



RABID BYTES

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The newsletter of The Global Alliance for Rabies Control

EDITORIAL

Better quality information and better access to this information are fundamental to a rabies-free world, so it is exciting to announce several developments in this area.

To improve the quality and accuracy of knowledge of rabies prevention among at-risk populations, GARC is excited to announce the Rabies Educator Certificate (REC). This free online course aims to qualify people working in at-risk communities to communicate accurate rabies facts and key prevention messages. You can read more about the REC [here](#).

Two recently published studies, by Schwiff, Hatch et al. and Taylor, Knopf et al. respectively, empower policy makers and program decision makers with improved information too.

The first, *Towards Canine Rabies Elimination in KwaZulu-Natal, South Africa: Assessment of Health Economic Data*, provides an economic analysis of the BMGF-supported KwaZulu Natal rabies control program in South Africa, quantifying the total cost per dog vaccinated, cost per PEP administered and cost per human life saved. These data enable informed decision making both for the on going project in KZN and other countries considering investments in rabies control.

The second, *Surveillance of Human Rabies by National Authorities – A Global Survey*, focuses on the reporting of human rabies incidence in different countries. The study found that almost 30% of surveyed countries (with populations totalling 2.5 billion people) had ineffective and therefore inaccurate rabies surveillance. Most of these were countries in Africa and Asia considered high-risk. By highlighting this gap in understanding of the true scale of the problem, this paper lays the foundation for improved reporting and better awareness of the true cost of rabies. Information that will save lives.

These and other developments in raising awareness of issues around rabies prevention are fundamental to saving the estimated tens of thousands of lives needlessly lost to the virus every year.

As always, we are grateful to you for the role you play in raising awareness too. Please connect with us on [Facebook](#) and [Twitter](#) to share your work and feel free to forward this newsletter to others who may be interested. If you have any comments about these or any of the other stories in this newsletter, please [get in touch](#).

NEWS FROM GARC AND WRD

Grenada Team Wins Global One Health Challenge

Congratulations to the team from St George's University, Grenada, for winning the first Global One Health Challenge!

Their entry for this competition, entitled *Tackling Rabies: One Island at a Time*, truly demonstrated the One Health approach, with veterinary and medical students working together and involving the government and other student groups. They used creative ways to reach a range of audiences and increase awareness of rabies prevention in their region, focusing primarily on rabies education, community outreach initiatives, and rabies fundraisers.

Among their initiatives were:

- Live television and radio interviews
- Outreach clinics (including a One Health One Medicine clinic)
 - over 200 animals received free health checks and other veterinary services including deworming, vaccination, tick and flea preventatives
 - rabies flyers were distributed to hundreds of Grenadians
 - rabies posters were erected in the communities
 - medical students provided 150 free examinations to local Grenadians, including free vision and hearing tests, blood pressure tests, blood sugar tests, breast exams.

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Online Course for Rabies Educators Launched

GARC is pleased to announce the launch of the first of its online education programs, the Rabies Educator Certificate (REC).

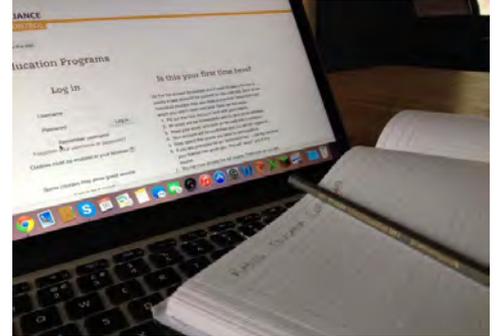
This is a free web-based course for individuals such as community educators and health workers who would like to learn about rabies and how to teach others to prevent rabies and reduce deaths in their communities.

The REC has been developed to help meet the need to effectively disseminate accurate, life-saving information to at-risk communities.

The course is open to anyone but aimed specifically at people who work regularly in these communities, and who are in a position to address community education on rabies. These people may be health/veterinary/community personnel who regularly visit communities, or it may be key people within the communities themselves who want to do something about rabies education.

This online course has five modules:

- What is rabies and how do people and animals get the disease?
- How to avoid dog bites and prevent rabies
- Caring for animals
- Understanding the role of a community educator in preventing dog bites and rabies
- Communicating with people



Continued on page 4...

...Global One Health Challenge continued from page 1.

- A Gala for Rabies Awareness that brought together St George’s University faculty, students and staff as well as officials from The Ministry of Health and The Ministry of Agriculture
- Fundraising events including bake sales, a “One Paw At A Time” fundraiser, and auctions – the funds raised were used to buy rabies vaccines for government programmes

The winning team from St George’s University, Grenada, has won the opportunity to participate in the [WVA/WMA Global Conference](#) on the One Health Concept in May. The prize was kindly funded by [World Animal Protection](#). The team travelling to Spain, Sarah Addison, Maggie Mottram, Ashley Marshall, Ailin Corella, and Nitasha Sharma, shared their thoughts on winning:

“Many students at St. George’s University understand how veterinary medicine, human medicine, and public health overlap. Not only do we share a campus and an island we call home for up to three years, we share the One Health One Medicine fairs - joint health clinics for both humans and their animals.

Winning the GARC One Health Challenge is a great accomplishment for all of Grenada. We are extremely honored to be representing the One Health view of St. George’s University in Madrid this May!”

You can watch a short video documenting their project [here](#).

There has to be a winner but it wasn’t easy to choose, and we’d like to thank all the teams who participated in the Global One Health Challenge – 28 inspiring entries from 17 countries across the world. We’ll be showcasing some of the entries on [Facebook](#) over the next few months – we hope that they continue to work to protect their communities from rabies and that their dedication and creativity will inspire others to do the same.

The first Global One Health Challenge, a competition for veterinary and medical students all over the world, was organised by the International Federation of Medical Students’ Association, the International Veterinary Students’ Association and the Global Alliance for Rabies Control on the occasion of the 8th annual World Rabies Day on September 28th, 2014.



A Blueprint for Rabies Surveillance

Almost every rabies-related document stresses the importance of surveillance. Rabies surveillance is vital for any rabies elimination program and helps to put and maintain the disease on the agenda of public and veterinary health authorities as well as policy makers. In regions of the world where rabies is still a neglected disease surveillance is the key link in a chain what is called the “circle of neglect”. Unfortunately, many countries in Africa and Asia are confronted with this situation. Breaking the ‘circle of neglect’ will stop underreporting of rabies cases both in humans and animals, enable assessment of the true burden of disease in a given country and hence, result in policy changes required to tackle rabies at the source.

So far so good. However, have you ever asked yourself what rabies surveillance actually means? Are you aware of the components rabies surveillance comprises of? Do you know what is required and needed to make rabies surveillance in humans and animals adequate and efficient? Is rabies surveillance the same as monitoring? Do you know which form of surveillance is best suited for rabies, who is responsible for implementing rabies surveillance and what you can do to make the system work?

Why all these questions? Because sometimes the answers are not obvious. Although there exist general guidelines from WHO, OIE and FAO on adequate disease surveillance, there is no detailed rabies tailored approach covering both human and animal related aspects of surveillance yet. Also, experience has shown that responsible authorities and people across the world often have different perceptions on the issue, different states of knowledge, and sometimes even misconceptions.

Hence, there was a desire in the global rabies community to make such relevant information easily available to make a difference in the global fight against rabies. Now a small group of experts from the ‘Partners for Rabies Prevention’ (PRP), an informal group of stakeholders, under coordination of the Global Alliance for Rabies Control has developed a new third module using the successful simple Q&A format and integrating it into the existing Rabies Blueprint website (<http://www.rabiesblueprint.com>). Their effort is greatly acknowledged.

The first version of the new information and learning module, the Rabies Surveillance Blueprint (<http://rabiesurveillanceblueprint.org>) is now complete. It brings together relevant information from specific international health organizations, published data from the field, as well as expert knowledge on the topic in an easily accessible format. It is not meant to replace existing material or national guidelines but rather is meant to serve as an easy to use guide to assist countries in understanding how to conduct adequate rabies surveillance, as well as how to report and use the data generated to improve rabies control in any species.

The Surveillance Blueprint is divided into six main sections: (I) Introduction, (II) Rabies Surveillance, (III) Minimum requirements for adequate rabies surveillance, (IV) Laboratory rabies diagnosis, (V) Epidemiological analyses and (VI) Reporting, dissemination and communication. Like with the canine and fox rabies blueprints answers to 78 rabies surveillance related questions are provided in clear and concise key messages, including links to specific documents and websites for more information if so required. One of the big advantages over traditional printed guidelines is that the Blueprint will be regularly updated by PRP experts and new or modified recommendations can be immediately included as they become available. Based upon an initiative of WHO, this living document will further evolve by incorporating approved standard operating procedures (SOP) for standard laboratory techniques in rabies diagnosis. Also, it is being contemplated to provide exemplary organizational flow charts that can be used as templates for countries in need in Africa or Asia by giving them ideas how other countries in the world implemented structures, work flows and chain of commands to make rabies surveillance efficient.

Written by Dr Thomas Müller of the WHO Collaborating Centre for Rabies Surveillance and Research. Dr Müller and Dr Dennis Slate of USDA lead the team who wrote the Rabies Surveillance Blueprint. Suggestions and useful information for further elaboration of this information tool are encouraged and should be sent to info@rabiesalliance.org.



Rabies Teacher-Coordinator's Orientation in Batac City

The province of Ilocos Norte, Philippines has been rabies free for over a year! This is the fantastic news with which Dr. Jeneveve Sulliva, from the Provincial Veterinary Office, welcomed participants to the Rabies Teacher-Coordinator's Orientation in Batac City on February 7.

The 26 clinic teachers attended the day to learn more about their new role as Rabies Teacher-Coordinator's in their respective schools, including how to use the Ilocos Norte Rabies Prevention Program Manual on Grade School Curriculum Integration and Instruction, [distributed to each school last year](#).

These teachers are the link between schools and both the manual and broader efforts to maintain Ilocos Norte's rabies free status. Their role includes monitoring and supporting their co-teachers using the manual.

The workshop was supported by education experts, Marilou Ofiana, Emelyn A. Dumlao, and Mimi A. Rambayon, who helped develop the rabies education manual. They worked through examples of the lesson guides and how to use them, and they



shared tips on how to efficiently integrate rabies and responsible pet ownership into classroom discussions. Our thanks to them and to Ilocos Norte Provincial Veterinarian Dr. Loida Valenzuela and Ms. Mirasol Mangasep of Department of Education Batac City Division Office, who also attended.

Ms. Elaine Llarena, GARC Communication and Education Consultant, and GARC Field Veterinarian Dr. Dianne Licuan were on hand throughout the day to help the teachers gain a deeper understanding of rabies, the program, and how to share this information in their schools.

As part of the activity and to ensure the sustainable use of the manual, the participants were asked to devise an efficient way of monitoring its use. They suggested a monitoring sheet that teachers in the schools complete at the end of each quarter. The Rabies Teacher-Coordinator's will then consolidate the data before sending it on to Batac City Division Office.

The Ilocos Norte Rabies Prevention Program Manual on Grade School Curriculum Integration and Instruction was launched and distributed to all public elementary school teachers in the province of Ilocos Norte, including Batac City. The development of this curriculum manual which started in 2012 is the product of concerted efforts of GARC, Department of Education Division (DepEd) of Ilocos Norte, Provincial Veterinary Office (PVO), and Provincial Health Office (PHO).

...**Online Course** continued from page 2.

Each module contains specific and clear information that should be applicable to all situations, regardless of geographical location and circumstances.

Participants can access the course at education.rabiesalliance.org. It is self-paced, so participants can complete it in their own time, although it should take between four and seven hours in total depending on previous knowledge and experience.

For those with slow or intermittent internet access, the whole course can be downloaded and studied offline. On passing a final online assessment, participants receive a certificate of achievement and should be ready to provide life saving information to their target communities.

This is the first of GARC's new online courses, and there are plans to provide it in other languages besides English by the end of the year. We look forward to hearing the feedback of stakeholders and participants: please join the course at education.rabiesalliance.org and share this information with your networks.

GARC is grateful to Crucell for its generous support for the development of this course.

For queries or more information, please contact us [here](#).

Global webinar on the Canine Rabies Blueprint

We were delighted that more than 130 people from 32 countries joined us live for our webinar in December “**Practical Guidance for Rabies Control: Canine Rabies Blueprint**”

The talks covered a general introduction to the canine rabies blueprint by Louise Taylor of GARC,

an introduction to the Stepwise Approach towards Rabies Elimination (SARE) from Katinka de Balogh of the FAO, and a presentation on how both of these tools have been used in Kenya to help develop their national rabies elimination strategy by Austine Bitek of the Zoonotic Disease Unit, Kenya.

If you were not able to join us, or would like to hear the presentations again, the recording is now available by following the link on [this page](#). Please feel free to share this link with anyone who might be interested.

The feedback we received was very positive and we look forward to using the suggestions we received to develop further webinars in the near future.



GARC's Applied Research Publications

Two papers resulting from GARC's applied research have recently been published.

The first, by Shwiff, Hatch et al. and published in *Transboundary and Emerging Diseases* comprises an economic analysis of the KwaZulu Natal (KZN) rabies control programme in South Africa. Dog vaccination campaigns in KZN were intensified in 2007 and again in 2009 when the project became a demonstration site supported by the Bill and Melinda Gates Foundation. The economic assessment work sought to compile the recent economic costs of the project, to estimate the total cost per dog vaccinated, cost per PEP administered, and cost per human life saved. The comprehensive figures include all the costs of project implementation (eg. salaries, transport, consumables, etc.) to assess cost-effectiveness and can guide management decisions for KZN and other countries considering investments in rabies control.

The study concluded that dog vaccination cost \$5.41/dog where a local campaign could be used, but \$6.61/dog where the remote population required a mass campaign strategy. The cost of providing PEP was found to be approximately \$64.50 on average per patient, but as high as \$333 on average for the 9% of patients who receive RIG. Estimating the cost per life saved depends on the percentage of patients receiving PEP who would otherwise have contracted rabies. Data on this is very hard to find, but two estimates were used. The authors concluded that the cost per human life saved ranged from around \$2565 to \$427 (assuming either 2% or 12% would have developed rabies from the bites sustained).

The second, by Taylor, Knopf et al. published in *Zoonoses and Public Health*, is the results of a global survey on the surveillance of human rabies. Many of GARC's colleagues, especially those in the Rabies Expert networks helped by answering this questionnaire, and we are glad to be able to share the findings with the global rabies community. The survey asked questions about whether rabies was a notifiable disease in the country, if so how the surveillance system operated, and importantly whether the system was considered to be operating effectively.

This was the first attempt to collect data of this nature and data from 121 different respondents in 91 countries (covering 88% of the world's population) were analysed. Although most countries reported that human rabies was a notifiable disease, surveillance systems were very variable, and many were judged to be ineffective. The respondents identified several reasons (such as rabies not being a health priority, to poor training of key medical staff, and a lack of resources to implement a reporting structure) where increased investment and training could have a big impact. However, other reasons, such as the fact that many rabies victims die without any contact with health systems, are less easily overcome.

Globally, people in 27 of the countries surveyed (totalling 2.5 billion people) are living where there is no, or ineffective, surveillance for human rabies, often in African and Asian countries where canine rabies is a high risk. If countries not covered by this survey actually had less emphasis on rabies reporting, as seems plausible, this figure could be much higher. The study concludes that the initiation of regional databases for rabies surveillance Africa, Asia and elsewhere should be strongly encouraged.

*GARC is very grateful for the support of the UBS Optimus foundation whose financial support allowed us to undertake both of these projects, and especially to the participants who helped gather the data. The paper details are: Shwiff, Hatch et al. (2014). [Towards Canine Rabies Elimination in KwaZulu-Natal, South Africa: Assessment of Health Economic Data](#). *Transbound. Emerg. Dis.* Nov 21. doi: 10.1111/tbed.12283, and Taylor, Knopf et al. (2015). [Surveillance of Human Rabies by National Authorities - A Global Survey](#). *Zoonoses and Public Health*.*

NEWS FROM THE COMMUNITY

Vétérinaires Sans Frontières Germany Fights Rabies in the Masai Mara

Vétérinaires Sans Frontières Germany (VSF Germany) is a non-governmental, non-profit making organization, engaged in the field of veterinary relief and development work. Since 2007 VSF Germany is engaged in rabies prevention in Southern Kenya, and their continuous work has born its fruit- the incidence of rabies in humans in the areas has decreased significantly.



The rabies vaccination campaigns started in the Serengeti Eco System by the University of Edinburgh and was in 2007 extended to the Masai Mara by VSF Germany. The area that we cover in the project is 77.4% of Narok south sub county and is inhabited by Masai pastoralists; the total area is around 8,060km²; it with an estimated dog population of over 12,000 dogs, and the campaign takes 5-6 months.

VSFG have contracted me for the last three years to be in charge of the project, I work closely with animal health workers from the local community who were trained in identifying and treating common livestock diseases as veterinary services are not readily accessible.

We create awareness through posters, public gatherings, schools and churches prior to start of campaign. Then we move from village to village and house to house in order to reach as many dogs as possible. At first, when we began the project, people were skeptical when we introduced ourselves as veterinarians who vaccinate. However these days there is appreciable responsible dog ownership that now they even remind us that their good dogs are due for the vaccine!

Certificates of vaccinations are issued to dog owners for every dog vaccinated, this increases confidence in us and acts as security for their dogs just in case they accidentally bite someone or animals. We also do deworming of dogs especially puppies and treat mange infested dogs.

Key Project Achievements

- To date 49,000 vaccinations done since 2007; last year alone we vaccinated 9,200 dogs!
- Before 2010, up to 50 cases of suspected rabies cases were reported from each division, currently after vaccinations for three years there are hardly any cases of human rabies reported.
- Most dog owners now are aware of rabies and report to us any suspected abnormal behavior in dogs or strange dogs seen
- Masai pastoralists are now beginning to appreciate meaning and purpose of responsible dog ownership
- As a result of my involvement with rabies control campaigns and other livestock diseases, the Kenya Veterinary Association (KVA) awarded me with **veterinarian of the year** certificate for excellent service, one of the highest honors in Kenya's veterinary profession.
- Last year for World Rabies Day, I was invited by the Kenyan Veterinary Association to present a lecture alongside Dr Sarah Cleveland and other distinguished speakers; my presentation was titled *Rabies control campaigns in dogs among the Masai pastoralist of Narok South*.

Our experience in the Mara has shown that good and consistent vaccination coverage of dog populations will eradicate the disease.

Because of the success of controlling rabies in Narok south, this year VSFG will be extending the coverage area to cover Narok east Sub County which has never been reached by animal health actors in rabies control, we expect to begin July and cover more than 6000 dogs.

Contributed by Dr Ezra Saitoti of Talek veterinary services in Narok, Kenya and [VSF Germany](http://www.vsf-germany.org).



Dr. Ezra Saitoti vaccinating a dog, notice how well the owner is restraining

Rabies Booster Study Shows Pets Overdue for Rabies Vaccination are Still Protected

A research team at Kansas State University recently demonstrated that pets with out-of-date rabies vaccinations are still protected from the rabies virus—provided they receive a booster immediately after exposure. This study, appearing in the *Journal of the American Veterinary Medical Association* is the first of its kind to evaluate the rabies antibody levels in pets that are not up-to-date with their rabies boosters and may have significant implications for how such pets are handled after a potential exposure.

When a pet is bitten by a rabid animal, it's an emotional and distressing time for owner and pet alike, often because owners worry that their pet will have to be euthanized. In the US, for suspected rabies exposures, animals that have never been vaccinated must be euthanized or quarantined long-term at the owner's expense. Pets that are current with their vaccinations fare much better after a potential exposure: a rabies booster can be administered, and the pet can be released for home-monitoring.

However, for animals that have received at least one rabies vaccination but are past due for their rabies booster, the options are not as straightforward. Public health officials typically take a conservative stance and consider non-current animals to be "unvaccinated", mandating that the animal be euthanized or quarantined after an exposure. Yet, because these out-of-date animals did receive a least one prior vaccination, a strong possibility still exists that protective antibodies may be circulating in their bloodstreams—raising questions over the necessity of such extreme measures for under-vaccinated pets.

In an effort to supply the missing clinical data to resolve this question, Moore and his colleagues tested the blood antibody levels in 74 dogs and 33 cats that were given a rabies booster either in response to a potential rabies exposure or for booster administration. Some of the animals were up-to-date on their vaccinations, while others were 1-4 years past-due for a booster. Using a rapid fluorescent focus inhibition test to monitor antibody levels, the researchers found that non-current pets quickly renewed their antibody production upon administration of the booster, generating levels of protection equal to (or even higher than) antibody levels generated by the up-to-date pets. Additionally, the rate of antibody production and median increase in level were often higher in the non-current pets than in the up-to-date population, indicating a vigorous immune response regardless of booster status. All pets achieved a recommended antibody level (≥ 0.5 IU/mL) after boosting.

These initial findings are intriguing and clearly show that even when owners do not adhere to the recommended vaccine schedule, their pet still may be protected from exposure to the rabies virus with an immediate booster, as long as the pet received a primary immunization in the past. After the initial vaccination, a pet's immune system will generate neutralizing antibodies, which over time, can fall below the accepted, recommended level.

However, a booster can rapidly recharge the pet's immune system, even if antibody levels have declined, indicating that active immunity against rabies remains for a lengthier period of time than that indicated by the vaccine's expiration date.

This discovery clears the way for veterinarians and public health officials to re-evaluate and clarify the current post-exposure recommendations for treating pets with out-of-date vaccinations. The study involved a relatively small number of study animals, and just 12 known or suspected to have been exposed to rabid animals. However, the study authors recommend extension of the same treatment for up-to-date and non-current vaccinated animals after rabies exposure, with confirmatory blood tests to show an adequate response to the booster if reassurance is necessary. It should be noted that rabies vaccinations are usually required by law, and so unless recommendations change they should still be adhered to.

Contributed by Laura Baker, a GARC volunteer. The paper is entitled "[Comparison of anamnestic responses to rabies vaccination in dogs and cats with current and out-of-date vaccination status](#)" by Moore et al. and was published in *JAVMA*, Vol 246, No. 2, January 15, 2015.



...Recent Research continued from page 8.

[Terrestrial rabies control in the European Union: Historical achievements and challenges ahead.](#) A review of progress towards terrestrial rabies elimination in Europe through ORV. The elimination of fox rabies from the EU is almost accomplished. However, illegal movements of animals, funding support for vaccination campaigns and control in Eastern Europe remain challenges.

Human Cases

[Rabies encephalitis in a child: a failure of rabies post exposure prophylaxis?](#) A case report of a 6-year-old boy who presented with febrile seizure with agitation and cerebellar signs, without hydrophobia or hypersalivation, 17 days after a dog bite in Tunisia. Despite four doses of rabies vaccine and immunoglobulin, he died of confirmed rabies.

[Virology, Immunology and Pathology of Human Rabies during Treatment.](#) Case report of a 9 year old who died accidentally 76 days after presenting with rabies of vampire bat phylogeny transmitted by cat bite. Antibody response in serum and CSF was robust and associated with severe cerebral edema, and no rabies virus was cultured at autopsy.

[Human rabies in Iran.](#) A review of 16 human rabies deaths resulting from ineffective treatment or erroneous PEP.

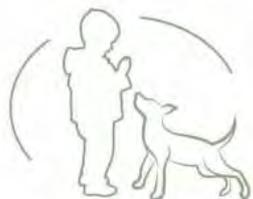
Surveillance

[A generic rabies risk assessment tool to support surveillance.](#) The development of a generic risk assessment tool to rapidly determine the vulnerability of rabies-free islands in Indonesia to best direct surveillance resources. The tool is based on eight critical parameters that can be estimated from the literature, expert opinion, observational studies and routine surveillance and reveals dog transportation by boats as a major risk factor.

[Global Positioning System: a new tool for measurement of animal bites in a rural area near Bangalore, South India.](#) Global Positioning System (GPS) technology was useful as a new tool in accurate measurement of animal bite cases.

[Re-emergence of rabies in the Guangxi province of Southern China.](#) 3,040 brain samples from normal dogs and cats were collected from 14 districts of Guangxi and assessed by RT-PCR. Re-emergence of human rabies has mainly occurred in rural areas of Guangxi since 1996. The human rabies incidence rate increased is related with RV positive rate of normal dogs.

Upcoming Conferences



2nd International Conference on Dog Population Management

The 2nd International Conference on Dog Population Management 2015 will be held in Istanbul, 3-5 March 2015.

www.dogpopulationmanagement2015.org

The 3rd International One Health Congress, to be held 15-18 March 2015 in Amsterdam, The Netherlands, will have the theme PREVENTION AT THE SOURCE. The deadline for abstract submission is October 1, 2014, and further details are at: www.iohc2015.com



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

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@rabiesalliance.org. For further information on the Alliance's work see www.rabiesalliance.org.