

RABIES

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DEFINITION

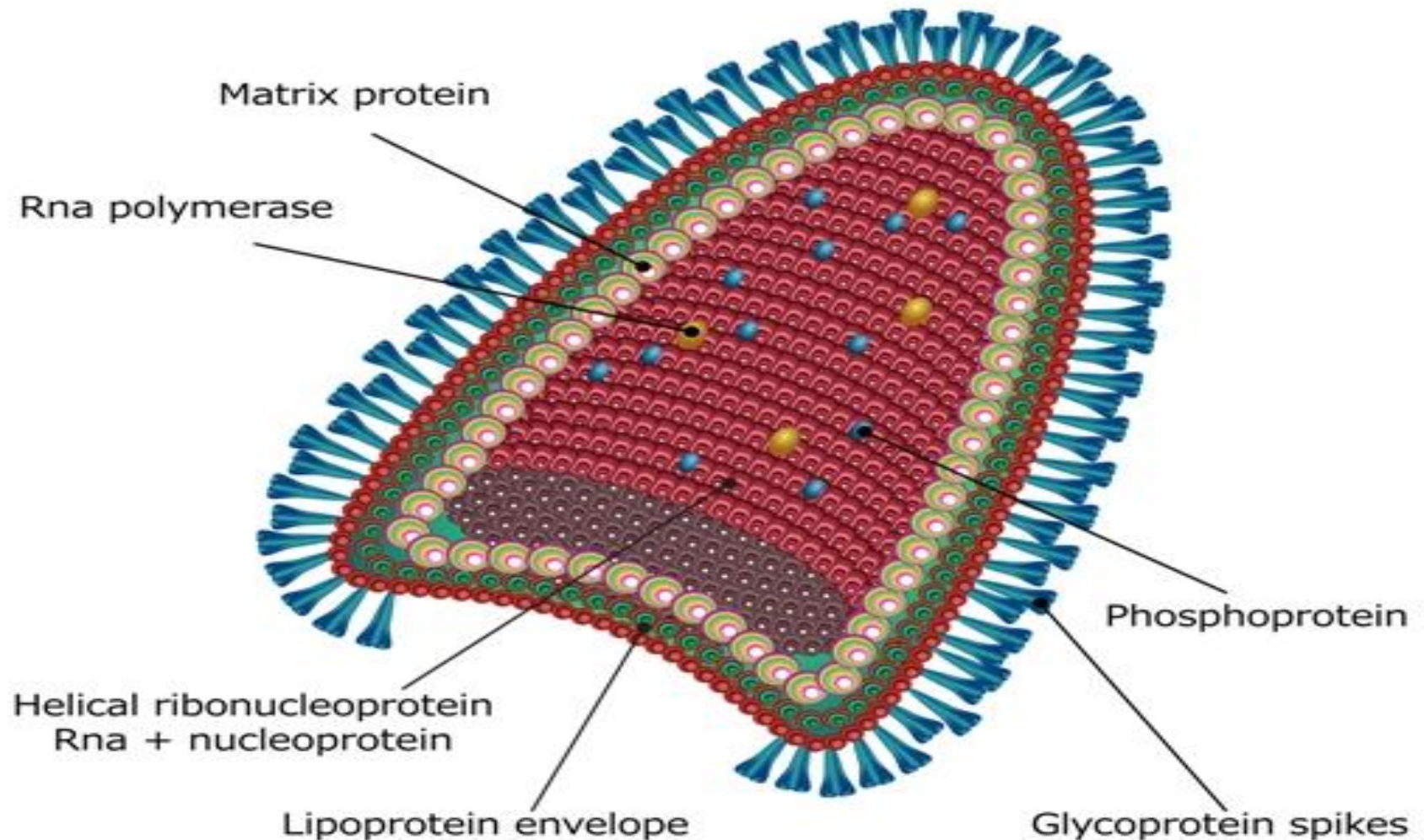
Rabies is an acute highly fatal viral disease of central nervous system caused by Lyssa virus type 1.

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.

Rabies Virus

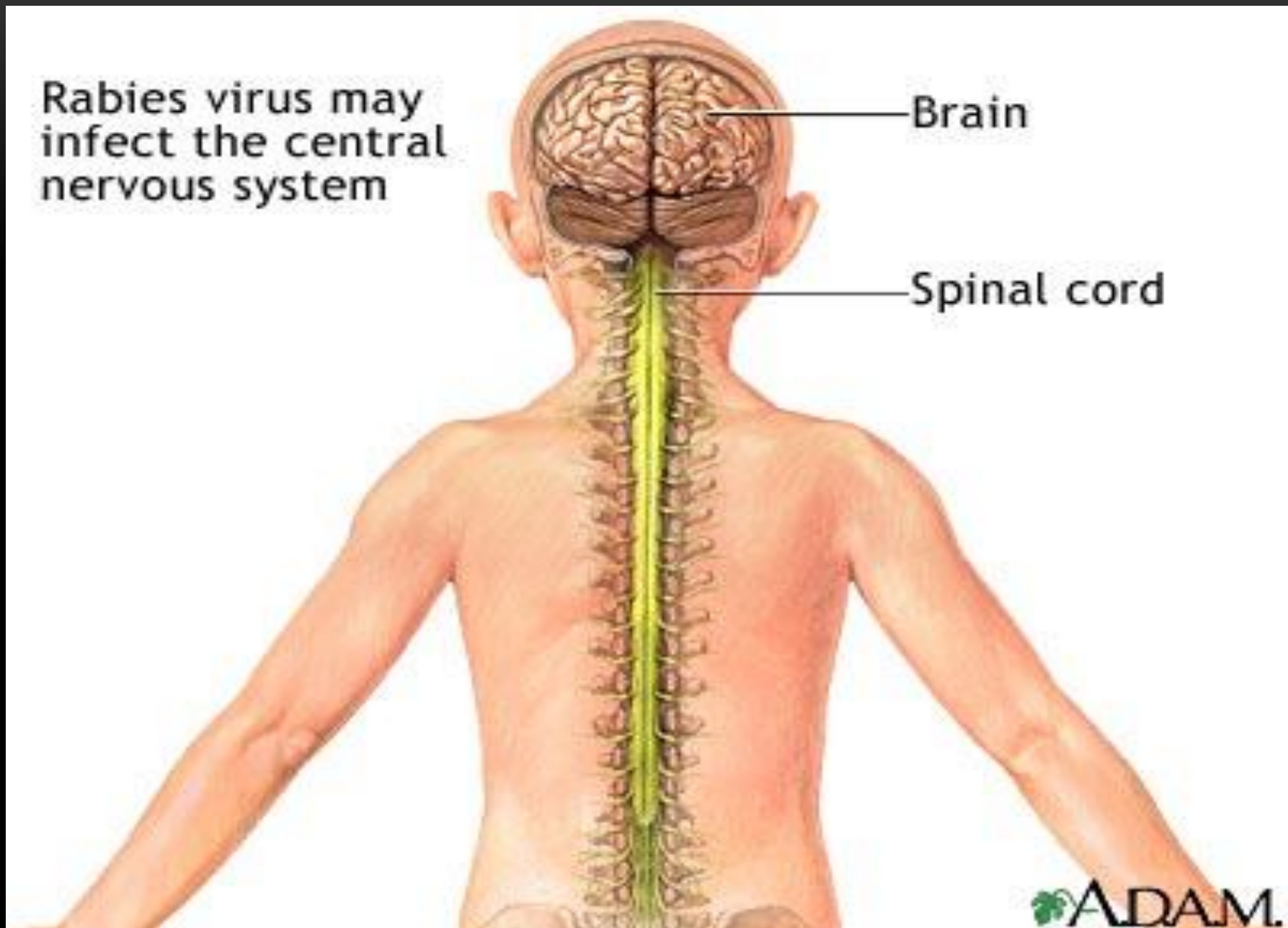
Baltimore Group V ((-)ssRNA)

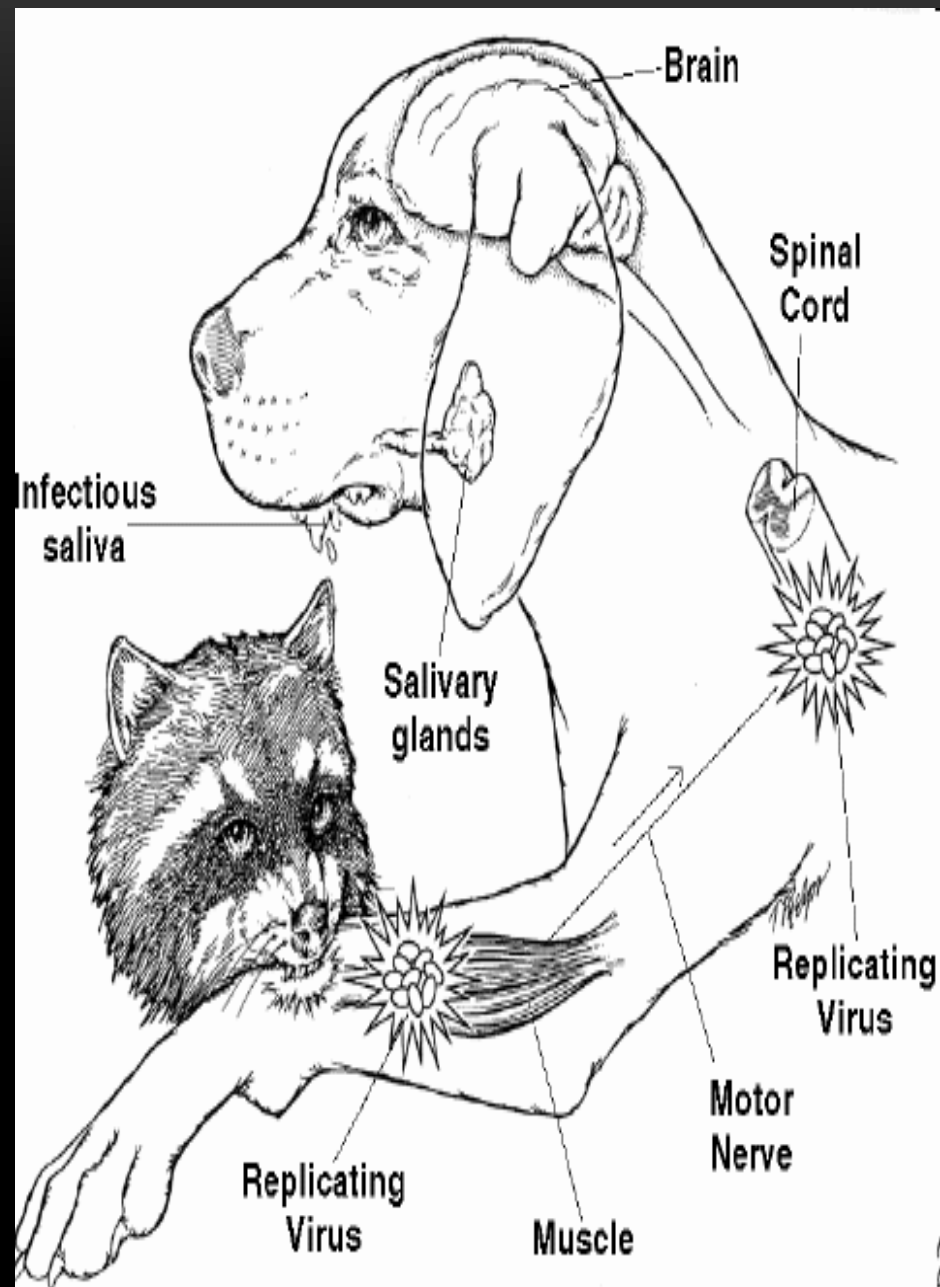


Rabies virus may
infect the central
nervous system

Brain

Spinal cord





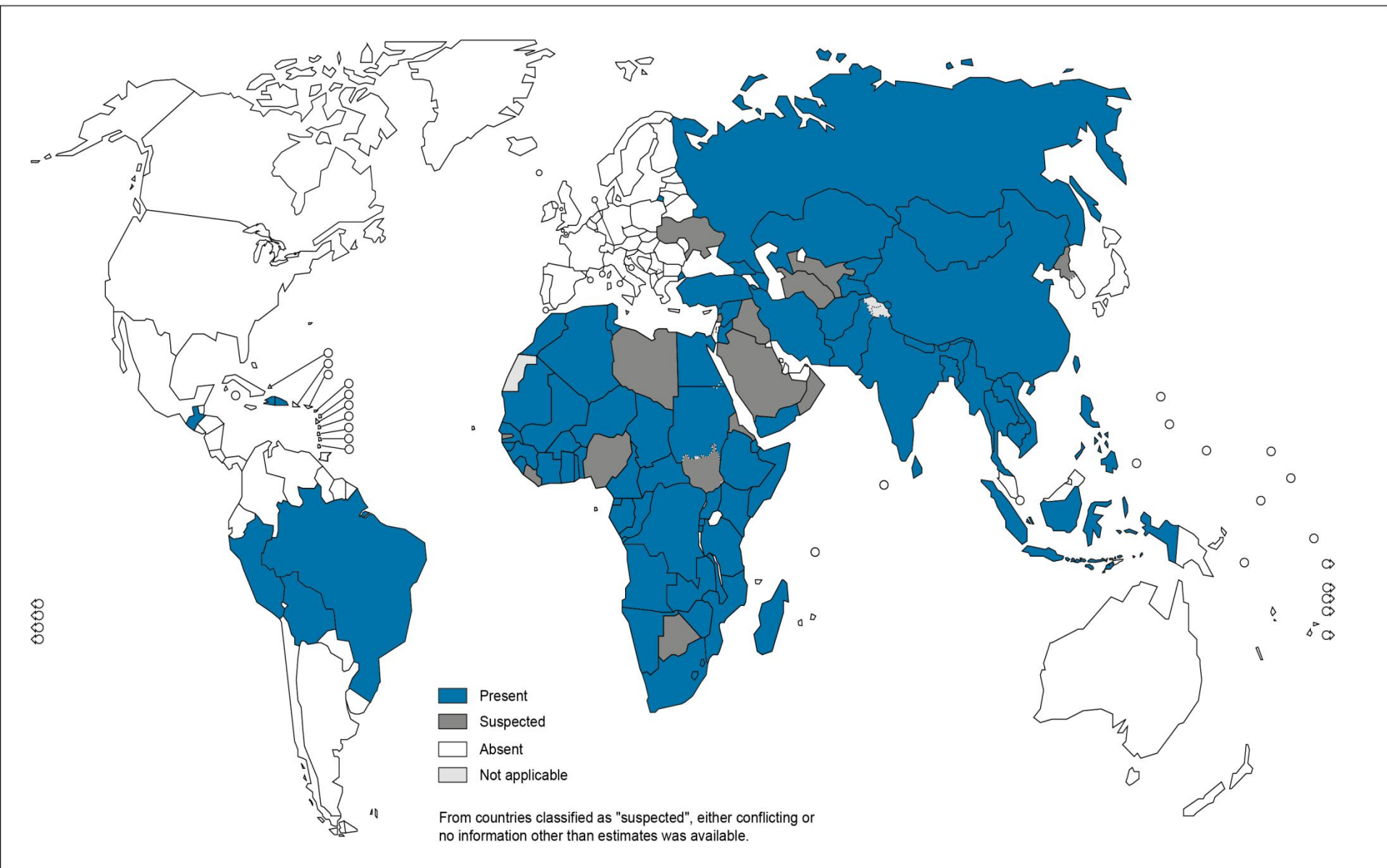
GEOGRAPHICAL DISTRIBUTION

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.

Presence of dog-transmitted human rabies based on most recent data points from different sources, 2010-2014



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2015. All rights reserved

Data Source: World Health Organization
Map Production: Control of Neglected
Tropical Diseases (NTD)
World Health Organization

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.

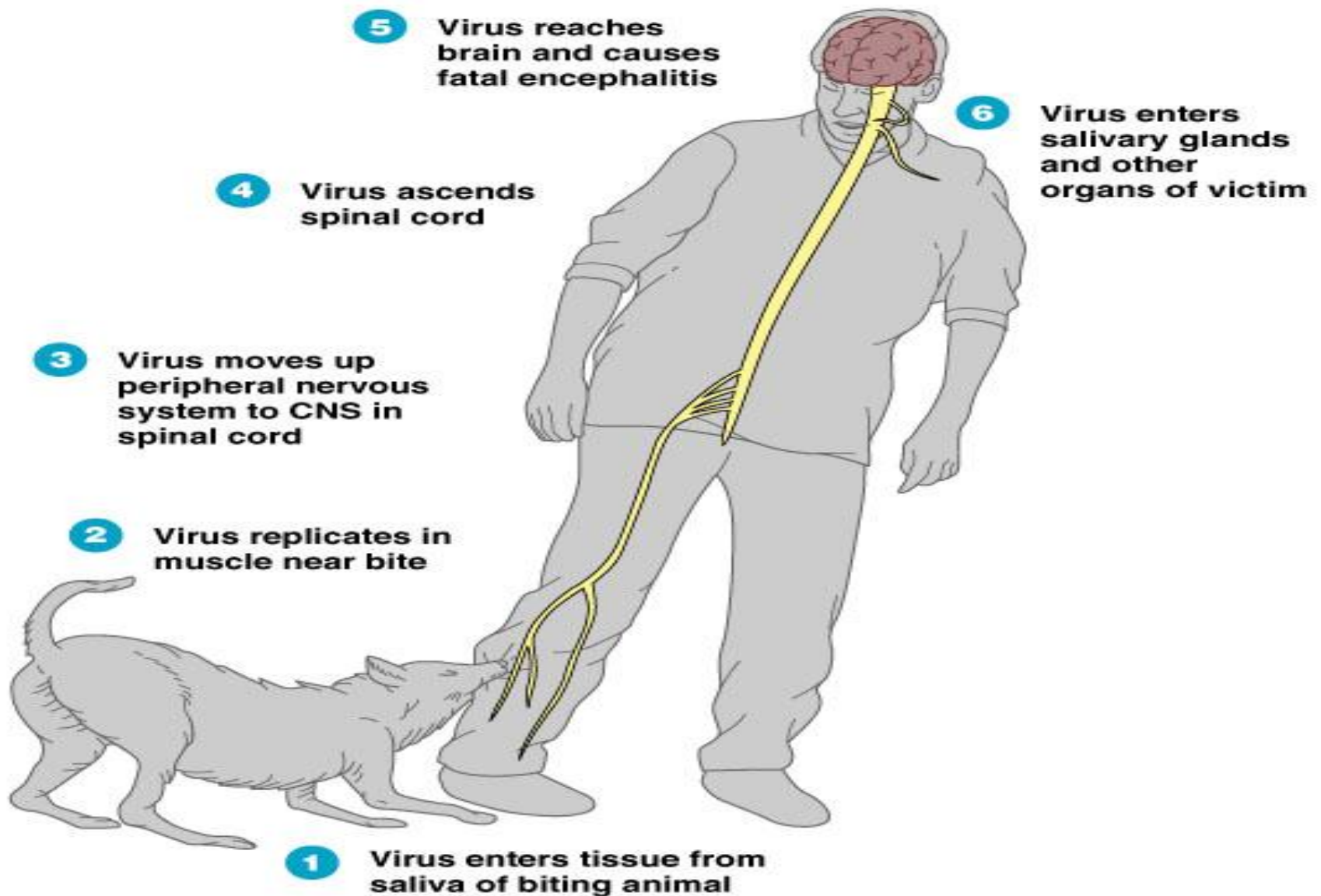
Susceptibility:

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).

CLINICAL PICTURE AND DIAGNOSIS

Clinical picture:

The disease begins with prodromal symptoms such as headache, malaise, sore throat and slight fever for 3-4 days.

This stage is followed by widespread excitation of nervous system. The patient is intolerant to noise, bright light with aerophobia and hydrophobia which pathognomonic of rabies.

Duration of disease is 2 to 3 days the patient may die abruptly during convulsions or may pass to paralysis or coma.

Diagnosis:

Rabies can be confirmed in patients by antigen detection using immunofluorescence of skin biopsy and by virus isolation from saliva and other secretions.

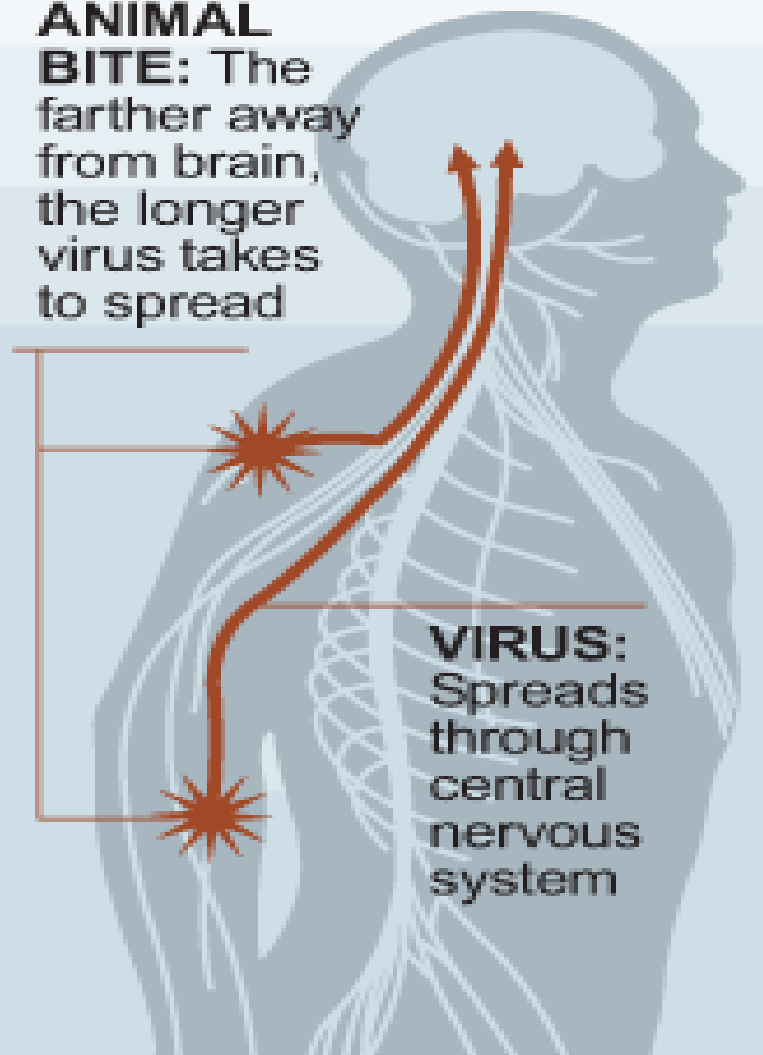


Rabies

How it spreads

ANIMAL

BITE: The farther away from brain, the longer virus takes to spread



VIRUS: Spreads through central nervous system

Common carriers of rabies

Infected animals: Show no fear for humans; act very agitated



Dog: Another common rabies source

Symptoms in humans

- Fever, depression
- Agitation
- Painful spasms followed by excessive saliva
- Death within a week without vaccine



Treatment: Hospitalization, immune globulin injections, anti-rabies vaccine



Foaming at mouth after drinking: Produced by spasms in throat

METHODS OF CONTROL

A .PREVENTIVE MEASURES

1. Immunize all dogs and cats in enzootic countries.
2. Maintain active surveillance for rabies in animals.





3. Observe clinically for **10 days** any dog or cat known to have bitten person (unwanted dog or cat can be sacrificed immediately and examine for rabies) if the biting animal was infected at time of bite, sign of rabies will usually occur within 4-7 days with paralysis followed by death.

The head of animal must be sent to laboratory to confirm diagnosis of rabies by microscopically identification of **Negri bodies**.

4. Individuals who are at high risk for rabies should be protected by pre exposure immunization using potent and safe cell culture vaccine which given in 3 doses of (1ml) IM on days (0,7,21 or 28). If the risk of exposure continue booster doses need to be given at interval of 2 years.

Those individuals include the following:

- a. Laboratory staff working with rabies virus.
- b. Veterinarians.
- c. Animal handlers.
- d . Wild life officers.
- e. Long term travelers to rabies endemic area.

5. Post exposure prophylaxis:

Which is usually done for prevention of rabies after animal bites. Post exposure prophylaxis include the following:

- a. **First aid:** Immediate washing the wound with plenty of soap and water under a running tap with at least 15 minutes.
- b. **Chemical treatment:** using virucidal agents including alcohol or 0.01% aqueous solution of iodine or povidone iodine.
- c. **Suturing:** Bite wounds should be not sutured immediately to prevent additional trauma which may lead to spread the virus to deeper tissues , if suturing is necessary it should be done 24 to 48 hours later with minimum possible stitches under cover of anti rabies serum.

Wound cleaning & treatment





Initial treatment for an animal bite should include thorough cleansing however all animal bites should be seen by a physician

Apply pressure if
bite is actively
bleeding



d. Anti rabies serum: local application of anti rabies serum is very effective in preventing rabies.

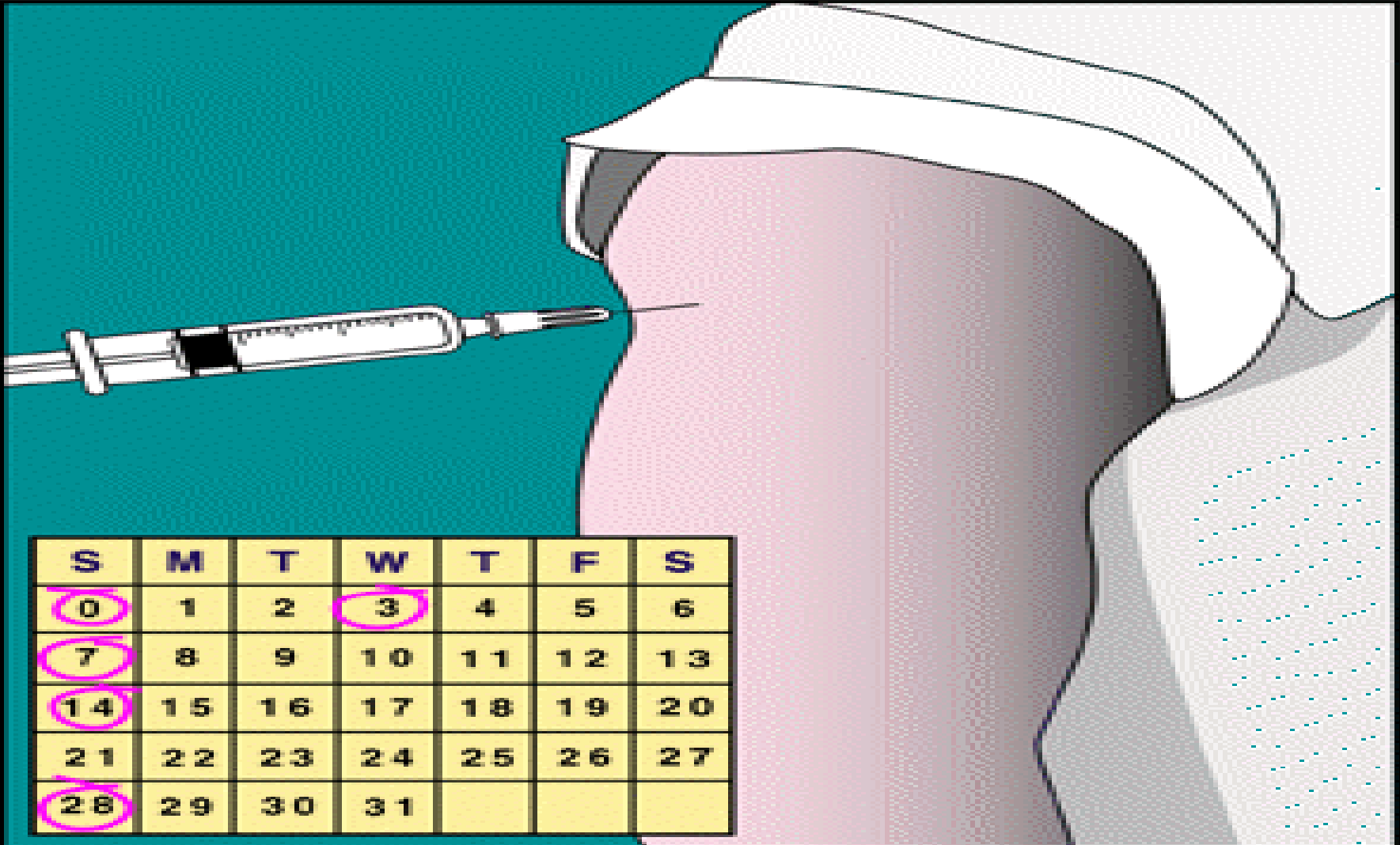
e . Antibiotics and anti tetanus measures.

f . Observe the animal for 10 days: if the animal show sign of rabies it should be killed and the head send to laboratory examination to ensure the diagnosis. If the animal remain alive and healthy at the end of 10 days there is no indication of anti rabies treatment.

g. Vaccine administration:

By using modern cell culture vaccine with routine intra muscular schedule in deltoid muscle which consist of 6 doses of (1 ml) on days (0, 3, 7, 14 , 28 and 90).

VACCINE ADMINISTRATION



Indications of anti rabies treatment:

- a. If the animal show sign of rabies or die within 10 days of observation.
- b. If the biting animal cannot be identified.
- c. All bites by wild animals.
- d. If laboratory tests of brain of animal is positive for rabies.
- e. Unprovoked bites.

6. Post exposure prophylaxis of person who have been vaccinated previously

If the patient antibody titre is unknown or the bite is severe we use (3 IM doses of vaccine on days 0, 3 and 7) while if titre is high or bite is not so severe so give (2 doses on days 0 and 3).

No need for systemic passive immunization (IG).

Exposure category	Type of contact with suspected rabid animal	Treatment
<u>category I</u>	touching or feeding animals, licks on intact skin	None
<u>category II</u>	nibbling of uncovered skin, minor scratches or abrasions without bleeding, licks on broken skin	Administer vaccine immediately , stop treatment if animal remain healthy throughout 10 days of observation or laboratory test negative for rabies
<u>category III</u>	single or multiple transdermal bites or scratches, contamination of mucous membrane with saliva from licks	Administer vaccine and immunoglobulin immediately , stop treatment if animal remain healthy throughout 10 days of observation or laboratory test negative for rabies



RABIES VACCINE



B. CONTROL OF PATIENT, CONTACTS AND IMMEDIATE ENVIRONMENT

1. Report to local health authority.
2. Concurrent disinfection: of saliva and articles soiled with them.
3. Immunization of contacts: contacts who have open wound or mucus membrane expose to patient saliva should receive anti rabies treatment.
4. Investigation of contacts and source of infection by searching for rabid animals.
6. Specific treatment: only by supportive medical care.

RABIES IS 100% FATAL YET EASILY PREVENTABLE

**Wash the wound
immediately with
water & soap**



**Do not ignore animal
bites or scratches**



**Consult doctor /hospital
for anti rabies treatment
without delay**



PREVENT RABIES!

SUMMARY

- ❖ Rabies is a vaccine-preventable viral disease which occurs in more than 150 countries and territories.
- ❖ Dogs are the source of the vast majority of human rabies deaths and Rabies elimination is feasible by vaccinating dogs.
- ❖ Infection causes tens of thousands of deaths every year, mostly in Asia and Africa.
- ❖ 40% of people who are bitten by suspect rabid animals are children under 15 years of age.
- ❖ Immediate wound cleansing with soap and water after contact with a suspect rabid animal can be life-saving.
- ❖ Every year, more than 15 million people worldwide receive a post-bite vaccination to prevent the disease; this is estimated to prevent hundreds of thousands of rabies deaths annually.

SUMMARY

- ❖ Rabies, a zoonotic disease, requires close co-ordination between animal and human health sectors at the national, regional and continental levels. In December 2015, a global framework to reach zero human rabies deaths by 2030 was launched by WHO and the World Organization for Animal Health (OIE), in collaboration with the Food and Agriculture Organization of United Nations (FAO) and the Global Alliance for Rabies Control. This initiative marks the first time that the human and animal health sectors have come together to adopt a common strategy against this devastating but massively neglected disease.

SUMMARY

- ❖ Rabies transmitted by dogs has been eliminated in many Latin American countries, including Chile, Costa Rica, Panama, Uruguay, most of Argentina, the states of São Paulo and Rio de Janeiro in Brazil, and large parts of Mexico and Peru.
- ❖ Many countries in the WHO South-East Asia Region have embarked on elimination campaigns in line with the target of regional elimination by 2020.
- ❖ Bangladesh launched an elimination programme in 2010 and, through the **management of dog bites, mass dog vaccination and increased availability of vaccines free of charge**, human rabies deaths decreased by 50% during 2010–2013.

WORLD'S RABIES DAY (ON SEPTEMBER 28)

World Rabies Day is celebrated annually to raise awareness about rabies prevention and to highlight progress in defeating this horrifying disease.

28 September also marks the anniversary of Louis Pasteur's death, the French chemist and microbiologist, who developed the first rabies vaccine.



SUMMARY

28 September 2016, the World Health Organization (WHO) estimates that up to 99% of human rabies cases are transmitted by the bite of infected dogs and that the infection causes tens of thousands of deaths every year, mostly in Africa and Asia.

Four out of every 10 deaths from rabies are in children aged under 15 years.

Although immediate wound cleansing with soap and water after contact with a suspected rabid animal can be life-saving, it is crucial also that people living in at-risk and endemic areas access prompt wound management and vaccines.

RABIES

Zero deaths by 2030

99%

human cases
result from
dog bites

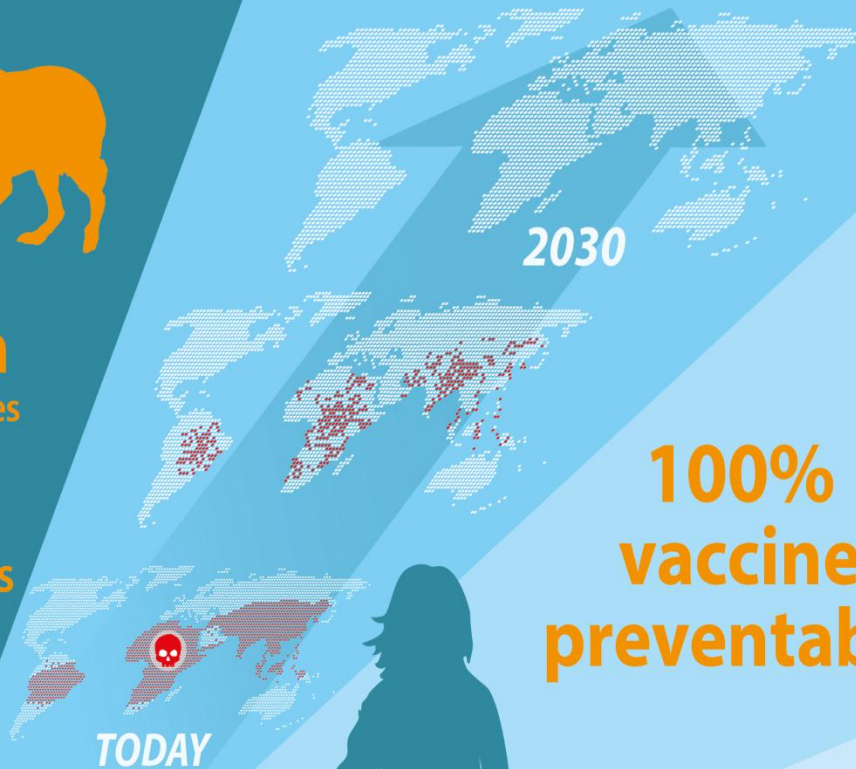


One death



every 15 minutes
worldwide

4 out of 10 deaths
are in children



2030

TODAY

**100%
vaccine
preventable**

**no bite
no rabies**



learn
how to
interact



World Health
Organization

#rabies
28 September
World Rabies Day

www.who.int/rabies/en

GLOBAL PARTNERS ANNOUNCE PLAN TO END HUMAN DEATHS FROM DOG-TRANSMITTED RABIES BY 2030



RABIES PREVENTION



World Health
Organization

IF



1. WASH!



**3. MONITOR
THE DOG**



**2. → FIRST AID
CENTER**



**Post-bite
treatment**



Thank you