Antimalarial Drug Resistance

Why in News

In recent years there is increasing evidence of the **Antimalarial Drugs Resistance (AMR) against** Malaria.

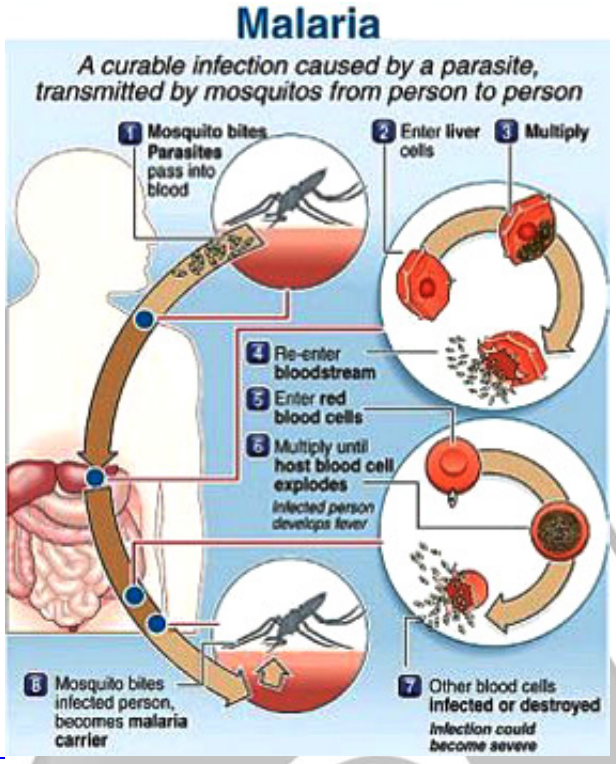
- It has been noticed while treating with the Drugs (Artemisinin or Chloroquine), either alone or with partner drugs.

Key Points

- **Drug Resistance:**
  - It is simply defined as the ability of disease-causing germs (e.g., bacteria or viruses) to **continue multiplying despite the presence of drugs** that usually kill them.
  - Drug resistance is the **reduction in effectiveness of a medication** to cure a disease or condition.
    - **For example:** With **HIV (Human immunodeficiency virus)**, drug resistance is caused by **mutations** in the virus's genetic structure. These mutations lead to changes in certain HIV proteins and enzymes (e.g., protease enzyme) which helps HIV to replicate.
- **Factors Causing AMR:**
  - **Mutations:**
    - The **mutations in the malarial parasite** have been responsible for artemisinin partial resistance.
    - As many as 1,044 studies conducted globally from 2010-2019 confirmed the PfK13 mutation.
  - **Inadequate Coverage:**
    - Imperfect coverage of antimalarial drugs, **improper diagnosis, misuse of drugs** and not-so-good mosquito control programmes were cited by the report as major contributory factors causing resistance against these drugs.
    - These failures lead to increased **exposure of the malaria parasites to drugs**, increasing the risk of drug resistance
- **Concern:**
  - **Chloroquine (CQ)** is the most commonly prescribed drug for P Vivax parasite. A World Health Organisation **(WHO)** report said P vivax resistance to chloroquine had been reported from all WHO regions.
    - Twenty-eight countries, including **India, showed the CQ resistance.**
  - A widespread resistance scenario could result in a yearly **excess of 22 million treatment failures, 116,000 deaths** and costs including an estimated **USD 130 million** to change treatment policy.

Malaria

- **About:**
  - It is a life threatening **mosquito borne blood disease** caused by **plasmodium parasites**, predominantly found in the tropical and subtropical areas of **Africa, South America as well as Asia.**
    - The parasites **spread through the bites of infected female Anopheles mosquitoes.**
    - When an infected mosquito bites a person, the **parasite is released into the bloodstream**, it then travels to the liver where it matures.



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- **Symptoms:**
  - Sweating, headache, nausea, vomiting and abdominal pain etc are cited as the symptoms.
- **Types:**
  - **Four types of Parasites** can infect humans: Plasmodium Vivax, P. ovale, P. malariae and P. falciparum.
- **Indian Scenario:**
  - India carries **2% of the global malaria** case burden and **2% of global malaria deaths.**
    - India also bears **85.2%** of the malaria burden in **South East Asia**.
  - India carries **47% of the global P. vivax malaria burden**, making the country strategically important for **global malaria elimination,** particularly in the South-East Asian region, on the other hand **India** is the only high endemic country which has **reported a decline of 17.6% in 2019 as compared to 2018.**
- **Related Initiatives:**
  - National Strategic Plan for Malaria Elimination **(2017-22).**
  - **National Framework for Malaria Elimination.**

Way Forward

- Malaria killed 405,000 people in 2018 and affected 218 million people. However, the **fight against this killer is becoming difficult** due to the growing resistance against malarial drugs.
- Up-to-date, **quality data are needed on the efficacy** of the recommended treatments, to ensure that patients receive efficacious treatment.
- The time has come to carry out **Molecular Malaria Surveillance to find out the drug-resistant variants** so that corrective measures can be undertaken in time to avert any consequences.

Source: IE