

Malaria



DR. AFNAN YOUNIS

Objectives:

- Epidemiology of malaria
- Clinical picture
- Mode of transmission
- Risk factors
- Prevention and control

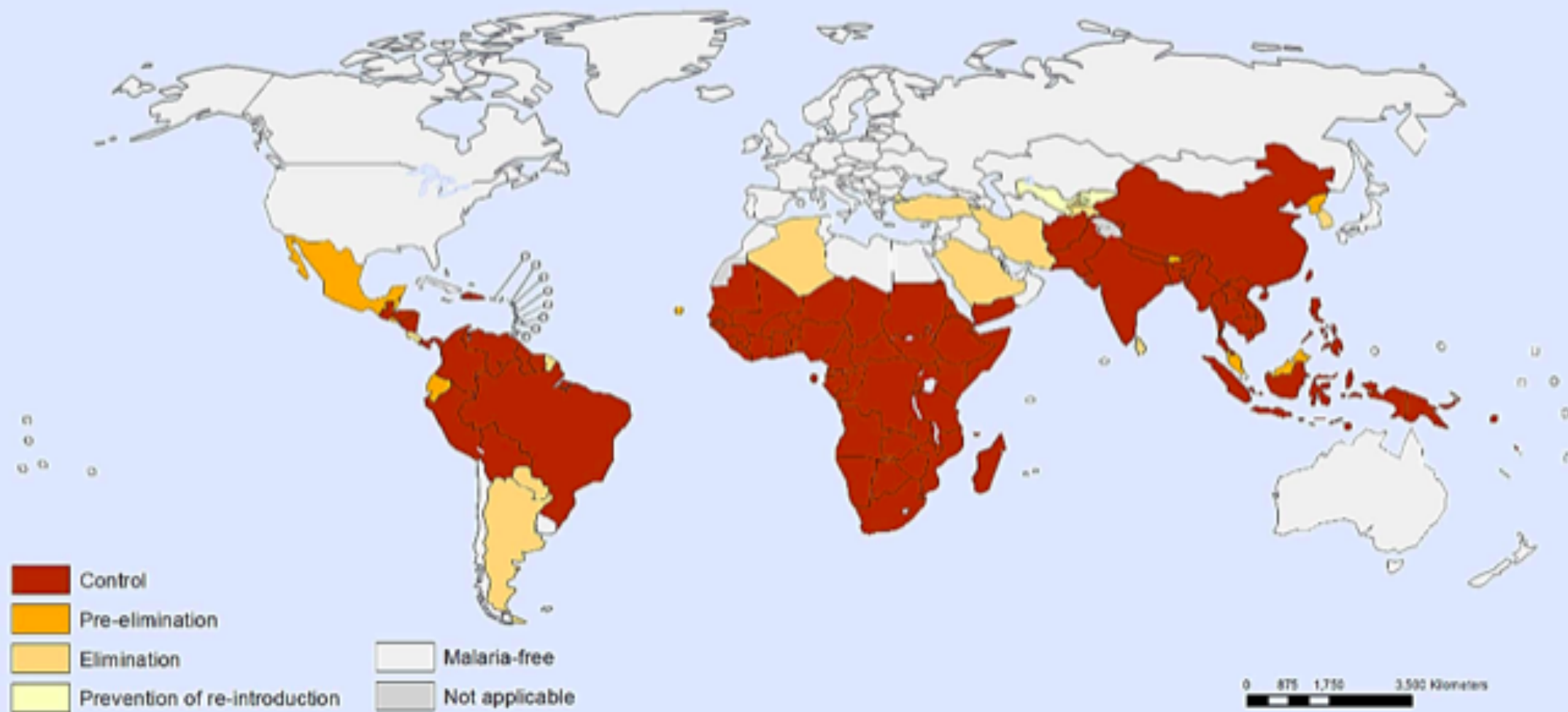


- Malaria is a life-threatening disease caused by **Plasmodium parasites** that are transmitted to people through the **bites of infected mosquitoes.**
- Malaria is responsible for approximately 1-3 million deaths per year

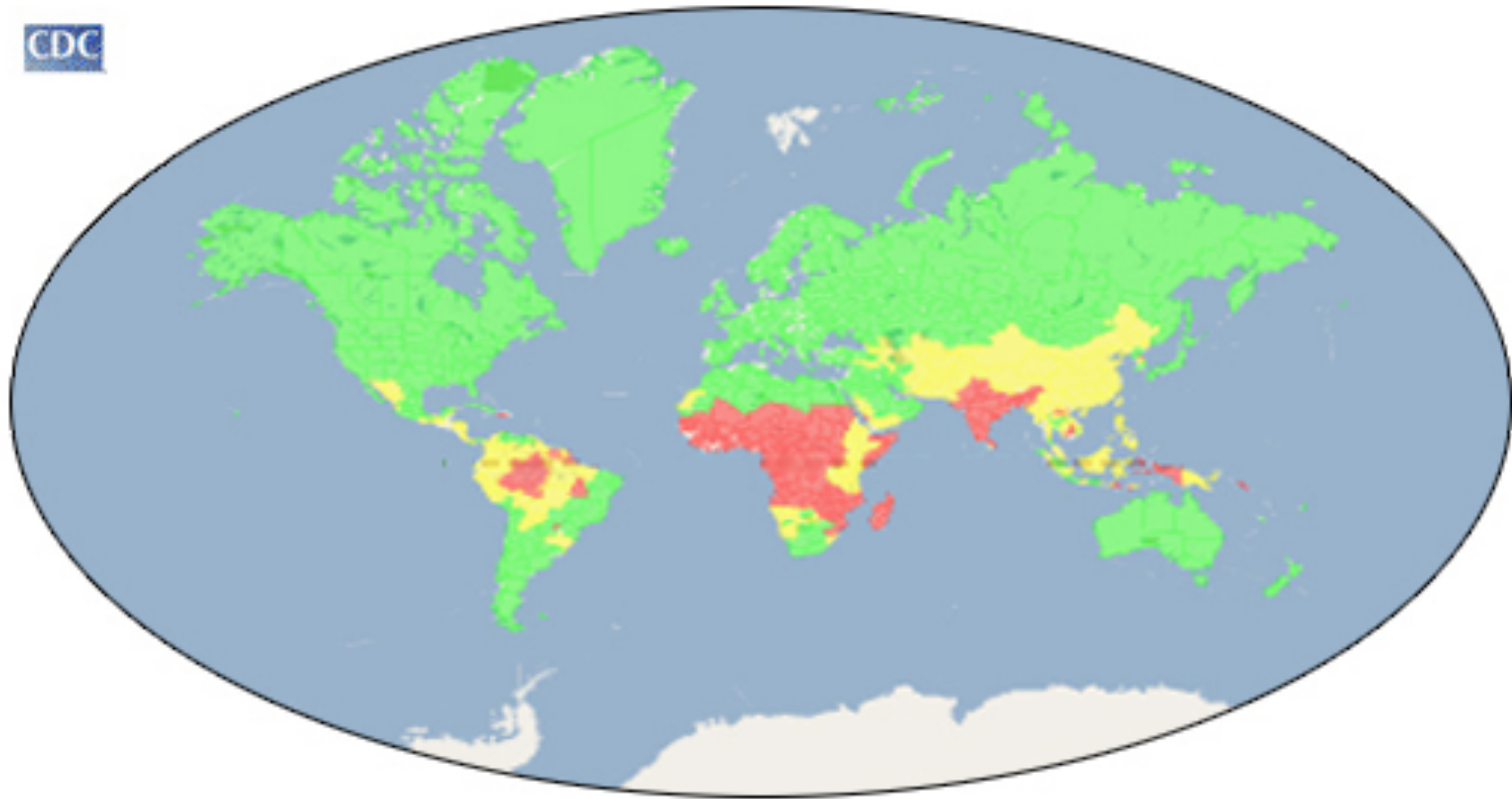
Epidemiology


- Between 2000 and 2015, malaria **incidence** fell by 37% globally.
- During the same period, malaria **mortality** rates decreased worldwide by 60% among all age groups, and by 65% among children under 5.
- An estimated 6.2 million malaria deaths have been averted globally since 2000.
- In 2014, 13 countries reported zero cases of the disease and 6 countries reported fewer than 10 cases.


Classification of countries by stage of malaria elimination, as of December 2014




CDC



 Malaria transmission occurs throughout

 Malaria transmission occurs in some parts

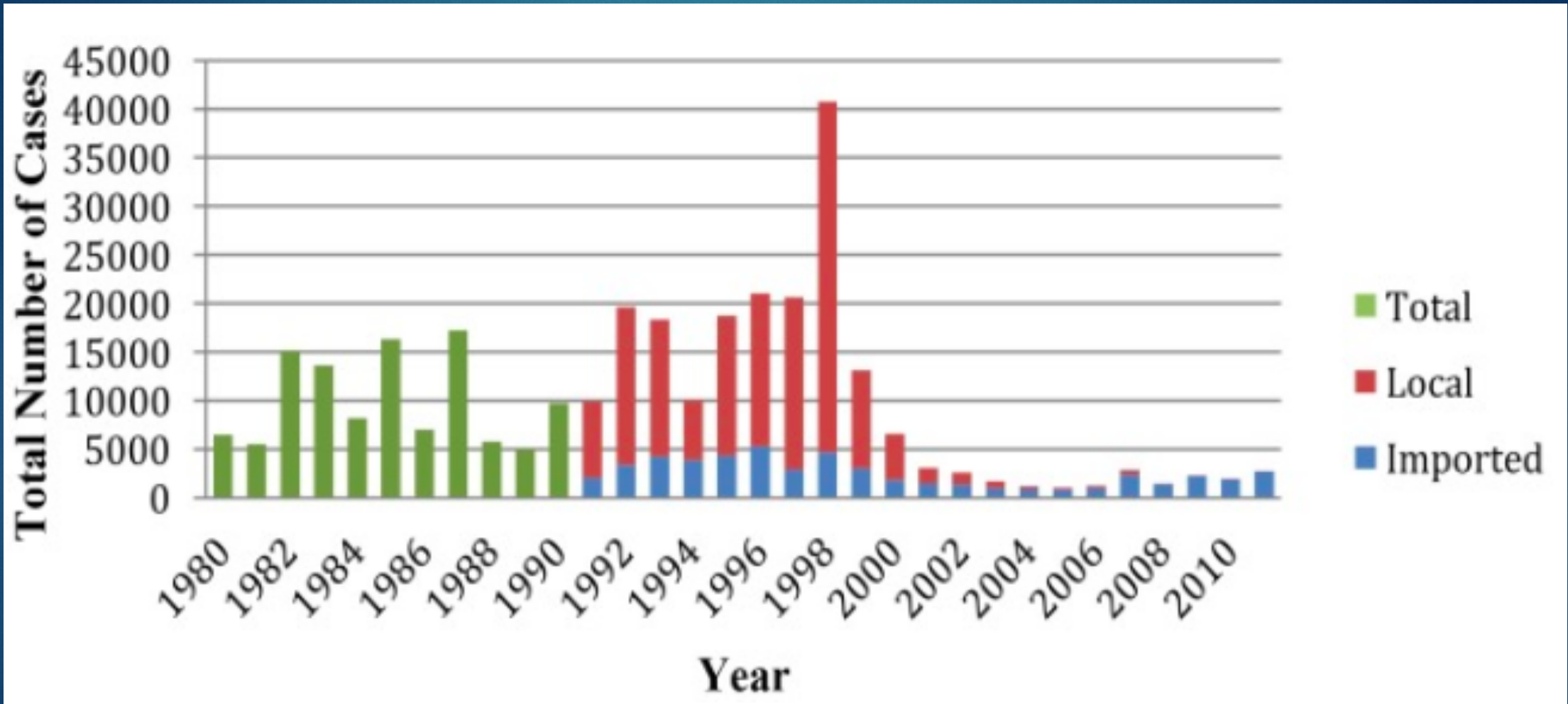
 Malaria transmission is not known to occur

An approximation of the parts of the world where malaria transmission occurs.

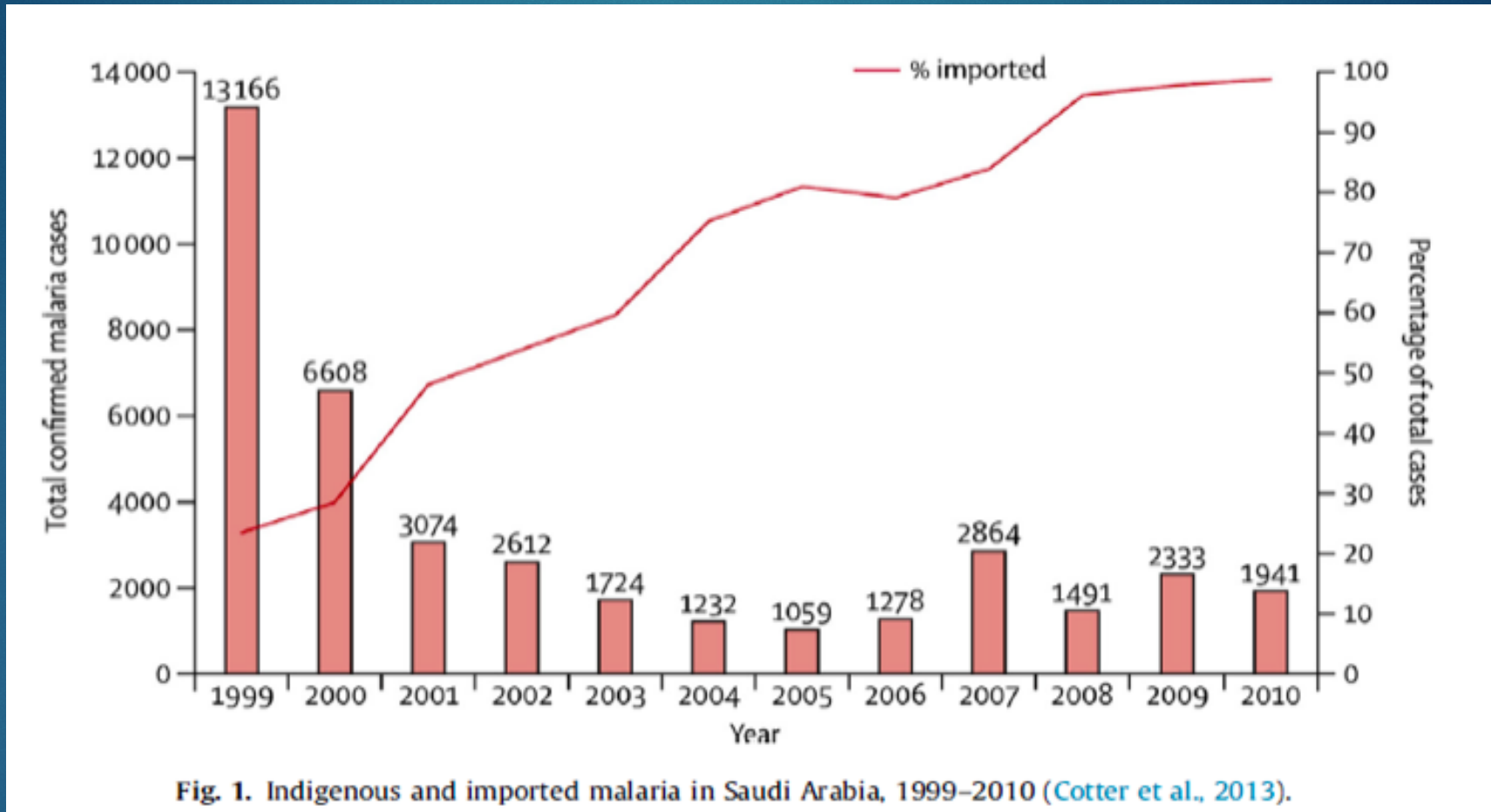
Malaria in Saudi Arabia

- Areas at the **southern region** are at risk of malaria transmission, specifically Asir and Jizan. The Dominant Malaria Species in Saudi Arabia is *P. Falciparum* .
- Saudi Arabia achieved a decrease in malaria cases and case incidence rates of $\geq 75\%$.

Indigenous cases of malaria Saudi Arabia 2014 :



Imported malaria in Saudi Arabia 1999-2010 :



Malaria in Saudi Arabia

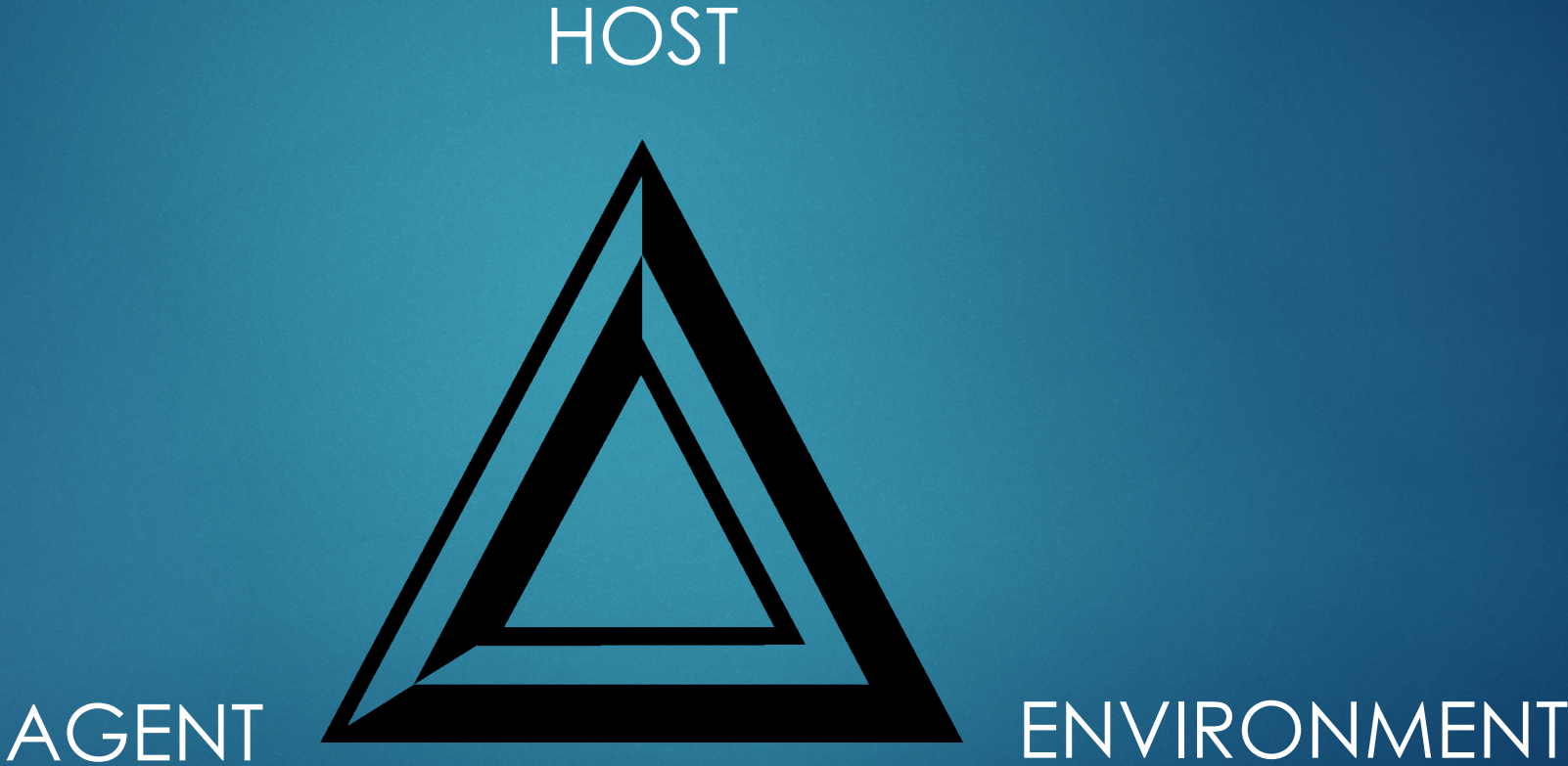
- Malaria outbreak in 1998.
- Since then, only a few cases were reported
- In 2012 , only 82 cases of malaria were reported..
- The proportion of imported malaria has increased from 23% to 99% of total detected cases.



- ❖ **Imported malaria:** via asymptomatic travelers from malaria endemic areas, sustains a threat for possible resurgence of local transmission:
Workers, immigrants, pilgrims.



Analytical Epidemiology Triad:

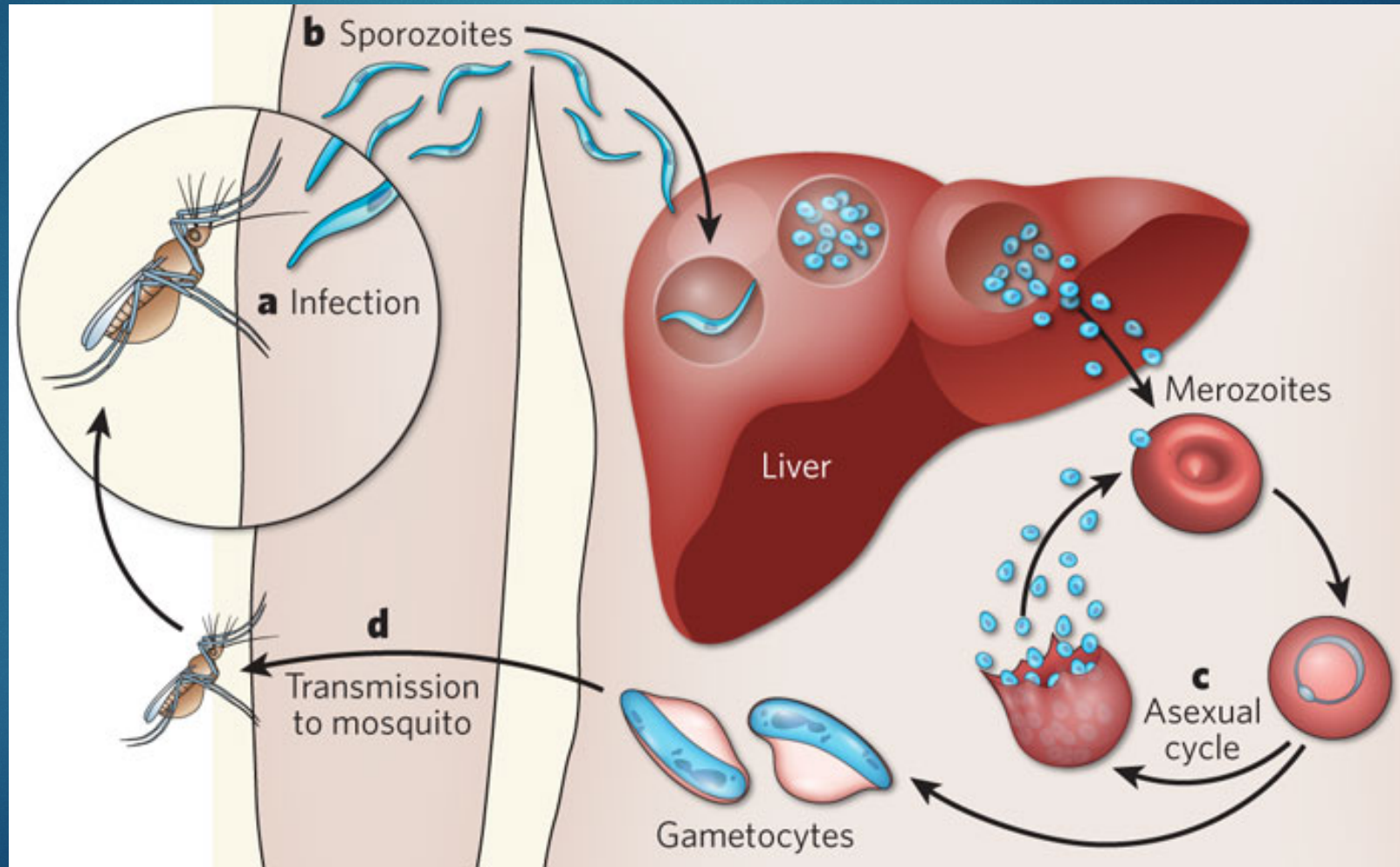


Plasmodium Parasites:

- The parasites are **spread** to people through **the bites of infected female Anopheles mosquitoes (vector)**.
- **Five** parasite species that cause malaria in humans
- **P. falciparum and P. vivax** pose the greatest threat.

- **Other modes of transmission:**
 - From mother to unborn child
 - Blood transfusion

Plasmodium Parasites transmission and lifecycle:



Symptoms

Early symptoms

Fever
Headache
Chills

**If not treated early
might progress to**



Severe illness

Severe anemia
Respiratory distress
Cerebral malaria
Multiorgan failure

Risk factors:

The most vulnerable are persons with **no or little immunity against the disease** in areas with high transmission (such as Africa south of the Sahara).

- **Young children**, who have not yet developed partial immunity to malaria
- **Pregnant women**, whose immunity is decreased by pregnancy.
- **Travelers or migrants** coming from areas with little or no malaria transmission, who lack immunity.

Immunity against malaria (protection)

- ❖ **Genetic Factors:** Biologic characteristics present from birth can protect against certain types of malaria: (having the **sickle cell trait**)
- ❖ **Acquired Immunity:** newborns in endemic areas will be protected during the first few months by maternal antibodies.
- ❖ **Repeated attacks of malaria**

Control:

The main way to reduce malaria transmission at a community is **vector control**

- Insecticide-treated mosquito nets (ITNs)
- Indoor spraying with residual insecticides
- Antimalarial medications
- Vaccination



Insecticide-treated mosquito nets (ITNs)

- For **all at-risk persons**
- Provision of **free LLINs**
- **Everyone sleeps under a LLIN every night.**



Indoor spraying with residual insecticides

- **At least 80%** of houses in targeted areas are sprayed
- Protection depends on type of insecticide.



Antimalarial medications

- To travelers
- Pregnant women
- Infants in endemic areas
- Seasonal chemoprevention



Vaccine

- **Still under trial**

Prevention And Control Of malaria in KSA

The current elimination strategy in Saudi Arabia focuses mainly on:

- 1. Targeting **high risk areas** for sustained preventative measures such as (Long lasting insecticide treated nets, Indoor residual spraying)*
- 2. **Management of infection** through rapid confirmed diagnosis and treatment.*
- 3. Individual case follow up and reactive **surveillance** with appropriate treatment and vector control.*
- 4. Active case detection **at borders** with screening and treatment.*



- References:
- <http://www.who.int/mediacentre/factsheets/fs094/en/>.
- http://www.cdc.gov/malaria/about/biology/human_factors.html