



RABID BYTES

The Newsletter of
The Alliance for Rabies Control

Issue 14 September 2009

One World Working Together	1
Mt. Snowdon for WRD	2
US WRD Stamps	2
Best WRD Events 2008.....	3
CDC Internship	3
Peru's WRD Stamp.....	4
Alliance Patron in Tanzania	4
Zero Rabies Cases in Chennai.....	5
Anti-Rabies Campaign- Jordan	5
Fast Evolving Rabies Virus	6
Rabies Awareness for Travelers ...	7

EDITORIAL

Can you imagine... this month marks the third year that we will observe World Rabies Day! As we look back at what we have accomplished, it is clear that we have made tremendous progress in the past three years. More importantly though, looking forwards, it is clear that there is much more that needs to be accomplished in the area of rabies prevention and control. There continues to be an urgent need for easily accessible and readily understandable educational material for millions of people living at daily risk of exposure. Promoting educational awareness is one area where all of us, as team members of the Alliance, have made good progress. The efforts of hundreds of our members and supporters to donate their educational material have enabled the Alliance to establish a repository of teaching materials in many languages on our website. The Alliance, along with our Partners, is also working to support the education of the next generation of public health professionals and researchers, as we believe that they are the future hope to prevent the ongoing tragedy of human and animal rabies. We urge everyone involved in the field of rabies to get involved in educating and training others so that one day we will be able to conquer the most deadly disease known to humankind.

This summer, we were pleased to join with two of our Partners, the Centers for Disease Control and Prevention in Atlanta Georgia USA (www.cdc.gov) and the One Health Initiative (www.onehealthinitiative.com), to support two unique field-training externships for students interested in pursuing a career in the field of public health. As part of their educational experience, Ms. Kelly Patyk and Dr. Robin Hughes were both searching for opportunities to get actively

involved in a public health project and through the financial support of our donors, the Alliance was able to help them fulfill their ambition. As you will read in this issue, Kelly, a veterinary student from Colorado State University and the winner of the student essay contest for WRD 2008, spent two incredible weeks learning first-hand about rabies from the experts at CDC. We also supported Dr Hughes, a Masters of Public Health student from the University of Florida, who travelled with other professional and volunteer public health professionals on board the military health ship the USS Comfort. The ship stopped at several Latin American ports, providing medical care and education for a variety of diseases including rabies (see the last issue of the newsletter). With the continued support of our partners and donors, we hope to support more training opportunities for students working toward a professional career in public health.

Finally, we encourage all of our readers to take advantage of the opportunity provided by World Rabies Day and get involved this year. Take a few minutes of your time to educate your neighbours, friends, classmates, or professional colleagues about rabies and how it can be prevented. We sincerely hope that you will take the time to organize an event, to observe WRD this year and invite you to send information about your event, along with photos to Peter Costa at: peter.costa@worldrabiesday.org as we would love to host them on our website. Finally, on behalf of the Alliance, I wish you all a very successful World Rabies Day this year and look forward to hearing from all of you very soon!

Dr. Deborah Briggs, Executive Director of the Alliance

ONE WORLD - WORKING TOGETHER TO END RABIES!

As event submissions continue to flood-in this year it has become quite clear that World Rabies Day has truly taken on a life of its own! Morphing from a day of action to several months of engagement, planned activities have been reported from 63 countries and many of the events this year are quite unique! In India – a competition on rabies knowledge will be offered to students of the Medical and Veterinary Colleges of Karnataka state. In the City of Antipolo, Philippines – numerous events will be held during the entire month of September introducing rabies education into day care centers. In United Kingdom – scientists and researchers in Wales [raced to the summit](#) of Mt Snowdon to raise awareness. In Thailand – all 76 provinces will observe World Rabies Day. Throughout the Americas events are varied. In Maranhão State, Brazil – a cycling tour for rabies will be held in the city of Balsas. Canada will be host to the [International Rabies in the Americas \(RITA\) Conference](#). In the U.S. – vaccination clinics, pet parades and educational seminars are planned. *(continued on p.2)*



ONE WORLD - WORKING TOGETHER TO END RABIES! (continued from page 1)

As a tribute to Dr George Baer, the U.S. Centers for Disease Control and Prevention will be hosting a [Memorial Rabies Symposium](#). In Africa – education and vaccination are at the forefront. In Nairobi, Kenya a house-to-house vaccination campaign is planned coupled with public forums in government meetings, schools and churches. In the area of Alimosho, Nigeria – educational slide shows will be given to children 3-15 years of age at local nursery and primary schools. In the Eastern Cape Province of South Africa – a massive province-wide joint campaign between the Departments of Health and Agriculture will offer free animal vaccinations through December with the goal of vaccinating 500,000 dogs.

As a reminder, WRD events do not have to be held on Sept. 28 but can be held at any time. Because Sept. 28 may fall on a weekday or coincide with religious observances, we encourage those wanting to plan WRD activities to pick any suitable date. For example, organizations that offer pre-planned rabies vaccination clinics throughout the year can utilize these opportunities as part of their WRD event. Getting involved in World Rabies Day has never been easier! There are many low or no cost ways to raise awareness about rabies and spread the word about WRD. This year you can send [electronic greeting cards](#) as a reminder about rabies prevention and to raise awareness amongst friends and family. Hang educational posters in community centers or in your workplace outlining the basic steps of rabies prevention. Add the [WRD logo](#) to daily correspondence such as letters and emails. Include information about WRD in presentations at conferences and during lectures. No matter what your event may entail, big or small, we want to hear about it! If you're planning an event please [tell us more about it](#) by posting the information to our website. During your event we encourage you to take lots of pictures and record video so that we can share your local efforts with the global rabies community! Photos and video taken at high-resolution are preferred and would be eligible to appear in future WRD materials such as the 2010 Picture Calendar and shared on emedia/social networks such as the WRD web site, YouTube and Twitter pages! For more information about World Rabies Day or how you can get involved and plan an event in your community, please contact Peter Costa (peter.costa@worldrabiesday.org) or visit the web site at www.worldrabiesday.org.

Contributed by Peter Costa of the Alliance



Alliance Rabies Poster.

MT SNOWDON SCALED FOR WORLD RABIES DAY



Researchers from the Veterinary Laboratories Agency (VLA) left their lab coats behind on August 1 as they followed in the footsteps of Sir Edmund Hillary - not up Mount Everest, but to the top of Mount Snowdon in Wales, UK. They also roped in colleagues from the Department for the Environment and Rural Affairs, the Institute for Animal Health at Pirbright, Liverpool and Cambridge vet schools, even two overseas visitors and a canine companion, Poppy. The challenge they had set themselves was to raise awareness of this year's World Rabies Day on September 28.

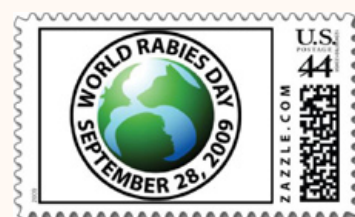
The intrepid team completed the three-hour climb (it's a little easier than Everest) and despite being in a cold wind and shrouded in cloud, still managed a smile for the camera at the summit. Talking to fellow walkers along the way the team spread the word about rabies control and World Rabies Day, even correcting a few

misunderstanding about rabies endemicity across Europe.

As well as raising awareness, the challenge also raised funds for the Alliance, so far over £650. It's not too late to add your contribution at www.justgiving.com/mad-scientists-up-a-hill. The Alliance would like to thank all who took part in or donated to this fantastic effort to mark World Rabies Day.

US WORLD RABIES DAY STAMPS

Got to post a letter? Then spread the word about World Rabies Day at the same time. We've uploaded the World Rabies Day logo to Zazzle.com, so whilst shopping for other World Rabies Day T-shirts and gifts, you can customise several denominations of US postage stamps to help the fight against rabies. Order at www.zazzle.com/world+rabies+day+stamps.



WINNERS OF BEST WORLD RABIES DAY EVENT 2008

The results of the competition for the best 2008 World Rabies Day events in Latin America and the Caribbean were announced recently. Out of 66 entries across 16 countries, 25 were submitted for consideration for the prizes, and a panel of five people from different countries chose winners in three categories: local award, regional/departmental award and national/international award.

The winner of the local award was a theatre performance called "A Day of Rabies Vaccination with Mimi and Tobí", presented to 50 children aged between 3 and 5 in state schools in São Paulo, Brazil. The children, their teachers and 30 other adults received educational material about vaccinations, rabies prevention and animal health. Special attention was given to rabies transmitted by bats, and the children were invited to participate by asking and answering questions.

The winner of the regional or departmental award was Rio de Janeiro Against Rabies. Several days of awareness-raising events on rabies prevention included a radio programme, classes for children aged 4 to 10 years, a tribute to professionals involved in rabies control in the state of Rio de Janeiro and two social events where folders were handed out with information on control and prevention of the disease.

The winner of the national and international award was an academic forum on animal welfare coordinated by the Mexican Ministry of Health. It was attended by more than 6,000 people from multidisciplinary and cross-institutional groups throughout the country, and was held alongside a best poster competition in primary schools in 32 states.



Educational Activities for school children in Rio de Janeiro.

Two other projects received special mention certificates. The first was a pilot project where sixth year primary classes in Santa Cruz de la Sierra, Bolivia, received material on rabies prevention and responsible pet ownership. The second project, in La Lisa, Havana, Cuba, involved 20 days of community-based activities in schools and health centres. Information was distributed on dog sterilization, animal care and anti-rabies vaccination, and a canine rabies vaccination programme was conducted in the area. Other activities involved a violin presentation, and the event received good radio and TV coverage.

The aim of the competition is to highlight examples of good practice in rabies prevention throughout Latin America, and the quality of the reports received was so high that descriptions of them all will be posted on a new Alliance/PAHO partnership website within the next two months.

Written by Jane Coutts of the Alliance. Summaries of all projects entered into the competition are on the [World Rabies Day website](#) along with a detailed report of the [Rio de Janeiro event](#)

INTERNSHIP AT CDC RABIES PROGRAM

"What did you do over your summer break?" This typical first-day-of-school writing assignment has not been incorporated into veterinary school curriculum, but I have the occasion to share one of my summer break experiences here!

In August I served as a guest researcher in the Rabies Program at the Centers for Disease Control and Prevention in Atlanta, Georgia. The two-week internship at CDC was my prize as the winner of the 2008 World Rabies Day Essay competition sponsored by the Alliance for Rabies Control.

I am currently a Master of Public Health/Doctor of Veterinary Medicine student at Colorado State University and have an interest in zoonotic disease control and prevention. In my essay, I discussed the role of veterinarians in public health. Rabies is an excellent example of the interconnectedness and current global challenges of veterinary, human, environmental, wildlife and public health. This is an exciting time to be entering the veterinary profession, and I was delighted to be selected for in the internship opportunity.

The Rabies Program staff at CDC were eager to discuss their research, share their knowledge, and involve me in their work. I learned about data collection and analysis for the surveillance of human and wild and domestic animal rabies cases in the United States, and the molecular sequencing being done to provide further evidence of the distributions of rabies among various species. I gained hands-on experience in experimental sample collection and learned how to perform the direct fluorescent antibody and the direct rapid immunohistochemical test for rabies diagnosis. *(continued on page 6)*



Kelly (second from left) with members of the Rabies Program team and Peter Costa.

PERU – HELPING TO MAKE RABIES HISTORY WITH STAMPS

The first postal stamp to commemorate the inaugural World Rabies Day was released on July 2, 2009 with an official ceremony during the Annual National Zoonoses Meeting in Lima, Peru. 50,000 stamps were issued at 5.5 PNS value each (\$1.75 USD) and will be available until sold out. The stamp shows the image of a healthy dog and the official WRD logo in Spanish with the picture of a microscopy rabies positive test as the background. The postal use of this commemorative stamp will help spread the word about WRD and will also be an excellent item for stamp collectors around the world.

Author: Dr Sergio Recuenco



PATRON OF THE ALLIANCE VISITS TANZANIA

Prof. Alexander McCall Smith, patron of the Alliance and world-renowned author of the No. 1 Ladies Detective Agency series, spent several days in Tanzania in June to lend his support for the Alliance and its efforts to control and eliminate rabies throughout the world.

The visit was hosted by Dr. Sarah Cleaveland, a Director of the Alliance who has worked for many years on rabies control projects in Tanzania. It provided the opportunity for Prof. McCall Smith and his wife, Elizabeth (a medical doctor from the UK) to spend several days in villages neighbouring the Serengeti National Park to see at first hand some of the problems that people face in rabies-endemic areas and the approaches that are being used to control and prevent deaths from the disease.

The Alliance team was very fortunate to be joined by Nicky Lankester, an award-winning documentary film-maker (see www.nickylankester.com), who was able to collect several hours of video material that we hope will form the basis for a television documentary about rabies and shorter clips for raising awareness and funds for rabies control on the Alliance website, as well as Prof. McCall Smith's own website.



Alexander McCall Smith talking to Nyamariwa Batagenda and her teacher about being bitten by a rabid jackal.



At one of the dog vaccination campaigns in Ngarawani village.

During four intensive days in Tanzania, the team visited several villages to meet people who had been exposed to rabies, including a 13-year old girl, Nyamariwa Batagenda, who had recently been bitten by a suspected rabid jackal. While her family was able to raise funds for the first injection of the post-exposure rabies course, money for the remaining vaccinations was stolen, so she was unable to complete the full course. The Alliance team was able to provide vaccine and Prof. McCall Smith accompanied Nyamariwa to the local hospital where she received her second vaccination. He was very touched by her reaction after she had received the vaccine – a spontaneous expression of huge relief – as she was clearly very much aware of the dangers of a rabid animal bite and that without the full course of vaccination she might die. He also heard several harrowing accounts from families touched by rabies, including the parents of a girl who had recently died, and a farmer who had lost almost all his livestock, and thus his livelihood, to the disease.

On a positive note, Prof. and Dr. McCall Smith also saw the enormous enthusiasm among villagers for dog vaccination campaigns, and the impact that these campaigns have had in controlling the disease and in some areas eliminating rabies entirely. The team visited Wasso Hospital, a mission hospital serving Maasai communities to the east of the Serengeti, where there had been no cases of rabies bite injuries reported to the hospital for over two years after a major epidemic in 2003-4. They were left in no doubt about the benefits of dog rabies vaccination and the impact that relatively simple interventions can have in reducing and eliminating the threat of this disease.

We look forward to future interactions with our patron and plans are underway for further media engagement and several fund-raising initiatives. We are enormously fortunate to have the support of Prof. McCall Smith –his eloquence, sincere concern about rabies, and his worldwide appeal are an invaluable asset in our global battle against rabies.

Contributed by Sarah Cleaveland of the University of Glasgow and a director of the Alliance.

ZERO RABIES CASES IN CHENNAI

For the first time since records began, there have been no human rabies deaths in Chennai (formerly Madras) for over a year. This announcement came from the Health Officer of Chennai Corporation to the Times of India on July 10, 2009.

In 1964, after a great deal of study, the Blue Cross of India (BCI) came to an inescapable conclusion – the catch-and-kill programme, used since 1860 as a means of controlling street dogs and reducing the incidence of rabies in humans, had failed to achieve either. In its place, the BCI proposed an aggressive catch-spay-vaccinate and release programme, called the ABC (Animal Birth Control) programme to show that the control of the street dog population was as simple as ABC! For 30 years, the Blue Cross kept up their lobbying, but no change in policy occurred. In these 30 years, the number of dogs killed by barbaric, crude electrocution went up from 16,000 in 1964 to as many as 135 per day in 1996.

In 1996, the Mayor of Chennai, M. Abul Hassan, temporarily stopped the killing and gave BCI six months to prove that ABC works. Despite this very short period, the trial went ahead. At the end of six months, the Mayor was amazed to find most dogs in the trial area had notched ears, indicating that they had been spayed and vaccinated.

In September 1996, the whole of Chennai changed to 'no-kill' as far as the street dogs were concerned. The Blue Cross of India and People for Animals carried out well over a 1,000 spays every month for the next several years. Every year that went by saw a drop in the number of rabies cases, from a high of 120 reported human cases in Madras in 1996 to five cases in 2004. This progress was made in spite of the size of the city growing massively and the population doubling over the same period. No longer could one see a pair of mating dogs or the usual pile of mangy dogs by every dustbin in the city. One hardly ever saw a mother dog and its pups in the city. Then on June 10, 2009, the Commissioner of the Chennai Corporation announced that there had been no case of rabies in 2008. Chennai had finally been rabies-free for well over a year!

Meanwhile, in 2001, the Government of India, seeing positive results in Chennai and Jaipur (which had also run an effective ABC programme) passed the Dog Control ABC Rules which made it illegal to kill a dog unless it was terminally ill or badly injured.

Instead a nationwide ABC programme started. Enforcement is still weak and sporadic mass killing does still take place on occasion in a knee-jerk reaction to complaints from the public, but usually only where no effective ABC programme has been set up.

Encouraged by the Chennai story, the Ministry of Environment & Forests is now working out a roadmap for a rabies-free India which hopefully will be in place in a few months. If the program is properly implemented, India will no longer be the largest contributor to the world's human rabies cases as it is at present.

Contributed by Dr Chinny Krishna, Chairman of the Blue Cross of India, Chennai. More details and data from the programme are at www.bluecrossofindia.org/abc.html and the news report is available via the Alliance's website under 'Rabies in the news'.



Some of the winners at the Blue Cross Well Dog show for non-pedigree, mongrel and rescue dogs. The white dog sports a notched ear showing it was part of the ABC programme.

ANTI RABIES CAMPAIGN IN JORDAN

In 2008, SPANA (Society for the Protection of Animals in Jordan) and the Jordan Ministry of Agriculture started a program to vaccinate dogs belonging to farmers in certain areas of the country against rabies.

As it would be a big campaign and could not be done without help, SPANA trained 57 vets and technicians from Government departments in different areas of Jordan. The largest number of staff were trained in the Karak Governorate (27), followed by Ma'an (9), and Ajlun (6), with smaller teams trained in Amman, Aqaba, Tafila and Al Riweashed. SPANA also supported them with dog control equipment to allow them to carry out the work.

Rabies vaccine and identification collars were provided by the Ministry of Agriculture. So far, 815 dogs and 379 cats have been vaccinated (total 1194) and the vaccination program is still continuing.

Contributed by Dr. Ghazi Mustafa of SPANA in Jordan.

More information about SPANA's work in Jordan and around the world is available from www.spana.org.



FAST-EVOLVING RABIES VIRUS

A rabies virus variant first identified in skunks and now foxes in the state of Arizona, US, is evolving faster than any rabies virus on record. Rabid skunks and foxes are testing positive for a rabies strain commonly associated with big brown bats. This in itself is not unusual, but the virus is now transmitting efficiently between skunks and foxes, and appears to be doing so not just through biting and scratching but through simple socializing involving infected saliva exchange, so called 'passive transmission'. Usually the secondary species (a skunk or fox bitten by a bat) is a dead-end host unless it spreads the infection through a subsequent violent attack. Passive transmission was documented between skunks in a 2006 study, and now genetic studies suggest foxes are also spreading the new strain to each other.

Rabies has continued to be confirmed in Arizona skunks for the past 8 years, despite periodic vaccination campaigns. To date, in 2009, county officials have documented over 30 rabid foxes in the Flagstaff area. Now laboratory studies at the US Centers for Disease Control and Prevention (CDC) in Atlanta appear to confirm that the fox and skunk rabies viruses are mutated forms of the bat rabies virus variant. "This sort of rapid evolution is exactly what worries public health officials when it comes to all manner of viruses. Virologists haven't seen such fast adaptation to a new species in rabies before. That's why Flagstaff is such an interesting story worldwide," said David Bergman, the US Department of Agriculture's (USDA) state director for Arizona. "We're watching evolution in action on the ground."

The concern is that this fast-evolving rabies virus could infect humans. Recent expansion and development around Flagstaff, often into wooded areas, has increased habitat and food sources for bats, skunks, and foxes. Skunks live under houses and bats adapt well to attics and roof spaces. As additional potential rabies host species congregate in the region, the chances for transmission increase and each new infection provides another opportunity for the virus to mutate into a more virulent form. "That's a pattern that we see all over the United States," Dr Charles Rupprecht, Head of the Rabies Section at CDC said, "Similar suburban development in the eastern US in the late 1970s, led to the spread of raccoon rabies from the Canadian border to the Deep South." The appearance of the new rabies virus variant in foxes is particularly worrying as these hosts travel much further than skunks.



Young skunks.

However, no-one is expecting the newly identified rabies virus variant to become an easily contagious, H1N1 flu-like epidemic among humans. Rabies is contracted through direct contact into open wounds or mucous membranes with infected saliva or tissue and the incubation period for rabies is generally long enough to provide time for post-exposure prophylaxis to protect exposed persons.

Rabies cases among skunks and foxes in Arizona are expected to increase when spring and summer mating seasons bring potential pairs and rivals together. Flagstaff declared a 90 day pet quarantine (all dogs on leashes and all cats indoors) beginning in April 2009. A wildlife vaccination program could stem the virus' spread. Local and state officials enacted vaccination programs in northern Arizona in 2001 and 2005 but discontinued these efforts after having 2 years without any rabies cases. Unfortunately, vaccination funds are currently difficult to obtain.

Adapted from a [National Geographic News story](#) by Anne Minard posted on [Promed Mail](#). Current Rabies statistics are available from the [Arizona Department of Health Service](#).

INTERNSHIP AT CDC (continued from page 3)

I also participated in sampling and analysis of several ongoing animal and human vaccine studies. I reviewed materials for inclusion in a World Rabies Day toolkit being distributed to state and local health departments and met with Peter Costa of the Alliance during his visit to the CDC campus.

In addition to the experiences in the Rabies Program, I participated in other activities at CDC, attending the Epidemiology Grand Rounds and the National Center for Zoonotic, Vector-Borne, & Enteric Diseases department seminars. I also toured the BSL-4 facility and the CDC Emergency Operations Center. During my free time I was able to explore a little of Atlanta, I visited the Georgia Aquarium and Stone Mountain, and my parents drove down from Ohio for a weekend.

I thoroughly enjoyed the two-week internship in the Rabies Program at CDC. It was an incredibly valuable experience and a wonderful opportunity. I hope to build upon the relationships established as well as become more engaged in rabies work and the mission of the Alliance.

"Thank you" to the researchers and employees in the Rabies Program for sharing your enthusiasm and research with me. And "thank you" to the Alliance for sponsoring the internship, supporting student involvement in rabies programs and for their commitment to alleviating the burden of human and animal rabies.

Contributed by Ms Kelly Patyk of Colorado State University

RABIES PRE-EXPOSURE VACCINATION IN TRAVELERS: COSTS AND RISKS

Although there has been at least one unvaccinated survivor of rabies, this should be considered to be an unique exception, the outlook for most rabies patients is certain death and the best protection against rabies continues to be prevention through vaccine administration. Half of the estimated 55,000 annual human deaths occur in children under 15 years of age in areas where rabies-infected dogs abound. Human rabies is infrequently reported in the US, generally occurring due to a failure to seek appropriate post-exposure prophylaxis (PEP) after an exposure to a rabid bat. While rabies infrequently occurs in vaccinated domestic pets in the US, an ongoing rabies epizootic in raccoons, skunks, and other wild animals can cause rabies to spillover into unvaccinated pets. However, many people may encounter rabies while traveling to endemic countries as tourists, adventure travelers, cavers, missionaries, business travelers, expatriates, or VFR's (visiting friends and relatives in their country of birth). Many travelers visit or work in rabies-risk rural areas, yet are often uneducated, unvaccinated, and unprepared.

Education is critical to reduce the risk of exposure, especially when accompanied by the vaccination and sterilization of dogs in canine rabies endemic areas. In addition, the risk of rabies from cat bites is not well understood by most travelers. Both the WHO (www.who.int/ith, www.who.int/rabies/en) and the US CDC (www.cdc.gov/travel, www.cdc.gov/rabies) travel guides have updated advice for travelers. While World Rabies Day activities (www.worldrabiesday.org) have made great strides in raising awareness in high-risk countries, the issue of pre-exposure immunization (PREP) should be re-considered, both for children in affected areas, and for high risk travelers. Recently, Gautret et al. (J. Travel Med. 2007;14:136) reported that about 85% of travelers experiencing animal associated injuries had traveled for less than 3 months.

PREP has been shown to be immunogenic and safe by all WHO/CDC recommended Intra-muscular (IM) or Intra-dermal (ID) regimens, although only the quite expensive IM route is currently used in the US. The cost per dose of rabies vaccine in our local midwest area is US\$230 - \$330, depending on the provider, and the cost for complete PEP including HRIG can exceed \$4000. One significant advantage of PREP is that it eliminates the need and expense of HRIG after exposure (only 2 booster doses of vaccine on day 0, and 3). Rabies biologics are less expensive in Asia. One Thai study estimated the cost of 3 IM doses at \$18.75-\$34.50; the Thai Red Cross ID using PCEC vaccine at \$2.00-3.75; and the cost of 2 PEP boosters at \$18.00-\$21.75 (Chulasugandha et al. Vaccine 2006;24:1478). In addition, most rabies-exposed people in developing countries where rabies is endemic have incomes of about U.S. \$1.00/day, making the \$40.00-\$50.00 cost for IM PEP regimens prohibitive (www.who.int/rabies/rabies_post_immunization/en/index.html)

PREP in Vietnamese infants as part of routine vaccination has been shown to be immunogenic and without adverse effects or diminished titers of other vaccines (Lang et al. J. Trop. Pediatr. 2009;55:26). This has potential for reducing rabies deaths in children, but has yet to be implemented on a broad global scale.

In Latin America, imported cell culture rabies vaccines are replacing mouse brain tissue vaccines and at least one local vaccine manufacturer has been established. Most major Asian health centers have modern vaccines available, but rabies immunoglobulin remains scarce or expensive. Expatriates can obtain PREP upon arrival, but short-term travelers must get PREP (Minimum of 3 weeks prior to departure) or seek proper PEP if exposed. An exposure can interrupt a trip either to fly home or to travel to a local major center where vaccine and immunoglobulin are available. While abbreviated PREP may be possible in the future, (Khawplod et al., J. Travel Med 2007;14: 173), no shortened pre-exposure regimens is currently approved by WHO. Conversely, anamnestic responses have been demonstrated in patients receiving boosters 14 years after rabies vaccination.

The key to rabies prevention remains education and vaccination/sterilization of dog populations in enzootic areas. However, health providers should also counsel travelers (e.g. cavers) about risk-avoidance and the potential value of pre-exposure vaccination for high-risk areas.



Dr. Robert E. Dedmon

Contributed by Robert E. Dedmon, MD MPH FACP FACOEM, Department of Population Health, Medical College of Wisconsin, Milwaukee, US

Conference Announcements

Rabies in the Americas (RITA) XX • October 19th - 23rd, 2009, Quebec, Canada • details at www.rita2009.org

Now you can follow the Alliance on Twitter! Go to <https://twitter.com/RabiesControl>

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