

All eyes on dogs

How dogs hold the solution to ending human rabies by 2030

World Animal Protection



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Cover: a dog in Brazil in 2013. Photo credit: World Animal Protection / Noelly Castro.

Left: A stray dog in Puebla. The local stray population has decreased since World Animal Protection has been working with local government and communities on animal welfare. The government of Puebla, Mexico, organises an annual campaign where owners can bring their cats and dogs for rabies vaccination and castration to help manage the welfare and population.. Photo credit: World Animal Protection.



Foreword

Rabies transmitted by dogs and cats to humans is made easier by living with these animals day to day. This is especially true in areas of extreme poverty, as has happened in parts of Mexico and Latin America.

More than 30 years ago, Mexico recognised that rabies transmitted by dogs could be controlled, and with this in mind, presented various national health plans and programmes throughout the years. Today, at the international level, Mexico is the first country in the Americas to be recognised as one free of human rabies transmitted by dog bites.

Mexico's success is largely down to two strategies; sustained national mass dog vaccination campaigns and a focus on giving medical attention to people bitten by potentially infected dogs. A One Health approach to rabies elimination was also important, with the Health Secretariat as the main coordinator, while sharing responsibilities with other actors (including federal, state, and municipal authorities, associations, academia, and civil society groups). Stabilising dog populations through reproductive control was also significant.

Mexico offers mass, intensive, free canine rabies vaccinations during the 'national weeks', using high quality vaccines to reach 80% of the population. In 2019, 18 million canine vaccines were administered, and the country will continue to vaccinate in the future to avoid the reemergence of the disease.

Mexico recognises that the uncontrolled reproduction of dogs and cats prevents some places from reaching vaccination goals. The canine stabilisation strategy is carried out with a shared responsibility model, and 6.8 million dogs and cats have been sterilised between 2000 and 2019, free of cost. These campaigns not only prevent the birth of unwanted puppies, that are less likely to get vaccinated, but also offer an opportunity to educate pet owners on responsible ownership and bite prevention.

In 2000, a project for health promotion and education was coordinated in Puebla with support from World Animal Protection, demonstrating the importance and effectiveness of partnerships between government and NGOs. Today, Mexico has a variety of alliances and collaborations with different actors to support rabies initiatives.

Due to the continuity of these strategies in the last 30 years, Mexico has experienced no human rabies transmitted by dog bites, recorded no dog rabies outbreaks, and has been declared a country free of human rabies transmitted by dog bites.

World Animal Protection's 'All Eyes On Dogs' report highlights the importance of focusing on dogs and details strategies that Mexico has used to eliminate rabies. We hope that this report, along with the experiences of our country, can pave the way for endemic countries so that we can have a world free of rabies by 2030.

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



Executive Summary

All eyes on dogs

How dogs hold the solution to ending human rabies by 2030

Rabies, a preventable viral disease affecting both humans and dogs, continues to cast a shadow over the close relationship between these two species. This is because the world has focused for too long on an obligation to treat rabies in humans, rather than on an ambition to eliminate it.

World Animal Protection is working to end the inhumane culling of millions of dogs around the globe, and introduce humane dog population management as an essential element of successful rabies elimination and sustainable development. Our position is simple: killing dogs and vaccinating humans will not stop rabies. Mass dog vaccination, along with responsible ownership, will. Globally, on average, it only costs US$4 to vaccinate a dog against rabies, but 27 times that – US$108 – to treat a person that has been bitten.[1] We should shift our focus to dogs rather than humans because, when vaccinated and treated responsibly, it is dogs that 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 dog-mediated human rabies deaths by 2030 worldwide.[2] That deadline is just around the corner, and the numbers show there's still a lot of work to do.

Each year, rabies causes an estimated 59,000 preventable human deaths.[3] If not addressed urgently and efficiently, the number of human deaths will increase to 67,000 per year, or more than one million deaths between 2020 and 2035.[4] The negative impact on the lives of dogs is not encouraging either. World Animal Protection estimates that more than 10 million dog lives are cruelly lost every year due to rabies or the human fear of rabies. That is approximately 170 dogs killed for every one human death from rabies.

This report will show that the most effective way to end human rabies by 2030 is to turn our attention to the vaccination of dogs, rather than killing dogs and vaccinating humans. Rabies predominantly affects poor, remote and vulnerable populations, for whom post-exposure prophylaxis (PEP) and dog culling are traditionally favoured. PEP is the act of vaccinating humans to prevent the disease after they have been bitten by a potentially infected animal. But these methods are expensive and ineffective at eliminating the disease, compared to mass dog vaccination. It's time for the world to change its approach and focus on vaccinating dogs.

There is much that individuals, communities, governments and organisations can do to help. A smart mix of humane dog population management, including mass dog vaccination, targeted sterilisation, responsible ownership and educational campaigns with community engagement, will make the 2030 goal achievable.

This approach has been successful in Latin America,[5] where cases of rabies in humans have fallen by 95% and in dogs by 98% since the 1980s. Close to 100 million dogs were vaccinated against rabies in one year in the region.

This report concludes with a set of actions for each stakeholder group (governments, donor bodies, the private sector, the veterinary community and individuals). Governments must acknowledge that eliminating rabies is a collective responsibility. By adopting a One Health approach, working with neighbours and partners, and above all vaccinating at least 70% of the national dog population, they will help to achieve the vision of a dog-mediated human rabies-free world by 2030.

If we collectively turn our eyes to dogs as our primary line of defence against rabies, we can end dog-mediated human rabies, protect human life and dog welfare, and contribute to sustainable development.

Left: **A stray dog in Puebla. Photo credit: World Animal Protection.**



Above: In 1985 Mexico City suffered a devastating earthquake, which killed thousands of people. In 2015 the city marked the 30th anniversary with a drill. World Animal Protection participated in the drill and used the opportunity to promote a public service announcement to include pets in the families emergency plan. Photo credit: World Animal Protection.

Introduction

At World Animal Protection, we have been moving the world to protect animals for more than 50 years. We inspire people to change animals' lives for the better by ending their needless suffering.

In 2018, World Animal Protection commissioned a global insight survey to assess attitudes and behaviours towards free-roaming dogs in five countries: Thailand, India, China, Brazil and Kenya. 'Exploring attitudes and behaviour towards roaming dogs around the world',[6] covered a wide range of topics such as the number of dogs owned, attitudes to culling, the percentage of vaccination, sterilisation, collaring, tagging and microchipping, as well as how people perceive owned dogs vs roaming dogs. It found that more than one in two people interviewed own at least one dog.

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 them as a member of the family: between 2018 and 2024, the number of pet dogs worldwide is expected to grow by 18%.[7]

However, rabies, a preventable viral disease affecting both humans and dogs, continues to cast 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, which happens mainly due to the human fear of rabies. This is not only a needless and ineffective practice, but also an expensive one in the long term.

For too long our collective response to rabies has focused on the obligation to treat rabies in humans, rather than on an ambition to eliminate the disease itself. 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 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 ending dog-mediated human rabies by 2030.



Right: **World Animal Protection participated in a drill in Mexico City and used the opportunity to promote a public service announcement to include pets in the families emergency plan. Photo credit: World Animal Protection.**

Why rabies and why 2030?

- Eliminating rabies is an integral part of the United Nations' Sustainable Development Goals, which aim to end neglected tropical diseases by 2030, and to achieve universal health coverage for all.[8]
- 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.[2]
- Organisations are using their expertise to mobilise the world to eliminate rabies. The World Health Organisation (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organisation of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC), established the United Against Rabies collaboration. It published the 'Zero by 30' global strategic plan,[1] outlining priority changes and activities needed to reach zero human dog-mediated rabies deaths by 2030.

These developments, along with a growing appreciation of the efficacy of the One Health concept – a collaborative approach that encourages multiple sectors to work together to achieve better public and animal health outcomes – indicate that the time is right for another concerted push to eliminate rabies.

Human rabies can only be eliminated by 2030 by focusing on the principal route through which humans contract the disease – dog bites. Therefore we must prioritise the primary source of the disease and focus on dog-centric interventions. Moreover, eliminating rabies will require cooperation between communities, governments, corporations, and animal and human health professionals.

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The burden of rabies

Rabies is a growing global concern

People usually catch rabies from an infected animal's bite or scratch, with dogs being responsible for 99% of human cases. Rabies is present in 150 countries and is virtually always fatal once symptoms become apparent for both humans and animals.[9] Rabies has the highest fatality rate of any disease. It causes needless suffering to families and dogs, while posing a financial burden on governments and communities.

World Animal Protection supports the availability of PEP (human vaccination given to prevent the disease after being bitten) to avoid any human casualties under any circumstances. However, as we grow no closer to eliminating the disease, we say it's time to turn the focus of our actions to dogs.

Each year, rabies causes 59,000 estimated preventable human deaths[3], more than 3.7 million disability-adjusted life years and $US8.6 billion economic cost.[10] In a business as usual scenario, human deaths are expected to increase to 67,000 per year, or more than one million human deaths between 2020 and 2035.[4]

- Nearly 50% of people bitten by suspect rabid animals are children under 15 years old.[3]
- 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 PEP is not accessible or too expensive.[3]
- The amount of annual human deaths caused by rabies is equal to more than 160 people dying every day, or one person dying every nine minutes from this horrific disease.

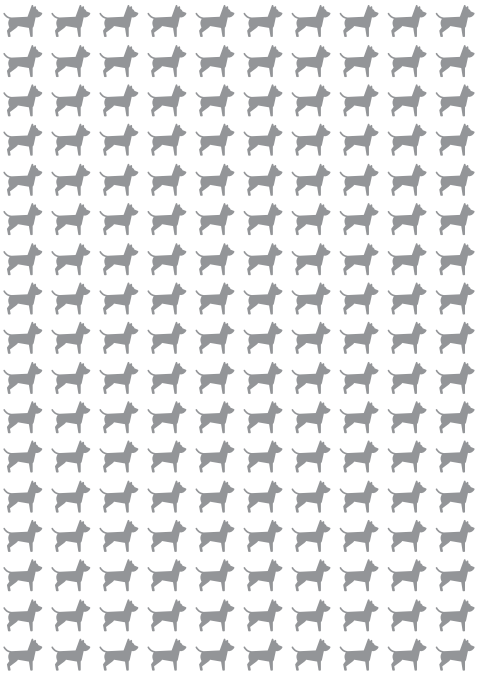


Each year
=
160 people die every day
1 person dies every 9 minutes

Rabies kills dogs, and breeds cruelty

We know that where rabies is endemic, so is cruelty to dogs. To counter the fear of rabies, local or national authorities sometimes cull the local dog population in the mistaken belief that a lower dog density leads to a reduced chance of people being bitten by a rabid dog. Methods used to kill dogs include poisoning, gassing, electrocution, beating and shooting. All of these methods result in slow and agonizing deaths.[11] Not only is this cruel, but it does not solve the problem at hand. In fact, it could exacerbate the problem by killing potentially vaccinated animals, thereby accelerating the spread of the disease. Vaccinating at least 70% of the dogs in an area creates 'herd immunity', slowing the spread of rabies until it dies out.

- In 2015, there were approximately 687 million dogs globally. Of this, 536 million dogs lived in countries with endemic rabies.[12]
- 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 equal to 170 dogs for every one human death from rabies.



170 dogs cruelly killed for every one human death from rabies

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. PEP and dog culling are expensive, have proven to be ineffective when used in isolation, and raise ethical questions.

- The global annual cost of canine rabies is estimated at US$8.6bn.[10] Economic losses could reach US$120bn if including the value of a statistical human life.[10]
- The largest part of the economic burden is due to premature death (55%), followed by the direct costs of PEP (20%) and lost income while seeking PEP (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%).[10]
- The average cost of rabies PEP is US$40 in Africa, and US$49 in Asia. The average daily income of the majority of affected families is US$1.5.[3]
- Currently, more money is spent on transporting bite victims to a medical facility than on the entire global rabies vaccination of dogs.[1]
- Globally, on average it only costs US$4 overall to vaccinate a dog against rabies, but 27 times that – US$108 – to treat a person that has been bitten.[1]

In 2017, researchers from the US Centers for Disease Control and Prevention at the National Center for Emerging and Zoonotic Infectious Diseases modelled what it would cost to eliminate rabies by 2030 through a focus on mass dog vaccination. Using empirical data from past mass dog vaccination exercises and applying it to 122 rabies endemic countries, the researchers estimated that a total investment of US$6.3 billion would be sufficient to achieve the elimination of dog-mediated human rabies by 2030.[12]

The researchers further estimated that if current levels of expenditure for mass dog vaccination remain stable between 2017 and 2030 (US$ 2.457 billion), the financing gap over 13 years was just US$3.9 billion. If we compare this figure to the WHO/FAO/OIE estimate of



Above: **A dog in Guerrero, Mexico. Photo credit: World Animal Protection.**

total annual cost of rabies (US$8.6 billion per year)[1] it's clear that rabies can be eliminated for less than half of the current annual financial burden of rabies.

We should note that the financing gap estimate was based on a number of rather ambitious assumptions, including that vaccine producers would produce an additional 7.5 billion doses of vaccine by 2030. This means that total financing needs may be a bit higher than estimated. However, the total investment required to achieve a dog-mediated rabies-free world by 2030 is still only a fraction of the current annually recurring costs related to rabies.

This shows that, in the long run, vaccinating dogs is much more cost efficient than treating humans with PEP, and certainly more effective in terms of eliminating canine rabies. The potential for cost saving is massive, as is the opportunity to apply those savings to other national health priorities. While a focus on treating humans with PEP will maintain the disease as well as the obligation to treat it, a focus on eliminating rabies in dogs will provide a return on investment in the form of steadily decreasing recurring costs.

Positive action: what is proven to work against rabies

The year 2030 is just around the corner. At the current rate, we will not meet our goal of ending rabies by that deadline. This is primarily because there is insufficient political will to switch to a dog-centric approach, a lack of resources required for rabies elimination, and an absence of diligent proactive rabies elimination programme management and coordination at a global, regional and national level.

We can change this. Experiences of positive action in the most affected continents (Asia, Africa, and Latin America), show that eliminating the disease in dogs is the solution to ending human rabies by 2030.

By implementing a smart mix of humane dog population management (DPM), we can achieve our 2030 goal. This includes, first and foremost, mass dog vaccination to prevent the disease from spreading (it is well proven that yearly mass vaccination in at least 70% of the dog population, including puppies, eliminates the circulating dog virus).[14] Effective humane DPM will also include the promotion of responsible dog ownership, provision of primary dog healthcare, and the introduction of educational campaigns with community engagement, as a means to facilitate mass dog vaccination and promote the benefits of the DPM approach.

What is humane dog population management?[15]

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 the following services:

Promote responsible behaviour (fundamental): people have knowledge, motivation and social support for responsible and compassionate behaviours	**Good professional capacity (fundamental):** DPM professionals provide accessible and good quality services	**Reproduction control (fundamental):** unwanted litters are prevented
Veterinary care (fundamental): dogs present minimal zoonotic risk, are maintained in good health and are not left to suffer	**Formal education of children (context dependent):** children behave safely with dogs, empathise with dog needs and understand good dog care	**Holding facilities/ rehoming centres (context dependent):** reuniting and rehoming dogs is efficient and reliable with minimal returns
Identification and registration (context dependent): owners are identifiable, enhancing enforcement, responsible behaviour and reuniting lost dogs	**Control of commercial breeding and sale (context dependent):** Puppies are in good health/welfare, suitably socialised and habituated	**Managing access to resources (context dependent):** reduced conflict with roaming dogs while maintaining resources essential for health

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.



Above: **World Animal Protection's CEO Steve McIvor on a project visit in Mexico. Photo credit: World Animal Protection.**

Mass dog vaccination as a priority

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

Research makes a case for mass dog vaccination[16]:

- Canine vaccination is financially the best option for animal rabies control and rabies prevention in humans.[17] 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.[13]

- 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 PEP 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.[13] Countries that provide more PEP, generally have higher fatality rates than those with high investment in mass dog vaccination.[18]

- Indiscriminate culling of the dog population is expensive and there is little evidence to support its effectiveness in controlling rabies in the long term.[13] Killing dogs also undermines vaccination efforts where turnover is high[19] and is unethical when mass dog vaccination is proven to work.

- Our global insight survey 'Exploring attitudes and behaviour towards roaming dogs around the world',[6] shows that 87% of dog owners vaccinated their dogs, and the majority of people interviewed (66%) would be willing to take roaming dogs to be vaccinated, if the service was available and free of charge.

Other elements of humane dog population management

There are elements of humane DPM that are critical in helping to attain at least 70% vaccination coverage and promoting a One Health approach in rabies elimination. DPM 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.

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

While half of the people we interviewed in our global insight survey,[6] claim to be taking care of roaming dogs, the care provided is most commonly about providing food and water, rather than veterinary care. Caring for stray dogs is very common in Thailand and India, but quite rare in Kenya.

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 at least 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 struggle to reach the 70% goal. Some governments have no estimate at all, making vaccination coverage a real challenge.

Knowledge of 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 where the majority of dogs are owned and allowed to roam, 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, with arguments both for and against it.

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 and could lead to 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.[20]

Those who argue in favour of sterilisation, say it can help attain the encouraged 70% minimum vaccination coverage, as it helps 'stabilise' dog populations and reduces dog turnover,[19] which can sabotage vaccination efforts if 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. Sterilisation can also increase dog life expectancy,[21] as dogs tend to live longer.

Sterilisation can have an impact on some biting behaviours. Research from various countries and cultures shows that the main perpetrator of registered bites are male, unsterilised dogs.[22] And evidence shows that sterilisation in males can reduce some aggressive behaviour.[23] However, and perhaps even more importantly, it reduces urine marking and mounting – some of the main reasons for



Above: **On 28th September 2019, World Animal Protection carried out vaccinations for 200 pet dogs in Sao Paulo, Brazil, as part of World Rabies Day. The vaccination drive took place at a public school called Maria Quiteria in a suburban neighbourhood of the city. The drive also aimed to raise awareness of rabies, behaviour of dogs, and responsible pet ownership. Photo credit: World Animal Protection.**

abandonment – which is problematic, especially if the dog is unvaccinated. Sterilising males also reduces roaming behaviour (except if roaming behaviour is learned), which automatically cuts the number of potential dog bite encounters.[23] Sterilising females may be justified if the biting behaviour from that female or a specific group of females comes from protecting puppies. 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.

World Animal Protection encourages targeted and sustained sterilisation campaigns as part of rabies elimination programmes. Our global survey[6] into attitudes towards roaming dogs shows that the vast majority of people (85%) find the sterilisation of dogs acceptable, with 66% of them saying they would be willing to take roaming dogs to be sterilised, if the service was available.

All sterilisation efforts should be combined with education on responsible dog ownership, as sterilisation does not change human behaviour – which has a major, if not the largest impact on dog turnover and dynamics.[20] Education leads 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. 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.[24]

Education and community engagement as a tool

Our global insight survey, 'Exploring attitudes and behaviour towards roaming dogs around the world',[6] shows that fewer than four in 10 people know what to do in the event of a dog bite, to reduce the risk of spreading the rabies virus. 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. For example, following a dog bite, you should wash the wound with plenty of soap and water for 15 minutes to inactivate the virus. Then go immediately to a medical centre. There is also a period of several days[25], when dogs may be infected before they're showing signs of rabies, potentially creating opportunities for people to unknowlingly approach them, get bitten and infected.

- 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. According to our survey[6], only 5% of people interviewed know how to respond to a dog attack to avoid being bitten. Most of them react in a dangerous way that could increase the risk of a dog bite.

- Responsible dog ownership: including the importance of vaccinating, sterilising, not abandoning and caring for dogs, to help dogs to be well-balanced, trained and well-socialised. While our survey[6] showed that most dog owners vaccinate their dogs (87%), sterilisation is less commonly practised (43%). It is important for dog owners to sterilise their dogs, as the same survey tells us that 30% of owned dogs are free to roam without supervision, leading to more uncontrolled breeding and unwanted, unvaccinated puppies.

- 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.

Most people interviewed in our survey (93%)[6] would like to see the government implement a local humane dog population management programme. The vast majority said they would be willing to take roaming dogs to get vaccinated and sterilised if the service was available in their communities.



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

A successful pilot from Makueni County, Kenya

The 'Makueni County Rabies Elimination Pilot Project' was carried out in Kenya over five years. The aim was to vaccinate 70% of the dog population annually over three years, sensitise residents to the disease and demonstrate that humane dog population management is the key to eliminating rabies.

Makueni County was chosen for the pilot due to a longstanding collaboration with the county government and because 85% of households own dogs, most of which are allowed to roam freely.

In addition to mass dog vaccination, the project also focused heavily on education. Teachers were given the skills to become trainers in schools – to teach children about rabies, responsible dog ownership and dog bite prevention – information which was, in turn, passed on to parents and the wider community. It is also important to note that the majority of people handling dogs and presenting them for vaccination, were children.

The project involved numerous partners including, The County Government of Makueni; World Animal Protection; Washington State University, The National Government/ Zoonotic Disease Unit, The Kenya Medical Research Institute; The Centre for Disease Control and Prevention, and the World Organization for Animal Health (OIE).

It demonstrated the challenges and opportunities of scaling up rabies elimination to national level and helping Kenya meet its goal of being rabies-free by 2030. As a result of the education and sensitisation:

- All six participating sub-counties within Makueni saw an increase in the recording of rabies incidences and dog bites in local hospitals.
- The prophylaxis vaccine was made available in all six sub-county hospitals for victims of dog bites.
- Two counties successfully vaccinated more than 70% of their dog population, while two counties achieved 60-65% and two others reached 50-55% coverage.

Moreover, the project highlighted the importance of collaboration between broader One Health stakeholders, which is key for humane rabies elimination and prevention of reoccurrence. Rabies elimination is possible with thorough planning, well-coordinated, structured implementation and adequate resources.



Left: 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.

Lessons Learnt

- Government and community buy-in is essential for project success.
- A dog census and KAPS survey on community attitudes to dogs and rabies is essential. Good background information on numbers of dogs, community calendar and availability of facilities are essential for proper planning of field activities
- Thorough pre-planning is needed to ensure effective implementation of the rabies elimination project.

Recommendations

- Undertake multi-sectoral approach towards rabies control and elimination, involving key actors at National and County levels and non-state actors in rabies control, including research institutes, NGOs, OIE and FAO.
- Recognise that rabies disease control is not on the Ministry of Health priority list or the national agenda, efforts should be made to set it as a priority disease.
- Governments should allocate adequate resources (human, finance and logistics) to facilitate implementation of rabies elimination projects.
- Train all health workers (human and animal) on all aspects of rabies management in both humans and dogs. Joint training sessions can also be organised between veterinarians and health officers.
- Recognise and mainstream the efforts of the private sector in rabies control and elimination.
- Mass vaccination campaigns and dog population control can be undertaken efficiently through public-private partnerships between the county government and private animal health service providers.
- Educate and raise awareness on the importance of dogs in the transmission of rabies, responsible dog ownership and other animal welfare practices.
- Use teachers and pupils as change agents in the control of rabies and responsible dog ownership.
- Incorporate humane dog management in urban planning
- Enact by-laws to make annual rabies vaccination and certification mandatory.



Left: **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.**

Latin America: a success story

Many countries in the world have eliminated or successfully controlled human rabies transmitted by dog bites.[26]

A particularly good example of this is in Latin America, where cases of rabies in humans have dropped by 95% and by 98% in dogs since the 1980s. The results achieved in the past 36 years in this region demonstrate that human rabies from canine origin can be eliminated. In 2019, there were zero cases of human rabies transmitted by dog bites in Continental America. Close to 100 million dogs were vaccinated against rabies in one year in the region.

What these countries do to succeed:

- They focus on dogs. Countries in Latin America have developed rabies elimination programmes efficiently and maintain an adequate dog vaccination coverage (80%) to avoid the reintroduction of human rabies. They use high quality biologicals such as inactivated vaccines produced in cell cultures.
- In Latin America, average expenditure on dog vaccination is 11.4 cents per capita (compared to 1.4 cent per capita in Africa and 1 cent per capita in Asia).[10]
- Although Latin America does ensure timely PEP and has improved the access, availability and quality of immunobiologicals to people exposed to rabies, yearly mass dog vaccination[27] campaigns and education on responsible dog ownership have been key in rabies elimination efforts.
- 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 (PAHO). The 1st REDIPRA – Meeting of Directors of Rabies Programs of the Americas – was held in 1983. Since then, 16 meetings have been organised to review and direct regional actions.
- There is adequate resource allocation and diligent programme management, guided by the PAHO. The PAHO´s Revolving Fund[28] pools member states' national resources, to procure high-quality life-saving vaccines and related products, at the lowest price.
- 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.[29]
- With some limitations, there is proper rabies legislation and proper recording of cases, as rabies is designated as a notifiable disease.[5]
- Many countries have also invested in more holistic dog population management programmes that include reproduction control, implementation of responsible dog ownership policies, and training of animal and human health professionals.[5]



Right: **On 28th September 2019, World Animal Protection carried out vaccinations for 200 pet dogs in Sao Paulo, Brazil, as part of World Rabies Day. Photo credit: World Animal Protection.**

Dog-mediated human rabies elimination in Mexico: a timeline

1980s • • • • • Mexico starts to vaccinate dogs according to WHO recommendations and vaccinate people bitten by dogs.

1990s • • • • • The 'national weeks' start, where massive, intensive and free canine rabies vaccinations are offered with quality biologicals.

Scattered dog and cat sterilisation campaigns start in some states.

1990 • • • • • 7.1 million canine vaccinations administered

1994 • • • • • 10 states begin to sterilise dogs and cats routinely, bringing the yearly total to 8,000 sterilised animals

1997 • • • • • The pre and post-exposure vaccination schemes are improved when human anti-rabies biologicals are included as per the WHO's recommendations.

1999 • • • • • More states begin to gradually implement sterilisation campaigns, with a total of 104,000 animals sterilised between 1994 and 1999.

2000s • • • • • The Canine Stabilisation Strategy is started with a shared responsibility model.

2000 • • • • • 13.7 million canine vaccinations are administered.

2006 • • • • • In 1990, 60 people died from canine-transmitted rabies. By 2006 there are no more reported cases, and none since.

2017 • • • • • Lab confirmed canine rabies: 3,000 cases reported in 1990. By 2017 the country has zero outbreaks/cases.

2019 • • • • • 18 million dog vaccinations administered.

From 2000 to 2019, 6.8 million dogs and cats were sterilised free of cost with the participation of all states.

Mexico is recognised as a country free of dog-mediated human rabies.



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

Join the fight to end rabies

If we focus our eyes on dogs and change our approach, from an obligation to treat towards an ambition to end the rabies disease, we can achieve the vision of a dog-mediated human rabies-free world by 2030. Together, we will succeed by intensifying mass dog vaccination efforts and encouraging responsible dog ownership through education and community engagement. Eliminating rabies is possible and a moral imperative, knowing that the expenditure required is lower than the current annual cost of the disease, mostly borne by the poorest. Moreover, achieving the elimination of rabies can act as proof of the utility and success of the sustainable development agenda and the One Health approach.

Eliminating rabies is a collective responsibility. The world has committed to achieve this goal by 2030. This is achievable but only if an effective multi-stakeholder partnership is established, involving all relevant stakeholders, including the United Against Rabies collaboration partners. We must ensure sustained and systematic rabies elimination programme management and coordination, working with the private sector to ensure timely and sufficient availability of high-quality dog vaccines at an affordable price.

World Animal Protection calls on all stakeholders to be part of this transformational story for dogs, and for humans.

We call on all Governments and funding partners to:

- **Provide a clear and unambiguous expression of political will to end dog-mediated human rabies by 2030.**
- **Scale up financing** to endemic countries including through the establishment of a financing facility for rabies elimination, which will support a **multi-stakeholder** and coordinated approach to mass dog vaccination.
- **Scale up technical and logistical support to implement mass dog vaccination,** including strengthening animal health systems, vaccine cold chain and delivery systems.
- **Support the Gavi replenishment** to ensure resources are available to enable Gavi-eligible countries to access human post-exposure prophylaxis, on condition that mass dog vaccination is put in place.

- Make rabies a notifiable disease for people and dogs and **ensure data and systems are in place to notify national governments, WHO and OIE of canine rabies outbreaks.**

We call on Governments of rabies endemic countries to:

- **Vaccinate at least 70% of the national dog population,** on an annual basis for 3-5 years to break the rabies transmission barrier.
- **Adopt a One Health approach to rabies elimination,** involving both the human and animal health sectors.
- **Scale up domestic financing for mass dog vaccination,** and take all necessary legal and policy measures to facilitate a focus on mass dog vaccination.
- **Invest in surveillance and data collection** to inform planning and decision-making.
- **Promote responsible dog ownership** and roll out nationwide education and community engagement and awareness campaigns.
- **Collaborate across borders** with neighbouring countries to pursue a regional strategy for rabies elimination.

We call on the veterinary community, academic, scientific and civil society to:

- **Focus your expertise on approaches to elimination that work** at community level, use your voices to lobby local and national government to implement the One Health approach to rabies elimination.
- **Establish alliances with local, national governments and community leaders** to promote and support implementation of mass dog vaccination and responsible pet ownership.
- **Support governments in their efforts to collect data** on dog ownership, immunisation and rabies outbreaks.

We call on the private sector, including pharmaceutical companies to:

- **Invest in R&D to drive down costs and ensure sufficient, timely and affordable availability of quality vaccine** for mass dog vaccination campaigns.
- **Support global and national initiatives to eliminate rabies.**
- **Increase support to civil society organisations** working in support of government efforts to eliminate rabies.

If we focus our eyes on dogs, rabies elimination can be achieved. World Animal Protection believes that this can happen by 2030 but we need your support. We can consign rabies to the history books and save the lives of millions of dogs and humans.

Please join us to put an end to rabies and create better lives for dogs and communities.

Right: **World Animal Protection participated in a drill in Mexico City and used the opportunity to promote a public service announcement to include pets in the families emergency plan. Photo credit: World Animal Protection.**



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Contact information

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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