



**UNITED
AGAINST RABIES
COLLABORATION**

First annual
progress report

ZERO BY 30

THE GLOBAL STRATEGIC PLAN
TO END HUMAN DEATHS
FROM DOG-MEDIATED RABIES BY 2030



Food and Agriculture
Organization of the
United Nations



WORLD ORGANISATION
FOR ANIMAL HEALTH



World Health
Organization



Global
Alliance
for
Rabies
Control

United Against Rabies Collaboration

First annual progress report: Global Strategic Plan to End Human Deaths from Dog-mediated Rabies by 2030

World Health Organization

Food and Agriculture Organization of the United Nations

World Organisation for Animal Health

Global Alliance for Rabies Control

Geneva, 2019

United Against Rabies Collaboration First annual progress report: Global Strategic Plan to End Human Deaths from Dog-mediated Rabies by 2030

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ABBREVIATIONS

CCC	Community Coordinator for Rabies Certificate
CDC	United States Centers for Disease Control and Prevention
FAO	Food and Agriculture Organization of the United Nations
GARC	Global Alliance for Rabies Control
GDREP	Global Dog Rabies Elimination Pathway
IHR	International Health Regulations (2005)
OIE	World Organisation for Animal Health
PEP	Post-Exposure Prophylaxis
PRP	Partners for Rabies Prevention
PVS	Performance of Veterinary Services
REB	Rabies Epidemiological Bulletin
REC	Rabies Educator Certificate
SARE	Stepwise Approach towards Rabies Elimination
SDG	Sustainable Development Goal
SISOT	Surveillance and Information-sharing Operational Tool evaluation matrix
UAR	United Against Rabies
WAHIS	World Animal Health Information System
WHO	World Health Organization

EXECUTIVE SUMMARY

This report describes the progress made since the launch of the Global Strategic Plan to End Human Deaths from Dog-mediated Rabies by 2030. The country-centric plan is built on the premise that societal and political support are fundamental to the success of any disease elimination campaign.

In addressing the first objective of the strategy, the United Against Rabies (UAR) collaboration demonstrated (i) increased access to dog rabies vaccines, (ii) improved medical care for cases of human rabies exposure and (iii) enhanced rabies awareness in several countries and regions worldwide. As education and increased awareness are essential to preventing the disease and advocating for its elimination, the UAR has pursued this goal in myriad ways, most notably in 2018 when almost 200 events on World Rabies Day were registered on the GARC website from at least 62 countries, attracting significant exposure through printed, digital and social media channels. Much traction has been generated through educational initiatives such as free online certificate courses and integration of rabies into school curricula, for example in the Philippines. The vaccine bank of the World Organisation for Animal Health (OIE) delivered more than 2 million doses of rabies vaccines to 13 countries, and the World Health Organization (WHO) and partners trained 450 health professionals in 70 countries where rabies is endemic during sub-regional and regional workshops. The announcement by the Gavi Alliance in 2019 that it would include human rabies vaccines (from 2021) is another significant positive outcome of the UAR collaboration.

Regional and national rabies-specific workshops allowed an assessment of the progress of rabies elimination in more than 60 countries, initiation of country workplans, for example through Stepwise Approach towards Rabies Elimination assessments, and subsequent in-country training activities and programmatic support by the UAR and partners. In terms of innovation and technology, the UAR collaboration allowed for a new rabies-specific operational tool evaluation matrix and the corresponding update of the rabies blueprint developed by the Partners for Rabies

Prevention. To improve data collection, the OIE World Animal Health Information System is being overhauled and the data on rabies in WHO data platforms updated through the regional rabies control networks and the Rabies Epidemiological Bulletin. In this critical venture, the UAR continues to coordinate the harmonization of data indicators and data validation to ensure accurate monitoring of progress towards the “Zero by 30” goal.

The UAR has identified 60 development partners and is committed to engaging all stakeholders in the rabies community, including government institutions, non-state actors, academia, international organizations and individual countries. Key achievements were reported to a broader audience in three joint press releases, by interlinking the four institutional websites and via digital and social media. Regional and global meetings on rabies and zoonoses were also used to engage partner organizations and institutions in implementing the Strategic Plan. As the UAR steps up its engagement with the global rabies community and individual countries, there is a steady increase in the commitment to “Zero by 30”. This progress is encouraging, and our challenge will be to continue to secure societal and political support not only internationally but also nationally in every country affected by dog-mediated human rabies.



ZERO BY 30

Global Strategic Plan to End Human Deaths from Dog-mediated Rabies by 2030

OBJECTIVE 1

to effectively use vaccines, medicines, tools and technologies

Reduce human rabies risk

- Improved awareness and education
- Increased access to healthcare, medicines and vaccines
- Dog vaccinations

OBJECTIVE 2

to generate, innovate and measure impact

Provide guidance and data

- Effective policies, guidance and governance
- Ensuring reliable data to enable effective decision-making

OBJECTIVE 3

to sustain commitment and resources

Harness multi-stakeholder engagement

Demonstrate the impact of activities completed under the United Against Rabies collaboration

Phase 1: START UP
2018–2020
29 countries

Phase 2: SCALE UP
2021–2025
+52 countries

Phase 3: MOP UP
2026–2030
+19 countries

First annual report

INTRODUCTION

The aim of this first annual report is to describe progress made between June 2018 and September 2019 in implementing the Global Strategic Plan to End Human Deaths from Dog-mediated Rabies by 2030, “Zero by 30”, and to identify the challenges encountered and areas for improvement in the coming year. The Plan, launched in June 2018, targets the disease at the dog reservoir and aligns efforts to prevent human rabies and to strengthen animal and human health systems. By implementing the Strategic Plan, affected countries will move a step closer to Sustainable Development Goal (SDG) 3.3, “By 2030, end the epidemics of neglected tropical diseases”, and make progress towards meeting SDG 3.8 on achieving universal health coverage.

The Strategic Plan puts countries at the centre, with renewed international support to make the social changes required, through a pragmatic approach with three objectives:

- Objective 1: Eliminate rabies by effective use of vaccines, medicines, tools and technologies;
- Objective 2: Generate, innovate and measure the impact of rabies control measures, provide guidance, effective policies and governance, and generate reliable data for effective decisionmaking;
- Objective 3: Sustain countries’ commitment and resources.

Phase 1 began in 2018, targeting 29 countries that provide regional cases of success. In phase 2, 52 more countries will be encouraged to commit to rabies elimination; and, in phase 3, all other countries in which rabies is endemic will be invited to commit to the Strategic Plan.

In order to guide the Global Strategic Plan implementation a logic framework was defined, with the expected outcomes, outputs and major activities. Indicators are used to measure progress towards each of the objectives.

ABOUT RABIES

Rabies is entirely preventable, and vaccines, medicines, tools and technologies have long been available to prevent people from dying of dog-mediated rabies. Nevertheless, rabies still kills about 60 000 people a year, of whom over 40% are children under 15, mainly in rural areas of economically disadvantaged countries in Africa and Asia. Of all human cases, up to 99% are acquired from the bite of an infected dog.¹

The estimated cost of rabies is approximately US\$ 8.6 billion per year, of which 54% is for productivity losses due to premature deaths, 37% is for treatment of humans bitten by dogs suspected of being rabid and only 2% is spent on dog vaccination and population control.² The cost of dog vaccination – the most effective measure of rabies control – is a negligible component of the losses due to the disease. For a relatively low budget, the disease could be eliminated, with thousands of lives saved.

Dog-mediated human rabies can be eliminated by tackling the disease at its source: infected dogs. Making people aware of how to avoid the bites of rabid dogs, to seek treatment when bitten and to vaccinate animals can disrupt the

¹ WHO fact sheet on rabies <https://www.who.int/en/news-room/fact-sheets/detail/rabies>

² Hampson et al. Estimating the global burden of endemic canine rabies. *PLoS Negl Trop Dis.* 2015;9:e0003709. doi:10.1371/journal.pntd.0003709.

RABIES IS A MAJOR PUBLIC HEALTH PROBLEM



FATAL once symptoms appear



ONE DEATH every **9 MINS**, worldwide

59 000 deaths / year

40% of victims are **children**

DOG VACCINATION can eliminate human rabies



Vaccinating **70%** of dogs in high-risk areas breaks rabies transmission cycle

Human rabies is 100% VACCINE-PREVENTABLE

Thorough washing of the wound with soap, and vaccine injection **save lives**



99 %

of human cases result from **dog bites**

rabies transmission cycle. Thus, dog vaccination programmes applied massively, with ensured access to human post-exposure prophylaxis (PEP), can save thousands of lives.

GOVERNANCE OF THE GLOBAL STRATEGIC PLAN

Until recently, actions to eliminate rabies were conducted independently and in an uncoordinated manner, whereas rabies elimination requires a unified response from all the sectors involved, in the “One Health” approach. In 2015, in response to an international call to set the goal of zero human dog-mediated rabies deaths worldwide by 2030, the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC) joined forces in the United Against Rabies collaboration (UAR) to achieve this goal. Through the UAR collaboration and extensive consultation with rabies-affected countries and international experts, the four organizations envision coordinated support for countries with existing tools and knowledge to empower, engage and enable them to reach the rabies elimination goal by 2030.

The UAR collaboration established a global steering group, comprising one representative from each partner organization and a chairperson from one of the four organizations elected for a 2-year term, either automatically, sequentially or by vote. WHO has chaired the Steering Group for the past 2 years. When required, the Group can request support from external working groups of experts, key stakeholders, development partners, country representatives and academics. The decisions taken by Steering Group members are not legally binding on their respective institutions but, rather, bind the partners in consensus towards a common goal. A key aim of the Group has been to link the Global Strategic Plan to an operational plan, with clear roles and responsibilities for all partners willing to contribute to the global goal “Zero by 30”.



**OBJECTIVE 1:
ELIMINATE RABIES
BY EFFECTIVE
USE OF VACCINES,
MEDICINES, TOOLS AND
TECHNOLOGIES.**

Timely, appropriate prophylaxis is almost 100% effective in preventing death from rabies.

INDICATOR 1: PROGRESS MADE IN AVAILABILITY OF AND ACCESS TO DOG RABIES VACCINES.

The OIE Rabies Vaccine Bank was established in 2012 after an international call for tenders. It facilitates the procurement of high-quality dog vaccines, manufactured in accordance with OIE international standards, for the benefit and use of countries in need. The mechanism of the bank allows production and delivery of ready-to-use, formulated dog vaccines required for vaccination campaigns and also facilitates access to vaccines that can be delivered rapidly in response to urgent requests. An important step in consolidating the mechanism was made in November 2018 with publication of the OIE Policy Paper on Vaccine Banks³, which defines the principles for management of the banks in accordance with the OIE's mandate and strategic plan.



During the past year, the Bank directly contributed to implementation of the Strategic Plan by ensuring delivery of **over 2 million doses of rabies vaccines to 13 countries**

(Benin, Eritrea, Indonesia, Kenya, Lesotho, Malaysia, Myanmar, Namibia, Philippines, Singapore, Togo, Tunisia and Zimbabwe).

Vaccines are directly purchased by OIE (with financial support from donors within the framework of grants); the costs of the vaccines and transport could also be covered by international organizations such as WHO, an implementing partner or the country itself. The mechanism is therefore of interest to various stakeholders and is flexible enough to ensure the best solution for countries. OIE provides access to the Bank for countries that show strong political will and a robust plan for implementing their national control strategy on rabies.

³ OIE Policy paper on vaccine banks. Paris: World Organisation for Animal Health; 2018 (https://www.oie.int/fileadmin/Home/eng/Links/docs/pdf/Policy-Paper-VB-final-EN_Oct-2018_01.pdf, accessed September 2019).



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NAMIBIA

2015 The Namibian Government launched a national rabies control strategy in 2015 with financial and technical support from the Government of Germany and coordination by OIE.

210 725 So far, 210 725 dogs have been vaccinated against rabies in a mass campaign, and hundreds of dogs and cats are routinely vaccinated at veterinary centres and during annual vaccination campaigns.



As a result, the number of rabies cases in dogs dropped from 103 and 63 cases in 2016 and 2017 to 27 in 2018, and the number of human deaths from rabies from 23 cases in 2015 to 1 in 2018.



In 2019, the German Government renewed the agreement for 3 more years, and Namibia will continue to benefit from OIE and UAR collaboration support in their efforts to eliminate rabies by 2030.



ZIMBABWE

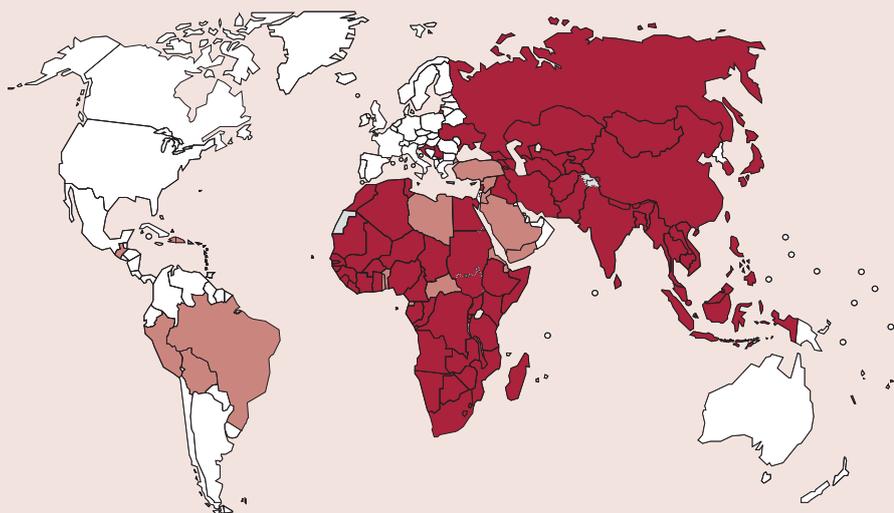
2017-2018 Between 2017 and 2018, GARC and World Animal Protection collaborated with representatives of the Government of Zimbabwe in strategic rabies intervention programmes.

12 000 Epidemiological data were used to direct 12 000 vaccinations in at-risk dog populations that significantly decreased rabies incidence; this work is ongoing.

INDICATOR 2: UNIVERSAL HEALTH COVERAGE INCLUDES BETTER TREATMENT OF DOG BITES AND RABIES IN HUMANS.

Timely, appropriate prophylaxis is almost 100% effective in preventing death from rabies. Equitable, affordable access to health care, medicines and vaccines is a pillar of WHO's work to achieve universal health coverage and the WHO 2030 roadmap for neglected tropical diseases. Bite victims in many low-income countries currently have to pay an average of US\$ 108 in out-of-pocket expenses for a course of multi-dose PEP, which is prohibitive for poor households. In 2018, the revised WHO position on rabies vaccines was published to ensure the availability of the safe, most cost-efficient techniques for pre- and post-exposure vaccination in all countries.

WHO and other UAR partners convened nine sub-regional and regional workshops, with sessions on human rabies prevention and training for more than 450 health professionals in 70 of the 89 countries in which human rabies occurs. Now, 21 rabies-endemic countries are changing their national guidelines to include the new WHO recommendations on human rabies prevention.



79% of countries with human rabies cases (shaded on the map) had health professionals involved in training sessions for human rabies prevention

Studies have been coordinated by WHO and partners in 23 endemic countries, mainly in Africa and Asia, on current practices in and obstacles to access to PEP and community-based rabies surveillance to ensure more judicious use of vaccine and rabies immunoglobulin. Collaboration with the WHO rabies modelling consortium resulted in a forecast that extended access to and free provision of PEP in 67 rabies-endemic countries between 2020 and 2035, which would prevent an additional 489 000 deaths per year at an average avert costs of US\$ 635 per death and US\$ 33 per disability-adjusted life-year.⁴ In

June 2019, the Gavi Alliance announced that it would widen its portfolio to include human rabies vaccines as of 2021. This is a promising step towards the “Zero by 30” goal. Gavi’s support will include scaling up rabies PEP in countries where Gavi runs other vaccine programmes. The greater availability and more targeted use of human rabies vaccines will affect supply chain management and therefore contribute to strengthening health systems, universal health coverage and, ultimately, less out-of-pocket expenditure for people exposed to rabies.

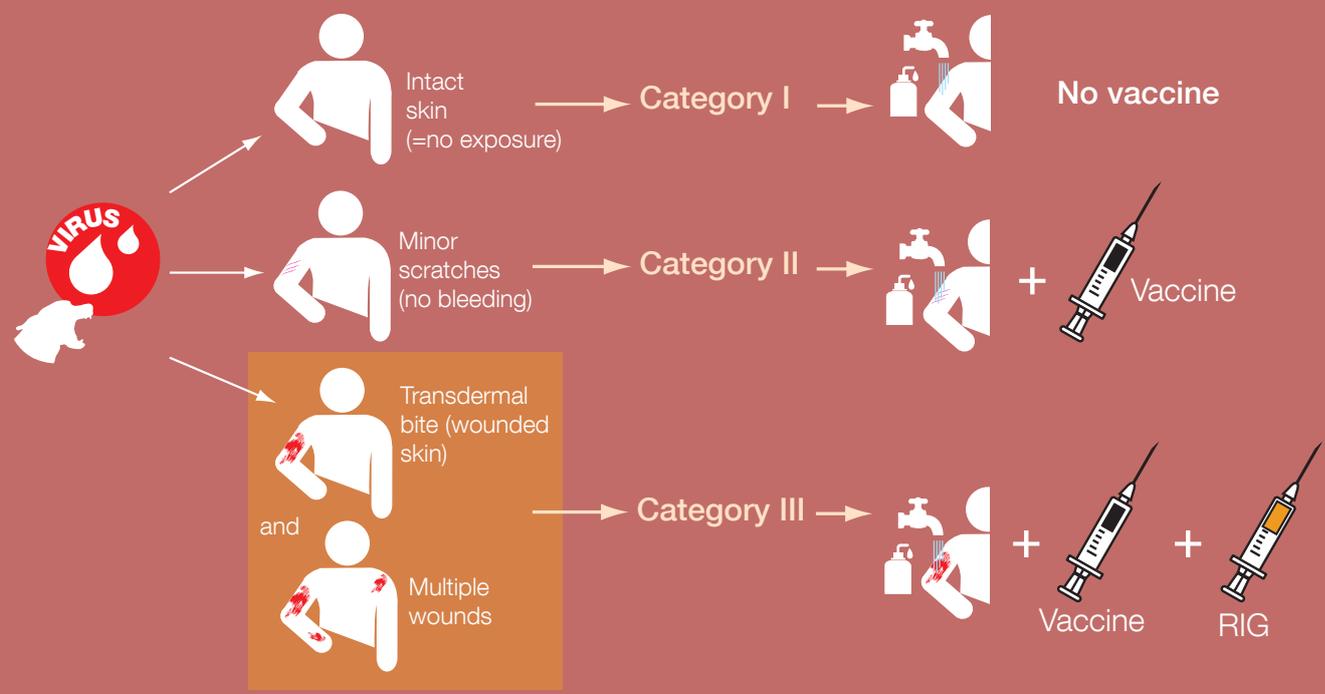
⁴ WHO Rabies Modelling Consortium. The potential effect of improved provision of rabies post-exposure prophylaxis in Gavi-eligible countries: a modelling study. *Lancet Infect Dis.* 2019 Jan;19(1):102-111. doi: 10.1016/S1473-3099(18)30512-7.



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Prompt local treatment of all bite wounds and scratches is an important step in PEP. The recommended first-aid procedures include immediate, thorough flushing and washing of all wounds with soap and water and application of povidone iodine or another substance with virucidal activity.

POST-EXPOSURE PROPHYLAXIS (PEP)



EXAMPLES OF USE OF THE NEW WHO POSITION ON RABIES VACCINATION AND OF INTEGRATED BITE CASE MANAGEMENT IN COMMUNITIES



PAKISTAN

3-visit intradermal PEP

Pilot-testing of the new three-visit intradermal PEP schedule saved 20% of vaccine vials and 20% of rabies immunoglobulin vials in a clinic with over 2000 patients a year exposed to rabies in Karachi, Pakistan. Patient adherence to the schedule increased from 72% to 95%.



INDIA

3-visit PEP

In Himachal State, India, WHO recommendations on cost- and dose-sparing PEP and a patient pooling strategy had the following outcomes:

- Three-visit rather than a four-visit PEP saved more than 700 vaccine vials during 6 months in a single clinic with over 2700 patients exposed to rabies per year.

RIG

- Administration of rabies immunoglobulin only into the wound reduced the cost of rabies PEP by 80%.

PEP saving

- Not giving PEP to patients who drank raw milk from a cow suspected of being rabid saved 62 vials of vaccine during 6 months, equivalent to annual additional savings of 1000 vaccine vials throughout the State.



GHANA

One Health

Two local initiatives from Ghana exemplify uptake of new WHO recommendations:

- The Bosomtwe district of Ghana pilot-tested the One Health approach for rabies prevention to maintain the record of 2 years without a rabies death in the district and to mainstream rabies prevention into animal and human health systems, with community engagement. Reporting of dog bites increased by about 60%.

Bite case management

- The occurrence of two human rabies cases and an apparently unrelated case in a dog in Awutu Senya East municipality triggered the introduction of integrated bite case management. Active contact-tracing showed that 4 of the 120 contacts identified had reported to a health facility for PEP, and 44 of the exposures were in WHO categories II and III; 95.7% of the exposures were to unprovoked dogs. The limited vaccine doses could therefore be allocated to initiate PEP in exposed people at risk of contracting rabies.



KENYA

Toll-free number

In selected counties in Kenya, providing a toll-free number for communities increased reporting of suspected animal bite incidents and doubled the percentage of bite victims who received life-saving PEP.



CÔTE D'IVOIRE

Free four-visit intradermal PEP

In Côte d'Ivoire, clinics in pilot zones switched from intramuscular PEP to a free four-visit intradermal schedule. This improved patient compliance by up to 32%, and no deaths occurred. As a result, the Government endorsed the WHO-recommended three-visit intradermal PEP schedule, which will be implemented nationwide. Promoting community engagement and the One Health approach increased local surveillance, providing evidence for the Government and private partners to establish additional anti-rabies vaccination services in strategic locations in 10 additional health districts in which the populations are particularly affected by rabies.

INDICATOR 3: RABIES PREVENTED THROUGH INCREASED AWARENESS AND EDUCATION

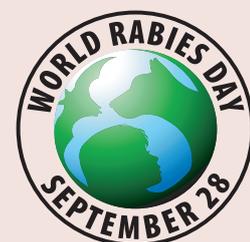
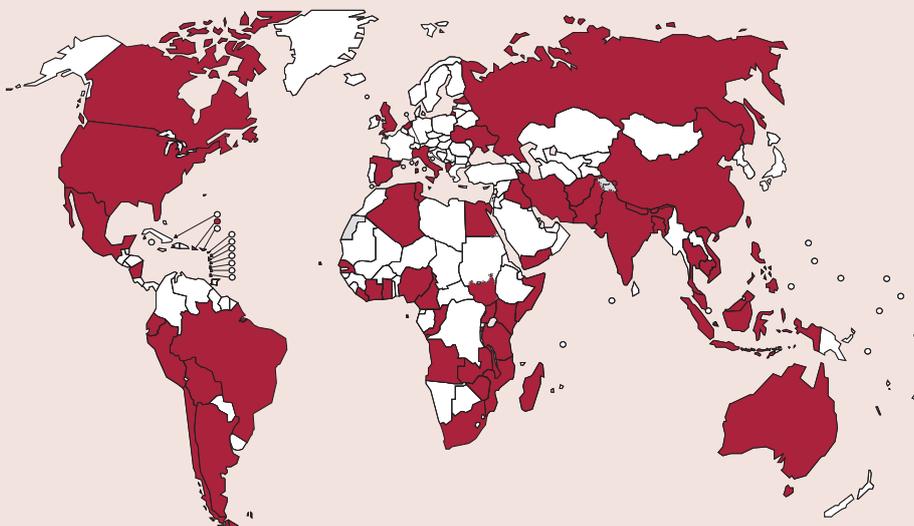
The four partners in UAR all make available materials that can be used and adapted by countries to raise awareness on rabies, including general information documents on the disease, posters, newsletters, infographics, videos, social media webinars and toolkits. In 2019, all the tools were made available on a Trello platform⁵, in addition to the websites of each organization, to facilitate access. FAO, OIE and WHO and their regional and national offices disseminate awareness tools to Member countries, national technical focal points, medical and veterinary students and institutional partner networks for communications and organization of awareness events, emphasizing rabies prevention and the importance of vaccinating dogs against rabies. To reach a wider audience, the materials are disseminated through channels including printed materials and digital and social media.

In addition, the four partners actively contribute to provide countries with communications materials to help them observe World Rabies Day on 28 September, an annual global day of awareness about rabies prevention.

⁵ <https://trello.com/b/TMlgf7uy/rabies-toolkit-fao-oie-who-garc>

⁶ <https://rabiesalliance.org/world-rabies-day>

- GARC sets up an online event platform⁶ for World Rabies Day and downloadable resources to be used by all stakeholders in holding and publicizing rabies awareness events, from community to international level.
- In 2018, OIE reached about 400 000 people through social media communications on the occasion of World Rabies Day. They also conduct local capacity-building in communication through regional workshops to train national focal points in communications, with a component on rabies, and strengthen regional networks.
- WHO featured success stories from countries on its neglected tropical diseases and rabies webpages, with a video, and social media campaigns.
- FAO organized a regional World Rabies Day webinar with OIE, WHO and GARC in Asia on 24 and 25 September 2018 and a webinar highlighting rabies activities in Africa in collaboration with OIE, WHO, GARC and the FAO reference centre for rabies, the Istituto Zooprofilattico Sperimentale delle Venezie in Italy.



In 2018, **197 events** were organized in **62 countries** with 3700 logos downloaded.

In 2017, 229 World Rabies Day events were registered on the GARC website in 56 countries, with 2117 logos downloaded, while, in 2018, 197 events were organized in at least 62 countries with 3700 logos downloaded. Hundreds of media articles appeared throughout the world.⁷ In 2018, the World Rabies Day social media campaigns through Facebook and Twitter extended to over 500 000 people all together .

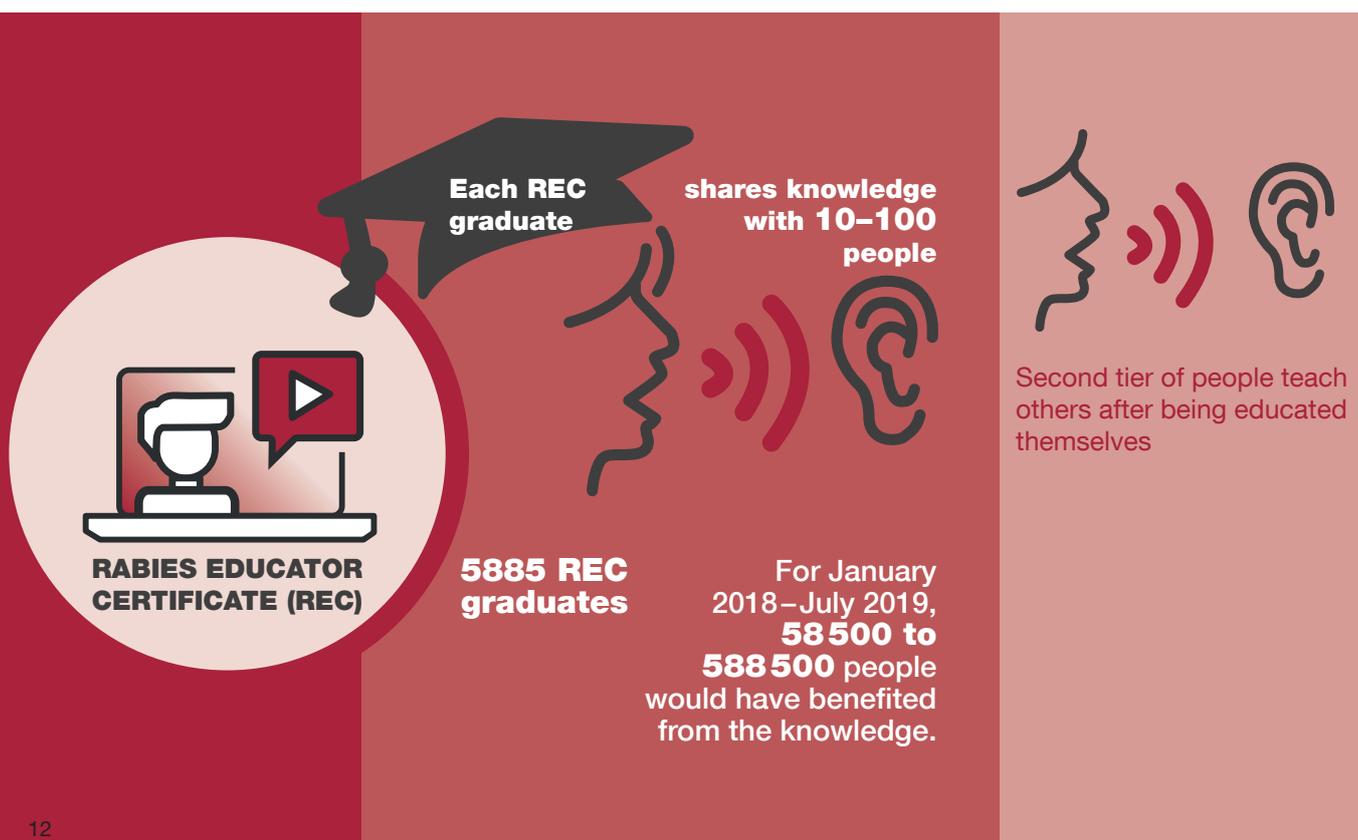
OIE conducts local capacity-building in communication through regional workshops to train national focal points in communications, with a component on rabies, and strengthen regional networks.

GARC offers free online courses to help people educate themselves and their communities about the prevention of rabies and to keep themselves safe. The courses are used for government capacity-building and are being integrated into veterinary university curricula. The Rabies Educator Certificate (REC) is the foundation certificate for all community educators, and the Community Coordinator for Rabies Certificate

(CCC) permits graduates to become focal points for rabies prevention in their area.

As of December 2017, 3624 RECs were delivered in 94 countries, representing an increase over the year of 1570 REC graduates in seven countries. By the end of July 2019, there were 5885 REC graduates from a total of 107 countries. It is estimated that each REC graduate will contact between 10 and 100 people in the community, thus between 36240 and 362 400 people benefitted from the REC programme and better knowledge about rabies. These numbers exclude the people to whom the second tier of people talk after being educated themselves. For January 2018–July 2019, the lower estimate would be about 58 850 people and the upper estimate would be about 588 500 people benefitting from the knowledge. As of December 2017, 124 people in 36 countries had received a CCC, an increase of 68 graduates in 24 countries. As of July 2019, there were 411 CCC graduates in 60 countries, representing an increase of over 279 graduates in 24 countries in 2018. The numbers of teachers trained were 148 in 2017 and 240 between January 2018 and July 2019.

⁷ <https://rabiesalliance.org/world-rabies-day/news> for 2017 and <https://rabiesalliance.org/world-rabies-day/news2018> for 2018.





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THE PHILIPPINES

Education of at-risk groups can be illustrated by an initiative for integrating rabies education into the Philippines national school curriculum.

Rabies prevention

In 2017, GARC worked with the Department of Education on rabies information campaigns. Under the Anti Rabies Act of 2007, the Department was given the mandate to integrate rabies into the national curriculum. Rabies prevention is now part of the national school curriculum, from nursery school through grade 10.

21 million students

It is envisioned that the initiative will benefit an estimated 21 million students in 46 847 public schools and also teachers, school health personnel, parents and the community. The initiative included preparation of lesson plans with messages on rabies as a disease, animal bite prevention, animal bite management and responsible pet ownership in English and Filipino.

2019

In 2019, the Department also supported the training of school health personnel (medical doctors, dentists, nurses) in all regions of the country and allocated funds for rabies education.



**OBJECTIVE 2:
GENERATE, INNOVATE
AND MEASURE THE
IMPACT OF RABIES
CONTROL MEASURES,
PROVIDE GUIDANCE,
EFFECTIVE POLICIES
AND GOVERNANCE AND
GENERATE RELIABLE DATA
FOR EFFECTIVE
DECISION-MAKING**

Improving rabies diagnostics will improve disease surveillance in humans and animals

OBJECTIVE 2.1: POLICIES, GUIDANCE AND GOVERNANCE PROVIDE SUPPORT.

INDICATOR 1: CLEAR GUIDANCE, STRATEGIES, PRIORITIES AND LEGAL FRAMEWORKS AT GLOBAL, REGIONAL AND NATIONAL LEVELS PROVIDED TO PREVENT HUMAN DEATHS.

Harmonized, programmatically feasible international standards or guidance are essential to empower regional organizations and countries for rabies elimination. Between 2018 and 2019, the UAR, led by the standard-setting organizations WHO and OIE, updated six global standards to reflect best practice in rabies prevention and control with a One Health approach and building on established tripartite mechanisms.⁸ Since mid-2017, the regular UAR conference calls helped also to improve coordination of the input from the 13 WHO and 1 FAO collaborating centres on rabies, the 11 OIE reference laboratories and consultation with national expert networks to optimize cross-sectoral work. Between 2017 and 2019, six international expert meetings were convened to improve guidance and to engage with private and public partners for implementation:

- The third report of the WHO Expert Consultation on Rabies⁹ includes comprehensive information on the epidemiology, vaccines, diagnostics, surveillance, control and prevention strategies for human and animal rabies, palliative care for human rabies patients, downloaded 32 300 times from the WHO webpage since its publication in April 2018;
- the WHO position on rabies vaccination¹⁰ was endorsed for the first time by the Strategic Advisory Committee of Experts on Immunization;

- the fifth edition of WHO's Laboratory techniques in rabies¹¹ was published to guide countries on the most suitable diagnostic tests for different purposes;
- the WHO Expert Committee on Biological Standardization established the seventh international standard¹² for reliable testing of batches of human and animal rabies vaccines to ensure that they meet the WHO and OIE recommended minimum potency and shelf life; and
- OIE convened two ad hoc groups of experts and four consultations with Member countries to revise OIE international standards on rabies in the Manual of Diagnostic test and vaccines for Terrestrial Animals¹³ and the Terrestrial Animal Health Code.¹⁴ Both standards were adopted by the 182 OIE Members countries by resolution in May 2018 and May 2019 respectively.

The human rabies vaccine products of two additional vaccine manufacturers passed the WHO assessment and are listed as WHO prequalified vaccines, a prerequisite for procurement by international organizations such as UNICEF and the Gavi Alliance and many national government agencies.

⁸ <https://www.who.int/zoonoses/concept-note/en/>

⁹ WHO expert consultation on rabies: third report. Geneva: World Health Organization; 2018 (WHO Technical Report Series, No. 1012; https://www.who.int/rabies/resources/who_trs_1012/en/, accessed September 2019).

¹⁰ Rabies vaccines: WHO position paper. Wkly Epidemiol Rec. 2018;16(93):201–20 (https://www.who.int/rabies/resources/who_wer9316/en/)

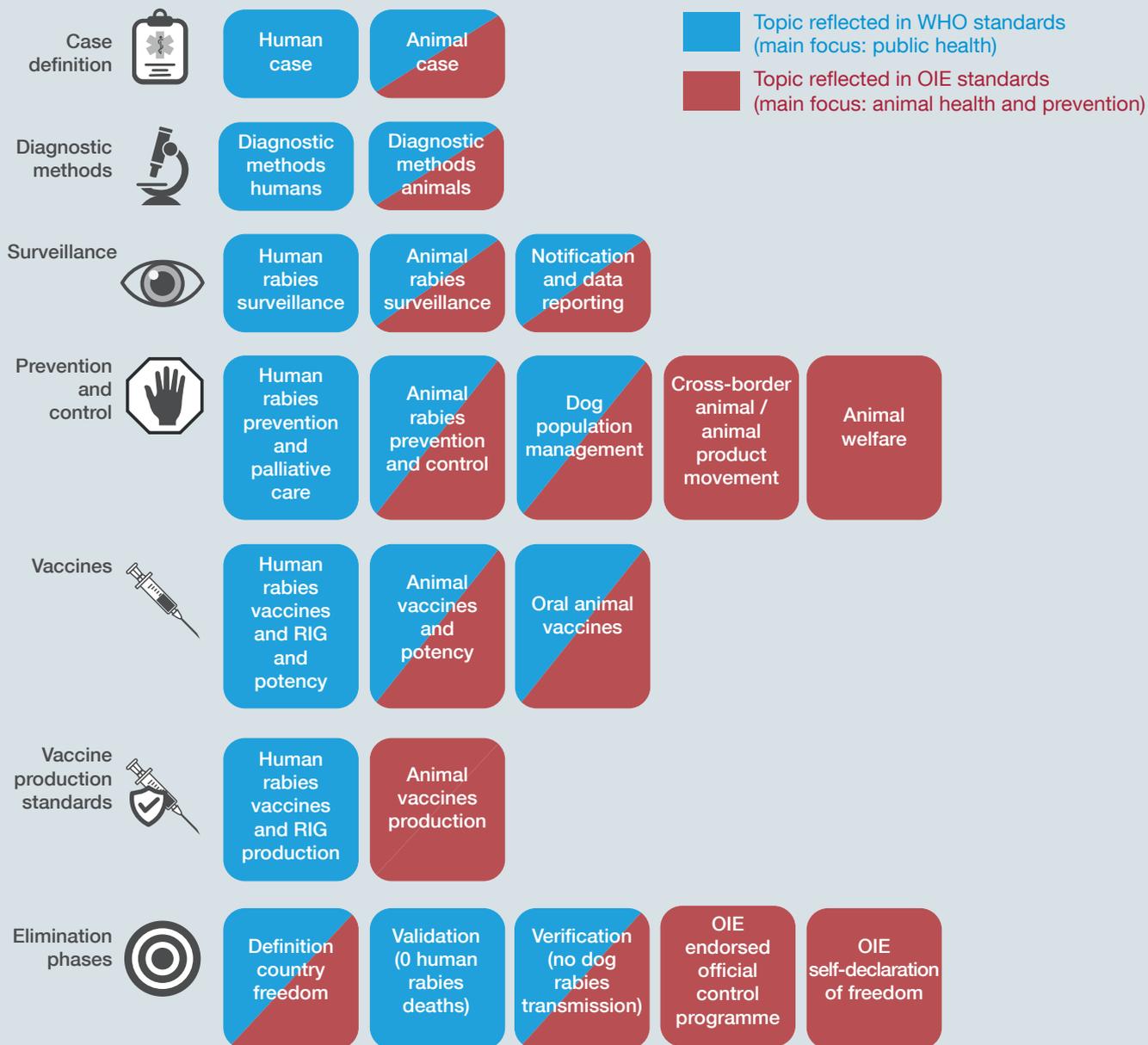
¹¹ Ruprecht CE, Fooks AR, Abela-Ridder B, editors. Laboratory techniques in rabies, 5th edition, vols 1 and 2. Geneva: World Health Organization; 2019 (<https://www.who.int/rabies/resources/9789241515306/en/>, accessed September 2019)

¹² WHO Expert Committee on Biological Standardization: sixty-ninth report. Geneva: World Health Organization; 2019 (WHO Technical Report Series, No. 1016; <https://apps.who.int/iris/bitstream/handle/10665/325184/9789241210256-eng.pdf>, accessed September 2019).

¹³ Manual of diagnostic tests and vaccines for terrestrial animals. Paris: World Organisation for Animal Health; 2018 (<http://www.oie.int/en/standard-setting/terrestrial-manual/>, accessed September 2019).

¹⁴ Terrestrial animal health code, Vols 1 and 2. Paris: World Organisation for Animal Health; 2019 (<http://www.oie.int/en/standard-setting/terrestrial-code/>, accessed September 2019).

WHO and OIE updated and harmonized global standards on best practice in rabies prevention with a One Health approach



WHO elaborated procedures for validation of elimination of dog-transmitted human rabies as a public health problem and verification of interruption of transmission of dog rabies for public health purposes,⁹ aligned to and in collaboration with OIE.

The OIE Terrestrial Manual for Diagnostic Tests and Vaccines and WHO's Laboratory Techniques in Rabies recommend new standard tests as diagnostic methods. Both organizations recognize the use of oral vaccination as a complementary measure for improvement of overall vaccination coverage in dog rabies control programmes. The OIE standards on rabies now also include definitions of countries free from dog-mediated rabies, provisions for OIE-endorsed official control programme for dog-mediated rabies, and a new article on country or zone self-declaration of freedom from dog-mediated rabies, in dog populations.¹⁴

INDICATOR 2: IMPLEMENTATION OF THE “ONE HEALTH” APPROACH, EMBEDDED WITHIN STRONG HUMAN AND ANIMAL HEALTH SERVICES.

The tripartite organizations FAO, OIE and WHO have programmes and guidance in place to strengthen human and animal health systems and provide missions or expert guidance to individual Member countries for preparing or updating their national disease strategies, including on rabies. The framework of the WHO International Health Regulations (2005) (IHR) for national health systems and the OIE Performance of Veterinary Services (PVS) Pathway for the strengthening of animal health system are two global examples. WHO and OIE combined the IHR and PVS outputs to offer a national workshop tool¹⁵ for analysing and identifying means for improving collaboration between the two sectors for the prevention and detection of and response to zoonotic diseases and other health events at the animal–human interface. National IHR–PVS bridging workshops have been held in 24 countries in the past 2 years. Strengths and weaknesses of intersectoral collaboration on rabies were selected for a case scenario by all countries (except one that has no rabies), resulting in relevant recommendations and follow-up activities. Progress in and the impact of rabies-related activities after the workshops are being analysed.

Regional fora, such as the bi-annual, intersectoral meeting of rabies programme directors in the Americas¹⁶ the rabies-specific Pan-African and Asian Rabies Control Network meetings (2017, 2018, 2019)¹⁷ and the recently (2019) constituted Tripartite One Health Coordination Group for Asia and the Pacific, have contributed significantly as coordinating platforms to assist countries in developing and implementing national strategies on rabies, in line with the priorities of the tripartite agreement.¹⁸ As of end 2018, 80 countries had reported a nationally endorsed framework for rabies, including 23 of the 29 countries targeted for phase 1 of the Global Strategic Plan.

FAO in collaboration with GARC organized meetings of rabies stakeholder in five West African countries (Côte d’Ivoire, Ghana, Guinea, Liberia and Senegal) between March and June 2018, with 222 participants representing government stakeholders and nongovernmental organizations routinely involved in dog-mediated rabies control. Stepwise Approach towards Rabies Elimination (SARE) workshops were also conducted. SARE is a tool developed by GARC and FAO, with input from OIE and WHO, for assessing rabies programme activities. The two main components are assessing progress in overall topics, in line with the framework agreed in 2015; and automatic establishment of a workplan that also assists in prioritising pending activities.

Assessments have usually been conducted by countries in regional workshops (nine workshops conducted to date), but individual countries have also held national meetings of rabies stakeholders. SARE includes optional tools to assist in planning and budgeting, such as the Global Dog Rabies Elimination Pathway (GDREP), developed by the United States Centers for Disease Control and Prevention (CDC). As SARE assessments conducted in regional workshops do not necessarily involve all national stakeholders, the results provide insight only of the government’s capacity to implement rabies control initiatives. The number of countries undertaking SARE in regional networks increased from 20 between January and December 2017 to 47 between January 2018 and January 2019. By linking the work plan with the economic landscape analysis from the GDREP, governments can ensure programmatic focus and inform stakeholders and partners of the requirement to ensure timely resource mobilization and progress, resulting in sustainable and continued progress towards eliminating rabies in humans and dogs.

¹⁵ IHR–PVS National Bridging Workshop (<https://extranet.who.int/sph/ihr-pvs-bridging-workshop>)

¹⁶ https://www.paho.org/panaftosa/index.php?option=com_content&view=article&id=211:que-es-redipra&Itemid=336

¹⁷ <https://rabiesalliance.org/networks#regional-networks>

¹⁸ <https://www.who.int/zoonoses/concept-note/en/>



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TANZANIA

Steps to eliminate canine-mediated human rabies on Unguja island, Zanzibar, United Republic of Tanzania

In January 2018, Zanzibar hosted a two-day SARE workshop to support a dog vaccination project on Unguja Island initiated in August 2017. The workshop, which was facilitated by GARC and World Animal Protection (WAP), was attended by participants from the Ministry of Agriculture, Ministry of Health, the Department of Local Governance and the Zanzibar Disaster Management Commission.

The final SARE score (2.5 out of 5) was indicative of a country in which large-scale rabies control initiatives are established and routinely implemented. Countries at this stage along the SARE pathway are often close to achieving control of dog-mediated rabies and must now make a concerted effort to maintaining programme momentum. In order to further rabies elimination, the work plan component of the SARE tool was used to draft a short-term action plan, with objectives, outcomes, key performance indicators and responsible authorities for each SARE activity. As the first country to use the SARE tool, the Government of the United Republic of Tanzania has prioritized rabies control on the Island.



GUINEA

Diagnosing the problem and planning for bolstering rabies control in Guinea

In March 2018, a workshop was organized by FAO (and funded by the United States Agency for International Development (USAID)), GARC, the United States Agency for International Development and CDC in Conakry, Guinea. Representatives of various ministries (including Health, Animal Husbandry and Environmental Affairs), international organizations (WHO, OIE, FAO, GARC) Pasteur Institute and the private sector undertook the assessment.

Guinea achieved an SARE score of 1.5 of 5.0, which indicates that they should scale up the development and implementation of a national strategy. In a previous SARE assessment by Government representatives in 2016, Guinea was given a SARE score of 0.5; the country has thus made clear progress. Following the SARE assessment, the participants prepared a work plan for rabies control and elimination, with prioritization of several activities to be achieved in the coming months.

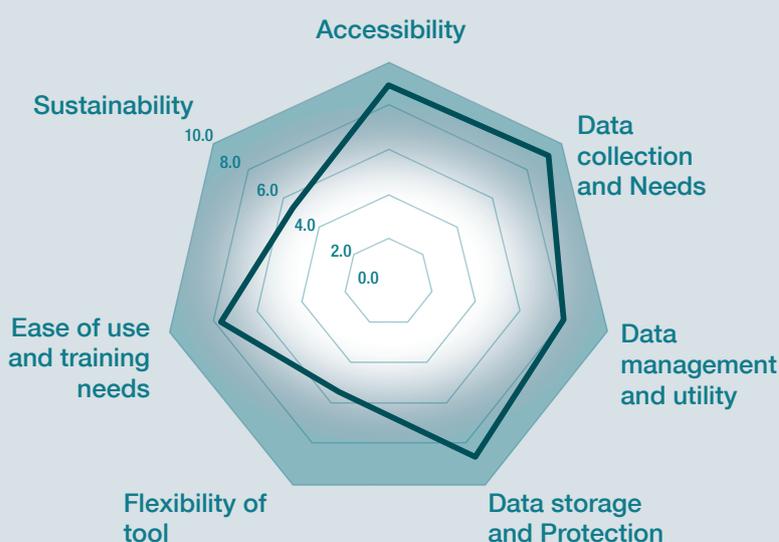
INDICATOR 3: TECHNOLOGY AND HEALTH INNOVATIONS FOSTERED TO ELIMINATE HUMAN DEATHS FROM RABIES.

FAO and GARC, with CDC, developed an instrument for objective assessment of the functionality and “fit for purpose” of the tools for rabies prevention in the public domain that have been developed by UAR members and partner organizations and institutions. The Surveillance and Information-sharing Operational Tool evaluation matrix (SISOT) was developed for evaluation of One Health tools for implementing the Tripartite guide on taking a multisectoral, One Health approach to addressing zoonotic diseases, which was adapted for a rabies-specific matrix to be used for an initial evaluation of rabies tools by global stakeholders during the annual meeting of Partners for Rabies Prevention (PRP) in July 2019.

The “rabies toolkit” developed by GARC is an Excel® collection of tools for the PRP Blueprint for Rabies Control.¹⁹ Tools are organized by functionality: surveillance and data analysis, mass dog vaccination, case detection, integrated bite case management, health-seeking behaviour, laboratory support, progressive zoning strategies and budgeting and education. The revised toolkit will include the assessment report from the evaluation matrix to guide countries in selecting the appropriate tools. Assessment by users, such as central government institutions, rabies programme managers and field officers, is pending. The evaluation matrix will be included in the rabies toolkit for assessment of new tools and to inform future ones.

¹⁹ <https://caninerabiesblueprint.org/>

Example of a SISOT-R assessment result



SUMMARY TABLE		
Category	Weighted Score	Total score
Accessibility	9.0	76.2 %
Data collection and Needs	9.2	
Data management and utility	8.0	
Data storage and Protection	8.7	
Flexibility of tool	5.3	
Ease of use and training needs	7.7	
Sustainability	5.5	

OBJECTIVE 2.2. ENSURE RELIABLE DATA FOR EFFECTIVE DECISION-MAKING.

INDICATOR 1: ROBUST DISEASE SURVEILLANCE IN HUMAN AND ANIMALS ESTABLISHED, SUPPORTED BY IMPROVED DIAGNOSTICS.

Through the networks of their collaborating centres and reference laboratories WHO, FAO and OIE, with GARC, have conducted capacity-building to improve surveillance and diagnosis of rabies.

Rabies diagnostics training workshops



LIBERIA

GUINEA

conducted by FAO and partners



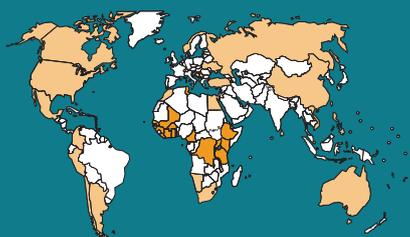
MYANMAR

FAO and partners conducted workshops in Liberia in February 2018 and in Guinea in May–June 2018 to develop capacity in rabies diagnostics (fluorescent antibody test, reverse transcriptase polymerase chain reaction, lateral flow device and direct rapid immunohistochemical test). Five-day workshops were organized at the Leon Quedlum Central Veterinary Diagnostic Laboratory (eight participants) and the Laboratoire Central de Diagnostic Vétérinaire de Conakry (six participants), which were also attended by staff involved in organization and compliance with biosafety.

To strengthen laboratory diagnostic capacity for rabies in Asia, the OIE regional office for Asia and the Pacific provided training in Myanmar on molecular diagnosis, enzyme-linked immunosorbent assay and direct fluorescent antibody techniques in 2018. The workshop was conducted by Changchun Veterinary Research Institute in China, which is the OIE reference laboratory for rabies diagnosis in the region. The objectives were not only to strengthen laboratory diagnostic capacity for rabies in Myanmar but also to strengthen quality control and quality assurance of some of the diagnostic tools. The participants were seven laboratory officers or technicians from the virology and serology sections of Yangon Veterinary Diagnostic Laboratory and Mandalay Veterinary Diagnostic Laboratory, Veterinary Assay Laboratory and Monywa Mini-laboratory and one Malaysian participant.

Proficiency testing 2017–2019

Fluorescent antibody test and reverse transcriptase polymerase chain reaction



Four standard diagnostic tests

FAO, with the support of the Istituto Zooprofilattico Sperimentale delle Venezie, conducted a proficiency testing programme for the development and maintenance of rabies laboratory diagnostic testing capacity. Between 2017 and June 2018, testing of proficiency in fluorescent antibody test and reverse transcriptase polymerase chain reaction was conducted in 13 national central veterinary laboratories and one Ministry of Public Health Institute in Burkina Faso, Cameroon (two laboratories), Côte d'Ivoire, Democratic Republic of the Congo, Ghana, Guinea, Mali, Senegal, Ethiopia, Kenya, Liberia, Uganda and the United Republic of Tanzania.

In 2018 and 2019, WHO collaborating centres organized panels of four standard diagnostic tests for proficiency testing in Albania, Argentina, Australia, Bosnia-Herzegovina, Cambodia, Canada, Chile, China, Colombia, Egypt, Kosovo (in accordance with Security Council resolution 1244 (1999), Mexico, Moldova, Montenegro, Morocco, Namibia, North Macedonia, Norway, Peru, Philippines, Russian Federation, Serbia, South Africa, Sri Lanka, Switzerland, Taiwan (China), Tunisia, Turkey, Ukraine and the USA.

INDICATOR 2: NEW RABIES CASES ACCURATELY AND COMPREHENSIVELY MONITORED.

Extensive scientific expertise in rabies is essential for countries to monitor rabies occurrence and formulate and adapt science-based control and elimination strategies. Therefore, access to high-quality diagnostic testing and technical knowledge at national and regional levels is necessary. The OIE laboratory twinning programme has been in place since 2006, to improve global capacity for disease prevention, detection and control through capacity-building and networking. The programme uses the network of reference laboratories and collaborating centres to assist institutes to improve their capacity and scientific expertise. China, Niger and Turkey have already benefitted from the programme. Chinese Taipei, India, Namibia and Peru are currently involved in twinning projects.

The OIE World Animal Health Information System (WAHIS) also contributes to achievement of objective 2.2. WAHIS has been collecting and disseminating data since 2005 and currently receives information from 206 countries or territories, including 182 OIE members. Some 197 countries sent notifications to the OIE for 2018, of which 36% made information available that rabies was present in dogs, either throughout the country or in a specific zone. However, a significant number of cases are still not reported. OIE WAHIS is being redesigned and updated in a technologically advanced, user-friendly manner to provide comprehensive information on global animal health and diseases, including rabies. From 2020, the new system will make it easier for countries to report disease, with new features such as geospatial location of outbreaks and easily accessible data free of charge. The data will be in the form of timelines, graphs, distribution maps and incidence maps, and the evolution of each outbreak will be shown. By 2020, the system will be interoperable with other systems and data sources, so that other UAR partner organizations can share data, which will undoubtedly improve the accuracy of rabies data.

WHO's call for data on rabies in 2018 resulted in more data from countries and also from regional databases, such as the Regional Information

System for Epidemiological Surveillance of Rabies of the Americas, the WHO Rabies Bulletin Europe and regional rabies networks initiated by GARC and partners. This permitted a major update of the data on rabies in the WHO Global Health Observatory. A module for rabies with a data dashboard and data entry mask was developed as part of the WHO Integrated Data Platform, which enhanced the visibility of data from rabies programme monitoring and allowed analysis with data on other diseases, such as co-endemicity and health system information. It will allow direct data entry or transfer by ministries of health and creation of automated data exchange interfaces with other rabies databases, such as WAHIS for animal rabies data, SIRVERA (PANAFTOSA Regional Information System for Rabies Epidemiological Surveillance) and GARC's Rabies Epidemiological Bulletin (REB). The WHO integrated data platform and the REB were built with the same software used by ministries of health for national health system and surveillance data. The range of countries that use the software overlaps with rabies occurrence: they are 67 low and middle-income countries located mainly in Africa, South and South East Asia and a few countries in the Middle East and the Americas. For the WHO Neglected Tropical Diseases 2030 roadmap and to monitor intermediate steps towards rabies elimination, WHO has added as indicators the number of countries that reduced mortality due to dog-transmitted human rabies by 50% and those that reached 70% vaccination coverage of dogs in high-risk areas.

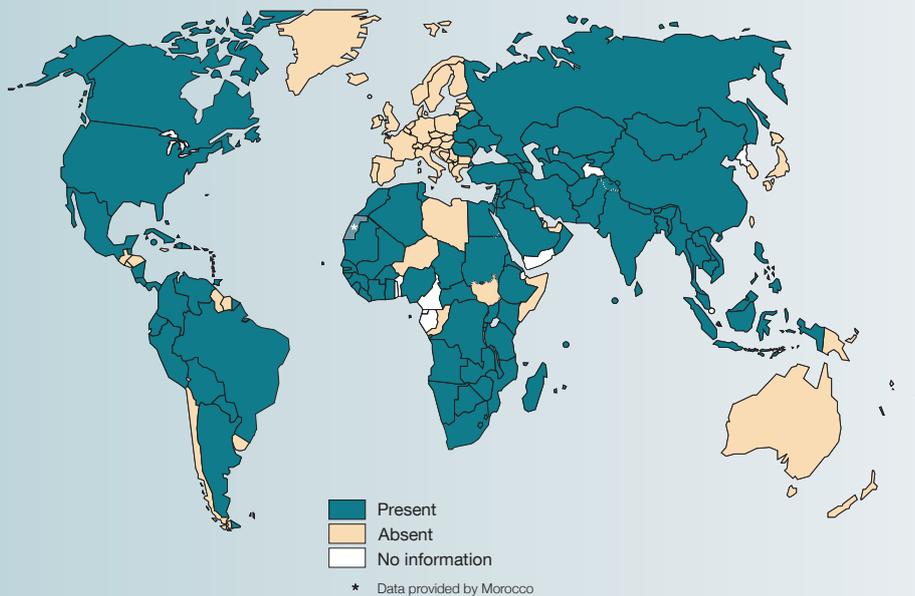
The REB is a web-based data platform developed in 2016 by GARC to reduce under- or inconsistent reporting of rabies by many endemic countries in Africa, the Middle East and Asia. The main purpose of REB is to facilitate establishment and routine use of One Health, rabies-specific surveillance systems in endemic countries, providing governments with a system that enables them to make data-based decisions and respond to outbreaks in a timely manner. This surveillance tool can produce various outputs, including visuals, graphs and tables that are updated with the latest data in near real-time.

Since it became operational in 2016, the REB has been used by the 46 countries in the Pan African Rabies Control Network, and almost 70% of those countries use the REB routinely. While the REB was initially developed to collect, collate, analyse and disseminate national data, it has also been continuously improved, with various additional components for collecting sub-national data. These components allow users to improve the resolution of their surveillance data and also automatically aggregate data up the administrative

hierarchy, facilitating data reporting and improving data quality at all administrative levels.

WHO, OIE and GARC have coordinated harmonization of data indicators and data validation to ensure accurate monitoring of progress towards the 2030 goal and greater interoperability among databases, thus relieving countries of the burden of multiple data entries in different formats.

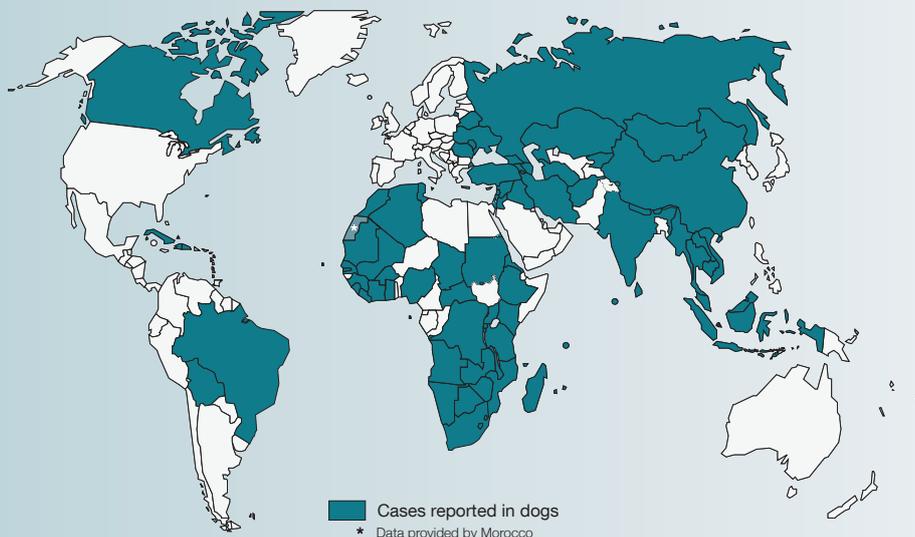
OIE Member countries reporting occurrence of rabies in domestic animal species in 2018^a



OIE currently receives animal health information from 206 countries or territories, including 182 OIE members; for 2018, 197 countries sent notifications to the OIE.

^a Data based on country reports received by September 2019

OIE Member countries reporting occurrence of rabies in dogs in 2018^a





OBJECTIVE 3: SUSTAIN COUNTRIES' COMMITMENT AND RESOURCES

Engaging stakeholders through effective advocacy encourages investment in elimination and creates an enabling policy environment

INDICATOR 1: INCREASED STAKEHOLDER COMMITMENT THROUGH EFFECTIVE ADVOCACY.

The Strategic Plan outlines a coordinated, country-oriented strategy to eliminate human deaths from dog-mediated rabies by 2030. Countries have been called upon to lead efforts to make the changes required to achieve this goal, supported by the UAR collaboration to build sustainable institutional capacity. On signature of a tripartite FAO, OIE, WHO Memorandum of Understanding to prevent and control health risks at the human–animal–ecosystems interface in May 2018,²⁰ the three organizations agreed to strengthen their long-standing partnership. Rabies was highlighted as a priority for cooperation, with zoonotic influenza and antimicrobial resistance.

In November 2018, the OIE Director-General on behalf of the UAR collaboration sent a proposal to the ministers of agriculture of the 29 phase-1 countries to engage in the goals of the strategy, to eliminate dog-mediated rabies by 2030. The document invited the ministries of both agriculture and health to use the One Health approach and to reaffirm their commitment to prioritize rabies prevention in their national plans. The governments of Ethiopia, Mali, Tunisia, Turkey and Zimbabwe responded promptly to the UAR call, demonstrating their strong commitment to eliminate human deaths from dog-mediated rabies by 2030. Countries' commitment to the proposal began to increase in 2019, as other countries informed UAR that they would sign the commitment.

The Global Strategic Plan, WHO-led efforts in global and national advocacy and investment in a programmatic evidence base led to a decision by the Gavi Alliance in June 2019 to extend its portfolio to include human rabies vaccines as of 2021, pending demonstration of the country commitment to eliminate rabies by acting at the source.

INDICATOR 2: ACTIVITIES OF THE UAR COLLABORATION ARE TRANSPARENTLY REPORTED TO KEY STAKEHOLDERS.

During the past year, UAR established robust coordination mechanisms, bi-weekly coordinating calls, regular face-to-face meetings and tools for regular monitoring of progress in achieving the plan's objectives.

- The UAR prepared a working document for an extensive operational plan for surveillance and monitoring that reflects details of the 94 defined UAR activities, with timelines, targets, institutional responsibilities and results and is fully aligned with the theory of change that leads the Strategic Plan.
- UAR has identified 60 development partners, 16 of whom have been contacted to assist in selected activities.
- In view of increasing requests and the importance of engaging additional technical and financial partners for implementation of the Strategic Plan under the UAR umbrella, a formal letter of intent for partner engagement has been developed.

The UAR partners have updated stakeholders in the rabies community, including government and non-governmental institutions, academia, international organizations and countries on UAR activities. Regional and global meetings on rabies and zoonoses were used, as well as annual meetings of the PRP,²¹ a global informal platform for rabies stakeholders established by GARC before the UAR was formed. It served to test, feed into and promote work on UAR's Strategic Plan in a transparent manner. In 2019, PRP emphasized discussions on engagement of partner organizations and institutions in implementation of the Strategic Plan. Each of the 20 partners present was given time to make a personal presentation, which was followed by debate and discussion on the vision and format of future engagement, contribution and collaboration.

²⁰ <https://www.who.int/zoonoses/concept-note/en/>

²¹ <https://rabiesalliance.org/networks#partners-for-rabies-prevention>

Key achievements were reported to a broader audience in three joint press releases, by interlinking the four institutional websites, establishing a UAR resource repository webpage,²² via social and traditional media, on the respective institutional channels to Member countries of FAO, OIE and WHO and by promoting the Plan on behalf of the UAR in 25 events worldwide. The first of the three joint UAR press releases announced the Global Strategic Plan, with a brief summary of its elements, on World Rabies Day 2017.²³ The Plan was launched officially in June 2018,²⁴ with a high-level comment in *The Lancet*,²⁵ culminating in publication of the full Plan on World Rabies Day 2018.²⁶ FAO promoted the launch on 18 June 2018 through e-cards and e-newsletters to all chief veterinary officers, the FAO Animal Health and Livestock Network mailing lists, all FAO country offices, the list of Emergency Centres for Transboundary Animal Diseases, subscribers to the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases and social media channels.

²² UAR Trello web page: <https://trello.com/b/TMIgf7uy/rabies-toolkit-fao-oie-who-garc>

²³ Joint UAR press release, September 2017 https://www.who.int/neglected_diseases/news/WRD_2017_Press_release/en/

²⁴ Joint UAR press release, June 2018 <https://www.who.int/rabies/news/RUA-Rabies-launch-plan-achieve-zero-rabies-human-deaths-2030/en/>

²⁵ Minghui R, Stone M, Semedo MH, Nel L. New global strategic plan to eliminate dog-mediated rabies by 2030. *Lancet Glob Health*. 2018;6(8):e828–9.

²⁶ Joint UAR press release September 2018 https://www.who.int/rabies/United_against_Rabies_collaboration_builds_skills_and_knowledge/en/



CONCLUSION AND FUTURE DIRECTIONS

UAR will continue to secure societal and political support internationally and in every country affected by dog-mediated rabies.

This first annual report describes the progress made since 2018 when the “Zero by 30” Global Strategic Plan was launched. The country-centric plan is built on the premise that societal and political support are fundamental to the success of any disease elimination campaign.

Until recently, the global response to rabies was fragmented and uncoordinated. This first annual progress report demonstrates the collaborative impact of the four organizations of the UAR on national, regional and global rabies elimination programmes. Significant progress has been made towards achieving the three objectives of the Global Strategic Plan.

In addressing the first objective, the UAR demonstrated (i) increased access to dog rabies vaccines, (ii) improved medical care for cases of human rabies exposure and (iii) enhanced rabies awareness in several countries and regions worldwide.

The last 1.5 years have seen much improvement in the provision of policies and guidance towards effective governance frameworks for rabies elimination following the One Health approach. This is evident from, among others, the many global updates on technical standards, international expert consultations, position papers and technical manuals described in this report. The concept of One Health was central to the various programmes, missions and regional networks and meetings reported. The UAR overcame challenges and gained experience on working together in a One Health approach.

As the UAR steps up its engagement with the global rabies community and individual countries, commitment to “Zero by 30” has steadily increased. UAR is developing an advocacy strategy for the “Zero by 30” plan to enhance involvement with stakeholders. High-level commitment, coordination and promotion was essential to eradicating smallpox and rinderpest. In the case of the UAR, it is already evident that several major accomplishments would not have been possible, if not for this coordinated approach. This is encouraging and our challenge is to continue to secure societal and political support not only internationally but also nationally in every country affected by deaths from dog-mediated human rabies.

