



# RABID BYTES

NOVEMBER 2015

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The newsletter of The Global Alliance for Rabies Control

ISSUE 45

## EDITORIAL

### **Launch of the End Rabies Now campaign – it's time to make rabies history**

Many of you in the rabies community would have already read the news of the launch of the [End Rabies Now](#) campaign. This campaign is part of a huge push that we all need to make to finally eliminate canine rabies in the world. We know that this is possible – we have the tools, the evidence and the experience to end this deadly disease. All we need is the political commitment and resources, and it's time to turn our attention to ensuring that these goals are obtainable by canine rabies-endemic countries.



The End Rabies Campaign is a year-round campaign to bring the world's attention to the global burden of rabies and its prevention and to help direct resources towards the countries that need it most. GARC is coordinating the campaign on behalf of a number of partners who are major stakeholders in the rabies field in the human and animal sectors. The partner list currently includes the World Health Organization, the Friedrich Loeffler Institute, the World Veterinary Association, the World Small Animal Veterinary Association, Fondation Mérieux, the UBS Optimus Foundation and World Animal Protection and more will be added over the coming weeks and months.

The campaign has been endorsed by GARC's patron, Professor Alexander McCall Smith, along with Sir Richard Branson, Dame Jane Goodall, Major Levison Wood, Lord Trees and Professor David Heymann. This will help to spread the message that ending rabies deaths is possible and increase support for the elimination of this disease.

The End Rabies Now campaign has no direct fundraising goal; the focus is on highlighting the problem and the progress being made across the world to policy makers and donor institutions and to encourage them to move funds into rabies elimination. There will be additional work done at meetings and events by GARC and its partners to ensure that spending on rabies control programmes are prioritised within international development budgets. In reality, the goal will be reached when all rabies programmes are adequately funded, and there are no more deaths.

End Rabies Now complements the World Rabies Day (WRD) campaigns that focus more on rabies-endemic countries. WRD will continue to provide a platform and support for rabies-prevention events and programmes in these endemic regions. The WRD awareness campaign has also been integrated into the GARC-coordinated regional network activities, such as PARACON in Africa, to provide more structured advocacy and resource support over the year to help rabies programme implementers, from the national to the local levels.

As part of the global rabies community, we invite all of you to support the campaign by signing the [pledge](#) and sharing the website with your networks. This campaign was set up to help all of us move forward in our common goal of ending rabies. Please make it your campaign as well.

*Louis Nel, Executive Director of GARC*



## NEWS FROM GARC AND WRD

### World Rabies Day Grows Again

World Rabies Day 2015 had the largest global participation so far with events registered in 58 different countries – an impressive 16% increase on 2014.

Event [registration](#) on the GARC website offers a window into all the work going on around the world to prevent this devastating disease. As always, the events varied enormously but they all made a contribution to a better understanding amongst at risk communities. This article is the first in a series to highlight the great work going on in the rabies prevention field.



### Africa

There has been a surge in rabies prevention activity since the launch of [PARACON](#) across the continent and this was reflected in the region’s participation in World Rabies Day: the number of countries registering an event this year was double 2014’s count.



Dr Carole Asanyo, a veterinarian based in Mombasa, Kenya with some children holding rabies awareness posters. Picture courtesy of Dr. Kenneth Wameyo.



Members of the GARC team teach children at Moemise Primary School in rural Limpopo, South Africa to ‘tell someone’ if they are bitten by a dog.

By a narrow margin, South Africa had the highest number of registered events (6). Other countries registered were Kenya, Madagascar, Nigeria, Sierra Leone, Swaziland, Tanzania, Tunisia, Uganda and Zimbabwe, along with newcomers Algeria, Angola, Botswana, Cameroon, Cote d’Ivoire, Ethiopia, Gambia, Ghana, Morocco and Sudan. A special mention goes to Ali Juma of Zanzibar Society for the Prevention of Cruelty to Animals and Tom Sandi of Campaign Against Cruelty to Animals in Sierra Leone (CCA-SL) for their continued commitment. Both organisations have coordinated WRD events in 2013, 2014 and 2015.

### ENDING RABIES TOGETHER WORLD RABIES DAY \* SEPTEMBER 28, 2015



### ASEAN ‘CALL TO ACTION’ TOWARDS RABIES-FREEDOM BY 2020

The ASEAN member states have a target of canine rabies elimination by 2020 and World Rabies Day 2015 served as a call to action.

### Asia

Across the whole of Asia an impressive array of events was registered. Philippines, always very active for World Rabies Day, topped the region with the highest number of events (72), and it was equally encouraging to have Bhutan, Cambodia, Kazakhstan, Myanmar and Thailand registering events in 2015 (not having done so in 2014). Events were also registered in Bangladesh, India (with a notable 23 events), Indonesia, Japan, Laos, Malaysia, Nepal, Pakistan, Sri Lanka, Taiwan and Vietnam. Special mentions go to Dr. Nidaghatta Gangadhar (India), Dr. Loida Valenzuela (Philippines), Dr. Cherian Johnson (India), and Samantha Green of the DogStar Foundation (Sri Lanka) who all registered events in 2013, 2014 and 2015.

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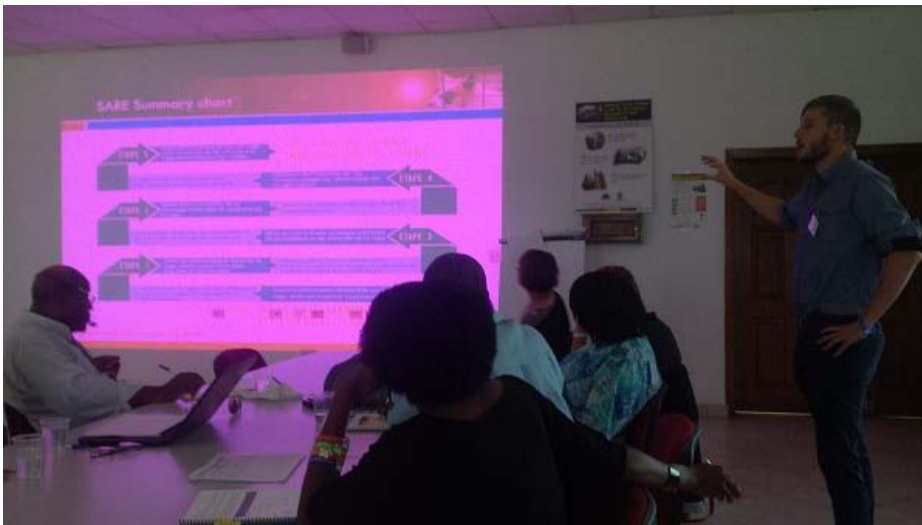
...*World Rabies Day* continued from page 2.

**Europe**

World Rabies Day continues to attract attention and action despite rabies being (on the whole) well controlled in Europe. Countries participating this year were Albania, France, Georgia, Serbia and the United Kingdom.

**Latin America and the Caribbean**

The region has made fantastic progress towards canine rabies elimination in the last 30 years, but Haiti remains a rabies hotspot. In partnership with the CDC, the Haitian government, and other organisations, GARC facilitated an offline Rabies Educator Workshop in Creole for 47 Haitian veterinary technicians, as part of a broader rabies prevention meeting. Haiti now has the highest number of REC certified users in the world, making it a hotspot of a different kind.



The picture shows Andre Coetzer explaining the SARE (Stepwise Approach to Rabies Elimination) scale to rabies stakeholders in Haiti.

[The Pan-American World Rabies Day Initiative](#), in its second year, ran a photo competition to commemorate World Rabies Day. The competition, open to anyone in the Americas, invited entrants to share images that they felt embodied rabies prevention. There were nearly 100 entries that featured everything from beloved pets and vaccinations in progress, to children carrying rabies awareness posters. We are waiting for the results from the judging panel, which included a representative from each of the initiative’s partners, led this year by PAHO.

The highest number of events was in Peru (47); Brazil, Chile, Colombia were all involved both this year and last; Argentina, Haiti, Mexico and Venezuela were the region’s newcomers.

**Middle East**

Iran, Iraq and the United Arab Emirates all took part this year with events, which included television discussions, dog vaccinations, and awareness raising among professionals.

**North America**

North America had a good spread of free or low cost rabies vaccinations, and awareness raising events. One that particularly caught our attention was by the Mexican Department of Health. They issued a commemorative lottery ticket as well as undertaking a day of mass vaccination and animal sterilisations - a fantastic way of reaching new audiences.

**It’s all about you**

World Rabies Day is all about you - the readership of this newsletter. It’s your chance to share your work with the wider rabies prevention community and to be inspired by others. Thank you to all the organisers of events big and small, to everyone who attended those events and to those who submitted photos and videos via the website and on our [Facebook page](#). Your time and effort makes a difference. Let’s #EndRabiesTogether.

## One Health Workshop on Rabies in Haiti

Haitian and international partners attended a One Health workshop on the control and prevention of rabies in Haiti, from the 14-16th of September 2015 in Port Au Prince. In attendance were professionals from the Ministry of Agriculture and Natural Resources Development (MARNDR), Ministry of Health (MSPP), Continuing Promise 2015, U.S. Naval Ship (USNS) Comfort, US Centers for Disease Control and Prevention (CDC), Christian Veterinary Mission (CVM), Pan-American Health Organization (PAHO), Humane Society International (HSI), International Foundation for Animal Welfare (IFAW) and GARC.



Members of the Haitian government and international partners at the start of the workshop. Photo: USNS Comfort

The first session was a comprehensive symposium on the current situation of rabies in the country which was covered by Haitian media in preparation for World Rabies Day. Dr Max Millien's data showed that Haiti is one of the last countries in the Western Hemisphere that still suffers from large numbers of human rabies deaths. In Haiti, as in many developing countries, the veterinary and medical infrastructure are not yet developed enough to be able to determine exactly how many people die from rabies in Haiti each year, but it is estimated that more than 10,000 people are exposed to the virus through dog bites, and several hundred people die.

Rabies control efforts have been less successful in Haiti due to many competing economic, political, and cultural priorities. Despite these challenges, progress towards control has been steady, with development of a national rabies control strategy (2007), the first dedicated animal rabies diagnostic laboratory (2012), and the first laboratory-based animal rabies surveillance program (2013). In 2014, Haiti also realized its largest mass canine rabies vaccination campaign to date, conducted by MARNDR. Non-governmental agencies have also been quite successful in establishing rabies vaccination, education, and animal welfare programs in Haiti. In general, however, these NGO activities have been poorly coordinated between institutions and their impacts have not been evaluated. Recent advances have provided the first glimpse into the true burden of rabies in Haiti, and represent the first indications of potential success in rabies control for the country.

The closing statement of the symposium was also used as an opportunity to provide Mr Pierre Dillius, head of the rabies surveillance program in the West Department, with an award for all of the work he has done within the rabies surveillance network of Haiti.

After the One Health symposium, the attending participants split into two workgroups for the duration of the workshop to address (i) the short-term goal of developing an integrated and sustained approach to rabies prevention and control, and (ii) the long-term goal of reducing the number of dog bites and, thus, the cause of rabies and deaths among humans.

The first workgroup updated the existing, but out-dated, national control strategy for the elimination of rabies, with the Haiti government (MARNDR and MSPP) able to ask international experts for advice. Discussion focused on 7 core areas: a nimal vaccination; human vaccination; animal surveillance; human surveillance; animal welfare and population management; public education and legislation; and organizational structure.

Key activities included the incorporation of bite-case prevention and responsible pet ownership into the school curriculum of the country, the expansion of the existing surveillance network into more departments, the scaling up of dog vaccination campaigns and the distribution of human vaccine and biologics throughout the country.

This group also used the [Stepwise Approach towards Rabies Elimination \(SARE\)](#) tool developed by the FAO and GARC. The SARE self-assessment was completed by everyone in attendance over a period of two days, and it was shown that Haiti is currently at stage 1.5 out of 5, indicating that whilst good progress has been made, the Haitian

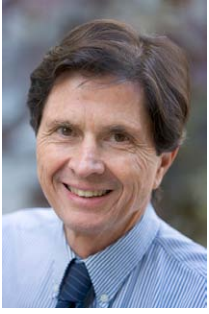
Mr. Apollon Destine discussing the finer points on "how to effectively communicate life saving information with community members." Photo: Andre Coetzer



Mr. Apollon Destine discussing the finer points on "how to effectively communicate life saving information with community members." Photo: Andre Coetzer

*Continued on page 5...*

## Professor David Heymann launches GARC Advisory Council



GARC is setting up an Advisory Council of experts to support and guide us as we advocate for rabies elimination at the global and regional levels. We are pleased to announce that Professor David Heymann has accepted a position on this Board, and we would like to welcome him and thank him for taking on this role.

Professor Heymann brings a wealth of global public health experience to GARC. At the World Health Organization he led the global SARS response, headed research on the WHO global programme on AIDS, represented the director-general on eradication of polio and oversaw WHO rabies control activities. Prior to that he worked as a medical epidemiologist in India and sub-Saharan Africa (for the US CDC), dealing with smallpox, Ebola, and malaria, among other diseases.

He is currently the head of the Centre on Global Health Security at Chatham House, chairman of Public Health England, and professor of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine. In 2009 he was appointed an honorary Commander of the Most Excellent Order of the British Empire (CBE) for services to global public health.

His experience will strengthen our team and help us to advance the movement towards global rabies elimination.

...*One Health* continued from page 2.

government still has a long way to go in order to achieve the elimination of canine-mediated rabies in humans. The outstanding objectives identified by the SARE Output were discussed and prioritised, taking into consideration that the international partners could provide further assistance in regards to achieving more of the objectives.

The second workgroup consisted of 47 para-veterinarians and veterinary technicians who travelled from across Haiti to undertake and complete the [Rabies Educator Certificate \(REC\)](#) course.

Thanks to the diligent effort from the USNS Comfort, all of the REC course material, pre-course assessment and final assessment were translated into Creole. Three Haitian professionals, who became REC certified prior to the onset of the workshop, presented the course work to the participants and facilitated discussions. The course facilitators, who were all fluent in Creole, were Pierre Dillius, Dr Rony LaFontant, (a Haitian veterinarian) and Apollon Destine (a PhD candidate working for the Carrefour Health Department in Haiti).

After completion of the five REC modules, the attending participants completed a paper-based, multiple-choice test. Over 80% of participants passed the final assessment, and each received a REC-certificate of achievement in Creole and a comprehensive rabies-advocacy package in Creole, designed by the CDC, to be used within their communities to raise awareness.

During the course, one participant recognized the symptoms of rabies as those that were seen in a young child in his village. The participant was provided with rabies educational materials and went to his village to collect more information, where it was discovered that the child was bitten by a dog several months before her death. A joint-ministerial investigation was conducted in the village, and an additional five bite victims were identified and vaccinated. This case, as with so many others in Haiti, would have gone unrecognized without the education training provided by the REC.

Subsequent to the One Health workshop, a mass vaccination and spay/neuter campaign was run on the outskirts of Port Au Prince, with CVM, CDC, USNS Comfort and GARC personnel all assisting in various ways. During the daylong campaign, separate stations were set up for: dog vaccination, spay/neutering and deworming; avian vaccination and health checks; and swine and cattle neutering and vaccination.

The comprehensive campaign was supported by REC graduates who walked to the surrounding houses with rabies information sheets and a megaphone to call the people to action. During the day, upwards of 250 dogs and cats were vaccinated against rabies, 21 dogs were spay/neutered, and countless cattle, swine and chickens were subjected to routine check ups and vaccinations. The vaccination campaign was successful in reaching many people within a short period of time, ensuring the health and wellbeing of themselves as well as their animals.

Contributed by Andre Coetzer (GARC) with assistance from Ryan Wallace (CDC) who both participated in the workshop.



A USNS vet vaccinating dogs against rabies at the mass vaccination event. Photo: Andre Coetzer

## Regional Rabies Meetings in the Americas

September and October saw meetings of the two most significant regional rabies networks in the Americas. At [REDIPRA 15](#), September 15-17th held in Brasilia, Brazil, rabies program managers and representatives from 28 countries across the Americas met to discuss progress and the next steps towards rabies elimination in the region. The meeting was preceded by a seminar on “The Experience of Countries and Tools for the Declaration of Canine Rabies Variants 1 and 2-Free Areas”. This included a presentation from Dr Bernadette Abela-Ridder from World Health Organization on a framework for the declaration of areas free of neglected tropical diseases and the procedures and portfolio of evidence that countries would need to present to be officially declared as canine-rabies free by international authorities. Dr Katie Hampson of the University of Glasgow then presented her work on a rabies transmission model that could be used by countries for optimally directing resources during the later stages of elimination campaigns. Delegates from countries reaching elimination shared their experiences and reinforced the message that there is a critical need for accurate surveillance data to guide efforts when elimination is near.

The main REDIPRA meeting reviewed and discussed the current rabies situation across the region. Only a few pockets of canine rabies remain, and in these (most notably Haiti), international collaborations are helping to make progress. The findings of working groups - on subjects such as the elimination of canine rabies, rabies control in wildlife and herbivores and the availability of vaccine and biologics were also presented. Presentations about the [PAHO Revolving Fund for](#)



[vaccines](#) (that now supplies canine rabies vaccines as well as over 40 human vaccines at discounted costs), the updating of the [SIRVERA surveillance database](#) for the region, and an overview analysis of data collected ahead of the meeting helped to guide and inform discussions. Delegates renewed their commitment to eliminating canine rabies in the region, and the

meeting's recommendations will be posted on the [REDIPRA15 website](#) when finalized.

The 26th [Rabies in the Americas \(RITA\)](#) meeting was held two weeks later, from October 4-8th in Fort Collins, Colorado, USA. With representation from across the Americas and the globe, this meeting focussed on recent research as well as rabies control operations across the region. The Latin American Investigator award was won by Dr. Patricai Araias-Orozco from El Salvador who presented her research on relating spatial distributions of rabies cases to social determinants. The conference celebrated the 25-year anniversary of the use of the oral rabies vaccination (ORV) in the US with a special session of presentations.

In a new venture, a series of provocative TED talks by experts in their fields, on issues from control of rabies in bats to human immune responses, evaluation of control efforts to rabies and the value of ORV for dogs, gave delegates some new perspectives on older debates. There was a meeting updating participants on recent activities of the Partners for Rabies Prevention of relevance to the Americas, including recent workshops and training on the REC in Haiti. As ever, the gala dinner (this year with a cowboy dress code) and the fundraising auction provided lots of entertainment. The RITA conference's next host will be Dr. Pedro Vasconcelos of the Evandro Chagas Insitute in Belem, Brazil, and the conferences ended with Dr. Charles Rupprecht of the Wistar Institut in the US handing over the presidency of RITA to Dr. Ivanete Kotait of the Vencofarma Laboratory of Brazil.

The Americas region is very close to freedom from canine rabies, and alongside strong regional commitment to this goal, many member countries are already contemplating programs for improving the control of wildlife rabies, an area in which the region has a high level of expertise. Extensive international collaboration--as exemplified by the attendees at these two meetings--will go a long way to support rabies control efforts throughout the region.

*Contributed by Louise Taylor, GARC's Partners for Rabies Prevention coordinator, who represented GARC at the meetings.*

## Richard Branson adds his voice to End Rabies Now

World famous entrepreneur Richard Branson showcases the End Rabies Now campaign with his blog post about the pressing need for the world to end human deaths from rabies. In his post, timed with the launch of the campaign, Branson highlights the disparity and inequality that makes rabies a “modern-day scourge.” As is the case with so many diseases, he writes “the continued spread of rabies is largely the result of neglect.” You can read his full blog [here](#). And, if you haven't done so already, please [sign the pledge](#).



## GARC's REC Supports More Rabies Awareness in Cambodia and Nigeria

*Report on a recent workshop in Cambodia by Dr. Lotfi Allal, Team Leader of Emergency Center for Transboundary Animal Diseases (ECTAD) at FAO-Cambodia and Makara Hak, National Veterinarian of the FAO-ECTAD Cambodia.*

Two deans and fifteen lecturers and fourth year students from the Animal Sciences and Veterinary Medicine faculties of Royal University of Agriculture in Cambodia gathered together last month for a training on GARC's [Rabies Educator Certificate \(REC\)](#).

A few months ago, the REC training materials were translated into the Khmer language by US-CDC Cambodia with technical support from FAO Cambodia. These were used and the training guided by Dr. Lotfi Allal, Team Leader of Emergency Center for Transboundary Animal Diseases (ECTAD), Food and Agriculture Organization of the United Nations (FAO) and Dr. Makara Hak, National Veterinarian of the FAO-ECTAD Cambodia. After the offline training, all the trainees went through the online final assessment on 20 Oct. 2015, and 13 of the 17 trainees (76%) successfully passed the final assessment. All of the successful trainees are a part of the exponential growth of rabies awareness in Cambodia and are going to deliver information on rabies issues to veterinary students, dog owners and farmers afterward.

The FAO-ECTAD's Team in Cambodia is planning to have a number of Rabies Educator Certificate offline trainings for the trainers of the Cambodia Applied Veterinary Epidemiology Training Programme (CAVET) and officers from the National Veterinary Research Institute (NaVRI), Veterinary Public Health, Animal Health and Extension offices of Department of Animal Health and Production (DAHP).

*Report on recent REC activities in Nigeria from Dr Okorie A. Victor, a Nigerian rabies educator and veterinarian, who shares his experiences below on completing and then organizing REC training courses and outreach in Nigeria.*



Some of the newest REC certified educators in Cambodia. Photo: Pitou Ly



School pupils participating in the rabies awareness programme. Photo: Dr Okorie A. Victor

A few days before completing the REC course myself, I was notified of the plan by the Nigerian Association of Veterinary Medical Students (NAVMS), University of Abuja's chapter, to undertake a two-day, free rabies awareness and vaccination outreach programme to selected communities as part of an annual event. The locations were Iddo Sarki community, Gwagwalada, and the University of Abuja Veterinary Teaching Hospital (UAVTH).

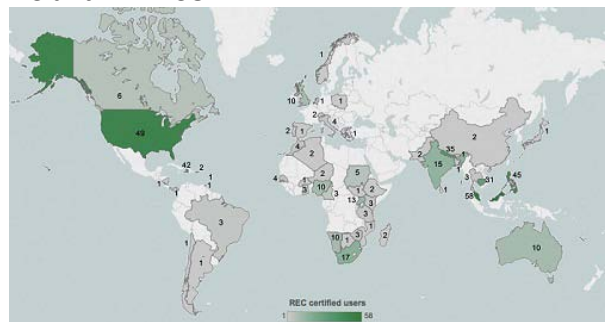
Adequately armed with the information garnered from the REC course, I volunteered to co-ordinate the programme. Other volunteer participants, drawn from the veterinary faculty, were made to undergo the REC course as well.

The fifth module of the REC course (How to communicate with people in the community) was extremely significant to the success of the vaccination outreach at Iddo-Sarki community. The community leader was involved, and he volunteered to undertake the publicity—a job he did so well, as evidenced by the large turn-out seen on the eventful day. Likewise, the head teacher of the basic school was also involved in the planning, and provided a venue within the school premises and as well granted us an avenue to interface with the pupils.

The rabies educators interacted with the pupils, who eagerly participated in the rabies awareness and vaccination programme, and over 70 dogs presented were vaccinated in the exercise. The team leaders and rabies educators included Abdullahi Omeiza (DVM), Audu Zakariya (DVM), Akeefe Isaac (DVM), Ezekwe Chidinma (DVM), and Akaniru Ronald (DVM). It was simply fun serving our communities. Thanks to GARC and PARACON.

*Information from Nigeria was extracted from Dr. Victor's article, "[Using the Rabies Educator Certificate for community outreach in Nigeria](#)," published recently on the PARACON website.*

These most recent REC-certified educators in Cambodia and Nigeria contribute to a fast growing global community of people trained to raise awareness of rabies and its control in their communities. The map shows the number of REC-certified educators by country:



## GARC and FAO Strengthen Collaboration



Professor Louis Nel, Executive Director of GARC, with FAO Representative Ms Godobedza Takalani at the MoU signing in the FAO South Africa Office

GARC and the Food and Agricultural Organization (FAO) of the United Nations have long been allies in the fight against rabies. The FAO is a member of GARC’s Partners for Rabies Prevention network and has collaborated with GARC on a number of key rabies prevention initiatives, including [World Rabies Day](#), the [Canine Rabies Blueprint](#), and most recently, the [Stepwise Approach towards Rabies Elimination \(SARE\)](#).

This long-standing collaboration was formalised in October with a Memorandum of Understanding between the two organisations, signed in the regional FAO office in South Africa. The two organisations will work together to encourage the development and implementation of national and regional rabies control and elimination strategies, through regional networks such as PARACON in Africa, and training to help countries progress towards rabies elimination.

Other activities include promotion of the [Rabies Educator Certificate](#) to increase community awareness, involvement in World Rabies Day and other communications campaigns, and collaboration on health economic analyses to help governments understand the costs and benefits of rabies elimination.

Rabies elimination needs a One Health approach, with stakeholders from the human and animal sector. The MoU between GARC and the FAO validates and ensures a continued focus on this approach to end deaths from canine rabies.

## NEWS FROM THE COMMUNITY

### Fondation Mérieux to Manage Rabies Network for Eastern Europe/Middle East

Fondation Mérieux is pleased to announce that it has been appointed to coordinate the Middle East & Eastern Europe Rabies Experts Bureau (MEEREB), an endeavour that is an integral part of the global strategy for the fight against rabies. The objective of this group (working as an implementation platform in cooperation with other regional initiatives in Asia and Africa coordinated by GARC) is to unveil the epidemiological situation of rabies in these regions and to share the experiences and problems encountered in clinical practice in order to implement the best prevention and control activities.



April 2015 MEEREB meeting attendees in Lyon, France

Amongst the MEEREB activities carried out this year, rabies experts from eleven Middle East, North Africa and Eastern European countries (Croatia, Georgia, Iran, Iraq, Tajikistan, Romania, Serbia, Morocco, Tunisia, Algeria and Ukraine) met in April 2015 in Lyon, France alongside key stakeholders from the Pasteur Institute, OIE, FAO, WHO and GARC. They discussed the rabies situation in their respective countries, identified strategies, initiated intercountry dialogue, highlighted the importance of dog-mediated rabies and fostered a OneHealth approach to prevent and control the disease in their regions.

Other activities included the promotion of World Rabies Day (WRD) activities with GARC’s support; nine countries organized WRD activities with successful engagement from key stakeholders from animal and human sectors. We look forward to fine-tuning the work that started this year with the MEEREB network and to fostering collaborations with key bodies in the rabies arena.

Contributed by Valentina Picot, Fondation Mérieux Research Advisor and Coordinator of the MEEREB network. You can follow the activity of the network on their website: [www.meereb.info](http://www.meereb.info), which includes the [report from the April meeting](#).





## Rabies Outbreak in Northern Malaysia Ends After Vaccination and Culling Campaigns

On November 3, Malaysian health authorities announced that the rabies outbreak plaguing the northern states of Perlis, Penang and Kedah had finally ceased. No new cases had emerged in these regions since September 21—an outbreak that started in late July—and the Malaysian Department of Veterinary Services (DVS) indicated that mass vaccinations and cullings would no longer be necessary to control the spread of the disease. In total, the DVM verified 10 rabies cases in dogs over the course of the approximately 2-month outbreak, with no cases occurring in people.

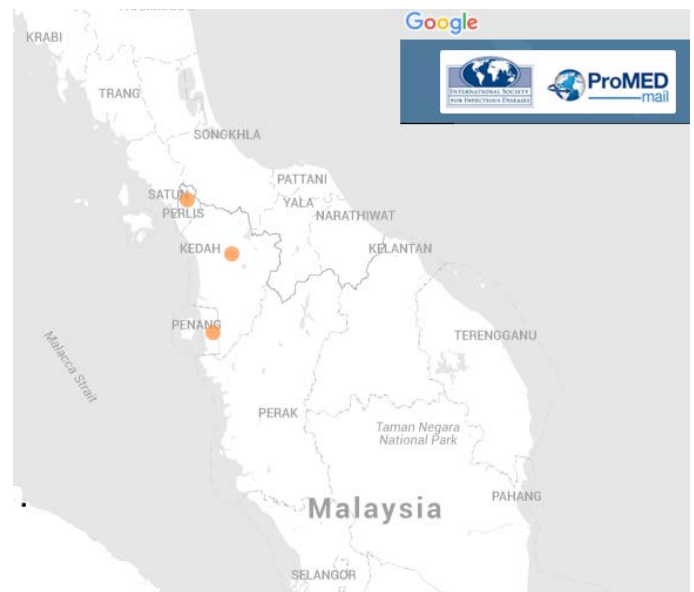
This rabies outbreak—occurring in states bordering rabies-endemic Thailand—was Malaysia's first since 1999 and has relegated Malaysia down from its rabies-free status that was previously conferred by the World Organisation for Animal Health (OIE) in 2012. A two-year waiting period will now be needed for this Southeast Asian country to be considered rabies-free again in accordance with the OIE's terrestrial animal health code. DVS officials suspect that the rabies outbreak originated in southern Thailand, and then cases were transmitted to dogs in Malaysia's "rabies immune belt," a zone 50-80 Km along the Thai border, in spite of the high-level surveillance and dog control programmes in this boundary area, which include ongoing vaccination of all owned pets and removal of strays.

The first outbreak occurred in the state of Perlis, where four dogs, two of which were later confirmed as having rabies, bit eight people. DVS officials in Perlis responded with preventative measures, vaccinating pet dogs and stockpiling vaccines, issuing health alerts, and educating residents on how to avoid dog bites. However, a rising number of cases in the nearby states of Penang and Kedah in mid-September prompted Malaysian health authorities to begin a more aggressive response. Penang DVS officials announced on September 17 that they would begin culling all stray dogs—estimated to be about 25,000 in just the state of Penang alone—and enforce vaccination of all owned pets. Kedah and Perlis quickly followed with mass culling orders of their own, and by October 8, over 4,500 dogs in these northern regions had been killed. With no new transmissions after September 21, the government ultimately lifted the orders for mass cullings of strays on October 10. Alongside these cullings, over 8,150 dogs, were vaccinated in Kedah, Perlis and Penang states in response to the outbreak.

Other anti-rabies measures instigated by the afflicted regions included disease education and strict dog containment and quarantine programmes to help stop the southward spread of the virus. Owned dogs were confined to their homes, cages or leashes, or they risked being targeted for culling. These rabies-control approaches were based on provisions in Malaysia's Animal Act of 1953 and adhered to ASEAN and OIE's 2013 [Dog Rabies Elimination Strategy](#) for the Southeast Asian region and the OIE's [Terrestrial Health Code on Infection with Rabies Virus](#)—approaches and regulations that have helped Malaysia effectively control rabies since their last outbreak in 1999.

Unsurprisingly, the mass cullings proved to be the most controversial of all the anti-rabies measures, triggering many NGO's working with animals to denounce the cullings as too harsh and left many wondering why mass vaccination campaigns alone were not used instead to stem the tide of rabies cases. The local media, in fact, attributed a heightened sense of panic to the mass cullings, pointing to a lack of understanding of the disease that was driving a number of owners to abandon their pets and an increased demand for vaccinations in areas unaffected by the outbreak.

*Submitted by Laura Baker, GARC newsletter contributor, summarized from articles in AsiaOne, "Rabies in Malaysia: A viral response," Today, "Penang lifts order to cull rabies-infected dogs in state," The Malaysian Insider, "Rabies cases prompt mass dog cull, quarantine," ProMED reports and OIE notifications 18497 and 18929.*



*The North of the Malaysian Peninsula showing the border with Thailand (solid) and the states where the rabies outbreak occurred (red spots). Reproduced from ProMED Health map.*

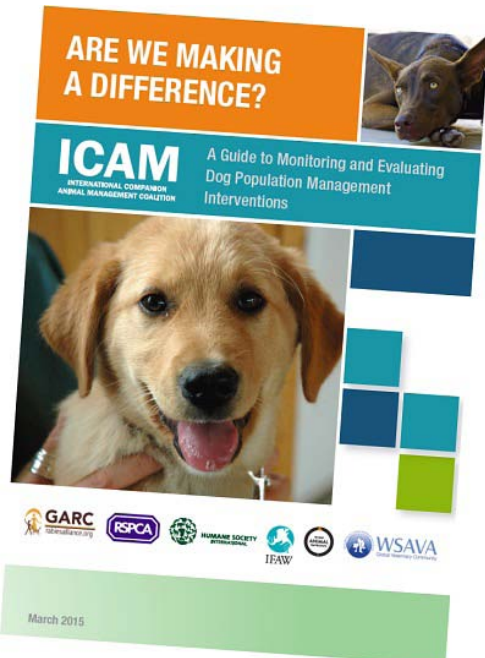
## Are We Making a Difference?

Many of us invest time and resources in vaccinating dogs against rabies. We know this will not only protect dogs but also the people they live amongst. There are many examples of studies reporting vaccination of dogs to be a highly effective method of protecting public health, but do you have evidence from your own work?

Many of us also invest in managing the dog population in other ways, such as limiting reproduction or persuading and supporting owners to provide greater care and oversight to their dogs. But how do you know if these activities are impacting dogs and their communities in the way you hoped?

In short; how do we know our hard work is making a difference? The International Companion Management (ICAM) Coalition felt that answering this question was critical. For donors, managers and beneficiaries of interventions, impact assessment can be highly significant. It can expose inefficiencies that can then be addressed or providing evidence of positive impact and therefore the opportunity to gain greater recognition and support. For those of us looking to develop policy or practice, impact assessment of varied interventions in different contexts provides the evidence-base required for making intelligent decisions about how to manage dog populations humanely and effectively.

By collating examples of successful impact assessment in dog population management, animal welfare and human health, the ICAM Coalition developed '[Are we making a difference? A guide to monitoring and evaluating dog population management interventions](#)'. This guidance provides detailed descriptions of potential indicators (measurable signs that change is happening) plus cost-effective ways of measuring these indicators. The indicators can be used to reflect change in eight different impacts, including improving public health and reducing dog density or stabilising population turnover.



The ICAM coalition wrote the guidelines to be relevant internationally but with a particular desire to support those of us implementing rabies control and dog management in resource-limited communities; hence the focus is on simple methods and meaningful indicators. The goal is to help us to evaluate our work efficiently, and therefore increase the rate at which we can adapt, improve and replicate humane interventions for the benefit of the dogs and the communities they live amongst.

Contributed by Dr Elly Hiby, ICAM Coalition Scientific Coordinator and Independent Consultant. The ICAM coalition includes [RSPCA International](#), [World Animal Protection](#), [HSJ](#), [WSAVA](#), [IFAW](#) and [GARC](#).



Dr Ernesto Gall of Spay Panama conducting a street survey of roaming dogs in Panama City. Photo: Elly Hiby

By presenting these impacts together, intervention managers can consider other benefits that could be achieved through additional activities. As well as reducing the public health threat from dog bites or rabies infection, a program could also contribute to reducing the incidence of leishmaniasis or echinococcosis. Many potential impacts are interrelated; programmes that improve the health of dogs by fostering better dog ownership practices may indirectly reduce the public health threat and improving the public perception of community dogs.

The resulting document is necessarily long, to encompass all the impacts that interventions around the world are working to achieve. But most interventions will have only a few impacts in mind, so much of the document is not relevant to them. With this in mind, ICAM also provide an [online navigation tool](#), which asks a series of short questions about the dogs and the intervention, and then creates a tailored document based on the answers. The result is much shorter and bespoke guidance. There are also a couple of [tools](#) available to help people train and test themselves on body condition scoring, one of the recommended indicators of dog welfare.

## Three New Papers from GARC Authors

In the last two months, GARC staff members published three scientific papers related to the work GARC is doing to combat canine rabies. The first is a historical and current review of canine rabies epidemiology, and the others describe in more detail two facets of GARC's work on rabies elimination and control.

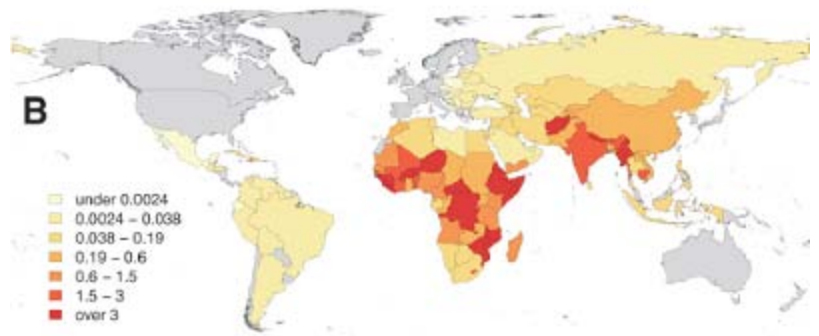
The first paper, [“Global epidemiology of canine rabies: past, present, and future prospects”](#)

by Louise Taylor and Louis Nel is a review that summarises the impact that canine rabies has

and continues to have on public health globally, the recent progress in its control of and the possibilities for its elimination. It was published in *Veterinary Medicine: Research and Reports*, 2015(6): 361-371.

Another paper, [“The Pan-African Rabies Control Network \(PARACON\): A unified approach to eliminating canine rabies in Africa,”](#) by Terence Scott and colleagues in the GARC South Africa group describes in detail a new initiative to coordinate rabies control efforts across the African continent. It reports on the approaches taken to support countries as they move towards elimination and is published in *Antiviral Research*, 2015; DOI:10.1016.

Finally, [“Global partnerships are critical to advance the control of Neglected Zoonotic Diseases: The case of the Global Alliance for Rabies Control”](#) by Louis Nel and others summarises the aims and approaches of the work of GARC and the Partners for Rabies Prevention over the past 8 years. It was published in *Acta Tropica*, 2015; DOI:10.1016.



Per capita death rates from canine rabies, from Hampson et al 2015 *PLoS NTD* 9(4): e0003709

## Recent Research – November 2015

### **Rabies Epidemiology**

[Epidemiology of rabies in Oman: a retrospective study \(1991-2013\)](#). A total of 22,788 cases of animal bites were reported in Oman between 1991 and 2013, with 8 human rabies cases reported (mostly from wild animals) with 100% mortality. Of 758 suspected animals tested, 56.1% were positive for rabies, with foxes showing the highest positivity rate, or 70.1%.

[Rabies Epidemiology and Control in Ecuador](#). In 1996, Ecuador suffered the highest rate of rabies per capita in the Americas. Human and canine rabies fell sharply until 2012 due to massive canine vaccination campaigns, with a very high correlation (0.925) between annual cases of dog and human rabies. In 2011, a distinct viral strain originating in vampire bat populations led to 11 fatalities in the Amazon region.

[Rabies Cases in the West of China Have Two Distinct Origins](#). In some areas, such as Tibet, Qinghai, Gansu and Ningxia in western China cases have been rising since 2011. Analysis of samples collected from these regions suggests two different sources. Strains collected from Gansu and Ningxia are closely related to the viruses of the current epizootic, whereas those from Tibet and Qinghai are related to the Arctic-like-2 lineage that is most commonly associated with wildlife.

[Government Response to the Discovery of a Rabies Virus Reservoir Species on a Previously Designated Rabies-Free Island, Taiwan, 1999-2014](#). From 2013 up to December 2014, there have been 423 rabies-confirmed ferret-badgers and three cases of spillover infection into non-reservoir hosts in Taiwan. The virus is genetically distinct from all other known rabies virus variants, and only one strain, sequestered to the mountainous regions, exists in Taiwan. Dogs and cats should be vaccinated to stop the spread of the disease from mountainous regions to domestic meso-carnivores.

*Continued on page 12...*

...Recent Research continued from page 11.

## Human PEP

[Neutralizing Antibody Response after Intramuscular Purified Vero Cell Rabies Vaccination \(PVRV\) in Iranian Patients with Specific Medical Conditions.](#) Patients with abnormal immune function due to chronic hepatitis B virus infection, lymphoma, rheumatoid arthritis treatments and other medical conditions, could have impaired immunologic response to rabies vaccines. For the first time, this was tested in 30 healthy people and 50 patients with such medical conditions who had a type II or III exposures to a suspected rabid animal. Bote victims were vaccinated with the ESSEN protocol and PVRV vaccine, and blood samples showed that adequate levels of anti-rabies antibody were produced in all cases.

## Vaccination of Dogs

[Recombinant rabies virus expressing dog GM-CSF is an efficacious oral rabies vaccine for dogs.](#) To develop an effective oral rabies vaccine for dogs, a recombinant attenuated RABV expressing dog GM-CSF (LBNSE-dGM-CSF) was tested in a dog model. Significantly more DCs or B cells were activated and higher levels of virus neutralizing antibodies were detected in dogs immunized with LBNSE-dGM-CSF than with the parent virus, and all immunized dogs were protected against a lethal challenge with wild-type rabies virus.

[Smartphone and GPS technology for free-roaming dog population surveillance - a methodological study.](#) A new framework for estimating free roaming dog population sizes. It uses a topological algorithm, implemented as ArcScript in ESRI® ArcGIS software, to randomly select sampling areas and a mobile phone application for Android® devices which integrates Global Positioning System (GPS) and Google Maps™, combined with a common counting method. The framework was tested in 2 Italian regions, and could help support dog population management systems.

[Population Dynamics of Owned, Free-Roaming Dogs: Implications for Rabies Control.](#) The entire owned dog population within a community in Mpumalanga Province, South Africa was monitored. Dog population birth and death rates varied over a 24-month period and population turnover was high. However, a simulation of population dynamics showed that a 70% vaccination coverage during annual campaigns would still maintain coverage above the critical threshold for rabies control for at least 12 months.

## Educational Interventions

[A Randomized Trial Evaluating Child Dog-Bite Prevention in Rural China Through Video-Based Testimonials.](#) A randomized controlled trial showed 280 school children an educational video of testimonials on either dog-bite prevention (treatment) or drowning prevention (comparison). Children who watched the video on dog-bite prevention had increased safety knowledge, higher perceived vulnerability to dog bites, and less risky simulated behaviors with dogs compared with the comparison group.

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## Upcoming Conferences

WHO/OIE with FAO and GARC Global Conference on Rabies - 'Global elimination of dog-mediated human rabies - The Time Is Now' Geneva, Switzerland, 10-11 December 2015. See the [website](#)

17th International Congress on Infectious Diseases (ICID) Hyderabad, India. March 2-5, 2016. For more details go to [www.isid.org/icid/](http://www.isid.org/icid/)

The 6th Northern European Conference on Travel Medicine (NECTM6) will be held in London, 1-4 June 2016. For more details go to [their website](#).

The editor of the Alliance newsletter is Louise Taylor. If you have news items or information of interest to those working to defeat rabies, please contact her at [louise.taylor@rabiesalliance.org](mailto:louise.taylor@rabiesalliance.org). For further information on the Alliance's work see [www.rabiesalliance.org](http://www.rabiesalliance.org).