



RABID BYTES

The Newsletter of
The Alliance for Rabies Control

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Photo: Jonathan Reichard, Boston University

EDITORIAL

On behalf of the Alliance, I would like to congratulate everyone for their incredible efforts to make this year's World Rabies Day a success. This is our fourth year and thanks to everyone's involvement and support, together we have sent educational messages to over 150 million people and have had over 300,000 visitors to our website from over 135 countries, seeking more information on rabies prevention.

But World Rabies Day is just one of the success stories of the Alliance. The ongoing collaborative project with the government in Bohol, Philippines has made great progress and October 8th of this year marked the second year with no reported rabies deaths in humans nor in animals on Bohol. The Bohol project has been successful due in large part to the strong commitment of the government and the community and the dedicated efforts and professional support of Dr Stella Lapiz and Dr Betsy Miranda. Supporting rabies prevention projects that empower communities to implement their own sustainable rabies prevention and control program is one of the major objectives of the Alliance.

This month I also had the privilege of visiting another collaborative community based project partially supported by the Alliance (pictured). The project is called "Adopt a Village" and involves six villages outside of the city of Bangalore India. The concept behind this project was initially developed by Dr MK Sudarshan, Dean and Principal from KIMS medical college in Bangalore. This unique project brings together medical, veterinary and animal welfare experts to educate village inhabitants using an intersectoral approach. The Coordinator of the project is Dr Aswath Naryana, Professor of Community Medicine, and the project officer is Dr NR Ramesh Masthi, Associate Professor of Community Medicine, both of KIMS. Other collaborators in the Adopt a Village project include the Rabies in Asia Foundation in India, the Commonwealth Veterinary Association, NIMHANS neurological institute in Bangalore and the Karuna Animal Welfare organization of Karnataka state. You are definitely going to hear more about this exciting project in the future!



Lastly, I would like to give you some exciting news. Peter Costa, Head of Global Communications for the Alliance and his lovely wife Maria have just had their first baby, Nicholas Costa born on November 14th. I am sure that you join us in congratulating Pete and Maria and sending them all of our best wishes.

Deborah Briggs, Executive Director, Global Alliance for Rabies Control

RABIES STOPPED IN ITS TRACKS

October 8th 2010 was an important day on the island of Bohol in the Philippines. It marked two years without a single human or canine rabies case.

As recently as 2005 and 2006 Bohol, with a population of 1.2 million was ranked 4th and 3rd respectively in the country's rabies watch list, with human cases peaking in 2006 with 10 people dying. This was the motivation for the ambitious target of ridding the island of the threat of canine rabies by 2010. In 2007, Bohol launched its Provincial Rabies Prevention and Elimination Program with financial support from the local government, national government, and the Alliance. The specific objectives were: the elimination of canine rabies contracted in Bohol; a reduction of 80% of the stray dog population; increased awareness of rabies; increasing responsible pet management to 80% of households; and a 70% reduction in the number of dog bites.



The first year of the intensified program was spent in preparing the communities for the vaccination campaign, training the personnel required and enacting an Anti-Rabies Law to ensure that enforcement was possible. The introduction of a dog registration fee was key to encouraging responsible dog management and dividing the fees between the rabies programme and local village funds, a sustainable model to pay for operational costs of a disease control program has been achieved.

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Between 2007 and 2009, massive dog vaccination programmes ensured that 70% of the dogs were vaccinated, and this campaign is ongoing.

The success of this programme has been due to many dedicated organizations, but particularly the work of many, many individual volunteers at local levels. This use of community mobilization against rabies was what attracted the Alliance to support this project. According to Dr Stella Maria Lapiz, the provincial veterinary officer for Bohol, the success of the project lies in making the communities themselves responsible for the project implementation. The work of carrying out dog surveys, registrations, vaccinations and arbitrating in dog-bite related incidents is all done at the local levels. Rabies is fully integrated into the school curriculum so that all children are aware of how to avoid dog bites and prevent rabies. Now, across the whole island there are more than 15,000 local leaders, livestock aides, rabies watch council members and school teachers participating voluntarily in the programme.

As part of the celebration of the milestone achievement, the Governor's awards for outstanding programs in rabies control were handed out during the provincial health summit to municipalities and villages that had the best practices for their rabies elimination campaign. The awards included a commemorative plaque and cash prizes, part of the ongoing commitment to encourage community participation and motivation.

If the zero rabies case can be sustained for three years, Bohol may be declared by the Department of Health as the second rabies free province in the Philippines, after the island of Siquijor. And the project stands a real chance of being recognized internationally as a model for its sustainable, community based efforts against rabies.

Submitted by Dr Stella Maria Lapiz, Bohol Provincial Veterinarian, and Dr Betsy Miranda of the Alliance who helps coordinate the Bohol Project.

RABIES IN PERU: VAMPIRE BAT PREDATION ON HUMANS, 2010



In July-August 2010, two rabies outbreaks were reported in the Amazon rainforest of Peru. The epidemic areas were villages populated by the Awaun people, on the shores of the Marañon River, in the Urakusa and the Suhapanki districts, in the Amazonas Department. At least five children died, and more than 800 people were bitten by vampire bats, requiring rabies prophylaxis. Due to this emergency and the number of rabies vaccine doses needed, in-country supplies of culture cell vaccine, as recommended by the WHO/PAHO, were insufficient, and stocks of suckling mouse brain vaccine had to be used. Rabies immune globin, a WHO recommended component of rabies post-exposure prophylaxis, was also unavailable. In 2009, two nearby districts in the Amazonas Department were also affected by rabies outbreaks, resulting in at least 11 human deaths. To date, Peru's zoonosis program has achieved significant success in canine rabies

control, with no reported human cases associated with canine rabies since 2004. However, bat rabies, as transmitted by bites from the common vampire bat, *Desmodus rotundus*, represents a major challenge for the Peruvian health care system which struggles to protect human populations living in areas with very difficult geographical access.

The frequency of rabies outbreaks are evidence in support of increased vampire bat rabies activity in the Amazon rainforest, where accelerated development is attracting a mobile population to vampire bat enzootic areas. The Peruvian Amazon region remains as a focus with one of the highest human rabies incidence zones in Latin America. Both indigenous and colonizing human populations are bitten by vampire bats that normally prefer to feed upon the blood of livestock. The typical architecture of a house without walls in the region is determined in part by both poverty and climatic conditions, allowing free access of vampire bats to sleeping residents. Temporary workers may live in even worse conditions. Local conveyance is only by river navigation, isolating distant villages and impeding access to healthcare services, more so than urban populations in coastal regions and in the Andes. Such difficulty becomes a major barrier to provide critical health care services, such as rabies prophylaxis, in a timely manner to prevent deaths.

In April 2010, a KAP survey, sponsored by the Epidemiology Office from the Peruvian MoH and CDC, was administered to two villages in a province adjacent to an outbreak area. Results of the survey included a high incidence of bat contact with humans, coupled with low public knowledge of rabies and its transmission from bats. An assessment of the burden of rabies in Amazonia, as well as innovative strategies for prevention, are needed to face the unique situation of rabies in this region. Such solutions could include pre-exposure vaccination for at risk populations with a high-incidence of vampire bat bites, shorter vaccination schedules, improved delivery schemes, and novel vaccines resistant to high temperatures and local climatic changes.

Submitted by Dr Sergio Recuenco, epidemiologist in the rabies group at the Centers for Disease and Control and Prevention, Atlanta, who has been a collaborating with Peru to prevent human rabies outbreaks. There are further details on the recent outbreak in the DGE-MINSA, [Boletín Epidemiológico, vol 19, wk 32, p685](#).

EVEN FOR RABIES VIRUSES, SWITCHING HOSTS IS HARD

Zoonotic pathogens, by definition, can cross species barriers to infect different host species, and rabies viruses with their wide range of potential host species and fast evolution are particularly complex examples. Spillover of pathogens from their usual animal reservoir hosts to different hosts, both animal and human, is one cause of pathogen 'emergence' with clear public and animal health consequences. The frequency at which pathogens manage to cross species barriers and the outcome of such infections has always proved hard to quantify, but a recent study on rabies in bats has started to try and answer some crucial questions.

Using 372 rabies infected bats, of 23 different species, collected across the USA over the last 10 years, Daniel Streicker and his colleagues (at the University of Georgia and CDC in the USA) have analyzed the genetic relatedness of both the virus isolates and the host species in which they were found. This data allowed them to study whether viruses are generally transmitted between bats of the same species, across different host species, and whether once they cross the species barrier they are able to establish themselves in the new host species.

They found that closely related viruses are usually found within the same host species, consistent with the idea that each bat species maintains an epidemiologically independent cycle of rabies transmission. Because of this pattern, when a virus is found in a different host species to its usual reservoir, there is strong evidence of a cross-species transmission (CST) event. Streicker and colleagues found evidence of 43 unambiguous CSTs amongst their isolates. They estimated that on average one CST event occurs for every 72.8 within-species transmission events, suggesting that CST is not very rare. Importantly, CST events were much more common between closely related host species.

North American bats are a diverse group with considerable ecological and physiological differences. It makes sense that viruses find it easiest to infect a host not so different from the one they came from. However, viruses in new hosts did not show significant genetic changes in the new host species, suggesting that CST events very rarely result in onward infections. In other words, most spillover events are dead-end infections and will not transmit within the new host species.

Of course, to have rabies in all these 23 different species of bats, implies historical CST events that have successfully established in their new hosts (a host shift). The data showed that successful host shifts were again usually to a closely related host species. So, even rapidly evolving RNA viruses are generally only able to successfully sustain transmission in a new host species if it is similar to the old one.



Photo: Dr. Ivan Kuzmin
(CDC Rabies Program)

To establish a host shift, the virus needs to contact a new host species, produce an infection in a new host (CST), and then to successfully transmit to new individuals of that host species. Across this dataset, there is evidence of CST events occurring, but the fact that they indicate mostly dead end infections, suggest that the biology of the new host species is more important than the opportunities for viruses to contact new host species.

It remains to be seen whether the same observations are seen for more distantly related host species, including other animal groups and humans. In these cases all emergence events may be equally unlikely to result in host shifts due to very large biological barriers that would need to be overcome. In this case, the frequency of inter-specific contact may be the more important factor.

Summarized by Louise Taylor from the paper: *Host Phylogeny Constrains Cross-Species Emergence and Establishment of Rabies Virus in Bats*, published by Streicker et. al. in [Science, August 2010, Vol 329, p676-9](#).

WORLD RABIES DAY WEBINARS

This year the Alliance and the Centers for Disease Control and Prevention utilized a new communications tool in the fight against rabies, a series of four Global Webinars. The webinars enabled participants from 34 countries around the world in different time zones to listen to global experts and local champions speak about rabies prevention and control. Free registration enabled 2,000 participants to join the online discussions. It was the first time that this type of a tool has been used in the field of rabies prevention. Participants from countries separated by distance and time zones were able to ask speakers questions about their own personal experiences and strategies of rabies control. As a result of this effort, moderated by our very own Peter Costa, participants were able to hear the latest information on rabies prevention and control. We hope that we can host more webinars in the future as the format is a fantastic interactive tool. Meanwhile, the recorded webinar talks from World Rabies Day can be viewed on the [World Rabies Day website](#). We are looking for feedback on the webinars, so tell us what you think using our [online evaluation](#).

Another resource made available for World Rabies Day this year is a series of informative short videos on rabies. They were recorded by Peter Costa, Communications Director at the Global Alliance for Rabies Control, and provides information about how you can protect yourself, your pets and your community from rabies. They are available [here](#).



PICTURES FROM WORLD RABIES DAY 2010



In Zamboanga City, Philippines the local government organized a dog walk at Pasonanca, where 61 dogs participated. High school students watched a film and listened to talks on rabies prevention and responsible pet ownership, and there was a dog fashion show and pets blessing.



The Nigeria Veterinary Medical Association in Lagos took its WRD celebration to the ancient city of Badagry, where over 500 school pupils and 100 tutors were educated about rabies. One session allowed 30 deaf and dumb students to have their rabies questions answered in sign-language. Free rabies vaccinations carried out by the Lagos State Veterinary Clinic received an overwhelming response. Photo: Dr Drapo Collins



Members of the Taiwan Veterinary Association cycled from Tainan City, in the south of Taiwan, to Singchu City, in the north, raising awareness about rabies as they peddled. They arrived on Sept 28th, and the event was reported on TV news.



Children show off the posters they designed as part of a large event in Hidalgo, Mexico. There was also a mass sterilization of dogs and cats and a talk at the Independent University of Hidalgo.



More than 225 rag pickers, garbage collectors and newspaper hawkers were administered free intradermal preventive rabies vaccination on World Rabies Day 2010 at the State Intradermal Antirabies Clinic and Research Centre, Shimla, India. Photo: Dr Omesh Bharti



One of the award winning posters in a competition held amongst school and medical students in Shimla, India.

Photo: Dr Anmol Gupta



"Rabia, una Enfermedad que se puede prevenir" (Rabies, a preventable disease) was an awareness-raising and training event for medical students, primary and secondary teachers and school pupils in an area of Havana, Cuba. The information was spread further by being featured on a local radio broadcast.



Medical students with banners and rabies information formed a human chain along the state highway in front of the Mandya Institute of Medical Sciences in India. This preceded a rabies awareness event for 125 school teachers, covering rabies, reservoir animals, exposure and its prevention, and opportunities for questions.



The first WRD celebration in Botswana involved around 100 participants marching from the Ministry of Agriculture to the grounds of the Gaborone Secondary School where throughout the day, speeches were held, information provided to the public and pets vaccinated against rabies.



Dr Francis Inangolet Olaki, District Veterinary Officer for Napak in Uganda conducts a castration operation. At least 500 dogs and more than 70 cats were vaccinated, 23 dogs castrated, 6 cats castrated and 10 dogs spayed during WRD activities.

WILD ANIMAL HANDLING TRAINING COURSE IN BRAZIL

A training course on the capture and management of wild (sylvatic) animals focusing on vigilance for Rabies and Yellow Fever was held in the city of Caicó-Rio Grande do Norte for about 20 participants. The event was a collaboration between several institutes: University of Brasília, Zoological Park Quinzinho de Barros de Sorocaba/SP, Center of Zoonoses control of São Paulo, Pasteur Institute/SP, Secretary of Agriculture of the State of Ceará, Secretary of Health of the State of Rio Grande do Norte, Secretary of Health of the Municipality of Caicó/RN and Secretary of Vigilance of Health/Ministry of Health (SVS/MS).

The theoretical and practical course was organized by the Secretary of Vigilance of Health/Ministry of Health together with the State Secretary of Health of Rio Grande do Norte. Several subjects were discussed including: capture and management of non-human primates, the main species of wild canines, hematophagous and non-hematophagous bats. In addition to these subjects other topics including the transmission cycles of the diseases in the Brazil, diagnostic methods, collection and transportation of materials for Rabies and Yellow Fever diagnosis, and management programs recommended for Rabies and arboviruses in Brazil were discussed.

The class was divided into groups, to allow all participants to have “hands-on” experience with Tomahawk traps for capturing wild primates and canines, and mist nets for capturing bats. Additionally, methods of animal containment, both physical and chemical, the use of blowpipes, the use of rifles with anesthetic darts, and others were demonstrated. The methods for the collection of biological materials were also demonstrated, such as the collection of brain and viscera, as well as the medulla. The monitoring of disease occurrence in wild species currently recommended in Brazil by the SVS/MMS is passive surveillance:

- For wild primates and canines, animals killed in road accidents are collected and examined for rabies, allowing detection of the regions with the highest incidence and focusing prevention and control actions in the areas of highest risk for rabies.
- For non-haematophagous bats, passive surveillance is conducted by submitting bats found in unusual situations (eg. grounded or on walls during the day) and those found dead or ill for testing.

Article submitted by Dr Marcelo Wada of the Brazilian Ministry of Health, and translated by Phyllis Romijn.

MASS VACCINATION EXPANDED ON BALI

In response to the growing rabies problem on the island of Bali, Indonesia, an island-wide vaccination programme covering nearly 400,000 dogs has begun.

The island's first attempt to combat the outbreak was an unsuccessful and highly criticized culling campaign in which 100,000 dogs were killed. The population who are largely Hindu resisted handing over their dogs to be killed and the campaign sparked anger and some violence. Representatives of several organizations including the World Health Organization stressed that dog killing is never an effective way to control rabies as a ‘vacuum effect’ brings in new, unvaccinated dogs to the area. When culling dogs is accompanied with very low vaccination rates, rabies spreads rapidly and in fact is now present in dogs in more than 200 of Bali's 700 or so villages.



*A BAWA vaccinator at work in Bali.
Photo: Brigitte Dunais*

At the start of the rabies outbreak, ignorance played a large part in the death toll with many people not seeking treatment. Prior to 2008, rabies was not present on Bali, and the population did not understand how dog bites could suddenly be causing human deaths. Now, improved vaccine availability and a large education programme has helped to address these issues, and dog bite victims are now seeking treatment more frequently. Experts and officials acknowledge that earlier, failed approaches to control the disease delayed concerted action, but hope that the new campaign, along with follow-up dog vaccination campaigns during the next two years will curb the disease by 2012. The first phase of the vaccination programme is being funded by the World Society for the Protection of Animals (WSPA), working closely with the Bali Animal Welfare Association (BAWA), and the local and central government. A pilot vaccination scheme conducted earlier this year in two of Bali's regencies was successful and now that the full programme has been approved, trained animal handlers will inoculate dogs in the remaining seven

regencies. AusAID, the government agency that manages Australia's overseas aid programme, has donated 370,000 doses of dog vaccine to the programme. Additionally, drugs for human post-exposure treatment have been contributed by the Bali and Indonesian central governments.

Following this first phase, the Balinese government will resume ownership of the programme, and take on the responsibility for managing and resourcing the scheme. It is hoped that this will ensure that the critical immunity threshold, which requires at least 70 per cent of the canine population on Bali to be vaccinated, will be maintained.

Summarized by Louise Taylor, from recent reports in the Veterinary Record (October 9th, 2010, p546) and the New York Times (Published September 29th, 2010). Links to previous news stories on the outbreak can be found on the Alliance's [Rabies in the News](#) page

NGO ADDS RABIES PREVENTION TO ITS MISSION STATEMENT

It is interesting to note that as organizations collaborate, they both evolve for the better. Nowhere is this more evident than in the area of animal population control and rabies prevention. Recently, there has been increased interest within the rabies prevention community in animal population control as part of rabies prevention programs. As a result of such a collaborative effort, the non-governmental organization, [Animal Balance](#), whose mission has always been to promote animal population control, has recently added rabies prevention to its mission statement.

Drs. Amy Fischer and Marcial Guevara, of the University of Illinois, Dr. Byron Maas, of Bend Oregon, and I recently returned to the Dominican Republic to work with Animal Balance and the Dominican government to train veterinarians and veterinary students on high volume surgical sterilization, and the use of Esterilsol, a chemical sterilant for use in male dogs, so that its use could be incorporated into a country-wide animal population control and rabies prevention campaign. While there, Emma Clifford, Animal Balance's Director, said they were adding rabies prevention to their mission statement. "By including rabies vaccinations when organizing high volume cat and dog sterilization programs, we are not only humanely managing the animal populations, but also providing a defense shield to the human population," Clifford said. "All beings are better protected from this lethal disease. Animal Balance's mantra is to 'protect all species,' and as such, we have changed our organization's mission statement to include rabies prevention."

Clifford has realized that animal population control is integral in rabies prevention in countries where the dog is the principal reservoir of the disease. But over time, she realized that rabies vaccination programs were key in drawing members of the community in, and allowing them to learn about the benefits of sterilization, as well. Such a collaborative effort has many benefits. Not only are the animals protected against rabies, but by controlling reproduction, we were able to reduce the number of animals who could potentially spread the disease.

The training that Drs. Fischer, Guevara, Mass, and I did in the Dominican Republic will help address the animal overpopulation problem in a humane fashion. Incorporating it in a rabies prevention campaign will save human lives as well.

Written by Robert Weedon, DVM, MPH, Veterinary Outreach Coordinator for the Alliance and a board member of the Alliance for Contraception in Cats and Dogs.



MULTI-LINGUAL WORLD RABIES DAY INFORMATION

El sitio web del Día Mundial contra la Rabia ya está disponible en español
A página do Dia Mundial Contra a Raiva agora está disponível em Português
Le site web de la Journée Mondiale contre la Rage est disponible en français

World Rabies Day websites are now available in Spanish, Portuguese and French - many thanks to everyone who helped with the translations and technical issues. To make sure the sites were available in these languages as quickly as possible, we have produced only basic information at this stage. However, in the longer term, we are anxious that the pages should be as relevant and useful as possible to those who use these languages in helping to control and prevent rabies.

Our aim is to make these sites places where users can share information, experiences and resources in their language. So, if your usual language is Spanish, Portuguese or French, we would be delighted to receive photographs and information about your World Rabies Day events in your own language. We will post them on the appropriate website, to help everyone learn as much as possible about initiatives in their own country, as well as projects from around the world. Therefore, if you have photographs, educational resources, poster designs or information you think may be useful to others, please contact Jane.Coutts@worldrabiesday.org.

We are especially interested to hear from French-speaking countries, as we would like to make sure that the website, and the French version of our newsletter, reaches as many people as possible around the world. If anyone can help us to distribute the newsletter in these countries, and inform others about the French version of our website, please contact either Jane. Coutts@worldrabiesday.org or Louise.Taylor@rabiescontrol.net

The three new websites can be accessed through the main site at www.worldrabiesday.org or directly at these addresses:

French: www.worldrabiesday.org/fr/acceuil.html

Spanish: www.worldrabiesday.org/es/home.html

Portuguese: www.worldrabiesday.org/pt/home.html

Thank you! ¡Gracias! Obrigada! Merci!

*Submitted by Jane Coutts,
The Alliance's Translation and WRD Latin American Coordinator.*



FIRST WHO REPORT ON NEGLECTED TROPICAL DISEASES

In October, the World Health Organization (WHO) published its first report on neglected tropical diseases (NTDs). WHO made an important strategic change in 2003, from a traditional approach centered on specific diseases to an integrated response to the health needs of poor and marginalized communities. By simultaneously addressing a suite of diseases, it is intending to ensure a more efficient use of limited resources, strengthen health systems in endemic countries, and alleviate the burden of illness for millions of people living in poverty in rural and urban areas.

The new report focuses on 17 neglected tropical diseases and disease groups, including dengue, intestinal parasitic worms, leprosy, trypanosomiasis, trachoma, and rabies. The infectious diseases and the organisms that cause them are diverse, but form a group because all are strongly associated with poverty, all flourish in impoverished environments and thrive best in tropical areas, where they tend to co-exist.

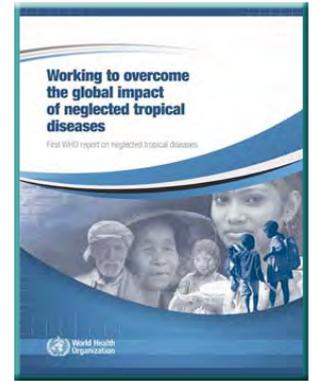
There are 149 countries and territories where neglected tropical diseases are endemic, at least 100 of which are endemic for 2 or more of these diseases, and 30 countries that are endemic for 6 or more. The NTDs are estimated to affect the lives of more than billion people worldwide, several are fatal if left untreated and most of the affected are living in poverty with little political voice. Whilst the need for prevention and treatment is huge, poor people can seldom afford treatments and interventions needed, and new or better products for these impoverished markets are unlikely be a big priority for industry. Over the past decade, wider recognition of the burden of these diseases and better knowledge of their epidemiology have stimulated necessary changes in public health thinking to approach and achieve control. Instead of waiting for these diseases to gradually disappear as countries develop and living conditions improve, a deliberate effort to reduce their impact is now recognized as a way to reduce poverty and encourage socioeconomic development.

The WHO recommends five public-health strategies for the prevention and control of neglected tropical diseases: preventive chemotherapy, intensified case-detection and case management; improved vector control; appropriate veterinary public health measures; and provision of safe water, sanitation and hygiene. When all 5 are combined and delivered locally, the most effective results can be expected.

The report showcases several success stories in the control of NTDs. The number of new cases of dracunculiasis has fallen from 892 055 in 12 endemic countries in 1989, to 3,190 in 4 countries in 2009, a decrease of more than 99%. The number of new cases of the chronic form of human African trypanosomiasis fell by 62%, from 27 862 in 1999 to 10 372 in 2008. And during 2008, more than 670 million people in 75 countries benefited from preventive chemotherapy for diseases caused by parasitic helminths. The importance of industry partners in making treatments available at reduced costs is acknowledged.

Clearly challenges remain: millions still need treatment and worldwide cases of some NTDs such as Dengue are increasing. However, the tone of the report is positive, and it is suggested that NTDs can be prevented and eliminated, and often relatively cheaply.

Summarized by Louise Taylor. The full report and summaries in english and french are available on the [WHO website](#)



STUDY OF PATIENTS SEEKING PEP IN BANGLADESH

The Institute of Public Health (IPH) is the only institute producing Anti rabies vaccine (ARV) in Bangladesh to date and it has been producing nerve tissue vaccine since 1954. Every day an average of 200 patients with a history of animal bite(s) visit IPH and get prescriptions for ARV.

A cross-sectional survey was conducted among the recipients of nerve tissue vaccine to determine their socio-economic status and knowledge about vaccines. In total, 493 respondents were given a closed-ended questionnaire including the following variables: Age, education, family income, living area, type of animal bite, bite site, treatment after bite, knowledge on ARV and imported vaccine. The age of patients that received vaccine ranged from 2 years to 100 years with an average of 24.9 years. Fifty percent of the patients were under 20 years of age. Ninety-two percent of ARV users had a monthly family income of less than TK10,000 (150 US \$) and the mean was TK5630.22 (US\$ 80). Half of the patients (52.5%) had a primary level education and 112 (22.7%) of the patients were illiterate. 93.3% of patients suffered dog bites, the rest were bitten by cats, foxes & monkeys, and 58.8% of victims experienced sudden and unexpected animal attacks. About 32% of the affected persons were school or college students. 90.3% of the patients came to purchase vaccine within 10 days of the animal bite.

31.6% of the bitten patients undertook primary treatment care and 31.4% of patients undertook indigenous treatment. Knowledge about ARV came from neighbours for 55.8% of the animal bite victims, 22.9% sought advice from their physicians and the remaining patients, 21.3%, received information from health workers. A large number, 443 or 89.9% of the vaccine recipients had previously witnessed other patients who had received the ARV (Nerve Tissue type) from the Institute of Public Health, and only 12 (2.4%) had seen a reaction after the ARV was administered. Among the respondents, 21 persons (4.3%) had personally witnessed a hydrophobic rabies patient during the last year. 245 people (49.7%) had heard of imported foreign vaccine, and of those, 89.8% didn't choose the imported vaccine due to its high price. A complete course of 5 doses of imported vaccine costs 3000-3500 Tk (45-50US\$) at private clinics. Alternately the local vaccine, produce by IPH, costs only 0.75 US\$ for a full course.

One improvement would be to incorporate rabies vaccine into the Expanded Programme on Immunization (EPI), a programme that already distributes vaccines throughout the country using a chain distribution system. With a vaccination center located at the village level, a local person could directly identify a child or any other person needing to be vaccinated against rabies. Such a vaccine distribution system would be beneficial to reduce the cost & sufferings of patients seeking ARV.

Submitted by Dr. Matiur Rahman, senior Medical laboratory technologist & Dr. Shafia Shaheen, microbiologist, Institute of Public Health ,Mohakhali, Dhaka, Bangladesh.

THE COMPLEXITIES OF A VACCINATION CAMPAIGN

Several states in Brazil suspended large-scale rabies vaccination campaigns in August and September 2010 pending an investigation by the Ministry of Health into allegedly high rates of side effects from the new vaccine being used.

Here, Phyllis Romijn of Empresa de Pesquisa Agropecuaria do Estado do Rio de Janeiro (PESAGRO-RIO) in Brazil, discusses the wider issues involved in an effective animal vaccination campaign.

Production of rabies vaccines has come along way since Louis Pasteur developed the first crude vaccine at the end of the nineteenth century. Today, the use of rabies vaccines is commonplace and very few people ask themselves what really happens during the production process.

The use of human vaccination after exposure is what most people think of when they consider how to avoid development of the disease but preventing rabies involves much more than just this one aspect. Eliminating rabies at the source of exposure and infection is the best way to prevent human rabies and in many countries this means vaccinating our pets.

To conduct a rabies vaccination day for animals, we need a strong structural framework in place. This includes the production of the vaccine itself in large amounts, transportation of the product, efficient temporary storage at the destination to keep it refrigerated, sufficient syringes and needles, training of people to vaccinate, determining the best vaccination posts and most importantly of all, motivating the human population to take their pets to receive the vaccine.

What type of vaccine should be used? Vaccines and the vaccination method should be adapted according to the species which are going to be vaccinated and the conditions and environment in which the animals live. Some vaccines induce a good antibody production but may cause frequent side-effects. Vaccines that are injected subcutaneously are easier to inject than those that need to be injected intramuscularly and therefore are more adequate for mass vaccination campaigns. Storage of vaccines at an appropriate temperature prior to use is also an essential factor in the success of rabies control programmes, as improper storage of vaccines may reduce their effectiveness. If the animal to be vaccinated is ill at the time of vaccination, they may have an adverse reaction to the vaccine. The true test of the efficacy of a vaccine is absence of disease after an exposure. The desired outcome of a vaccination campaign is to eliminate the disease in the vaccination zones and the main challenge is to collect enough data to have a reliable conclusion.

The results of one year's vaccination campaign, especially the numbers and percentage of animals vaccinated, will be the basis of the efforts for the following year's campaign. We can even say that a successful annual rabies vaccination campaign affects the health of the dog and cat population for a whole year. The distribution of technical and educational material before and during the vaccination day campaign are the key to raising awareness about rabies prevention. Responsible pet ownership, what to do and where to go if a person is bitten are essential information if human rabies cases are to be avoided. In terms of year-round information on the public health importance of animal vaccination, the support of the media is also a vital component.

For people living in rural areas and owning pets, other critically important educational information includes the role of wildlife in rabies transmission, who they should contact and what they should do when they see an animal behaving abnormally. They should be warned to leave wildlife alone to avoid potential exposure.

Even if a region is free of canine rabies cases, there is no reason to lower prevention standards especially if there are wildlife reservoirs of rabies virus. The importance of maintaining a regular awareness programme for domestic animals in areas at risk of rabies cannot be understated.



*A Vaccination day in Tanzania.
Photo: Serengeti Carnivore Disease Project*

CONFERENCE ANNOUNCEMENTS

The 10th meeting of Southern and Eastern African Rabies Group (SEARG) will take place from 24 to 28 January 2011 in Maputo (Mozambique). Registration is now open at <http://searg.info/doku.php>

IMED 2011, the International Meeting on Emerging Diseases and Surveillance will be held in Vienna, Austria, from February 4th to 7th, 2011 The congress web site is <http://imed.isid.org>

The First International One Health Congress will be held in Melbourne, Australia 14th-16th February 2011. More details are at www.onehealth2011.com

The OIE's "Global conference on rabies control: Towards sustainable prevention at the source" will be held on 7-9 September, 2011 in Seoul, Korea. Further information is available [here](#).

The 15th International Congress on Infectious Diseases (ICID) will be held in Bangkok, Thailand on June 13-16, 2012
[Visit the 15th ICID website](#)

The editor of the Alliance newsletter is Louise Taylor, layout is by Peter Else. If you have information of interest to those working to defeat rabies, please contact louise.taylor@rabiescontrol.net. For further information on the Alliance's work see www.rabiescontrol.net.