were attributed to malaria in 2017. Most malaria deaths are due to severe Plasmodium falciparum infection. Studies have shown that various genetic factors may affect susceptibility to severe P. falciparum infection.

Mengist—in collaboration with Stempel College researchers Merhawi T. Gebrezgi, Gladys Ibanez and Purnima Madhivanan as well as Mats Wahlgren of the Karolinska Institute in Stockholm, Sweden—conducted a meta-analysis study examining the effects of [blood](#) type on susceptibility to severe malaria and related morbidities.

The study showed that individuals within blood group A, B and AB are more susceptible to severe P. falciparum infection, while those in blood group O have a protective effect.

"This finding makes a number of meaningful clinical and research implications, [which are] useful for the control of severe malaria," Mengist says. "Now that we are starting to understand the mechanisms of how [blood type](#) can affect the progression of the disease, we are exploring various options that can one day help people in the regions where malaria is endemic."

As blood group A, B and AB could facilitate progression to severe malaria, transfusion of blood group O to P. falciparum infected patients seeking blood transfusion might be preferable to reduce the progression of the infection to severe malaria and, possibly, help patients avoid further complications or deaths. In addition, the study recommended

production of antimalarial drugs that can disrupt rosette formation—the binding of malaria-infected [red blood cell](#) to uninfected ones, which is prominently seen in blood group A and B—for treating severe cases of malaria.

"By better understanding how blood groups interact with malaria infections, we open doors for the development of treatment options and antimalarial vaccines," Mengist says. "The study has also given way to evidence of evolutionary selection of blood group O individuals in regions where severe malaria is common. This [could possibly answer] why there's an increased proportion of individuals with blood group O in malaria endemic sub-Saharan African countries as compared to non-endemic regions like Europe and the U.S."

The findings were published in the high impact journal *Blood Reviews*, which helped Mengist win the UGS Provost Award for Graduate Student Outstanding Paper or Manuscript.

"I am honored to be selected by the provost as a recipient of this award as it helps highlight my work and the need for continued malaria research," Mengist says. "I am grateful to my major advisor Dr. Madhivanan for all her support during the work."

Since beginning his Ph.D., Mengist has published more than 22 papers on the topics of [malaria](#), helminth and the HPV vaccine.

**More information:** Abraham Degarege et al. Effect of the ABO blood group on susceptibility to severe malaria: A systematic review and meta-analysis, *Blood Reviews* (2018). [DOI: 10.1016/j.blre.2018.07.002](https://doi.org/10.1016/j.blre.2018.07.002)

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