

Malaria Epidemiology



Fourth Grade 2025



LECTURE OBJECTIVES

- To describe Malaria Agent-host-Env.
- To show vector born transmission
- To enumerate treatment types
- To highlight control program in Iraq



Epidemiology of Malaria

Mal-aria = bad environment

Chronic Protozoal disease caused by infection with plasmodium parasite transmitted by infected anopheline mosquito.

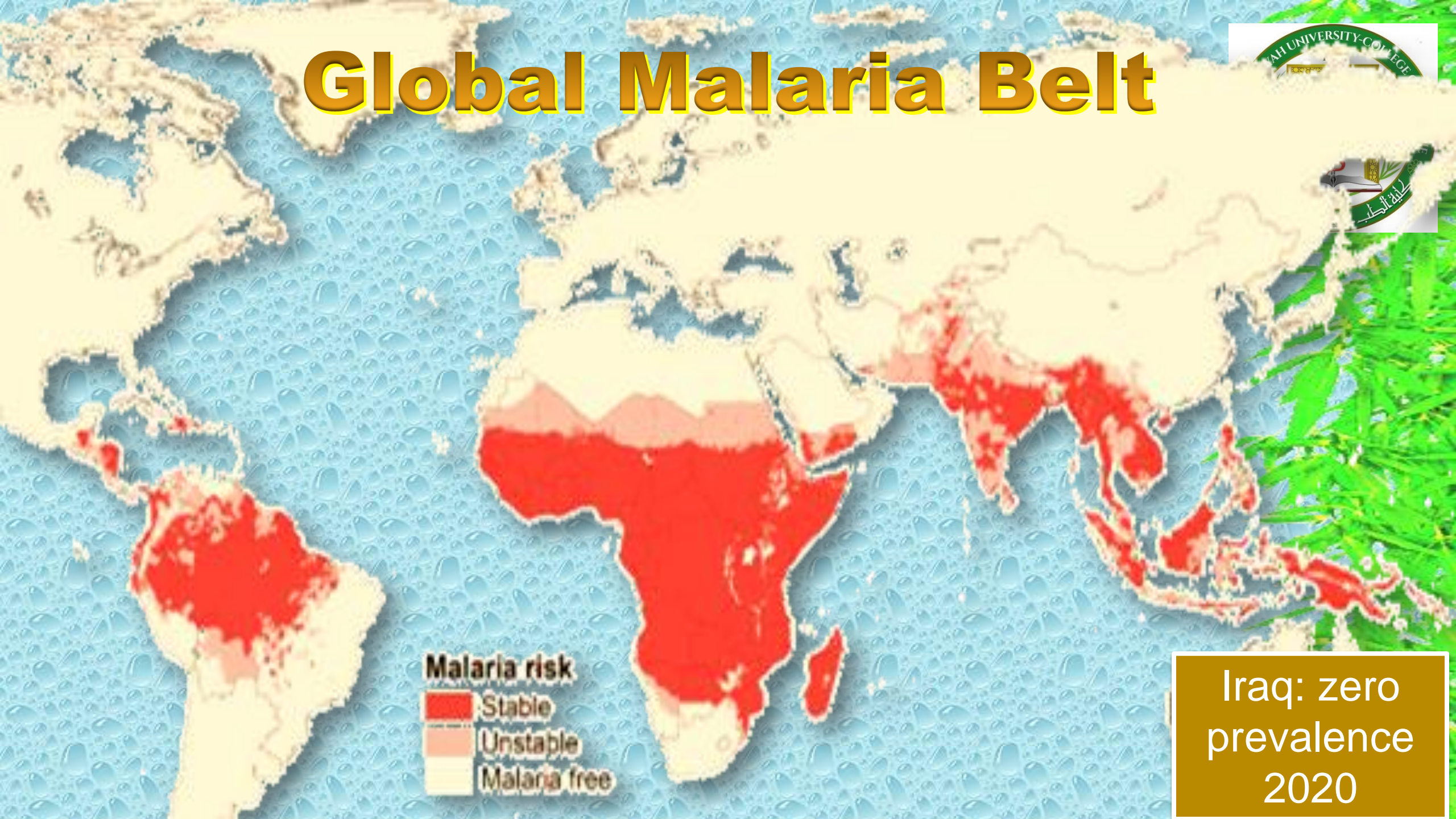
Occurrence: 250 million cases. Major cause of illness in tropical areas. Deserts & high mountains are free.

Mortality: 2 Million deaths/year, half in African children <5, due to anemia & cerebral malaria.

Risk groups: Young children & pregnant living in poor houses, farmers, travelers, outdoor sleepers. Males > females.



Global Malaria Belt



Malaria risk
■ Stable
■ Unstable
■ Malaria free

Iraq: zero prevalence
2020

Causative agent

Plasmodium: vivax, falciparum, ovale, malarie.

Diagnosis: clinical 3 stages Confirmed by blood film
cold stage, hot stage, sweating stage.

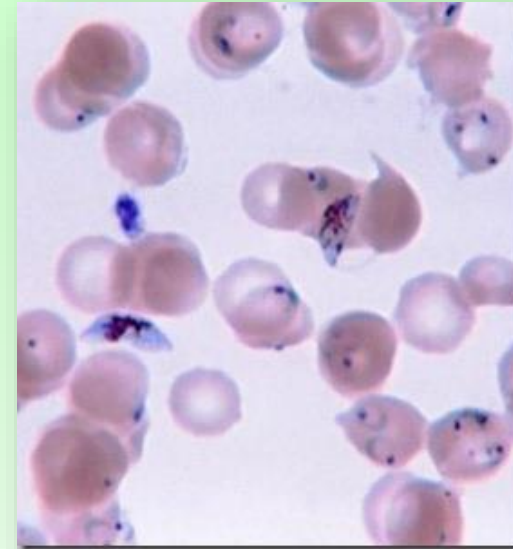
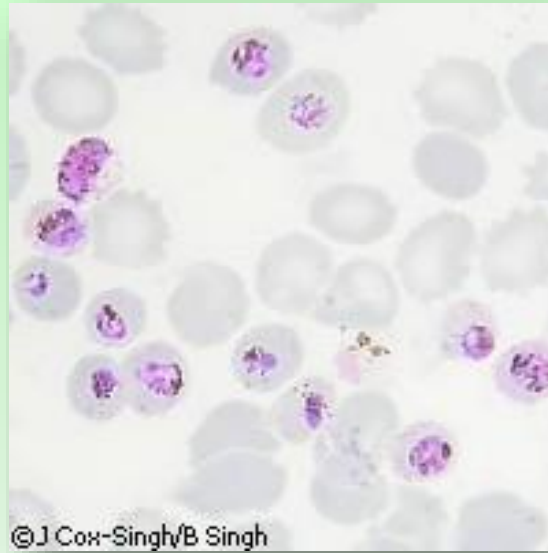
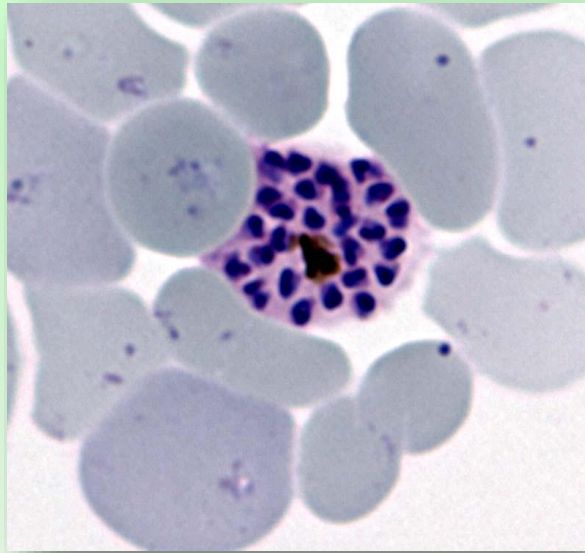
Severity: of malaria depends on:

- Plasmodium species
- Immunity

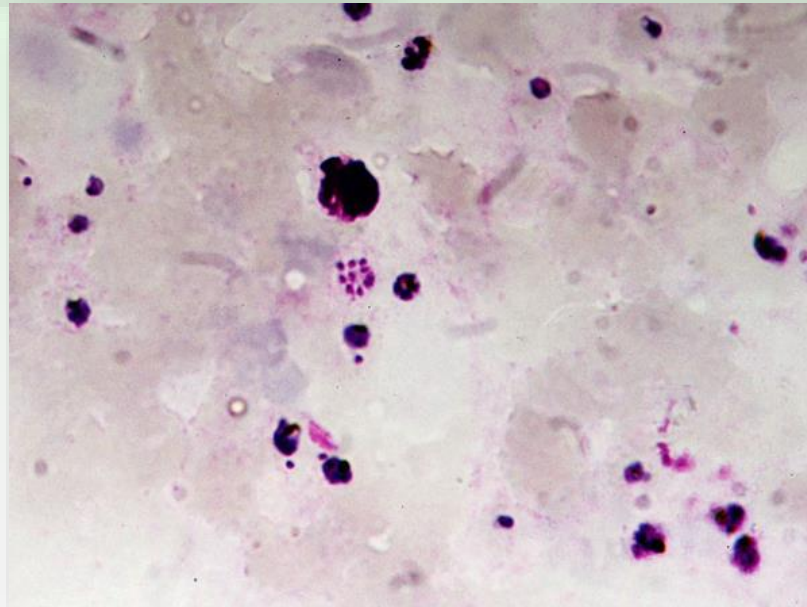
Relapses: may occur years after infection:

- Dormant hepatic parasites: **(Hypnozoites)**
- Low level Blood parasites





Thin & thick blood smear



Host

- **Definitive**: Anopheline mosquito species
- **Intermediate**: human

Reservoir

Human: with gametocytes in blood

Modes of transmission

- ➔ Bite of infective female mosquito.
- ➔ Blood transfusion.
- ➔ Contaminated syringes.
- ➔ Congenital transmission is rare.



Incubation period



→ From infective bite till appearance of symptoms (1-4 weeks) depends on parasite species.

→ Shorter in blood transfusion, longer in patients on chemoprophylaxis.

Period of communicability: mosquito remains infective for life. In human (1-3 years) depends on parasite species.

Extrinsic incubation period: is IP for vector

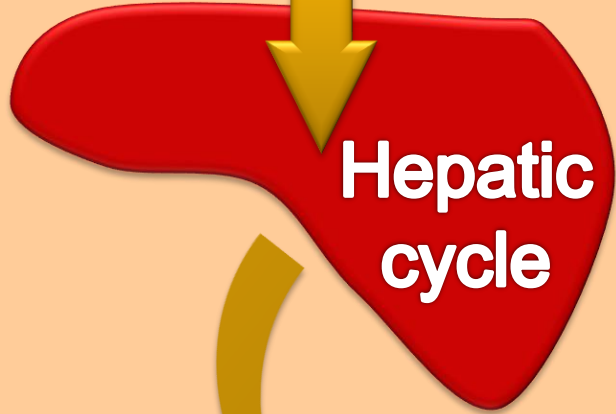
Malaria transmission



MOSQUITO

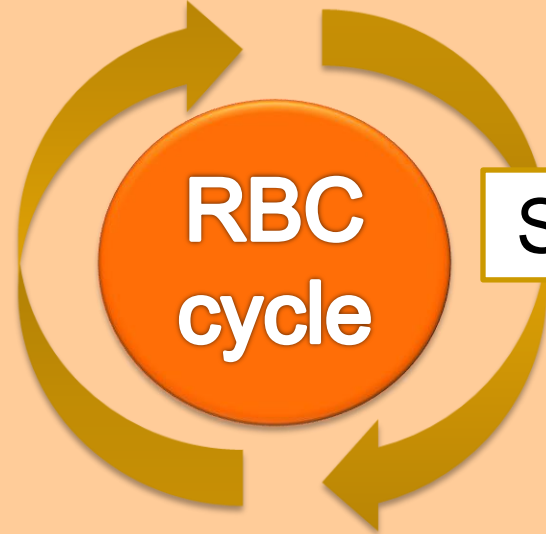
Macrogametes
Microgametes

Sporozoite



Merozoite

Trophozoite

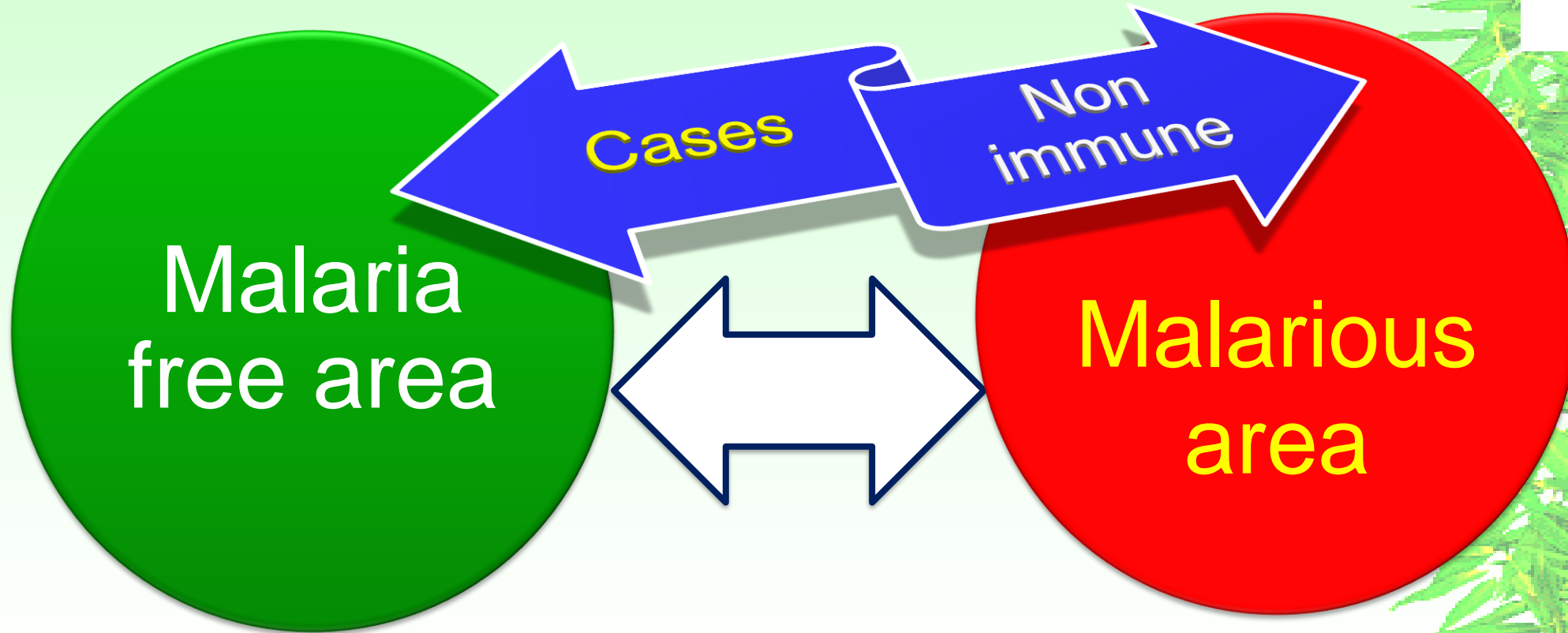


Schizont

HUMAN



Effects of travel on malaria



Control

Integrated program for prevention & control

1. **Vector control:** Larva & Adults

2. **Vector biting control:**

Bed nets impregnated with insecticides.

3. **Human control:**

- ACD & PCD (thin & thick blood smear)
- Chemoprophylaxis, Anti-relapse treatment.
- Examining donated blood.
- Malaria recombinant vaccine: for Children 5 months age in Falciparum malaria areas (Africa).



Mosquito bed net



Treatment types



- **Presumptive**: for suspected cases.
- **Radical**: for new cases
- **Mass treatment**: to all people when control is impossible
- **Anti relapse**: for treated cases in past year.
- **Chemoprophylaxis**: travelers to malarious area

Antimalarial drugs scheduled in combination, and resistance is increasing:

chloroquine, premaquine, mefloquine, proguanil, fansidar, malarone.

Program in Iraq



No local transmission.

Imported cases from:

← **Travel:** Iraqis to malaria country.

→ **Travel:** Foreigners from malaria country.

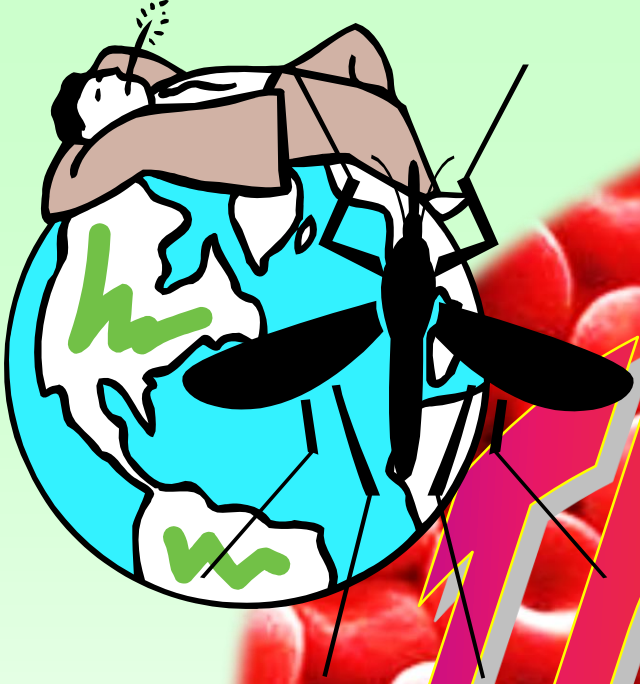
- ACD for local cases & travelers
- PCD of febrile patients



References



- ❑ Control of communicable disease manual. APHA, 21th ed 2017
- ❑ Park, K. Park's textbook of preventive and social medicine. 26th ed. 2021.



Thank You