



# RABID BYTES

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The newsletter of The Global Alliance for Rabies Control

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## EDITORIAL

Another September is here and we are about to experience our sixth annual World Rabies Day! This incredible initiative has definitely captured the imagination of millions of people living at daily risk of contracting the most deadly disease known to mankind. On behalf of us here at the Global Alliance for Rabies Control, I am taking this opportunity to send our sincere thanks to everyone that has helped us to reach out and unite the entire global community of professionals and lay people alike that are working toward eliminating every human and animal death due to this horrific disease. There are so many people and organizations that have been involved in the past six years, that there is not enough room in this short editorial to mention everyone. However, all of you know who you are and how much you have done to save lives. Over the past six years, we have begun to see changes in the support for rabies prevention programs, at international, national and local levels. We have seen local champions make a huge difference in their own communities. We have seen animal welfare organizations help develop programs that have convinced local communities that responsible pet ownership is worth buying into. We have seen international organizations reach out with their time, talent, and treasure to countries in need of their expertise.

This global community of people at all levels taking action has helped put rabies higher on many countries' health agendas. We thank everyone who has contributed, volunteering in rabies control projects, raising awareness through sponsored events, sharing their events with the World Rabies Day team, writing articles for our newsletter and helping to typeset it and translate it so that we can all share the information and the lessons learnt along the way.

One of the most important changes that we have seen is that World Rabies Day has turned into more than just one day of action; it has indeed become a rallying call to nations and communities to do something to better the public health situation of in their own locations and among their own citizens. Looking at our own staff, we know that we have had tireless efforts from everyone and we want to especially thank them for the extra hours and dedication that they have put forth to make World Rabies Day a great success. To our sponsors, we send a special note of appreciation for your kind and continual support; we could never have made it this far without you! Finally, to all of you working on reducing the global burden of rabies, whether it be at an international level, or amongst your own family and friends, our sincere thanks and best wishes for all that you have done to make the world a safer place.

*Deborah Briggs, Executive Director, GARC*

## NEWS FROM GARC AND WRD

### Calling Africa

GARC has recently launched a web page to support World Rabies Day events and rabies prevention work in African countries. The main feature on the page is a new resource to help promote WRD events in the African media. It is designed to make it as easy as possible for organisers to promote their activities in newspapers, on the radio and TV, and via social media.

The full resource appears in both English and French, for which we would like to extend our thanks to Jacques Barrat of the Southern and Eastern African Rabies Group (SEARG), who provided many hours of voluntary help with the French translation. James Hackworth, the WRD team's expert on social media, added an excellent, concise guide on how to maximise publicity for WRD events on Twitter, Facebook, etc., one of the fastest growing ways of making sure as many people as possible are aware of the basics of rabies prevention.



*Continued on page 2...*

...Calling Africa *continued from page 1.*

The resource is entirely digital, and free to download in [English](#) or [French](#). The press release templates in the package can be modified with details of local events, and provide some general facts about rabies and World Rabies Day, as well as advice about the kind of information to give regarding local events and rabies issues. This way, organisers do not have to spend time writing a full press release and can devote more time to their World Rabies Day event and rabies prevention work. A similar template is available for publicity on radio stations.

The pack also contains a fact sheet on rabies, with particular emphasis on the disease in African countries. This can be sent out with the press release, as journalists are often unfamiliar with important details about rabies and how to prevent it. The fact sheet is supported by a spreadsheet with links to articles about previous events and projects in each African country.



Vaccination clinic in Tanzania.

*This is where we need your help.* We do not yet have an article for each country, and would appreciate any links to published information on WRD events or rabies prevention projects in the following countries: Burundi, Cape Verde, Central African Republic, Comoros, Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Gabon, Gambia, Guinea, Guinea-Bissau, Lesotho, Libya, Mauritius, São Tomé and Príncipe, Seychelles, South Sudan and Zimbabwe. Jane Coutts, GARC's African Outreach Officer, would be delighted to receive any information or queries. Better still, if you are involved in rabies prevention in any of these countries, why not write a short article of your own and submit it to Louise Taylor for our newsletter?

We also need your feedback about how to improve the press package for Africa, and would like you to tell us your experiences after WRD. Did the media take it up? Did you (and the media) find it useful? How can we make it better? Next year, we are keen to develop contact with **radio stations** throughout Africa, and would particularly like to know how best to do this in your area. Send your feedback and queries to GARC's African Outreach Officer, Jane Coutts, and by next year we hope to hear rabies prevention messages sounding across the radio waves throughout Africa.

On behalf of the World Rabies Day team, I would like to thank everyone working in rabies prevention in Africa for their enthusiasm and commitment. The World Rabies Day team is here to help and, although we are all working with limited resources, together we can begin to *make rabies history* across the continent.

Submitted by Jane Coutts, African outreach officer for GARC who can be reached at [Jane.Coutts@worldrabiesday.org](mailto:Jane.Coutts@worldrabiesday.org).

## WRD Activities in Delhi

This year in Delhi, World Rabies Day will be marked by a full two weeks of events from 16th Sept. to 30th Sept. Several key messages about rabies in India will be publicized. An estimated 17 million animal bites occur annually in India, with 91.5% from dogs, 40% of which are pets. These bite injuries result in about \$25 million and 38 million person-days lost every year. About 70% of animal bite victims being children younger than 15 years, and the majority of deaths due to rabies are people of poor or low-income socioeconomic status.

Dr A. K. Gupta, who is coordinating the WRD activities, sees that not just the public, but also doctors need to increase their knowledge of rabies and its management. The key to survival of a rabies exposure is administration of correct post-exposure prophylaxis (PEP) as soon as possible, as there is no treatment available once symptoms start. However, only 2.1% of bite victims in India receive Rabies Immunoglobulins (RIGs), despite RIG being a life-saving drug for category III rabies exposures. In Delhi this can be improved, as private practices can supply the more costly human RIG, but if the patient cannot afford this, equine RIG is available free of charge at government hospitals.

Myths about rabies and its treatment prevent people seeking proper medical care, and many still believe that

*Continued on page 4...*

अगर कुत्ता काट ले या पंजा मार दे  
या चाट ले तो 100% जानलेवा रेबीज की  
बीमारी हो सकती है।  
बचने के लिये घाव को साबुन और  
पानी से धोयें और टीके जरूर लगवायें।





ASSOCIATION FOR PREVENTION AND CONTROL OF RABIES IN INDIA (APCRI)  
Website : [www.apcri.org](http://www.apcri.org)

A partner of the Global Alliance for Rabies Control

**Together We Can Make Rabies History**

*WRD flyer to be distributed.*

## Adopt-a-village – *helping communities to protect themselves from rabies*

As a neglected disease, there is one thing we know for certain about rabies and that is that nobody knows enough. From the people living with the threat of infection in their everyday lives, to the doctors, vets, and scientists looking for ways to reduce that threat, everyone would benefit from knowing more.

In India, of the estimated 20,000 people who die of rabies, 84% are from rural areas. So, our Adopt-a-Village project, which ran from December 2009 to November 2011, was based in precisely the type of community most at risk from the disease: villages in the rural area South-East of Bangalore. Its aim was to fill some of the gaps in knowledge about rabies that cost lives.

For people who are most at risk from rabies, the project tackled misconceptions about the disease by launching an education and awareness program. This involved communicating facts about rabies via messengers (school teachers, health care workers, local leaders) and media (posters, television, etc.) to dispel myths and encourage behaviour change.

So, posters on post exposure treatment and responsible dog ownership were put up in the villages. School children took part in a drawing competition and played a specially developed Snakes & Ladders game, to help them learn the dos and don'ts of rabies prevention. Calendars were handed out to all the households and institutions and murals displaying key messages were painted on houses. Educational videos were shown on the local television network every weekend and regularly in schools. Folk dancers performed special routines to convey anti-rabies messages. And, a rally was organized for World Rabies Day.

Local leaders and women from Self Health Groups were recruited to help implement these activities and their continued involvement is crucial in sustaining anti-rabies activities now the project has finished.

Extensive surveys conducted before the project and at the end, monitored how people's knowledge of, attitudes towards and practices of rabies had changed as a result of the project. For example, the percentage of respondents that mentioned washing a bite wound thoroughly with soap and water as a first aid measure, leapt from 22.3% to 80.1%, and acceptance that anti-rabies vaccinations are safe increased from 36.2% to 49.8%.

Vets and volunteers from Karuna Animal Welfare Association collared, dewormed and vaccinated 58.7% of the dogs in the study villages, and gave 41% a one month booster. Blood samples from the dogs were studied to evaluate the baseline rabies virus neutralising antibody titers.

Vets also received training in dRIT. With dRIT, rabies infection testing can be done 'in the field' and suspected cases can be quickly verified without submitting samples to a laboratory. Easier testing leads to easier record keeping, better estimates of rabies infections and the impact of vaccination. Medical training on rabies prophylaxis was given to staff from Primary Health Centers, Veterinary Dispensary, school teachers and women from Self Help Group. These people also helped by reporting any animal bite cases and animals suspected of having rabies.

Throughout the project anyone, whether from the study or control villages, who was exposed to the disease was entitled to life-saving post-exposure prophylaxis free of charge. In total, 112 people received this treatment, 69 from the study villages and 43 from the control villages. There were no cases of human rabies in the project villages for the duration of the project.

The number of animal bites (each a potential exposure to rabies) fell by 30% in the study villages compared to the control villages. Adopt-a-Village was developed using the principles of One Health. This worldwide strategy encourages multi-disciplinary cooperation between health care for humans, animals and the environment, for all round benefit. In the case of rabies, a zoonotic disease with devastating consequences for people and animals, this is particularly important.



*Village women are taught to be rabies educators*



*Folk dancers teach Rabies awareness*

*Continued on page 4...*

## Next stop the Olympics!

Kirstyn Brunker, a PhD student at the University of Glasgow completed the Great Scottish Run (a half marathon) on September 9th, in aid of the Global Alliance for Rabies Control. She smashed through her fundraising target, raising almost £300 to support rabies control efforts worldwide. The Alliance is really grateful for the support that we receive from people like Kirstyn, running, walking, cycling and anything else to help us raise much needed funds.

You can add to Kirstyn's total at [www.justgiving.com/Kirstyn-Brunker](http://www.justgiving.com/Kirstyn-Brunker)



...**WRD in Delhi** *continued from page 2.*

PEP consist of a series of very painful injections in the abdomen (with the old Nerve tissue vaccine). Scratches and licks on open wounds or mucous membranes are often not regarded as rabies exposures, which endangers people's lives. In India, many incorrect practices of animal bite management still persist, especially in rural areas. These include the application of turmeric, salt, ghee, chilies, hydrogen- peroxide and cow dung to the wound, and a belief that washing the wound actually causes hydrophobia. The belief that witchdoctors, herbal extracts, gems and stones, a change in diet or religious practices can prevent rabies stops people seeking effective treatment. Even around vaccination, inaccurate beliefs can hamper treatment as people believe that one vaccination dose is sufficient, or that that dietary or other activities can reduce the effectiveness of vaccination.

The events set to challenge these misunderstandings scheduled for around WRD are diverse and include: - a rabies awareness program for school and college students, Medical, Nursing and other paramedical students, trainee health workers, health inspectors and representatives from pharmaceutical companies.

- 2 launchings of Dr Gupta's book "*Rabies – The Worst Death*"
- a Seminar with Indian Medical Association - Delhi North Zone Branch.
- rabies education displays on rickshaws will tour the areas and distribute leaflets and pamphlets on rabies.
- a dog walk with participants wearing T-shirts and caps with rabies control slogans.
- large, road-side hoardings in places across Delhi.
- a press release to address awareness among lay persons, and radio and TV shows on rabies.
- the launch of a Rabies Pre-Exposure program.
- an exhibition on Rabies, stickers and posters to increase awareness.
- the distribution of dispensing envelopes with WRD messages for chemists and other shopkeepers to use.

*Contributed by Dr A.K. Gupta, a private medical practitioner in Delhi, and Joint Secretary of the [Association for Prevention and Control of Rabies in India \(APCRI\)](http://www.apcri.org)*

...**Adopt-a-village** *continued from page 3.*

Adopt-a-Village mobilized the local communities, the medical and veterinary communities, and the governing bodies to work together to prevent rabies. It relied on numerous local volunteers, including the Department of Community Medicine (Bangalore), the Government Veterinary College in Bangalore, the National Institute of Mental Health and Neurosciences (Bangalore), the World Health Organization, the Rabies in Asia Foundation and GARC.

The project has given villagers access to facts about rabies that could save their life. It has helped to improve animal welfare by improving pet-stewardship. It has given us a better understanding of the power of education to save lives. It gives local authorities hard evidence of the benefits of preventing rabies. And, doctors and vets were able to reliably monitor rabies in people and animals and analyze the impact of providing pre-exposure vaccinations.

There is always more to learn, but Adopt-a-Village is a building block of the knowledge we need for a rabies free world.

*Summarized by Liz Davidson, a communications officer for GARC, from the project's report to GARC. The results of the study are currently being analysed for scientific publication.*

## NEWS FROM THE COMMUNITY

### Red Collars in the Fight against Rabies

WSPA says stop wasting time culling millions of dogs, when thousands are dying from rabies. The World Society for the Protection of Animals (WSPA), the leading global animal welfare organisation, will mark World Rabies Day this September 28th through its global [Red Collar campaign](#) which is calling for an end to the unnecessary deaths of millions of dogs, every year, caused by our fear of rabies.

More than 3 billion people (about half the world's population) are living in countries or territories where dog rabies still exists, and 99% of human deaths are caused by a rabid dog bite. It's a deadly, but wholly preventable disease. WSPA believe the on-going battle to control rabies in humans has created another victim: man's best friend.

WSPA estimates 20 million dogs are culled every year, mainly because of a fear of rabies, that's 38 dogs every minute. The only solution to control rabies in humans and dogs is the humane choice: mass dog vaccination. Vaccinating 70% of dogs in a community creates a high number of immunised dogs. Unable to spread, rabies is then eliminated in the local dog population. When canine transmitted rabies is eliminated in dogs, it is eliminated in humans.



A puppy being vaccinated at a mobile clinic operated by the Blue Paw Trust in Colombo, Sri Lanka. Photo © WSPA.

All leading organisations committed to controlling rabies, including the World Health Organisations, the World Organisation for Animal Health, the Pan American Health Organisation, World Society for the Protection of Animals, the Global Alliance for Rabies Control and the Food and Agriculture Organisation of the United Nations, agree that killing dogs doesn't control canine rabies and therefore has no impact on reducing the incidence of rabies in humans.

To help promote a humane approach to rabies control in the Asia Pacific region, WSPA is announcing a partnership to roll out a Rabies National Action Plan with the Bangladesh government. This will help stamp out rabies in Bangladesh, where over 2000 people a year die from the deadly disease. It will be rolling out programmes in Philippines and Indonesia in partnership with the Global Alliance for Rabies Control (GARC) and national governments.

In Latin America, which has been leading the way in developing a humane and sustainable approach to tackling dog rabies for nearly thirty years, WSPA will be showcasing success stories in Mexico, Brazil and Peru where rabies has virtually been wiped out using a vaccination-based approach. It will also be working with governments in South America and Central America, where rabies is still prevalent to help them introduce mass vaccination programmes and bring an end to culling.

WSPA has commissioned research in Africa this year to identify countries where rabies is most prevalent to identify how it can work with governments and communities in these countries to introduce our humane solution. WSPA plans to start running pilot schemes in Africa in early 2013.

WSPA is also marking World Rabies Day by celebrating the success of its Red Collar pilot projects in Cox's Bazar, Bangladesh and Bali, Indonesia. They demonstrate that a mass vaccination approach combined with community education leads to a dramatic fall in both dog and human deaths.

*"We are pleased to see the successes to date, where mass dog vaccination programmes have been introduced, but our vision is to have a world where no dog is needlessly killed in response to rabies. We want to see all countries with rabies running mass vaccination programmes until this deadly disease is stamped out,"* said Mike Baker, Chief Executive of WSPA International.

As part of WSPA's Red Collar Campaign vaccinated dogs are given red collars to show they have been vaccinated and protected against rabies. These red-collared dogs are a visible symbol of the proactive measures being taken to defend the community from rabies without resorting to the cruel and unnecessary killing of dogs.

Contributed by Esmee Russell, Red Collar Campaigns Manager, The World Society for Protection of Animals. You can join the Red Collar campaign at [www.wspa-international.org/redcollar](http://www.wspa-international.org/redcollar), and a full press release for the campaign can be downloaded [here](#).



The inhumane culling of dogs is carried out all over the world in a bid to get rid of rabies. Photo © WSPA

## Dennis Slate Retires

Dr. Dennis Slate has been a fixture in the wildlife profession and more recently associated with wildlife rabies management in the Northeast U.S. (and beyond) since the mid 1980's. After a long and diverse career of more than 30 years, Dennis officially retired on July 29, 2012 to spend more time with his family (especially his two granddaughters) as well as to fish, hunt ducks, trap muskrats in the St. Lawrence River watershed, play golf, paint, carve some decoys, read and even play a little guitar. For those of us who have had the opportunity to know and work alongside Dennis, his day-to-day presence and wise counsel will be very much missed. We all fully appreciate the role he has played in helping to shape careers and our thinking on a variety of wildlife and rabies control topics and the significant impact he has had on the profession. Dennis' strong work ethic, expertise and ability to see the humor in situations when it is most needed resulted in a high energy work environment where his superiors listen to his wise counsel; his peers respect and laugh alongside him; and his subordinates want to emulate him.

Dennis grew up in the small hamlet of Chippewa Bay, New York. After military service, including a tour in Vietnam, he received Associate, Bachelor's, and Master's and Ph.D. degrees in forestry and wildlife ecology and management. For his Doctoral research at Rutgers University he studied raccoon ecology in high density suburban raccoon populations. He joined the USDA, APHIS, Wildlife Services (WS) program in 1986, developing some of the first state-federal cooperative wildlife damage management programs in the Northeast U.S. Dennis is a widely recognized wildlife expert, a key WS representative for a diverse array of human-wildlife conflict issues, including wildlife rabies control and has authored or co-authored over 50 scientific publications. He instituted the WS National Rabies Management Team meeting that brings together some 100 wildlife rabies experts from the U.S., Canada and Mexico, which is held up as a model for sound interagency and international cooperation. Dennis was also one of the primary forces behind the development and implementation of the North American Rabies Management Plan.

Primarily as a result of Dr. Slate's work, WS first received federal funding for oral rabies vaccine (ORV) bait distribution and monitoring in 1997. The program has grown and evolved so that in 2011, WS targeted control efforts toward specific rabies virus variants in raccoons, gray foxes, and coyotes through enhanced rabies surveillance, ORV, monitoring and contingency actions. WS worked with State and local cooperators in 2011 to purchase and distribute some 7.9 million ORV baits over 189,000 km<sup>2</sup> in 18 states from Maine to Arizona.

While some may decide to take the easy path and glide into retirement, Dennis chose a different approach. In the last year, he built the necessary coalition of experts and rallied the troops to successfully organize and implement the first U.S. oral rabies vaccine field trial targeting raccoons in more than 20 years. Recently asked what accomplishments he was most proud of professionally he said "I am most proud of having been involved with WS Rabies Management Program—from the early 1990s to the present. I continue to derive my energy from the passion and dedication shown by our cooperators and my WS colleagues and friends in support of our collective efforts." Those colleagues hope that he will maintain his interest in and invaluable support to the program into the future.

From a more personal perspective, since beginning work with my friend and mentor in 1991, I have not always been sure where we were headed and seemed to frequently be playing an intellectual game of catch up. However, it has been a fantastic trip that provided countless great memories that will keep me enthusiastically involved in helping to move the wildlife management and rabies control needle in the right professional direction. Fortunately, these memories are also likely to cause me (and his other colleagues) to burst out laughing at inappropriate times for the foreseeable future. And that may be one of the best legacies of all.

*Contributed by Richard Chipman a certified wildlife biologist at USDA, APHIS, Wildlife Services, who is the new coordinator of the National Rabies Management Program.*



*Richard Chipman with Dennis Slate (right) during the RITA meeting in 2007.*

## Culling Vampire Bats is Not Reducing Exposures to Rabies

A new study by Daniel Streicker of the University of Georgia and colleagues suggests that culling of vampire bats is not only failing to eliminate rabies, but may be making the situation worse.

Strategies to control vampire-bat-transmitted rabies in Latin America include vaccination of humans and livestock and reduction of bat populations by culling. However, isolated populations in remote areas make any control attempts difficult, and often vaccination occurs only in response to deaths.

Mass culling of bats was started in the 1970s and relies on application of vampiricide (an anticoagulant paste), either to captured bats, or to bite wounds of cattle. Treated bats, or bats that feed on treated wounds pick up the anticoagulant, return to their colonies and the vampiricide spreads to other bats during communal grooming, killing them. As young bats tend to be dependent on their mothers for food and may groom few other adults, they are probably less affected by vampiricide. Despite widespread use of vampiricide for 40 years, vampire bat rabies still persists throughout Latin America and theoretically, culling hosts can actually increase disease prevalence through resulting increased dispersal. The effectiveness of vampiricide relies on several untested assumptions, that adult bats are responsible for rabies transmission, that rabies transmission scales with bat density and that of the benefits of culling outweigh any increased dispersal between colonies.



Vampire bat colony. Photo D Streicker

The new study related bat colony size to cattle density data and bat culling history and then looked at rabies exposure prevalence (measured by testing for rabies neutralizing antibodies) and how that related to individual, colony and local cattle density characteristics. Most colony sizes stayed stable over time, and recapture of bats (always at the same roost) occurred over multiple years. Colony size was highly related to the local cattle density, supporting theories that cattle provide resources to support larger colonies. No evidence was found to relate colony size to culling history.

Antibodies against rabies (i.e. evidence of exposure) were found in 10.2% of 1086 samples analyzed, and all well sampled colonies, even small ones, showed rabies exposures. Exposure rates were generally stable within each colony over the time period studied, with a few exceptions where local viral extinctions and reintroductions could have occurred.



Vampire bat - photo D Streicker

Only two types of data measured helped to explain whether an individual bat had been exposed to rabies: the age of the bat and the culling history of the colony. Rabies exposure was not related to colony size. Interestingly, juvenile and sub-adult bats had evidence of higher rabies exposure than adult bats. Bats from periodically culled colonies actually showed higher rabies exposure levels than those from colonies that were never culled. Taken together, these data suggest that culling could increase the proportion of young bats in a colony, which increases the age class most susceptible to rabies. Regardless of the exact mechanism, there was no evidence to suggest that previous culling attempts had reduced rabies exposures in colonies.

It is possible that culling was simply insufficient to impact colony size, and that increased culling effort could eliminate rabies from vampire bats. However, after 95% of bats were killed using cyanide in an area of Argentina, rabies deaths still occurred less than a kilometer away, suggesting only very localized effects. Data from this study suggests that the culling effort required to be effective may be highly impractical in the mountainous terrain of these study areas. Streicker's team will continue their monitoring efforts in Peru and is currently developing new epidemiological models that aim to develop more effective strategies for vampire bat rabies control in Latin America.

Summarized by Louise Taylor from ['Ecological and anthropogenic drivers of rabies exposure in vampire bats: implications for transmission and control'](#) by Daniel Streicker et al. *Proceedings of the Royal Society B* (2012) 279, p3384–3392

## Immunity against Rabies without Vaccination

A newly published study suggests that some people living in two Amazon communities in Peru survived being exposed to rabies virus without receiving vaccination.

There are extensive reports of rabies transmitted from vampire bats (*Desmodus rotundus*), in cattle and humans throughout Latin America, and communities in the Amazon have experienced a number of outbreaks of rabies from vampire bats in recent years. Due to the successful reduction in canine rabies, 80% of all human rabies cases reported in Peru from 1996 to 2010 were associated with vampire bats.

The researchers from the US CDC, in collaboration with the Peruvian Ministry of Health, surveyed 92 members of two remote Amazonian communities in Peru and asked them about their knowledge about rabies transmission and history of exposure to vampire bat bites. All respondents had basic or no understanding of rabies and only 23% knew that rabies was transmitted by animal bite. Over half reported that they had been bitten by bats, but only 3 people had previously received rabies vaccination.

The survey found that one community had a higher level of reported bat bites, possibly related to the lack of cattle there (a previously described phenomenon) or to differences in their proximity to bat roosting sites. Also, people under 25 years of age, and people who owned domestic animals that were bitten by bats were also more likely to report being bitten.

Those who consented also provided blood samples which were tested for rabies Virus Neutralizing Antibodies (rVNA) by the rapid fluorescent focus inhibition test (RFFIT) technique and two types of rabies virus binding antibodies (with proven roles in the immune response to vaccination) by indirect fluorescent antibody testing (IFAT).



The village of Santa Marta, Peru. Photo: Amy Gilbert

Of these 63 blood samples, 7 showed rVNAs, and a further 2 samples demonstrated rabies antibodies only by IFAT. All 9 seropositive individuals were over 25 years old, all reported bat exposures, and 7 reported bat bites. One person had received rabies vaccination in the past, and for a further two persons the data were unavailable. Considering their remote location and that these communities rarely seek vaccine after a bite, it is likely that the rest had not received rabies vaccination and had developed antibodies after natural exposures.

The presence of rVNAs indicates exposure to virus, but not necessarily active viral infection and replication in the body. Indeed, vigorous rVNA responses are induced by inactivated rabies

vaccines. Samples that could have demonstrated central nervous system (CNS) infection in the Peruvian subjects were not taken, but interview questions concerning past illnesses did not suggest any CNS infections. As younger people were more likely to be exposed to bat bites, but older people more likely to produce antibodies, it would appear that repeated exposures lead to the production of detectable antibody levels.

This evidence adds to other findings suggesting that natural immunity can fight off rabies viruses; bats often show rVNAs, unvaccinated wildlife trappers and hunters have shown antibodies to rabies virus, and a handful of unvaccinated human patients have survived clinical rabies. It remains to be investigated whether the Amazonian indigenous populations show enhanced immune responses and genetic resistance to rabies infection that would indicate natural selection resulting from regular exposures to rabies virus.

Regardless of the mechanism, the new study confirms a high level of vampire bat exposures and a risk of rabies virus exposure from bats. The authors suggest that pre-exposure vaccination of these and other high-risk communities should be considered in future rabies interventions.

Summarised by Louise Taylor from the publication "[Evidence of Rabies Virus Exposure among Humans in the Peruvian Amazon](#)" by Amy Gilbert and colleagues in the *American Journal of Tropical Medicine and Hygiene*, vol 87(2), 2012, pp. 206–215.

## 'Pooling' Strategy Makes ID Vaccination Work for Poor People

In India, all bite victims used to be offered nerve tissue rabies vaccine free of charge. However, following rare, but serious adverse reactions to this, and following WHO advice this vaccine was withdrawn from India. Modern, cell tissue vaccine are available, but at a cost of \$44.5 per course (for traditional IM delivery) many poor people were left with no affordable source of vaccine. Patients are known to have died of rabies as a result, or had to borrow large amounts of money for vaccinations. The sudden withdrawal of the old vaccine also caused shortages of the modern vaccine amongst those who could pay. The WHO approved Intra-Dermal (ID) route of delivery requires 5-fold less vaccine, and can reduce this cost to \$7.50 or less, but it was not being widely used in India.



*Dr Bharti (right) prepares a rabies pre-exposure vaccination for a vulnerable community member on WRD 2010*

A short paper in *World Journal of Vaccines*, describes how the barriers to more widespread use of the ID route were addressed in setting up the first ID rabies vaccination clinic in North-West India.

One barrier was the lack of knowledge about the new route and training in how to administer vaccine in this way. Another was reluctance to administer vaccine by the ID route when the vial was not labeled "for IM route".

The clinic is based in a small referral hospital in Shimla, and vaccination works by a 'pooling' strategy. After wound washing and first aid, all nearby hospitals were asked to refer all patients to one central location for vaccination. Each patient pays for a single vial of vaccine (\$7.50) and brings it to their first vaccination. A group of four patients are assembled and are all vaccinated from one of the vials, and the other three stored for use 'free' on subsequent visits. Posters in English and Hindi were developed to help inform the public about the new procedures.

Within a month of the clinic starting this strategy, the number of poor patients receiving vaccination had increased over 3 fold. Within 2 years, the clinic vaccinated 5,769 animal bite victims without any failure, even in cases of proven rabid dog bite victims. Around 12,000 vials of ARV vaccine were given, saving more than US \$200,000. The district budget for emergency medicine, previously all spent on rabies vaccine, was then used to fund other emergency medicines for the poor as well.

A further refinement was to transfer any left over drops from the old vial to the new vial, within the allowed 8 hour timeframe. The vaccine saved over time amounted to over 100 vials which were used on World Rabies Day 2010 to vaccinate 225 of the most vulnerable members of society – rag pickers, garbage collectors and street sellers, at no cost.

These methods have begun to spread to other clinics in Himachal, and now with more states in India adopting the ID route, there is increasing pressure for vaccine manufacturers to label the vials 'for IM/ID use'. The clinic is also advocating to other countries that there is an affordable alternative to the old NTV vaccine.

Research has shown that the ID route could be used for other vaccines, including the injectable polio vaccine, with potential to free up more budgets for the health needs of poor people, and spare doses to avoid scarcity of vaccines. Publications such as this one allow everyone to benefit from successful innovations, and do more to help poor people access vital rabies vaccines.

*Summarised from the paper "Breaking the Barriers to Access a Low Cost Intra-Dermal Rabies Vaccine through Innovative "Pooling Strategy" by Omesh Bharti and colleagues, in World Journal of Vaccines, 2012, 2, A121-124*

## Upcoming Conferences

The 2012 Rabies In The Americas (RITA XXIII) meeting will be held in São Paulo, Brazil, October 14-19, 2012. The website is at [www.ritaxxiii.org](http://www.ritaxxiii.org)



The 4th International Meeting on Emerging Diseases and Surveillance

will be held February 15-18, 2013 in Vienna, Austria and updates are available at: <http://imed.isid.org/>

The International Society for Infectious Diseases has announced that the next International Congress on Infectious Diseases will be held in Cape Town, South Africa from the 2nd to the 5th of April 2014. Sign up for the 16th ICID mailing list at <http://www.isid.org/icid/>

The editor of the Alliance newsletter is Louise Taylor and the layout and typesetting is by Pete Else. If you have news items about rabies, please contact Louise at [louise.taylor@rabiescontrol.net](mailto:louise.taylor@rabiescontrol.net). For further information on the Alliance's work see [www.rabiescontrol.net](http://www.rabiescontrol.net).