

A high-magnification electron micrograph showing numerous rabies virus particles. These particles are elongated, bullet-shaped, and have a distinct outer envelope and a darker, more textured internal core. They are scattered across the field of view, with some appearing in small clusters.

RABIES

SYDNEY LEE

INTRODUCTION

WHAT WILL BE COVERED

- What is rabies
- Why is rabies an issue?
- Where does rabies occur the most
- Signs of infection
- Likely animal hosts of rabies
- Signs and symptoms of rabies
- How to protect against rabies



(World Health Organization, 2019)

WHAT IS RABIES?

- A viral disease that affects the central nervous system of mammals. This frequently affects dogs, bats, foxes and cats and in turn, affects humans (World Health Organization, 2024b).
- Rabies (RABV) is considered a zoonotic disease, meaning it can be passed between humans and animals (World Organisation for Animal Health, 2025).

WHY SHOULD I BE CONCERNED?

**Rabies kills about
70,000 people
globally per year.**

(CDC, 2024)



**99% of human
rabies deaths occur
from dog bites!**

(World Organisation for Animal Health, 2025)

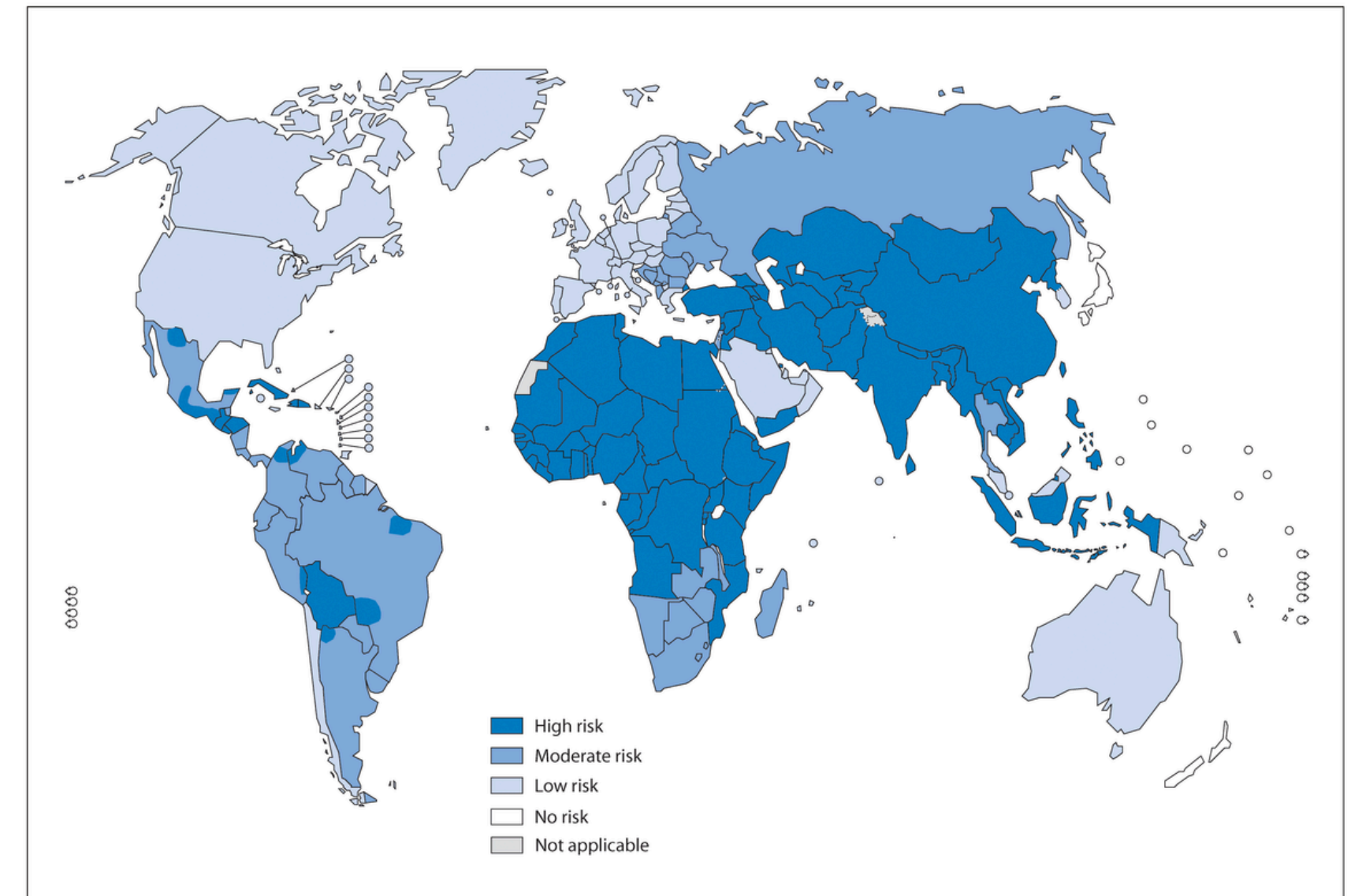
WHERE DOES IT OCCUR?

- Highest risk areas include rural Africa, Asia and Central/South America
- 95% of human deaths occur in Africa/Asia (World Health Organization, 2021)

- Some countries in this area are classified as “rabies - free” according to the WHO. This means there’s no record of an indigenously acquired case of human or animal rabies within two years period, in line with surveillance and import regulations (Singh et al., 2017).

- Some countries in Asia and Africa that have this status are: Japan, Singapore, Barbados, Jamaica, Cape Verde, Congo, Seychelles and Singapore (Public Health England, 2014).

Distribution of risk levels for humans contracting, rabies, worldwide, 2009



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 2010. All rights reserved

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



- Many Western nations including the UK, USA and the majority of the EU have “rabies - free” status! (Public Health England, 2016)

WHERE DOES IT OCCUR? (CONT'D)

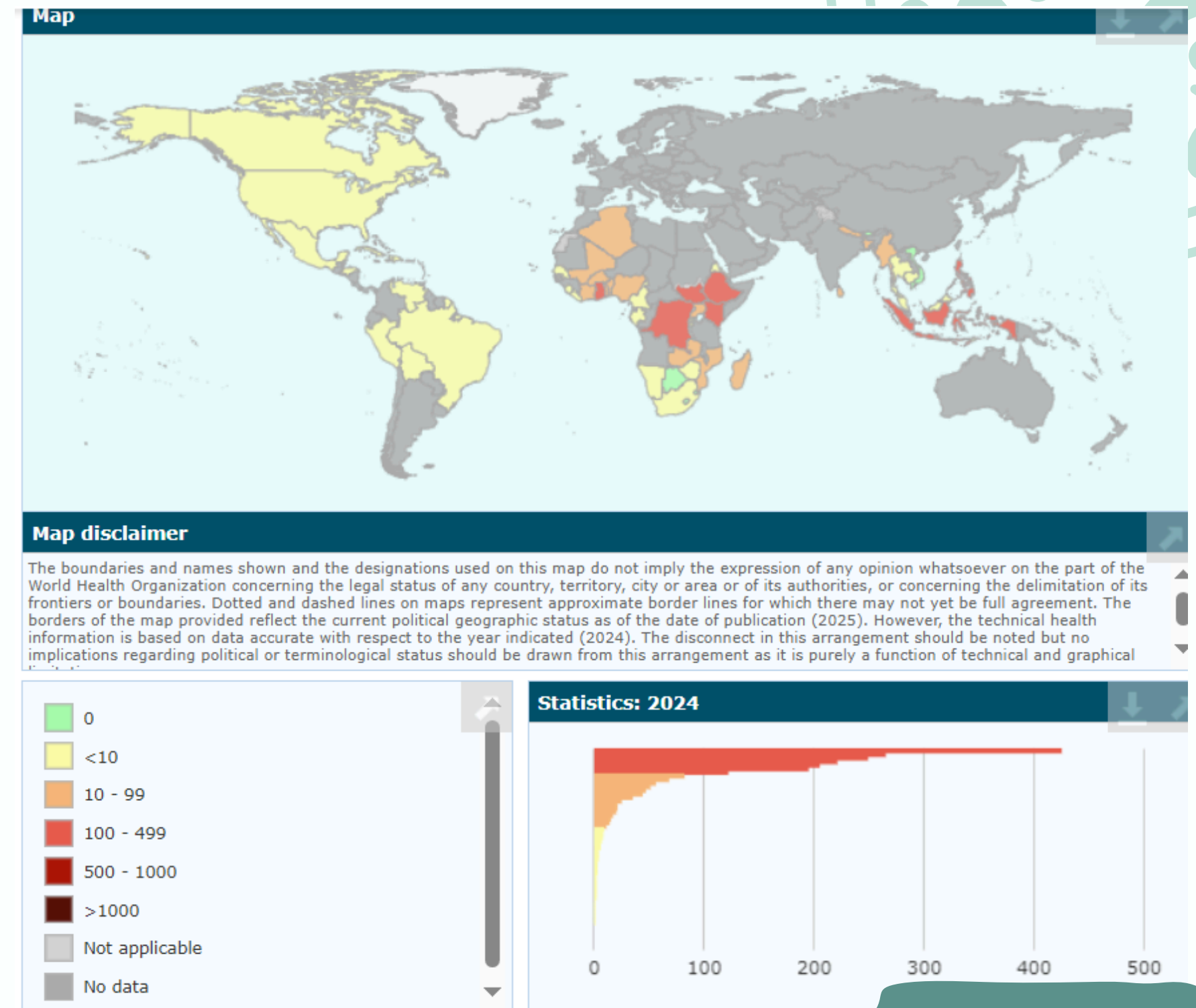
- The countries with the highest rabies mortality rates:
- India - nearly 36% of global rabies deaths occur in India
- Nigeria - 909 deaths (2024)
- Pakistan- 614 deaths (2021)
- China- 604 deaths (2021)
- Nepal - 479 deaths (2021)
- Philippines - 250 (2021)

(Travel Health Pro, 2025)



Stray dogs and limited access to PEP (post-exposure prophylaxis) are the main drivers behind these high mortality rates!

(World Health Organization, 2021)



Many countries aren't actively reporting cases!

SIGNS OF INFECTION

- Symptoms normally appear within a few weeks (3-12), but can occur after a few days.

Symptoms include:



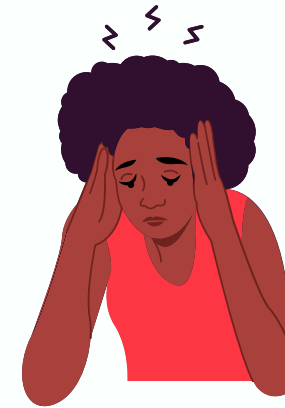
Fever



Nausea/ Vomiting



**Numbness/ Tinging
at bite site**



Headache



Paralysis



Energetic



**Anxiety/
Confusion**



Halucinations



Insomnia



Irritability

**Once symptoms are
present, the
infection is almost
100% FATAL.**

MOST LIKELY ANIMALS TO CONTRACT RABIES

- Dogs
- Cats
- Cows
- Ferrets
- Goats
- Horses

Domesticated/Farm Mammals

- Bats
- Beavers
- Coyotes
- Foxes
- Monkeys
- Raccoons
- Skunks

Wild Mammals

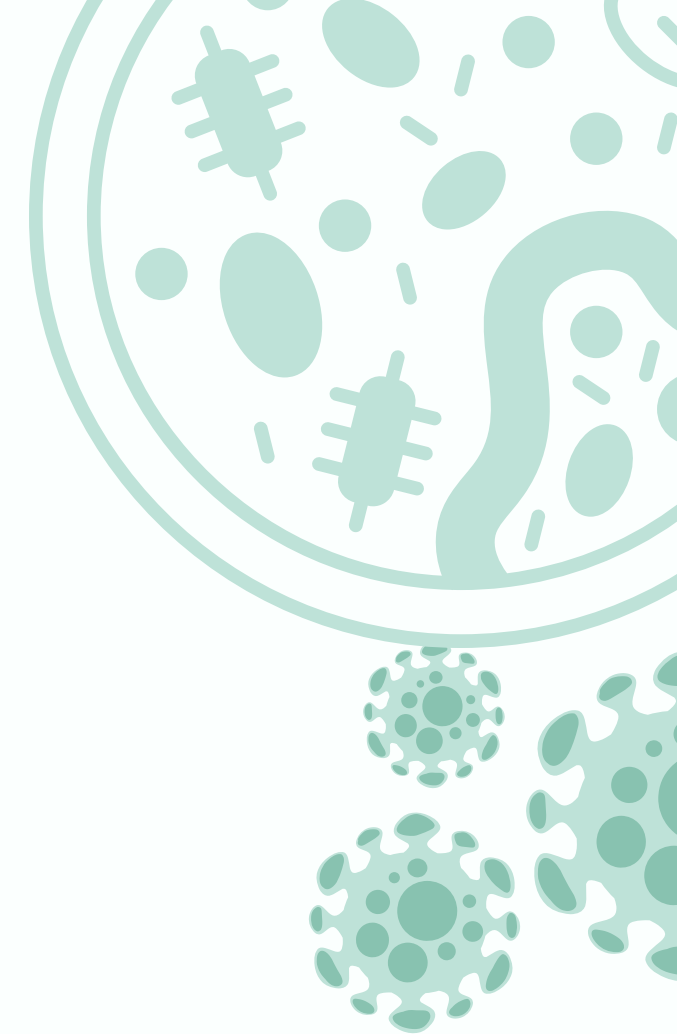
(Mayo Clinic, 2021)

Bats also spread rabies like viruses that cause clinical rabies in humans!

(Bat Conservation Trust, 2020)

HOW IT SPREADS

Rabies is initially transmitted via the bite of an infected animal, or direct contact with infected material (fluids, saliva, etc), Once bitten, there's 3 key stages to infection: (Cleveland Clinic, 2022)

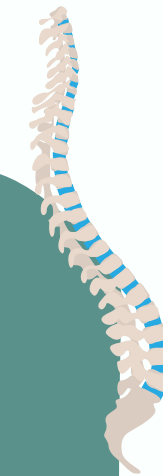


1 Incubation Phase



- Can lie dormant in the body for days up to weeks
- If treatment is received during this time

2 Prodromal Phase



- Virus travels through spinal column nerves until it reaches the brain
- Symptoms emerge

3 Acute Neurologic Phase



- Aggression seizures and delirium.
- Also paralysis, coma then eventual death.

INFECTION RATE (INCIDENCE & PREVALENCE)



- Rabies has been virtually eliminated
- However rabies like viruses are presents in bats throughout the UK and Europe.
- Since 1946, only 26 cases have been reported in the UK
- Outside of one case (bat virus), all cases were exposure based elsewhere in the world

(Public Health England, 2018)



- The virus is still largely prevalent in Africa and Asia
- More than 30,000 deaths annually occur across Asia.
- The high mortality rates is often children and underprivileged farmers.
- Environmental hygiene is the biggest factor behind rabies in these areas.

(Singh et al., 2017)

CONTROL & PREVENTION

- PEP (post-exposure prophylaxis) is considered the most effective measures in controlling the spread of rabies.

Categories of contact with suspect rabid animal	Post-exposure prophylaxis measures
Category I - touching or feeding animals, animal licks on intact skin (no exposure)	Washing of exposed skin surfaces, no PEP
Category II - nibbling of uncovered skin, minor scratches or abrasions without bleeding (exposure)	Wound washing and immediate vaccination
Category III - single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposures due to direct contact with bats (severe exposure)	Wound washing, immediate vaccination and administration of rabies immunoglobulin/monoclonal antibodies

NB: Category II and III exposures require human rabies vaccination.

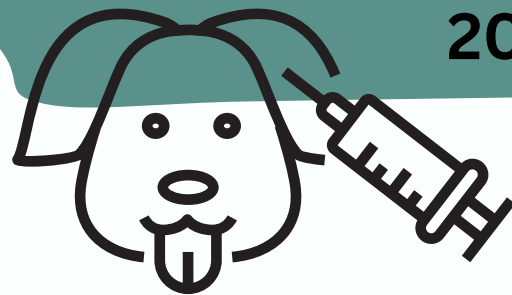


3 GOOD HEALTH AND WELL-BEING



- Increasing dog vaccination rates will also contribute to the decline in rabies worldwide.

Especially nations with high populations of stray dogs (World Organisation for Animal Health, 2025)



CONCLUSION

Rabies is an incredibly devastating disease, affecting the poorest the harshest. Once symptoms appear, it is 100% fatal so it is best to follow PEP (post-exposure prophylaxis) measures in order to reduce risk.

It is recommended to vaccinate your pets, avoid petting stray animals, and seek medical attention immediately if attacked/bitten by a dog, cat, bat or other mammal.



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