



RABID BYTES

The Newsletter of
The Alliance for Rabies Control

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Editorial

As you will read in this month's Rabid Bytes, the first World Rabies Day was a tremendous success, thanks to the commitment and involvement of the global rabies community. This grass roots initiative really captured the hearts and imagination of the world and a wonderful video showing global WRD events can now be viewed or downloaded at: www.worldrabiesday.org We have already received many enquiries from our partners and event coordinators to be involved in this year's WRD which will occur on September 28, 2008. As you will read in Peter Costa's article below, by all of us working together in different communities across the world, we managed to vaccinate hundreds of thousands of animals against rabies and educate over 50 million people about how to prevent rabies.

ARC is also very pleased to announce the winners of the two awards associated with WRD 2007. The winner of the essay competition for a trip to an African rabies research site is Mr James S Desmond from the Class of 2008 at Tufts University and the winner of the rabies symposium for

involving the highest percentage of the veterinary student body in WRD 2007 events is the Tuskegee School of Veterinary Medicine in Alabama. We express our congratulations to both winners for all of their efforts, to all of the students who submitted essays and to the rabies experts who took the time and effort to review the students' essays.

You will also find exciting news in this issue about the new canine rabies elimination project in Turkey, information about the rabies program in the Philippines, a new rabies serological test that may help laboratories with limited resources to conduct serological assays in their own facilities, and much more. As always, we personally invite you to contact us if you would like to publish an article in our newsletter.

Lastly, ARC would like to thank all of you who were involved in WRD 2007 and encourage everyone to begin to plan activities and get involved in WRD 2008. Together we truly are making rabies history!

Best wishes,
Debbie Briggs, Executive director, ARC

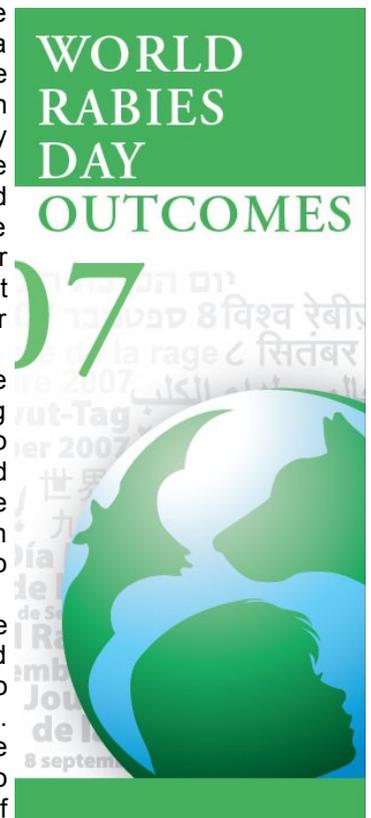
World Rabies Day 2008 – Early Momentum

The phenomenal global response to the inaugural World Rabies Day demonstrates the recognized need for action to control this preventable disease. Event summary data collected from the sensational feedback of World Rabies Day event coordinators around the world indicates that nearly 400,000 people participated in an event, with educational outreach extending to over 54 million people! At the forefront of this effort were the veterinary students, with participation from approximately 50 Colleges of Veterinary Medicine worldwide. "Veterinary students are the future front-line advocates of rabies awareness and the significance of their continued participation in this initiative is crucial if we hope to make global rabies prevention and control a reality" said Dr. Deborah Briggs, Executive Director for ARC. The campaign overview and its outcomes have been summarised in the leaflet pictured, and a short video of images from WRD 2007 events is also available on our website.

With just over 200 days left until World Rabies Day 2008, the enthusiasm behind the second campaign is spreading at an astounding rate and events are already in the planning stages. "Last year's campaign clearly energized community based health organizations to get involved and the momentum going into the 2008 campaign is really extraordinary and quite ambitious," says Peter Costa, Global Communications Coordinator for ARC. "We're seeing World Rabies Day fever. Local event planners from last year are starting early in anticipation of a much larger and more collaborative event. Additionally, those unable to organize an event last year are eager to get on-board and plan their first event."

World Rabies Day is a major achievement for the rabies prevention community and the WRD campaign remains committed to its objective of raising global awareness and resources to enhance the prevention and control of rabies. The WRD team would like to renew its invitation to everyone involved in public health to be a part of this great initiative. World Rabies Day this year and future years will be observed on September 28th. The date was moved to September 28th to recognize the anniversary of Louis Pasteur's death and to celebrate his contribution to preventing human rabies through the successful development of the first efficacious rabies vaccine.

This piece was contributed by Peter Costa of the World Rabies Day Team. The WRD 2007 leaflet can be downloaded from: www.worldrabiesday.org/downloads/WRDOutcomes2007.pdf and the movie seen at: www.worldrabiesday.org/make_movies_en.php



EU Supports Turkey's Efforts In The Fight Against Rabies

Although Turkey is not yet a member state and despite pending accession status, in 2005 the European Union (EU) approved the financing of more than 10 million Euros for a comprehensive nation-wide rabies control program in Turkey. The resulting project "Technical Assistance for Control of Rabies Disease" was launched in October 2007 and will continue for 17 months. This project is headed by the Turkish General Directorate for Protection and Control, part of the Ministry of Agriculture and Rural Affairs and managed by an international consultant consortium including PAN Livestock Services Ltd of the UK, Jules Van Lancker s.a. of Belgium, the Veterinary Laboratory Agency of the UK and the Friedrich-Loeffler-Institute of Germany. The overall objective is to contribute to improved human and animal health status including reduced infection risk from rabies at a national level.



Turkey is the only European country where dog mediated urban rabies predominates, and there is close interaction between dogs and the human population. More than 3/4 of all rabies cases were reported in dogs with occasional cases observed in other domestic animals. Rabies is reported from most regions of Turkey, with the exception of areas bordering the Mediterranean Sea and the central parts of Anatolia. Until the late 1990s the incidence of dog rabies was in decline, partly due to previous attempts to control the disease focusing on the control of stray dogs and the vaccination of potential rabies hosts. However, increasing numbers of dogs have reversed this trend in recent years, resulting in a few human casualties and more than 100,000 Post Exposure Prophylaxis vaccinations

administered annually. Additionally, rabies recently emerged within the fox (*Vulpes vulpes*) population, mainly in the Aegean region in the western part of the country.

Raising public awareness of rabies and the establishment of a functioning EU-compliant rabies control system are paramount tasks of this project and include education, improvements in surveillance, diagnostics and vaccination of dogs as the main reservoir host. Oral vaccination of foxes will be conducted in affected regions early in 2008 and leaflets such as the one shown have been prepared in order to educate the public.

This piece was contributed by Winfried Müller, teamleader of the project TR.503.06/100, Thomas Müller, and Conrad Freuling of the Friedrich-Loeffler-Institute Germany. The picture of the stray dogs is courtesy of Dr Adriaan Vos from IDT-Biologika GmbH, Germany who spent 5 years in Turkey developing oral vaccination strategies for dogs. For further information go to: www.kuduzpro.org

Congratulations SCAVMA Winners!

As part of World Rabies Day 2007, the Student Chapters of the American Veterinary Medical Association (SCAVMA) set all the US Colleges of Veterinary Medicine (CVM) a couple of challenges. The first was to involve as many of the school's student body in activities to mark WRD. The second was an individual student essay competition.

These challenges were well met with a total of 24 American Veterinary schools holding events to mark WRD, involving over 6,900 participants, providing 600 vaccinations and helping to educate more than 55,000 people. The winning CVM was the Tuskegee School of Veterinary Medicine. They managed to involve over half of their student body in their "Mutt Strut" dog walk, Rabies Forum and 5K Run (pictured). As a reward for their efforts, a Symposium on Rabies will be held at their College and will include presentations from global rabies experts. The Symposium is currently scheduled to occur this fall. We hope this motivates them further for future WRD events!



The essay competition attracted 29 entries, and an impressive standard of writing. Choosing a winner was difficult, but eventually Mr. James Desmond, from Tufts University (Class of 2008, also pictured) was selected by the committee. His essay, describing the important role veterinarians play in public health and zoonotic disease prevention and control, won him an externship at a rabies research field site in Africa where he will gain hands on experience in a project working toward canine rabies and improving education in the local community.

The World Rabies Day Team would like to thank everyone again for their tremendous partnership and collaboration in helping to make the inaugural campaign a success! We are looking forward to World Rabies Day 2008 as we continue to "Work Together to Make Rabies History!"

Written by Louise Taylor and Peter Costa of the World Rabies Day Team

Rabies Scouters Organized For Advocacy Against Rabies

On March 27, 2007, the island of Bohol in the Philippines launched its Rabies Eradication Campaign Program in an effort to make the province safer for habitation and tourism. The program ambitiously aims to achieve a rabies incidence of zero for the island by the year 2010. A major strategy adapted for the realization of the campaign is the participation of the entire community: the government, the private sector and children and youths.



Anchored on the belief that children are the future generation, the Bohol Provincial Rabies Prevention and Eradication Council (BPRPEC) has conceptualized and initially organized a pilot scheme of Rabies Scouters. Rabies scouters are young students whose primary purpose is to lead the advocacy campaign against rabies in their respective schools, homes and community. Recruited rabies scouters have been given extensive orientation on important aspects of the disease and the rudiments of responsible pet ownership.

During the 2007 World Rabies Day Celebration, the Scouters held a "Candle-Lighting Ceremony" offering prayers for those who died of rabies (pictured). During the ceremony, various rabies-related activities took place. These included viewing of rabies film shows, rabies information and photo gallery, and participation in games and puzzles. As the initial response to the pilot was

positive, the BPRPEC in coordination with the Department of Education is planning for the full institutionalization of Rabies Scouters in the elementary schools of the province.

This piece was contributed by Dr. Stella Marie Lapiz, Provincial Veterinarian, Bohol, Philippines. An article on Rabies Scouters from the Philippine Information Agency is available at: www.pia.gov.ph/?m=12&sec=reader&rp=7&fi=p060602.htm&no=61&date=

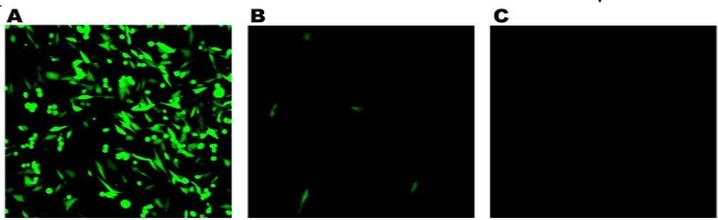
A Hybrid Virus Detects Rabies Virus Neutralising Antibodies

The recent elimination of canine rabies in North America is an excellent example of how crucial efficacious vaccines are in controlling the spread of the virus. Their ability to confer herd immunity, when used in far reaching administration programs, makes it possible to tackle rabies head on. To aid vaccine campaigns, epidemiological surveillance of dogs and wildlife needs to be conducted concurrently in order to evaluate their efficacy and ensure widespread protection. Current blood tests for rabies viruses either require high-level biosafety laboratories, detect both neutralising (ie. protective) and non-neutralising antibodies or are not 100% accurate. While vaccine campaigns are being initiated in countries that bear the burden of rabies infections and fatalities, it is often the case that the screening of blood samples from vaccinated individuals cannot be undertaken *in situ*. This hampers the chance of achieving a similar goal to that realised in North America.

Using technology called viral pseudotyping, where the outer coat of one virus is put onto the body of another, we have developed an assay that can be conducted in low-level containment laboratories because the virus is only infectious for one cycle and cannot replicate. Rabies pseudotypes were produced by combining the rabies CVS-11 envelope glycoprotein with the human immunodeficiency virus core. With careful manipulation of the pseudotype, tests for neutralising antibodies against rabies virus can be undertaken using enhanced green fluorescent protein (GFP) or luciferase as reporter genes in the pseudotype. Serum is mixed with the rabies pseudotype, incubated with

mammalian cells and the reporter signal is read 48 hours later (pictured). Initial validation has shown our test to be 100% concordant with the OIE/WHO "gold-standard" Fluorescent Antibody Virus Neutralisation assay with respect to detecting positive and negative samples, and antibody titres obtained using the two assays correlate strongly.

We are currently expanding the reporter repertoire to include Lac Z as this would allow results to be processed



The green (GFP reporter) signal indicates rabies virus. Compared to no serum (A), human immune serum (from a vaccine recipient) shows lower viral load at a 1/40 dilution (B) and 1/20 dilution (C), demonstrating protective antibodies.

using an ELISA plate reader. Each reporter protein has their own advantages: Luciferase enables high throughput, GFP removes the need for expensive reagents, while maintaining some of the high throughput potential, and Lac Z does not require expensive reagents or equipment. We are also in the process of further validating the assay, including preparing a proficiency panel of pseudotypes to distribute to various laboratories in the WHO/OIE network of rabies laboratories, and expanding the range of lyssavirus genotypes that can be pseudotyped.

This piece was contributed by Edward Wright of University College London, UK and Tony Fooks of the Veterinary Laboratories Agency, Weybridge, UK. For further information please email t.fooks@vla.defra.gsi.gov.uk or edward.wright@ucl.ac.uk

Rabies in Russia

Most of Russia has enzootic rabies. Rabies virus circulation is maintained predominantly by arctic foxes in the far north, and by red foxes in moderate latitudes. Raccoon dogs are involved in the virus circulation in the Far East and European and Ural regions, and corsac foxes maintain the virus in steppe territories concurrently with red foxes. Spill-over transmission is registered sporadically in wolves, badgers and other carnivores. The wide belt of conifer taiga forests is considered free of rabies, presumably because canid population density is limited there due to high winter snow. Genuine dog rabies is still present in northern Caucasus only. Nevertheless, dogs and cats are the most common source of human disease.

Rabies is a notifiable disease, but only limited passive surveillance is carried out, and diagnosis is performed by regional veterinary laboratories. From 1,500 to 5,000 rabid animals are reported annually. Of these, wild carnivores constitute about 40%, livestock 25%, dogs 20%, and cats 15%. Oral rabies vaccination of wildlife has been performed in enzootic territories over the past decade, however the baiting density is usually limited to 1-2 baits per square kilometer. Parenteral vaccination of dogs and cats is compulsory, but a significant proportion of pets is vaccinated only in metropolitan areas. In the rural areas mostly affected by rabies, no more than 5-10% of these animals are vaccinated.

Rabies prophylaxis in humans is performed by local surgeons. Every year about 450,000 people are admitted with animal bites, and 40-45% receive postexposure prophylaxis (PEP). The biologicals used for PEP include horse anti-rabies immunoglobulin of Ukrainian and Russian origin. Supply of foreign human anti-rabies immunoglobulin is limited. Vaccines are produced locally in primary BHK cell culture, using rabies virus strain Vnukovo-32 (SAD derivative). A low concentration of this vaccine is administered using a long-term subcutaneous schedule (7 to 21 doses, 3 to 5 ml each), whereas the concentrated version of the vaccine is administered according to the "Essen" regimen.

Over the last decade, 7 to 22 human rabies cases have been registered in Russia annually. The majority of these patients did not apply for PEP (64%), PEP was not administered (7%), or deviations from the regimen occurred (8%). However, about 10% of human cases are referred as vaccination failures. No data are provided for these cases regarding the delay of PEP, appropriateness of immunoglobulin administration, or other details. Most of these failures occurred after severe, multiple bites in high-risk areas, including the head, where the incubation period of the disease was short.

This piece was contributed by Ivan Kuzmin of the Rabies Unit, Centers for Disease Control and Prevention (Atlanta, USA) and Elena Poleschuk of the Institute for Infections with Natural Focality (Omsk, Russia). Further information (in Russian) is at: <http://medi.ru/doc/15b3701.htm>



Rabid Alaskan Wolves Attack Village Dogs

In the SW Alaskan town of Marshall, villagers have been dealing with rabid wolves roaming into the area, attacking their sleigh dogs and posing a threat to children. Nick Andrew, Jr., Tribal Administrator for the Ohogamiut Traditional Council, said people are very concerned about the likelihood of a widespread rabies outbreak, as 25 dogs were directly or indirectly affected by the wolf attacks. "People here are on alert status, parents or guardians are escorting their children to and from school, and children are ordered to be home before dark for their safety," Andrew stated in a public notice.

Three sled dog yards were attacked by wolves on the evening of October 25, 2007. Later that evening, more dogs and pups were found dead or bloodied by several owners, some near a wooded area which provided cover for the marauding wolves. Tests performed by the Alaska State Virology Laboratory confirmed that a 17 month old female wolf, killed by a village resident, was positive for rabies. There are concerns that others in the wolf pack reported near the village may have rabies. "Rabies virus is present in saliva, and when several animals eat from the same source, the virus can be quickly spread to other members of the pack," says Dr. Kimberlee Beckmen, a wildlife veterinarian in the Alaska Department of Fish and Game.

According to Andrew, local men armed themselves to protect the sled dogs and the community. They noticed that the wolves had no real fear and at times ran within a few feet of them. "Within the next few days wolves were sighted around the village wandering on the roads and near homes. People were basically baffled about this odd behavior of the wolves and many expected the worst."

Not all dog owners in rural Alaska have access to the required immunizations, causing fear of a rabies outbreak in the village. All dogs and cats in Marshall were regularly vaccinated in the past when a Village Public Safety Officer was in place. Many unvaccinated dogs that were exposed to the wolves have now been euthanized. The Alaskan Division of Public Health advised dog owners in Marshall that if their dogs were previously vaccinated to have them revaccinated, and then confine and observe them for 45 days to make sure they didn't develop the disease.

Only 18 wolves have tested positive for the disease in Alaska since 1977. The last confirmed case occurred in 1998 in a wolf from the Dillingham area. The disease is more commonly found in foxes in coastal areas, and some 35 animals have tested positive for rabies since 2006, along the west coast and North Slope of Alaska. As a result, efforts were made to vaccinate dogs in several Yukon-Kuskokwim Delta villages in 2007.

Edited from an article published in the Native American Times, 14th Jan 2008, sent by the editor, Liz Gray.

An Alaska Department of Fish & Game Press Release is available at: www.adfg.state.ak.us/news/2007/10-31-07_nr.php

World Rabies Day 2007 Encourages Rabies Control in Haiti

Human deaths from canine rabies in Latin America have been reduced by around 90% in the last 20 years. In 2006, 29 human cases of dog origin were reported in the region of which 11 (38%) were reported from Haiti. Recently, the authorities have outlined a systematic and intensive effort to bring this disease under control. After initial implementation of this plan, Haiti has reduced the number of cases by half.

There is a strong political will in Haiti to control rabies, recently expressed through the celebration of “Journée Mondiale de la Rage” (World Rabies Day) in Port au Prince, Haiti, September 2007. A press conference was held by the Ministers of Public Health and Agriculture and the Representative of the Pan American Health Organization/ World Health Organization (PAHO/WHO), followed by a technical conference on control and prevention of rabies in which 120 people participated. During this meeting, a rabies control plan for Haiti was formulated. Five countries in the Americas (Brazil, Canada, Cuba, Haiti and Dominican Republic) are part of a Technical Cooperation between Countries (TCC) agreement coordinated by PAHO, and supported the Plans for Control of Rabies in Haiti. This involved financial support from the countries and PAHO/WHO (US \$130,000) along with a donation from Brazil of 500,000 doses of rabies vaccine for dogs. These resources as well as resources from Haiti’s Government will provide the necessary action for the control of rabies transmitted by dogs.

Objectives of TCC for 2007 included an intensive country-wide dog vaccination campaign and further development of a comprehensive rabies prevention and control plan. The World Rabies Day committee formulated a prevention strategy including: human rabies post-exposure prophylaxis, dog vaccination campaigns, and enhancement of rabies surveillance, diagnostic and epidemiologic capacity.

During a meeting last December in Port-au Prince, the Haitian Representatives from the Ministries of Agriculture and Public Health presented their National Plan to representatives from the countries of TCC as well as representatives from The French Cooperation and IICA (pictured). Participants also visited the city of Jacmel where they observed a dog vaccination campaign.

The strongest part of this work plan is the creation of an alliance between human health and agricultural sectors with the goal of working to improve the health of animals and humans. The plan for prevention and control of rabies in Haiti is a tangible demonstration of implementation of the “One medicine” concept.

This piece was contributed by Cristina Schneider, Jean Philippe Breux, Mariela Canepa, Max Millien, Jocelyne Pierre Louis and Joseph Thomas, Pan American Health Organization and Haiti Government rabies team. Cathy Hanlon helped with translation. For more information about rabies in Latin America visit www.paho.org



Call for Translation Volunteers for WRD

The World Rabies Day Team is requesting volunteers to help translate the WRD logo and educational materials. The 2008 logo is currently available in 19 languages, but with the continuing requests from additional countries to have information in their local language, we urgently need help with translations.

If you are interested in contributing to the campaign by volunteering in this way, please send your name, contact information and language(s) for which you could provide translations to: peter.costa@worldrabiesday.org

Upcoming Meetings



The 19th annual RITA meeting will be held from September 28 – October 3, 2008 at the Centers for Disease Control and Prevention in Atlanta, Georgia, USA. Further details will be available shortly at www.cdc.gov/rabies/events/rita.html

The Southern and Eastern African Rabies Group 2008 meeting will be held in Gaborone, Botswana from 25-28 August 2008. More information is available from Louis Nel at: Louis.Nel@up.ac.za



The editor of the ARC newsletter is Louise Taylor. Louise can be contacted at louise.taylor@rabiescontrol.org If you have any news items or information of interest to those wanting to reduce the

burden of suffering from rabies, then please contact Louise. For information about rabies and the Alliance for Rabies Control, see www.rabiescontrol.org