Malaria Epidemiology

Fourth Grade 2024

LECTURE OBJECTIVES

To clarify Agent-host-Env.
To Understand vector born transmission
To List treatment types
To Outline control program in Iraq

Epidemiology of Malaria

Mal-aria = bad environment

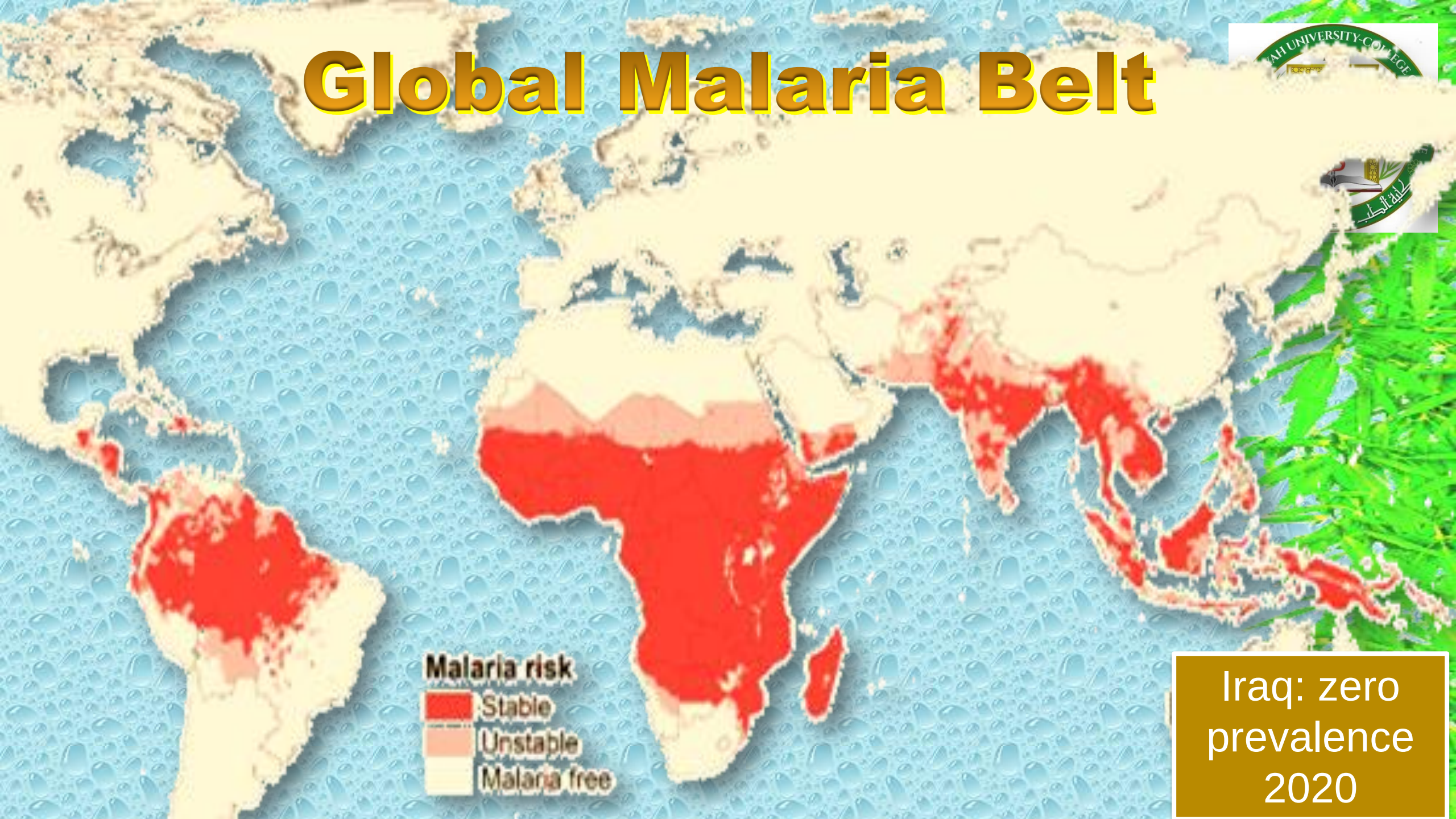
Chronic Protozoal disease caused by infection with plasmodium parasite transmitted by infected anopheline mosquito.

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



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.

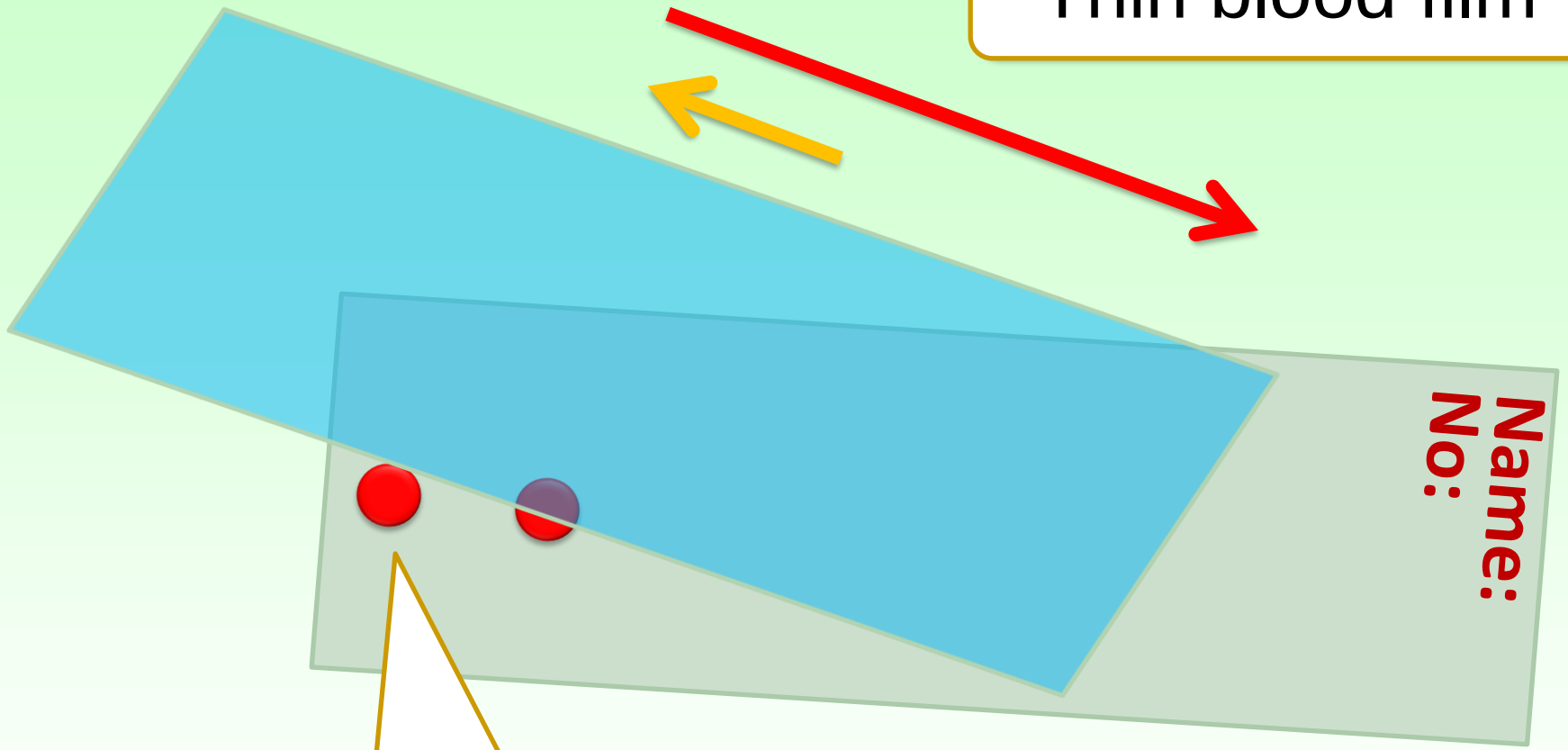
Severity: of malaria depends on:

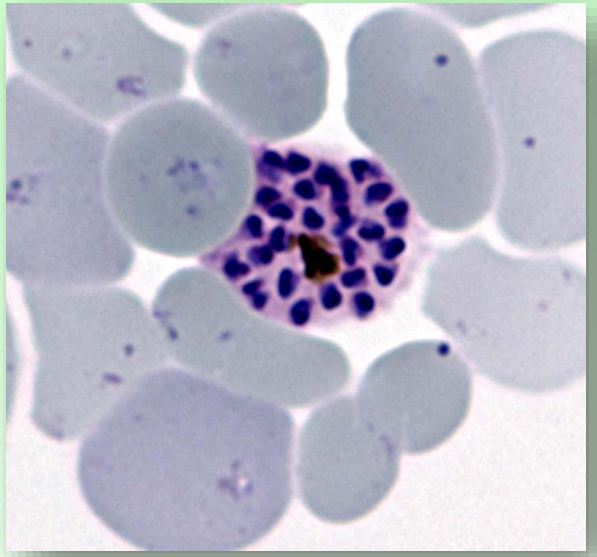
- Plasmodium species
- Immunity

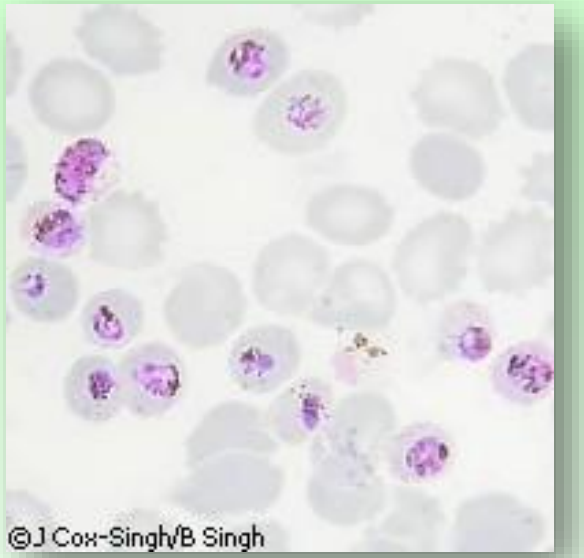
Relapses: may occur years after infection:

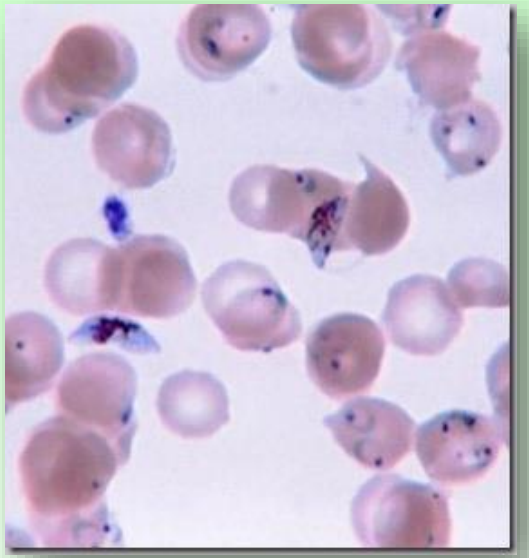
➔ Dormant hepatic parasites: **(Hypnozoites)**

➔ Low level Blood parasites

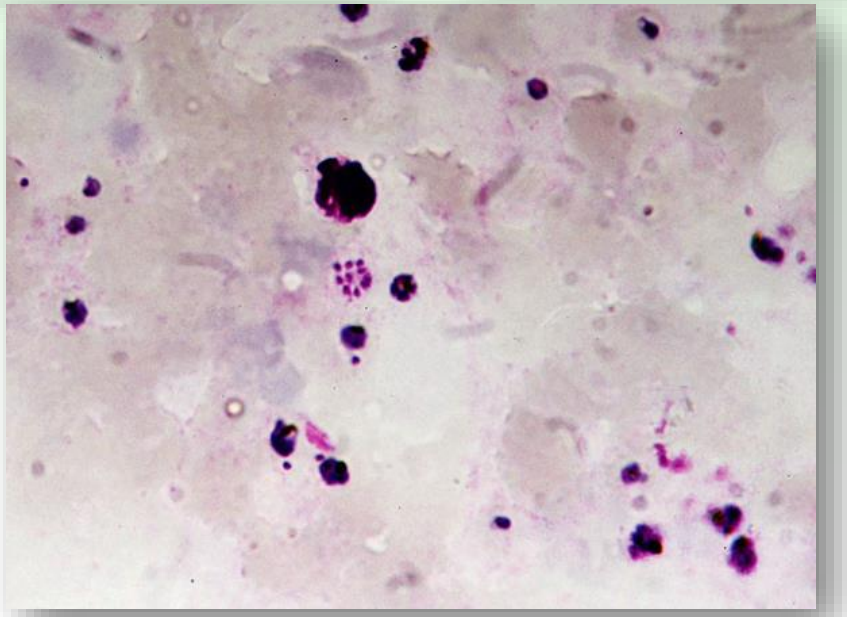

Thin blood film
Name:
No:
Thick blood film







Thin & thick blood smear



Host

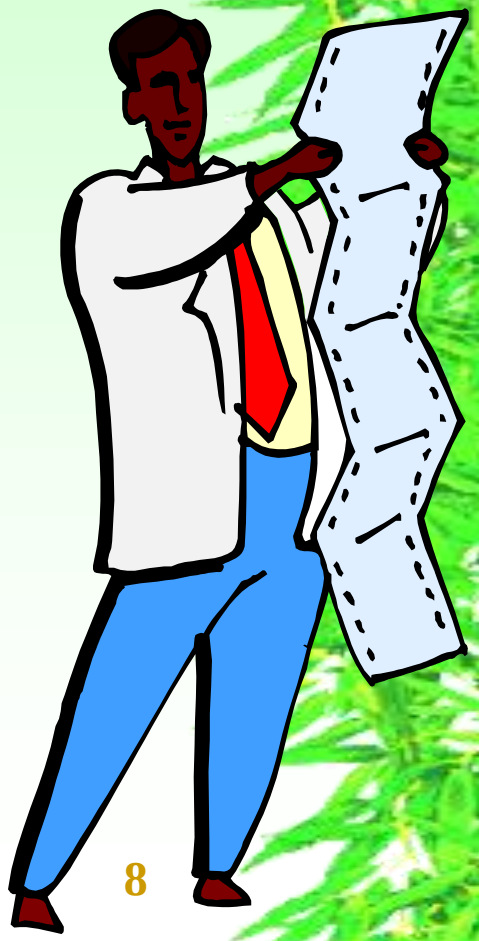
- **Definitive:** Anopheline mosquito species
- **Intermediate:** human

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

Hepatic cycle

Merozoite

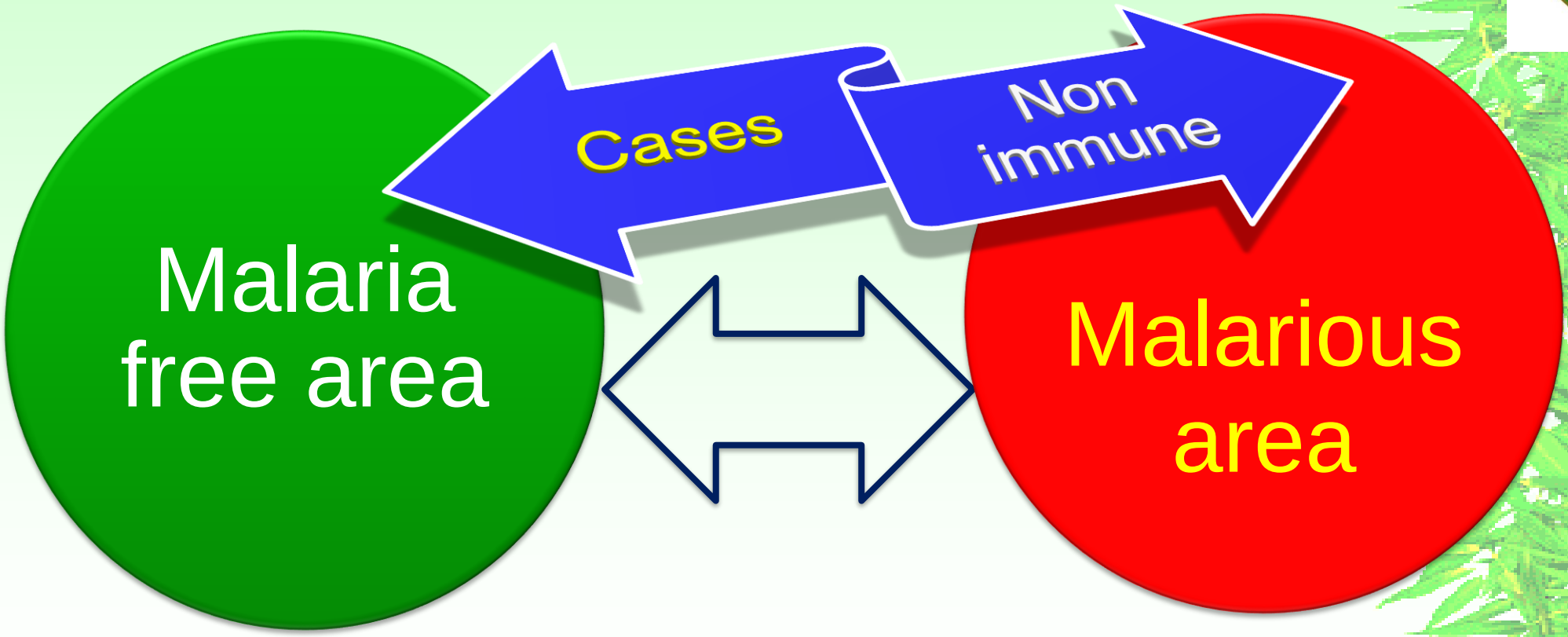
Trophozoite

RBC cycle

Shizont

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