

# Malaria Vaccine Breakthrough: Shaking or Stirring the Field?



Malaria is one of the oldest disease to have infected humankind. Since the stone age period, malaria is responsible for almost half of all human death, and it still causes 1-3 million death each year. Interestingly, four of the Nobel Prize winners in Medicine have contributed to understanding or controlling this disease: Ronald Ross for describing Anopheles mosquito in causing malaria, Alphonse Laveran for finding the malaria-parasite in human blood, Paul Muller for discovering DDT and using it to control malaria parasite and Youyou Tu for extracting anti-malarial substance artemisinin ([Immunity to Malaria](#)).

The approval of malaria vaccine on October 6, 2021 by the World Health Organization (WHO) has received widespread attention. The vaccine commonly known as RTS, S, where 'R' stands for the central repeat region of *Plasmodium falciparum* circumsporozoite protein (CSP), the 'T' for the T-cell epitopes of the CSP, and the 'S' for hepatitis B surface antigen (HBsAg); the 'RTS' fusion protein spontaneously assemble with free 'S' protein in RTS, S particle. This vaccine also contains the AS01 adjuvant system, and in scientific literatures is usually referred to as RTS, S/AS01. The RTS, S vaccine acts by triggering the body's immune system against the CSP present on the surface of *Plasmodium falciparum* parasite. The WHO recommended its use among

children in Sub-Saharan Africa.

RTS, S vaccine will act as a new weapon to fight against malaria by preventing the disease, but it is not a silver bullet. The modest efficacy of this vaccine, requirement of multiple booster doses and the potential cost involved are some of the limitations of RTS, S vaccine. This vaccine have shown to prevent 30% of severe malaria in young infants and children (1). In a recently published results from a clinical trial finding showed that a combination of chemopreventive drugs that includes sulfadoxine-pyrimethamine and amodiaquine in combination with RTS, S could prevent severe malaria by 70.5% and death by 72.9% in children of 5-17 months of age (2).

Being the first and the only approved vaccine of a deadly parasitic disease makes RTS, S a potential part of malaria-control tool kit. This vaccine will help in lowering the tide of the disease-malaria, but the existing measures against malaria would still be needed.

#### References:

1. Rts SCTP (2015) [Efficacy and safety of RTS,S/AS01 malaria vaccine with or without a booster dose in infants and children in Africa: final results of a phase 3, individually randomised, controlled trial.](#) *Lancet* 386(9988):31-45.
2. Chandramohan D, et al. (2021) [Seasonal Malaria Vaccination with or without Seasonal Malaria Chemoprevention.](#) *N Engl J Med* 385(11):1005-1017.

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