

# RABIES

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# DEFINITION

Rabies is an acute highly fatal viral disease of central nervous system caused by Lyssa virus type 1.

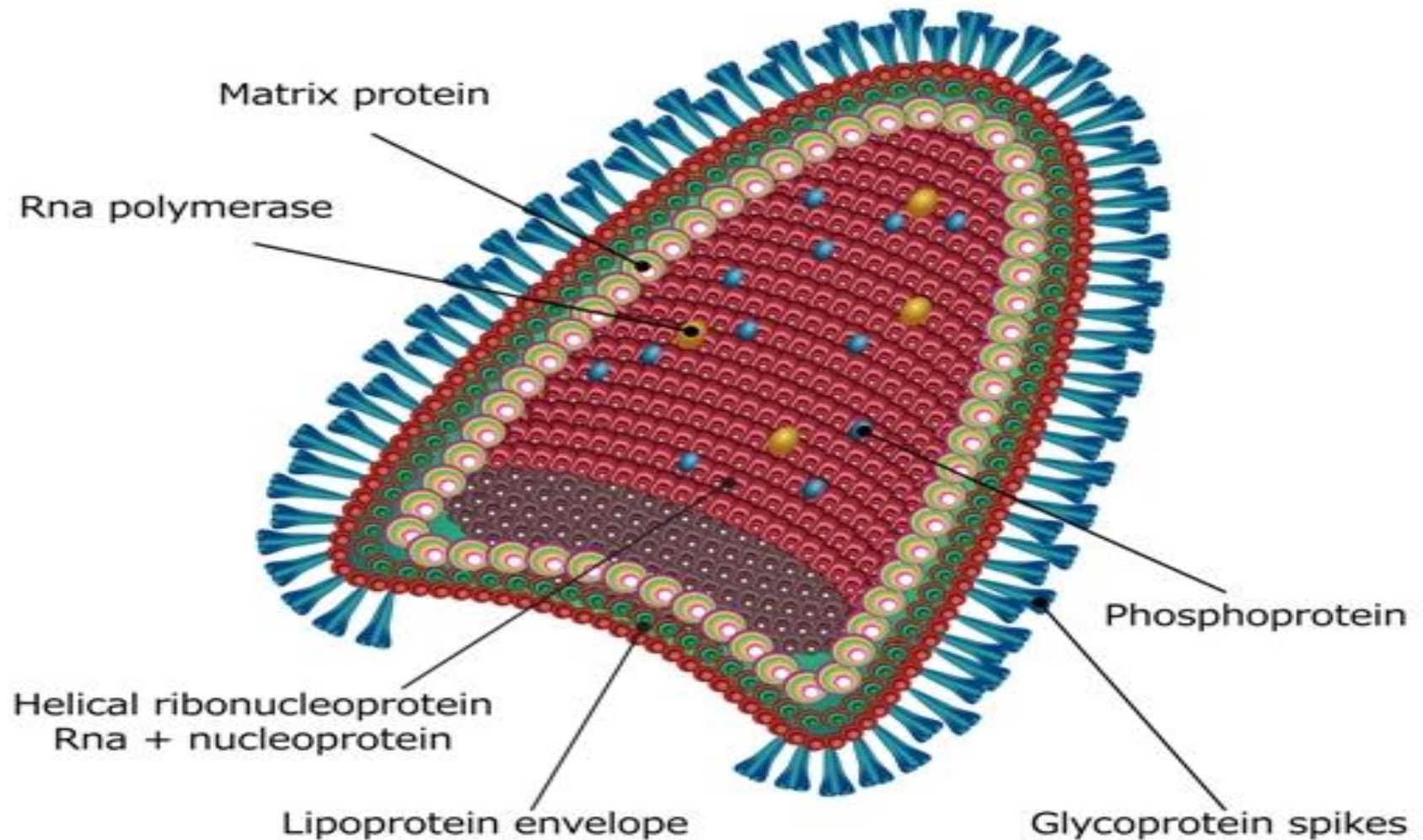
It is zoonotic disease of warm blooded animals especially carnivorous animals such as dogs, cats and wolves.

It is transmitted to man usually by bites or licks of rabid animals.

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# Rabies Virus

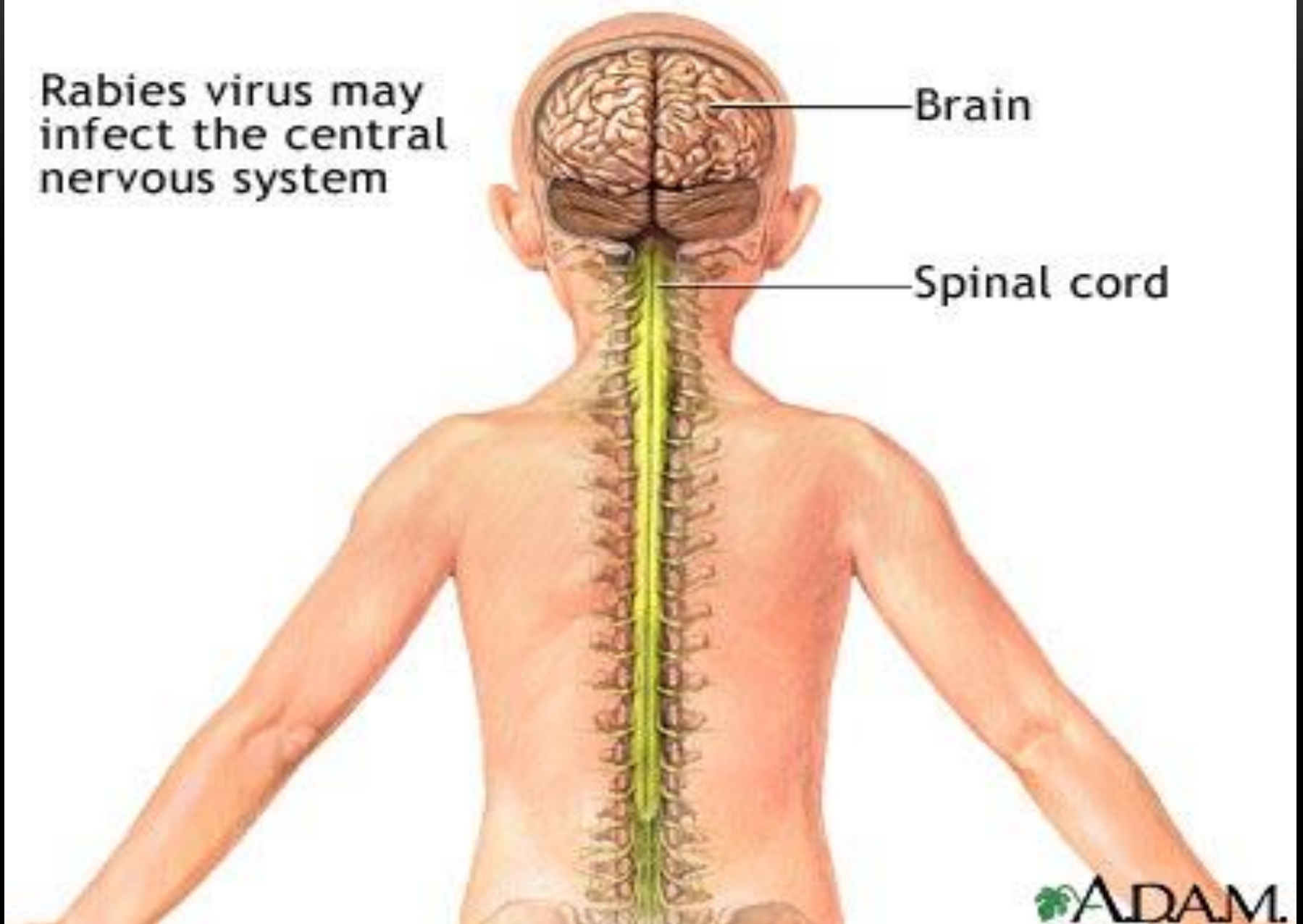
Baltimore Group V ((-)ssRNA)



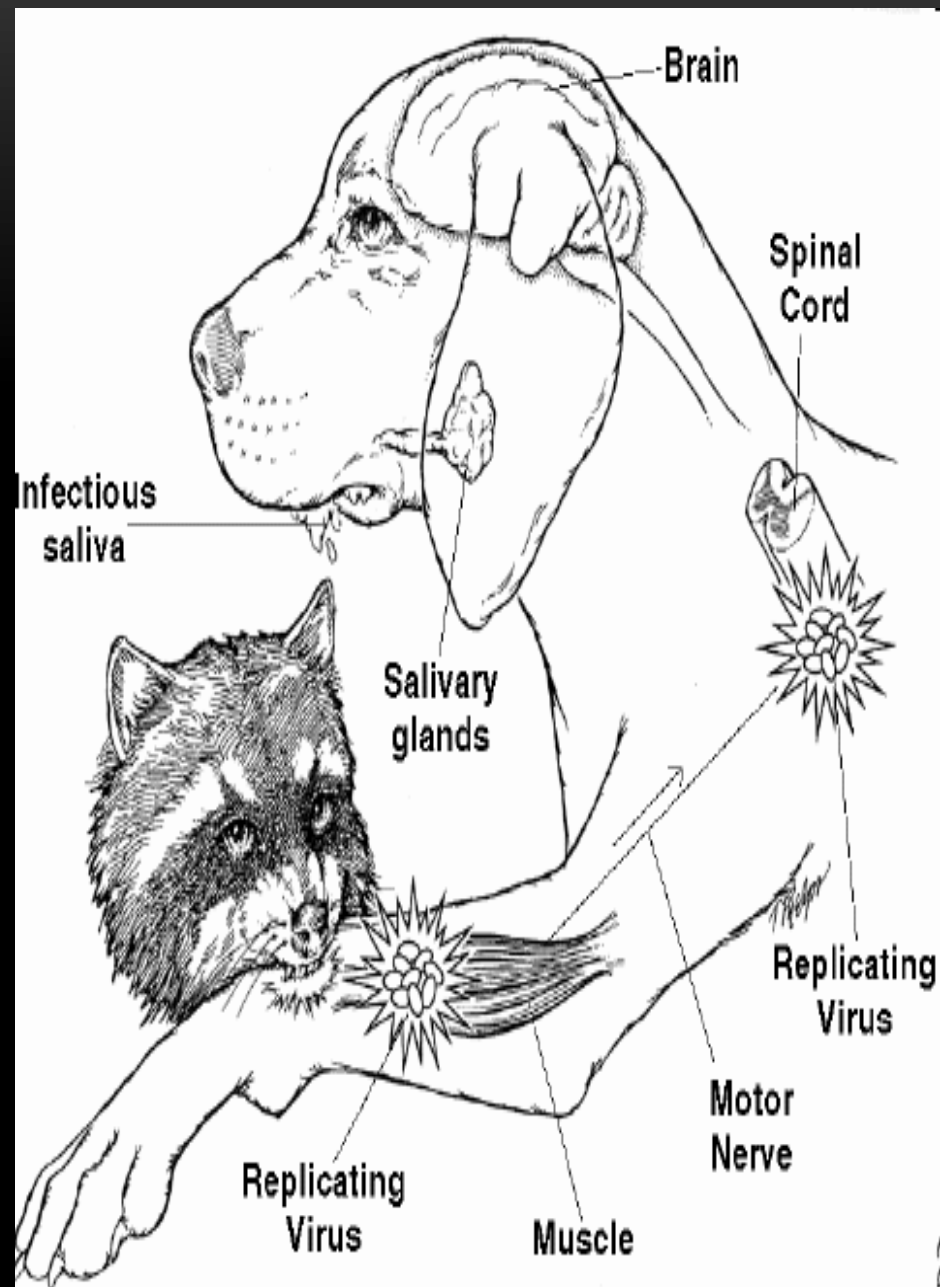
Rabies virus may  
infect the central  
nervous system

Brain

Spinal cord







# INTRODUCTION

- Rabies is a viral zoonotic disease that causes progressive and fatal inflammation of the brain and spinal cord. Clinically, it has two forms:
  1. Furious rabies – characterized by hyperactivity and hallucinations.
  2. Paralytic rabies – characterized by paralysis and coma.
- Although fatal once clinical signs appear, rabies is entirely avoidable; vaccines, medicines and technologies have long been available to prevent death from rabies. Nevertheless, rabies still kills tens of thousands of people each year. Of these cases, approximately 99% are acquired from the bite of an infected dog.

# INTRODUCTION

- Dog-mediated human rabies can be eliminated by tackling the disease at its source: infected dogs. Making people aware of how to avoid the bites of rabid dogs, to seek treatment when bitten and to vaccinate animals can successfully disrupt the rabies transmission cycle.
- Rabies is estimated to cause 59 000 human deaths annually in over 150 countries, with 95% of cases occurring in Africa and Asia. Due to underreporting and uncertain estimates, this number is likely a gross underestimate. Approximately half of cases attributable to children under 15 years of age.

# GEOGRAPHICAL DISTRIBUTION

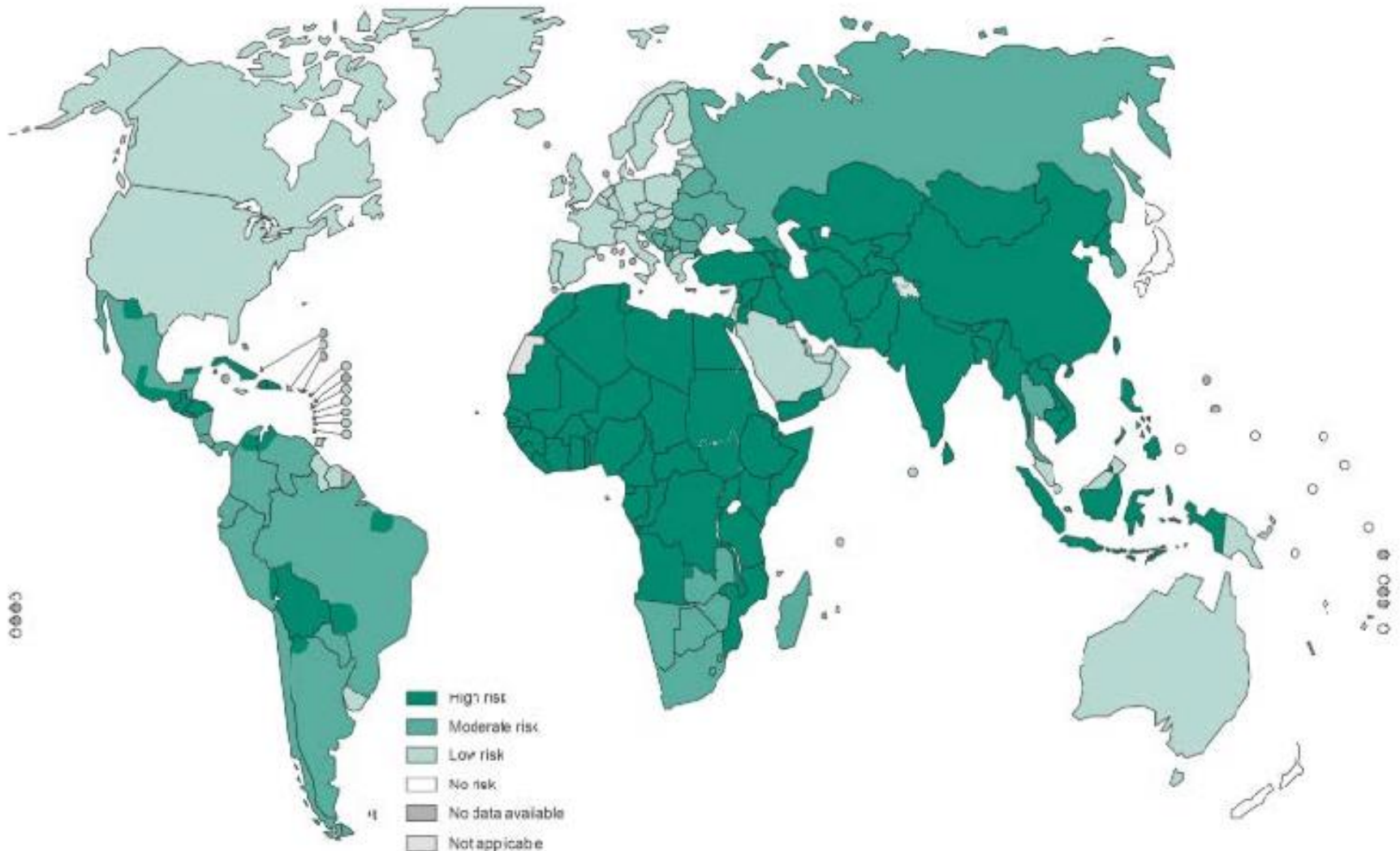
Rabies is an **enzootic and epizootic** disease of world wide importance. Some countries have achieved (rabies free) by vigorous campaign of elimination while in others the disease has never been introduced.

Water is regard as the most important barrier for rabies.

Rabies free area is defined as area in which no case of indigenously acquired rabies has been reported in man or animal in previous 2 years in presence of surveillance system and health regulations.



# GLOBAL DISTRIBUTION OF HIGH-RISK LOCATIONS FOR HUMAN RABIES (WHO, 2018)



| Indicator                  | Reported number of human rabies deaths |         |         |         |         |         |         |         |
|----------------------------|--|---------|---------|---------|---------|---------|---------|---------|
| Location                   | 2017                                   | 2016    | 2015    | 2014    | 2013    | 2012    | 2011    | 2010    |
| Georgia                    | 0                                      | 0       | 0       | 4       | 3       | 2       | 1       | 1       |
| Germany                    | 0                                      | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| Ghana                      | 8                                      | 10      | 15      | No data | No data | No data | No data | No data |
| Greece                     | 0                                      | 0       | 0       | 0       | No data | 0       | 0       | 0       |
| Grenada                    | No data                                | No data | No data | No data | 0       | 0       | 0       | 0       |
| Guatemala                  | 1                                      | 2       | 0       | 2       | 1       | 0       | 3       | 1       |
| Guinea                     | No data                                | No data | No data | No data | No data | No data | No data | No data |
| Guinea-Bissau              | No data                                | No data | No data | 6       | No data | No data | No data | No data |
| Guyana                     | No data                                | No data | No data | No data | No data | No data | 0       | 0       |
| Haiti                      | 8                                      | 8       | 3       | 4       | 3       | 2       | 13      | 1       |
| Honduras                   | No data                                | No data | No data | 0       | 0       | 0       | 0       | 0       |
| Hungary                    | 0                                      | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| Iceland                    | No data                                | No data | No data | No data | No data | No data | No data | No data |
| India                      | No data                                | No data | No data | No data | No data | No data | No data | No data |
| Indonesia                  | No data                                | No data | No data | No data | No data | No data | No data | No data |
| Iran (Islamic Republic of) | 12                                     | 1       | 7       | 4       | 5       | 6       | 8       | 4       |
| Iraq                       | 9                                      | No data | 6       | 12      | 8       | 11      | No data | No data |
| Ireland                    | 0                                      | 0       | 0       | 0       | 0       | 0       | 0       | 0       |

### **Infectious agent:**

Lyssa virus type 1 which is RNA virus belong to rhabdoviridae family.

### **Reservoir of infection:**

Wild and domestic animal including dogs, foxes, wolves and other biting animals. Bats also regard as a reservoir of infection in some area like Mexico.

### **Source of infection:**

The source of infection to man is the saliva of rabid animals. In dogs and cats the virus may be present in the saliva for 3 to 4 days before the onset of disease and persist during the course of illness until death.

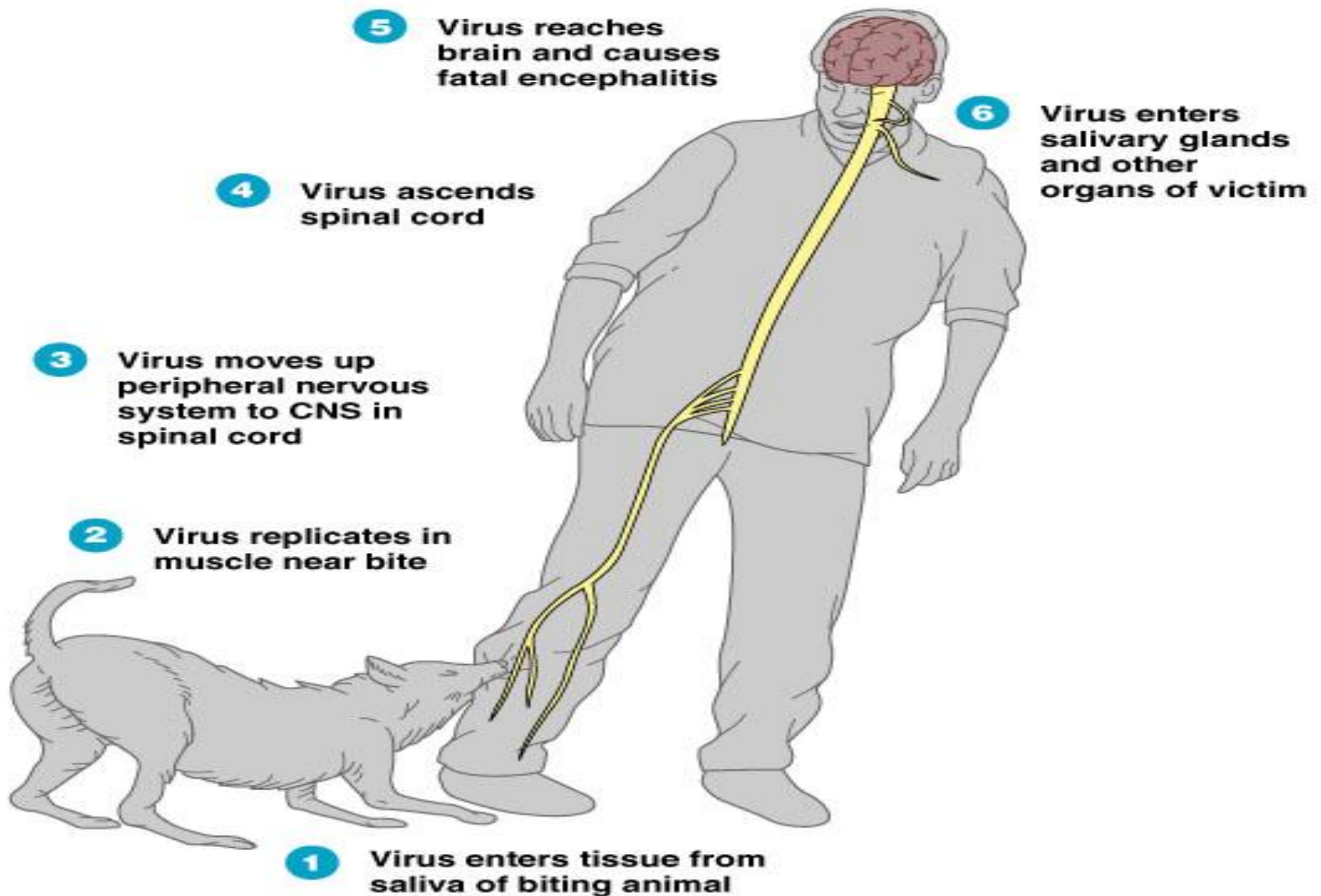
## **Susceptibility:**

All mammals are susceptible. Studies show that not every person bite by rabid animal and not receive treatment develop disease but those develop disease represent about 40%.

## **Mode of transmission:**

1. Animal bites.
2. Licks on abraded skin and mucosa.
3. Aerosols: in caves harboring rabies infected bats.
4. Person to person: man to man transmission although rare but possible by corneal and organ transplants.







## Incubation period:

The incubation period in man is highly variable commonly 3 to 8 weeks (sometimes as short as 4 days and may persist to many years).

## The incubation period depend on the following:

1. Site of bite.
2. Severity of bite.
3. Number of the wounds.
4. Amount of virus injected.
- 5 . Species of the biting animal.
- 6 . Protection provided by clothes and treatment.

## Shorter incubation period occur in:

(Sever exposure, bite in head, neck, face and upper extremities and bite by wild animal).