

Transmission and maintenance of disease

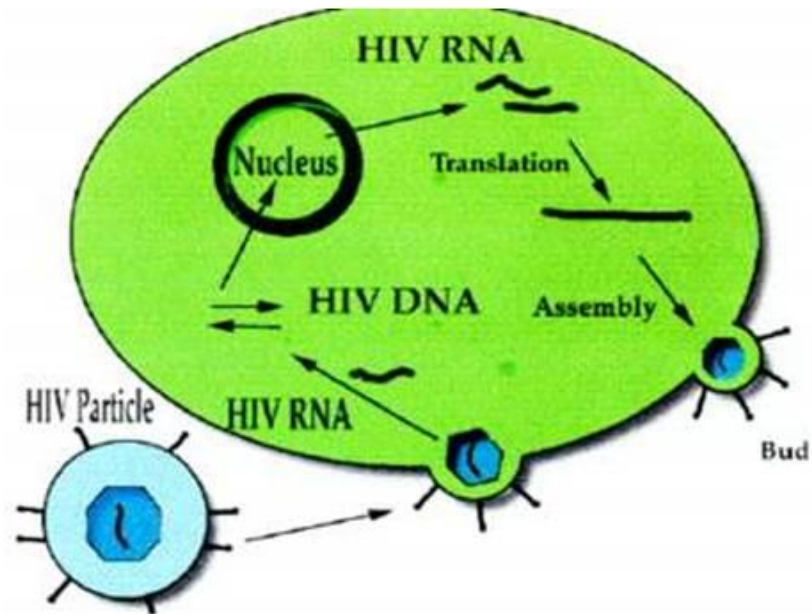
Infection: Invasion of host tissue/ body by a disease causing agent, their multiplication and reaction of host tissue against agent or their toxins produced is called infection.

Infectious agent: The agent responsible for infection is called as infectious agent. Eg Bacteria, Virus, fungus, Parasite etc

life cycle of disease:

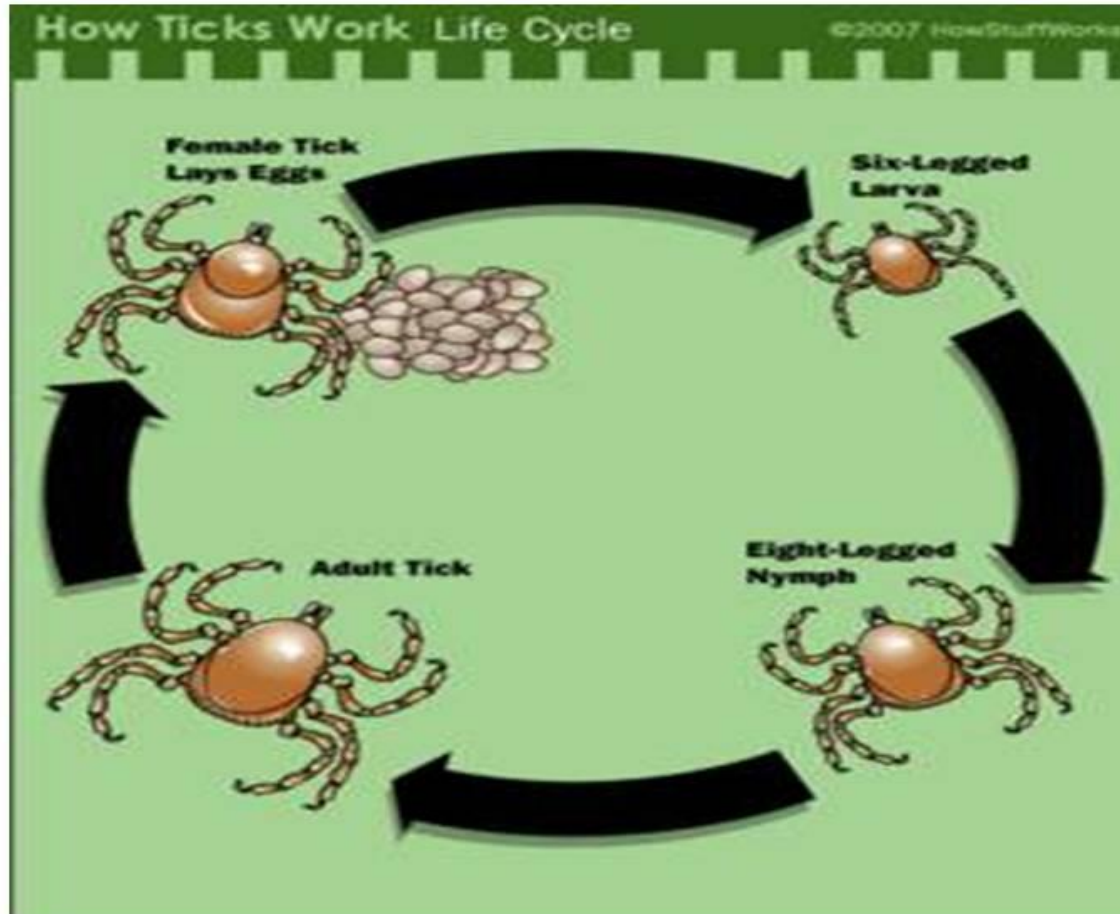
- The complete cycle of an infectious agent is its life history (life-cycle). It include the life cycle of
 - Infectious agent
 - Life cycle of vector

Life cycle of an infectious agent



A knowledge of the life history of an infectious agent is essential when selecting the most suitable control strategies of a disease.

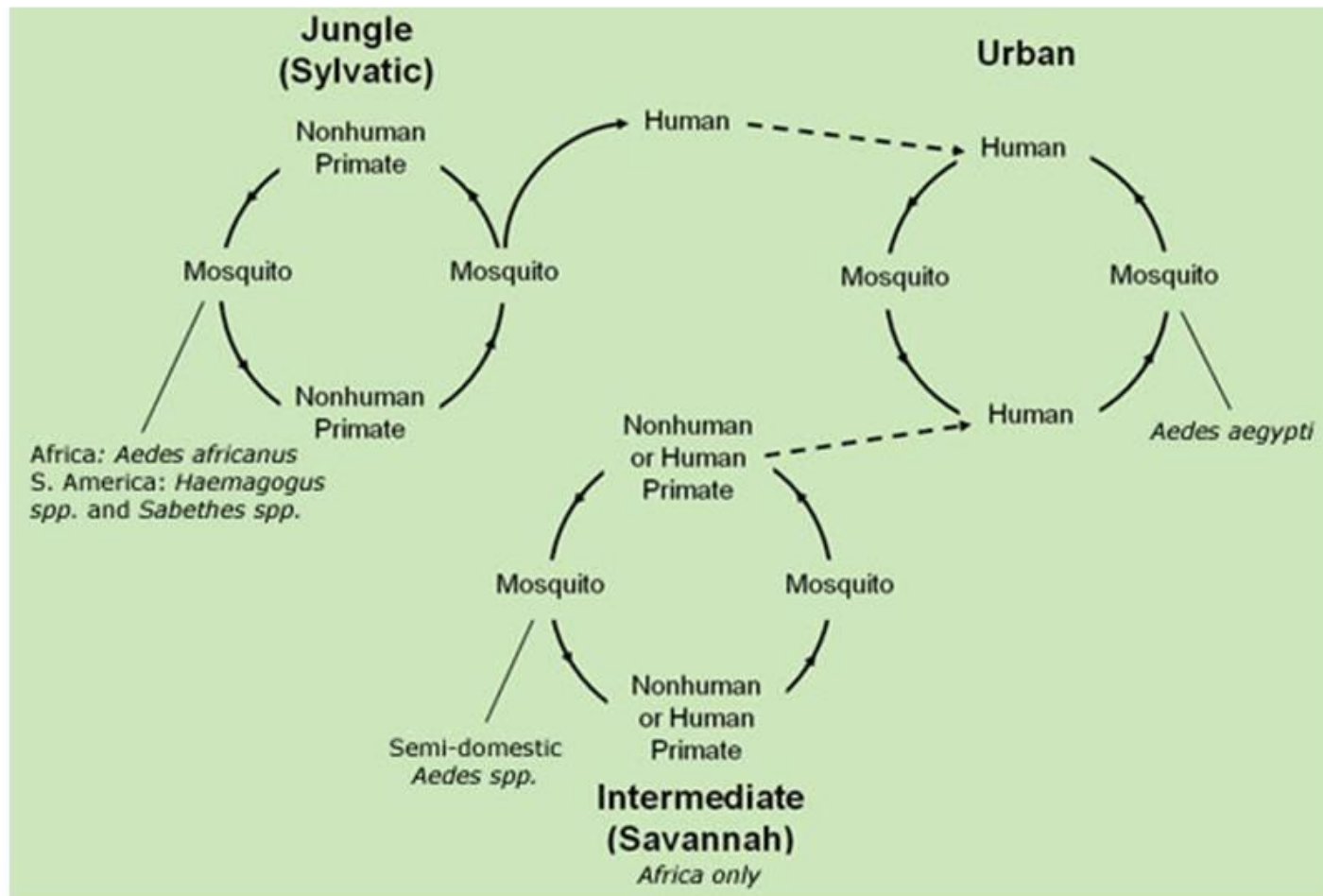
Life cycle of vector



Transmission cycle

- It is the complete cycle of an infectious agent involving different host and vector/ stage of vector for its transmission from one host to another.

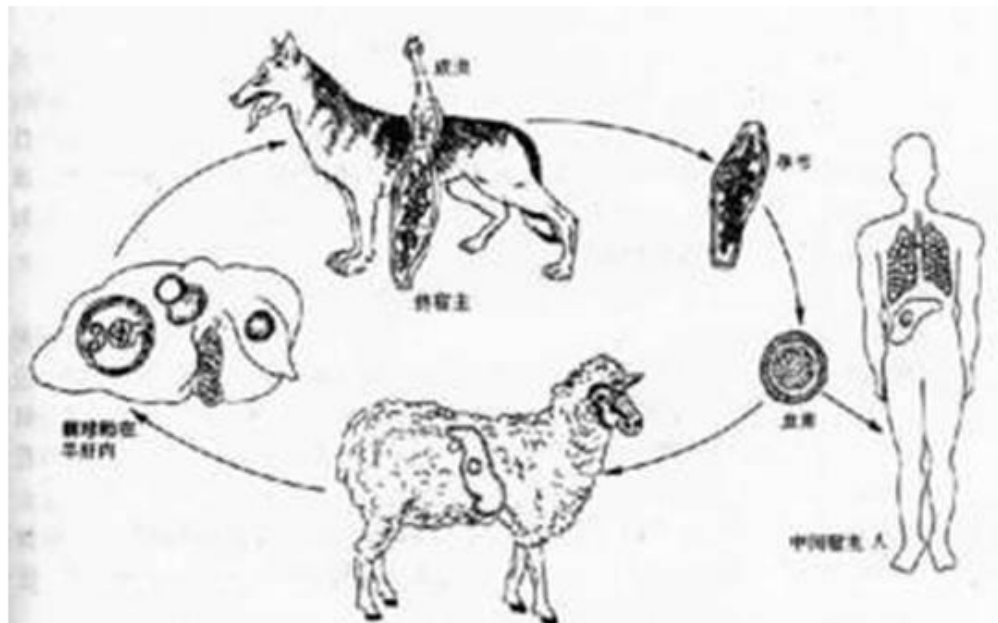
Transmission cycle



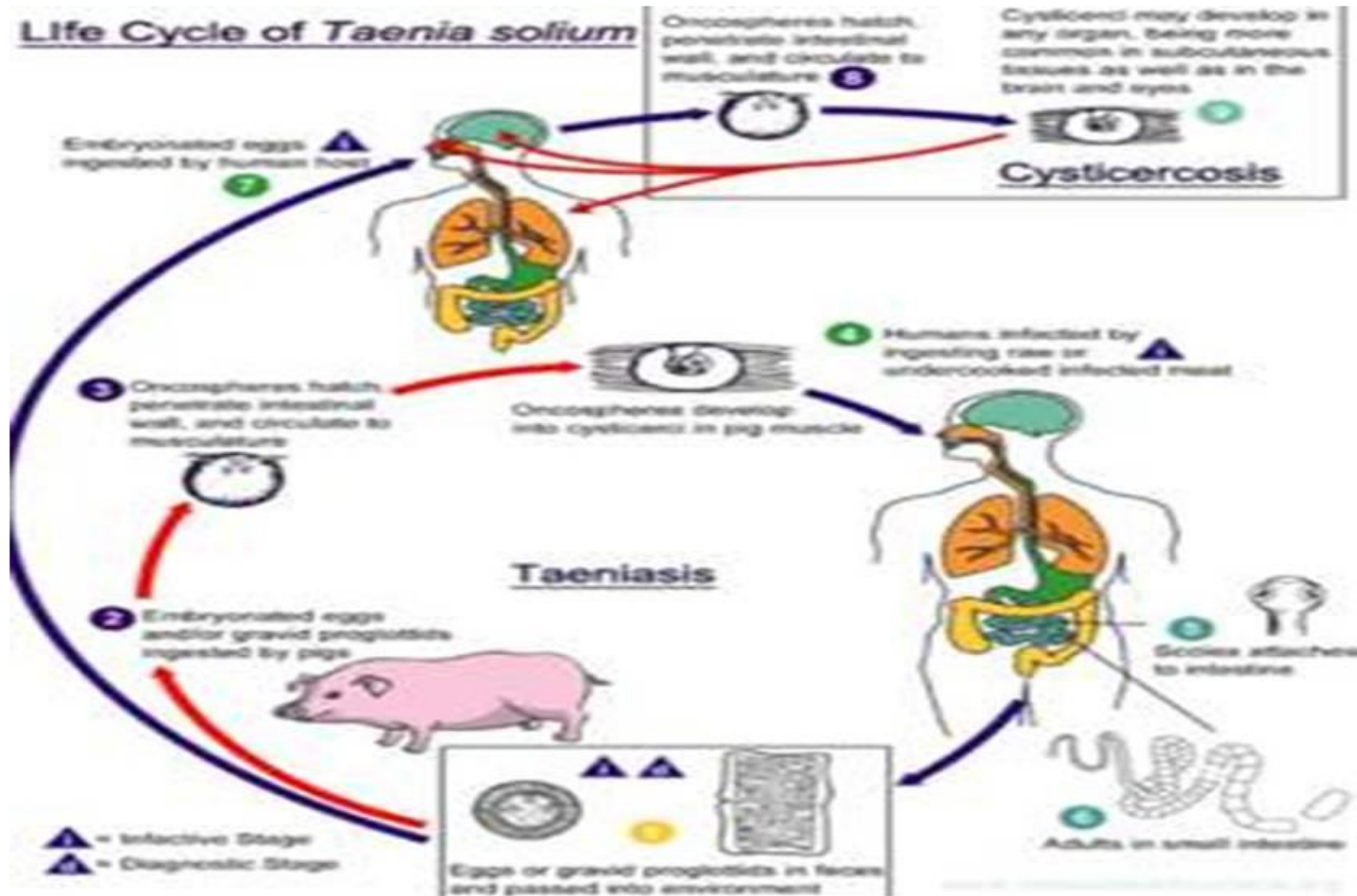
Transmission of infection to different host plays an important role in survival of infectious agent.

Host: A living organism plant, animal or arthropod that is capable of being infected with, and therefore giving sustenance to, an infectious agent is termed as host.

Definitive host/ Final host: A host in which an organism undergoes its sexual phase of reproduction (e.g., *Echinococcus granulosus* is in dogs; *Plasmodium* spp. in mosquitoes).



Intermediate host: A host in which an organism undergoes its asexual phase of life cycle. Eg cysticercosis in cattle or pig



- Primary (natural) host: An animal that maintains an infection in the endemic area (e.g., dogs infected with distemper virus).
- An infectious agent depends upon a primary host for its long-term existence, hence such host is also called as maintenance host.

- **Secondary (aberrant) host** : A host species that additionally involved in the life-cycle of an agent, especially out side typical endemic areas .

(e.g., cattle infected with strains of foot-and-mouth virus that usually cycle in buffaloes).

- **A secondary host sometimes can act as a maintenance host**

- **Amplifier host:** An animal which can increase the amount of infectious agent because of the sudden increase in their population size. *Typical example of such host is litters of baby pigs infected with Japanese encephalitis virus.*



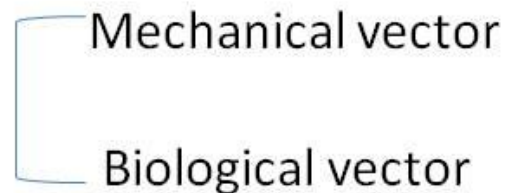
- **Hibernating host:** Such host which harbour the infectious agent without replication.

- **Incidental (dead-end or accidental) host** : Does not usually transmit an infectious agent to other animals (e.g., human infected with *Brucella abortus*).
- **Link host:** A host that forms a link between other host species (e.g., pigs linking infected herons/wild birds to man in Japanese encephalitis)

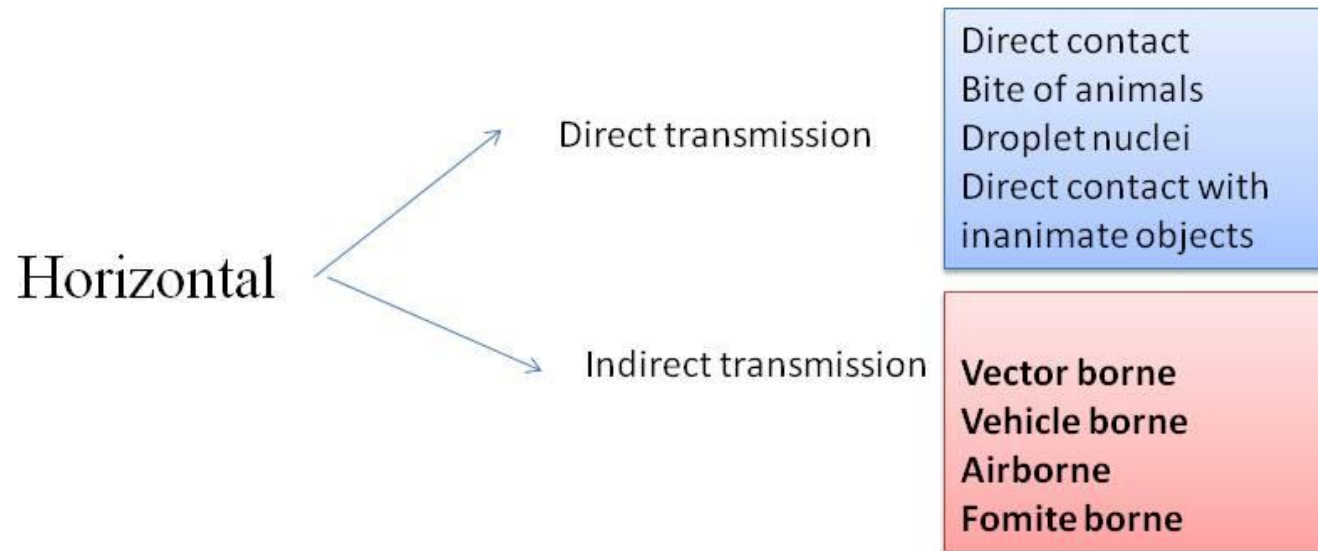
- **Reservoir host:** A reservoir host is one in which an infectious agent normally lives and multiplies without producing infection.
- They act as common source of infections to susceptible animals or humans.
- Inanimate object can also act as a reservoir for an infectious agent. E.g soil act as a reservoir for anthrax bacilli.

Vector

- **Vector:** They are the animate transmitter of infectious agents.
- They can be defined as invertebrate animals, usually arthropods, capable of transmitting infectious agents to vertebrate animals or humans.



Mode of transmission of infectious diseases



Vertical : Transmission of infectious agent from one generation to another.

Vector borne transmission

