

CHIKUNGUNYA FEVER



Chikungunya fever (CHIKV) is a vector borne disease which causes painful and crippling symptoms and sometimes death; it is found primarily in Africa, but has recently been found elsewhere and may be spreading. A look at vector borne diseases and how they are transmitted is the topic of this paper; CHIKV is only an example as we consider the significance of the problem.

What is a vector borne disease?

Vectors are the transmitters of disease-causing organisms that carry pathogens from one host to another. Most are arthropods, which includes insects, spiders, etc. with the most notable being mosquitoes and ticks (technically foxes, raccoons, and skunks which can transmit rabies to humans are also vectors). Most of the arthropod vectors are blood feeding, transmitting a virus usually from one reservoir to a human.



What are the common vector-borne diseases?

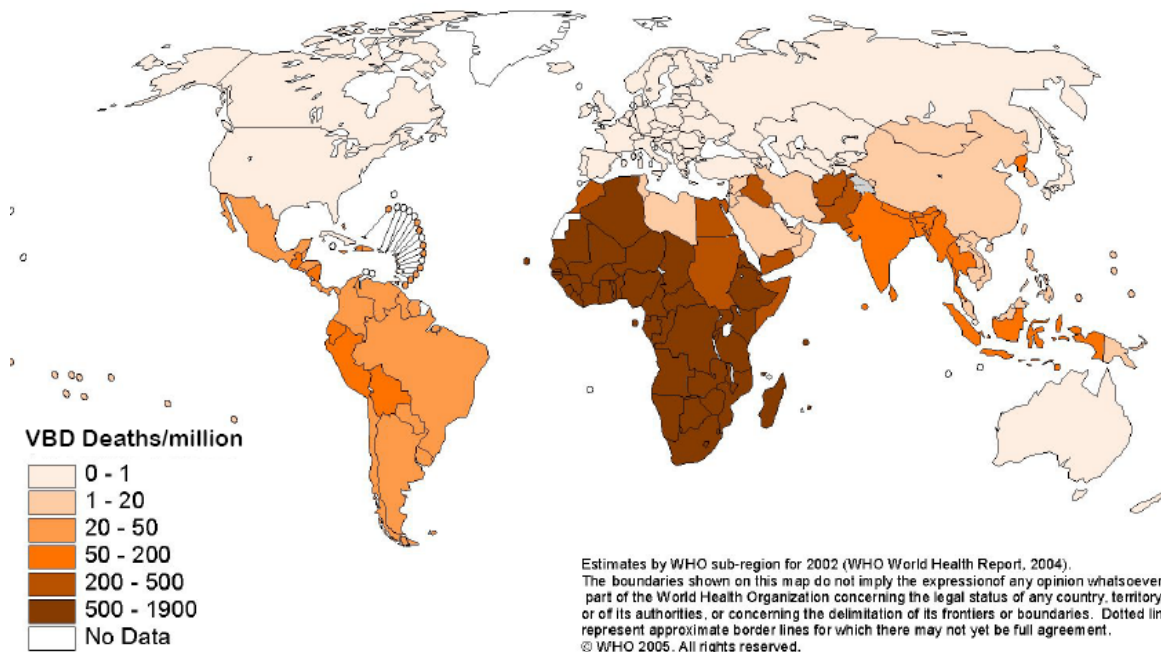
- A. VIRUS
 1. Western equine encephalitis
 2. St. Louis encephalitis
 3. West Nile encephalitis
 4. Dengue fever
 5. Yellow fever
 6. Japanese encephalitis
 7. Eastern equine encephalitis
 8. LaCrosse encephalitis
 9. Hantavirus Pulmonary Syndrome
 10. Powassan encephalitis

- B. PROTOZOA
 1. Malaria
 2. Leishmaniasis
 3. Trypanosomiasis

- C. BACTERIA
 1. Lyme disease
 2. Rocky Mountain spotted fever
 3. Tick-borne relapsing fever
 4. Plague
 5. Typhus
 6. Tularemia

- D. WORMS
 1. Schistosomiasis
 2. Elephantiasis

Deaths from vector-borne disease



What is interesting about Chikungunya Fever?

CHIKV is a viral disease carried by the mosquito, initially only the Yellow fever (*Aedes aegypti*) mosquito. However in 2006, an island in the Indian Ocean, Reunion, with a population of 770,000 had 265,000 clinical cases of CHIKV; 237 people died of the disease. Since there are no *Aedes aegypti* mosquitoes on Reunion Island, researchers discovered that the virus had mutated and now CHIKV could be carried by the Asian tiger (*Aedes albopictus*) mosquito.



The Asian tiger mosquito is found throughout the United States; in contrast, the Yellow fever mosquito is rarely found in the United States.

Conclusion

Since the 1970's there has been a world wide resurgence of vector-borne diseases. The reasons for this resurgence are many and include insecticide resistance, viral mutation, large population growth with concomitant deterioration in public health resources, and increased travel. Someday soon, CHIKV will probably be found in the United States. While we will always live with vector-borne diseases, the message is clear – vigilance and public health measures are crucial for our well-being.

Resources:

- CDC
- Medline
- California Surveillance Program
- NEJM – Feb. 22, 2007
- National Institute of Health