



RABID BYTES

The newsletter of The Global Alliance for Rabies Control

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Editorial - Major New Rabies Study	1
Rabies Awareness Month	2
GARC to be Charity Partner of NECTM6	3
Rabies Elimination Workshop for ASEAN Countries	3
Rabies Education in Schools and Beyond ...	4
Partnership to Educate Children.....	5
New Book on Laboratory Techniques for Rabies.....	5
WHO Encourages Domestic Healthcare Investments	6
Recent Research Highlights	7
EURL for Rabies Newsletter	8
Upcoming Conferences	8

EDITORIAL

160 People Die of Rabies Every Day, Says Major New Study

GARC’s Partners for Rabies Prevention group, has just published a study that found that 160 people die every single day from canine rabies. The report is the product of a long collaboration among PRP members to gather all relevant data that can be used to address the question of how big an impact canine rabies has across the world. It is the first study to consider the impact in terms of deaths and the economic costs of rabies across all countries. Even though the disease is preventable, the study concluded that around 59,000 people die every year of rabies transmitted by dogs.

The multi-author study also shows that annual economic losses because of the disease are around 8.6 billion US dollars, mostly due to premature deaths, but also because of spending on human vaccines, lost income for victims of animal bites and other costs. This ground-breaking study is an essential step towards improved control and eventual elimination of rabies. An understanding of the actual burden helps us determine and advocate for the resources needed to tackle this fatal disease.

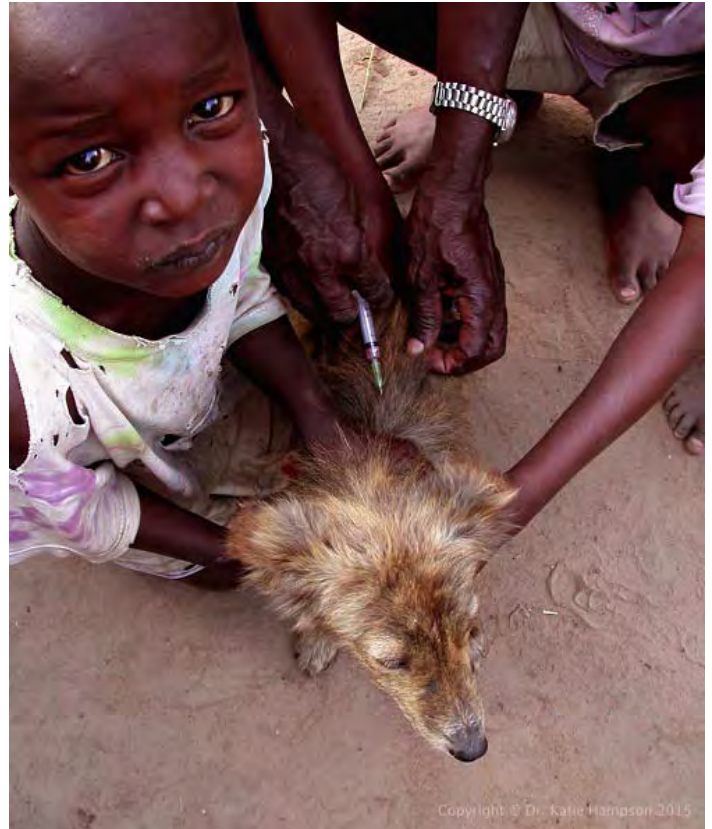
The study finds that overwhelmingly the greatest risk of canine rabies is in the poorest countries; the death rate (deaths / 100,000 people) is highest in countries in sub-Saharan Africa, while India has the highest number of fatalities of any country, with over 20,000 human deaths annually.

By quantifying the extent of rabies control efforts, the study can also serve as a snapshot of rabies control efforts around the world. It shows that the proportion of dogs vaccinated is far below that necessary to control the disease across almost all countries of Africa and Asia, and that over 29 million people are given post exposure vaccines each year. The breadth of data used in this study, from surveillance reports to epidemiological study data to global vaccine sales figures, is far greater than ever analysed before, allowing this more detailed output.

According to the report, this One Health approach to eliminating rabies deaths, with collaboration between the human and animal health sectors, can save many lives and significantly reduce the burden on vulnerable economies. Indeed, the countries that have invested most in dog vaccination are the ones where human deaths from the disease have been virtually eliminated. The study also emphasises that reporting systems are fundamental to rabies elimination, to monitor and assess the success of prevention efforts.

No one should die of rabies and GARC and its partners will continue to work together using a One Health approach towards global rabies elimination.

By Louis Nel, executive director of GARC. The paper “Estimating the burden of endemic Canine Rabies” has been published in PLOS Neglected Tropical Diseases, and can be accessed [here](#).



©2015 Photo by Dr. Kate Hampson.

NEWS FROM GARC AND WRD

GARC Joins Rabies Awareness Month Celebration In The Philippines

From Dane Medina, GARC Communications Team in the Philippines

March is Rabies Awareness Month in the Philippines. Various activities took place this year in support of government efforts to raise people’s awareness of this deadly disease, and to rid the country of rabies in 2016. These are some highlights from what has been a very busy month!

The celebrations kicked off on March 7 with an event organized by the Department of Agriculture-Bureau of Animal Industry (DA-BAI). At least 100 pet owners came along and were able to benefit from free veterinary services such as consultation, vaccination, and spaying and neutering of dogs and cat. To raise awareness among children at the event, GARC set up a coloring and origami-making station and gave out comics and coloring books about rabies. The team also talked with the children about behavior around dogs and how to recognize and respect a dog’s feelings to avoid being bitten.



Continuing with the theme of education, The Rabies Corner was formally launched at Pilar II Central Elementary School in Sorsogon. Around 73 students from Pilar II CES along with district heads and school representatives from six school districts attended the launch on March 6. The Rabies Corner is a designated area within the school in which children and teachers can access materials about rabies, bite prevention and management, and responsible pet ownership. There are plans for A Rabies Corner to be put up in a further six selected pilot schools throughout the province.

participated in an orientation-seminar on the Anti-Rabies Act (Republic Act 9482) on March 18. They play an important role in enforcing the province’s rabies control and elimination program.

Still in Sorsogon, police officers in the Province of Sorsogon



Dr. Rosebelle Gamal, a GARC Field Veterinarian, was invited by the Philippine Information Agency (PIA) Region 3 as one of the four panelists during the *Kapihan ng Mamamayan* (Coffee with the Community).



March is also Women’s Month in the Philippines so for this event the PIA invited around 100 women-beneficiaries of the Pantawid Pamilyang Pilipino Program (4Ps) from Pampanga. (4Ps is a government program which aims to eradicate extreme poverty by investing in health and education.) The panelists covered topics such as human and animal rabies, the rabies prevention and control program of the province, as well as the different GARC initiatives.

Rabies-Free Region 1” (Working Together for a Rabies-free Region 1) while the participants worked together to plan the roadmap towards rabies elimination in their areas. You can see press coverage of this event [here](#).

On March 26, a total of 336 medical professionals, veterinarians, educators, information officers, law enforcers, and municipal/provincial leaders attended the Region 1 Rabies Summit in Ilocos Norte. They were invited to assess the rabies prevention and control program in their respective areas. A one-health approach was emphasized with the theme “*Sama-sama, Tulong-tulong para sa*

And finally, the ‘graduates’ of the Communicating Health Advocacy Mentorship Program (CHAMP) which is one of GARC’s pilot models, also got to contribute to the Rabies Awareness Month festivities. Their outputs, such as communication activities (press conferences and radio and TV interviews) and media materials intended for their respective geographical areas, coincided with the celebration. Participants of the CHAMP include community media practitioners and government information officers from the PIA, DA-BAI and DA-Regional Agriculture and Fisheries Research Division (DA-RAFID).

The Rabies Awareness Month in the Philippines is celebrated annually every March through the Executive Order (E.O.) No. 84 passed in 1999. Aside from declaring March as Rabies Awareness Month, the E.O. allows for the creation of the National Rabies Prevention and Control Committee (NRPCC) in which GARC is an active member.



GARC Selected as Charity Partner of NECTM6

GARC are delighted to have been selected as a charity partner of the 6th Northern European Conference on Travel Medicine.

This partnership recognises that rabies is a modern tragedy: a totally preventable disease which nevertheless still poses a deadly threat to billions of people around the world - including those who travel in endemic areas.

The conference, to be held in London 1st-4th June 2016, is an ideal opportunity for learning and networking in all aspects of travel health. It reflects the multi-disciplinary nature of the sector with sessions catering specifically for nurses, pharmacists, clinicians, academics and students. You can find out more about this conference and download past abstracts [here](#).

We, at GARC, look forward to working with the conference organisers over the coming year but, in the meantime, if you're looking for a way to support rabies prevention, why not consider joining [TeamNECTM6](#)?

Their first event is The Great North Swim, at Lake Windermere in the Lake District, on Sunday 14th June. Find out more about this and other fundraising events by emailing the team here teamnectm6@in-conference.org.uk.

And if you don't feel like getting wet but you do want to help, please donate to or sponsor the team via their Just Giving page at <https://www.justgiving.com/TeamNECTM6>. **Go TeamNECTM6!**

A Workshop on Rabies Elimination for ASEAN Countries

On February 25-26, 2015 in Bangkok, Thailand, GARC hosted the 1st Asia Regional Workshop on Rabies Elimination. The meeting was the first in a series that are supported by the UBS Optimus Foundation and will contribute to the ASEAN (Association of Southeast Asian Nations) efforts towards their goal of rabies elimination from the region by 2020.

The meeting aimed to provide a platform for building partnerships, facilitating information sharing, and contributing to capacity-building in ASEAN countries for rabies prevention and control. It brought together 35 participants from seven countries, including government representatives, academic institutions and the business sector, and featured workshops on key topics: the Rabies Blueprint; Rabies Education program recently initiated by GARC; and the Stepwise Approach towards Rabies Elimination. It also provided an opportunity for country feedback on these approaches, an exchange of information and the sharing of experiences and lessons learned in rabies control in the region.

The role and initiatives of various organizations were articulated. OIE plays a key role in setting standards for rabies prevention and control and the requirements for rabies freedom. FAO has developed the Stepwise Approach on Rabies Elimination that can be used by the countries in their planning. World Animal Protection shared its experiences on appropriate dog population management. Humane Society International provided its expertise on dog ecology and behavior and on its insights and experiences on dog sterilization. GARC shared developments in their information, communication and education resources. In-country initiatives have been supported in different ways by these various organizations.

Indonesia showcased its efforts in bringing together various sectors from the national to the local level and to promote community involvement to address the rabies problem in Indonesia. The Philippines shared their legal framework to support and strengthen rabies prevention and control and highlighted the importance of multisectoral involvement.

Insights shared on the realities and challenges in the surveillance of human rabies and the need for linking data on the biting animal with that of an animal bite victim or a human rabies case. It was emphasized that in certain aspects, rabies could be integrated into a laboratory diagnostic set-up for encephalitis until a definitive diagnosis for rabies is reached.

The Philippine experience demonstrated that with support and political will from decision-makers, a decentralized system of Animal Bite Treatment Centers located can increase access, promote affordability and ensure delivery of quality of Rabies Post-exposure Prophylaxis. Additionally, the nationwide adoption of the intradermal regimen has greatly reduced the vaccine required per patient. The government of Thailand have taken steps to ensure appropriate management of animal bite cases through their guidelines as they move forward with developing a road map that is based on specific areas' situation on rabies, in line with the ASEAN Rabies Elimination Strategy.

Participants were asked to carry out a rapid assessment of their respective countries' efforts for rabies prevention and control, and there is recognition that the countries have different levels of progress in addressing rabies, and have wide gaps in resources and capacities between the countries. With the increased recognition of available resources, in terms of information, initiatives and projects and potential partnerships, the foundation is built on which to advance progress in the region, and organizations and countries should work together with the aim of maximizing the use of available resources for rabies prevention and control.

The activities will be complemented by those at the related PARACON meeting scheduled for June in Africa.

Written by Ning Villa of the GARC Philippines office who coordinated the meeting.

Rabies Education in Schools and Beyond

As a reader of this newsletter, you probably already know that children are most of risk of dog bites and, consequently, rabies exposure; and that using the school network is an efficient and effective way of giving them access to the knowledge that might save their life. Recent reports from our field projects show various ways in which we achieve this.



In Ilocos Norte this year, as in Sorsogon last year, rabies education is being included in the school curriculum. Facts about rabies are included in teaching materials for math, English, Filipino and science and health classes. Ensuring teachers use the materials is the hurdle. Dianne, our field vet in Ilocos Norte, recently shared this picture of Teacher Coordinators at an orientation session. The Teacher Coordinators act as the point of contact for their school. They share the materials with their colleagues, and encourage and report on their usage.



Early Years Interventions, like the one held recently at St. Ignatius School with the Armed Forces of the Philippines, ensure that young children also receive life-saving information. Coloring, story telling, and games help teach serious lessons in a fun, non-threatening way.



Sadly, not all children go to school. And if the risk of dog bites to street children is greatest of all. Rosebelle, our vet for Marikina City and Cainta, shared this photo of an activity aimed specifically at this disadvantaged group. Age appropriate activities included puppet shows for the younger children and a 'game show' for the older ones.

and in the second, jubilant students from a school in Nias island, Indonesia gather round for a photo graph with Fahkri after their rabies awareness day.

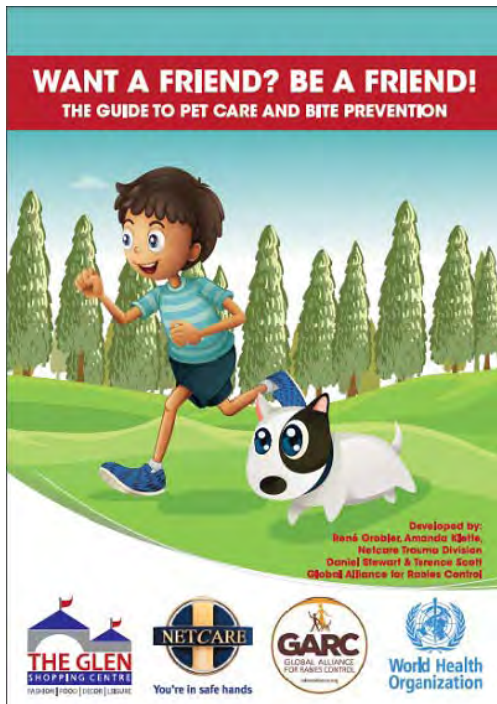


We at GARC are proud of these initiatives in our field projects but our ambitions for rabies awareness are bigger than we can ever achieve



on our own. If you are involved in or have links to community health projects, take a look at the [REC](#) (Rabies Educator Certificate). Aimed at community health or veterinary workers, the REC equips candidates with accurate life-saving knowledge about rabies and is completely free. Please share [the link](#) with people in your network who may benefit - because education saves lives.

Partnership Forged to Educate Children to Prevent Dog Bites and Rabies



Educating children on how to avoid being bitten by dogs is a key step in preventing the spread of the deadly rabies virus. To this end, GARC and the programme managers of two Netcare Trauma Injury Prevention Programmes have teamed up to develop a fun-filled yet informative booklet.

The booklet was developed to teach children how to interact with dogs and read their body language in order to avoid being bitten. Young children are typically the ones most impacted by rabies, as their actions around dogs can often lead to dog bites. The booklet was designed to be interactive, with educational games and pictures to facilitate easy learning.

The graphics will also help illiterate individuals to understand the core concepts contained in the booklet. The booklet includes a certificate to serve as a reminder of these concepts. With support from the WHO and the Glen Shopping Centre in the south of Johannesburg, South Africa, a first printing of the booklet will be distributed to disadvantaged communities. It is hoped that, in time, the booklet will be translated into a variety of widely spoken national and international languages.

The partnership between GARC and Netcare for the development of the educational booklet epitomises a ‘One Health’ approach towards rabies control and elimination. GARC provided the expertise with regards to rabies and dog bite prevention, whilst Netcare – with their experience in the successful development of several other trauma booklets – has the skills to target the correct audience most effectively. The booklet reinforces the importance of seeking medical attention as soon as possible after an animal bite in order to improve one’s chances of survival - through post-exposure prophylaxis – in the case of a rabies exposure.

The booklet was developed by René Grobler, Netcare Milpark Hospital trauma programme manager, Amanda Klette, Netcare Union Hospital trauma programme manager, and Daniel Stewart and Terence Scott of GARC, all based in South Africa. An electronic version of the booklet can be downloaded free from the GARC Educational Resources [here](#).

NEWS FROM THE COMMUNITY

New Reference Book on Laboratory Techniques for Rabies

The second volume of “Current Laboratory Techniques in Rabies Diagnosis, Research and Prevention” edited by Charles Rupprecht and Thirumeni Nagarajan was published in February 2015. It provides comprehensive information on the choice of laboratory methods for rabies diagnosis and virus typing, of systems for producing monoclonal and polyclonal antibodies and of methods for testing potency of vaccines and antibodies. The book covers advancements in the classical methods as well as recent methods and approaches applicable to rabies diagnosis and research.

Techniques covered include: detection of the whole virus by microscopy and viral isolation; detection of viral fragments by immunohistochemistry; detection of viral nucleic acids by genetic techniques; detection of antibodies against the virus by binding assays or functional tests; viral typing by antigen analysis; and detailed discussion of the biologics (vaccines and antibodies) available for rabies control.

Aimed at those directly involved in rabies diagnosis, research and product development, the methods are provided as full laboratory protocols (or Standard Operating Procedures) detailing the laboratory requirements as well as advantages and disadvantages of the methods and trouble shooting.

You can read more about it, or purchase it [here](#).



WHO Encourages Domestic Healthcare Investments to Alleviate Tropical Diseases

By boosting domestic funding for healthcare, afflicted countries will be better positioned to eradicate rabies and other neglected tropical diseases (NTDs) that maim, disfigure or kill over 1.5 billion people worldwide. In the recently released Third report on NTDs, entitled “Investing to overcome the global impact of NTDs”, the World Health Organization (WHO) urges affected countries to increase their spending by as little as \$1 per person annually until the year 2030 to help alleviate the burden of NTDs and improve domestic health care outcomes.

This report is third in a series of publications initiated by WHO in 2010 that were designed to raise further awareness about NTDs, as well as evaluate the strength of current elimination strategies. In this third report, the WHO outlines the specific funding goals that must be reached to achieve eradication and to implement universal healthcare coverage in affected nations by 2030.

NTDs are a diverse group of tropical diseases that receive less attention and funding than the three big diseases affecting tropical, low-income nations—HIV/AIDs, tuberculosis and malaria—but cause a significant healthcare burden that affects the world’s poorest people . Currently WHO lists 17 diseases as NTDs, which includes rabies, but the list also encompasses diseases such as guinea worm disease, river blindness, dengue fever and sleeping sickness—illnesses that rarely are found in wealthy countries and receive little media attention. These NTDs are treatable, but often the local resources directed at prevention or care are minimal, leaving poor countries looking to the international aid community to tackle these blights.

Success in overcoming NTDs is being considered a “litmus test” of universal health coverage in endemic countries, and the roadmap for NTD control sets goals for global eradication or global elimination by 2020 for six of the diseases. Elimination goals for rabies are regional: Latin America by 2015 and South East Asia and the Western Pacific regions by 2020.

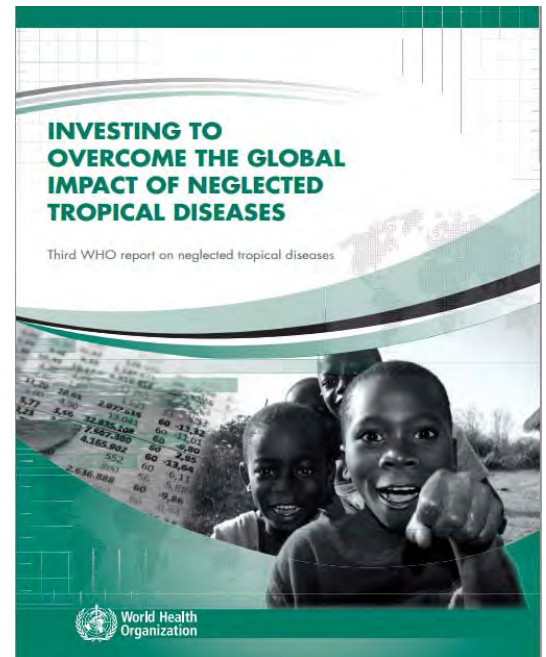
This report provides targets for the investment needed to achieve the Roadmap’s targets by 2020 and universal coverage against NTDs by 2030 for 12 of the 17 NTDs, but explicitly excludes dracunculiasis (already targeted for elimination in 2015) and the 4 neglected zoonotic diseases (including rabies) which it says will be covered in future updates.

The WHO report urges developing nations, especially those middle-income countries with accelerating economies, to begin to shoulder more of the responsibility for NTD healthcare, and encourages nations where the 17 NTDs are endemic to invest as little as 0.1% of their current level of total health care spending, a figure adding up to \$34 billion USD over the next 16 years.

While there has been considerable progress in reducing NTD prevalence, sustained increases to current healthcare budgets is seen as the most cost-effective and most promising way to implement programs for disease prevention and control in endemic countries. The WHO analysis projected that \$2.9 billion USD must be allocated for the first 5 years (2015-2020) with a slightly reduced amount of \$1.6 billion USD needed for the 2021-2030, a decrease in called-for investments that reflects the projected, immediate eradication of a select few NTDs that would then permit reduced health care commitments in the later years.

The WHO report also projects how increased domestic investments will encourage the international community to renew and expand its pledges for healthcare aid when governments of afflicted countries actively demonstrate a commitment to fighting NTDs by earmarking funds specifically for these diseases.

Contributed by Laura Baker, volunteer newsletter contributor for GARC, in part based on [this Reuters news story](#). There is more information from the WHO on this report [here](#), and you can download it [here](#).





Recent Research Highlights - April 2015

Dog Vaccination

[Uptake of rabies control measures by dog owners in Flores Island, Indonesia](#) a high level of knowledge of rabies and its control, but this was not associated with uptake of the 2012 vaccination campaign. Geographical accessibility was one of the important factors influencing the vaccination uptake and the most important reasons not to join the vaccination campaign were lack of information about the campaign schedule and problems with catching the dog.

Surveillance

[Trends in animal rabies surveillance in the endemic state of Minas Gerais, Brazil](#) An analysis of 10,112 rabies diagnoses in animals from the Brazilian passive surveillance system suggest a deterioration in the effectiveness of the passive surveillance for rabies. The number of rabies cases, total number of tests performed and positivity rate are good indicators for evaluating passive surveillance

[Rabies in the State of Rio de Janeiro, Brazil: analysis of surveillance and control actions in the municipal field \[In Portuguese\]](#) A survey revealed that rabies surveillance and control actions were being unsatisfactorily conducted, especially for items related to the monitoring of vampire bat colonies, viral circulation surveillance, notification and monitoring of suspect or aggressive animals, quantification of dog population and population control of stray dogs

Human Vaccination

[30 years of rabies vaccination with Rabipur: a summary of clinical data and global experience](#) Rabipur, the first purified chick embryo cell-culture vaccine, has been licensed in more than 60 countries worldwide. Numerous clinical trials in pre- and post-exposure regimens, using both intramuscular and intradermal routes of administration and extensive, worldwide clinical experience with Rabipur has shown the vaccine to be immunogenic, effective and generally well tolerated.

[Comparative study on the immunogenicity and safety of a purified chick embryo cell rabies vaccine \(PCECV\) administered according to two different simulated post exposure intramuscular regimens \(Zagreb versus Essen\)](#). 250 healthy adults were enrolled and randomized into a Zagreb or Essen group, each receiving PCECV according to their respective regimen. The Zagreb regimen was immunologically non-inferior to the Essen regimen by Day 14, no safety issues were noted and the occurrence of adverse events was similar in both groups.

[Immunogenicity and safety of purified chick-embryo cell rabies vaccine under Zagreb 2-1-1 or 5-dose Essen regimen in Chinese children 6 to 17 years old and adults over 50 years: A randomized open-label study](#). The non-inferiority in immune response and safety of the Zagreb vs. the Essen regimen was demonstrated in children and older adults in China, as assessed by RVNA concentrations ≥ 0.5 IU/mL, at day 15 and at day 43.

[Factors associated with delay in post-exposure prophylaxis in bitten people](#) Of 425 animal bites cases in Iran, 71.8% were male and 81.2% were from rural areas. Only 37.2% of the cases received timely PEP (< 6 hours), with delayed PEP associated with sex, type of animal, injury status, place of residence and distance from RTC

[Evaluation of intradermal vaccination at the anti rabies vaccination OPD](#). A survey of PEP compliance of pre and post introduction of the ID regimen calculated much lower vaccine costs and increased patient adherence and enrolment with the ID administration route. ID has now been routinely adopted at the clinic.

Rabies Epidemiology

[Complex Epidemiology of a Zoonotic Disease in a Culturally Diverse Region: Phylogeography of Rabies Virus in the Middle East](#). An investigation of the evolution of 183 rabies virus isolates collected from over 20 countries in the Middle East between 1972 and 2014 shows evidence of four genetically distinct clades with separate origins. Regular and multidirectional trans-boundary movements of viral lineages in some parts of the region, but relative isolation in others suggest that regional collaboration is essential for rabies elimination.

[Molecular epidemiology of rabies viruses circulating in two rabies endemic provinces of Laos, 2011-2012: regional diversity in southeast Asia](#). Similar to other rabies-endemic countries, dogs are the main viral reservoir and 3 viral

Continued on page 8...

...Recent Research continued from page 7.

lineages closely related to viruses from neighboring countries are currently circulating in Laos. There is evidence of periodic historic exchanges of the viruses with neighboring countries, but no recent invasion.

Antigenic characterisation of lyssaviruses in South Africa. A total of 624 brain specimens, containing lyssavirus antigen by direct fluorescent antibody test, were subjected to antigenic differentiation. The lyssaviruses were differentiated into two species, namely rabies virus (99.5%, with canid and mongoose biotypes) and Mokola virus (0.5%, from an unknown reservoir species).

Rabies in Saudi Arabia: a need for epidemiological data. Little has been published about the endemic rabies situation in Saudi Arabia. A total of 11069 animal bites to human were reported during the 2007-2009 and 40 animals suspect of rabies were examined for rabies infection from 2005 through 2010. Animal-related injuries remains a public health problem with feral dogs accounting for the majority of bites and animals found to be rabid. Over the last 10 years no confirmed human rabies cases have been reported.

Economic Impacts

Towards Canine Rabies Elimination in Cebu, Philippines: Assessment of Health Economic Data. An analysis of dog vaccination and human PEP costs for dog bite patients in a highly urbanized area and a low-income rural municipality in Philippines shows that eliminating rabies in dogs through mass vaccination is more cost-effective than treating rabies exposures in humans.

Cost-effectiveness of rabies post-exposure prophylaxis in the context of very low rabies risk: A decision-tree model based on the experience of France. In metropolitan France’s very low rabies prevalence context, PEP with rabies vaccine, administered alone or with RIG, is associated with significant and unnecessary costs and unfavourable benefit-risk ratios regardless of the exposure category.



EURL for rabies Newsletter
Laboratory rabies information note



The European Union Reference Laboratory for Rabies (the Anses–Nancy Laboratory for Rabies and Wildlife, France) released its first monthly newsletter in March 2015. The e-newsletter focuses on rabies in Europe and the Mediterranean Basin as well as innovation in research and tool development. It will provide rabies information, notifications, news and publications of the month.

It is primarily intended for those in European Union Member State National Reference Laboratories, but anybody who is interested in joining the mailing list can do so by sending an e-mail to rabies.eu-rl@anses.fr.

Upcoming Conferences

The WVA/WMA GLOBAL CONFERENCE ON ONE HEALTH will be held 21st - 22nd May 2015 in Madrid, Spain. It will focus on Drivers towards One Health with the theme “Strengthening collaboration between Physicians and Veterinarians”. Further details at www.wma.net/en/50events/20otherevents/80onehealth/index.html

26th International Conference on Rabies in the Americas (RITA) will be held from October 4th - 8th, 2015 at Embassy Suites Loveland, outside beautiful Fort Collins, Colorado in the USA. For more details and to register go to www.RITAconference.org. Abstracts will be due July 31st, 2015.



Rabies in the Americas
Fort Collins, Colorado

The 14th International Symposium of Veterinary Epidemiology and Economics, entitled “Veterinary Epidemiology and Economics: Planning Our Future” will be held 3-7th November 2015, in Merida, MEXICO. Abstracts are now being accepted. Further details at: <http://isvee2015.org>

The editor of the Alliance newsletter is Louise Taylor, typesetting is by Pete Else. If you have news items or information on rabies, please contact Louise at louise.taylor@rabiesalliance.org. For further information on the Alliance’s work see www.rabiesalliance.org.