



All eyes on dogs

How dogs hold the solution to ending human rabies by 2030





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Cover: a boy and his dog wait outside a Sierra Leone Animal Welfare Society clinic. Photo credit: World Animal Protection.

Left: Two stray dogs in Jaisalmer, India. Photo credit: World Animal Protection.



Executive Summary

All eyes on dogs

How man's best friend holds the key to ending human rabies by 2030

Rabies, a preventable viral disease affecting both humans and dogs, casts a shadow over the close relationship between these two species. The world has focused for too long on an obligation to treat, rather than on an ambition to eliminate this virus.

This is why World Animal Protection is striving to end the inhumane culling of millions of dogs around the globe. Our position is simple: killing dogs and solely focusing on vaccinating humans will not stop rabies. Mass dog vaccination, along with responsible ownership, will. The focus should be on dogs because, when vaccinated and treated responsibly, they hold the solution to ending this disease.

In 2015, at the Rabies Global Conference in Geneva, Switzerland, the world called for action, setting a goal of zero human dog-mediated rabies deaths by 2030 worldwide. That deadline is just around the corner, but the numbers show there's still a lot of work to be done.

Each year, rabies causes 59,000 reported preventable human deaths¹. If not addressed urgently and efficiently, the rates will increase to 67,000 per year or more than 1,074,000 deaths between 2020 and 2035.² The impact on the lives of dogs is not encouraging either. World Animal Protection figures estimate that more than 10 million dog lives are cruelly lost yearly due to rabies or the human fear of rabies. That is approximately 170 dogs for every one human death from rabies.

This report will show that rabies predominantly affects poor and vulnerable populations, living in remote locations around the world where post-exposure prophylaxis and dog culling – expensive and ineffective measures – are applied.

But all is not lost. There is much that individuals, governments and organisations can do to help. A smart mix of humane dog population management, including mass dog vaccination, responsible ownership and educational campaigns with community engagement, will make the 2030 goal more achievable.

This approach has been successful in Latin America³, where cases of rabies in humans have fallen by 95% and in dogs by 98% since the 1980s.

We will conclude this report by assuring that turning our collective attention and efforts to dogs is an opportunity for all stakeholders to help achieve the vision of a dog-mediated human rabies-free world.

We will share a series of actions to illustrate how together, governments, NGOs, corporate citizens (the private sector), the veterinary community, communities, and individuals, can turn our eyes on dogs to eliminate rabies by 2030.

Left: Man's best friend: Between 2018 and 2024, the number of pet dogs worldwide is expected to grow by 18%. Photo credit: World Animal Protection.



Above: A focus on dogs: World Animal Protection funded a dog vaccination programme in Bali after the government responded to a rabies outbreak by culling thousands of dogs. Photo credit: Ulet Ifansasti / Getty Images.

Introduction

At World Animal Protection, we have been moving the world to protect animals for the past 30 years. We inspire people to change animals' lives for the better by ending their needless suffering.

Dogs have been an integral part of human society for more than 10,000 years, as companions, helpers and guardians. Millions of households around the globe count man's best friend as a family member: between 2018 and 2024, the number of pet dogs worldwide is expected to grow by 18%.⁴

However, rabies, a preventable viral disease affecting both humans and dogs, casts a dark shadow over the close relationship between the two species. World Animal Protection strives to end the inhumane culling of millions of

dogs around the globe, caused by rabies and the human fear of rabies. This is not only a needless and ineffective practice, but an expensive one in the long term.

For too long we have focused on the obligation to treat rabies, rather than an ambition to eliminate it. How many more lives – both human and animal – do we need to lose before we get it right?

Our position is simple: killing dogs and focusing solely on vaccinating humans will not stop rabies. Mass dog vaccination, together with responsible ownership, will. We should focus our attention on tackling the disease in dogs because, when vaccinated and treated responsibly, they hold the solution to rabies eradication.

Why rabies and why 2030?

- In 2015, at the Rabies Global Conference in Geneva, Switzerland, the world called for action, setting a goal of zero human dog-mediated rabies deaths by 2030 worldwide.
- Eliminating rabies is aligned with the United Nations' Sustainable Development Goals, which aim to end neglected tropical diseases by 2030, and to achieve universal health coverage for all.⁵
- Organisations are using their expertise to mobilise the world to eliminate rabies. The World Health Organisation, the World Organisation for Animal Health, the Food and Agriculture Organisation and the Global Alliance for Rabies Control, established the United Against Rabies Collaboration. It published the 'Zero by 30' global strategic plan, which prioritised changes and activities needed to reach zero human dog-mediated rabies deaths by 2030.

- Partners for Rabies Prevention, a group consisting of the major international rabies prevention stakeholders, has been providing technical and strategic support, as well as research, to help countries eliminate rabies.
- In 2015, World Animal Protection joined the 'End Rabies Now' initiative, to refocus the attention of world leaders and policy makers onto rabies elimination, moving them to commit to stamping out the disease by 2030.

These actions, along with a move towards the One Health concept – a collaborative approach that encourages multiple sectors to work together to achieve better public health outcomes – indicate that the time is right for another concerted push to eliminate rabies.

Rabies can only be eliminated by 2030 by focusing and prioritising on dog-centric interventions. Eliminating rabies will require cooperation between communities, governments, corporations, animal health and human healthcare professionals.

World Animal Protection



Right: A young boy brings his tiny friends to get vaccinated. Photo credit: World Animal Protection

The burden of rabies

Rabies is a growing global concern

People usually catch rabies from an infected animal's bite or scratch, with 99% of human rabies transmitted by dogs. Rabies is present in 150 countries and is almost always fatal for both humans and animals. It causes needless suffering to families and dogs, while posing a financial burden on governments and communities.

World Animal Protection supports the post-exposure prophylaxis approach – vaccinating humans to prevent the disease after being bitten – as part of the overall strategy to end human rabies by 2030. But, as we grow no closer to eliminating the disease, we ask: is it time to turn the focus of our actions to dogs?

Each year, the virus causes 59,000 reported preventable deaths⁶ and, if not addressed urgently and efficiently, human death rates are expected to increase to 67,000 per year, or more than 1,074,000 human deaths between 2020 and 2035.⁷



- Nearly 50% of people bitten by suspect rabid animals are children under 15 years old.⁸
- More than 95% of the 59,000 human rabies deaths each year occur in Africa and Asia, as a result of being bitten by an infected dog. This happens mostly in economically underprivileged countries, where post-exposure prophylaxis is not accessible.⁹



1 year

=

1 person dies / 10 minutes
170 dogs die / 10 minutes

- The amount of yearly human deaths caused by rabies is equivalent to 150 people dying every day, or to one person dying every 10 minutes from this horrific disease.¹⁰

Rabies kills dogs, and breeds cruelty

We know that, where rabies is endemic, so is cruelty to dogs. Methods used to kill them include poisoning, gassing, electrocution, beating and shooting. All of them result in slow and agonizing deaths. Not only is this cruel, but it does not solve the problem at hand.

- In 2015, there were approximately 687 million dogs globally. Of this, 536 million dogs lived in countries with endemic rabies.
- World Animal Protection estimates that more than 10 million dogs are cruelly killed each year due to rabies or the human fear of rabies. That is nearly equal to 170 dogs for every one human death from rabies.



Above: A high price to pay: Rabies predominantly affects poor populations in remote areas. Photo credit: World Animal Protection / Georgina Goodwin.

Rabies has a socioeconomic impact

Rabies predominantly affects poor and vulnerable populations living in remote rural locations around the world. This is another reason for using cost-effective actions to eliminate the disease. Post-exposure prophylaxis alone and dog culling are expensive, have proven to be ineffective when used in isolation, and raise ethical questions.

- The global cost of canine rabies is estimated at US\$8.6bn annually. Economic losses could reach US\$120bn if including the value of a statistical human life.¹⁴
- The largest part of the economic burden is due to premature death (55%), followed by the direct costs of post-exposure prophylaxis (20%) and lost income while seeking post-exposure prophylaxis (15.5%). There are only limited costs to the veterinary sector due to dog vaccination (1.5%), as well as additional costs to communities from livestock losses (6%).¹⁵
- The average cost of rabies post-exposure prophylaxis is US\$40 in Africa, and US\$49 in Asia. The average daily income of affected families is US\$1.5.¹⁶
- Currently, more money is spent on transporting bite victims to a medical facility than on the entire global rabies vaccination of dogs.¹⁷
- Globally, on average it only costs US\$4 overall to vaccinate a dog against rabies, but 26 times that – US\$108 – to treat a person that has been bitten.¹⁸
- It cost US\$60,000 to treat an outbreak with post-exposure prophylaxis, culling and impounding stray dogs. This strategy had little apparent effect on rabies transmission.¹⁹
- On an eastern Indonesian island, the annual cost of rabies control between 2000 and 2011 was US\$1.12m. The cost of culling roaming dogs represented the highest portion (about 39%) of total costs, followed by post-exposure prophylaxis (35%) and mass canine vaccination (24%).

Positive action: what is proven to work against rabies

The year 2030 is just around the corner. At this rate, we will not meet our goal of ending rabies by that deadline. There is neither the political will nor the necessary resources required for rabies elimination.

But all is not lost. Experiences of positive action in the most affected continents (Asia, Africa, and America), show that eliminating the disease in dogs holds the solution to ending human rabies by 2030.

By implementing a smart mix of humane dog population management, the 2030 goal seems more achievable. This includes mass dog vaccination (it is well proven that yearly mass vaccination in at least 70% of the dog population, including puppies, eliminates the circulating dog virus)²⁰, responsible ownership, and educational campaigns with community engagement.

What is humane dog population management?

Contrary to popular belief, dog population management is not just about sterilising dogs. It is a multilayered concept, which aims to improve the health and welfare of dogs (usually free-roaming), while setting goals to reduce population size or turnover, and minimising the problems they may cause. These include transmitting zoonotic diseases such as rabies, biting humans, soiling, and their impact on wildlife and livestock. Dog population management programme goals may overlap with rabies programme goals, and include:

<p>Educating and promoting behaviour change in dog owners and communities, regarding responsible dog ownership and bite prevention, including local legislation.</p>	<p>Veterinary care, including vaccination (such as mass dog vaccination for rabies elimination) and parasite control.</p>	<p>Identification and registration of dogs to strengthen owner responsibility and to keep track of all dogs when lost or abandoned.</p>
<p>Legislation and enforcement to achieve responsible dog ownership, to punish cruelty, and ensure public health, etc.</p>	<p>Holding facilities and rehoming centres for animals that may need temporary shelter. These seek to educate and engage communities, vaccinate, sterilise, tag or microchip, rehabilitate, and seek an adopting family.</p>	<p>Limiting access to resources which encourage dogs to roam (such as litter, food markets, etc.).</p>
<p>Euthanasia should only ever be carried out for welfare reasons, in order to eliminate pain and suffering, and on a case-by-case basis.</p>	<p>Reproduction control seeks to reduce unwanted puppies, improve welfare, reduce turnover by increasing lifespan, and/or achieve a certain population goal.</p>	<p>All dog population management programmes should be: humane and ethical, adapted to local dog population management dynamics and culture, sustained and adaptive, have an evidenced-based design with good monitoring and evaluation, focus on root causes, and human behaviour change.</p>



Above: Safe for dogs: Mass dog vaccination is economically sound and effective in eliminating rabies. Photo credit: World Animal Protection / Georgina Goodwin.

Mass dog vaccination as a priority

Mass dog vaccination is both safe for dogs and communities, and economically viable. It must remain a priority if we want to reach the 2030 goal of eliminating rabies globally.

Research makes a case for mass dog vaccination:

- Canine vaccination is financially the best option for animal rabies control and rabies prevention in humans.²¹ Campaigns have demonstrated that elimination of rabies is both feasible and cost-effective, and, in most instances, cost-saving (compared to other options), in endemic locations in Asia and Africa, the regions where almost all human rabies deaths occur.²²
- While post-exposure prophylaxis is effective to prevent deaths in people exposed to rabies, it is comparatively expensive and has no impact on the canine reservoir,

the primary source of zoonotic rabies.²³ Countries that provide more post-exposure prophylaxis, generally have higher fatality rates than those with high investment in mass dog vaccination.²⁴

- Mass canine vaccination programmes, using a One Health framework that achieves a minimum 70% vaccination coverage during annual campaigns, have proven to be cost-effective in controlling zoonotic rabies in endemic, resource-poor regions. While indiscriminate culling of the dog population is expensive and there is little evidence to support its effectiveness in controlling rabies.²⁵ Killing dogs also undermines vaccination efforts where turnover is high²⁶ and is unethical when mass dog vaccination is proven to work.

Other elements of humane dog population management

There are elements of humane dog population management that are critical in helping to attain 70% vaccination coverage and promoting a One Health approach in rabies elimination. Dog population management also has added value and benefits such as reducing unwanted puppies and nuisance, which can form part of some rabies programmes.

a. Responsible dog ownership

When it comes to rabies prevention, taking better care of dogs and treating them as our companions and protectors is important. The cornerstones of an effective dog population management strategy are: education to become responsible owners, effective legislation, and community engagement.

World Animal Protection's extensive experience shows that dogs with owners are more likely to get vaccinated than ownerless and unwanted dogs.

There will always be dogs who have informal owners. Either community dogs – those without a formal owner, who are cared for by one or more people in the community, or true stray dogs who have no owner at all. In these cases, the local, regional or national authority – depending on the local context – should ensure their care and vaccination.

Taking care of dogs not only helps to eliminate rabies, it also creates value for the welfare of dogs and the health of communities. These are elements of the One Health approach and in some cases, objectives of public health programmes. Apart from vaccination, dogs that are well taken care of will be identified and sterilised, helping communities to track dogs that are lost or roaming, and record their vaccination status. Cared for dogs will have more positive interactions with humans, reducing the possibility of dog bites.

b. Real dog number and population dynamics

In order to achieve 70% vaccination coverage, it is critical to know the real dog population figures.

Many governments vaccinate based on estimates of the owned dog population only, but fail to take into

consideration the number of community dogs and the unowned dog population. They therefore never reach the 70% goal. Some governments have no estimate at all, making vaccination coverage a real challenge.

Knowledge on dog dynamics and the complex local interplay between dogs and people in communities can clarify where dogs are coming from and how best to ensure their vaccination. For example, the vaccination approach in a community with a preference for purchased puppies, with a high rate of adult dog abandonment, will be very different from one where most dogs are well cared for community dogs.

c. Targeted sterilisation

Sterilisation is a controversial topic in rabies elimination. Those against it argue that while mass dog vaccination eliminates rabies, sterilisation does not. They say it is considerably more expensive than vaccinating a dog, misdirecting funds and energy when rabies programmes are just getting started. Rabies is also not density-dependent, meaning that rabies can occur in places where the density of dogs is high or low.²⁷

Those who argue in favour of sterilisation say it can help attain the 70% vaccination coverage, as it helps 'stabilise' dog populations and reduces dog turnover,²⁸ which can sabotage vaccination efforts if very high. Sterilisation of specific groups of female dogs of reproductive age, particularly from low income settings, or roaming dogs, also reduces unwanted dogs and puppies, which are less likely to get vaccinated. Together with education, sterilisation can also have an impact on dog density, abandonment, and the number of roaming dogs, all elements which may fall within the scope of rabies programmes.

World Animal Protection encourages targeted sterilisation as a complement to rabies elimination programmes, if used wisely and responsibly.

Targeted dog sterilisation may be justified if the turnover is caused by a specific sub-population of dogs (or dog owners that encourage a high turnover rate), leading to new waves of unvaccinated puppies. Sterilisation can also increase dog life expectancy,²⁹ as dogs tend to live longer and roam less when sterilised (except if roaming behaviour



Above: Being responsible: Dogs with owners are more likely to be vaccinated than strays. Thirty-three year old Boniface Mulei brought several dogs in for vaccinations during World Animal Protection's drive in Kenya in 2016. Photo credit: World Animal Protection / Georgina Goodwin.

is learned), reducing turnover. All sterilisation efforts should be combined with education on responsible dog ownership (mentioned above), as sterilisation does not change human behaviour - which has a major, if not the largest impact on dog turnover and dynamics.³⁰ Resources, time, and the stage of rabies elimination programmes are also a factor in deciding whether targeted sterilisation for dog turnover is justified. Countries may opt to include targeted sterilisation only after their vaccination programmes are well established.

Sterilisation can have an impact on some biting behaviours. We recognise that not all biting dogs will be rabid dogs, but that dog bites in general are a major concern for rabies/public health programmes. Also, there is a period of several days,³¹ when dogs may be shedding the virus in their saliva, even if they're not yet showing signs of rabies, potentially creating opportunities for people to get bitten and infected. Many dog bites can be avoided through education on dog bite prevention (mentioned below); however, sterilisation can also be a useful tool, when correctly targeted.

Research papers from various countries and cultures show that the main perpetrator of registered bites are male, unsterilised dogs³². Evidence shows that sterilisation in males can reduce some aggressive behaviour³³. However, and perhaps even more importantly, it reduces urine marking and mounting, which in our experience, typically lead to abandonment - problematic, especially if the dog is unvaccinated. Sterilising males also reduces roaming behaviour, which automatically cuts the number of potential dog bite encounters³⁴. Sterilising females may be justified if the biting behaviour from that female or a specific group of females comes from protecting puppies.

Sterilisation campaigns can add value if they are used to educate communities on responsible dog ownership, leading to better cared for dogs that are more likely to be vaccinated and potentially produce fewer bite encounters. It also helps to maintain community participation and positive perceptions about the intervention.



Above: Education: World Animal Protection supports an educational programme in Romania to encourage responsible pet ownership. Photo credit: World Animal Protection.

Education and community engagement as a tool

Educational campaigns are vital to ending rabies in the long term and should be applied at all levels: formally in schools, as well as informally within each particular community.

Educational campaigns should focus on:

- Basic awareness of rabies: what it is, how it is transmitted, why it affects humans and animals, why it is a disease that needs to be eliminated, and how to take care of a potentially infected person or dog.
- Prevention: learning about dog behaviour, dog body language, and dog bite prevention, especially for children and young adults. Why vaccinating dogs every year is critical to eliminating rabies.
- Responsible dog ownership, including the importance of vaccinating, sterilising, not abandoning and caring for dogs, to help them be well-balanced, trained and well-socialised.
- Animal welfare: how millions of dogs suffer cruel deaths due to fear of rabies, and how there is a humane alternative through mass dog vaccination and responsible ownership.

Community engagement is critical to achieve 70% vaccination. Community leaders are key in encouraging communities to be aware of, and attend, vaccination campaigns. It is a way of highlighting the importance of vaccination and responsible dog ownership.

Latin America: a success story³⁵

Many countries in the world have eliminated or successfully controlled human rabies transmitted by dog bites.³⁶

A particularly good example of this is in Latin America, where regional cases of rabies in humans have dropped by 95% and by 98% in dogs since the 1980s.

What these countries do differently to succeed:

- They focus on dogs. Although Latin America does ensure timely post-exposure prophylaxis, mass dog vaccination and education on responsible dog ownership are primarily used in rabies elimination efforts. Sterilisation, implementation of responsible dog ownership policies, and professional training are also part of their programmes.
- There is political will and regional support. The countries made the decision to eliminate rabies by a certain date, supported by the Pan-American Health Organisation.
- There is cross-sector cooperation. Health and agricultural sectors, as well as regional and international organisations, public and private agencies, and non-governmental organisations, joined forces to reach a common goal.
- There is adequate resource allocation and diligent programme management, guided by the Pan-American Health Organisation. The Pan-American Health Organisation's Revolving Fund³⁷ pools member states' national resources, to procure high-quality life-saving vaccines and related products, at the lowest price.
- With some limitations, there is proper rabies legislation and proper recording of cases, as rabies is designated as a notifiable disease.

Right: In August 2018 World Animal Protection was in Makueni County, Kenya to oversee a small rabies vaccination drive being carried out in the area. Photo credit: World Animal Protection.





Above: Be part of it: Help eliminate human rabies by 2030. Photo credit: World Animal Protection / Andrew Morgan.

The burden of rabies

By turning our attention to dogs, this is an opportunity for all stakeholders to help us achieve the vision of a dog-mediated human rabies-free world by 2030. We will succeed by focusing on mass vaccination and encouraging responsible dog ownership through education and community engagement.

World Animal Protection wants you to be part of this transformational story for dogs, and for humans. Here's how:

Governments:

- Follow the stepwise approach to rabies elimination (Stepwise Approach towards Rabies Elimination).³⁸
- Establish a deadline date by which you want rabies eliminated from your country, considering that 2030 is the global aim.
- Activate all resources, entities, and legal mechanisms to implement a mass dog vaccination-based strategy, accompanied by monitoring, surveillance and good records. Implement mass dog vaccination goals, and vaccinate, vaccinate, vaccinate!
- Make rabies a notifiable disease.
- Give high priority to educational campaigns based on responsible dog ownership, rabies education, and dog bite prevention.
- Seek support from international governmental organisations, your neighbouring countries, and the United Against Rabies collaboration members.
- Raise the importance of eliminating human rabies transmitted by dog bites by 2030, in all national and international meetings and conferences.
- Consider integrating other elements of dog population management that can help you achieve 70% vaccination coverage. This includes dog counts, dog dynamics research, and targeted sterilisation, where appropriate.
- If your country is already rabies-free, financially, technically, or logistically support those nations that are starting rabies elimination programmes, especially those that share your borders. Now that ending rabies is an agreed target in the Sustainable Development agenda, all rabies elimination programmes are a collective responsibility.

- Recognise the need for a regional and inter-disciplinary (human and animal) One Health approach to rabies elimination.

NGOs:

- Gather evidence and publicise, especially to national authorities, the importance of shifting from a human-focused to a dog-focused rabies programme, to successfully and cost-effectively eliminate the disease by 2030.
- Continue to create and participate in regional or global alliances and joint initiatives that provide the necessary scientific, financial, and logistical support that you collectively need to eliminate rabies.
- Lead and support vaccination and educational campaigns aimed at eliminating rabies by 2030.

Corporate citizens (private sector):

- Include support for rabies elimination programmes that focus primarily on dogs as part of your corporate social responsibility initiatives, whether you are in the animal care industry or not. Your organisation can participate by supporting governments, donating resources (such as vaccines and medical equipment) or skills, providing funding, participating in education campaigns, and/or volunteering, among other actions.
- Be a spokesperson for dog-focused rabies elimination in your country's national discussions on rabies.
- Help spread the word on dog-focused rabies elimination in all educational campaigns among your employees, partners, suppliers and other audiences.

Veterinary community:

- Become 'flag bearers' of dog-focused rabies elimination by putting dogs at the heart of rabies elimination efforts. Be a spokesperson for the elimination of rabies, rather than just the treatment of rabies.
- Become involved by creating or publicising educational rabies prevention and awareness campaigns in your community.

- Establish alliances with local or national governments, as well as community leaders, and become a focal point for mass dog vaccination and responsible pet ownership campaigns.

Communities:

- Identify leaders who can help promote educational campaigns, support vaccination days, and help local governments and veterinarians' initiatives to eliminate rabies from your community.
- Design and promote educational campaigns focused on responsible dog ownership and dog bite prevention.
- Demand proper, financially feasible, and timely actions to help vaccinate the dogs in your community against rabies every year, from your local and national governments.

Individuals:

- Become an example to your friends, family, and neighbours as a responsible dog owner who every year, vaccinates any dog who lives in your home against rabies, as well as roaming dogs that are a part of the community.
- Be on top of, and participate in, any rabies educational or vaccination campaign in your neighbourhood. Let everyone close to you know about it.
- Recognise that your active participation in the elimination of rabies is key when it comes to achieving a world free of this disease in humans by 2030.

If together we turn our eyes on dogs, rabies elimination will be achievable. Mass dog vaccination, humane dog population management that help attain the 70% goal, and community education and engagement, hold the key to making it happen.

World Animal Protection will ensure it is done humanely by 2030, and we welcome you to be an active part of the change.

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Every individual, organisation, community member, government official, veterinary, and corporate citizen can be involved.

Please contact World Animal Protection for resources, guidance and more on how to help achieve a world free of human rabies by 2030.

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