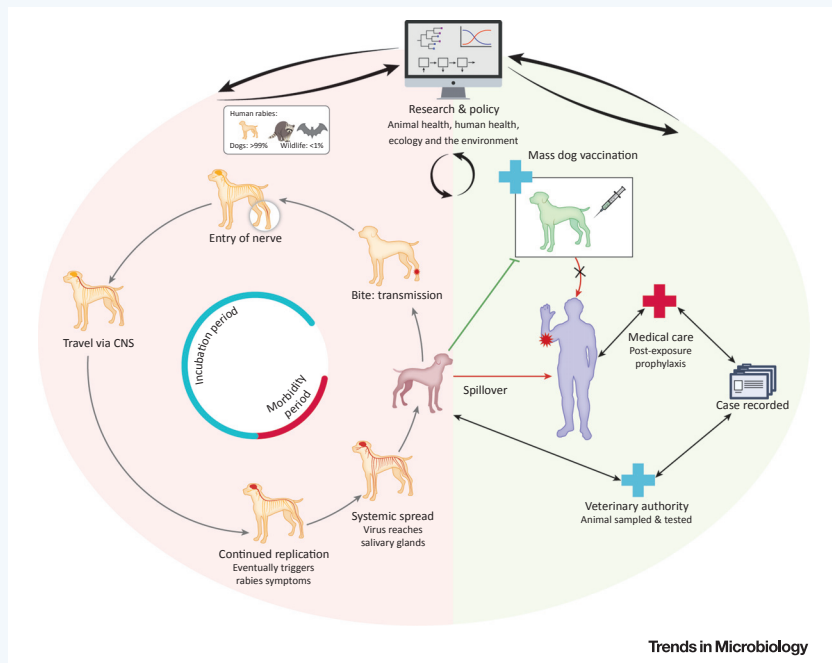


Rabies Virus

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This infographic describes the transmission cycle of rabies virus in domestic dogs and the necessity of a One Health approach, integrating medical and veterinary interventions, to control and eliminate human rabies deaths. Rabies virus (RABV) causes an acute, fatal neurological infection in humans and other mammals, transmitted through the saliva of rabid animals via a bite or scratch. From the site of infection the virus travels along neurons to the central nervous system (CNS), where viral replication leads to symptoms and systemic spread. Once symptomatic, the disease is nearly 100% fatal. However, the disease is 100% vaccine-preventable through the prompt administration of human postexposure prophylaxis (PEP) and vaccination of animal reservoirs. While RABV has a broad host range, domestic dogs cause over 99% of all human cases, killing 59 000 people every year. Human PEP is costly (US\$11–150 per dose) and often difficult to obtain. Dog vaccination is a considerably more cost-effective and feasible method to reduce the incidence of human rabies. With this in mind, the World Health Organisation (WHO) and partners have set a target for the global elimination of dog-mediated human rabies, through control of the disease in dogs, by 2030.



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TAXONOMY AND CLASSIFICATION:

ORDER: Mononegavirales

FAMILY: Rhabdoviridae

GENUS: *Lyssavirus*

SPECIES: *Rabies lyssavirus*

Single-stranded, negative-sense RNA virus

KEY FACTS:

Small, compact genome (~12 kb) encoding five proteins.

Widespread zoonotic virus capable of infecting all mammals. However, epidemiological cycles are maintained by only a few species of bats and carnivores.

RABV has adapted to each reservoir independently, leading to host-specific maintenance cycles. Cross-species transmission does occur, but rarely leads to the establishment of new maintenance cycles.

The *Lyssavirus* genus contains 15 other species, all capable of causing rabies symptoms, though human cases are rare.

DISEASE FACTS:

Rabies is almost 100% fatal but 100% vaccine-preventable.

A significant human health problem: over half the world's population is at risk of exposure, it kills thousands (mostly young children), and causes US \$8.6 billion in economic losses annually.

Renowned for nightmarish clinical symptoms, including behavioural changes, hydrophobia (a fear of water; occurs only in humans), seizures, and hypersalivation.

WHO advises 70% annual vaccination coverage of dogs to control and eventually eliminate canine rabies, an approach largely responsible for eliminating human rabies in much of the industrialized world.

Because of the presence of wildlife hosts, eradication is not yet possible. But canine rabies elimination is epidemiologically and logistically feasible in both high- and low-income countries.

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Resources

https://rabiesalliance.org/policy/united_against_rabies

<https://rabiesblueprint.org/>

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