

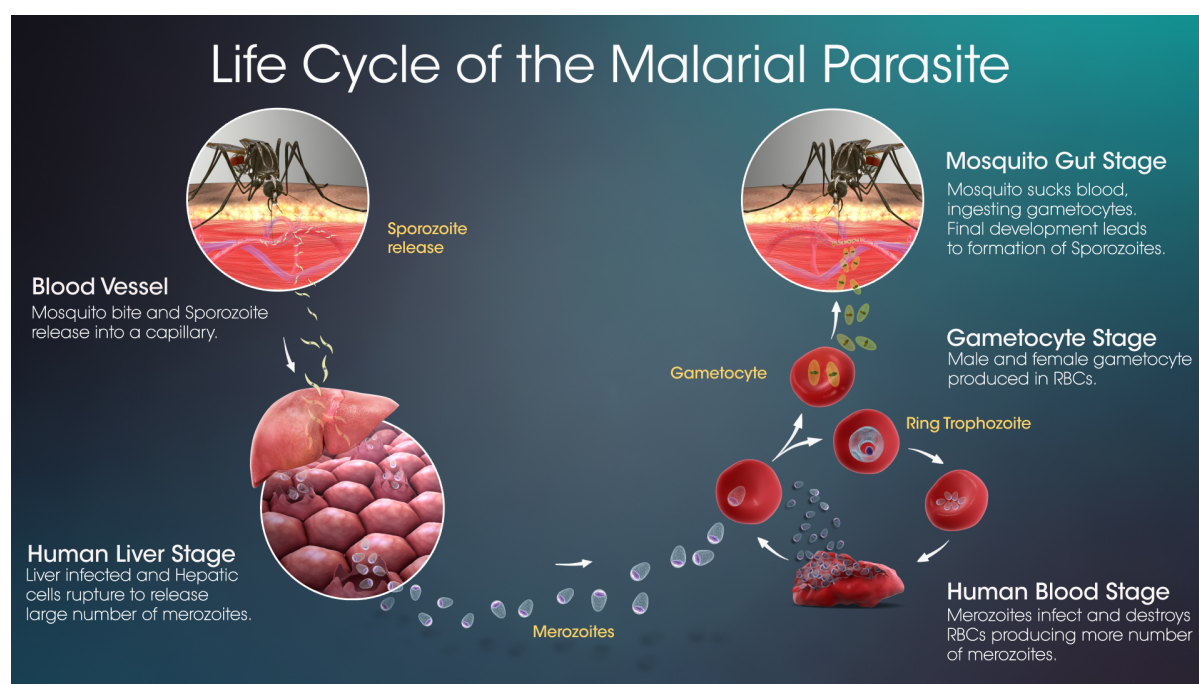
## Malaria and Vaccine Hunt

### Why in news?

WHO has allowed widespread use of the world's first malaria vaccine, **RTS,S** as part of a pilot project in parts of Africa.

### What is Malaria?

- Malaria is a disease caused by a **Plasmodium** parasite
- It is usually transmitted by the bite of infected female **Anopheles** mosquitoes.
- The severity of malaria varies based on the species of Plasmodium - *Plasmodium falciparum* and *Plasmodium vivax* are fatal
- Symptoms of the disease includes chills, fever and sweating, usually occurring a few weeks after being bitten.
- It is both preventable and curable.
- The parasites' life cycle includes mosquitoes, human liver, and human blood stages.



### What is the status of Malaria?

- As per WHO, in 2019, nearly half the world's population was at risk of malaria, while most cases and deaths occur in sub-Saharan Africa.

- Even today, it kills over four lakh every year, according to WHO.
- In 2019, India had an estimated 5.6 million cases of malaria, although deaths due to malaria have come down sharply
- Children under five are the most vulnerable group accounting for about two thirds of all malaria deaths.

### **What is the vaccine that has been cleared for widespread use?**

- **RTS,S/AS01 (RTS.S)**, trade name **Mosquirix**, is the first and to date only, vaccine shown to have the capability of significantly reducing malaria.
- It is the result of a partnership between GlaxoSmithKline and the global non-profit PATH's Malaria Vaccine Initiative, with grant funds from the Bill & Melinda Gates Foundation.
- It is a recombinant protein vaccine, which means it includes DNA from more than one source.
- The vaccine acts against *P. falciparum*, the most deadly malaria parasite globally.
- However, it offers no protection against *P. vivax* malaria.
- It is a 4 dose vaccine and in largescale clinical trials, the vaccine was able to prevent approximately 4 in 10 cases of malaria over a 4-year period.

### **What measures have been taken to eliminate malaria?**

- In 1953, the Government of India launched the National Malaria Control Programme (NMCP) with a focus on indoor residual spraying of DDT.
- National Malaria Eradication Programme (NMEP) was launched in 1958 which reduced the number of malaria cases and deaths.
- In 2003, malaria control was integrated with other vector borne diseases under the **National Vector Borne Disease Control Programme (NVBDCP)** as all such diseases share common control strategies.
- Administration of drugs like Chloroquine, Artemisinin-based Combination Therapy (ACT) started.
- The **National Framework for Malaria Elimination in India 2016-2030** aims to eliminate malaria (zero indigenous cases) throughout the entire country by 2030.
- The Global technical strategy for malaria 2016-2030 was adopted by the World Health Assembly in 2015 to reduce global malaria incidence and mortality rates by at least 90% by 2030.
- The **Global Fund to Fight AIDS, Tuberculosis and Malaria** is an international financing and partnership organization that aims to attract,

leverage and invest additional resources to end the three epidemics.

*Over the last two decades, 11 countries have been certified by the WHO Director-General as malaria-free - UAE, Morocco, Turkmenistan, Armenia, Sri Lanka, Kyrgyzstan, Paraguay, Uzbekistan, Algeria , Argentina and El Salvador*

### **What are the challenges in the elimination of Malaria?**

- Long time taken to develop a vaccine against malaria is a concern.
  - Mosquirix itself is the result of more than 30 years of research and development.
- The complexity of the malaria-causing parasites' life cycle and subsequent antigenic variations of the parasite poses difficulty.
- Because malaria disproportionately affects low and middle income countries that lack robust health infrastructure, the vaccine manufacturers have little incentive for malaria vaccines.
- There is increasing evidence for the failure of artemisinin-based therapy (drug resistance) for *Plasmodium falciparum* malaria either alone or with partner drugs.
- Majority of malaria in India is diagnosed and treated in private sector which has no obligation to follow government guidelines, use recommended drugs, or report cases to State authorities.

### **What measures needs to be taken?**

- States will have to tailor their programmes to achieve elimination especially in tribal areas where the burden of malaria is often the highest.
- Partnership between communities, civil society, private sector, and public health agencies is required.
- Integrated Vector Management approach as insisted by WHO is the need of the hour.
- The next step should be speedy and meticulous implementation of the vaccine programme from the lab to the field.

**Source: The Indian Express, The Hindu**



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