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/ASO1 (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 Chloroquinine, Artemesinin-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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