



RESEARCH
PROGRAM ON
Agriculture for
Nutrition
and Health



ILRI
INTERNATIONAL
LIVESTOCK RESEARCH
INSTITUTE



Participatory Epidemiology Network for Animal and Public Health

Report of the First Technical Workshop

Chiang Mai, Thailand, 11-13 December 2012

In collaboration with ILRI, Kenya, VPHCAP-CMU, Thailand



PENAPH First Technical Workshop

The Participatory Epidemiology Network for Animal and Public Health (PENAPH) is a partnership of organizations and individuals that seek to facilitate the continued development and application of participatory methods in epidemiology. PENAPH partners include animal health and public health organizations committed to one health and ecohealth approaches. The overall goal of PENAPH is to enhance epidemiological services in the developing world by making them more representative of and responsive to the needs of beneficiaries.

PENAPH was pleased to hold a technical workshop that brought together trainers, practitioners and others interested in Participatory Epidemiology (PE) and its applications in animal health, one health and ecohealth. The organization of the workshop was supported by a grant to ILRI from the Rockefeller Foundation through the Empowering National and Regional Stakeholders Grant. ILRI hosts the PENAPH secretariat. The Technical Workshop has produced this electronic proceedings that contain the abstracts of the papers presented and results of discussion forums.

Communications concerning the Technical Workshop have been posted on www.penaph.net. PENAPH suggests those interested in PE browse the website and follow the link 'Join our online community' to join PENAPH.

The objectives of the Technical Workshop were to:

- Document and exchange experiences in PE
- Report results of mentored field studies from PE training programs
- Report regional and national partner activities
- Document workshop proceedings and papers in an electronic publication
- Plan the future of the network

Program activities included:

- Presentation of papers
- Discussion forums
- Poster session
- Social events

Oral Presentations:

A call for papers was done and 58 abstracts were received. All submissions were reviewed anonymously by at least two reviewers drawn from PENAPH's core partners. Of these abstracts, 36 were selected for oral presentation. Subjects included:

- Project and program experiences involving PE
- Research on PE methods
- Epidemiological research involving PE methods
- Methods for assessments and evaluations of programs that include PE
- Participatory impact assessment of health related activities

Regional Networks

Two of the regional networks, the Asia-Pacific Participatory Epidemiology Network (APPEN) and the Participatory Research in Emerging and Infectious Disease in South East Asia (SEA-PREID) held side meetings on December 14th to develop their principles of operation and work plans.

Funding:

The core organization of the workshop and a limited number (24) of stipends for participants from developing countries were funded through the project. The Empowering National and Regional Stakeholders Project had limited funds to support participants from developing countries. Participants from developing countries who had a paper or poster accepted and did not have an on-going sponsoring project for their work were given priority. The Project was able to support all those who had an oral presentation accepted and requested support. Also, the conference fee was waived for all participants from developing countries who requested a waiver of fees.

Projects active in the area of PE were encouraged to support participants to the workshop as a forum to share their findings. The response was very encouraging and organizations such as CIRAD, SEAOHUN and FAO funded 30 participants from Asia and Africa. The organizers express their sincere thanks.

Background: PENAPH has had two core partners meetings where the formation and operating principles of the network has been the main topic. PENAPH has conducted training of trainers workshops in English and in French, conducted pilot training programs on the use of PE in one health and hosts a website on participatory epidemiology (www.penaph.net). Those interested are encouraged to visit the website to learn more. At present, 13 organizations and 350 individuals are members of PENAPH.

This PENAPH Technical Workshop was intended as a next step to bring together all core and organizational partners as well as interested individuals.

Organizing Committee:

PENAPH would like to thank the organizing committee for excellent work in planning the conference and executing the call for papers.

The Organizing Committee:

1. Byrony Jones, RVC
2. Dirk Pfeiffer, RVC
3. Jane Parmley, VSF-Canada
4. Chris Jost, EcoServe Solutions
5. Solenne Costard, RVC
6. Jeff Mariner, ILRI
7. Fred Unger, ILRI
8. Arjan Khwanchai, CMU

The Conference Team:

1. Terry Amaya, ILRI
2. Charatkae Chantarapaoraya, CMU
3. Warangkhan Chaisowwong, CMU

WORKSHOP PROGRAM

Day	Time slot	Duration	Topic	Presenting Author	Presentation Title	
Day 1	9:00-9:20am	20 minutes	Welcome	Drs. Lertrak and Mariner	Welcome by the Dean of CMU and the PENAPH Coordinator	
	9:20-10:30am	40 minutes	Scientific presentations: Chair Dr. Swai	A.E. Wright	Perspective of PE in the Investigation of Zoonotic Disease Perception in the Van Gujjar Community of Northern India	
				N. Nantima	Participatory Disease Searching Using Participatory Epidemiology Techniques in Agro-Pastoral and Pastoral Areas of Mbarara District in Uganda	
	10:30-11:00am	30 minutes	Break			
	11:00-12:30pm	90 minutes (30+3*20min)	Scientific presentations: Chair Dr. Goutard	D.D. Wako	Use of Participatory Epidemiology to Study Camel Diseases in Northern Kenya: Achievements and Challenges - <i>Innovative presentation</i>	
				N. Antoine-Moussiaux	Participatory Approaches for Evaluating Surveillance Systems: Insights from a Training-Related Study from Vietnam	
				Dr. Norman	Participatory Impact Study of Peste des Petits Ruminants in Pakistan	
				MB. Bolajoko	Participatory Rural Appraisal of Livestock Diseases among Fulani Community, Barkin Ladi Local Government Area, Plateau State, Nigeria	
	12:30-1:30pm	60 minutes	Lunch			
	1:30-2:00pm	30 minutes	Interactive poster presentations 1			
	2:00-3:30pm	90 minutes	Discussion forum 1	Jost, Okeil and Noelina	Criteria for useful PE evaluations	
	3:30-4:00pm	30 minutes	Break			
	4:00-5:30pm	90 minutes (30+3*20min)	Scientific presentations: Chair Dr. Antoine Moussiaux	C. Jost	Assessing the Accuracy of a Clinical Outbreak Definition for Highly Pathogenic Avian Influenza (HPAI) - <i>Innovative presentation</i>	
				C. Basri	The Use of Participatory Epidemiology (PE) Approach in Supporting of Rabies Control Program in District of Karangasem, Bali, Indonesia	
				D.N. Mwapu	Detection of Transboundary Animal Diseases Using Participatory Disease Surveillance in Plateau State, Nigeria	
				M. Tetui	Exploration of Community Perceived Risk Factors for Diarrheal Diseases in Busanna Sub-county, Kayunga District Using Participatory Epidemiology Methods	
	5:30pm			End of Day 1		

Day	Time slot	Duration	Topic	Presenting Author	Presentation Title	
Day 2	9:00-9:30	30 minutes	CMU Keynote Presentation	Dr. Sithinat P.	Participatory Action Research in Health	
	9:30-11am	90 minutes (30+3*20 min)	Scientific presentations Chair Dr. Odooch	F. Goutard	Participatory Epidemiology: A Tool to Evaluate Impacts of Foot-and-Mouth Disease Among Livestock Owners in Cambodia - <i>Innovative presentation</i>	
				E.S. Swai	Using Participatory Epidemiology Tools to Investigate Contagious Caprine Pleuropneumonia (CCPP) in Maasai Flocks, Northern Tanzania	
				I.W. Musa	Clinical Application of Matrix Scoring and Comparison of Participatory Epidemiology with Conventional Research Methods in Two States of Nigeria	
				C. Calba	Adaptation of a Participatory Tool for the Evaluation of Village Animal Health Workers	
	11:00-11:30am	30 minutes	Break			
	11:30-1:00pm	90 minutes (30+3*20 min)	Scientific presentations: Chair Dr. Jost	J. Berezowski	The Canadian Swine Health Intelligence Network - <i>Innovative presentation</i>	
				L. Srikitjakarn	A Model for Avian Influenza Control Using Participatory Tools Suitable for Village Conditions in Rural Area of Thailand	
				T.S. Ahmed	Detection of Highly Pathogenic Avian Influenza Outbreak using Participatory Epidemiology Techniques - Niger State, Nigeria, 2009	
				MO. Soleye	A Participatory Assessment of Disease Burden, Morbidity and Mortality from Five Priority Livestock Diseases in Nigeria	
	1:00-2:00pm	60 minutes	Lunch			
	2:00-3:30pm	90 minutes	Discussion forum 2	S. Fevre, Imron and Goutard	Participatory Methods in Surveillance, One Health and Ecohealth	
	3:30-4:00pm	30 minutes	Break			
	4:00-5:30pm	90 minutes (30+3*20 min)	Scientific presentations: Chair: C. Okell	N. Antoine-Moussiaux	A Participatory Methodology to Assess the Local Factors Influencing the Performances of Avian Influenza Surveillance Network in Northern Vietnam - <i>Innovative</i>	
				F. Unger	Participatory Planning, Implementation and Evaluation of a Zoonosis Control Research Project in Kenya	
				MB. Bolajoko	Participatory Rural Appraisal of Livestock Diseases among Fulani Community, Barkin Ladi Local Government Area, Plateau State, Nigeria	
				M. Ali	Participatory Impact Assessment of Animal Health Through Collective Action to Enhance the Stake of Equine-Ownning Communities	
	5:30pm			End of Day 2		

Day	Time slot	Duration	Topic	Presenting Author	Presentation Title	
	8:30-9:00	30 minutes	OIE Keynote Presentation	Dr. Martinez	Participatory Action Research in Health	
	9:00-10:30am	90 minutes (30+3*20min)	Scientific presentations: Chair Dr. Kwendai	P. Woods	Community Health Education and Perceived Incentives Increase Demand for Brucellosis Testing - <i>Innovative presentation</i>	
				A. Delabougli	The Social Dimension of Animal Health Surveillance System: An Interdisciplinary Approach of Social Pressure in the Process of Disease Reporting in Northern Thailand	
				R. Duboz	Companion Modelling and Participatory Epidemiology	
				P. Pato	Classical and Participatory Epidemiology of Canine Rabies in Lome Commune in 2012	
	10:30-11:00am	30 minutes	Break			
	11:00-12:30pm	90 minutes (30+3*20min)	Scientific presentations: Chair Warangkham	S. Fevre	Using Narrative Approaches to Assess Animal and Community Health Interventions in Laos: Most Significant Change - <i>Innovative presentation</i>	
				C. Jost	Using a Participatory Approach to Characterize HPAI Outbreaks in Indonesian Village Poultry	
				J.L. Coffin	Using One Health and Participatory Epidemiology to Assess Impacts of Anthrax on the Human-Animal Interface in Rural Uganda	
				T.J. Beyenne	Foot-and-Mouth Disease in the Borena Plateau: Vaccination Benefit-Cost Analysis, Ethiopia	
	12:30-1:30pm	90 minutes	Lunch			
	1:30-2:50pm	80 minutes (4*20min)	Scientific presentations: Dr. P Woods	Dr. Olatayo	Eight Years (2004-2012) of Teaching Participatory Epidemiology at the University of Ibadan, Nigeria	
Day 3				N. Nantima	Results of Participatory Active Surveillance for Highly Pathogenic Avian Influenza in Uganda	
				C.N. Okell	Perceptions of the Impact of Deworming Activity in the Emergency Drought Response, Northern Kenya, 2011	
				B. Lubwama	Using Participatory Epidemiological Techniques to Establish the Factors Associated with the Typhoid Fever and Gut Perforation Outbreak in Communities of Kasere	
	2:50-3:15pm	25 minutes	Break			
	3:15-3:35pm	20 minutes	Scientific Presentation	Papaspong J.	Community's Perception of Brucellosis by Applying Participatory Epidemiology in Chiang Mai and Lamphun Province, Thailand	
	3:35-5:15pm	100 minutes	Discussion forum 3	Mariner, Fon and Okell	Future Directions for PE and PENAPH- Members views and feedback	
	5:15-5:30pm	15 minutes	Closing	Dr. Lertrak		
	5:30pm		End of Day 3			

ORAL PRESENTATIONS

TITLE: DETECTION OF HIGHLY PATHOGENIC AVIAN INFLUENZA OUTBREAK USING PARTICIPATORY EPIDEMIOLOGY TECHNIQUES – NIGER STATE, NIGERIA, 2009

Author(s): T. S. Ahamed, E.Oddoh, J. Kabir and C. Jost.

Presenting Author: T. S. Ahamed

Abstract:

Background: Highly Pathogenic Avian Influenza (HPAI) was first reported in Nigeria in 2006. Limitations of the existing animal disease surveillance system contribute to poor reporting from rural areas of the country. We conducted a study to identify possible undetected HPAI outbreaks using participatory epidemiology (PE) techniques in villages in Niger state. PE is an approach to disease investigation in rural areas using community participation and gives stakeholders a role in disease identification and shaping control programs.

Methods: Multi-stage random sampling was used to select 30 villages in the state. Focus group discussions (FGD) and key informant interviews using semi-structured questionnaires were conducted in each village. Information was collected on perceived importance and prevalence of poultry, poultry diseases, and disease syndromes that occurred in the village over the past one year. The prevalence of villages with suspected HPAI outbreaks was determined using matrix scoring techniques and proportional piling methods by scoring key poultry diseases/symptoms against a standardized case definition of HPAI.

Results: The study showed that chickens, with a median score of 47 (10th and 90th percentiles of 37 and 54 respectively) were perceived to be the most abundant livestock species in the villages. Matrix scoring determined 16 of the 30 villages (53%) reported diseases/disease syndromes that were consistent with HPAI. Two types of mortality that met the case definition for HPAI were described: sudden death in (1-12 hrs), and rapidly increasing mortality.

Conclusions: PE techniques modified for surveillance purposes could be an effective means to detect animal diseases in rural areas where conventional surveillance methods are limited. Early identification of zoonotic diseases in animals, such as HPAI, would provide information for early intervention of human disease.

Keywords and references:

Keywords: Highly Pathogenic Avian Influenza, Participatory Epidemiology, Surveillance, Rural populations

TITLE: PARTICIPATORY IMPACT STUDY OF PESTE DES PETITS RUMINANTS IN PAKISTAN

Author (s): **Syed Noman Ali¹, Jeffrey C. Mariner² and Shahan Aziz³,**

1. Food and Agriculture of United Nation

2. International Livestock Research Institute, P.O. Box 30709, Nairobi 00100, Kenya.

3. Department for Agribusiness, University of Karachi Pakistan

Presenting Author: **Syed Noman Ali**

Purpose

Agriculture is the main source of income and contributes about 26% to the gross domestic product of Pakistan. Peste des petits ruminants (PPR) is an important TAD disease and it has been reported from many countries of the world. In Pakistan, outbreaks of PPR were recorded in early 90s. The main livestock found in the country includes cattle, buffalo, sheep, goat, camel, horse, asses and mules. Yaks are found in northern hilly topography. About 67% of rural population is dependent directly or indirectly on livestock, more than 35 million families are involved in this business with an average holding size of 2-4 cattle and buffalos, 5-6 small ruminants and poultry. The study was an impact assessment of PPR disease conducted in 2004-5 that estimated relative prevalence and identified the high risk and low risk areas in Pakistan using participatory epidemiological methods.

Methods

Data regarding the prevalence and importance of PPR disease was taken from report of PDS teams working in Pakistan, however published reports about disease in Pakistan and expert opinion were also take in consideration. On the basis of data from the PDS teams, high risk and low risk areas about PPR disease are identified. Mission visited each identified area and used PDS tools including semi-structured interview, proportional piling, matrix scoring and seasonal calendars were used to study the prevalence, importance and impact of disease (economic, social, environment. etc.). Besides focus group interviews at the village level, individual interviews with key informants like livestock department personnel, private veterinarians and major livestock owners were held. Information collected included descriptions of PPR like symptoms and pastoral movements both internal to Pakistan and across the border with Afghanistan.

Main results

The information indicated that PPR is endemic in the country. During the study period it was most severe in Sindh province followed by lower Punjab province then Khyber-Pakhtunkhwa province, and AJK. It was present to a lesser extent in Baluchistan province and the Northern Areas (Gilgit-Baltistan). Disease free areas could be identified because of animal movement and concern that respondents were less aware of the disease in low incidence areas. Result shows that in Pakistan, morbidity due to PPR is higher in goats than in sheep and that mortality is highest in young stock. According to ranking and scoring result, the relative prevalence is anthrax 29.34%, PPR 28.17%, Contagious caprine pleuropneumonia 18.89%, enterotoxemia 17.09% and Orf or contagious pustular dermatitis) 5.7 %. Impact assessment shows that PPR directly reduce the income and wealth landless farmer use sheep and goat as a form of financial savings. As this disease causes higher morbidity and mortality in goats as compared to sheep, the disease has more negative effect in Sindh, Punjab and Azad Jammu and Kashmir where goats are a major species.

Conclusions

The impact assessment showed that PPR was a disease with important negative impacts on wealth and income generation particularly in Sindh, Punjab and Azad Jammu and Kashmir where goats are a major species. Participatory exercises found that PPR was the second most important disease in Sindh and Punjab provinces, while in other part it was the most important disease. Overall stockholders gave priority to two diseases, anthrax and PPR, due to their direct and indirect impact on their livelihood.

**TITLE: PARTICIPATORY EPIDEMIOLOGICAL STUDIES OF NEWCASTLE DISEASE IN RURAL
POULTRY IN THE FEDERAL CAPITAL TERRITORY, ABUJA-NIGERIA.**

Author (s): S.A.Anzaku, C.Akujobi and J.U.Umoh

Presenting Author: S.A.Anzaku

Abstract:

There is generally an erroneous perception that rural people are ignorant and have little or no knowledge on issues affecting them and their livelihood; however, they constitute a very crucial resource base with untapped knowledge. In realization of the above concept, Participatory epidemiological approach utilizing indigenous knowledge, skills and practices is now being used for animal disease surveillance in Nigeria. Participatory Disease Surveillance was established in 2009 under the programme tagged 'Early Detection, Reporting, Surveillance for Avian Influenza in Africa' (EDRSAIA) project of AU-IBAR.

Since the first reported outbreak of Highly Pathogenic Avian Influenza (HPAI) in Nigeria in 2006, the disease spread to some parts of the country including the Federal Capital Territory (FCT) with the last reported outbreak in 2008. Subsequently, some suspected outbreaks of HPAI in FCT were confirmed to be Newcastle Disease (ND). This research was thus set out to investigate the status of ND in FCT using participatory approach. Forty (40 nos) villages were purposively selected and the study was conducted between April and June 2012 using Participatory rural appraisal tools (PRA).

Information were obtained from rural farmers using a check list about livestock kept, husbandry systems, common poultry disease problems and their clinical signs, effects of ND on productivity and health, accessibility to veterinary services using semi- structured interviews and other PRA tools. The results revealed that: poultry is the most prevalent livestock species kept predominantly on free range while ND outbreak is the major disease constraint. Outbreaks of ND (locally known as apesiyisun, apesiguma and ciwon masasara) mainly occurred between the months of November and January of each year with an average morbidity of 60% and mortality of 55%. There is little or no accessibility to modern veterinary health care delivery services by these rural farmers hence treatment is based mainly on indigenous knowledge and practices with varying degrees of successes.

It was concluded that the recurring occurrences of ND in the communities studied with the resultant decreased productivity and health of poultry could be attributed to organizational weaknesses resulting in inaccessible veterinary health care delivery services.

TITLE: PARTICIPATORY IMPACT ASSESSMENT OF ANIMAL HEALTH THROUGH COLLECTIVE ACTION TO ENHANCE THE STAKE OF EQUINE-OWNING COMMUNITIES

Author (s): **Murad Ali and SK Pradhan**

Presenting Author: **Murad Ali**

Abstract:

Purpose: Brooke India, an affiliate of The Brooke (UK) is a charity aiming to improve the health and welfare of working donkeys, mules and horses in 30 districts of northern and central India.

Methods: Marginalized communities are mobilized to form equine welfare groups (EWGs), enabling them to take collective responsibility for sustainable improvement in the health and welfare of their working animals. A team of development professionals within Brooke India are engaged in promoting this participatory approach.

During the initial stages of project development, we faced a lot of challenges in adapting existing participatory tools to fit animal welfare contexts. However, after 4-5 years of community engagement, we have evolved an innovative participatory process to assess the impact of improved animal health and husbandry practices, called Participatory Welfare Need Assessment (PWNA).

PWNA is a set of tools which facilitates communities to develop their own indicators for assessing equine health and welfare, identifying their issues and taking action to improve husbandry practices and the health status of their animals. First, each community devises and agrees their assessment protocol, using a tool called “If I Were A Horse”. EWG members then go on a “transect walk” with Brooke India staff, visiting door-to-door to assess each working animal according to the agreed criteria and recording their findings. This is repeated at regular intervals of one to three months as decided by the group. Issues relating to animal health and welfare, husbandry practices and resources available are summarized on a chart and the group develops a common action plan to improve these. Animal welfare is a complex and dynamic process, so the community also analyses changing trends in each

indicator on quarterly basis and relates these to contributing factors such as season, workload, feeding practices and other internal and external influences.

Main results: The number and type of assessment criteria, scoring/transect methods and process of analysis have changed over time, as communities have become increasingly sensitive to their animals' welfare and have made incremental improvements in methodology. At the start they used binary scores (good and poor status) which evolved to 'traffic light scores' (red, yellow, green) and then to more complex numerical scales and weightings according to the importance of each issue.

Groups have been federated at sub-district level into "Associations of Equine Welfare Groups", some of which have taken responsibility for carrying out PWNA in all villages in their sub-district. Association representatives visit village-to-village and facilitate the work of EWGs independently of Brooke India staff.

We have also made an effort to aggregate and analyze PWNA data at district level by categorizing indicators and using them for comparative analysis between villages and districts. These analyses have helped to uncover higher-level factors responsible for the positive and negative welfare status of working equine animals.

Conclusions: We have seen a sustainable impact on working equine health status and husbandry practices through regular collective assessment of animals and analysis of findings. Understanding trends and contributing factors to equine welfare at various levels has helped Brooke India to strategize its programmatic approach.

**TITLE: EIGHT YEARS (2004-2012) OF TEACHING PARTICIPATORY EPIDEMIOLOGY AT THE
UNIVERSITY OF IBADAN, NIGERIA**

Author (s): Babalobi Olutayo

Presenting Author: Babalobi Olutayo

Abstract:

Purpose: This article shares experiences in the teaching, research, promotion and adoption aspects of Participatory Epidemiology (PE) at the Department of Veterinary Public Health and Preventive Medicine (DVPHPM), University of Ibadan UI since 2004.

Methods: These aspects will be respectively highlighted by the PE lecture contents; research applications profile; features and contents of PE conference presentation and published articles; as well as post-training adoption and application features

Main results: Postgraduate Participatory Epidemiology training commenced at the Department of Veterinary Public Health and Preventive Medicine, University of Ibadan, Nigeria since 2004 when PE was officially added and adopted as a compulsory part of the Masters curricula of the department. The target beneficiaries have been the students offering any of the three Masters programs in the Department; as well as any student (especially government veterinarians), who wish to apply PE for an MPhil/PhD or PhD programme. Taught by the author since 2004, the author has also supervised eight (8) Masters PE projects, presently supervising three out of the eight (8) Masters students who intend using PE projects for their PhD, delivered five (5) PE workshop lectures, given six (6) PE presentations at local and international conferences and have six (6) PE journal publications. At least one other departmental lecturer has shown interest in PE. PE has been identified as a cheap, effective low capital input research projects by students and practitioners in Nigeria. Traditional settler research beneficiaries have been effectively involved in identification of local animal disease and production problems, resulting in Community Based Animal Health training of nominated pastoral settlers. PE is gradually been adopted in veterinary practiced in Nigeria especially by government veterinarians who have been exposed to PE training and PE is now included as part of the Nigeria Field Epidemiology and Laboratory Training Programme's One Health Curriculum. Constraints

experienced include misunderstanding and opposition from academic colleagues, need to get more departmental lecturers to be PE compliant to prevent sole lecturing by the author and the migratory pattern of pastoralists which affects effective year-round monitoring and surveillance of enzootic disease which may also lead to trans boundary transmission of infectious diseases.

Conclusions: There is support for PE as practical, effective low-cost and sustainable strategy for the identification, prevention, control, monitoring and surveillance of livestock diseases and production problems among pastoral communities in Nigeria. However, PE supportive institutional and policy frameworks, which are currently lacking in Nigeria, should first be developed and adopted. It is necessary to encourage other veterinary faculties in Nigeria to include PE in their curriculum, and also adopt a standard PE curriculum for use in Nigeria.

**TITLE: THE SOCIAL DIMENSION OF ANIMAL HEALTH SURVEILLANCE SYSTEM: AN
INTERDISCIPLINARY APPROACH OF SOCIAL PRESSURE IN THE PROCESS OF DISEASE
REPORTING IN NORTHERN THAILAND**

Author (s): **Binot A.*1,4, Valeix 1, Kovitvadhi A. 2, Antoine-Moussiaux N.1,3, Duboz
R.1,4,5, Timilsina M.5, Kasemsuwan S.2 and Peyre M.1,4.**

**1CIRAD, AGIRs Research Unit S; 2Kasetsart University, Veterinary Medicine Faculty ;
3Tropical Veterinary Institute, University of Liege, Belgium ; 4SEA PREID network; 5Asian
Institute of Technology (AIT)**

Presenting Author: **Aurélie Binot**

Abstract:

In the framework of the CIRAD REVASIA research program, aimed at the improvement of methods for the evaluation of animal health surveillance systems, a interdisciplinary approach has been designed for addressing surveillance's social factors at local level. To that purpose, methodological inputs from epidemiology, economics and anthropology have been merged together in order to provide an innovative methodological pathway for the assessment and quantification of these factors at community level.

Regarding the onset of the desired interdisciplinary approach, the first step was to bring the researchers into several brainstorming sessions aimed at defining a shared scientific and operational objective for this study. It was decided to settle two field sites in two different political, economical and social contexts: one in Vietnam and one in Thailand. Then, the next step was to bring all the concerned researchers into a common workshop dealing with participatory approaches applied to epidemiology. One of the main outcomes was to allow for the handling by the investigators of basic participatory investigation and visualization tools (mapping, diagrams, proportional piling, etc.) and qualitative data gathering. Then, the two field inquiry's protocols were designed on the economical process at play in the field of livestock and animal health and the social and socio-political dynamics at the community level. This communication will focus on the Thailand study, showing how an anthropology-based study of the social, economical and political process in the community can highlight behavior rules in the context of animal diseases reporting.

Indeed, the decision-making process for reporting or not reporting a disease has been considered beyond the individual, as the result of a body of community influences referring to social factors. Thus, we have gone through a better understanding of (1) the community's functioning patterns, (2) power relationships at play and social stakeholders' networks and interactions (economical stakes, land tenure issues, political control etc.). In parallel, we showed some trends for health management practices and knowledge. The outputs of this study were an analysis of the social pressure that the stakeholders are subjected to in the framework of animal health management, a better understanding of the animal health information spreading scheme, and a typology of social stakeholders regarding surveillance. The research process, even if focusing on social and anthropological dynamics at play was interdisciplinary from the very beginning, merging together qualitative participatory investigation methods from sociology and economics, modeling and computer sciences, and epidemiology. Thus, pathways of individual motivation for reporting, based on social types, have been provided in order to highlight behavior rules associated to animal health surveillance systems.

Keywords and references:

Surveillance, Animal health, Anthropology, Thailand, Social pressure, Reporting

**TITLE: PARTICIPATORY RURAL APPRAISAL OF LIVESTOCK DISEASES AMONG FULANI
COMMUNITY, BARKIN LADI LOCAL GOVERNEMENT AREA, PLATEAU STATE, NIGERIA**

**Author (s): Bolajoko, M.B., Moses, G.D., Gambari-Bolajoko, K.O., Ifende, V.I., Emenna, P.,
and Bala, A.**

Presenting Author: Bolajoko, M.B

Abstract:

A participatory rural appraisal (PRA) study was carried out to assess its effectiveness as a rapid appraisal tool using the Fulani community of Plateau Sate, Nigeria as a case study to have a rapid overview of the livestock health problems, their prevalence or incidence and the importance placed on each by the community. Occurrence of various livestock diseases particularly foot and mouth disease, infectious bursa disease, contagious bovine pleuro pneumonia, babesiosis and trypanosomosis were established among the cattle population of the Fulani community of Barkin Ladi Local Government Area, Plateau State, Nigeria based on participatory rural appraisal of cattle diseases in the area.

For this study, different techniques of participatory rapid appraisal such as open-ended interview with respondents, probing, transect, triangulation and proportional piling with help from key informant/translator were applied in randomly selected 30% of the Fulani community that were visited during the course of study. Samples were collected during each visit for laboratory diagnosis and analysis.

Sourced data were recorded as non-numeric, non-categorical testimony, explanations and interpretations of the participants. Analysis of results indicated that haemorrhagic septicaemia was the most important while babesiosis and contagious bovine pleuro pneumonia were the most prevalent diseases in the community. Other significant livestock health problems recorded during the appraisal exercises included newcastle disease, fascioliasis, brucellosis, tick and tsetse fly infestation. There was no evidence of rinderpest outbreak in the area of investigation during the last 5 years. Laboratory results of samples analyzed confirmed the presence of infectious bursa disease, contagious bovine pleuro pneumonia, babesiosis, newcastle disease, fascioliasis, brucellosis and tick infestation among cattle population of the community. Results also reveal that the Fulanis are not

effectively integrated into the nation's livestock disease control and health maintenance system. Limited water supply particularly over the dry season was also identified as a major challenge to the community.

Participatory rural appraisal proved to be a useful tool for reliable data collection as indicators of spatiotemporal prevalence or incidence of diseases and to inform research design and goal. Importantly, PRA can be utilized as a medium to liaise with, empower and integrate the rural or remotely located livestock-owning communities in the control of animal diseases. This study has been able establish the benefits of the PRA technique in detecting and understanding the grass root problems facing farmers, thus, proving to be indispensable tool for sustainable disease control, rural development and food security.

TITLE: PARTICIPATORY EPIDEMIOLOGY: A TOOL TO EVALUATE IMPACTS OF FOOT-AND-MOUTH DISEASE AMONG LIVESTOCK OWNERS IN CAMBODIA

Author (s): **C. Bellet, T. Vergne, V. Grosbois, D. Holl, F. Roger and F. Goutard**

Presenting Author: **Flavie GOUTARD**

Introduction:

The economic and social impacts of Foot and Mouth Disease (FMD) for livestock owners in developed countries have been extensively documented over the past few years. In developing countries like Cambodia, the lack of accurate data makes it difficult to evaluate FMD perception by local communities and its current impact at household level.

Methods:

In this study, we used a range of participatory tools in order to assess the knowledge, the perception and the 2009 relative incidence of FMD in 51 villages in the Svay Rieng province of Cambodia. The detection of antibodies directed to the non-structural FMD virus proteins (NSP) at village level was used to cross-validate results from participatory epidemiology. A quantitative assessment using Bayesian modeling was carried out to assess the ability of PE to retrospectively determine the FMD-infected status of a village in Cambodia.

Results:

Matrix scoring agreements of farmers' perception of losses due to FMD, $W=0.58$ $P<0.01$, showed a significant similar perception of FMD for all districts visited. The mean relative incidence and mortality of FMD in the infected villages were 18% [min–max: 2–46] and 3% [0–19] respectively for cattle and buffaloes, and 11% [1–41] and 4% [0–29] for pigs. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of PE study were estimated at 87%, 30%, 51% and 74%, respectively.

Conclusion:

Our study shows that even if FMD is considered as the second most important disease, livestock owners see no benefit in reporting it since the disease is known to have low direct impacts, explaining why the reporting of FMD cases is often delayed or lacking in Cambodia.

In this context participatory epidemiology proved that it can be a valuable and cost effective epidemiological tool to understand economic drivers of farmers when managing livestock health risks.

**TITLE: INVOLVING CHILDREN IN PARTICIPATORY DISEASE MONITORING OF ANIMAL IN A
SELECTED VILLAGE OF INDIA**

Author (s): Dr D.Basu¹ and Ms G.Basu²

1 Bidan Chandra Krishi Viswavidyalaya (Agricultural University), Mohanpur Nadia, West Bengal, India, 741252 and

2 State Institute Panchayat and Rural Development, Kalyani, Nadia, West Bengal, India 741235

ABSTRACT

Children have easy access to every household of the community. They have high level of knowledge about their ecosystem too. In the family enterprise they lend their hand to their parents and animal husbandry is no exception. From the early childhood they are attached to household animals, big or small and build their capacity while feeding, grazing, milking and so on. Considering their expertise, access and network in the community participatory exercise has been conducted as a research study to find out the capability of the children for surveillance of animal diseases in the locality. A small hamlet Ghorgachha village of Haringhata block under Nadia District in West Bengal State of India had been selected purposively for the study. Participatory learning tools like animal census mapping, disease mapping, mortality mapping and disease seasonality, problem - tale analysis and listing of remedial measures had been applied with active facilitation of the present researchers. The information was triangulated with their parents and local vet. They were amazed by the detailed findings which they considered highly reliable and opined that only children of the locality had that level of accurate information. The contribution was documented and presented before the community which sensitized the adults for future action. This group of boys and girls were found very enthusiastic to share their information. If facilitated properly, they could generate reliable information, analyze and present it for further action. They were in favor of an opinion to form a monitoring group in the community to support the local vet to control the diseases for the betterment of their livelihood.

**TITLE: THE USING OF PARTICIPATORY EPIDEMIOLOGY (PE) APPROACH IN SUPPORTING OF
RABIES CONTROL PROGRAM IN DISTRICT OF KARANGASEM, BALI, INDONESIA**

Author (s): Basri C1, Suandy I2, Mariner J3 and Hendrickx S3,

**1 Department of Infectious Disease and Veterinary Public Health, Faculty of Veterinary
Medicine. Bogor Agricultural University.**

Jl. Agatis, Kampus IPB Dramaga, Bogor. Indonesia

**2 Quality Control Laboratory for Livestock Products, Directorate of Veterinary Public
Health Services, Directorate General of Livestock Services
Ministry of Agriculture, Republic of Indonesia, Bogor, Indonesia.**

3 International Livestock Research Institute (ILRI)

ABSTRACT

The effort to control rabies in Bali requires an alternative approach to surveillance system that is cheaper, more effective and was validated such as participatory epidemiology (PE) approach. PE study was conducted to analyze the incidence of rabies and other things associated with the event using the PE. The study was conducted in July-September 2012 in 12 villages in four subdistricts randomly selected in District of Karangasem, Bali province. Data were collected by a group discussion using the techniques developed in PE as simple ranking, proportional piling, matrix scoring, seasonal calendar and mapping. The results of this study showed in the District of Karangasem found various animals that could transmit rabies as dogs, cats, bats, squirrels and monkeys. Dogs are non-livestock animals most commonly found in the environment and the most important role in people's lives. About 20% of all dogs in the area are estimated to have the disease, including rabies problem. The problems of rabies in dogs in the region are expected to have morbidity of 3.6 %, mortality of 3% and case fatality of 81.8%. In general, the incidences of dog bites on humans have increased, especially in the months of April and June. The pattern of increased incidence of bites do not occur simultaneously with an increase in the number of breeding dogs at breeding season (February-April) and increased number of cultural and religious ceremonies (April and August). In this district there were a place that could be a meeting place for the dog as well as a place of transmission of rabies such as markets, tourist spots, landfills and

temples. The conclusion of this study in the District of Karangasem, based on the pattern of time, bite cases that occur are generally not associated with the patterns of dogs and people activity in the district. Based on the data of the existence, total population, role in society and the way of maintain animals transmitting rabies, especially dogs and the knowledge about rabies disease, the potential for the spread of rabies in the region is still relatively high. Our study revealed, that PE is a useful approach in an effort to control non-livestock animal diseases such as rabies. Based on our experiance, PE could be a useful tool to evaluate the success of public awareness program concerning rabies in Bali.

TITLE: THE CANADIAN SWINE HEALTH INTELLIGENCE NETWORK

Author (s): John Berezowski, Chris Byra, Egan Brockhoff, Dan Hurnik, Christian Klopfenstein and Harold Kloeze

Presenting Author: John Berezowski

The Canadian Swine Health Board (CSHB), an organization aimed at providing leadership, coordination and support in the management of the health of the Canadian swine herd, is leading the implementation of the Canadian Swine Health Intelligence Network (CSHIN). The CSHIN is a participatory surveillance network aimed at helping to manage health conditions on the farm, provide infrastructure to identify, verify and assist with the control of disease events and to support Canada's pork markets. The CSHIN is distinctive as a national surveillance initiative because it is not operated by a government agency or ministry. There is government funding for the design and implementation of the CSHIN, but long term sustainability is dependent on the network being valued and supported by its participants. To achieve this, the CSHIN has adopted a participatory approach, engaging practicing veterinarians as data providers, information consumers, and directors of the network. The primary function of the CSHIN is to directly support participating veterinarians by: 1) providing useful and timely information that will help them to manage disease on farms and 2) engaging them in social networks with their colleagues and other swine disease specialists who share information and develop disease control/response strategies. In addition, participating veterinarians are being engaged in decision making, including decisions relating to the data collected, the information produced and communicated, confidentiality and other issues, as well as governance of the network as a whole.

The network has two parts. The first is a group of networks (one national and several regional) of swine veterinarians and swine disease specialists that meet on a routine and adhoc basis to discuss and develop strategies to deal with swine diseases, evaluate information produced by the surveillance network and function as decision makers for their network. These networks form the organizational structure of the CSHIN. The second is a data network in which data about swine diseases is collected from veterinarians during their day-to-day work. Veterinarians enter data into a web based practice management application¹. Data is automatically extracted and transferred to a CSHIN database for event

detection, analysis and reporting. The goal of data collection is to collect useful data that adheres to national standards enabling collation of data across the entire country, comparison of disease patterns across the country and allowing for the use of standardized, automated event detection algorithms. The goal of information reporting is to produce useful information in a timely fashion and deliver it to veterinarians in a user-friendly format that ensures veterinarians have a positive experience. The information reporting website is critical since it is the point at which veterinarians will obtain valuable information from the whole system. Engaging participating veterinarians in designing the look and feel of web reports as well as the information reported is critical for the information to be valued and for the long term sustainability of the CSHIN.

TITLE: USING ONE HEALTH AND PARTICIPATORY EPIDEMIOLOGY TO ASSESS IMPACTS OF ANTHRAX ON THE HUMAN-ANIMAL INTERFACE IN RURAL UGANDA

Author (s): **Coffin, J.L., Monje, F. and Asiimwe-Karimu, G.**

Presenting Author: **Coffin, J.L.**

Abstract:

Anthrax is enzootic within Uganda's Queen Elizabeth National Park (QENP) and the surrounding area, affecting wildlife, domestic animals, and humans. The 2004/2005 QENP outbreak killed 306 hippopotamus, 143 other wild animals, and 405 domestic animals [1]; a 2010 outbreak in QENP killed 154 wild animals (132 hippopotamus); and a 2011 outbreak in Sheema district temporarily halted local beef sales and killed 2 humans and 7 cattle [2].

A multi-disciplinary team of investigators from Makerere University African Field Epidemiology Network (AFENET) fellowship program, a biologist and Tufts Institute of the Environment Fellow in the Masters in Conservation Medicine program, and wildlife and production veterinarians are working together under the supervision of faculty from Makerere University and Tufts University as well as staff at the Uganda Wildlife Authority and the International Livestock Research Institute (ILRI) to assess the impact of anthrax on humans, wildlife, and domestic animals around QENP. Using a One Health approach, the focus is on how humans and animals interact and how anthrax impacts the livelihoods and therefore the perceptions of conservation and public health efforts in the QENP area.

The team is using participatory epidemiology approaches to evaluate and design disease surveillance and management strategies, to assess perceived disease impacts, current surveillance efforts, and local conservation efforts in order to investigate anthrax's impact on livelihoods in the QENP area. These findings will be used to propose a One Health approach to the management and prevention of anthrax through a network of stakeholders. This project is partly funded by the Tufts University Institute of Environment Graduate Fellowship Program.

TITLE: ADAPTATION OF A PARTICIPATORY TOOL FOR THE EVALUATION OF VILLAGE ANIMAL HEALTH WORKERS

Author (s): **C. Calba, A. Ponsich, S. Nam, L. Collineau, S. Min, J. Thonnat and F. Goutard .**

Presenting Author: **Clémentine Calba**

Introduction

Economical development of rural areas in Cambodia has to be supported by agricultural development, and hence by the promotion of secure livelihoods in the livestock sector. In order to improve animal diseases surveillance as well as animal health services at the community level, Cambodian government and other national institutions have trained for the past 10 years, Village Animal Health Workers (VAHWs) in every village. But according to field response from farmers, VAHWs organization and capacities still need to be improved.

Material and Methods

Applying a methodology developed by AVSF in Madagascar for farmers' association evaluation, we used several participatory methods to collect information about VAHWs' context, and to build a criteria grid for their evaluation. VAHWs' problems were identified through the elaboration of problem trees, relations with stakeholders were described via relational schemes, and then information was completed by semi-structured interviews. The grid has been built with the help of proper stakeholders involved in the animal health system in Cambodia. The first step was to identify VAHWs' functions through the adaptation of the metaplan method; the second one was to elaborate criteria and the associated questionnaire through working groups, and the last one to score the grid with all the stakeholders through pair-wise ranking and working groups.

Results

Stakeholders have organized the criteria into 5 main categories: sustainability, treatment, production, vaccination and diseases report. This grid was further tested in the field with a total of 34 VAHWs, in order to determine its usefulness on the evaluation of their efficiency and sustainability. It's a tool which could be used by local authorities to do a gap analysis of VAHWs training and to improve disease reporting in remote places.

Conclusion

The use of participatory approaches for the elaboration of such evaluation tool permitted VAHWs as well as local and national Cambodian authorities to appropriate the grid, which represent an important strength. Moreover the entire process allowed them to discuss and exchange their point of view concerning VAHWs' activities, roles and responsibilities.

TITLE: A PARTICIPATORY METHODOLOGY TO ASSESS THE LOCAL FACTORS INFLUENCING THE PERFORMANCES OF AVIAN INFLUENZA SURVEILLANCE NETWORK IN NORTHERN VIETNAM

Author (s): **Delabougli¹ A., Antoine-Moussiaux^{1, 2} N., Nguyen³ T.T., N., Phan⁴ D.T., Dao⁴ C.D., Pham¹ T.T.H, Vu⁴ C.D., Nguyen³ V.K., Roger¹ F. and Peyre¹ M.**

1 International Centre of Agricultural Research for Development, CIRAD-AGIRs, 34398 Montpellier Cedex 5, France

2 Université de Liège, Belgique

3 National Institute of Veterinary Research, Hanoi, Vietnam

4 Hanoi Agriculture University, Vietnam

Presenting Author: **Alexis Delabougli¹**

Abstract:

Since the beginning of highly pathogenic avian influenza (HPAI) H5N1 epizootic in Vietnam in 2004, a reinforcement of the passive surveillance system has been performed. However evaluations of the system performances in the field have remained limited so far. The purpose of our study was to identify the actors involved in sanitary information transmission at local level and to estimate the social and economic factors that contribute to their decision to transfer sanitary information. A participatory approach was implemented in a rural commune of the Red River Delta in Northern Vietnam to assess the pathways of the flow of sanitary information between actors and economic and social constraints influencing their decision. Both surveillance pathways of poultry and pig diseases were targeted, as a mean of comparison to understand how the characteristics of the production system or the government's policy (which are different according to the species and disease involved) could influence actors' decisions towards disease surveillance. Among the main results, we demonstrated that the behavior of actors regarding disease reporting is greatly influenced by the policy implemented by authorities. In response to this policy, local actors mainly aim at developing economic strategies to optimize their own benefit in case of disease outbreak but they also take into account the social considerations, particularly the interests of their own local community. We also identified a critical role of private actors, particularly local input and private input suppliers (feed or drugs; private companies) in the sharing of sanitary information through informal networks. Public surveillance system was poorly

trusted as a source of support for poultry health management; the results were more mitigated regarding swine health issues. Finally we were able to develop and implement a methodology to quantify the impact of each of the identified social factors on actors' decision. This tool was based on the principles of stated preference methods which are widely applied in the field of economic assessments but required specific adaptation to the socio-cultural context.

Keywords and references:

Passive surveillance, participatory epidemiology, social network, socio-economic factors, stated preference methods

TITLE: **COMPANION MODELING AND PARTICIPATORY EPIDEMIOLOGY**

Author (s): **Duboz R., Binot A., Goutard F., Peyre M., Roger F. and Le Page C.**

Presenting Author: **Raphaël Duboz**

Abstract

Companion Modeling (ComMod) is a well-established method for co-designing a shared representation of a resources management problem¹. It is a participatory methodology involving the different type of actors of a given socio-ecological system. It enables to consider, with the same level of importance, the different types of social and environmental knowledge, brought by the different stakeholders. They build together one or several conceptual models, which can, if relevant, be implemented on a computer, and are used to design a role-playing game involving the stakeholders. Thus, the resulting co-designed model is used as the instance of the shared representation in game sessions where the different actors play their own roles or interchange their roles with each-others. Here, the models are not intended to forecast. They are the result of a participative process to share representation between the stakeholders of the system of interest. The main idea is that companion modeling, by rendering explicit known and hidden processes, as well as actor strategies, can be used by stakeholders themselves to deal with their own problems for indentifying commonly accepted solutions and consultation pathways. The role of the scientific here is mainly to back the modeling process, and to implement the model and the game sessions.

ComMod has been successfully applied for natural resources management in different multi-stakeholders contexts. ComMod has been well accepted by very heterogeneous types of actors, from national park management in South Africa, water resource supply in Northern Thailand, to politicians' awareness increasing about forest fires in France¹. In this communication, we present ComMod as a complementary approach to be used in participatory epidemiology. With ComMod, it is possible to introduce the dynamic of process, here an epidemic and the control measures for instance, in the model and let the actors managing the situation, considering different scenarios. Then, they will be more likely to identify a common solution to manage the spread of the disease.

The originality of this approach is that stakeholders are likely to identify, through a consultation process, to which issues they could share joint interest, in order to assert win-win solutions.

The validity of the model is measured by the stakeholders themselves, regarding the usefulness of the model considering the objective (an epidemiological issue).

After introducing the fundamental basis of ComMod, we'll present the "Problem Actors Resources Dynamics and Interactions" (PARDI) method to co-design a model. Then, we illustrate the methodology with an example from the province of Sukotai, North of Thailand, where we plan to launch a ComMod process in concern with the management of poultry diseases. We will present our preliminary results and perspectives.

**TITLE: USING PARTICIPATORY EPIDEMIOLOGY TOOLS TO INVESTIGATE CONTAGIOUS
CAPRINE PLEUROPNEUMONIA (CCPP) IN MAASAI FLOCKS, NORTHERN TANZANIA**

Author (s): **Swai, E.S.**

Presenting Author: **Emmanuel S. Swai**

Abstract:

Participatory Epidemiology (PE) was applied on the Maasai rangeland of northern Tanzania to understand pastoralist's perceptions of the clinical and epidemiological features of Contagious Caprine Pleuropneumonia (CCPP). The study was conducted during the period of April 2008 and caprine disease event was directed during the period of July 2006 to June 2007. Participatory methods such as Focus Group Discussion (FGD), proportional piling and matrix scoring were used to characterize pastoralist perceived clinical signs and risk factors for CCPP. The estimated mean incidence and case mortality rate of CCPP was 31.6 and 61.4%, respectively. Matrix scoring showed moderate to good agreement between informant groups on the clinical signs and risk factors. It was concluded that PE complimented with local knowledge could generally be used to generate disease information at low cost and therefore assist the design of feasible diseasesurveillance systems and control programmes at local and national level.

**TITLE: DEVELOPMENT OF A COMMUNITY – BASED SYNDROMIC LIVESTOCK HEALTH
RECORDING SYSTEM FOR ANIMAL DISEASE SURVEILLANCE IN SILVOPASTORAL
PRODUCTION SYSTEMS IN MEXICO.**

Author (s): Eroles, J., Reid, R., Solorio, J., Van Metre, D., Zepeda, C and Salman, M.

Presenting Author: Eroles, J.

Developing countries such as Mexico are limited in their available economic resources to provide veterinary services to all livestock producers, particularly small stakeholders and marginal communities, where accessibility and other communication infrastructure are scarce. Furthermore, organized crime has created regions with an unsafe atmosphere, reducing the possibility for remote communities to receive animal health technical advice either from public or private veterinarians. Approximately 70% of Mexican farmers are owners of herds smaller than 35 cows, their units are family owned/operated and its level of technification is low. For this reason, approximately 2.5 million farms are not able to receive affordable private veterinary services.

To generate information on animal health, aiming to provide veterinary supports to farmers in these conditions for future surveillance program, a community based syndromic livestock health recording program is proposed for silvopastoral producers in Mexico. The study includes, owners and animal workers from 6 selected farms in Michoacan State and in Yucatan State will met with researchers, during the summer of 2012, and informed about the inherent long-term benefits of animal health care to farm productivity and food safety. Training will be conducted on recognition of selected clinical signs and syndromes with the use of a booklet for recording observations and treatment data.

The syndromes and component clinical signs include: Respiratory: (Cough, nasal discharge, fever, abnormal respiratory sounds) Digestive: (Diarrhea, bloat, indigestion, inappetence) Reproductive: (Abortion, retention of fetal membranes, abnormal vaginal discharge) Locomotor: (Lameness, fractures, inability to stand) Neurologic: (Depression, incoordination, abnormal behavior) Udder/Mastitis: (Clinical mastitis (abnormal quarter(s) or abnormal milk) Skin/Lesions: (Skin cuts, lacerations, hematomas, wounds and eye lesions) Death: (Sudden death or involuntary (non-planned) cull).

Syndromes will be compiled on a daily basis and will include: date, animal ID and syndrome, description of any treatments and related comments the recorder would wish to add. Data collection will begin in July of 2012 and will conclude on December 2012 in the 1st phase. Production indicators recorded will be weaning weights of calves per cow and per hectare and milk yield per cow and per hectare.

The recorded data will be “triangulated”, with observations recorded by one veterinarian and one technician in each of the two states. All farmers will have their own identical booklet. Farmers will be encouraged to perform laboratory tests or post-mortem examinations, in order to obtain precise diagnoses.

Frequency of syndromes will be reported, as well as correlation between recording sources. The association between syndromes and productivity parameters will be estimated using conventional epidemiological indices, using commercially available statistical software.

**TITLE: USING NARRATIVE APPROACHES TO ASSESS ANIMAL AND COMMUNITY HEALTH
INTERVENTIONS IN LAOS: MOST SIGNIFICANT CHANGE**

**Author (s): Fèvre, S., Southammavong, F., Kaesombath, L., Chittavong, M., Drew, A. and
Kongmanila, D.**

Presenting Author: Fèvre, S

Abstract:

Assessing the impact of Ecohealth interventions presents numerous challenges. Multiple issues are at stake which may not be systematically monitored, impacts may take years to manifest, and unintended outcomes may be missed by using conventional quantitative assessments. In the field of community-based animal health, such challenges are particularly relevant owing to the numerous factors which influence the supply, management, production, sale and consumption of backyard livestock.

Most Significant Change (MSC) is a participatory monitoring and evaluation tool that uses the collection, selection and dissemination of stories from the field to monitor positive change. It is a qualitative approach that favours the identification of positive impacts and unintended consequences over indicator-based monitoring. Its purpose is therefore to help recognise positive outcomes across all stages of a project, and thus highlight models of effectiveness that can be emulated as the intervention develops. MSC can be most valuable when combined with other techniques, and may complement the types of information collected through participatory epidemiology. MSC is particularly well-suited to Ecohealth approaches which by their nature address complex situations whose components cannot necessarily be fully captured by quantitative indicators alone.

MSC was integrated into the action research used in the *Village Ecohealth and Veterinary Extension Project*, a partnership between the National University of Laos and Veterinarians without Borders (VWB/VSF) targeting eleven villages in Xaythany district, central Laos. It aims to build the skills of Primary Animal Health Workers and improve community awareness of animal, environmental and human health.

To better assess its impacts the project undertook an MSC process in early 2011. An MSC

Training workshop was delivered to the project team. Twenty-three villagers (considered somehow 'affected' by the project) were then interviewed using a narrative template. In February 2011 a Story Selection workshop was held during which the stories were reviewed by the team. Three themes were chosen based on project objectives (Environment and human health, Animal health services, Skills and knowledge) and one story was selected as 'most significant' for each theme. These were later shared with the villages at community meetings and have been disseminated to project partners.

The stories indicated that community members value the training and regular support provided by the project, and that the combination of animal and community health promotion was especially effective. A model of 'Community Health Days' used by the project had tangible impacts on household hygiene practices by those interviewed.

The MSC stories allowed the project to capture 'success stories' and it has invested in developing these successful approaches more widely. The MSC process also provided valuable discussion within the project team to better understand and align the purpose of their work with the way communities experience project activities.

**TITLE: ASSESSING THE ACCURACY OF A CLINICAL OUTBREAK DEFINITION FOR HIGHLY
PATHOGENIC AVIAN INFLUENZA (HPAI)**

**Author (s): Jost, C.¹, Priyono, W.², Bett, B.³, Poole, J.³, Schoonman, L.⁴, McLaws, M.³,
Unger, F.³ and Mariner, J.³**

- 1. EcoServe Solutions, Kenya**
- 2. Ministry of Agriculture, Indonesia**
- 3. International Livestock Research Institute, Kenya**
- 4. Food and Agriculture Organization of the United Nations, Jakarta, Indonesia**

Presenting Author: Jost, C.

Abstract:

Clinical case definitions are an important tool for the detection of disease, particularly when participatory approaches are used to enhance the sensitivity of surveillance systems. This study used virus isolation and typing to measure the accuracy of a diagnostic procedure in which a series of case definitions were applied in West and Central Java, Indonesia.

Outbreaks of illness in backyard and small-scale commercial chickens were investigated to determine if they could be characterized as sudden death using a case definition. If so they were further diagnosed as HPAI-compatible, viscerotropic velogenic Newcastle disease (VVND)-compatible or “unknown”. Strains of avian influenza and pathotypes of ND that were not highly pathogenic would not have fit the clinical case definitions used in this study, and would have been diagnosed as “not sudden death”.

Using frequentist calculations, the diagnosis of sudden death was found to have a sensitivity of 76.4% (standard deviation $\pm 5.9\%$), specificity of 41.8 $\pm 9.8\%$, and positive predictive value of 72.7 $\pm 6.0\%$. The diagnosis of HPAI-compatible disease was found to have a sensitivity of 71.2 $\pm 7.3\%$, specificity of 62.3 $\pm 7.7\%$, and positive predictive value of 64.6 $\pm 7.4\%$. When considering the sensitivity and specificity of the diagnosis of HPAI-compatible disease as series diagnoses, the sensitivity and specificity was found to be 54.4 $\pm 8.1\%$ and 78.0 $\pm 6.6\%$, respectively. Using Bayesian analysis that does not require the assumption of a gold standard, it was found that the HPAI-compatible diagnosis had an average sensitivity of 85.1 $\pm 4.3\%$, specificity of 78.2 $\pm 4.5\%$ and positive predictive

value of $75.1 \pm 6.0\%$, while virus isolation and typing had an average sensitivity of $88.1 \pm 4.4\%$, specificity of $91.0 \pm 3.1\%$, and positive predictive value of $88.6 \pm 4.1\%$. The true prevalence of H5N1 HPAI in the population of samples tested was $43.8 \pm 4.6\%$. It was found that the VVND-compatible diagnosis had an average sensitivity of $69.1 \pm 10.6\%$, specificity of $89.2 \pm 2.0\%$, and positive predictive value of $22.5 \pm 7.7\%$, while virus isolation and typing had an average sensitivity of $87.6 \pm 4.9\%$, specificity of $90.9 \pm 1.9\%$, and positive predictive value of $30.8 \pm 10.7\%$. The true prevalence of ND was $4.5 \pm 1.7\%$.

Various elements of study design and laboratory analysis could have influenced the sensitivities and specificities derived for the clinical diagnoses used in this study. Bayesian analysis likely provides a more realistic estimation of the accuracy of the diagnostic procedure employed. This research points to the importance of decision-makers clearly understanding the principals of diagnostic test accuracy, and how protocols calling for the implementation of tests in series or parallel affected the predictive value of the overall diagnostic procedure.

Keywords and references: Highly pathogenic avian influenza, viscerotropic velogenic Newcastle disease, sensitivity, predictive value positive, Bayesian analysis

**TITLE: USING A PARTICIPATORY APPROACH TO CHARACTERIZE HPAI OUTBREAKS IN
INDONESIAN VILLAGE POULTRY**

Author (s): **Jost, C.1, Walker, P.2, Bett, B.3, Poole, J. 3, Azar, M.4, Murahman, J.4, Daju, D.4, McLaws, M. 3, Schoonman, L.5, Unger, F. 3 and Mariner, J. 3**

- 1. EcoServe Solutions, Kenya**
- 2. MRC Centre for Outbreak Analysis & Modelling, Department of Infectious Disease Epidemiology, Imperial College London, London, United Kingdom**
- 3. International Livestock Research Institute, Kenya**
- 4. Ministry of Agriculture, Indonesia**
- 5. Food and Agriculture Organization of the United Nations, Jakarta, Indonesia**

Presenting Author: **Jost, C.**

Abstract:

This study was designed to measure the transmissibility of Type A H5N1 highly pathogenic avian influenza (HPAI) in mixed populations of backyard and small-scale commercial chickens in Java, where other domestic fowl are in direct contact with chickens.

A participatory approach adapted to infection tree reconstruction was used to trace affected chickens and households in neighborhoods (RTs) in which HPAI had been diagnosed by Indonesia's surveillance system. During semi-structured interviews, mapping, timelines and transect walks were the main tools used.

Most backyard chickens were found to be free range, visiting a mean 4.2 households per day. Commercial poultry were present within the village in nearly half the outbreaks, although they were affected in only 7.3% of them. Mean morbidity was 80.9% (standard deviation +28.8%), mortality 77.6+27.7%, and case fatality 97.3+12.3%. The relative risk for outbreaks to occur in households where Muscovy ducks, non-commercial chickens, broilers and geese were kept was significant, but not for pigeons or ducks. By documenting risk behaviors that occurred at the time of outbreaks, it was found that introduction of new birds to a household flock most frequently led to the introduction of HPAI to an RT, while contact between birds from different household flocks most frequently contributed to spread. Final outbreak size equation calculations showed that for the entire study area the reproductive number (R) between chickens within household flocks was 1.72 and between

households it was 1.48; R between chickens within household flocks in vaccinated areas was 1.66 but in unvaccinated areas was 1.77; R between households in vaccinated areas was 1.42 but in unvaccinated areas 1.52. A susceptible-infected-recovered (SIR) model showed slightly higher reproductive numbers, with an R between household flocks for the overall study area of 2.01 and within flocks it was 2.54; within-flock R in vaccinated areas was 2.21 but in un-vaccinated areas was 2.76; between flock R in vaccinated areas was 1.9 but in un-vaccinated areas was 2.07. Based on the SIR model estimates for un-vaccinated areas, these results indicate that 63.8% of birds in a household flock need to be immune to H5N1 to interrupt transmission within the flock, and that 51.7% of household flocks in a neighborhood need to be immune in order to interrupt transmission between the flocks.

Our findings indicate that backyard poultry populations as they occur on Java provide the necessary environment for indefinite HPAI transmission. Our results agreed with the results of a participatory impact assessment (PIA) of mass vaccination on disease incidence, which found that achieving moderate levels of flock protection (between 27.4% and 33.8%) reduced HPAI-compatible disease incidence by 46%. The participatory approach used in this study proved to be a valuable, cost effective and simple method for assessing the epidemiological impact of disease control measures.

Keywords and references: HPAI, transmissibility, risk factors, vaccination, infection tree reconstruction

**TITLE: PARTICIPATORY PLANNING, IMPLEMENTATION AND EVALUATION OF A ZOONOSIS
CONTROL RESEARCH PROJECT IN KENYA**

Author (s): Kang'ethe, E., Nyangaga, J. and Grace, D.

Abstract:

Purpose: We describe a trans-disciplinary process of co-generating, sharing and evaluating evidence-based messages for reducing the risk from *Cryptosporidium* and other zoonoses in an urban and peri-urban community in Nairobi. Message generation and impact were part of a broader project on investigating and managing cryptosporidiosis, an emerging zoonosis.

Methods: Research findings about prevalence, risk factors, and observed risky and risk mitigating practices were analysed by a trans-disciplinary team comprising researchers, community members and local policy and decision -makers. Using participatory planning, multiple strategies were developed for disseminating key information. Impact was assessed using progress markers participatively developed and evaluated by and with community stakeholders.

Findings: We identified five vulnerable groups at higher risk of exposure to cryptosporidiosis and other cattle zoonoses with similar transmission pathways (women, children, elderly, immunosuppressed, and male farm workers). For each group, targeted messages were developed. Good practices already in use were identified, as were practices to improve environmental conditions. These messages were shared through printed material, in a workshop, through community campaigners and also an edutainment soap opera episode broadcast on Kenyan television.

Participatory impact assessment found that farmers the project worked with made considerable progress according to the markers; they demonstrated an understanding of cryptosporidiosis, established or maintained clean and well drained cattle sheds, and took conscious effort to reduce possible infection. Farmers who did not participate in the project (non-contact farmers) were found to be less advanced on the progress marker indicators.

The administration leaders, as strategic partners, had a positive attitude towards the project and confidence in their ability to support project objectives.

Conclusions: A participatory and trans-disciplinary process can help transform the findings of research into messages that are targeted, attractive and understandable. Participatory methodologies can help in implementation and evaluation of zoonoses control.

TITLE: USING PARTICIPATORY EPIDEMIOLOGICAL TECHNIQUES TO ESTABLISH THE FACTORS ASSOCIATED WITH THE TYPHOID FEVER AND GUT PERFORATION OUTBREAK IN COMMUNITIES OF KASESE DISTRICT, UGANDA

Author (s): **Bernard Lubwama, Fred Monje, John Lule, Fred Mulabya and Monday**

Busuulwa

Presenting Author: **Bernard Lubwama**

Abstract:

Uganda's Ministry of Health and CDC investigated a typhoid fever outbreak in Kasese district, Uganda in October 2011. A participatory epidemiological study was designed to determine the factors associated with the increased incidence of typhoid fever and gut perforations in this district and its impact on livelihoods.

A Sub County, an administrative unit lower but next to a district but made up of several villages, was the sampling unit. Eight villages from three most affected Sub Counties were purposively selected. A village is the smallest administrative unit occupied by clusters of families sharing common resources including water sources, schools and health facilities. At least one focus group discussion involving 10 – 15 people was held in each village. Key informant interviews were conducted with recovered cases of gut perforations and local leaders before or after the group sessions. PE techniques used in group sessions included participatory mapping, relative incidence scoring, proportional piling, matrix scoring for comparative burden, mode of communication and symptoms, seasonal calendars and probing.

Cholera, typhoid and malaria were perceived the highest priority diseases. Typhoid (median score 22 {10, 63}), Malaria (20.5 {17, 47}) and cholera (15.5 {4, 30}) were perceived to contribute to the highest disease burden of this district. Females were perceived more at risk for catching typhoid (62%), differing from hospital data (57.1% cases reported were males). Perceived risk included poor hygiene (56%) and poor sanitation (20%) by proportional piling. Contributing behavior included 'habitual' contamination of water sources (rivers) at different points of descent from the mountains, poor hand washing, delays in seeking care from health facilities, and misdiagnosing typhoid. Symptoms of typhoid included stomach pain, vomiting, low grade fever and diarrhea. Typhoid occurred extremely

rainy and dry seasons. Estimated hospitalization and cost of treatment for gut perforation patients varied between 3 to 6 months or more and \$100 - \$800 depending on severity. Chemical water treatment and enforcing hygiene and sanitation laws were suggested to counter this epidemic.

A communication strategy was designed during and after the response using these results to counter this epidemic.

TITLE: CLINICAL APPLICATION OF MATRIX SCORING, AND COMPARISON OF PARTICIPATORY EPIDEMIOLOGY WITH CONVENTIONAL RESEARCH METHODS IN TWO STATES OF NIGERIA.

Author (s): **MUSA, I. W., LAWAL, S., MOHAMMED, B., ABDU, P.A. and JOST, C.**

Presenting Author: **MUSA, I. W**

Participatory epidemiology involves open communication using a toolkit of interactive methods that help to identify herd health constraints and community needs, and guide strategic interventions. This study was undertaken to identify which PE tools would be most suitable for use by a field veterinarian in Nigeria seeking to understand community needs and constraints, and to compare PE and conventional epidemiological research techniques when used for disease investigation.

Many livestock diseases present with similar clinical and postmortem manifestations. A clinician can arrive at a long list of differential diagnoses based on specific diseases, while farmers often focus on disease syndromes to arrive at a single diagnosis. Achieving a reliable rate of accuracy in tentative clinical diagnoses saves the clinician time, resources, and reputation in the eyes of his clients. Various PE tools were investigated for their usefulness in diagnosing clinical cases or outbreaks.

Livestock disease report records from veterinary directorates of two states in Nigeria were compared with findings from PE investigations in those states. Samples where necessary were taken for further laboratory confirmation. Attempts were also made to look at the level of accuracy of data generated by PE and conventional research methods, cost effectiveness of data generated and level of farmer confidence in data release. Check list and questionnaires were designed to gather the same information and semi structured interviews were conducted after structured questionnaires were administered. All finances involved in PE and conventional research methods were compared.

Of the PE tools tested, matrix scoring appeared to be most clinically useful. From 2009 to date we have used matrix scoring to clinically diagnose many poultry diseases in field situations, and recently to identify some chronic wasting diseases of cattle. There were areas of agreement with data generated using PE and conventional approaches, however

there were also basic significant differences. Either research approach had weaknesses, but could be truly effective when combined.

**TITLE: PARTICIPATORY APPROACHES FOR EVALUATING SURVEILLANCE SYSTEMS: INSIGHTS
FROM A TRAINING-RELATED STUDY FROM VIETNAM**

**Author (s): Antoine-Moussiaux, N.1,2, Vu, M.Q.G.1, Delabougliise, A.1, Thi, T.P.H.1,3,
Peyre, M.1, Binot, A.1, Baudon, E.1, Calba, C., Valeix, S.1, Nguyen, T.T.4, Phan, D.T.5,
Noopataya, S.6 and Jost C.7**

- 1. CIRAD, AGIRs Research Unit, Montpellier, France;**
- 2. Tropical Veterinary Institute, University of Liege, Belgium;**
- 3. National Institute of Animal Science, Hanoi, Vietnam;**
- 4. National Institute for Veterinary Research, Hanoi, Vietnam;**
- 5. Faculty of Animal Science and Aquaculture, Hanoi University of Agriculture, Vietnam;**
- 6. Department of Livestock Development, Ministry of Agriculture and Cooperatives, Thailand;**
- 7. EcoServe Solutions, Kenya**

Presenting Author: Nicolas Antoine-Moussiaux

Abstract:

In the context of the CIRAD project Research for Evaluation of Avian Influenza Surveillance in South East Asia (REVASIA), the impact of social factors on the efficacy of the surveillance systems are being studied using participatory approaches. Twelve researchers (epidemiology, sociology, economics, modelling) received a 10-day introductory training in participatory epidemiology (PE). The training included five days of classroom work, and five days of fieldwork. The training aimed providing basic PE knowledge, and to catalyse interdisciplinarity within REVASIA.

The objective of the fieldwork was to assess the occurrence and reporting of sudden death in poultry in Luong Dien Commune, Cam Giang District, Hai Duong Province, Vietnam. We began with a hypothesis that sudden death was occurring in poultry flocks of the community, but was not always reported.

Our fieldwork provided us with crucial insights into the benefits and limits of PE when applied to this specific subject. The team experienced the central PE principle of flexibility, as both the study objective and hypothesis were changed during the investigation. Indeed, the hypothesis was changed to reflect the observation that cases were seldom reported,

leading us to ask the question “Why do some people report” rather than the question we had started with, which was “Why do some people not report?” Also, a comparative approach between poultry and pig was integrated into the study objective, as it appeared to provide useful insights into the topic. The inclusion of pigs in the study’s scope proved a fruitful means of facilitating discussions about surveillance with farmers and veterinarians. Stepping down from the status of expert and considering the farmers as having unique and valuable knowledge was a new element and a major achievement in the field for most of the researchers involved. Together with the trainer, the trainees could build on their new experience in PE to develop different approaches aimed at tackling different dimensions of surveillance evaluation in their own work. About the project’s need for interdisciplinarity, the training helped spur discussions and raise awareness about participation. This shed light on the different scopes of scientists according to their discipline.

Practicalities about training organization were also learned from the experience. Particularly, the need for the group to lodge closer to the study community, as well as the importance of alternating field and classroom sessions in order to leave space for analysis between field work days. Training in PE encouraged our team to incorporate PE into the REVASIA project because it allows us to tackle sensitive topics with farmers, the benefits of the openness of the approach and as a research tool, and the higher level of interdisciplinarity that it allows us to achieve. We have also moved to create a dedicated regional PE network (SEA-PREID), with the support of PENAPH

**TITLE: DETECTION OF TRANSBOUNDARY ANIMAL DISEASES USING PARTICIPATORY
DISEASE SURVEILLANCE IN PLATEAU STATE, NIGERIA,**

**Author (s): Mwapu Dika Ndahi, Ayi Vandi Kwaghe, Joy Gararawa Usman, Samuel Anzaku ,
Alim Bulus and Jude Angbashim.**

Presenting Author: DR MWAPU DIKA NDAHI

Abstract:

Participatory Disease surveillance (PDS) has been used to produce more efficient and useful data in the prevention, treatment of diseases and improvement of veterinary services in the rural areas. PDS closes the gap between the veterinary public health disease investigators and the diverse livestock keepers. This study was conducted in 35 villages out of 6 local government areas of Plateau state in order to detect the Transboundary Animal Diseases (TADs) that are present in the state.

The study was conducted in 35 villages out of six local government areas in the Northern part of Plateau state. The local governments are; Bassa, Jos North, Jos South, Jos East, Barkin Ladi and Bokko's local government areas of Plateau state. The villages were selected for effective coverage of Northern aspect of Plateau state. Pre-advocacy visits were conducted to find a suitable meeting arena for the farmers before the commencement of PDS. All age groups of farmers were interviewed for more viable results. Materials such as Geographical Positioning System (GPS, GARMIN's eTrex Legend personal navigator), cardboards, counters, permanent markers, digital camera and others were used for the study. Each person was assigned a role before moving out. The following tools were used during the course of the participatory disease surveillance: (a) Check list consisting of the following items: mutual introduction, identification of respondents, sources of livestock, livestock species kept, husbandry systems, problems/challenges, livestock diseases, questions and advice, (b) Scoring and Ranking: simple ranking, proportional piling, pairwise ranking, matrix scoring and (c) Visualization which includes mapping, seasonal calendar and transect walk. Data was analyzed as indicated in "A Manual for Participatory Disease Surveillance

Practitioners: Introduction to participatory epidemiology and its application to highly pathogenic avian influenza participatory disease surveillance”.

In poultry, Newcastle Disease (ND) proved to be the most important disease of poultry found in the study area and is also a transboundary animal disease. The transboundary animal disease of sheep and goats in this area is Peste de Petit Ruminant (PPR) which happens to be the most important disease of sheep and goats in Plateau state. The TADs of cattle in this area include Foot and Mouth Disease (FMD), Contagious Bovine Pleuropneumonia (CBPP) and Lumpy Skin Disease. The most important disease of cattle in this area is FMD. In pigs and dogs, the most important diseases which are also TADs in this study area are African Swine Fever (ASF) and Rabies respectively. Challenges faced by the farmers in these villages include; diseases, difficulty in getting access to veterinary services, drought during dry season, and predation of chicks by hawks.

Poverty still poses challenges in the use of veterinary drugs and services by the farmers in these communities, hence the need for government to make these services affordable for these people. Ethnoveterinary medicine is still in practice in almost all the villages. There is need to include a botanist in the PDS team for easy identification of some of the trees and plants which are being used for ethno veterinary medicine due to the fact that these plants used by the rural dwellers are named in their local dialect. In conclusion, the presence of transboundary animal diseases across species of livestock in Plateau state indicates the need to strict adherence in the control and eradication of transboundary animal diseases within the country. There is also need for community enlightenment programs for the farmers on livestock production which will also aid in better animal production. This participatory disease surveillance (PDS) has really provided insight on the difficulties the rural communities are facing in terms of poultry and other livestock production. Active surveillance should be continuously carried out at the borders. Also there is need to check livestock movement from one region to another within the country due to the presence of TADs. This study has indicated the presence of numerous transboundary animal diseases in Plateau state and hence the need to address the issue in order to control the entry and spread of the disease in the area.

**TITLE: PARTICIPATORY DISEASE SEARCHING USING PARTICIPATORY EPIDEMIOLOGY
TECHNIQUES IN AGRO PASTORAL AND PASTORAL AREAS OF MBARARA DISTRICT IN
UGANDA.**

Author (s): **1Nantima, N., 2Twinamasiko, J., 3Nasinyama, G. W., 1Ademun, R., 1Serugga, J.
and 1Rutebarika C.S.**

1 Ministry of Agriculture, Animal Industry and Fisheries

2 National Agricultural Research Organisation

3 Makerere University, Kampala

Presenting Author: **Dr. Noelina Nantima**

Abstract

Participatory epidemiology is a useful method for investigation of livestock diseases. Both pastoralists and agro-pastoralist communities have a good knowledge of the common diseases that affect their herds.

A study was carried out in Rugaga sub county, Bukanga County, Isingiro district, South Western Uganda to assess the knowledge of the pastoralists and agro pastoralists about the major priority diseases and the impact of these diseases to their livelihoods.

Both conventional and participatory epidemiology approaches were applied to compare the results. 25 focus group discussions of 10-15 respondents were held in 19 villages purposively selected from 2 parishes and PE tools including Semi structured Interviews, Pair wise ranking, Proportional Piling, Seasonal Calendars, Mapping and Impact Matrix Scoring were used. Stratified sampling for predominant livestock management systems was used to select the villages and animals to be sampled. In total 384 heads of cattle from 10 villages were sampled. The samples including blood, serum and faecal samples were tested for Contagious Bovine Pleuropneumonia, Rinderpest, Brucellosis, Trypanosomosis, Tick-Borne Diseases and worm burdens at the National Animal Diseases Diagnostic Centre in Entebbe.

The results from PE indicated that the most important five priority diseases impacting on the livelihoods of these communities were Trypanosomosis, FMD, CBPP, worms and ECF in that order. The conventional study showed that Brucellosis, FMD and CBPP were the most important diseases. None of the 387 samples tested positive for either Trypanosomosis or

Tick-Borne Diseases such as ECF and Anaplasomosis. There were variations between the results obtained during the PE and conventional study. The variation could have resulted from the timing of sampling, type, sensitivity and specificity of the tests used since both ECF and trypanosomosis are very important diseases in this area, farmers regularly use chemotherapeutics to prevent them. Therefore the basic diagnostic techniques used could not detect these diseases.

In conclusion, PE tools enhance a better understanding of diseases that have occurred even if the disease signs are no longer evident at the time of investigation. Such information is usually not obtained using conventional epidemiological studies since livestock owners are not fully involved in disease analyses and identification of the importance of diseases is often based on prevalence and incidence. This study provided information regarding the importance of livestock diseases to the livelihoods of the livestock keeping families. Since direct government role in extension services is decreasing and livestock keepers are being encouraged to demand services, it is important that livestock farmers are empowered not only to appreciate disease control options but also to demand for the most profitable services.

**TITLE: RESULTS OF PARTICIPATORY ACTIVE SURVEILLANCE FOR HIGHLY PATHOGENIC
AVIAN INFLUENZA IN UGANDA**

Author (s): **1Nantima, N., 2Bryony, J., 2Saskia, H., 2Mariner, J.W., 1Kauta, N., 1Ademun, R.,
1Ndumu, D., 1Ayebazibwe, C., 1Mugabi, K., 1Rutebarika, C.S., 1Sserugga, J., 1Mubiru, E.D.
and 1Olaho-Mukani, W.**

**1 Ministry of Agriculture, Animal Industry and Fisheries
2 International Livestock Research Institute**

Presenting Author: **Dr. Noelina Nantima**

Abstract

Highly Pathogenic Avian Influenza (HPAI) a highly fatal zoonotic disease has so far spread to all continents. Strong surveillance in both birds and human populations is a critical component of early detection and response.

A surveillance study was commissioned between March and August 2009 in Uganda to assess the HPAI status, and to explore the epidemiology and socio-economic impact of NCD which has similar signs with HPAI. Both conventional and Participatory Epidemiology approaches were applied. Forty high risk districts were sampled purposively, 170 focused group discussions of 10-15 respondents each were conducted in 17 districts using a check list. The districts included; Masaka, Rakai, Mpigi, Mukono, Wakiso, Bugiri, Busia,, Tororo, Kasese, Kabarole, Nakasongola, Masindi, Koboko, Gulu, Apac, Lira, Soroti. Poultry farms that reported sick birds were also visited and samples taken. In addition, 1022 cloacal and retropharyngeal samples from poultry were collected in duplicate. Samples were tested using AI rapid antigen and NCD test kits.

All the 1022 samples tested negative for HPAI. The results of participatory disease surveillance indicated that there was no HPAI in the country according to people's indigenous knowledge and clinically at post mortem examination. The NCD prevalence was $\geq 90\%$ (CI95% 61-67%) affecting both free range and small-scale commercial farms. The NCD incidence was however very low in large commercial farms that practiced routine vaccinations. The relative impact on income, food and culture due to NCD was very high.

It was concluded that there was no evidence of any circulating HPAI virus in Uganda. NCD is negatively impacting on livelihoods of poultry farmers. It was recommended that the Government should strive to address the high prevalence of NCD to improve incomes of rural communities, and a policy framework should be developed to promote safe poultry production.

Since NCD is responsible for causing very high morbidities and mortalities in poultry farms hence impacting negatively on the livelihoods of poultry farmers, the study recommended that the government should promote effective NCD vaccination especially in the backyard farms. Promotion of thermal stable NCD vaccine and training of community vaccinators should be adopted to increase vaccination coverage. Reliance on passive reporting of poultry diseases results in under-reporting and there is need to encourage farmers to report all incidences related to sudden death and high mortalities in poultry followed by active surveillance. This could be achieved by integrating PE tools in the national disease surveillance system so that all sudden death syndromes' and major poultry disease problems are promptly investigated and laboratory confirmed to lead to better prevention and control of poultry diseases.

**TITLE: PERCEPTIONS OF THE IMPACT OF DEWORMING ACTIVITY IN THE EMERGENCY
DROUGHT RESPONSE, NORTHERN KENYA, 2011**

Author (s): Okell, C.N., Mariner, J.C., Allport, R., Rushton, J.R. and Verheyen, K.L.P.

Presenting Author: Okell, C.N.

Abstract:

There are over one million ruminants and camelids within the semi-arid and arid lands of the counties of Isiolo and Marsabit, northern Kenya. Ninety per cent of the population are reliant on these animals for the economic viability and food security of their households. The largest constraint to maintaining livestock as a viable asset is drought. Anthelmintic distribution is thought to improve the food conversion efficiency of livestock when pasture is scarce and is the most prevalent animal health activity used in the emergency drought response. Monitoring and evaluation of such projects rarely extends beyond activity assessments of operations and the impact on animal health or household indicators is unknown.

This study aimed to ascertain the perception of the effect of internal parasites on livestock, the existing capacities of livestock owners to provide treatment, the role of the emergency response in this capacity and the impact of anthelmintic administration on livestock output in the drought response in 2011.

The study was carried out in the counties of Isiolo and Marsabit, eastern province Kenya. Data were collected in participatory rural appraisals and semi-structured household interviews. Methods included ranking, seasonality calendars and proportion piling. Individual differences in perceptions and experience between participants within appraisals were ascertained in key informant interviews. The data collected were triangulated between the methods used. Analysis included non-parametric statistical analysis of quantitative data.

The study took place in 23 locations and included 265 participatory appraisal participants and 112 household interviews. The perceived importance of internal parasites relative to other diseases was uniform across the study population but the reasons for considering

other diseases of greater importance were different between counties, suggesting a difference in the epidemiology of internal parasites. 62% of households had administered anthelmintics procured themselves in the drought period. There was no statistical evidence that anthelmintic administration during a drought period was perceived to have an effect on livestock output. Although there was evidence of an improvement in output after administration during the rains, the concurrent improvement in pasture quality and water availability prevented evaluation of the independent impact of anthelmintic use.

Whilst the methods used in this study demonstrated the perceptions of livestock owners, further work is needed to quantify the effect of anthelmintics on output accounting for confounding factors. To ascertain an effect at a household level, in depth knowledge of the demographics of the livestock populations owned by households is needed. Whilst the free provision of animal health services is supported by the findings of this study, the provision of resources otherwise unavailable to livestock owners may be considered of greater value.

**TITLE: CLASSICAL AND PARTICIPATORY EPIDEMIOLOGY OF CANINE RABIES IN LOME
COMMUNE IN 2012**

Author (s): **Dr Pato Pidemnewe**

Presenting Author: **Dr Pato Pidemnewe**

Abstract:

Introduction: Rabies is a major zoonosis transmitted mainly in Africa by the dog bite. In Lome commune, suspected biting dogs dead or killed during quarantine are not confirmed by laboratory test. This study was conducted with Laboratoire d'Elevage de Ouagadougou in order to achieve this technology transfer and identify in a participatory way dog population at risk, as well as their nature

Method: Prospective study: We followed 75 under observation for biting dogs in 12 veterinary practices in Lome commune during August 2011 to January 2012; notified information about homes locations. Some samples were taken in dog bite home, we recorded characteristics of person bitten and dog biting. We realized on the basis of clinical suspicion, 32 samples collections from hippocampus and cortex, including 11 suspected rabid dogs dead and 21 suspected rabid dogs killed and read to fluorescent microscope.

Case-control study: in March 2012 at households where cases are positive (cases) and neighboring households (controls), we used proportional piling in each household (people living on the lease regardless of the number), we used Epi Info 3.5.1 and Excel to analyze data (confidence interval CI: 95% $p < 0.01$) bivariate analyze, Yates corrected Chi 2 p and Fischer, to statements of account and triangulation to determine number and manner of detention of the dog (on leash or straying partial) to estimate risk population and their nature when suspected

Results: Prospective study: seventy-five dog quarantine with as many people bitten were followed in the municipality, 68% (56.2 - 78.3) of people were exposed to the bites while 32% (21.7 - 43.8) were at a scratch. Five (5) % of biting dogs were vaccinated. 49.3% (37.6 - 61.1) completed the three visits of quarantine. Monthly incidence of cases of bite

dog/100,000 inhabitants in Lome is: 1.18 (1.1 - 1.4), for the mad dogs on the basis of clinical diagnosis /10,000 dogs, incidence is 1.25 (1.0 - 1.5). The DFA test was positive in 34.37% of cases (20.4 - 51.6) (n = 32). The test is positive 54.54% (6/11) of suspect's dead dogs and 23.80% (5/21) of dogs slaughtered. A threshold 0.05, difference is significant. Odds ratio (OR) = 3, 84 (0, 64 - 24, 94) Chi 2 (Yates corrected) = 1, p 81 (Fischer) = 0.089; There is a high risk that a biting dog died during the observation set is positive DFA test

Case-control study: cases households: 81% (47.9 - 96.9) households have more than one dog, 72% (38.7- 92.3) households leave stray dog

Control households: 91% (57.2- 99.5) households have more than one dog, 72% (38.7- 92.3) of households leave stray dog. Difference was not significant between cases and controls

Conclusion: This study demonstrated by epidemiological data found that rabies is a reality in the Lome commune and the technology transfer of diagnostic IFD is possible. Participatory survey is a complementary tool to classical epidemiology in understanding and presentation of cases

**TITLE: A MODEL FOR AVIAN INFLUENZA CONTROL USING PARTICIPATORY TOOLS SUITABLE
FOR VILLAGE CONDITION IN RURAL AREA OF THAILAND**

**Author (s): Srikitjakarn, L., Trakarnsirinont, P., Kaewpinta, B., Janya, S., Avaiyavanonth, N.,
Robert, C.S., and Robert, G.L.**

Presenting Author: Lertrak Srikitjakarn

Failures in risk management and communication related to Avian Influenza (AI) outbreaks contributed to a considerable impact on human-animal health, socio-economics, and vulnerable communities. At the onset of the AI epidemic in Thailand in 2003, no cooperation between governments' authorities and the community level as well as a delayed disease alert resulted in wide spread of the disease. The involvement of communities is organized under the Local Administration Organization (LAO). In the case of AI, no role was given to LAO even though they had potential resources. This study aims to develop a participatory surveillance and risk communication model for AI control suited for village conditions in rural areas of Thailand, where the LAO plays a role and participates. For this purpose a set of qualitative and quantitative tools were applied in a survey targeting different groups and stakeholder during May 2006 and September 2007. Participatory research and survey tools (i.e. in depth interview and focus group discussion, FGD) were supplemented with quantitative data gained from questionnaire surveys to verify the findings of the qualitative results. Pitsanulok and Chiang Mai provinces were selected as study sites, representing a high and low risk area for AI respectively. Initial FGD (phase I) targeted villagers, local farmers, health volunteers and LAO officers. Out of this a first model-draft was developed based on strong and weak points of existing disease control management and inter-sectoral communication by incorporating responses from villagers about best bet options suited to their conditions. Draft 1 then was tested for acceptance, feasibility, and expected effectiveness by criticism and discussion using a set of stakeholders FGD (phase II). Their responses were analyzed to design model-draft 2. Subsequently model-draft 2 was subjected to be scrutinized again within the last FGD (phase III), comprising of all stakeholders from both study areas. Expressed opinions and ideas were used for adjustment of model-draft 2, resulting in the final model. Additional in depth interviews were performed with local authority for AI control on knowledge and perception of AI in villagers,

knowledge of disease transmission, prevention and control in communities. Study results revealed that respondents had a lack of knowledge on AI and the LAO played no role in surveillance, however, a passive role in disease control. The developed model will help to ensure a sensitive surveillance with rapid response supported from the LAO who can decide to implement emergency action within 3 hours after outbreak detection. This will contribute to prevent high economic losses with very low input cost. The model can be modified to monitor other zoonoses as well as agricultural hazards in rural area.

**TITLE: A PARTICIPATORY ASSESSMENT OF DISEASE BURDEN, MORBIDITY AND MORTALITY
FROM FIVE PRIORITY LIVESTOCK DISEASES IN NIGERIA**

**Author (s): Soley, M.O.1, Okoroafor, O. 1, Ahamed, T., 1 Musa, I.W. 1, Garba, I.M. 1,
Mwapu, N. 1, Okike, A.2, Fadiga, M.3 and Jost, C.4**

- 1. Livestock Department and Pest Control Services, Federal Ministry of Agriculture and Rural Development, Area 11, Garki, Abuja, Nigeria.**
- 2. International Livestock Research Institute (ILRI), Oyo road, Ibadan, Nigeria.**
- 3. International Livestock Research Institute (ILRI), Box 30709, Nairobi 00100, Kenya.**
- 4. EcoServe Solutions, Kenya.**

Presenting Author: Soley, M.O.

Abstract:

A model was developed to determine the costs of not controlling five priority livestock diseases (CBPP, trypanosomosis, ASF, PPR and NCD) identified by the Nigeria Federal Department of Livestock in 2010. Multiple methods were used to gather data to feed the model, including a rapid PE assessment of the epidemiology and impact of livestock diseases, herd population structures, livelihoods and farm level cost information.

The PE study was carried out in four agroecological zones. It was designed to provide supplemental information for comparative purposes with data harvested from other sources. In addition the mean probability was determined, using logistic regression, that farmers in the study area faced challenges to production. Livestock disease occurrence was identified as a significant challenge to cattle, swine and small ruminant production in all study areas. Relative disease incidence for the previous year was determined using multinomial regression. FMD had a significantly higher incidence than other diseases in cattle; ASF, gastrointestinal parasitosis and mange in swine; PPR in small ruminants; and ND in chickens. Those diseases that had the greatest impact on livelihoods were not always those that had the highest incidence.

The PE component of the study was designed to meet the needs of a model for determining the economic impacts of not controlling five livestock diseases. The diversity of data required was great in terms of time and resources available for the

study, leading to sample sizes for individual parameters that were non-representative. In future, this weakness can be overcome by limiting the PE component to a smaller set of topics that have been shown to drive impact in a preliminary model sensitivity analysis, allowing for more comprehensive and representative data collection for a defined set of key model parameters. PE can then be used to gather in-depth data on those parameters in one agroecozone, and used to determine the mean and variance that can be expected in the data available for those parameters in that agroecozone. These levels of variability can then be used to calibrate the model in each of the agroecozones. If the estimated level of uncertainty or variance is expected to differ between zones, field data on the driving parameters can be collected in each zone.

The results of this assessment argue for different approaches to disease control depending on the species and zone, with a clear understanding of the epidemiology and importance of each disease in the targeted zones. It appears most effective to target public resources to high risk areas. This provides an opportunity to shift the focus of disease control towards effective packages of interventions involving collaboration between the public and private sectors, including private sector collaboration between veterinarians and village level animal health workers, veterinary pharmacists and livestock supply shops, and farmers and farmer associations.

TITLE: EXPLORATION OF COMMUNITY PERCEIVED RISK FACTORS FOR DIARRHEAL DISEASES IN BUSAANA SUB COUNTY, KAYUNGA DISTRICT USING PARTICIPATORY EPIDEMIOLOGY METHODS

Author (s): **Moses Tetui, Racheal Ankunda and Christine Nalwadda**

Presenting Author: **Moses Tetui**

Background:

Diarrhea is the third leading cause of morbidity in children less than five years and a common cause of morbidity among adults in Kayunga district, Uganda. Despite current public health interventions no reduction in morbidity due to diarrhea has been noted in Kayunga district. This study explored community perceived risk factors of diarrhea and workable interventions for controlling diarrhea in Busaana sub-county, Kayunga district.

Methods:

This was a participatory epidemiology study conducted in Busaana sub-county in September 2010. Two parishes-the most and least affected by diarrhea were purposively selected. Seven villages from the selected parishes were randomly selected and a discussion with eight to ten individuals was held in each of the villages. Participatory epidemiology data collection methods used included: community mapping, seasonal calendar, simple ranking, proportional pilling and semi-structured interviews. Data was analyzed manually and results presented in text and tables.

Results:

The most commonly identified physical risk factor was inadequate supply of water for domestic use. Respondents reported using water from river Nile, unprotected springs and swamps for domestic activities. Diarrhea was perceived to be more prevalent in the rainy season compared to the dry, sunny season. Having dirty compounds was perceived as the highest scoring behavioral risk factor for diarrhea. Health education, boiling drinking water and increasing access to safe water were the community proposed interventions for controlling diarrheal diseases.

Recommendations:

The local government of Kayunga district should mobilize resources to ensure increased access to safe water for Busaana sub- county residents. Behavioral change interventions should target improving hygiene and sanitation in homesteads through effective mobilization of community members. Diarrhea prevention interventions should be intensified during the peak rainy seasons.

**TITLE: COMMUNITY HEALTH EDUCATION AND PERCEIVED INCENTIVES INCREASE DEMAND
FOR BRUCELLOSIS TESTING**

Author (s): Woods, P.S.A., Taylor, N.M. and Beardsley, R.S

Presenting Author: Pamela Woods

Abstract:

Brucellosis provides an excellent example of conflicting incentives affecting voluntary reporting of cattle abortions and requests for serological testing. Regulations often stipulate serious consequences if cattle are seropositive e.g. branding and compulsory uncompensated slaughter, leading to concealment. However, once farmers know that brucellosis is zoonotic, and spreads between cattle on communal grazing unless management practices are changed, they should want to know their area's brucellosis status and request testing.

In Zimbabwe, most small-scale communities were free from brucellosis and unaware of it. However, finances constrained the veterinary services and uncontrolled cattle movements after farm resettlements introduced *Brucella*-positive cattle into naive, unvaccinated areas.

We hypothesized that informing farmers about the dangers of brucellosis to their families, and working with these communities to decide possible management options for positive cows would increase the incentives for farmers to report abortions and request testing for their cattle and their at-risk family members. Substantial public health benefits would follow if district hospitals knew when *Brucella* was present and for local clinics to consider brucellosis in differential diagnoses with possible antibiotic treatment.

Working with the small-scale dairy cooperative network, veterinary and extension services, nurses, community health workers and local leaders, we developed short courses about brucellosis, its epidemiology and to develop community action plans to prevent *Brucella* entering an area or infecting people/cattle. The emphases were varied to audiences and their future roles in surveillance and detection. According to each group's discussion, subsequent interventions were conducted. Repeated structured interviews at 120 households compared brucellosis knowledge levels, cattle management and milk handling

practices. Questions were based partly on the “Health Belief Model” (Rosenstock, Strecher & Becker 1988) to assess motivations and appropriate behaviour changes.

Results supported our hypotheses and more farmers reported abortions to their local veterinary paraprofessional once they knew about the testing option. The first reported cases of human and bovine brucellosis in two districts were found after farmers requested testing. Knowledge indices and perceived threat of the interviewed households increased after the health education sessions in their areas and was correlated with reporting abortions, calf vaccinations and milk hygiene practices.

The community health education sessions with action plan development allowed individuals to understand the options to reduce brucellosis risks, and to decide as a group the methods they felt suitable. The group decision increased peer pressure to conform to the agreed measures and the community-directed surveillance appears sustainable with minimal outside inputs.

**TITLE: USE OF PARTICIPATORY EPIDEMIOLOGY TO STUDY CAMEL DISEASES IN NORTHERN
KENYA: ACHIEVEMENTS AND CHALLENGES**

**Author (s): Wako^{1, 2}, D.D., Younan^{1, 3}, M., Tessema ^{2, 4}, T.S., Glücks ⁵, I.V., Machuchu ⁵,
D. and Baumann ^{2, 6}, M.P.O.**

- 1. Kenya Arid & Semi-Arid Lands (KASAL) Research Programme, Kenya Agricultural Research Institute, Kenya**
- 2. Joint Master Programme in Transboundary Animal Disease Management (MTADM), FU Berlin/Addis Ababa University, Ethiopia**
- 3. Vétérinaires sans Frontières (VSF) Germany**
- 4. Faculty of Veterinary Medicine, Addis Ababa University, Ethiopia**
- 5. Vétérinaires sans Frontières (VSF) Suisse, Kenya Programme, VSF-Suisse Regional Office Nairobi, Kenya**
- 6. Postgraduate Studies in International Animal Health, Faculty of Veterinary Medicine, Freie Universität (FU) Berlin, Germany**

Presenting Author: Wako, D.D.

Abstract:

To investigate the 'swollen gland syndrome'/haemorrhagic septicaemia complex in camel (*Camelus dromedarius*) in northern Kenya a study using participatory epidemiology (PE) was carried out between April and September 2011. The PE tools applied included focus group discussion, matrix scoring, proportional piling, seasonal calendar and time lines. The objectives of this paper are to highlight achievements and challenges of the PE tools used in the context of this study with examples given. Focus group discussion (FGD) proved to be highly useful in outlining priority diseases in the area. Here, using a broad approach to outlining general disease problems in the area rather than isolating the disease of interest was very useful in avoiding bias. It further resulted in generating enormous information on other diseases beside the disease complex under investigation. Matrix scoring of clinical signs of the priority camel diseases was very valuable in identifying and differentiating the diseases. Moreover, it generated further debate resulting in more detailed disease descriptions. Quantification of the qualitative data collected from focus group discussions worked quite well when describing clinical signs and postmortem changes during the data analysis stage of this master thesis. However, there were a number of challenges encountered in this study. For instance, in estimating the period prevalence and case fatality

rates of camel diseases using proportional piling, some informants counted the actual number of their animals rather than using the 100 counters provided for the exercise. The PE approach was also found to be highly sensitive to day-to-day changes in disease status in an area. Using pair-wise ranking in determining the priority camel diseases with the herders was extremely time consuming. This led us to use proportional piling to generate the same information which proved to be less time consuming and more easily understood by the herders as they could visualize and debate on all the priority diseases at once rather than comparing only two diseases at a time.

TITLE: PERSPECTIVES OF PE IN THE INVESTIGATION OF ZOO NOTIC DISEASE PERCEPTION IN THE VAN GUJJAR COMMUNITY OF NORTH INDIA

Author (s): Wright, A.E. and Thrusfield, M.

Presenting Author: Wright, A.E

Abstract:

Purpose: Persons living in and around forest areas are at increased risk of zoonotic disease transmission. The transhumant Van Gujjar community of north India are one such population. There is an absence of published human and veterinary health data concerning this population and their livestock. The aim of this study is to investigate the perceptions that the Van Gujjar population have towards zoonotic diseases, noting that various studies have demonstrated that pastoral communities possess in-depth knowledge of health issues (Catley, Alders & Wood, 2012).

Methods: Participatory epidemiology (PE) methodology was used - specifically semi-structured group interviews, ranking, proportional piling, transect walks and direct observation. Informal interviews with local veterinarians provided further triangulating information. Translated interview transcripts were coded for analysis in the manner of qualitative inquiry, alongside analysis of ranking and scoring exercises.

Results: It was found that the subject community did not have a wide perception of zoonotic diseases. Rabies and potentially zoonotic skin diseases were the only zoonoses perceived. In contrast, veterinary diseases were of priority to the community and were discussed in depth. This study found that the locally named surra, ajar, khuriya, dakhutra, gheru, taku, and a condition typified by 'blood in urine' were of most concern. Differential diagnoses for these diseases are suggested.

This study is the first to use PE methodology with Van Gujjars and also the first to use PE in forested areas of north India. As such, various issues were encountered in the community response to published PE methods. Participants were found to be reserved during PE exercises. There was some reluctance to handle cards and counters. Diseases affecting livestock health were of priority whilst there was little interest in discussing human conditions or diseases with potential zoonotic links. Additional logistical issues included

large group sizes, time-constraints, a strong gender bias favouring male contributions and challenges experienced in obtaining accurate translations.

In-depth analysis of interview transcripts in this study was found to be a very useful technique to obtain additional data from that gained during PE exercises. This approach may prove a beneficial adjunct to PE work in other contexts.

Conclusions: A PE approach was found to be useful for the investigation of veterinary disease and zoonotic disease perception in the Van Gujjar population. Lessons and perspectives learned from this study will help to inform further work in this population, in addition to informing the use of PE in other novel contexts.

Keywords:

Participatory epidemiology, zoonosis, coding, India, Van Gujjar

References:

Catley, A., Alders, R.G. & Wood, J.L.N. (2012) Participatory epidemiology - approaches, methods, experiences. *Veterinary Journal*, 191, 151-160.

POSTER PRESENTATIONS

**TITLE: INVESTIGATION OF THE HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) IN FCT
USING PARTICIPATORY EPIDEMIOLOGY APPROACH.**

Author (s): Akujobi C.I and Anzaku S.A

Presenting Author: Akujobi C.I

Abstract:

Early disease detection and reporting are crucial to the prevention and control of the Highly Pathogenic Avian Influenza (HPAI). As a result of the outbreak of HPAI in Nigeria in 2006, AU-IBAR through ILRI in 2008 in collaboration with the Federal Government of Nigeria implemented a programme tagged EDRSAIA where PE as another method of disease surveillance was introduced and adopted. It commenced with a 2 weeks training of twenty (20) veterinarians drawn from both the public and private sectors.

As a follow up to the Participatory Epidemiology training, practitioners were requested to undertake field practice of the PE tools learnt for the investigation of HPAI in their respective locations.

The objective of the study was to investigate the HPAI in FCT using PE approach, 30 villages were randomly recruited for this study. Data was collected using semi structured interview, simple ranking, pairwise ranking, proportional piling and matrix .

From our findings, we observed that the common diseases in these areas are Newcastle and Fowl typhoid .There's very limited access to veterinary services especially in the rural poultry while the large commercial farms have access to veterinary services. Most villagers use local herbs and some orthodox human preparations to treat sick birds. They have heard about HPAI and this was through Television, Radio, sensitization workshops but most strikingly from their children. They rural farmers are yet to adopt biosecurity while the commercial farmers have biosecurity in place. However, the data collected was not statistically tested due to the design of the study and nature of data collected. Though the sample was randomly selected, inaccessibility of some parts of the state made it impossible to include such areas in the study. The sample size which was dependent on available funds was also inadequate which in turn affected the power of the study.

Some challenges encountered include inability to use the rapid test kit as this is yet to be adopted by the Nigerian Government and as such on the spot testing of samples collected was impossible. Integration of reports from PDS into the national surveillance system could not also be done as this is yet to be harmonized.

In conclusion, from the study, there may be no HPAI in FCT as even the only suspected case reported during the study turned out to be Newcastle Disease based on Laboratory confirmation.

Keywords and references:

Participatory Epidemiology, Participatory Disease Surveillance

**TITLE: PARTICIPATORY DISEASE SEARCHING OF CONTAGIOUS BOVINE
PLEUROPNEUMONIA IN PASTORAL COMMUNITIES OF NIGER STATE, NIGERIA**

Author (s): **Alhaji¹, N.B. and Babalobi², O.O.**

Presenting Author: **Alhaji, N.B.**

Introduction/Purpose: Contagious bovine pleuropneumonia (CBPP) is a fatal respiratory and transboundary animal disease of high economic importance to cattle owners and cattle industry in Niger State, Nigeria. Many experts have stated that after rinderpest, CBPP is the most important transboundary cattle disease in sub-Saharan Africa (OAU-IBAR, 1999). CBPP is considered to be a disease of high economic importance because of its ability to compromise food security through: loss of protein and draft power; reduce output; increase production costs due to costs of disease control; disrupt livestock/product trade; inhibit sustained investment in livestock production; cause pain and suffering to cattle (Paskin, 2003). Estimated annual losses directly or indirectly attributable to the disease are around US\$2 billion in African countries (Masiga et al. 1998). In the northern part of Nigeria, direct economic cost of CBPP is estimated to be US\$ 1.5 million (Egwu et al. 1996). The objective of the study is to assess existing veterinary knowledge (EVK) and traditional oral history on the disease in pastoral communities and confirm (triangulate) them with conventional veterinary methods.

Methods: The occurrence of the disease in the state was investigated qualitatively by the application of Participatory Disease Searching (PDS) using Participatory Rural Appraisal (PRA) tools of proportional pilling, matrix scoring, seasonal calendar and triangulation were very effective in investigating local perceptions of disease-signs and disease causes. This was quantitatively validated by conventional veterinary method, the competitive enzyme linked Immunosorbent assay (cELISA) test.

Results: Kendall's Coefficient of Concordance $W = 0.787$ and $P < 0.05$ indicate existing veterinary knowledge, traditional oral history and strong agreements on the disease among the key informants and traditionally called CBPP Ciwon huhu or hutu. Although it can occur in all seasons, the current study revealed its occurrence to be more in dry season (rani) about 77.67% than in the rainy season (damina) or 23.33% in the state. The estimated

prevalence of CBPP in cattle population in the state was 8.7%., meaning that there are about 87 cases of CBPP in every 1000 cattle population in the state.

Conclusion: This study indicates that pastoralists have existing veterinary knowledge on CBPP. The combined use of Participatory Disease Searching (PDS) and conventional veterinary methods is essential for active disease surveillance and control strategies of CBPP. The prevalence of the disease in the cattle population is high and calls for effective prevention and control of the disease particularly in Niger State and Nigeria as a whole.

Keywords: Contagious bovine pleuropneumonia, existing veterinary knowledge, pastoral, Nigeria.

**TITLE: PARTICIPATORY CENSUS METHOD FOR GENERATING RELIABLE DATA FOR
SANITATION PROGRAMME**

Author (s): **Gayatri Basu¹ and D. Basu²,**

- 1. SIPRD, Kalyani, Nadia , W. B. India 741235**
- 2. BCKV, Mohanpur, Nadia , W. B. India, 741252**

Abstract

The disenchantment of questionnaire surveys as method of data collection leads to search for alternative methods which are reliable, time and labour saving and owned by common people. Participatory census is emerged as a tool to answer the inherent problems of formal data collection. This tool was used to generate sanitation related information in a village of West Bengal State of India while training Government officials for data collection. Initially cards were prepared for every families living in the village. The participants of the exercise discussed in details about the features to be observed and reached to consensus for assigning different signs and colours for different features of sanitation. The feature were sanitary latrines constructed, sanitary latrines used, open defecation practiced, potable water source, soak pit, compost pit etc. Based on interaction among the key informants all these information were documented in each card assigned to family with symbols and colours. It takes hardly one and half hour to compile the information of the whole village. By forming different piles the information may be analysed and frequency table can be generated for further analysis.

**TITLE: INTRODUCING FIELD EPIDEMIOLOGY TRAINING PROGRAM TRAINEES TO
PARTICIPATORY EPIDEMIOLOGY IN UGANDA, 2010**

Authors and affiliation: **Monday Busuulwa, Sheba N. Gitta, Peter Wasswa and David
Mukanga**

African Field Epidemiology Network Secretariat (AFENET)

Introduction

Participatory epidemiology is the application of participatory methods to epidemiological research and disease surveillance. Participatory disease surveillance has made an important contribution towards eradicating diseases such as rinderpest. Knowledge on Participatory Epidemiology (PE) and its application by public health professionals is presently limited. A two-week course targeting public health trainees of field epidemiology training program (FETP) from Uganda was done in 2010.

Methods

Twelve Uganda FETP trainees and five program mentors were invited for residential two weeks PE training conducted in Arua district, Uganda. The training was conducted by experienced trainers from International Livestock Network (ILRI) and Ministry of Agriculture Animal Industry and Fisheries (MAAIF). The training model included didactics to introduce trainees to PE approaches and techniques. After each module, trainees chose topics, developed checklists and relevant materials for conducting field practical sessions in nearby communities. At end of each field session, each trainee made daily presentations. After the course, trainees prepared and implemented short projects that involved using PE techniques.

Results:

Trainees constituted 70.5% of the total trained; the rest were lecturers and mentors from FETP and the African Field Epidemiology Network (AFENET). Field sessions constituted 50% of the training. All participants had equal opportunity to participate in field sessions and present their results. All participants were divided up into small groups for six subsequent PE short projects. The evaluation of the course by participants indicated that they found the

method and tools were valuable for their public health activities and should be incorporated in public health education.

Conclusion

A PE short course that blended didactic and field sessions was conducted for FETP trainees from Uganda. It provided trainees with knowledge and skills in the application of PE techniques.

Recommendations:

Similar trainings should be conducted for field epidemiology trainees to promote future application of PE techniques in routine disease surveillance and implementation of public health programs.

**TITLE:LIVELIHOODS IMPACT OF FOOT AND MOUTH DISEASE IN THE BORENA PLATEAU:
ETHIOPIA.**

**Author (s): Tariku Jibat Beyene^{1*}, Berhanu Admassu Abegaz², Tesfaye Rufael Chibsa³,
Carlsen Poetzch⁴**

- 1. Addis Ababa University, Faculty of Veterinary Medicine, Pobox 34, Debre zeit, Ethiopia.**
- 2. Tufts University, FIC, PObox 1078, Addis Ababa office, Ethiopia.**
- 3. National Animal Health Diagnostics and Investigation Center , POBox 34, Sebeta, Ethiopia.**
- 4. EUFMD-Germany.**

Presenting Author: Tariku Jibat Beyene

This study was conducted on FMD's livelihoods impact, and trend analysis in Borena zone, southern Ethiopia using participatory appraisal methods and secondary data sources. Livestock related livelihoods options accounted for 31% of the total means of food and income source followed by crop farming. This study clearly showed that FMD had the greatest impact on the cattle-derived benefits and the trend of outbreaks frequency and severity has been increasing with timeline from 1960 to 2007 ($r=0.612$). Furthermore, through the timeline, FMD outbreaks frequency and severity was found to be significantly correlated to length of extended dry season ($r=0.377$). In addition, FMD is ranked number one cattle disease after 1985 with significant rank change ($t=12.04$) as compared to 1984 and before. The therefore, an immediate control strategy needs to be installed and run considering FMD's significant impacts on livelihoods. That would reduce people's lives stress, alleviate secure security and keep social harmony.

**TITLE:FACTORS ASSOCIATED WITH THE PERSISTENCE OF TUNGIASIS IN KAKIRA TOWN-
COUNCIL, JINJA DISTRICT, UGANDA**

Author (s): **Samuel Etajak¹, Moses Okol¹ and Monica Musenero²**

Presenting Author: **MOSES OKOL**

Abstract:

Background: In Uganda, Tunga penetrans (Jiggers) have been a more wide spread problem in the country than most people thought. They have also been reported in Busoga, Kisoro, Mukono, Adjumani, Kagadi in Kibaale District, Kayonza sub-county in Kayunga, Kabale and Tororo district among many other rural areas. Jiggers come with stigmatisation and desertion of family and friends. The study was conducted to establish factors associated with persistence of Tungiasis infestation in Kakira Town Council, Jinja District, Uganda 11th – 23rd October 2010

Methods: A total 20 Semi-structured interview involving 10 – 15 participants were held in 8 villages determined using risk based sampling and population together with one focus group discussion in each village. Data collected using simple ranking, proportional piling for morbidity and mortality, participatory mapping, matrix ranking and seasonal calendars was analysed after standardization using non parametric statistical methods. The level of agreement between informant groups was assessed using Kendal's coefficient of concordance in SPSS v 16.0. Seasonal calander was drawn.

Results: The study Tungiasis (jigger's disease) was perceived the most common zoonotic disease. Proportional piling for morbidity and mortality indicated that Tunga penetrans infestation was high at Kabembe A, Kabembe B, Luanda and Nakabago with the most affected age groups being children and elderly.

The standardized ranked risk factors are poor hygiene and laziness followed by lack of community health inspections, free grazing pigs, dusty environment and sleeping with animals. The preferred channels of communicating interventions are village meetings followed by radio, door to door visits and churches.

Conclusion: This study established knowledge and control practices were consistent across the affected communities. Whereas tungiasis has disappeared from the underdeveloped rural communities where it formally existed, the disease should be considered as a resurgent health problem of areas where environmental conditions favour high attack rate together with social neglect (linked to poverty and inadequate health care seeking behaviour).

**TITLE: SENSITIVITY OF COMMUNITY-BASED ANIMAL HEALTH OUTREACH (CAHO) SURVEYS
TO DETECT H5N1 HPAI IN EGYPT**

**Author (s): Hannah, H., Unger F., Yilma J., El Masry I., Ettel, T., Nasef, S., Hassan M.K.,
Abdelkader, Galal, S., S.H., Soliman, M.A., Grace D. and Randolph T.**

Presenting Author: Unger F.

Abstract:

There is a need to find locally and globally relevant surveillance tools to measure disease prevalence and inform control programs. Traditional veterinary knowledge has a contested role in surveillance systems. The present study examined the sensitivity of participatory surveys to detect H5N1 HPAI in household and small scale poultry (chicken, duck, geese and turkey) production sectors in Egypt by measuring the correlation between rt-PCR results and presumptive diagnoses by CAHO practitioners who perform focus group and individual discussions with rural poultry farming communities.

Community meetings facilitated by CAHO practitioners were convened to detect HPAI disease as per national surveillance protocols in 15 governorates. Between April and June, 2012, a total of 720 villages were visited where community meetings were performed by 45 CAHO teams, each consisting of 2 veterinary surveillance officers trained as CAHO practitioners. In each community, CAHO teams recorded a presumptive diagnosis of HPAI at the community level. Tracheal and cloacal swabs were collected at the same time from suspected birds or in the case of presumed negative diagnoses (apparently healthy), samples were collected from five birds chosen at random in a flock. Samples were shipped to the central laboratory and analyzed by rt-PCR to determine H5N1 HPAI status. Sensitivity of the CAHO surveillance program to detect H5N1 HPAI in poultry in comparison with other surveillance parameters was determined based on the correlation between the presumptive diagnosis and laboratory confirmation.

The findings of the study highlighted the accuracy and limitations of local knowledge coupled with clinical observation and assessments from CAHO surveys. The usefulness of such approaches as surveillance tools was demonstrated by the ability of CAHO practitioners

to estimate infection prevalence at community levels and assess the health status of individual animals. This study showed that CAHO can serve to combine inquiries from local knowledge with scientific study results as a complement to laboratory analysis.

**TITLE: COMMUNITY'S PERCEPTION OF BRUCELLOSIS BY APPLYING PARTICIPATORY
EPIDEMIOLOGY IN CHIANG MAI AND LAMPHUN PROVINCE, THAILAND**

Author (s): **Jongchansittoe, P., Chotinun, S., Chaisowwong, W., Waropastrakul, S., Unger,
F. and Kreausukon, K.**

Presenting author: **Papaspong Jongchansittoe**

Abstract:

Brucellosis is listed as one of the priority zoonoses in Thailand. Cattles and pigs are the most susceptible species. Brucellosis can causes remarkable economic and health impact on dairy production. The Department for Livestock Development (DLD) has implemented a countrywide disease control program mainly focusing on dairy cattle. However, the situation in small holder beef farms which are traditionally backyard farming is not well known. The further exploration of knowledge and perception of those farmers is seen as a key factor to control and prevent brucellosis. Thus, the aim of this study was to investigate the perception of communities on brucellosis in Chiang Mai and Lamphun province, Thailand by applying Participatory Epidemiology's tools.

In depth interviews and focus group discussion were used to explore knowledge and perception of brucellosis in community. The study area included four villages which are part of an existing beef cattle foundation. Total 93 key informants were included, with 45 informants for interviews and 48 for focus group discussion. Interviews were conducted by using open-ended question. The 45 key informants (male 32: female 13) consisted of 22 beef holders, 15 villagers, 3 head of the villages, 3 public health volunteers, 1 livestock volunteer and 1 beef cattle middle man. Two focus group discussions (one group of villagers and one group of beef cattle small holders) were performed in each village with 5-7 persons each group. During interviews and group discussions, technical terms such as "brucellosis" "zoonosis" were translated using easy explanation for people in the community. Participatory Epidemiology's tools were applied during focus group discussion aiming to collect the zoonoses perception data.

Results indicated a lack of land for raising animals (27.3%) and animal infertility (22.7%) as the main problem for raising cattle. Foot and Mouth Disease is the most relevant cattle disease (36.4%) in both areas. Among the interviewed beef cattle holders, only one person

has knowledge of brucellosis, nine have heard the name, 32 have never heard about it. The one person with well-knowledge of brucellosis was educated through University. No significant differences in responses among the group of people and among the 4 villages were observed. The informants listed rabies (40%), Avian Influenza (24.4%), Leptospirosis (8.9%), Tuberculosis (6.7%), Anthrax (6.7%), and *Streptococcus suis* (4.4%) as known zoonoses. None of them mentioned brucellosis as a zoonotic disease. It can be concluded that knowledge and perception on brucellosis is very poor in the beef cattle small holders in the study areas.

Public health promoting campaigns in communities have shown some impact on knowledge and perception of people. The zoonoses which were listed by villagers and farmers have been promoted by launching to community communication such as local communication, song, bill board, etc. The question to be answered is what would be the correct priority level of investment for brucellosis in beef cattle at the national level? And how difference of Participatory Epidemiology disease investigation comparing with classic epidemiology disease investigation and laboratory test of brucellosis on the same area?

**TITLE:APPLICATION OF PARTICIPATORY EPIDEMIOLOGY IN SURVEILLANCE AND
DESCRIPTION OF THE POULTRY SECTOR IN HPAI HIGH RISK DISTRICTS IN KENYA**

Author (s): **W.Kabaka¹, A.Asaava¹, A.Aluma², H.Saskia², M. Kioko¹, C. Nyongesa¹,**

J.Wakhungu¹, P.Olwande¹, G.Oyoko¹, J.Ohato¹

- 1. Department of Veterinary Services**
- 2. International Livestock Research Institute, Nairobi**

Presenting Author: **Ojigo David**

Abstract:

Recent studies have demonstrated that emerging and re-emerging human pathogens originated from the animal kingdom. Avian influenza is one of the important re-emerging viral infections. The emergence of this disease in various parts of the globe that are pathogenic to humans and with potential to cause flu pandemic shows the need to understand the epidemiology of the disease.

In disease control and eradication programmes, surveillance is the key to success. Effective surveillance is essential to insure the appropriateness and timeliness of interventions, whether they are movement control, treatment, vaccination or stamping out.

In 2009 the Department of veterinary services applied Participatory epidemiology methods to carry out avian influenza surveillance. The surveillance involved three activities: training of field officers, the surveillance activity in the field, and the retraining and evaluation workshop. The objective of the activity was to apply relevant PE/PDS tools in conducting surveillance, enable the trained personnel use PE tools for early detection of emerging trans-boundary animal diseases and train other AHSPs on how to carry out PE/PDS and to change the altitude of the participants towards PE/PDS tools.

A desk top risk analysis, literature review and consultations with experts were done to generate a list of the high risk districts in the country. Veterinary officers from the risk districts were nominate to a 10 day residential training. Local veterinary personnel mobilized the community in each of the sites visited. Syndromic surveillance, focus group discussions and key informant interviews were used to generate the data using Participatory epidemiology approaches. Where suspect cases of HPAI were encountered rapid antigen

testing was done and sample collected. A retraining was carried out at the end of the field exercise.

Besides the acquisition of knowledge and skills, recommendation, risk maps, disease 'hotspot', action plans, PE teams and budgets for each district to be visited were generated.

No reports of HPAI were noted in the sites visited. Epidemiologic information on other disease prevalent in the poultry including ND, IBD and fowl typhoid was generated. The poor surveillance of poultry disease in the high potential areas of the country was noted. Indigenous knowledge and interventions was captured and extension messages on the control of these diseases were passed to farmers. During the retraining session, an evaluation of the field exercise, sharing of the findings and experiences revealed the need to integrate participatory approaches in the surveillance system. Knowledge generated on rearing and marketing of chicken was consolidated and the application of PE methods refocused.

Participatory disease search is a sensitive, timely, flexible and cost effective method that should be deployed as part of the active surveillance. Livestock owners are relatively adept clinical diagnosticians and can readily recognize major disease problems present in their area. When combined with questionnaire, participatory techniques are excellent methods for assessing the epidemiological risk levels of an area or for tracing owner reports back to (or forward) active disease outbreaks for laboratory investigation.

In apparently disease free areas, participatory disease search can be used to confirm the absence of disease. Information gained through participatory disease searches on husbandry system and trade practices can be used to establish epidemiological risk levels for disease introduction scenarios. Concerning endemic areas, data collected on livestock movement, animal contact and service delivery can suggest mechanisms of endemicity. This information can form the basis for the design of more appropriate control strategies. Participatory investigation can also help to establish the risk levels of disease spread of endemic areas. Of importance are the exotic emerging avian diseases such as the avian influenza (bird flu) in the country. It was recommended that scheduled participatory disease search missions be carried in the HPAI high risk districts in of the country in order to

improve early detection, early responses and to deliver extension messages for community empowerment and to improve biosecurity in the sector.

**TITLE: RELEVANCE OF PARTICIPATORY EPIDEMIOLOGY AND PARTICIPATORY DISEASE
SURVEILLANCE IN CONTROLLING TUBERCULOSIS IN BUFFER ZONE OF CHITWAN NATIONAL
PARK, NEPAL**

Author (s): **Sushil Khatiwada**

Presenting Author: **Sushil Khatiwada**

Abstract:

Nepal is a small, landlocked country situated between India and China, with a human and captive elephant population of approximately 27 million and 230 respectively. Like other many developing countries, Nepal too is struggling to control tuberculosis (TB). TB, a zoonotic bacterial disease, infects 45% of Nepal's population with 44,000 active cases reported every year creating huge public health havoc. TB is also endemic in Nepal's livestock and is caused by *Mycobacterium bovis*. While the human TB is assumed to primarily involve *M. tuberculosis*, but human are also susceptible to *M. bovis* infection. Nepal lacks national livestock TB control program and routine screening for human TB is provided by a World Health Organization (WHO) supported Directly Observed Treatment Short-course (DOTS) program, which does not differentiate *M. bovis* from *M. tuberculosis* infection. A scientific understanding of the dynamics of TB in human and animal is poor. TB also occurs in captive elephants in Nepal and may occur in other wildlife species. TB is also endemic in cattle dwelling in buffer zone of Chitwan National Park (CNP), in Nepal's southern plains, and threatens the survival of 160 captive elephants in the region. Of 29 positive cases identified by Nepal Elephant Healthcare and TB Surveillance Program from captive elephants all over Nepal, 19 alone are from CNP receiving the treatment which costs about \$7,500-10,000 per elephant. Captive elephants are critical to the Nepalese conservation program as they engage in patrolling the CNP, eco-tourism activities and generating income for the CNP and people. Their intermingling with other important free-ranging endangered wildlife, domestic livestock, and humans is common which elevates the potential for multidirectional transmission of TB as they share grazing land with cattle and come in constant contact to humans.

Till now, intervention directed to TB control is largely sectoral rather than participatory focussing on screening and cure ignoring the complex wildlife, human and livestock interface in the area. Treatment is carried out on people without the slightest idea of TB prevalence in their cattle. Cattle that are screened positive aren't treated or even condemned due to high cost involved and sheer lack of awareness. Disease dynamics among mahouts, community people, cattle, other wildlife species and captive and wild elephants is largely overlooked. Agencies working in human, livestock and wildlife TB control don't have effective communication and working understanding to better cope the situation. So, a multidisciplinary co-ordination between the experts from the veterinary, medical, wildlife and public health sectors in the participatory epidemiology and disease surveillance actively involving the community is pivotal to come up with the effective control strategy.

Ongoing studies are focusing on the development of diagnostic tools that will better differentiate *M. bovis* and *M. tuberculosis* organisms in livestock, elephants, human and other wildlife. While, other researchers are focusing on developing effective and affordable treatment regimens for controlling TB in captive elephant population and in understanding the ecology of this disease. But somewhere around, co-ordination among stakeholders is lacking. Thus, the control and treatment strategies aren't very rewarding. One health initiative has been proven globally to be effective in such complex disease interface. Locally also, the lessons learned from the participatory epidemiology, participatory disease surveillance and multi-sectoral co-operation in the avian influenza control program (AICP) undergoing in Nepal from government itself can be exemplary for modelling the TB control strategy.

Conceptualizing and implementing the participatory epidemiology and participatory disease surveillance methodology in the buffer zone of CNP has to be the way ahead as TB is notoriously difficult to diagnose, track and treat especially in resource limited country like Nepal.

**TITLE:HIGHLY PATHOGENIC AVIAN INFLUENZA PARTICIPATORY DISEASE SURVEILLANCE IN
PLATEAU STATE, NIGERIA.**

**Author (s): yi Vandi KWAGHE, Mwapu Dika NDAHI, Joy Gararawa USMAN, Emmanuel
SAMBO, Ibrahim WAZIRI, Adamu A. EL-OJI, Ezekiel Gyang PAM, Christine C. JOST,
Iheanacho Okike ACHO, Cyrille Pissang TCHANGAI and Samuel ANZAKU**

Presenting Author: AYI VANDI KWAGHE

Abstract:

PDS is a surveillance system which involves the active participation of communities or individuals in data acquisition on diseases, existing veterinary knowledge and traditional oral knowledge. This study was conducted for the surveillance of highly pathogenic avian influenza (HPAI) in Plateau state.

The PDS team composed of five veterinarians. The study was conducted in 77 villages from 5 local government areas (Barkin Ladi, Quan Pan, Jos East, Jos South and Bokkos) of Plateau state. Before each exercise outing was carried out, pre-advocacy visits were conducted to find a suitable meeting arena in each village according to the suitability of time, place, local politics and convenience for the farmers. Efforts were made to include farmers of all age groups. Materials such as Geographical Positioning System (GPS, GARMIN's eTrex Legend personal navigator), cardboards, counters, permanent markers, digital camera and others were used for the study. Each person was assigned a role before moving out. We always have our note taker, observer, tool applicator and the facilitator. In order to avoid bias, the Participatory Disease Surveillance (PDS) Team did not mention about HPAI during the interview process. The following tools were used during the course of the participatory disease surveillance: (a)Check list consisting of the following items: mutual introduction, identification of respondents, sources of livestock, livestock species kept, husbandry systems, problems/challenges, poultry diseases, questions and advice. (b) Scoring and ranking: simple ranking, proportional pilling, pairwise ranking and matrix scoring. (c)Visualization: This includes mapping, timelines, seasonal calendar and transect walk.

Result indicates that New Castle Disease (NCD) is the most important disease of poultry in all the 5 LGA's where the study was conducted. This was followed by fowl pox as the next

poultry disease of importance in the studied areas. The use of seasonal calendar showed that NCD occurs from the month of October to November and is said to have high morbidity, mortality and case fatality rates. Challenges faced by the farmers in the studied areas include insufficient funds, management problems, predators, diseases and theft.

In conclusion, HPAI was absent in the 77 villages (five LGA's) of Plateau state where this study was conducted. Although on further probing, it was discovered that the farmers are aware of the disease due to its publicity which they heard via the media. NCD is the most important disease challenging the poultry system in Plateau state based on this study. There was no active case of NCD in all the 77 villages during the conduction of the study. Ethno-Veterinary medicine is very much in practice in all the villages where the study was conducted. This study (PDS) has revealed the challenges of poultry production in Plateau state based on the studied communities. The use of participatory disease surveillance proved to be a useful tool to collect reliable data that can be utilized for the control of poultry diseases in Plateau state based on the season of occurrence of the various diseases as indicated in the study. PDS has proven to be an effective method in data collection and analysis.

**TITLE: IMPERATIVES OF PARTICIPATORY ANTIMICROBIAL RESISTANCE MONITORING
(PARM): RESISTANCE OUTCOMES AS INDICATORS OF ANTIMICROBIAL USE HABITS OF
ACTORS IN THE NIGERIAN POULTRY INDUSTRY**

Author (s): I.C. Okoli¹, M.N. Opara¹, C.C. Ugwu¹, I.C. Unamba-Oparah¹, C. Ezema² and K.F.
Chah³

1. Tropical Animal Health and Production Research Laboratory, Department of
Animal Science and Technology, Federal University of Technology Owerri, Nigeria
2. Department of Animal health and Production, University of Nigeria Nsukka, Nigeria
3. Department of Microbiology, University of Nigeria Nsukka, Nigeria

Presenting Author: I.C. Okoli

Abstract:

Indiscriminate use of antimicrobials along with poor hygiene and disease control are the major risk factors that drive antibacterial resistance in the Nigerian poultry industry. Antimicrobial resistance testing is rarely performed before drugs are prescribed and administered at practically all levels of the industry because of unwillingness of operators to bear the extra cost of such tests, unavailability of veterinary medical laboratories and veterinarians' apathy. Seven poultry operators made up of a veterinary doctor, medical doctor, turkey breeder, hatchery operator, commercial feeds and feed raw materials dealer, layer and small holder free range chicken farmers gave consent for evaluation of resistance profiles in *E. coli* isolated from their operational sites in exchange for access to the research results. *E. coli* isolates were screened for resistance against 17 antibiotics using the disc diffusion method. The isolates from breeder broilers managed by the veterinary doctor recorded very high resistance rates of 90 - 100% against nitrofurantoin, cotrimoxazole, cefuroxime, tetracycline, chloramphenicol, nalidixic acid and ampicillin respectively. In the growing pullets/broilers farmed by the medical doctor, *E. coli* isolates recorded 40, 50, 80 and 90% resistance against ofloxacin, pefloxacin, ciprofloxacin and norfloxacin indicating high use of fluoroquinolones by the operator. The turkey breeder farm located about half a kilometer from the medical doctors' farm yielded isolates that recorded 2.8, 8.3 and 11.1% resistance against ofloxacin, pefloxacin and ampicillin respectively and 30.6 to 36.1%

against nalidixic acid, chloramphenicol, norfloxacin and cotrimoxazole. Isolates from dead-in-shell chicks and poultts obtained from the hatchery and pullets from the layer farm revealed high resistance (75.0 to 100%) to the inexpensive, first line broad-spectrum antibiotics readily available without prescription from authorized veterinary centers. The free range chicken (cockerels) yielded isolates that recorded zero resistance against gentamycin, tetracycline and ciprofloxacin. Feeds and feed raw materials isolates on the other hand recorded 80.8, 76.9, 75.0 and 59.6% resistance against cefuroxime, nalidixic acid, ampicillin and cotrimoxazole respectively. This study specifically showed that resistance rates varied across the different sites, especially for the fluoquinolones, with drug use habits of operators and the resistance acquisition dynamics of *E. coli* in mixed host population being suggested as major factors driving variations in resistance events in the study area. This study concluded that promise of access to antimicrobial resistance monitoring results could be used as an inducement tool to recruit multi-stakeholders into a national participatory antimicrobial resistance monitoring program.

**TITLE:ASSESSMENT OF COMMUNITY UNDERSTANDING OF NOTIFIABLE WATER BORNE
DISEASES IN KAWEMPE DIVISION, KAMPALA DISTRICT**

Author (s): Okot, B. and Muhammed, B.S.

Presenting Author: Okot Barbara

Abstract:

Purpose of study:

A Participatory Epidemiology (PE) approach was taken to assess community understanding of water borne diseases and actions taken upon seeing suspected cases. This was carried out with communities in Kawempe Division. These communities were from 6 villages within 6 parishes in Kawempe division, Kampala district in central Uganda. According to World Health Organization (WHO) fact sheet on water borne diseases (2007), in seven countries surveyed there were 75 outbreaks of waterborne diseases related to drinking-water resulting in over 12,000 episodes of illness between 2000 and 2005. Every year more than 3.4 million people die from water related diseases, making it one of the leading causes of disease and death around the world (WHO, 2005).

Kawempe division, one of the most populated and largest divisions in Kampala has been for several years to present day suffering from frequent cases of waterborne diseases. The Division is poorly drained as much of it is located in low-lying areas. This situation creates ideal conditions for the development and transmission of water borne diseases. The United Nations has set a goal of cutting in half by the year 2015 the number of people without access to safe drinking water and basic sanitation as a way of preventing water borne diseases. It is important that the community is knowledgeable about the different water borne diseases so as to detect them early and respond appropriately.

Methods:

The methods used were pre-tested in a community that was not within the sampled villages prior to data collection. We considered the Parishes as a sampling unit, which comprises of several villages/zones. Out of the 19 parishes in the division, Six (6) parishes, where water borne diseases were more prevalent according to the division HMIS report (2009/10), were

purposively sampled. These included Bwaise II, Bwaise III, Kawempe I, Kazo Angola, Makerere III and Mulago II. One village/zone was randomly selected from each parish from which two FGDs, one for males and the other for females, were conducted in each village. All the villages selected for the study were notified by the village health teams (VHT) through the mobilizers and Local Council (LC) chairpersons. This made a total of 12 FGDs with each FGD involving 10 – 15 participants. The FGDs were conducted in local language with help of a translator and a check list was used to guide the discussions. Twelve Key Informant interviews were conducted with the Division Medical Officer, two members of the Village Health Team, Disease Surveillance Focal Person and Local Council chairpersons. In addition, The semi-structured interview points were geo referenced using coordinates at time of interview using Global Positioning System (GPS).

PE techniques that were used with the participants include simple ranking, proportional piling for morbidity/mortality, disease matrix, timeline, seasonal calendars, participatory mapping and transect walks. Knowledge and understanding of the community about the signs and symptoms of the notifiable water borne diseases was assessed using a disease matrix with a scoring technique. A pile of 30 counters (beans) were used to score these signs and symptoms against the disease in which they manifest most. Probing and double checking was done to ensure that the participants agreed to the scores.

Using proportional piling, participants were given 100 counters (beans), representing the population in that particular village. The diseases mentioned were written on index cards and the participants were asked to pile the beans onto the cards representing the proportion of people who fell sick from a particular water borne disease. This was to show morbidity of a particular disease in the area.

The participatory map showed the roads in the area, institutions like schools, churches and mosques, health facilities, physical features like drainages, hills, valleys, mountains, settlements, toilet facilities like communal VIP latrines and water sources like wells, springs, and communal taps and bore holes.

Timelines were used majorly to show the frequency of occurrence and patterns overtime of major health related events like disease outbreaks, mass immunization, launch of health related projects and campaigns, floods and mosquito bed net distribution among others. The timeline used in this study was for a period of 10 years. That is from 2000-2010. To easily jog their memory, participants were permitted to mention non-health related events that coincided with an outbreak of cholera or other water borne disease.

A seasonal calendar was also used to show weather patterns or different seasons in the area for each month, from January to December. The participants were then requested to indicate in which season or month water borne diseases occurred. This was used to relate occurrence and outbreak of certain waterborne diseases with certain weather conditions. Both qualitative and semi-quantitative data were collected in the study. For qualitative data scoring and ranking were used to generate frequencies and percentages from excel. The original ranks were converted to scores so as to standardize ranks on the same scale. Themes from the FGDs and Key Informant interviews pertinent to the study objectives were extracted and combined. Texts and quotes were also used to present some of this information.

Main results:

The study revealed that Diarrhoea (66.1%) and “other diseases” like typhoid, dysentery, and cholera (25.8%, 6.3%, and 1.8% respectively) were perceived to be the most common water borne diseases in all the communities/villages visited. Cholera had the highest mortality rate of 86% while diarrhea has the least mortality rate of 5.6%. The participants in 9 of the 12 FGDs mentioned malaria as a waterborne disease. They reasoned that it also comes from water as the mosquitoes live in water and malaria has become endemic in the division due to the rainy and wet seasons.

According to the community regarding signs and symptoms, typhoid is generally characterized by a fever, stomach pains, dehydration, and vomiting and body weakness, diarrhea presents with stomach pains, dehydration, running stomach, weight loss and body weakness, dysentery presents with bloody stool, stomach pain, dehydration, running

stomach and body weakness and a person with cholera presents with vomiting, watery stool, running stomach, weight loss and body weakness and sunken eyes.

Kawempe division generally receives rainfall throughout the year. This is an indicator of a risk factor for some waterborne diseases. This situation is made worse by the poor drainage system in the area and poor waste disposal practices. It is in this regard that malaria is endemic and cholera outbreaks are frequent in this part of Kampala District. The community associates the rainy season with cholera, typhoid, diarrhoea and dysentery. Typhoid is attached mostly during dry periods and cases of dysentery are also said to increase during dry periods.

Generally in all the 12 FGDs carried out, only 1/12 had members talking about going to traditional healers to seek treatment for their disease conditions, but not necessarily for water borne diseases. The most common action taken by the respondents upon seeing suspected cases of these diseases were mixing sugar and salt solution at home, buying medicines like flagyl and panadol from a nearby clinic/drug shop, then going to Mulago hospital if one's condition does not improve. Majority of the participants for diseases like cholera and dysentery took the sick person immediately to Mulago hospital. However for diarrhea they first administered oral Rehydration Salts or the salt and sugar solution to the person as first aid. In the event that the person shows no improvement, they then took the person to Kawempe Health Center IV or Mulago National Referral Hospital.

Conclusion:

The respective communities in Kawempe Division had little variance in their understanding of the notifiable waterborne diseases. For diseases they considered severe like cholera and dysentery, they immediately took the person to Mulago Hospital. However, for diseases like diarrhoea and typhoid, communities first administered salt and sugar solution and self medicated with panadol and flagyl. The findings underscore the need to reinforce community knowledge about waterborne diseases and recommended actions to be taken upon seeing suspected cases, for both adults and children.

**TITLE: MOVING WITH PARTICIPATORY EPIDEMIOLOGY TRAININGS AT MAKERERE
UNIVERSITY, UGANDA**

Author (s): **Odoch T.A, Nantima N., Serugga J., Ejobi F., and Rutaberika C**

Presenting Author: **Odoch Terence Amoki**

Participatory Epidemiology (PE) short training course has been developed at College of Veterinary Medicine Animal Resources and Biosecurity, Makerere University, Uganda. The overall objective of the course is to support existing conventional disease surveillance systems through training of frontline animal health staff participatory methodologies. PE has also been introduced in the curricula at undergraduate and postgraduate levels

The demand for the training was determined by Uganda's Ministry of Agriculture, Animal Industries and Fisheries. Both Ministry of Agriculture and Makerere University mobilised resources for the development of this course. The short training courses conducted at Makerere University and funded by the Ministry of Agriculture saw participants selected purposively across the districts in Uganda. The selection criteria included presence of risk factors for Avian Influenza like water bodies where migratory birds come, population of poultry, border districts. Another training was funded by Cooperation & Development (C&D) an Italian Development NGO operating mainly in Karamoja and facilitated by Makerere University, was conducted in Moroto Karamoja. The participants were mainly drawn from Karamoja sub region of Uganda. The minimum requirement for the course at Makerere University is a Diploma in Animal Husbandry or its equivalent, while the training conducted in Karamoja region was tailored and the minimum requirements was a certificate in animal husbandry or its equivalent

We trained a total of 72 participants in December 2009 and April 2010 in Makerere. Each training session lasted 8 days with one day of field excursion. Participants were drawn from different regions of Uganda and one Burundian. Twelve (16.2%) were from Western, 17 (23.5%) Northern, 22 (30.9%) Eastern, 20 (27.9%) Central and 1 (1.5%) foreign participant from Burundi. Sixty eight (94%) participants were men against 4 (6%) women. In Karamoja 20 Veterinary Officers and Community Animal Health Workers were trained thru a program supported and funded by C&D. Participants evaluated the course, 93% indicated that the

training was relevant to their work. However 37% felt that time allocated for field activities was inadequate.

Participatory epidemiology training has been well taken by Ministry of Agriculture and Makerere University, thus giving it a bright future in Uganda. Results from this training were convincing, efforts will be made to ensure that the future trainings provide more time for field exercises. We propose that ultimately most frontline animal health workers should get PE knowledge and skills. Eventual application and success of PE will depend on the level of support frontline animal health workers get to use it in the field during their routine duties. Training institutions especially in developing countries should take up PE training seriously as PE can positively support existing conventional disease surveillance systems.

**TITLE:PRIORITIZATION OF POULTRY DISEASES AND MANAGEMENT CONSTRAINTS IN
BACKYARD AND SEMI-INTENSIVE POULTRY PRODUCTION SYSTEMS AROUND DEBRE
ZEIT,ETHIOPIA**

Author (s): **Sambo,E.Y**

Presenting Author: **Sambo,E.Y**

Abstract:

Background

Poultry production is an integral part of most families' livelihoods in Ethiopia. Women play a major role in local poultry production and directly control the income generated from the sale of chickens and chicken products, making it important in poverty alleviation and household food security. This study, using Participatory Rural Appraisal (PRA), investigated the disease problems, determined the constraints in production, explored farmers' perception regarding disease risk factors and evaluated biosecurity measures on the poultry farms so as to inform prevention and control strategies. The information obtained will also be integrated into a larger on-going study.

Methodology

Eight volunteer focus group interviews were conducted in four purposively selected villages; each group comprised 5 or 6 backyard chicken producers with the different genders and age groups in the communities represented. In addition, semi-intensive poultry farmers were also individually interviewed. Several PRA tools, including semi-structured interview, simple ranking, proportional piling and seasonal calendars were applied to obtain the information with the guide of a check-list.

Results

A total of 71 chicken keepers participated in this study comprising 29 men and 42 women. Forty-one of the participants were backyard chicken producers, while 30 were semi-intensive chicken farmers. Cattle ranked as the most economically important animal to backyard producers, followed (in descending order) by poultry, donkeys and sheep/goats.

Flock size per household on the day of interview ranged from 3 to 50 for backyard chickens and 8 to 9000 in commercial farms. Disease was the most important constraint faced by chicken farmers: others identified were high cost and poor quality of feed, unavailability of day-old chicks, lack of experienced poultry veterinarians, predators and high cost of vet services.

The most important poultry disease was said to be Newcastle disease (NCD) while the commonest was ectoparasitism. Seasonal calendars reported NCD from April to September with the highest number of cases recorded in June. Dew ranked as the most important cause of disease, with dogs bringing infected carcasses home, scavenging behaviour of poultry, weather and dirty environment following in that order. Dead chickens were thrown away by majority of respondents and the biosecurity measures in place in most of the poultry farms visited were poor. There was widespread use of ethno-veterinary medicine by both local and semi-intensive poultry producers.

Conclusion

This study highlights the major constraints faced by the poultry farmers and their perception of the risk factors of disease and biosecurity practices. This information will aid design of farmer extension education and also help address the constraints faced in production to assist farmers derive greater benefit from the on-going chicken improvement project through appropriate design of interventions.

**TITLE: TRICHINOSIS FOCI IN THAILAND: APPRAISAL OF INFLUENTIAL FACTORS
FROM LOCAL BEHAVIOURS**

Author (s): **Wandee Kongkaew**^{1,2}, Michael V. Thrusfield¹, Penporn Tablerk³, Aomruetai Torkee³, Sue C. Welburn¹ and Mark C. Eisler¹

¹Royal (Dick) School of Veterinary Studies, Edinburgh University, Edinburgh, UK

²Southern Veterinary Research and Development Centre, Department of Livestock Development, Nakhon Si Thammarat, Thailand

³Nan Provincial Livestock Office, Department of Livestock Development, Nan, Thailand

Presenting Author: **Wandee Kongkaew**

Abstract:

Trichinellosis was first known in Thailand in 1962, when an outbreak affected 53 residents of the north of the country, killing 11 of them. Since this initial outbreak the disease has been continuously reported and surveillance of trichinellosis in humans has been established. Data from 1981 to 2007 cluster in the northern region; with spatio-temporal analysis revealing clusters of disease in seven Northern Provinces during 1983 to 1992. A decreasing trend of disease was observed. It could be accounted for by an improvement in pig farm management and the expansion of industrial pig farms.

Despite the declining trend, trichinellosis has been repeatedly reported from some provinces. This study looked into the risk-associated behaviour of people in these areas. A study took place in 12 purposively selected villages of Nan Province in which 10 adult males and 10 adult females aged 15-70 years old from each village were requested to participate by the village chief. Age, sex, and occupation of participants were recorded. Pictures of local food and meat; practices such as pig farming, hunting, and eating raw food; news about food poisoning acquired from pork and a trichinellosis outbreak were shown or read aloud to participants. Data from individuals and group discussions were collected to indicate their knowledge, attitudes, and practices. Results from individual respondents were analyzed and presented as percentages by gender. Responses to questions related to their attitude

toward trichinellosis prevention were carefully classified into three groups; favour trichinosis prevention, against trichinellosis prevention, and uncertain.

Overall 225 respondents, 112 females and 113 males participated; the majority of men and women were able to identify dishes containing raw meat. About 70% and 67% of men and 77% and 41% of women have heard about illness from eating raw pork and trichinellosis, respectively. Despite their knowledge, 67- 82% of men and 20- 75% of women eat three local raw foods. About 84%, 81%, 69%, 22%, and 1% of men and 39%, 28%, 37%, 4% and 6% of women eat raw pork, beef, wild boar, bear, and dog. Attitudes of men and women favour trichinosis prevention. However they responded that a quarter or less of residents still eat raw meat or let their pigs scavenge. The association between these respondents' knowledge, attitudes and practices and the presence of trichinellosis suggested practices in backyard farms and public awareness should be improved in these areas.

VPHCAP



Veterinary Public Health Centre for Asia Pacific

Faculty of Veterinary Medicine, Chiang Mai University

Chiang Mai, Thailand

Mae Hia, Muang, Chiang Mai 50100 Thailand

Telephone: (66) 5394 8073

Fax: (66) 5394 8072

Email: vphcap@gmail.com

<http://vphcap.vet.cmu.ac.th>

