

05– 07 – 2024

News: Malaria Vaccines

- Serum Institute of India (SII), the world's largest vaccine manufacturer (by number of doses produced and sold globally), has shipped the first set of R21/Matrix-M malaria vaccines to countries in Africa.
- This vaccine has been developed by the University of Oxford and the Serum Institute of India.
- It has been recommended for use by the World Health Organization (WHO) after meeting required safety, quality and effectiveness standards.
- The first malaria vaccine, RTS,S/AS01 was recommended by WHO to prevent malaria in children in October 2021.

Malaria

- Malaria is a mosquito-borne infectious disease that affects humans and other animals.
- It is caused by plasmodium.
- Symptoms of malaria include fever, tiredness, vomiting and headaches.
- These begin 10-15 days after being bitten by infected Mosquito.
- It is spread through Anopheles mosquito.

- The disease is widespread in the tropical and subtropical regions that exist in a broad band around the equator.
- This includes much of sub-Saharan Africa, Asia and Latin America.
- 25th of April has been declared as World Malaria Day by the World Health Organisation (WHO).
- World Malaria Day was first held in 2008. It was developed from Africa Malaria Day, which was an event that had been observed since 2001 by African governments.
- The theme for the year 2024 is “Accelerating the fight against malaria for a more equitable world”.
- Recently, the World Health Organisation (WHO) endorsed the world's first Malaria Vaccine Mosquirix in the hope that it will spur stalled efforts to curb the spread of the parasitic disease.
- Recently, Yaoundé Declaration was signed by the health ministers of 11 African countries with the highest burden of malaria, committing to accelerated action to end deaths from the malaria disease.

Mosquirix

- **RTS, S/AS01**, trade name Mosquirix, is an **injectable vaccine** targeting *P. falciparum*, the most prevalent malaria strain in Africa.
- It is the **first and only vaccine to show partial protection in young children**.
- It was developed by **British drugmaker GlaxoSmithKline in 1987**.
- The active substance in Mosquirix is **made up of proteins found on the surface of the Plasmodium falciparum parasites (PFP)**.
- **RTS, S** aims to trigger the immune system to defend against the first stages of malaria when the PFP enters the human host's bloodstream through a mosquito bite and infects liver cells.
- It also helps **protect against infection of the liver with the Hepatitis B virus**.

Potency

- The **vaccine's effectiveness** at preventing severe cases of malaria in children is **only around 30%**, but it is the only approved vaccine.
- The **European Union's drugs regulator approved it in 2015**, saying its benefits **outweighed the risks**.
- Its **side effects are rare**, but sometimes include a fever that may result in temporary convulsions.

Challenges

- Inconvenient: A child must receive four injections before age 2, sometimes at intervals that do not match the routine vaccine schedules for most other diseases.
- Partly Effective: Testing in more than 10,000 African children from 2009 to 2014 showed that, even after four doses, the vaccine prevented only about 40% of detectable malaria infections.
- Not Long Lasting: It is unclear how long even those relatively low levels of protection last; previous trials followed vaccinated children for four years. Experts also worry that parents whose children are vaccinated will become less vigilant about using mosquito nets, and less likely to seek medical care when their children develop fevers.
- Develop Resistance: The vaccine reduced the occurrence of severe malaria by about 30%, and the occurrence of severe anemia - a complication that often kills children - by about 60%. It did not protect well against parasite strains that were poor genetic matches, raising a concern that, over time, parasites could evolve resistance to the vaccine as they have to drugs.

Burden of Malaria

Global

- In 2019, there were an **estimated 229 million cases of malaria worldwide**, and the **estimated number of malaria deaths that year stood at 4, 09,000**.
- **Children aged less than 5 years are the most vulnerable group** affected by malaria in 2019, they accounted for 67% (2, 74,000) of all malaria deaths worldwide.

India

- In 2019, India had an estimated **5.6 million cases of malaria** compared to about 20 million cases in 2020, according to WHO.

Countries that Eliminated Malaria

Over the last two decades, 11 countries have been certified by the WHO Director General as malaria free:

- United Arab Emirates (2007), Morocco (2010), Turkmenistan (2010), Armenia (2011), Sri Lanka (2016), Kyrgyzstan (2016), Paraguay (2018), Uzbekistan (2018), Algeria (2019), Argentina (2019) and El Salvador (2021).

- Countries that have achieved at least 3 consecutive years of zero indigenous cases of malaria are eligible to apply for the WHO certification of malaria elimination.

Way Forward

- The next steps for the WHO-recommended malaria vaccine will include funding decisions from the global health community for broader rollout in endemic countries, and country decision-making on whether to adopt the vaccine as part of national malaria control strategies.