Partners for Rabies Prevention meeting 2017
August 30th - September 1st in Wolfsberg, Switzerland

Meeting Minutes

Thursday August 30th

Session 1: Welcome and introductions

Louis Nel welcomed all participants to the meeting, especially those who had not attended before. He provided an outline of the agenda for the rest of the meeting and his hopes for a productive and positive meeting as we work towards the goal of rabies elimination by 2030.

Session 2: Recent international meeting outputs

Bernadette Abela-Ridder : WHO Expert meeting & revision of TRS, inc. PreP/PEP guidelines

Rabies is one of 20 neglected tropical diseases now recognized by WHO which all impact communities living in poverty. Veterinary public health is one of WHO's five key strategies to tackle these NTDs. For rabies, the global goal of "Zero by 30" is critical as a target that we can measure progress towards. At the WHO expert consultation meeting in Bangkok in April 2017 Draft revisions to the technical report series (TRS) were discussed, and a side meeting on modelling was held to support policy decisions around rabies control. The TRS will include a new section about validation and verification of rabies elimination, links to OIE standards and other updates.

Expert consultations around vaccination and a systematic review are being used to draft a background paper for the Strategic Advisory Group of Experts (SAGE) on whether prEP and PEP regimen can be simplified and made more cost-effective, and whether a more risk-based approach to the use of scarce rabies immunoglobulin (RIG) can be designed. A final version of TRS will be available following the decisions made at the SAGE meeting in October 2017, and a revised WHO vaccine position paper reflecting the change will be available by March 2018.

GAVI will meet in October to consider 20 human vaccines and there has been a lot of modelling and data collection work to support the rabies vaccine being included in their short list for further consideration. Work on the global business plan for rabies elimination was a task from the global meeting and much work has been put into developing this plan. A list of key dates in the near future was presented, including a meeting proposed for January 2018 to engage India in rabies elimination.

Susan Moore : DRIT, OIE validation and diagnostics update

An overview of the current guidance procedures for rabies diagnostics, the techniques currently recommended and the challenges in developing countries was presented. In terms of viral detection, the DRIT technique will be included in the updated WHO guidance. There are still many doubts related to manufacturing about lateral flow tests to detect viruses, but they may be useful (as a screening method only), so long as their limitations are understood. The sensitivity and specificity of genetic diagnostic techniques are improving and they are being used increasingly for confirmatory testing. There are several standardized tests available for antibody detection, modifications of these, and lateral flow tests for this purpose as well (the latter also with manufacturing concerns).

There is a need for flexible tests that allow for surveillance decentralization, and clear guidance on which tests are most suitable under which circumstances. The updated WHO manual will seek to provide this with algorithms and differentiation between routine and screening or confirmatory tests, and WHO and OIE guidance will be aligned. In future, more frequently updated and online/ video based guidance would be helpful, a biological bank of reagents for diagnosis and a pre-approval process for diagnostic tests would also be very beneficial.

Gregorio Torres and Bernadette Abela-Ridder : Harmonisation of rabies international standards and guidelines. Validation and verification from rabies

The OIE rabies chapters in the terrestrial code and manual and WHO guidance is currently being updated, and much work is being done to align the revisions. The new OIE guidance will differentiate dog-mediated rabies from other types, and discussions on how to demonstrate freedom and whether a zoning approach can be used are ongoing. The consultation process will take around two years. The recent WHO expert committee meeting will result in an update of the WHO technical report series by the end of 2017, and this discussion will feed into the rabies committee of the SAGE group as well.

To assess progress towards the global goal, there will be a process of validation (elimination of the public health threat) and verification (breaking of dog transmission) for rabies elimination targets. Reaching each stage will require a desk review of evidence, 24 months without cases, and adequate surveillance and control systems being in place. Recognition of the end of the human health threat is important to celebrate progress, but also has the risk of reducing commitment to control. There is a need for a stringent certification process with clear standards and scientific evidence. A template of a dossier of evidence has been prepared. WHO has an expert review procedure for validation, but OIE currently relies on self-declarations which rely on trust. Rigorous evaluation of evidence could be an expensive process, and for rabies there may be less incentive than for other diseases.

Points from discussion: There needs to be a clear definition of "adequate surveillance". Proof of continuing freedom will be necessary. We need to have the vision of long term sustainable absence of disease to make progress. We need to realize that some countries are a long way behind others and will need special support. There's a need to recognize the value of rapid diagnostic tests for decentralized surveillance. Validation may need to be context-specific, according to local standards.

Session 3: Health Economics work

Katie Hampson : Update on modelling to support GAVI

This is a large collaborative project intended to support decision-making by GAVI and the SAGE group, and to support the business plan. It aims to predict the impact (in terms of cost per death averted) of increased access to PEP and RIG. Two interlinked models were used, a biological rabies transmission model and an overlaid decision tree model which includes the probabilities of receiving treatment (and the consequences in terms of deaths) and the economic costs. These were used to explore the benefits of free intradermal PEP, with or without promotion of health seeking behaviour, over time frames until 2030 and until 2050. Additional components considered were including RIG, and assuming that mass dog vaccination is significantly increased over time. Data was sourced from GAVI countries, or extrapolated from other similar countries. Whilst all bites treated contribute to the economic cost, only bites from rabid dogs contribute to a reduction in deaths. It was also confirmed that pre-EP alone is very costly and ineffective in the prevention of dog rabies in endemic areas and should only be considered in connection with dog vaccination.

Completed activities include collating the data, an analysis of pre-EP within routine EPI schedule, modelling the relative cost-effectiveness of ID & IM regimens and proposed dose sparing approach for RIG and Estimation of human rabies PEP needs for the WHO Global Business Plan. Results so far show that the IPC 3 visit ID regimen is the best, and will be used in the model. There is poor data on the proportion of those given PEP who were genuinely exposed, and poor data on the effect of delays in PEP and absence of RIG, even though these are critical to outcomes. The ceiling on PEP demand may be 100X those genuinely exposed, and much overuse of PEP, which may be reduced by integrated bite case management techniques. Different countries are at different stages towards elimination, but most GAVI countries are currently under-using PEP. Different sources of data (contact tracing, community surveys, bite clinic records etc.) help with different aspects of the model.

Further work planned includes a technical review of the modelling methods, presentation of the model results to SAGE in October and a journal paper by Dec 2017.

Ryan Wallace : Modelling to predict vaccine and capacity needs for global elimination

The Global Dog Rabies Elimination Pathway (GDREP) model assesses the needs to reach 70% mass dog vaccination coverage in all endemic countries, and elimination by 2030. The model involves a 13 year time frame, with three phases from preparation, to scaling up and maintaining 70% coverage for 7 years. Using global datasets, estimates were made for all rabies endemic countries of the number of

vaccines and vaccinators needed and how much this will cost. Off the 536 million dogs in endemic countries, 130 million (24%) were estimated to have been vaccinated in 2015. By 2023 there is an estimated gap in demand for vaccine of 245 million doses. With production lags we need to be planning ahead. If vaccination campaigns last 3 months there will be a short fall in vaccinator capacity in 4 years' time. Assuming just over $2 per dog, the total cost to reach elimination was calculated at $6.4 billion, an additional $3.9bn on top of projections based on current spending. Based on the deaths averted between 2017 and 2045 this is $2,991 per death averted – much lower that GAVI calculations for other diseases. Attempts at cost reduction need to focus on the expensive components: logistics and more efficient strategies for vaccinators (increasing the no. vaccinated dogs / day). The work also considered spending on dog population management, specifically focusing on female sterilization which at current costs ($17+ / dog) is not cost effective, but at around $4/ dog may become beneficial.

Session 4: Universal Capacity Building Tools developed by the global community

Andre Coetzer : Overview of the SARE and recent improvements

Achieving sustained adequate vaccination coverage is difficult, and many long-term programs have failed to break rabies transmission. The global (STOP-R) framework recognizes that there are many different aspects needed for a good program and the Stepwise Approach towards Rabies Elimination (SARE, aligned with the framework) is designed to help countries develop strategy. Many separate activities are assessed, some as straight yes/no answers, others requiring more details. At the end of the assessment, an output of complete and pending activities is provided (with links straight to guidance in the rabies blueprint), a one year or a five-year plan can be accessed, and an overall SARE score is given. The whole process breaks down the progression to elimination into small steps and allows for country and regional scale progress to be assessed, as well as priorities identified. Yearly SARE assessments allow successes on the pathway to 2030 to be quantified. The tool has been well received by countries, and used at Regional meetings In Africa and Asia, in several dedicated in country rabies task force meetings, and has been requested through the blueprint.

Ryan Wallace : New planning tools: GDREP and VaxCalculator

The GDREP model described earlier has been converted into a customisable country-based Excel tool. It provides the country default values from the global model which can be replaced by improved country-specific data to estimate the number of years it will take for elimination, the resources required and additional costs above current investment. This tool has recently been used in Kenya, and the country report is intended for high-level decision-makers and control program directors. The goal is to elicit long-term commitment and resources for rabies control efforts. In Haiti a GDREP report elicited a World Bank donation for vaccine purchase. Integration into the SARE tool and having an online tool linked to the Blueprint are under consideration.

The VaxCalculator tool is intended to help design effective local vaccination efforts. Characteristics of the dog population such as ownership and confinement are collated as this strongly affects the efficacy of different vaccination strategies. Inputs include the number of dogs and the proportion confined, the number of vaccines, the number of dogs to be vaccinated by different methods and the costs associated. A very complex mathematical model exists behind the user interface, but the outputs are the vaccination coverage achieved, vaccination wastage and the costs per dog vaccinated. The model has been validated with 12 campaigns and the predictions are very close to reality. The tool is now being used in country workshops, will be published shortly, and then widely available.

Terence Scott : Rabies Epidemiological Bulletin development

Many countries collect rabies data and never use it. The rabies epidemiological bulletin was launched at PARACON in 2016. It is based on the DHIS-2 platform which is available in many languages and already in use in more than 60 countries. It can be used at different levels for international reporting, for regional (e.g. PARACON) data, to collate Ministry of Agriculture and Ministry of Health Data at the national level, and for sub-national data collection (e.g. in hospitals or during vaccination campaigns). There is a simple upload of data to the DHIS-2 platform, and data is displayed on a dashboard and automatically collated into tables, graphs and reports for download. It Is being used to track patient data at animal bite treatment clinics, and integrated with the rabies data collector for data capture from dog vaccination campaigns, for example in Zanzibar. In PARACON, 22 countries have submitted national rabies data so far, and the meetings provide continuous training in data entry and analysis. There are

dashboards for data at national, sub-regional and regional levels, and the data that can be shared publicly is visible via the GARC website.

Sarah Jayme : Progressive Zoning applied in a country context

Progressive zoning was a very useful tool for the Philippines during FMDV elimination, where the zoning was used to guide vaccination efforts. In 2016 they were 208 human cases of rabies in the Philippines and 35 areas are declared rabies-free, but only seven of these are provinces, some are very small. There is a need for a more strategic plan to reach elimination by 2030. The progressive zoning tool developed for Latin America has been applied to the Philippines as a management tool to provide guidance on control efforts in each zone. Provinces were categorized depending on the case numbers as endemic, declining (cases in consecutive months), intermittent (cases in non-consecutive months), absent and at risk or absent. Human and animal case data from 2015-16 was used, and most provinces could be classified using both sources of data. The progressive zoning tool describes very accurately the epidemiological situation. The Philippine OIE STANDZs project has an 'OPlan Red' tool that also classified provinces in a more risk-based way. There is value in both methods to monitor progress, and guide efforts going forwards.

Session 5: United Against Rabies Business plan

Bernadette Abela-Ridder and Saleh Khan : Vision for UAR, Theory of Change and Business plan

The United Against Rabies collaboration is an attempt to reduce the historical fragmentation of support to countries, and builds on the tripartite collaborations and the global framework and meeting. United Against Rabies is a mission-driven collaboration dedicated to achieving a common goal. It is a global catalytic initiative and a uniting platform for all stakeholders. It will highlight best practices and define standards and policies, facilitate south-south knowledge exchange and promote a one health and highly country-centric approach. It is not a donor agency, a financing facility, a research group, or simply a talk shop, and it is not a vertical program dictating the needs of or allocating resources to countries.

It has been a very enriching journey to build upon the success so far, to contribute to the Sustainable Development Goals (SDGs) and to put countries in the centre of our vision to reach 0 by 30. The group has defined its goals, objectives and the way it will work together, and developed a business plan around the value proposition. The purpose of the business plan is to engage with stakeholders and to define what success looks like.

National and regional elimination plans remain at the centre of the strategy. The United Against Rabies value proposition is that its work will support countries to promote rabies control, tie into the efforts of development partners working towards the SDGs, and bring in donors, vaccine manufacturers and business planning skills. This will allow donors to know that a country's plans are anchored in best practices. The theory of change flowchart outlines how activities lead to societal changes and these to achieving the big picture goals. This in turn leads to the Strategic plan's 3 objectives, 9 outcomes and 20 outputs which are defined in a logical framework. Objective 1 is to efficiently prevent and respond by raising awareness, vaccinating dogs and ensuring access to vaccine for bite victims. Objective 2 focuses on generating and measuring impact, through the provision of guidance and ensuring that reliable data enable effective decision-making. Objective 3 is to sustain commitment and resources, through stakeholder engagement, advocacy and monitoring of progress towards the goal,

The plan will deliver support to countries in three phases: 2018-2020, 2021-25 and 2026-2030, with 26, 59 additional and 20 additional countries engaged in each. The estimated budget is around 50 million dollars for all three phases across the 13 years. In Phase 1, the majority of support will be for capacity building and enabling national plans along with advocacy efforts. Additional funds will be needed for countries to reach zero human deaths, and for the human and animal by biological banks, as well as to maintain freedom from human cases, eventually leading to elimination from dogs.

The request to the PRP group, is for continued engagement to help reach this goal.

Points from discussion: The prioritization of countries into the phases was based on a combination of factors. Countries that may make quick progress, donor alignment, and government commitment as well as disease status. Hopefully the list will include some champions that can help create a snowball effect by giving their full commitment in the early phases. The human biologicals bank is envisaged to support countries who cannot commit to a very long-term agreement, and should even out peaks and troughs in demand. The standard operating procedures for the biologicals banks (requirements from countries, licensing and registering of products etc.) have not yet being developed, and such concerns will need to be solved early on. Different sectors of the budget could be targeted to different potential donors, or donors may support particular countries. Pre-qualification of animal vaccines is not on the OIE agenda, but an expert group could potentially draw up a list of approved products. If GAVI did finance the 'downstream' process, matching this with an 'upstream' investment in dog vaccinations from a suitable donor would be very desirable as this is the only way to achieve an acceptable return on investment. Monitoring and evaluation of progress is a vital aspect, often missed in programs.

Session 6: TOC: Education and Advocacy programmes to increase awareness and commitment

Kim Doyle : Advocacy plan

The United Against Rabies collaboration builds on 10 years of work based around a shared vision within the rabies community. In 2008 the PRP developed a plan on where and how to invest towards human rabies elimination, and in 2015 a landscape analysis pointed to the need to reach out more to the broader health community and focus on coordination and championing rabies success stories. The advocacy work by the United Against Rabies collaboration is a coordinated effort to promote the feasibility and to attract the resources necessary for all countries to achieve the global goal.

Key activities will be to develop a joint donor landscaping and resource mobilization plan and a joint communications plan (including World Rabies Day and End Rabies Now). Additional activities focus on encouraging countries to prioritize rabies and to integrate rabies into the broader NTD and universal health coverage fields.

The United Against Rabies plan will be launched on September 28th and the WRD theme for this year is "0 by 30". The End Rabies Now (ERN) campaign is being expanded to attract a broader base of supporting organizations, and we would like the PRP group to endorse the global goal during this meeting to support this also. We want to use ERN to show incremental progress towards the global goal.

Stephanie Salyer : Country prioritisation of zoonoses

The One health prioritization tool (Published in Plos NTD) is useful where limited data and poor collaboration between sectors exists. It is needed to prioritise disease control efforts using local data and criteria from across human and animal sectors in a transparent, collaborative process. After a 5 step process identifying the important criteria and questions, the ranking criteria are agreed and at the end of a two-day workshop, a ranked list of (usually 5) zoonotic disease priorities is arrived at. The workshops allow for a lot of discussion over the next steps to be taken and a workshop summary and final report are prepared. As an example, the workshop in Cameroon resulted in rabies being listed as the first priority disease.

The Global Health Security Agenda (GHSA) was launched in 2014. Zoonotic diseases are one of the areas where support packages are provided, and this requires the identification of 5 zoonotic diseases of greatest public health concern. The existing priorization tool has been used in this context with 15 countries so far and 2 more workshops are planned. Of the 15 completed countries, rabies was prioritized by 14, making it the most prioritized disease. CDC has also partnered with USAID to support one health platforms and have trained local facilitators to be able to repeat the prioritization exercises. There are 19 countries that have prioritized rabies using this one health tool or alternate methods. Future work involves working with other partners, for example with the One Health Challenge, and developing a workflow, so that prioritization of rabies leads into application of the SARE tool to allow countries to plan more effectively their next steps.

Bernadette Abela-Ridder : Integration of rabies into the broader NTD field

We are trying to promote rabies within the agenda of a big organization with lots of goals. We need to mainstream rabies control within the wider Universal Health Coverage movement. We can deliver

very focused rabies control messages through the United Against Rabies collaboration and End Rabies Now, but we need to ensure that rabies finds a place in the larger organization goals too.

Sarah Cleaveland : Integrated interventions

Washington State University has been testing whether the community trust in their rabies dog vaccination program could be used for other disease control programs. In remote communities of Northern Tanzania, soil transmitted helminth (STH) control is being combined with the dog vaccination program. 86% of children treated for STHs this way would not have been reached through a conventional school-based control program. Effective dog vaccination coverage was sill attained, and at a lower cost per dose, as part of the integrated delivery strategy and the communities were enthusiastic about the integrated strategies. The program catalysed effective collaboration between human and animal health workers.

Recent data on thermo-tolerance of rabies vaccines has shown that vaccines stored at up to 30 degrees Centigrade for 3 months are still effective. This work argues that some transportation outside the cold chain does not significantly affect vaccine quality, at least for high quality vaccines, but does not argue that the cold chain can be dropped completely. We need to see how we can use this information with community-based distribution systems to increase the reach of vaccination campaigns.

Sarah Jayme : Leprosy screening and rabies ABTC integration

Integration of rabies and leprosy control in the Philippines is helped because the two programmes have the same manager. There were 1,655 cases of leprosy in 2014. Rabies is endemic, with over 1 million bite victims accessing free PEP from 498 bite treatment clinics in 2016. Animal bite treatment clinic staff need to be trained every two years, and leprosy screening is being integrated into this training to allow staff to recognize cases of leprosy and refer them on. A joint manual for the two diseases will be developed and a pilot test in 6 ABTCs in three provinces is planned, before nationwide combined trainings.

Points from discussion: It is hard to argue that vaccine can be used outside a cold chain, without it being licensed for this. Lower quality vaccines may not fare as well at room temperature. Thermo-monitors on every vial are too expensive, but monitors on each box may be more feasible. WHO guidelines need to be adaptable for countries with very large differences in existing capacity. Donors are very interested in integrated disease management and if there was a way to relate maternal and new-born health to rabies that would be very attractive. Rabies as a sentinel for other diseases is also a good message for donors. A mobile phone surveillance system used for animal bites and dog vaccination reporting in Tanzania is being adapted by the 'Zipline' company to deliver emergency parcels of medicine by unmanned vehicles. In January they will implement delivery of rabies vaccine and snake bite anti-venom.

Friday 1st September

The meeting participants agreed to release the following statement from the meeting:

"The Partners for Rabies Prevention gathered at Wolfsberg, Switzerland on August 31st - September 1st, 2017 for their tenth annual meeting. The group comprised over 40 representatives from 27 organizations, reflecting a diverse range of stakeholders in rabies control, including International organizations, rabies experts, academics, vaccine manufacturers and Non-Governmental Organizations.

Together, they endorsed the global goal of Zero human deaths from dog-transmitted rabies by 2030, and evaluated the progress, particularly related to health economics and universal capacity building tools developed in recent years.

The group called for: the accelerated implementation of these tools in rabies endemic countries; for all countries to make rabies elimination a priority; and for further cooperation and concerted action from all players to bring freedom from rabies closer to all communities. The Partners for Rabies Prevention pledged to work harmoniously together to achieve the global goal."

Session 7: TOC: Operational Capacity Building to increase preparedness

Louise Taylor : Overview of how tools combine to support an elimination strategy

This presentation builds on many from yesterday, with the key concept being how can we as a community support countries as they move towards rabies elimination. We have a number of different technical guidance tools and other mechanisms now available, but how can they be combined into a package of support? Not every country will start at the very beginning, but we can break down the stages a country moves through into (i) prioritization, (ii) assessment, (iii) program development, (iv) capacity building and program delivery, (v) monitoring and evaluation and finally (vi) program promotion phases. Within each of these phases are various steps that a country needs to move through. Between the regional networks and country-based workshops, we have the ability to deliver technical tools, such as the SARE assessments, the rabies epidemiological Bulletin and capacity building Education and Training. The WRD and ERN provide advocacy channels to attract support, and the vaccine banks allow countries better access to quality vaccine. Mapping out all tools and mechanisms to the stages a country needs to move through also helps us to identify remaining gaps.

Isabelle Dieuzy-Labaye : OIE strategy for Vaccine banks

The OIE rabies vaccine bank is administered through the World Fund for Animal Health. It works very well, but improvements are possible. The vaccine bank is designed to provide easy access to quality vaccines (sometimes as an urgency), and it uses production on demand, with no physical stock to ensure a good shelf life, involves good logistical planning and offers lower prices. It is by no means exclusive or mandatory, and requires an official request from the OIE delegate, who accepts the responsibility once the vaccine is delivered to the country. Monitoring of the end use of vaccine is not covered very well right now. Many different types of donors are able to access it, and it is currently operating underits capacity. After 5 years it has delivered over 19 million doses to 27 countries worldwide (mostly through WHO purchases, and with some country programs). Feedback is invited on potential improvements, particularly in the context of the 2030 global goal.

Points raised from the audience for future discussion: Countries need millions of dollars up front to plan an elimination campaign, mechanisms such as social impact bonds may help with this. Financial donations are currently just short-term. More information on long-term planning should be requested if vaccine is donated. We should try to build multi-year vaccine orders, with countries paying increasing cost over time. There is currently insufficient feedback on where the vaccines go. The benefit to the vaccine manufacturers is not all that clear. Can we encourage bilateral donors to also support a more general fund for supporting regional efforts? Is there any way to engage private vets in countries with emerging markets? However, most donations go where there are no private vets. Rabies control successes are usually due to big commitments by governments. Rabies is competing with a lot of SDGs. Could a highly successful OIE vaccine bank negatively affect other vaccine purchase mechanisms? A larger market will mean prices are reduced for all purchasers.

Session 8: TOC: Monitoring and Evaluation to increase effectiveness and sustainability

Gregorio Torres : Official notification of rabies. WAHIS and WAHIS+

The official data for rabies in animals in 2016 is very patchy, but over the period 2015 - 2017, almost all countries reported rabies in animals as present or suspected. The terrestrial code rabies case definition is an infection of any animal with the rabies virus, so all reservoirs are grouped together which is unhelpful. An entire country is either free or not free of rabies, and there is no zoning approach. WAHIS is the platform for submitting official rabies data in a standardized format, and it is reported by the OIE delegate CVO. There is training on how to notify the OIE, and an app is available. Member countries (181) are legally obliged to report, but 203 countries report, using two types of report (outbreak and regular monitoring). Requested data is only the essential data relating to locations, tests, numbers of animals affected, species and control measures implemented etc. WAHIS is being redesigned into WAHIS+ which will have a more user-friendly interface, connectivity with other databases including climate and human data, and provide more useful feedback to countries. This will be completed by 2020, and input into the process is being invited.

Terence Scott : Integration of Rabies Epidemiological Bulletin into global databases

At national levels, there is often a lack of coordination between human and animal health sectors which affects the quality of the data and causes discrepancies in databases at national and international levels. There is a strong need for standardization and harmonization of reporting to produce high-quality data. To achieve this a standardized set of indicators was developed for the PARACON bulletin. The DHIS-2 based bulletin also includes automated sharing of data, from national governments to GARC, and from GARC to WHO, and information sharing with other international database (for example WAHIS+) could be explored. GARC is trying to get existing country DHIS-2 systems linked to the rabies epidemiological bulletin. With better quality data, we can make clear advocacy statements to stakeholders. In Kenya 38 human cases tested positive for rabies in 2015, compared to an estimate from the burden study of 523. In 2016, 727 human cases were tested positive, demonstrating a huge improvement in data reporting.

Points from discussion: We need to fix the disconnect between reported and estimated cases with improved reporting. There are issues over the ownership of the data, as only the CVO can send information to be accepted by the OIE. A data validation step for this could be built into the DHIS-2 bulletin. In some countries the "official" data is completely inaccurate, and in some cases funding of programs affects the data ownership also. Connecting field workers to central data management people is vital. When rabies cases do not equal rabies deaths, we know the quality of data is very poor. OIE National Focal Points (animal health data entry people) are trained by OIE, but high turnover of staff is an issue. There are quality control mechanisms, and missing reports are followed up on. The SIRVERA database for Latin America took 30 years to develop, and the PARACON bulletin after only two years looks much nicer. Is there a role for social media sources to contribute to rabies reporting? There's a strong role for regional networks to build trust and transparency and some peer pressure into data reporting.

Louise Taylor : Concept of a PRP Global Rabies Atlas

Over the last decade, the PRP's expertise has been drawn on many times: for the global burden reassessment; technical expert meetings; data collation to support modelling; mapping of capacity-building work and other purposes. How can we best use the work already done and think ahead to future data and monitoring needs for the 2030 goal? To assess progress towards a global elimination goal, we need global data, not just a few examples. We need to provide quantifiable and referenceable data on rabies in all countries to support countries in developing better plans, to encourage more community support and investment and to allow monitoring of progress. There are several existing global and regional data sets on rabies cases (e.g. WAHIS, the WHO Global Health Observatory, regional rabies bulletins) and global estimates from the Hampson burden and Wallace GDREP models. There are country specific data from publications such as case data, bite incidence, vaccination coverage, dog population estimates, etc. There are various measures of assessing capacity for rabies control in different countries. Could these be combined into a web-based, map-based Global Rabies Atlas that could be useful for different stakeholders? Some considerations include whether private data could be included, how much replication of other data should be attempted, and how interactive the interface might be. Feedback and suggestions are welcomed.

Session 9: Wrap Up Discussion session

Saleh Khan : How can PRP members contribute to the UAR country intervention approach?

Angélique Angot contributed that the FAO is increasing its work on rabies, due to the USAID-funded FAO Emerging Pandemic Threats (EPT-2) programme. FAO is starting to work in 14 countries in West, Central and East Africa, where rabies has been listed as a priority disease, and welcomes linking these activities into the work of the wider community.

Saleh Khan then invited discussion on how the PRP members and organizations would interface with the United Against Rabies collaboration.

Points from discussion: A regionally coordinated operations plan is needed to accompany the business plan, and relating to country clusters, the epidemiological evidence should lead the business logic. The next step for the United Against Rabies collaboration is to develop such a work plan for 2018 - 2030. Solid plans for how the biological banks will function are needed to kick-start multi-year planning.

This should be guided by good data and the principles of best practice. The lack of pre-qualification for dog vaccines, and in particular oral rabies vaccines is an important issue, and it was suggested that the United Against Rabies collaboration could develop an expert committee independent from manufacturers to complete a qualification process for canine products. Such a group could identify challenges, and the United Against Rabies collaboration would then be tasked with finding solutions. There are currently only two pre-qualified manufacturers for human vaccine, and there is a need for a projected demand graph for human vaccines. This is one aspect of the modelling work associated with the business plan. One of United Against Rabies collaboration biggest roles is advocating for prioritization, engaging funders and identifying countries that are serious about rabies elimination.

The business plan represents a huge step forwards, and the four partners remain very positive about the collaboration. We need to spread the word to our networks to maintain commitments, within OIE and WHO for example. When the business plan becomes available, a one-pager to share widely will be very helpful, and testimonials of support from organizations at the PRP would be beneficial. There is a need to make sure countries are involved in the collaborative process. The business plan has been worked on because it was a request from all participants, including countries at the 2015 global meeting. There were donors at the global meeting asking for the rabies community to speak their language by developing a business plan.

Victor Del Rio requested technical input from the participants to a survey designed to support a model that will use behavioural data to inform risk attitudes and willingness to pay for improvements in surveillance.

Louis Nel : Closing remarks

Louis Nel closed the meeting with an African Proverb: "The best way to eat the elephant standing in your path is to cut it up into little pieces" and reflected that there had been a real feeling of progression demonstrated at this meeting. He added that he was happy that his hopes for the meeting had been realised: It was a constructive meeting; there was synergy and a common goal; and the final outcome is a better way forward towards the elimination of human rabies by 2030.

Participants at the 2017 Partners for Rabies Prevention meeting

Minutes of the 10th PRP meeting in Wolfsberg 2017

Partners for Rabies Prevention meeting 2017
August 30th - September 1st in Wolfsberg, Switzerland

Participants list

Name	Organization
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