

**Eighth Partners for Rabies Prevention Meeting  
Wolfsberg, Switzerland, May 5<sup>th</sup> – May 8<sup>th</sup> 2015**

**Participants List**

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Abdul Rahman	Commonwealth Veterinary Association, Global Alliance for Rabies Control, India
Ad Vos	IDTBiologika, Germany
Alexandra Giesen	Novartis Vaccines, Germany
Andrea Arancibia	Sanofi Pasteur, France
Anna Charinna Amparo	Global Alliance for Rabies Control, Philippines
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Ann-Marie Sevcsik	UBS Optimus Foundation, Switzerland
B.J.Mahendra	Rabies in Asia Foundation, India
Bea Bezmalinovic	Momenteum Consulting, USA
Bernadette Abela-Ridder	World Health Organization, Switzerland
Beryl Mutonono-Watkiss	World Animal Protection, UK
Deepa Balaram	Global Alliance for Rabies Control, UK
Doug Eckery	US Department of Agriculture, USA
Florence Cliquet	Reference Laboratory Nancy, ANSES, France
Gregorio Torres	World Organisation for Animal Health, France
Guy Palmer	Washington State University
Hervé Bourhy	Pasteur Institute, Paris
Joanne Maki	Merial, USA
Katinka DeBalogh	Food and Agriculture Organization of the UN, Italy
Kim Doyle	Global Alliance for Rabies Control, Switzerland
Liz Davidson	Global Alliance for Rabies Control, UK
Louis Nel	Global Alliance for Rabies Control, South Africa
Louise Taylor	Global Alliance for Rabies Control, USA
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Richard Franka	Centers for Disease Control and Prevention, USA
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Stephanie Shwiff	US Department of Agriculture, USA
Terence Scott	Global Alliance for Rabies Control, South Africa
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Tiziana Lembo	University of Glasgow, UK
Tony Fooks	Animal Health and Veterinary Laboratories Agency, UK
Valentina Picot	Fondation Mérieux, France

## Minutes of the meeting

Wednesday May 6<sup>th</sup>

### SESSION ONE – INTRODUCTION

#### Welcome, introductions and nomination of rapporteur – Louis Nel

Prof Nel welcomed and introduced all the participants and noted that when you can bring together global experts who also care enough to want to make a meaningful difference in the world – then you have the means to advance any given cause. He thanked the sponsors of the meeting, UBS Optimus who again generously hosted the meeting, Sanofi Pasteur and IDT Biologica.

### SESSION TWO – LANDSCAPE ANALYSIS

#### External evaluation: GARC landscape analysis - Bea Bezmalinovic

Dr Bezmalinovic presented the key findings of a recent landscape: A lack of awareness about GARC and rabies in general within the broader health community. Many people valued the focus on coordination and highlighted the need for more advocacy work to raise awareness (at national levels, local levels and with key stake-holders in the global community). The PRP is unique in that the partnership is not donor-led, but instead represents the community coming together voluntarily. World Rabies Day was perceived as a huge success given limited resources, and very valuable for outreach. Surveillance and overlap in the agendas of other NTDs were thought to be important aspects to focus on, yet rabies vaccination was not seen as priority by childhood vaccination organizations. An important message was that GARC should not go it alone, but must work in partnership with the other global stakeholders.

The recommendations were to build on the momentum of World Rabies Day, to work in partnership, to focus on professional public awareness campaigns, and to promote clear concise easily communicable messages that all partners agree on, rather than focussing on differences of opinion.

It is a challenge to produce outputs whilst generating awareness and resources (making the market), so the value added by GARC needs to be clear. Key allies are likely to be other NTD organizations, with humanitarian intervention organizations and especially child health organizations less likely allies.

PRP partners need to use a common voice to promote a few simple key messages: Rabies is preventable; any death can be prevented; Vaccinating dogs ends human rabies and GARC/PRP aims to end human deaths from rabies (by 2030?). With focused effort, it is possible to achieve success in short time (3-5yrs).

#### GARC's 2015-2017 Action Plan - Louis Nel

GARC's role must be a complimentary one, filling in gaps between other players and contributing to stronger bonds by coordination – we should not go it alone. GARC's main activities and achievements (2007-2013) include the World Rabies Day (WRD) campaign, GARC newsletter, PRP meetings, Tripartite statement, Blueprint and Burden study. We have raised awareness, through the completion and promotion in the press of the PRP burden study and highlighted the importance of surveillance whilst providing tools to help countries (Blueprints, the Rabies Educator Certificate (REC) and The Animal Handlers and Vaccination Certificate (AHVEC).

The focus needs to follow the greatest need (in Africa and Asia) and to ensure sustainable progress. Donor money needs to be a catalyst and not replace what countries could do for themselves. If we are to have a target for 2030, we need to have a plan and coordinated action by everyone. The time for a project here and there is over. Registration for the upcoming PARACON meeting is very high and there is a multiyear plan for meetings to really progress countries.

#### Response to GARC Action Plan: How this strategy fits into the rabies landscape - Spring Gombe

There need to have strong answers to 3 questions: What is your ask? (elimination of rabies by 2030); Who Cares? (Both rabies endemic and non-endemic countries); Why should I care? (the key messages translated for different audiences). GARC should focus on surveillance and advocacy, the need to grow and invigorate the rabies community by showing the feasibility of elimination. It needs to seek commonality of interest with other groups i.e. wound management groups, vaccination (preventative/therapeutic), new surveillance tools (i.e. clicker app), and tie in with movements i.e. European year of development, launch of African CDC, coordination of scientific exchange. GARC should exploit the opportunity to amplify rabies message i.e. through key dates or anniversaries, further rabies education and reach out with people at critical meetings outside the rabies field.

PRP members need to demonstrate their alliance with GARC- display logos on their websites. GARC should also look for new (perhaps not obvious) opportunities – Mobile phone providers, Google, social apps lab at Univ. Berkley or through MOOC education.

Gaps to be addressed include coordinated lobbying in rabies-free and endemic countries, clear timelines for coordination/implementation, and with progress measured at regular intervals.

#### **Discussion:**

There is a need to make rabies notifiability and compliance with notifiability a key issue- otherwise there is no incentive to report rabies cases in countries. Both human and animal cases need to be notified as these will be critical to verifying rabies free areas. There should be continued discussion by a working group on this between PRP meetings. And the regional networks will help identify countries where rabies notifiability needs to be targeted.

The messages need to reach policy makers, as they act when they can look good. The burden study was the 1<sup>st</sup> to generate a lot of press attention. GARC made a calculated investment based on feedback received, and tested a possible new media partner for future projects. There are networks such as the African Union Bureau for Animal health, the SAADC livestock committee and other organizations with representation in many countries. It requires time to meet with policy makers, and a physical presence at meetings is needed.

Can we reach out to other groups? For example, Africa has encephalitic diseases that aren't diagnosed. Can dRIT be marketed as new tool to join with other groups to increase accurate diagnosis? There is a need to first put the DRIT forward for approval by OIE.

Regarding children's organizations not being very interested – we still need to try and work with them: GAVI, Gates, Unicef – they are critical to a lot of other projects' success. Perhaps we can embed rabies in a package of activities to approach the African Development Bank with. The NTD agenda is gaining support, for example with the British Government.

**Other Partner Perspectives** on the landscape analysis and their future roles in the PRP

#### **FAO - Katinka de Balogh**

FAO's engagement is at the country level, communicating with policymakers. Surveillance is key, but the response is very important too. We need to get rabies integrated into other surveillance efforts in brackets e.g. the emerging infections agenda). As One Health is becoming more integrated, especially in universities and the new generation of vets and medics, this will be important.

Advocacy to the donors is critical, but if we have not mobilized the countries to respond, nothing will happen with those funds. We need to translate messages for policy makers, especially in Europe to mobilize donor community, and use statistics to make it real for them. A political study/survey across countries could lead us to better understand what affects rabies control policy.

We can integrate rabies into other areas, such as emergency responses to natural disasters and in war zones (Haiti, Nepal, South Sudan). The REC could be integrated into social programs and dog bite centres. Interministerial community and stake holder consultations are important, and we can see success in the 3 to 5 year time span of a politician. I will continue to fight for rabies control within FAO and will help support regional networks through our country offices.

#### **OIE - Gregorio Torres**

The OIE priority is too support elimination of human deaths due to animal rabies, through a One Health approach. We can use the tools we have, but manage control programs better. We need to promote successes and build on the momentum. OIE contributes its standards and promotes them (eg. on notifiability) to strengthen veterinary services and expand reference labs in endemic regions. We need to strengthen regional activities with harmonized messages between the tripartite and other NGOs. The challenge is to demonstrate improvement using clear indicators and identify what creates success. Sometimes it is hard to get messages to municipalities and private vets.

We also need to focus on what do we do after elimination? How do we maintain surveillance ? How can OIE provide support to member countries for example in emergency situations?

## **WHO - Bernadette Abela-Ridder**

The WHO sees GARC as a main partner in global campaign, up with a facilitating role as an umbrella NGO for other NGOs in rabies control. The global coordination can still improve and the global conference should shape of vision agenda for rabies and attract funding agencies. There will be a big advocacy splash and the investment case will be refined and launched there.

We can support rabies control efforts, but countries must find own investment to ensure sustainability. This is a focus of the new NTD report. We want to improve the WHO rabies webpage to better incorporate the Blueprint and SARE. We want to put rabies into the global health observatory database to increase its visibility alongside the IHR diseases before the rabies conference. Then we need to motivate countries to supply the data.

## **Animal welfare NGO perspective - Mike Baker**

World Animal Protection was drawn to rabies through dog population management and to reduce culling. However GARC and the Tripartite have an intelligent approach, have already saved lives and we're happy to partner.

Vaccination alone is not sustainable, and persuading communities to maintain a herd immunity is hard. Population growth leads to further problems like high bite cases that can again lead to culling, mistrust and fear. Therefore, we support DPM along vaccination as it is important for community engagement. DPM strategies need to be taken to the regional and national levels. We have built up a body of evidence to influence policy and demonstrate impact, and have advocacy tools to show what can be achieved. We are happy to share our expertise about how projects can be adapted to the requirements of each community, disaster management techniques, political advocacy and how to assist in building national plans. Examples of success in resource-poor areas can be useful as motivation.

We as the PRP need to have a single unified approach, with no undermining voices.

## **Institutional perspective - Thomas Müller**

The WHO, OIE, FAO collaborating centers and reference labs tend to be in North America and Europe, not in Asia and Africa. The terms of reference are consultative work, support and expertise, training and special activities such as twinning projects. The possibilities of these networks are not yet exhausted- we need more joint efforts and interaction e.g. WHO MAb cocktail for PEP, OIE MAb for dRIT towards the common goal. The response to the GAVI call was not well coordinated for example.

If WHO/OIE/FAO/GAC are "Partners for Rabies prevention", are terms of reference valid for the PRP? How can the PRP better utilize institutional network capacities? Designated institutions need to take more responsibility in lab capacity building, rabies elimination projects, education of responsible authorities in Africa and Asia. We need tailored research to support the paradigm of protecting people through vaccinating dogs. Is it possible to request that funding from the WHO, FAO and OIE for rabies projects is increased?

## **Academic perspective - Sarah Cleaveland**

Research is needed to support pathways towards elimination. There's a need to coordinate studies across different sites and groups, to be able to appreciate the wider context. All sites are different in their burden, KAP, dog population ecology, intervention strategies used and determination of PEP use as programmes succeed.

But, we don't have to know everything to start - we can learn from intervention platforms as we progress through an iterative process. Some questions can only be addressed through good control projects and can be a win-win situation for both researchers (who need to demonstrate their research has impact) and implementers (who want the best designed program). For example, the perception of wildlife is a big barrier to control needs to be tackled, and we need more good dog ecology data. There are operational questions about surveillance especially towards elimination. The last mile is tough and we have to sustain efforts. A few gaps in coverage can make a huge difference and incentivising reporting may be needed.

We don't need perfect data at the onset of intervention- the intervention can become the platform for gathering of information, and a catalyst for surveillance. We can integrate rabies control with very different disease control strategies, e.g. using rabies dog vaccinations as a way to reach communities for soil transmitted helminth treatment. We do not yet understand how to package information for policymakers and this requires further effort.

## **Industry perspective - Michaël Attlan**

The vaccine industry focuses on quality vaccines and biologics, predicting demand, ensuring adequate supply, innovation and vaccine improvements, and increasing awareness around the need for vaccination.

The theoretical supply of human vaccine is 100m doses /year, for a demand of about 80m doses /year, but not all vaccines are the same the quality. The pre-qualification process needs to be expanded and clinical confirmation of any new schedule/route is needed.

Availability of vaccine is not universal, and local production can decrease costs and increase accessibility. Tier pricing should be supported at the right level, and new mechanisms to lower overall PEP cost should be explored.

Industry can lend support to networks, be an active partner in implementation of new mechanism e.g. dog bite centres, support training, education and awareness at all levels and to all audiences, support data collection to assess rabies impact. It can also enhance the life cycle of products.

But others have a role to play too, rabies is still an 'out of pocket' expense and there may be no affordable price, so we may need GAVI support. Poor availability results from a lack of vaccine orders from national governments. The efficiency of human rabies prevention depends on the synchronization of human and animal health interventions. A move to a public market may be vital and there needs to be recognition of the cost of quality and strong regulation. We need to evolve from thinking of industry just as a supplier to being more of a partner.

## **SESSION 3 - TOOLS FOR IMPLEMENTATION**

### **Tools developed by the PRP and promotion/implementation thereof:**

#### **Canine Rabies Blueprint – Louise Taylor**

The Canine Rabies Blueprint was thoroughly revised and version 3 was launched on line in September 2014. The communication section was completely rewritten and the Stepwise Approach towards Rabies Elimination (SARE) was integrated as section 6. A number of improvements to the navigation were made and this will continue to be a central access point to all relevant materials. This version will shortly be available in French and Spanish.

#### **Rabies Surveillance Blueprint – Thomas Müller**

Surveillance is key to breaking the cycle of neglect for rabies. Probability of detection = a function of prevalence, level of awareness & vigilance. Current obstacles to rabies surveillance include different definitions of surveillance, varying approaches, responsibilities, regionally biases, differing levels of diagnosis, numerous different reporting systems and many surveillance systems are ineffective. The Rabies Surveillance Blueprint brings together relevant information into an easy to use guide with clear and concise messages. It will be further improved with standard operating procedures and examples of well-structured surveillance systems.

#### **Training tools / Rabies Educator Certificate - Terrence Scott**

The GARC Rabies Education Platform is a web domain where various online courses will be hosted, some open to all and others for specific professions. To date one course, the Rabies Educator Certificate (REC) is live on the web site. The REC is designed to enable people to communicate rabies prevention in their communities. It is self-paced and generally takes 4 to 7 hours to complete. Coursework can be downloaded but the final multiple-choice assessment is done online. Participants have two attempts to score more than 85% and then receive a certificate. Since the launch in February 2015, 253 enrolled users have produced 76 certified educators. It will be piloted as an offline course in Haiti. Next, an Animal Handlers and Vaccinators Education Course (AHVEC) will be launched at PARACON in June.

#### **SARE platform - Katinka de Balogh**

Rabies outbreaks occur where there is low awareness, poor responsible dog ownership, under-reporting, weak health services and low vaccination coverage. Successful rabies control results from high level commitment, funding being available and success stories. Dog vaccination and public awareness are key, and coordination and communication between sectors around dog bites is vital, with municipalities playing an important role. The SARE describes 6 stages to move from endemic to freedom from rabies, using Political, Operational and Scientific actions to progress. It first uses a checklist to determine which stage a country is at and then provides keys to move ahead and measure progress, with links into the rabies blueprint. The Republic of Congo was at stage 0 in June 2013, but at stage 1 by December 2013. The Republic of Georgia progressed to stage 2 in 2014, after starting a large vaccination campaign. The tool needs to be promoted further.

**Discussion:**

The evaluation of all countries can be expensive. Self-assessment combined with some spot checks is one solution. Maybe this could spark a regional friendly competition. There could be a traffic light-type monitoring system. The SARE tool will be further tested at PARACON, and it will improve as it is used.

For a standard setting body like OIE, assessment is difficult. It provides countries with an opportunity to see progress, but it can divert the message by being too complex. However, if countries want to use it, OIE will support it.

**World Rabies Day - Liz Davidson**

The first WRD was in 2007 and achieved its goals of engaging support of rabies stakeholders, attracting media interest and encouraging communities to do something to raise awareness. In 2014 there were more than 260 varied events, and promotion occurred through regional networks also. A revised pack of support tools for event organizers was prepared, the global one health challenge attracted 28 "One Health" events by students. The Pan-American WRD initiative strengthened efforts in the Americas, and Me and My Dog engaged over 120,000 people. WRD is now integrated into GARC's global level, regional and country level activities.

**Longer term plans and tools:****Dog Population Management (DPM)****DPM conference 2015 feedback – Deepa Balaram**

The International Companion Animal Management (ICAM) coalition's Dog Population Management conference in March 2015 attracted over 130 diverse participants. Discussions centred on population dynamics, government collaboration, monitoring DPM programs, education and community engagement. Rabies issues were high on the agenda. There was agreement that community ownership of programs is essential. There was an emphasis on research and although data was presented, there was not much analysis of success rates. A new ICAM interactive monitoring and evaluation tool for DPM programs was presented, and there is also an OIE /IZSAM self-assessment tool to check compliance with OIE stray dog control guidelines. The conference presentations are available on YouTube.

**Development of methods for fertility control of dogs – Doug Eckery**

USDA applies science to reduce human-wildlife conflict, and is engaged in fertility control research to benefit other disease control programs as well as rabies. In general methods need to be 90+% effective in the lab, with no significant health or behavioral effects, for the agent not to enter the food chain and to be low cost. We may want the agent to be reversible and delivery possible by remote methods (though possibly less relevant for rabies). It must be technically feasible, cost effective and acceptable to end users. It would provide another nonlethal tool in the toolbox. Fertility control methods include: immunocontraceptive vaccines, pharmaceuticals and surgery. Implants of progesterins can cause side effects, and zinc gluconate and calcium chloride injected into the testicles only work in males.

The NWRC fertility control project works on vaccine development, chemosterilants and delivery systems. The aim is a one shot, permanent sterility product. Immunocontraception based on GnRH inhibition (GonaCon) is licensed (as a pesticide) and effective in deer, bison, pigs, horses and other species. Early trials in dogs produced severe injection site reactions, these were addressed and the product shown not to interfere with rabies vaccination, but no fertility data was collected. Recent trials in collaboration with Spay First have altered the formulation further, but frequently antibody levels fell fast. Formulations seem to be either stable and ineffective or effective and produce injection site programs. Once antibody levels fall, fertility will return, so reformulation efforts are continuing. NWRC is involved in developing oral vaccines using bacterial fragments and pollen spores as delivery vehicles. There also other groups (Thomas Jefferson University and CDC) working on combined rabies and fertility control vaccines. Another avenue is chemosterilants aimed at destroying primordial oocytes.

Besides physiological and formulation challenges, the scale up of production and environmental and human safety are also difficult. There needs to be well described population management goals, baseline data to assess effectiveness, feasibility studies in terms on the logistics of implementation. There are not many groups doing fertility control research, and very few focused on free roaming dogs.

**Discussion:**

Population control and management are different, sometimes the number of dogs is not the problem, their management is. There is a real demand for sterilization or contraception due to behavioural problems of dogs in communities, not just unwanted puppies.

Longevity can increase with fertility control. This is seen in horses. Also with fewer dogs remaining, their care improved in the Navajo study.

There are concerns about a combination product, and that rabies vaccine compliance may fall if combined with fertility control. Not all owners want sterilization, and trust in a rabies vaccination program could be lost if sterilization is not handled correctly. Combination vaccines are also expensive to manufacture and separate products may be preferable.

**DRIT and other diagnostic priorities – Tony Fooks**

Diagnostic testing ideally requires speed, quality and low cost, but it is hard to have all three. We have a lot of tools for rabies diagnosis. Sequencing and PCR are being used more routinely now. In the UK (APHA) lab, IFAT testing is used first and confirmed by the tissue culture infection test, but PCR can confirm the test faster. Mouse inoculation is generally avoided.

The Direct Rabies Immunohistochemistry Test (dRIT) does not need specialist equipment, training is minimal but necessary. It is accurate, and has been extensively used, but the test is still not validated and there's a need for standardization of the monoclonals and biotinylation procedures used. Inter-laboratory harmonisation of procedures and reagents is necessary, the standard working concentrations need to be determined, and to ensure the breadth of coverage a combination of a least two pan-reactive mAbs is needed. We need to be able to manufacture standard kits at large scale.

New tests are being developed which require little training and will be cheap. Tests must be validated and accepted by OIE /WHO with close collaboration between reference laboratories. They offer huge advantages for resource limited countries.

**Discussion:**

Results from tests on 6 different lateral flow devices have been very disappointing. Some didn't detect any rabies virus and the best sensitivity was 70% (to be published shortly). There were legal issues with naming the manufacturers, so how do we approach recommendations? The WHO has a catalog of approved products that could be relevant here.

We need a company lined up to distribute before we start to standardize the techniques, or time will be wasted. DRIT is not suitable for human diagnosis.

Following the Ebola and Influenza crises, PCR diagnosis is being more widely used.

The ownership of mAbs is an issue. Some of CDC's belong to Wistar, but they may start to produce an NIH funded mAb bank next year. The UK could provide hybridomas to a non-profit distribution company.

**Surveillance apps and rabies databases - Terence Scott**

There are several rabies surveillance databases, but none for Africa. We propose a PARACON epidemiological bulletin, based on the country reports (official government data, policy information, diagnostic capability etc.) and supplemented by data from other sources, eg. vaccination teams via mobile apps. Electronic country reports will be submitted directly to the web site and produce online surveillance maps which are freely available. Mobile phones are increasingly used in Africa and network coverage is increasing.

There are rabies reporting apps already, but these are often complex and the data is not freely available. A new, simpler free app is needed to collect useful data on a large scale that will then be freely accessible. The proposed solution involves a clicker system linked to a mobile phone with the mobile app on it locked in a vehicle. These are cheap, hardy and simple to use and several clickers can connect to a single device and they work by radio or infrared. They will collect basic data on dog gender, vaccination times and locations. Campaign and vaccine batch information would be added at the start, and then the animal sex and age category entered via the clicker button during vaccination.

**Discussion:**

The uploading of data will require Wifi. It is important that this step is free to users.

Dr Naseem (in Pakistan) has already developed a similar app. We can also contact the evaluators of Tanzania app. Ministries may require a validation step before data showed publicly.

There would still need to be a vaccination certificate issued.

We don't want to duplicate reporting effort that is already required EG 2 OIE over six months. Interaction with other databases eg. WAHIS should be considered. This database could be a tool to generate reports to be sent to OIE/WHO.

Governments need to buy into using the app. NGOs could also use them for independent interventions.

Sightings of unvaccinated dogs could also be added in to the data collected.

**Thursday May 7<sup>th</sup>**

### **SESSION 3 - TOOLS FOR IMPLEMENTATION (Cont.)**

#### **Health Economics: New BioEcon model – Stephanie Shwiff**

There's a need for an adaptable model that can be used to model diseases in their hosts, including wildlife that will incorporate management strategies for both the disease and hosts as well as the economic implications. The BioEcon model has been developed at NWRC as a simulation model written in R. It is Individual-based and stochastic, models host abundance and disease incidence and can forecast the benefits and costs of many different (eg. removal, sterilization, temporary contraception, vaccination) and combinations of management strategies. The population is modeled across a grid and movements between cells can be varied. Sample simulation outputs are realistic, and graphs show population size and disease incidence over time. Output data relates to host abundance (time, location, age, sex), the prevalence of disease and economic costs. The next steps include full parameterization for rabies, developing a graphical user interface and data entry spreadsheet, improving the speed using C++ in places. More details will be shared at RITA in October.

#### **Discussion:**

The Model can be applied to any host population eg. dogs, wildlife etc. It is extremely flexible.

It could be useful to policy makers to have visual evidence of long-term impacts, to develop investment cases and useful in the PARACON setting. It could also be used in monitoring of projects.

Discussions need to be had around how much technical support users will need to use this model.

Human exposure costs are not yet built in but the model can generate data to quantify costs associated with PEP/vaccination in humans.

Human-dependent dog movements may need consideration. We need to start using the tool and improve it as we go along, but the tool can also be used to determine the most critical aspects of disease management.

### **SESSION 4 - ROUTES OF IMPLEMENTATION**

#### **Regional Networks**

#### **Asia: Strengthening the ASEAN Regional Network – Sarah Jayme**

Rabies is still endemic in 7 out of 10 ASEAN countries, with 608 million people potentially at risk. The OIE STANDZ project supported an initial draft of an ASEAN Rabies Elimination Strategy (ARES), which was endorsed by health and agriculture ministers in September 2014. A workshop on rabies elimination was held in Bangkok in February 2015 with 35 participants from the 7 endemic countries and international organizations. It aimed to build capacity in rabies control and facilitate access to international standards, rabies control resources and exchange information between countries. Workshops on the rabies blueprint and the REC and SARE were held. An SARE self-assessment was conducted for each country and further refinements to that tool were suggested. WRD plans were suggested and positive feedback on the REC and Blueprint was also received, though language and internet access barriers were identified as a challenge.

#### **Middle East: The Middle East and Eastern Europe Rabies Expert Bureau (MEEREB) – Valentina Picot**

MEEREB is an informal network of national stakeholders in rabies control with a mission to foster rabies prevention and control activities. Started in 2010 with 8, there are now 17 member countries and Fondation Merieux recently took over its management. MEEREB works as a think tank to empower local actors and promote action

through inter-sectoral communication. It supports national and international goals and aims to enable the rabies control field. It also promotes a bottom-up approach to Rabies control with most of the knowledge coming from the countries.

The countries cover a huge area and language diversity, but participation is still good and the momentum is being generated. There is significant disparity among countries in terms of rabies control status, and often reliable data is sparse. The idea is to keep the platform simple and build upon a baseline assessment from country data towards mapping of interventions, identifying gaps and developing action plans.

Human and animal rabies data from 2013-14 for 10 countries has been collected, but generally there is little laboratory confirmation carried out. Dog mediated rabies elimination is now a priority and the countries want to follow a One Health approach. The network provides a vision for countries, but leaves them to decide on actions. GARC has a role as an umbrella for all countries and their tools can help everyone through these rabies networks.

#### **Discussion:**

It is not up to GARC to decide on a date of 2030 for elimination, countries themselves need to adopt a target date in groups and regions.

#### **Africa: PARACON – Terence Scott**

The vision for the new PARACON network is for an active network with working meetings and quantifiable progress. It will seek to empower countries to take ownership of rabies control, within a standardized framework, and develop tools to support them. The first meeting is planned for 9-11 June 2015 in Gauteng, South Africa. There will be workshops on the Blueprint and the SARE, using lessons learned from the ASEAN meeting. Countries will assess what stage of the SARE they are at, and identify the next actions. Both medical and veterinary sectors have been invited, and there will be an educational section as well as an animal behavior and ecology section. The AHRVEC course will be launched there. Country reports (as fillable PDFs) are being received now and will gather data relevant to running the BioEcon model. The website and the epidemiological bulletin are being developed, which will encourage participation from all African countries. The most suitable delegates for the meeting were picked from lots of lists of contacts from different organizations, and so far over 30 countries will be represented.

#### **Asia: SAARC – Abdul Rahman, presenting Guyandra Gongal's slides**

There are 7 endemic countries in SAARC, and these contribute 45% of the global burden of human rabies, with more than four million people receiving PEP per year. The region has technical expertise and is self-reliant in human rabies vaccine production. In India there are many different networks active in rabies control (eg. RIA, APCRI, CVA, GARC India), and a dedicated lab for rabies diagnosis in Bangalore.

Different countries have different issues, from cross border rabies transmission into Bhutan, to issues of human rabies vaccine supply in Afghanistan, to ownership of a control program in Pakistan. Rabies is not a notifiable disease and there's still no comprehensive rabies control program in many countries. NGOs are involved but only in limited areas. The final country using nerve tissue vaccine (Pakistan) will cease this in 2015 hopefully, and ID use of human vaccine is very good. The SAARC has held a number of meetings and the need for regional coordination of activities is recognized. In 2012, Sri Lanka was recommended to coordinate the SAARC Rabies Elimination Project. International partnerships support the countries e.g. through use of the WHO Strategic framework, the OIE vaccine bank, and NGOs' tools. The SAARC Rabies Elimination Project will support intercountry harmonization and elimination targets. The project lasts five years (2016 -2020). The first 2 years will establish a regional coordination program (Costing USD10 million) and the next three years will eliminate rabies as a public health problem (Costing USD 20 million per year). The proposed organizational structure and a budget breakdown was presented.

#### **Discussion:**

There's a need to work through the networks to project data to the Global Health Observatory (GHO) so that we can demonstrate impact. There's an opportunity to publish in the WHO Weekly Epidemiological Record on rabies cases, comparing the reported cases to the projected estimates to improve surveillance efforts. We have to work with National Data and improve and increased it so the best data is fed into the GHO. A standardised data collection protocol used across all regions would help in this regard. The Rabies Bulletin Europe is a possible template.

For the first time we see the same ambition from all networks - different platforms but there are common messages and best practices across them. Finding a way to streamline data reporting would help and feeding back data in a useful format (e.g. maps, trends tables) would benefit countries. Transparency in data collection increases

motivation. Sharing a timetable of upcoming meetings to coordinate activities will be very helpful, along with sharing information on which projects are active and where.

## **Advocacy and Fundraising**

### **End Rabies campaign: a global communications campaign - Deepa Balaram**

GARC is planning a global communication campaign with the working title of “End Rabies”. This will address the landscape analysis’ findings that rabies lacks visibility in the wider health community and to champion progress in the rabies field. The campaign objectives are to bring stakeholders on board as partners, showcase rabies prevention progress and provide a channel for public activities to support the advocacy campaign. It will have a dedicated website with strong branding, like the End 7 campaign, and will be optimized across platforms.

Relevant user-friendly information and country specific information (that can be compared across countries such as the burden study data) will be included, highlighting successful rabies control examples. News items will be scheduled around specific events. The outreach is targeted to policymakers and institutions. There will also be a call to action such as signing a pledge, and we would also like celebrity endorsement of the campaign. The development timeline is from May and December 2015. We’re looking to identify and engage new stakeholders and partners and also to amplify the voice of stakeholders through joint communications, so PRP members are central partners in this joint campaign. There will be a need for content (based on publications, major events, progress of research projects, country data etc). The campaign is for everyone and we welcome advice and suggestions.

#### **Discussion:**

It is fundamental to unite and have standardized messaging. We could identify people at the regional meetings to act as spokespeople for that region. The burden study is static and things may change fast. Key messages could include that “costs will only escalate over time” and we currently have “a window of opportunity”. The End 7 campaign made an animated cartoon which played for the London Declaration launch. There was a powerful rabies video at the OIE meeting in Korea that we could maybe use too.

### **Veterinary Vaccine Overview for SARE – Joanne Maki**

We need to ensure that manufacturers are able to make enough rabies vaccine, so we need to project how many are needed. The SARE has a directional flow, from external donor driven programs, to donor initiated programs, to community-owned and nationally governed programs, to regional coordination and finally global elimination of human deaths. Vaccine manufacturers have a need for a safe potent robust product that can be reliably delivered in quantity and on time, that performs well in the field. Manufacturers forecast usually one year in advance, large projects usually require phased deliveries, and planning at regional levels will be harder. Manufacturers know the airports that are suitable, but where does logistic planning go from there? At each stage of the SARE, program managers, field implementers, the vaccination oversight team and vaccine producers have different responsibilities. An outline of what these might be was presented, from a situation of outbreak management at SARE stage 0 to possible expansion into wildlife rabies control after stage 5 when canine rabies has been eliminated. Vaccine manufacturers appreciate being involved from the start in strategic planning and forecasting, and receiving both positive and negative feedback. They can offer technical and logistical support, network building and promotion of progress.

#### **Discussion:**

It is likely that responsible dog ownership will rise as countries progress along the SARE, and there are opportunities to engage with Petcare Industries, who need a positive success story to become interested.

### **OIE Regional Vaccine Banks – Gregorio Torres**

Countries working towards elimination required easy access to high quality dog vaccines. The Asian rabies vaccine bank uses a multiple supplier approach with the first contract signed in 2012. Vaccine is supplied in 10ml and 1ml vials, as well as oral vaccine for research projects. African countries were added to the list of eligible countries in October 2014. The current contracts are active until December 2015 and a new tender is scheduled. In total over 3.6 million doses have been delivered to 10 countries in Asia so far and more are being scheduled. Donors to date include the European Union, developed country governments, Swiss TPH and the WHO. OIE delegates must submit an official request to OIE confirming that logistics are in place before the request is processed and vaccine is

dispatched. Countries need to provide updates on how the vaccine is being used and post-vaccination surveillance results.

The bank can deliver a high quality vaccine with the required flexibility and has a virtual stock mechanism (production on demand) to ensure vaccines do not expire before use. The process results in economies of scale, allows direct purchases by countries and better harmonizes and coordinates regional vaccine usage, with support for multiparty vaccination campaigns. Total doses ordered as of April 2015, were more than 6.85 million doses. Collaboration between OIE and WHO is recognition of the One Health approach. Optimized supply and coordination will lead to expedited achievement of zero human deaths and eventually the elimination of dog rabies.

#### **Discussion:**

Forecasting of vaccine usage is still not good, and we need a mechanism for other vaccines, such as PEP. Can we get GAVI interested in scaling up a pilot project?

Measuring the impact is critical and feedback from the vaccine bank is very valuable. How can this information be shared? The data belong to the country and it is shared with OIE. The country must give permission for this to be shared elsewhere. A delivery of vaccines is not necessarily an impact, the data on what its use has achieved is critical.

The vaccine bank does not dictate where it will be used, the donors decide on this.

PAHO's revolving fund for human and animal vaccines is another model, and countries using WHO procurement mechanisms another.

Will the OIE vaccine bank be able to manage the demand in 2 to 3 years' time? The bank has been doubled already and the philosophy is scalable. Countries with their own vaccine production may not need the bank. Tenders are open to all companies to apply, and requests for vaccine are evaluated by OIE.

#### **Global Meeting on Rabies – Bernadette Abela-Ridder**

The Global Meeting was triggered by the end of the BMGF elimination programs (KwaZulu, Phillipines and Tanzania) and will showcase their progress. The meeting will just be two days and we want to involve eloquent speakers who are on the ground in the projects. There will be a chair and facilitators who will help generate participation from the delegates. Sessions will focus on how to expand and maintain the success of the projects, the dissemination of proof of concepts, building support and a case for investment, promoting One Health intersectoral collaboration, shaping a forward vision –an agenda for elimination, and exploring funding mechanisms. A draft global framework for rabies elimination will be developed during the meeting with a manageable number of recommendations. Countries will have the opportunity to shape this framework. We will discuss a 2030 deadline with countries.

There's also an opportunity to have a WHA resolution on rabies. This will require letters from countries in support.

#### **Discussion:**

The PARACON meeting could help identify people to write letters for the WHA.

Could we launch the end rabies campaign at the global meeting, or on World Rabies Day?

### **SESSION FIVE - FULL DISCUSSION**

#### **ROLE OF PRP MEMBERS IN GLOBAL CANINE RABIES ELIMINATION**

4 key messages that all partners should emphasis in their communications were summarised as:

- Every rabies death is avoidable
- Vaccinating dogs ends rabies
- The rabies community should end human rabies by 20xx (tentatively 2030).
- The cost of canine vaccination is a fraction of the full cost of rabies.

There was general discussion around the possible action points raised throughout the meeting and PRP members volunteered to support the development of the activities according to their expertise (see appendix). Some areas clearly fall within the remit of international authorities, but all can benefit from the input of the PRP members.

It is clear that whilst making rabies a notifiable disease is critical, this alone will not ensure accurate disease reporting.

There is a need to design ways to demonstrate progress towards elimination goals. In this regard showcasing the BMGF projects as success stories will be valuable.

Direct interaction with governments has a role to play to enhance control agendas.

The relative strengths and potential uses of the RabEcon and BioEcon models need to be explored.

Translation of messages to policy makers is very important and Policy briefs need to be developed.

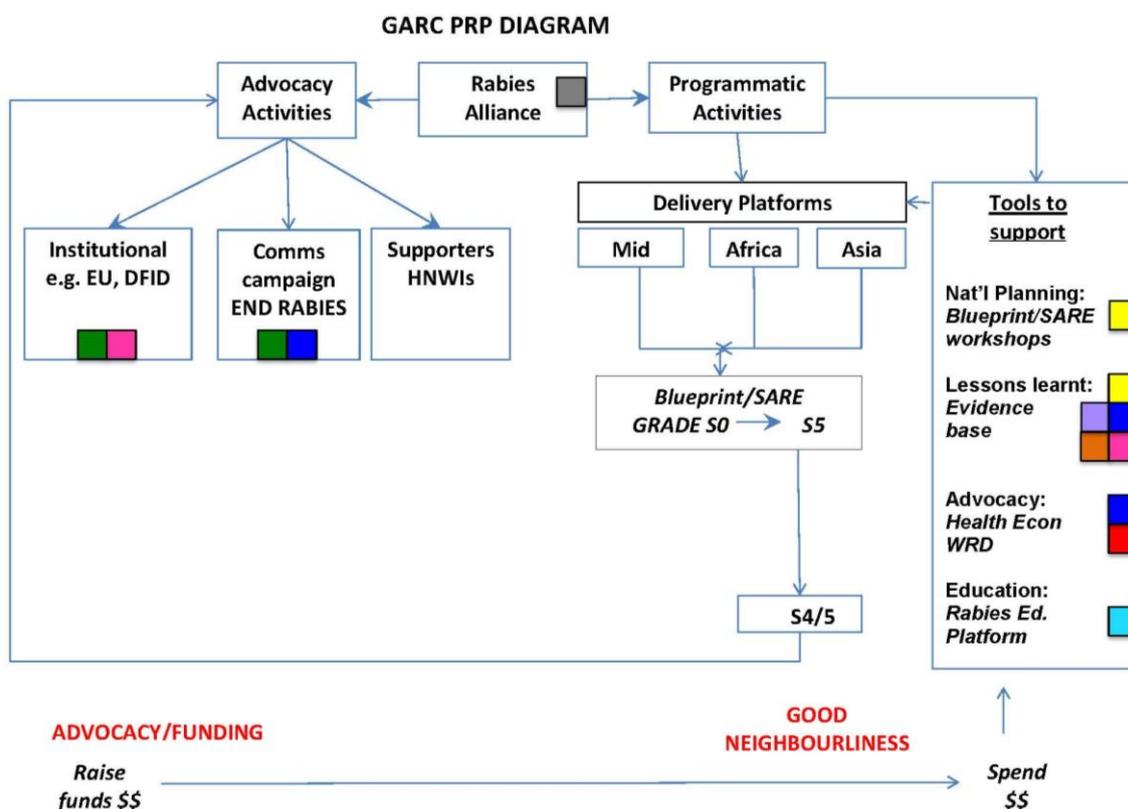
In terms of strategic planning, fewer and more coordinated meetings are needed and sharing of funding opportunities should be encouraged.

### **Concluding remarks – Louis Nel**

It is clear that although we have different backgrounds and see the landscape from different points of view, all PRP members support one goal. We need to identify the target, and if we are going in for the kill (ie. to eliminate rabies), we need to understand the method of the hunt and fix on this objective only. That requires focus and working together, which the working groups will help to achieve.

## Appendix: PRP working groups

I: How the working groups support the overall strategy



II: Topics of the Working groups

	<p><b>Surveillance</b></p> <ul style="list-style-type: none"> <li>• Notifiability campaign</li> <li>• Further develop surveillance app</li> <li>• Refinement of surveillance blueprint</li> <li>• Approval of dRIT / Standardization of mAbs</li> <li>• Validation of data source</li> <li>• Global Health Observatory /Standardization of data collection across countries</li> </ul>
	<p><b>Progress towards elimination</b></p> <ul style="list-style-type: none"> <li>• SARE</li> <li>• Showcase studies and lessons learned</li> <li>• How to demonstrate progress in countries</li> <li>• Validation of elimination</li> <li>• Coordination of regional networks</li> </ul>
	<p><b>Vaccination planning</b></p> <ul style="list-style-type: none"> <li>• Efficacy / Safety*</li> <li>• Longer term planning for vaccine use / public and private markets</li> <li>• Vaccine bank</li> </ul>

	<p>*Also include:</p> <p>Effectiveness (vaccination + program evaluation)</p> <p>Cross-cut with surveillance group</p> <p>Communication of WHO/OIE standards</p> <p>Criteria for using banks or other mechanisms</p>
	<p><b>Dog Population Management</b></p> <ul style="list-style-type: none"> <li>• Specifications of DPM tools</li> <li>• Defining the role of DPM</li> </ul>
	<p><b>BioEcon model</b></p> <ul style="list-style-type: none"> <li>• Parameterization of BioEcon model going forwards</li> <li>• Trialling</li> <li>• Use in developing investment case</li> <li>• Opportunities and limitations</li> </ul>
	<p><b>Advocacy</b></p> <ul style="list-style-type: none"> <li>• Translation of messages to policy makers</li> <li>• All to amplify key PRP messages</li> <li>• Political study of what affects rabies control</li> <li>• Demonstration of impact</li> <li>• End Rabies campaign</li> <li>• 4 key messages / policy briefs / elevator pitch</li> <li>• High level lobbying</li> </ul>
	<p><b>Education and training Platforms</b></p> <ul style="list-style-type: none"> <li>• Curriculum development</li> </ul>
	<p><b>Strategic Planning</b></p> <ul style="list-style-type: none"> <li>• Coordination of meetings and mapping of ongoing projects</li> <li>• Sharing of funding opportunities</li> <li>• Opportunities outside the rabies field</li> </ul>