Canine Rabies Blueprint - Introduction

This section contains information on the following:

1.1. What is the Blueprint for Rabies Prevention and Control?
1.2. Who is it for?
1.3. How does it work and what does it include?
1.4. What is rabies and why is it important to control it?
1.5. Why is it possible to control canine rabies?
1.6. What is involved in a dog rabies control plan?
1.7. Who can I approach for advice?
1.8. What measures are available for controlling dog rabies?
1.9. Can we prevent human rabies through human rabies prophylaxis instead?

1.1. What is the Blueprint for Rabies Prevention and Control?

It is a document aimed at helping countries where rabies is present to begin implementing rabies control programmes to reduce the number of human rabies cases with the eventual aim of eliminating canine rabies from an area.

Part I (www.caninerabiesblueprint.org) focuses on the control and elimination of canine rabies. Part II (www.foxrabiesblueprint.org) deals with wildlife rabies focusing on the red fox. Part III (www.rabiessurveillanceblueprint.org) gives guidance on establishing good surveillance practices for any type of rabies.

The Global Framework for the elimination of dog-mediated human rabies, finalized in 2016, set a strategic vision of zero human deaths from dog-mediated rabies by 2030. As global support builds to work towards this vision, the Canine Rabies Blueprint provides a central access point to information and resource for countries and all stakeholders to use as they progress towards the 2030 goal.
1.2. Who is it for?

This document can be used by all persons and agencies concerned with implementing dog rabies control programmes including:
- Professionals (public and private veterinarians and medics)
- Government, ministry and municipality officials
- Non-governmental organisations, including animal welfare organisations
- Field teams involved in the day-to-day rabies control activities (animal and human health workers and field personnel).

1.3. How does it work and what does it include?

The Blueprint is a user-friendly, web-based, question and answer document including contributions from numerous experts working in the field of rabies and provides hyperlinks to more detailed information and documents.

1.4. What is rabies and why is it important to control it?

Rabies, an invariably fatal disease, has been known and feared since antiquity and is usually caused by the bite of an infected animal. More than 98% of all human rabies deaths are caused by the bite(s) of rabid dogs. Rabies is distributed worldwide and can affect all mammals including humans. The virus responsible for rabies infects the central nervous system resulting in a neurological disorder characterized by horrific clinical signs and symptoms in both animals and humans.

The majority of human rabies deaths globally occur as a result of being bitten by dogs. However, reliable data indicating the actual incidence of human rabies exposure are scarce or non-existent in many countries, leading to the widespread belief that the global number of human deaths is significantly underreported. As a result, rabies impacts are often considered insignificant by policymakers, which ultimately results in inadequate political pressure to implement disease control measures. It is estimated that approximately 59,000 people die annually as a result of canine rabies, and most victims are children on the continents of Asia, Africa, and Latin America. (See Hampson et al. study here.)

Prevention of rabies in humans is complicated because those most commonly exposed to canine rabies (e.g., children, the poor) also lack the resources necessary to treat or prevent exposure. This means that governments, and other organizations are often the primary source of funding for the required post exposure prophylaxis (PEP).

Rabies transmitted by dogs is responsible for the loss of over 3.7 million DALYs (disability adjusted life years) every year, with direct and indirect economic costs (PEP, animal tests, dog vaccination, and livestock losses) totaling $8.6 billion per year. (See Hampson et al. study here.) Another economic
analysis, which also included the costs associated with the risk of human mortality, resulted in a global cost for canine rabies of $120 billion. (See Anderson and Shwiff study here.)

In several countries, such as Ethiopia and Kazakhstan, studies have calculated major economic losses due to rabies deaths amongst livestock (see here) and total livestock losses globally are estimated to be over $500 million per year (see Hampson et al. study here).

Rabies also threatens the survival of endangered wildlife species, such as African wild dogs and the Ethiopian wolf.

Controlling rabies is critically important to prevent human deaths and alleviate its burden in animal species and on local and national economies.

Evidence that canine rabies elimination is feasible, primarily through mass dog vaccination, has been increasing over the last decades (see here), and in 2015, a “Rationale for investing in the global elimination of dog-mediated human rabies” was jointly released by WHO, OIE and FAO.

In Sri Lanka, mass dog vaccinations have dramatically reduced human rabies cases, and human vaccine use has fallen.

In December 2015, delegates at a global meeting entitled “Global elimination of dog-mediated human rabies: The time is now!” agreed on a strategic vision of an end to human deaths from rabies by 2030.
Following discussions at that meeting, a [Global strategic framework for the elimination of dog-mediated human rabies](#) was released in March 2016. These global efforts are supported by the [End Rabies Now campaign](#).

Read [here](#) for more information on rabies and [here](#) for updates about international efforts to support global canine rabies elimination.

### 1.5. Why is it possible to control canine rabies?

There are no insurmountable obstacles to controlling dog rabies because:

- The global scale and magnitude of the rabies problem, a major factor in generating political support, is now **widely recognized**.

- In regions where the highest number of human rabies deaths and exposures occur (Africa and Asia), the domestic dog is responsible for almost all maintenance and transmission of the disease. Intervention programmes focused on preventing rabies in dogs will therefore lead to the disappearance of rabies in dogs and other species, including humans and livestock, and this has been **successfully shown**.

- Rabies is entirely preventable. Modern safe, affordable and efficacious vaccines for animals have controlled rabies in many parts of the world.

- Levels of rabies virus transmission in dogs are low, as shown in this study, therefore elimination of canine rabies can be achieved.

- Controlling canine rabies at the source is essential if the disease and public health threat are ever to be eliminated, but these studies have shown that the approach is cost-effective even before
elimination is reached.

- Effective strategies for the prevention of rabies in dogs, particularly through mass immunization campaigns, are available, as shown here. Adequate community involvement can be achieved through increased awareness rendering most rural and urban dogs accessible for vaccination.

![Photo courtesy of Serengeti Carnivore Disease Project](image)

- Diagnostic and surveillance approaches are available to help evaluate the impact of control and elimination efforts. The Secure Approach towards Rabies Elimination (SARE) can evaluate the whole programme’s progress towards its goal of rabies elimination.

- Reducing human rabies deaths through effective dog rabies control and dog-bite prevention is less costly than increasing the use of human vaccine. If rabies is eliminated in dogs, there will be a reduced demand for human vaccine in the long term, so strong collaborations between the medical and veterinary sectors can allow cost-sharing strategies to be developed.

Click [here](#) to view studies showing that canine rabies elimination in Africa, Asia and Latin America is a feasible objective.
1.6. What is involved in a dog rabies control plan?

The first step is to define the canine rabies situation in your country, which can be as follows:

- Rabies is present and is either maintained in dogs or is fairly common in dogs, but is maintained in other species (spill-over situation). In both circumstances it is important to control rabies in dogs since they represent the greatest threat to human health because of their close proximity to people.

- Rabies has been absent for a number of years but re-introductions are possible.

- No information is available because no surveillance measures are in place.

- I do not know, how do I find out? Click here to see the global distribution of rabies.

The objectives of a dog rabies control project should be to eliminate dog rabies from a given area and to keep this area free from the disease forever. The Blueprint for Canine Rabies Prevention and Control will guide you through what you can do to achieve these objectives. An effective dog rabies control programme should involve two phases, an attack phase (the elimination project) and a maintenance phase. Epidemiological vigilance is essential to both. It is strongly suggested that initiators of rabies control projects emphasize the importance of a maintenance phase in order to render the endeavour worthwhile.

If canine rabies is present in your country, there are a number of steps you need to consider to achieve the objectives described above as shown in this diagram. You can access guidelines specific to each component of the process either by clicking on the headings of the diagram, or through the left navigation bar or the Site Map.

If canine rabies has been suddenly re-introduced into an area after a period of absence, click here for specific guidelines on contingency planning.

If wildlife species are responsible for maintenance, different approaches will be required, which is dealt with in the Blueprint for Fox Rabies Prevention and Control.

Governments wishing to establish and implement a national rabies control strategy may find additional, practical guidance in the available tool for a Stepwise Approach towards Rabies Elimination in Section 6.
1.7. Who can I approach for advice?

As the global community strives towards rabies control and elimination by 2030, a variety of supporting networks, international bodies and centres have been established in different regions around the world. Primarily, regional networks have been established to guide countries in their control efforts and to help promote successes, lessons learnt, and innovative approaches. Through the network, other countries experiencing similar challenges may learn from these to facilitate their own progress towards elimination. The network approach focuses on the sharing of relevant information and experiences to create a unified front against rabies. Due to the transboundary nature of the disease, regional collaboration - promoted through the various networks, organisations and centres - becomes an essential aspect of rabies control and elimination strategies. As such, rabies databases maintained by regional networks are also critical to regional elimination goals.

For further information, please contact these international agencies and bodies connected to rabies.

For an example of how regional networks can support countries’ rabies control efforts, see the PARACON case study.

1.8. What measures are available for controlling dog rabies?

Find below a summary of measures available for controlling dog rabies. Full details of these measures are provided throughout the document.

- The most effective approach to control dog rabies is through implementation of mass vaccination of domestic dogs, which is described in this section. In most situations, vaccinating at least 70% of the dog population will result in control of rabies as shown in this study. However, coverage required may be higher if dog populations are very dense or lower in areas where most dogs are restricted in their movements.
Efforts should be made to limit the unrestricted movement of owned dogs through promotion of responsible dog ownership and legislative measures (e.g. tie-up orders, individual animal identification and registry), as explained in more detail here and here, where appropriate and with consideration for animal welfare. Border checks and other measures could be implemented to prevent the introduction of rabies into rabies-free areas, as described here and here.

Dog vaccination can be supplemented by methods to control the population of owned and unowned dogs, such as public education and legislation to develop responsible dog ownership, reproduction control of dogs and re-homing or humane euthanasia of unwanted dogs. However, dog population management is not always necessary, as explained here. Indiscriminate inhumane killing of free-roaming dogs is not recommended; it can make the situation worse, is unpopular with local communities and causes international concerns about animal welfare. Read also here for further explanations on dog culling. Unwanted reproduction of dogs can be achieved using chemical contraception or sterilisation or immunocontraception and efforts are being made to produce and license safe and effective contraceptives and sterilants. Click here for more information on the dog population management tools just described.

1.9. Can we prevent human rabies through human rabies prophylaxis instead?

Human rabies deaths can be substantially reduced by increasing availability and accessibility of human anti-rabies vaccines and rabies immunoglobulins as shown in this study. However, if this is the only strategy adopted, the financial costs are high and will continue to increase since human vaccines are much more expensive than animal vaccines and because the disease has not been eliminated at its source (in the dog population). Adequate provision of human rabies biologicals and appropriate training of medical professionals to avoid their unnecessary use are both essential when beginning a national canine rabies control programme. This strategy will help to prevent
rabies in exposed people and protect workers involved in activities related to the control programme. It should be expected that at the beginning of the programme there might be an increase in the use of human biologicals due to improved accessibility and enhanced rabies surveillance. However, the eventual decline of human deaths that occurs by reducing rabies in dogs through effective canine rabies vaccination programmes generally leads to a decrease in the use of expensive biologicals for humans thus resulting in substantial savings to the public health sector.