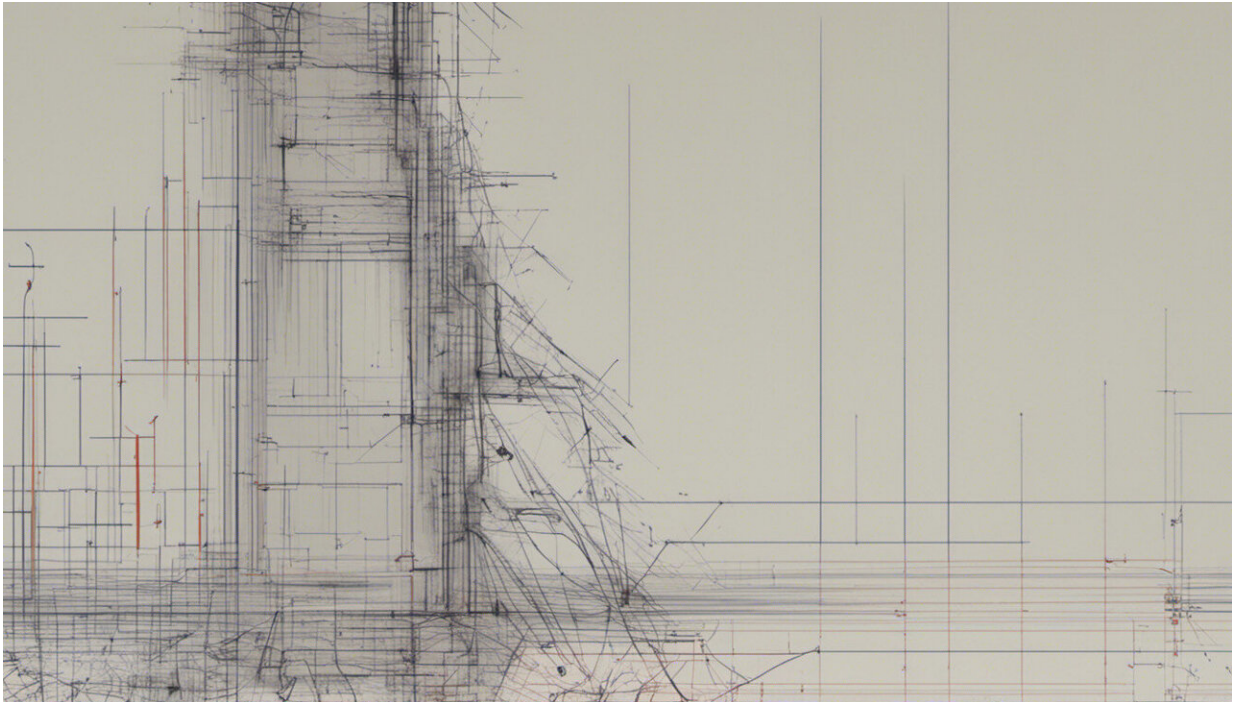


Why haven't we wiped out rabies yet?

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Credit: AI-generated image ([disclaimer](#))

Despite effective vaccines, the rabies virus kills around 59,000 people a year. We asked medical anthropologist Deborah Nadal why the disease is still a threat.

Rabies is the deadliest viral disease humans face. Left untreated, it is always fatal. The majority of victims live in poor Asian and African communities, where it is spread by bites from infected [dogs](#) in most

cases.

Monitoring outbreaks is difficult. The [incubation period](#) can range from one week to over a year. And with no cure, many families decide against hospitalizing bite victims, meaning they don't enter the surveillance system.

Rabies was not even considered a notifiable disease in some countries until as late as last year. "For public [health authorities](#) in [poor areas](#), investing in [rabies](#) surveillance doesn't look cost-effective. Even when cases are logged locally, [accurate data](#) sharing with central authorities is often not there," says Nadal.

Diagnosis is also difficult. Only when the virus reaches the brain and symptoms appear can it be conclusively diagnosed, and at this point the disease is invariably fatal. "We think of classic symptoms like a foaming mouth, but the range is actually wide and can result in misdiagnosis," adds Nadal.

To prevent the onset of rabies, a bite victim has to reach a clinic for treatment within 24 hours, which can be difficult for the rural poor. There often aren't even the resources to confirm rabies post-mortem, and families frequently refuse autopsies for religious or cultural reasons.

Could rabies be eliminated in dogs? Vaccination for livestock is routine in many countries, but dogs are often viewed as economically unproductive and unworthy of the effort.

"To work, you need a dog vaccination coverage of 70%, but this requires commitment, resources and good organization, and has to be sustained over at least 5 years," notes Nadal. This is out of reach for many health authorities.

As a medical anthropologist, Nadal is particularly interested in the role culture and religion play in determining how dogs are valued in society, despite the risk they pose.

She found some Indian communities are resistant to dog vaccination as dogs are viewed as emissaries for deities, while some African societies resist vaccination as they fear their [hunting dogs](#) will lose their prized aggression. In some Muslim countries, dogs are viewed as impure, and so handling free-roaming dogs is discouraged.

But with such high fatality rates, why hasn't rabies simply burnt itself out?

"The rabies reproduction number is fairly stable at around 1.2 meaning that on average every infected animal will infect 1.2 others," explains Nadal. "The perfect balance between the high case fatality rate and the low reproduction number enables the virus to survive."

Additionally, as rabies affects many different animals, the virus has a wide pool of reservoirs in which to evolve various strains.

What's next for rabies prevention?

When authorities neglect rabies, cases surge. Nadal cites Bhutan, which suspended joint dog vaccinations with India after it closed its borders due to the COVID-19 pandemic. Dog rabies cases immediately spiked.

"It's a [vicious cycle](#), the absence of data triggers the assumption there's no problem, making advocacy difficult. We have catching up to do," says Nadal.

Yet successes in oral vaccination for dogs, and vaccines that are not cold

chain dependent, give cause for optimism. Nadal also cites employment of lay vaccinators in remote communities, as well as integrating livestock and dog vaccination.

"We can achieve effective control of dog rabies, and so could eliminate deaths from human rabies. We have the tools to do it," concludes Nadal.

Provided by CORDIS

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