

The Stepwise Approach towards Rabies Elimination: A Planning and Evaluation Tool

Acknowledgments

This tool was made available upon request of countries endemic for dog-transmitted rabies. The concept and tool have continuously been subject to review by and input from national or regional rabies meetings, mainly held in rabies endemic regions of Africa and Asia. The numerous contributors over time are acknowledged for their precious input, as well as the FAO, GARC and WHO for their continuous institutional support and expertise provided. We wish to extend our sincere gratitude to the Bill and Melinda Gates Foundation, the UBS Optimus Foundation and World Animal Protection for their generous financial support.

An updated version of the Stepwise Approach towards Rabies Elimination (SARE October 2016) follows a working meeting of the FAO, GARC, WHO, OIE and CDC in Bangkok, Thailand – June 2016.

Background

1) Why a tool for stepwise rabies control?

Rabies is classified as a Neglected Zoonotic Disease by the World Health Organization (WHO). As a result of chronic underreporting and political neglect, the true burden of the disease remains unknown. The transmission of rabies occurs most commonly through wounds or direct exposure of mucosal surfaces to bites, licks and scratches from rabid animals. Dogs are the main source of human exposure to rabies and human rabies deaths. Dog-transmitted rabies is estimated to kill tens of thousands of people per year and to cause significant losses in production animals. Over 95% of all human rabies deaths occur in Asia and Africa. In these regions, the disease is inextricably linked to poverty and has a negative impact on the ability of countries to meet the Sustainable Development Goals, particularly the goal to eradicate extreme poverty and hunger (SDG 1 and 2) and improve health (SDG 3), by 2030.

Human rabies of dog origin is a vaccine-preventable zoonosis. Vaccination of dogs is the most effective way to achieve a significant and lasting reduction in the number of rabies-related human deaths. The prevention of human rabies is dependent upon the effective and verifiable control of dog-transmitted rabies. In light of these facts, FAO, GARC and partners created a tool to assist planning, monitoring and evaluation of programmes to prevent and control dog-transmitted human rabies.

Many steps towards international control and elimination of dog-transmitted human rabies have already been taken. At the global level, FAO, OIE and WHO declared rabies a priority disease¹. Besides national strategies developed by individual countries, several regional strategies for the elimination of dog-mediated human rabies already exist or are under development^{2, 3}.

In December 2015, the global rabies meeting in Geneva, Switzerland, developed a framework for the elimination of dog-mediated human rabies. The strategic vision of this framework is to reach zero human deaths from dog rabies by 2030. The framework revolves around 5 pillars, abbreviated as **STOP-R**.

S: Socio-cultural. This context influences rabies perceptions and dog-keeping practices of at-risk populations. Socio-cultural activities include aspects of rabies awareness, responsible dog ownership, bite prevention and treatment, and community engagement.

T: Technical. Activities in this pillar include efficacious vaccines and vaccination programmes/strategies, logistical support, diagnostics and surveillance.

O: Organization. Rabies is a very good model/fit for One Health (OH) and activities include promotion of this OH concept, coordination, governance, monitoring and evaluation.

P: Political. Political will and support are critical for the elimination of rabies. Activities include international support, legal frameworks and regional engagement.

R: Resources. Sustained long-term support is necessary for the ultimate elimination of rabies. The framework promotes the case for investment in rabies control, as well as the development of a business plan and vigorous encouragement for investment in the elimination of rabies as a global public good.

The framework was developed by the OIE, WHO, FAO and the Global Alliance for Rabies Control⁴.

Technical guidance, tools and updated standards for the sustainable implementation of rabies programmes are available^{5,6,7}. Over the past decade, international organizations such as the FAO, OIE, WHO and GARC have initiated global capacity programmes to strengthen national public health systems⁸ and veterinary services⁹. However, the implementation of rabies prevention and control programmes remains the responsibility of national authorities that have to cope with a multiplicity of human and animal disease priorities while attempting to overcome the challenges associated with planning across sectors and administrative levels. The One Health concept has been beneficial in addressing these challenges.

The table below summarizes the main challenges and opportunities for rabies control^{10,11,12}:

Challenges:	Opportunities:
<ul style="list-style-type: none"> - Vicious circle of neglect - lack of data and information lead to lack of committed political will and resources - Low value of dogs in societies - low priority by veterinary professionals, despite rabies-related livestock losses - Lack of commitment and coordination between the animal health sector (where the main intervention is required), and the human health sector (where the main benefits reside) 	<ul style="list-style-type: none"> - Elimination of dog-transmitted human rabies is feasible through vaccination of dogs - While rabies is 99.9% fatal, it is 100% preventable - Rabies is an ideal model for One Health, as it requires intersectoral collaboration - Rabies elimination is a global public good and a target of 2030 for worldwide elimination of human deaths due to dog-transmitted rabies has been set - There are active global and regional rabies platforms - Effective advocacy, education and communication tools and platforms are available (including the Rabies Blueprint, World Rabies Day, End Rabies Now campaign, and the GARC Education Platform)

The Stepwise Approach towards Rabies Elimination (SARE) has been developed as a practical planning, monitoring and evaluation tool to guide, develop and refine rabies control programmes. This tool provides tangible and achievable steps for the control and prevention of dog-transmitted rabies.

The SARE tool is aligned with the One Health approach, and follows the principle of strengthening intersectoral collaboration with the goal of sustained rabies risk reduction over time¹³. The list below shows the outcome of a high level technical meeting¹⁴ and provides the elements that ideally need to be in place to allow and facilitate effective intersectoral collaboration in the spirit of a One Health approach. These principles are applicable but not limited to rabies.

1. Political will and high-level commitment
2. Trust
3. Common objectives and priorities
4. Shared benefits
5. Strong governance structures, aligned legal frameworks, and recognition of existing international standards

6. Adequate and equitably distributed resources
7. Identification and involvement of all relevant partners
8. Coordinated planning of activities
9. Guidance on implementation of intersectoral collaborations
10. Capacity development
11. Strong and effective health systems within the individual sectors

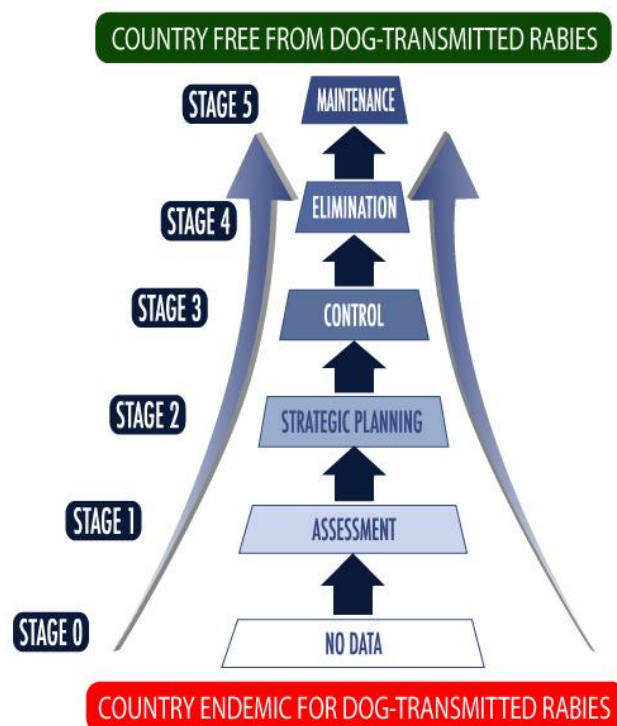
2) How to use the SARE planning and implementation tool for rabies control:

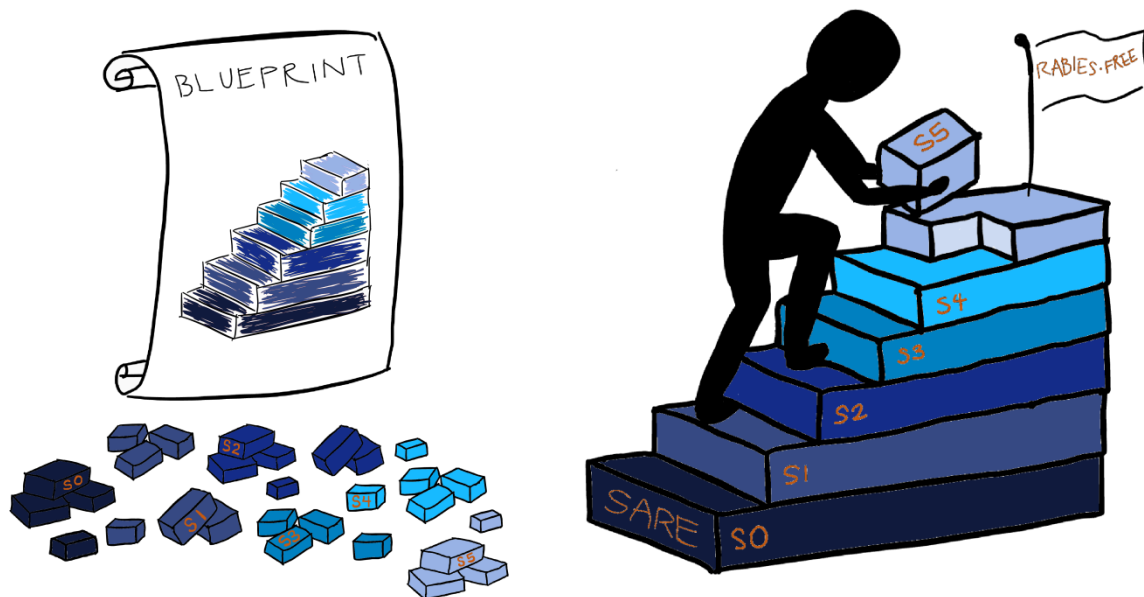
This document provides an outline of the SARE tool and its benefits, and can be used to raise awareness and gain support for SARE within your government and among other stakeholders.

The SARE tool provides an **Excel assessment scoresheet** with measurable steps, designed as a logical flow of activities, to progress from Stage 0 to Stage 5, in efforts towards freedom from dog-transmitted rabies. Countries with no information on rabies start at Stage 0, while others may start further along the scale, and when the country reaches Stage 5, it is free from dog-transmitted rabies.

- The SARE assessment scoresheet outlines a number of activities in each stage that need to be completed to move upwards to the next one, and the activities build on the previous achievements.
- It allows you to provide a '0' or '1' score for each activity that needs to be completed.
- A SARE score is then calculated automatically.

Overview of the stages of the Stepwise Approach towards Rabies Elimination:





The SARE is an integral part of the **Canine Rabies Blueprint** (<http://caninerabiesblueprint.org>), a readily accessible, open source tool which provides practical detailed methods and guidance to implement each activity in the SARE in a progressive and systematic (stepwise) manner. Activities in the SARE assessment scoresheet provide links to the Blueprint, which also gives examples of how to implement rabies control activities, as well as guidance on institutional responsibilities concerning each activity and who might carry out the work. It encourages relevant stakeholders to work together to progress from stage to stage towards rabies elimination.

The SARE assessment scoresheet is divided into different categories, all of which need to be addressed to reach rabies elimination. The table below lists the categories, the acronyms used for the categories, and how they are related to the agreed Global Framework (see page 2 for details).

How the categories are linked to the **Global Framework for the Elimination of Dog-Mediated Human Rabies (STOP-R)**:

Socio-cultural

- Information, education, and communication
- Dog population related issues

Technical

- Prevention and control
- Data collection and analysis
- Laboratory diagnosis

Organization

- Cross-cutting issues

Political

- Legislation

There are 4 activities which are considered crucial from the beginning and across all stages:

- Dog vaccination
- Rabies awareness/communication
- Accessible PEP
- Capacity for rabies diagnosis/surveillance

Monitoring and periodic evaluation of progress should be done as part of the SARE work. As the programme progresses, e.g. building rabies surveillance systems, scaling up rabies control at the animal source or implementing a national rabies strategy itself, it may require adaptation.


Periodic revision: The SARE will be periodically revised and improved through the sharing of experiences by participating regions and countries, and as relevant documentation of these efforts becomes available.

Adaptation for use at different levels: The SARE was initially designed to be implemented at national level. However, it can be adapted to be used at other levels such as the local or regional level.

Description of stages 0 to 5

COUNTRY ENDEMIC FOR DOG-TRANSMITTED RABIES

<p style="text-align: center;">STAGE 0</p> <p style="text-align: center;">NO DATA</p>	<p><i>No information on rabies available, but rabies is suspected to be present:</i></p> <p>No systematic recording of clinical rabies or animal bite events occur, but suspicion of rabies being present (any species) is based on episodic clinical description (in animals or humans) or historic confirmation (many years ago). There is no, or no recent, laboratory diagnosis of rabies (by a laboratory inside the country or by an international reference laboratory). There are no national rabies control guidelines or, if available, are not implemented or inappropriate to the country's situation.</p>
<p style="text-align: center;">STAGE 1</p> <p style="text-align: center;">ASSESSMENT</p>	<p><i>Assessment of the local rabies epidemiology, elaboration of a short-term rabies action plan:</i></p> <p><u>Situation assessment:</u> At this stage the government assesses existing structures, activities and available resources.</p> <p><u>Data collection/analysis:</u> The country analyses existing data on rabies, such as animal bite-related events and existing prevention and control activities in at least some parts of the country.</p> <p><u>Outbreak investigation:</u> Some follow-up of outbreaks and cases has already been conducted or initiated. Collated information and experiences lead to a short-term action plan regarding initial needs and success stories.</p> <p><u>Stakeholder analysis:</u> It is important to gain insight into the potential stakeholders involved in rabies prevention and control in the country, and to understand the needs of rabies affected communities.</p> <p><u>Action plan:</u> This stage includes activities to lay the foundation for the elaboration of a future national rabies prevention and control programme and strategy.</p> <p><u>Resources:</u> Typically, at this stage there is no, or only limited, funding allocated to rabies control.</p>

 <p>STAGE 2 STRATEGIC PLANNING</p>	<p><i>Development of a national rabies prevention and control strategy:</i></p> <p>The activities indicated in the previous stage continue to evolve. Based on the short-term rabies action plan there is development of needed capacity and elaboration of SOPs or protocols. Development of a national strategy based on an improved epidemiological understanding and knowledge about the prevailing institutional landscape. Identification of options for funding (local, national and international).</p>
 <p>STAGE 3 CONTROL</p>	<p><i>Full-scale implementation of the national rabies control strategy:</i></p> <p>The capacity to implement the national rabies control strategy is established and functional. Rabies risk is reduced through implementation of the national control strategy. All key stakeholders are engaged in the implementation of the strategy and regular meetings to share information and evaluate progress of rabies control and elimination take place. No human rabies cases are reported.</p>
 <p>STAGE 4 ELIMINATION</p>	<p><i>Maintenance of human rabies freedom, elimination of dog rabies</i></p> <p>Maintaining the elimination of dog-transmitted human rabies and elimination of dog rabies. Sustaining implementation of the national elimination strategy including development of plans for the post-elimination phase.</p>
 <p>STAGE 5 MAINTENANCE</p>	<p><i>Freedom from human and dog rabies being monitored:</i></p> <p>Monitoring freedom from human and dog rabies. The national post-elimination strategy is developed and implemented.</p>

COUNTRY FREE FROM DOG-TRANSMITTED RABIES

Abbreviations

FAO	Food and Agriculture Organization of the United Nations
GARC	Global Alliance for Rabies Control
IBCM	Integrated bite case management
KAP	Knowledge, Attitudes and Practice
OH	One Health
OIE	World Organisation for Animal Health
PAHO	Pan-American Health Organization
PEP	Post-exposure prophylaxis
PreP	Pre-exposure prophylaxis
RIG	Rabies immunoglobulin
SARE	Stepwise Approach towards Rabies Elimination
SOP	Standard operating procedure
WHO	World Health Organization
WRD	World Rabies Day

References and further reading

- GARC <http://www.rabiesalliance.org/>
- FAO Rabies page
http://www.fao.org/ag/againfo/home/en/news_archive/AGA_in_action/2010_rabies.htm
- OIE Rabies Portal <http://www.oie.int/en/animal-health-in-the-world/rabies-portal/>
- PAHO Rabies page
http://www.paho.org/panaftosa/index.php?option=com_content&view=article&id=509&Itemid=233
- WHO Rabies page <http://www.who.int/rabies/en/>

¹Joint statement of FAO, OIE and WHO on World Rabies Day 2013
<http://www.fao.org/news/story/en/item/198087/icode/>

²WHO. **WHO Expert Consultation on Rabies, Second report.** In WHO Technical Report Series 982. Geneva: World Health Organization; 2013.
http://apps.who.int/iris/bitstream/10665/85346/1/9789240690943_eng.pdf?ua=1

³Recommendations of the OIE Global Conference on Rabies Control, 7-9 September 2011, Incheon–Seoul (Republic of Korea)
http://www.oie.int/fileadmin/Home/eng/Conferences_Events/docs/pdf/recommendations/A_Recommendation_Global%20Rabies%20Conference%20Seoul_final.pdf

⁴Global Elimination of Dog-Mediated Human Rabies – the time is now! Report of the Rabies Global Conference 10-11 December 2015, Geneva, Switzerland.
http://www.oie.int/fileadmin/Home/eng/Media_Center/docs/pdf/Rabies_portal/EN_RabiesConfReport.pdf

⁵WHO Immunization, Vaccines and Biologicals – Rabies <http://www.who.int/immunization/diseases/rabies/en/>

⁶OIE Terrestrial Animal Health Code
<http://www.oie.int/en/international-standard-setting/terrestrial-code/access-online/>

⁷OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals

<http://www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/>

⁸WHO Alert, response, and capacity building under the International Health Regulations (IHR)
<http://www.who.int/ihr/about/en/>

⁹OIE PVS Pathway <http://www.oie.int/en/support-to-oie-members/pvs-pathway/>

¹⁰ Nel LH. 2013. Factors impacting the control of rabies. Microbiol Spectrum 1(2):OH-0006-2012. doi:10.1128/microbiolspec.OH-0006-2012

¹¹ Ceballos, N. Aréchiga; Karunaratna, D.; Setién, A. Aguilar. Control of canine rabies in developing countries: key features and animal welfare implications, Rev. sci. tech. Off. int. Epiz., 2014, 33 (1), 311-321

¹² FAO. 2011. Challenges of animal health information systems and surveillance for animal diseases and zoonoses . Proceedings of the international workshop organized by FAO, 23-26 November 2010, Rome, Italy. FAO Animal Production and Health Proceedings, No. 14. Rome, Italy

¹³Developing a stepwise approach for rabies prevention and control, proceedings FAO/GARC workshop, 6-8 November 2012; Rome (Italy) <http://www.fao.org/docrep/019/i3467e/i3467e00.htm>

¹⁴High-Level Technical Meeting to Address Health Risks at the Human-Animal-Ecosystems Interfaces, 15-17 November 2011, Mexico City (Mexico) http://www.who.int/zoonoses/HLTM_exec_summary.pdf