



Integrated Human and Pig Health Approaches for Cysticercosis Control in Africa



STAKEHOLDERS' MEETING REPORT

Laico Lake Victoria Hotel, Entebbe, Uganda

21-22 November 2017

Stakeholders' Meeting Report
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Acronyms

AFRO	African Regional Office for Africa for Neglected Tropical Diseases
AU-IBAR	The Inter-African Bureau for Animal Resources
AMR	Antimicrobial Resistance
CDC	Center for Disease Control
CYSTINET-Africa	An interdisciplinary multinational one-health project focusing on neurocysticercosis (NCC) in sub-Saharan Africa.
FAO	The United Nations Food and Agriculture Organisation
GALVmed	The Global Alliance for Livestock Veterinary Medicines
HT	Human Taeniasis
IIL	Indian Immunologicals Limited
ILRI	International Livestock Research Institute
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MCI Sante Animale	Moroccan animal health company, specialized in the production and marketing of veterinary vaccines and medicines
MoH	Ministry of Health
MTK	Ugandan company that specializes in Animal health, Human Health, Public Health and Crop Protection
NCC	Neurocysticercosis
NTD	Neglected Tropical Disease
OIE	World Organisation for Animal Health
PAHO	Pan American Health Organisation
PC	Porcine Cysticercosis
PPP	Public-Private-Partnership
PZQ	Praziquantel ^R
STH	Soil Transmitted Helminthiasis
WHO	World Health Organisation

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1.0. Introduction

The stakeholders meeting on integrated human and pig health approaches for cysticercosis control for Africa was convened in Entebbe on 21st -22nd November 2017. The meeting was organized by the Global Alliance for Livestock Veterinary Medicines (GALVmed) and the International Livestock Research Institute (ILRI). The meeting was also supported by many others who subscribe to the integrated “One Health” approach that brings together partners and stakeholders from different inter-related sectors to address common challenges pertaining to human, animal, and environmental health associated with porcine cysticercosis (PC), human taeniasis (HT) and neurocysticercosis (NCC).

Taenia solium infection is a serious public health issue with negative impact on livestock farming households and national economies in the developing world. It is estimated that there are 50 million cases of people with epilepsy, 80% of these in the developing world and as many as 30% of these could be NCC. Most recently two new products have become available for controlling the transmission of disease in pigs a key part of the parasite life cycle. Studies on how these new tools can be used to eliminate porcine cysticercosis will be presented. As well as reports from a National and regional control programme. The meeting will raise awareness and identify gaps and opportunities to inform key stakeholders to act to reduce the burden of this serious disease.

Objectives

Specifically, the meeting aimed to:

1. Bring together policy, technical, commercial, and development stakeholders and partners from the animal health and human health sectors to share the results on GALVmed’s activities on porcine cysticercosis;
2. Share information on current cysticercosis control programmes in Africa;
3. Provide feedback on the findings from GALVmed-commissioned PC landscaping studies
4. Explore opportunities for working towards an integrated approach to cysticercosis control in Africa;
5. Call for commitment particularly from policy stakeholders and funding agencies to take action to control cysticercosis in Africa.

Anticipated outcomes

Following were the outcomes that were anticipated from the meeting:

1. Understanding and appreciation of the prevalence and impact of cysticercosis on animal and human health enhanced;
2. Set of recommendations for controlling PC, HT and NCC.

The one and half-day meeting was officially opened by the Honorable Minister of State for Animal Industry, Ministry of Agriculture, Animal Industries and Fisheries, Honorable Joy Kabatsi and attended by approximately sixty-six participants (15 women & 50 men). The participants fell into four major categories, notably:

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- (i) African Country representatives from Zambia, Tanzania, Madagascar, South Africa and Uganda of whom some were policy makers/KOL in public health, animal health, regulation; traders' and farmers' representatives;
- (ii) Commercial partners in Manufacturing and Distribution of the PC vaccine and dewormer;
- (iii) Regional & International development partner representative from FAO, WHO, Aga Khan Foundation and GALVmed;
- (iv) A representative each from ILRI, Imperial College of London, University of Melbourne, Madagascar, and PAHO.

As many as thirteen presentations were given to provide insights to the current understanding and progress in the diagnosis, management and control of PC and human Taeniasis/cysticercosis in different parts of the world. The different undertakings by GALVmed and its stakeholders in the management of the disease were also presented. Presentations were followed by plenary question discussions for most of Day 1, which registered more participants than Day 2.

Keynote presentations were given by Professor Marshall Lightowlers, Professor of Veterinary Science at The University of Melbourne and Dr Meritxell Donadeu, International Development Professional and Visiting Research Fellow at The University of Melbourne.

Professor Lightowlers and his team developed the first-ever licensed vaccine for PC. He underscored the importance of wide dissemination of knowledge and awareness regarding the availability of a PC vaccine so that human health can be protected from infection from HT and NCC. It is this awareness that will raise demand for vaccines and encourage manufacturers to increase vaccine production with the overall objective of improving animal health and ultimately human health. The risk of losing these PC tools cannot be over emphasized.

Also in attendance were Mr. N S N Bhargav and Dr. Baptiste Dungu of Indian Immunologicals Limited, India and MCI Sante Animale, Morocco respectively. IIL have registered Cysvax™, the vaccine for PC while MCI are the manufacturers of Paranthic™ 10%, a dewormer that when used together with the vaccine has been demonstrated to eliminate porcine cysticercosis. These commercial partners gave their perspective on the vaccine manufacturing, registration and distribution of vaccines.

Dr Mwemezi Lutakyawa Kabululu from Tanzania, Dr Chrisostom Ayebazibwe from Uganda and Dr Evans Kabemba Mwape from Zambia, researchers from the three target countries featured in GALVmed's African cysticercosis landscape and technical reports, gave national perspectives on the human and animal effect of the disease.

Dr. Sylvia Ramiandrasoa Noromanana, Country Coordinator of Human Cysticercosis, Madagascar, shared her country's best practices and success stories with an integrated approach to controlling PC.

In addition, participants heard of the experiences of the Pan African Health Organisation (PAHO) on their 'One Health' approach to tackling PC.

Day two focused on transforming the acquired knowledge and understanding of the cysticercosis problem into actionable interventions and way forward for its management and control in Africa. Participants were grouped according to the role they were envisaged to play in the management and control of Porcine Cysticercosis (PC), Human Taeniasis (HT) and neurocysticercosis (NCC). The outputs of the six groups are summarized below.

2.0. Proposed framework for management and control of cysticercosis in Africa

By the end of the meeting, an emerging framework for dealing with the challenge of Porcine cysticercosis and Human Taeniasis and cysticercosis diseases was proposed, under seven themes/pillars for action, moving forward.

The proposed framework is premised on the following challenges that are associated with cysticercosis:

1. *High level ignorance and social cultural practices by the public* that exacerbate the spread and persistence of the disease;
2. The disease causative agent is hosted in a *pig, which does not suffer any clinical disease*. This makes motivation to invest in its control at farm level minimal;
3. *Inadequate meat quality standards* for meat in most developing countries where the disease is endemic are failing to enforce compliance to sale and consumption cyst free pork;
4. In the final host (human) the disease is insidious, not easily be identified and mainly affects the poor in remote rural areas or urban slums;
5. *Potential misdiagnosis of TC* - in Uganda, NCC was only accidentally diagnosed in prevalence studies for Oncocercoma when 33.3% and 4/6 nodules in two respective districts, were found to be due to *T. solium* cysts
6. Definitive *diagnosis of the disease is very expensive*, requiring CT scan technology makes it unaffordable;
7. Breaking the cycle requires *harmonized* effort of veterinary, human and environmental health as well as social work professionals operating in a "One Health" approach that is not easy;
8. There are *inadequate supportive legal frameworks and law enforcement* for compliance to PC-free pork and use of proper human waste disposal facilities;
9. *Poor National infrastructural development* with no access to water and limited capacity of individuals to construct proper latrines/toilets implies that the PC cycle is sustained;
10. *Not a National priority* in some African countries - Although Cysticercosis/Taeniasis has been classified as a Neglected Tropical Disease (NTD) by the WHO, the African Regional Office for Africa (AFRO) does not list it as NTD and hence will attract minimal attention for prevention and control intervention measures.

Opportunities that exist that can be exploited to manage the spread of the disease and eventually eliminate it.

1. The disease is *easily preventable* through hygienic practices of defecating in pig access-proof toilets and latrines. This is because the PC cycle involves the ingestion of larvae infested human feces by pigs therefore the disease cycle can be cheaply broken;
2. *Existing sanitation programmes* such as WASH are practiced in countries where the disease is endemic and these can be used for controlling PC;
3. *Simple interventions* through regular deworming plus strict use of latrines and toilets can cheaply terminate the cycle and prevent progression to the adverse stage of neurocysticercosis in humans;
4. *Existing interventions for other diseases* such as schistosomiasis can be rallied on for PC prevention and control using the same resources;

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5. *Globalization* implies that technologies and innovations can quickly and easily be transferred from one place to another;
6. *ICT revolution* means that information sharing is cheaper and faster, but also different packages of messaging can easily be tailor made to suit local socio-political environment for the sensitization of people;
7. *Best practice models* for control and eradication of PC under socio-economically similar regions such as Madagascar and Latin America exist can easily be accessed and adapted;
8. *International recognition of the disease as an NTD and commitment* to managing the disease. On January 30, 2017, multiple stakeholders of the London Declaration on Neglected Tropical Diseases, grouped under the collective *Uniting to Combat NTDs* called “for continued investment in, and expansion of their collaboration with the World Health Organization (WHO) to defeat neglected tropical diseases (NTDs)” of which cysticercosis is one.

A Way Forward Framework

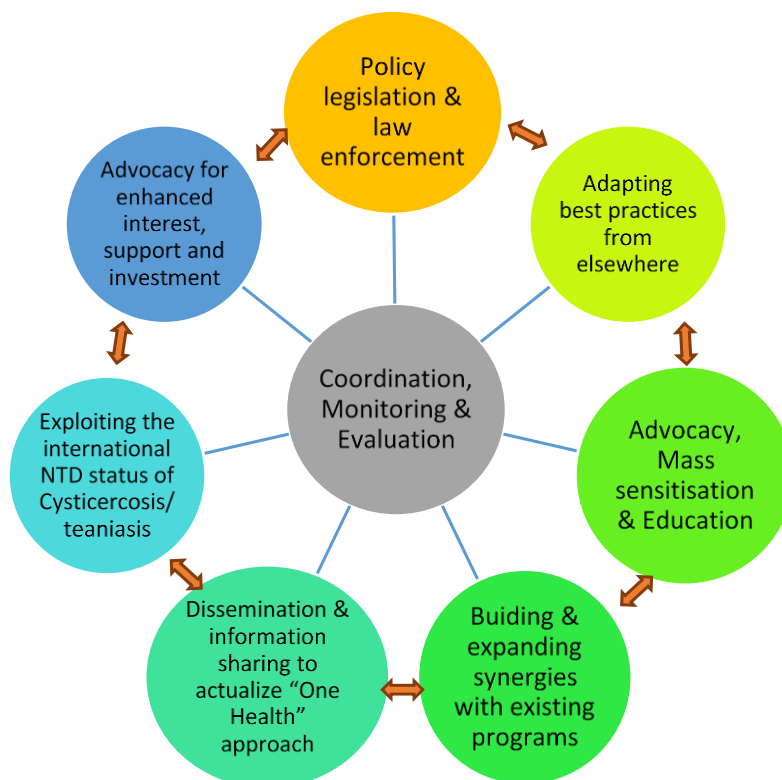


Fig.1: Emerging Framework for Cysticercosis management and control

(1) Dissemination and information sharing to actualize “One Health” approach

ILRI has facilitated a multi-stakeholder platform for the pig value chain and this is continuing – where they share knowledge and experiences and discuss ways where things of interest exist including management of cysticercosis as a way to producing high quality pork. This should be combined with promotion trial and utilization of Cysvax™ vaccine.

(2) Exploit the international NTD status of cysticercosis/taeniasis for the needed support

Since the disease is not a high priority at the National level, the international attention to cysticercosis can be exploited for the mobilization of resources for the needed support

- Rigorous sensitization campaigns;
- Increased advocacy;
- Sustainable mass treatment (deworming) in endemic parts;
- Research and development for new diagnostic tools and disease management and control approaches and development of highly needed novel products and tools;
- Applying for grants to subsidize the vaccination of pigs for the resource poor farmers.

(3) Mass sensitization and Education of key stakeholders and the public

Strategic messaging: Using case studies to tell stories because these touch people, for example, the case of a strange hemorrhagic disease (yellow fever) hit Uganda and culminated in the death of 263 people within one month. The problem took long to be identified since the cultural taboo associated with bleeding forced relatives to hide their patients and not submit them to health facilities. Yellow fever being transmitted by mosquitoes, affected people who went to forests to collect firewood. The susceptible group were the young people that had not been exposed to the virus after a period of 40 years after Uganda had been declared Yellow fever free. It took the concerted effort of health, social and legal professionals in a “One Health” manner to contain the epidemic.

Using pictures and art: The USAID funded OBULAMU campaign platform has changed people’s socio-cultural practices and beliefs towards HIV/AIDs and can be adopted to messaging proper use of toilets and latrines, pork handling and preparation, cooking, eating habits with pictures and art

Engaging performing artists – Use of drama to send messages home. This can be done by building around an event and educating masses about cysticercosis

Targeting awareness and sensitization to key stakeholders i.e. farmers, traders, human health practitioners and veterinarians. For example, farmers should receive messages that motivate them to practice improved pig husbandry, hygiene and sanitation, while human health practitioners should receive targeted messages that motivate and encourage them to submit information and data regarding HT/NCC as well as instant treatment of patients found with HT/NCC. Veterinarians should receive targeted messages encouraging/motivating them to participate in the submission of data and information towards surveillance of PC as well as using the Cysvax™ plus Paranthic™ in pigs.

The general consumer public should get targeted messages that encourage/motivate them to invest an extra cent into safer pork because this will not only promote food safety, put it will create demand for vaccines and drugs that will in turn promote more private sector investment into those products

(4) Advocacy for enhanced interest, support and investment

Justify why individuals and government should care: Using data from research, enlist the consequential loss of productivity by pigs, aggravation of poverty due to human sickness, high household health costs, and slowed socioeconomic development

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Strategic advantage of other integrated initiatives: Use initiatives that have the support of a global network of highly committed public and private partners to influence relevant ministries of Health, Animal Resources and Environment to include cysticercosis among the targeted issues for “One Health”

Linking cysticercosis to relevant ministries: Campaign for National Infrastructural development for safe water, sanitation and hygiene. Developed countries including Australia succeeded in eliminating cysticercosis and other disease because of among others, National Infrastructural development for safe water and sanitation

(5) Building and Expanding synergies with existing programs

Ride on the backs of existing interventions for other diseases - Since PC/Taeniasis may not be a national priority, its prevention and control efforts should be pinned onto other diseases, for example, schistosomiasis that attracts national attention and shares similar management and control packages using the same resources.

- Treatment with **40mg/kg of PZQ** has been shown to reduce TC but not cause increases in neurological side effects
- Improvement in **sanitation** will reduce endemicity of schistosomiasis, STH and TC
- Possible to integrate **health education and promotion messages** for the three diseases
- Advocacy messages and **training of health workers** to manage the three diseases can be integrated
- Some synergies in the logistics of distribution of PZQ and oxfendazole

(6) Adapting ‘Best Practice’ from elsewhere

Madagascar and Latin America: Have experienced management and prevention of cysticercosis from an integrated approach and can provide information on best practices.

(7) Policy legislation and law enforcement

Reactivating existing laws and policies, Formulation of new ones and enforcement of current ones for compliance: Implementation of safe pig production and pork preparation legislation by Veterinary and Human, Public health sectors of line ministries will ensure breaking the disease cycle through improved meat inspection and condemnation of infested pig carcasses

Empowering the private sector in legislation and enforcement: Zambia, traders have developed minimum standards for meat and have empowered themselves to reject substandard meat quality

(8) Coordination, Monitoring and evaluation

Harmonization of the different yet interlinked strategies to ensure that PC, human Taeniasis/cysticercosis is contained, and monitoring and evaluation. This will involve strengthening One Health approaches in the country by forming cysticercosis working groups.

3.0. Action points for the Proposed Framework

This session aimed at transforming the acquired knowledge and understanding of the cysticercosis problem into actionable interventions and way forward for its management and control in Africa. Participants were grouped according to the role they were envisaged to play in the management and control of porcine cysticercosis (PC), human taeniasis (HT) and neurocysticercosis (NCC). The outputs of the six groups are summarized below.

Farmers, Traders in Pig Value Chain & One Health Champions

Biggest challenges related with Cysticercosis

- Economic loss to pig traders and the farmers;
- The information to the public is not clearly communicated to human health personnel;
- Inadequate animal health practitioners to inspect the animals (pigs) before buying and for meat inspection after slaughter.

Practical actions that need to be taken in order to improve the management and control of Cysticercosis and by whom

- Collaborative effort to public awareness through public private partnerships;
- Enforcement of legislative and policy measures to pig farmers and pig traders through collaborative PPP.

Actions that are within our sphere of direct control we can undertake to contribute to the management of cysticercosis

- Improvement of hygiene and sanitation in animal husbandry practices;
- Undertake good farming practices such as housing, feeding, vaccinations and deworming;
- Formation of farmers and traders' groups for information sharing, mutual support and negotiating power (unity is power) to enforce policies.

Opportunities that could be starting points that would allow you to make small but quick gains for buy in from others?

- Formation of farmers and traders' groups will simplify knowledge sharing and linkages with other stakeholders.

Contributors

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Emmanuel Faustine Hamaro	Trader in pig value chain	Tanzania
Samora Mshang'a	Trader in pig value chain	Tanzania
Mutebe Abby	Trader in pig value chain	Uganda
Elias Davison Nkhuwa	Trader in pig value chain	Zambia

Policy Makers in Public Health

Practical actions that need to be taken in order to improve management and control Africa?

- Disseminate this meeting's report to respective policy makers;
- Need a forum at national level where all key stakeholders (Multi-sectoral) can meet to coordinate all interventions:
 - This intervention be coordinated at a high-level e.g. Vice-President's office;
 - SOPs be developed outlining how intervention will be operationalized;
 - Ministry of Health (MoH) should initiate this collaboration.
- Develop National Control Strategy for NCC for each country:
 - Develop specific guidelines regarding enforcement of Acts and Ordinances regarding sanitation, animal movement control etc.

Actions that are within our sphere of direct control and or influence that we can undertake to contribute to this important issue

- Disseminate meeting report of the Entebbe regional workshop;
- Develop country National Control Strategy document;
- Resource mobilization:
 - Government;
 - Cooperating partners.

Strategic partners that if influenced would contribute making faster progress

- Government:
 - Ministry of Health;
 - Ministry of Agriculture/Livestock.
- Parliamentary committee on Health

Opportunities that could be the starting points to allow for small but quick gains for buy in from others

- NTD strategic committee (Uganda);
- One-Health platform (Uganda);
- National Rabies control taskforce (Zambia);
- AMR taskforce (Zambia);
- One Health Committee (Tanzania)

Contributors

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Policy Makers; Regulation and Vaccine Business

Practical actions that need to be taken in order to improve management and control of Cysticercosis in Africa

- Create awareness among pig farmers, the general public, policy makers using electronic media, livestock extension officers;
- Crafting and dissemination of information via mass media;
- Regional harmonization of registration of veterinary medicines;
- Mobilization of support from Government, collaborating and development partners;
- Meat inspection and grading of meat.

Actions that are within our sphere of direct control and or influence that we can undertake to contribute to this important issue

- For awareness creation among pig farmers, the general public, policy makers using electronic media, livestock extension officers through:
 - training meetings with farmers;
 - Stakeholder meetings at national level;
 - Sensitization through electronic media and Stakeholder at local farm levels;
 - Sending mass sensitization through social media to the public and veterinarians.
- Meat inspection and grading of meat can be done.

Strategic partners that can contribute to making faster progress

For meat inspection and grading of meat, strategic partners include:

- Professional practitioners;
- Farmer cooperatives;
- Government veterinary services;
- Abattoir facility owners;
- Academia;
- International organizations.

Opportunities that could be our starting points that would allow you to make small but quick gains for buy in from others

- Existence of avenues for dissemination of information through various platforms, media, professional bodies, farmers, cooperative schemes etc.
- Integrate already existing programs.

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Bhargav N S N	Vaccine Manufacturers	India

Policy Makers in Animal Health

Practical actions that need to be taken in order to improve management and control of cysticercosis in Africa

- Improve awareness and sensitization to key stakeholders (farmers, traders, human health practitioners, veterinarians);
- Strengthen One Health approaches in the country by forming cysticercosis working teams;
- Generate evidence on cysticercosis to convince policy makers through research and dissemination;
- Improving diagnostics.

Actions that are within our sphere of direct control and or influence that we can undertake to contribute to this important issue

- Popularize the confinement of pigs as many existing legal frameworks in countries do provide for it;
- Promote use of toilets, hygiene, public health and meat inspection practices;
- Promote trial and utilization of Cysvax™

Strategic partners that can contribute to making faster progress

- Politicians and permanent secretaries;
- Traditional leaders and farmers;
- Traders and input suppliers.

Opportunities that could be our starting points that would allow you to make small but quick gains for buy in from others

- Promotion of awareness and sensitization;
- Applying for grants to subsidize the vaccination of pigs for the resource poor farmers;
- Integrate porcine cysticercosis program with other existing programs such as Schistosomiasis.

Contributors

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One Health, Consultants & Investigators

Practical actions to improve management and control of cysticercosis in Africa

- Diagnostic capacity in terms of human resource (there is lack of knowledge), laboratory and technology;
- Applied research to improve the sensitivity and specificity of the diagnostic tools;
- Advocacy: for consumers, involve traditional leaders, have a by-law in place;
- Translate Information, Education and Communication (IEC) materials to local languages;
- Education of communities;
- Ensure research results reach policy makers to help inform policy;
- Embedding One Health into the control program;
- Need to regulate pig slaughter and marketing;
- Organising farmers into cooperatives/associations;
- Improve reporting;
- Mass vaccination.

Actions that are within our sphere of direct control and or influence that we can undertake to contribute to this important issue

- Agree to use a One Health Approach in practice in the management and control of cysticercosis;
- Research to map the distribution and burden of cysticercosis;
- Improve IEC leading to change in KAP, targeting different levels – the community, laboratory professionals, animal health workers – vets and paravets).

Strategic Partners

- Health workers - animal health professionals, medical professionals, laboratory professionals;
- Farmers;
- Communities;
- Politicians;
- Policy makers;
- International agencies – WHO, FAO;
- Research and academic institutions.

Opportunities:

- Integrate the control into existing programs at the level of the ministry;
- There are existing one health platforms – National Public Health Institute in Zambia, OHCEA in Uganda and Tanzania, National OH platforms in TZ, Kenya and Uganda)

Contributors

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Gideon Zulu	Investigator	Consultant

Facilitators

Practical actions that need to be taken in order to improve management and control of Cysticercosis in Africa

- Improved diagnostics validated in endemic settings;
- PC tools available and registered in countries;
- Dissemination guidelines form WHO;
- Information on co- endemicity with schistosomiasis and effect of treatment with Praziquantel;
- Add it to zoonotic NTDs agenda;
- Change messages to focus on human health.

Actions that are within our sphere of direct control and or influence that we can undertake to contribute to this important issue

- Disseminate information reports/guidelines (WHO) to policy makers and follow up;
- Need for drivers to take research to national implementation because it has been slow;
- Local partners/champions to work together and attract funding.

Strategic partners that can contribute to making faster progress

- CDC Africa Ethiopia;
- Local CDC e.g. the National Institute of Communicable Diseases;
- One Health platforms;
- OIE Country chapter;
- WHO Country chapter;
- FAO Country Chapter;
- Carter Foundation.

Opportunities that could be our starting points that would allow you to make small but quick gains for buy in from others

- There is a schistosomiasis control Initiative for mapping out co-endemicity, and side effect of treatment.

Contributors

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4.0. Conclusions and Way forward

Achievement of objectives

The meeting succeeded in **bringing together** policy, technical, commercial, and development stakeholders and partners from the animal health and human health sectors in all the four African countries, South of the Sahara, where the problem is endemic, to share the results on GALVmed's activities on porcine cysticercosis

Information on current cysticercosis control programmes in Africa was successfully shared particularly by the experiences from Madagascar as well as ongoing vaccination and treatment trials using Cysvax™ vaccine/Oxfendazole/Endazole treatment.

Feedback on the findings from GALVmed-commissioned PC landscaping studies was received through the various contributions and action points from the different stakeholders

Opportunities for working towards an integrated approach to cysticercosis control in Africa were explored. A champion in each of the countries present where the disease is endemic got a volunteer to kickstart discussions aimed at moving the CC Agenda forward but also to ensure there is regional networking and sharing of knowledge and information. The first meeting will be convened by Professor Charles Waiswa, a researcher and Director Vector control in the Ministry of Agriculture, Animal Industries and Fisheries, Uganda.

Policy stakeholders including the Minister of State Animal Industry, MAAIF in Uganda, as well other policy makers from the region and all other partners and funding agencies present **committed** to take action to control cysticercosis in Africa

Meeting outcomes and way forward

It is evident from the set of action points proposed by the various groups of stakeholders in the meeting, that their understanding and appreciation of the prevalence and impact of cysticercosis on animal and human health had been enhanced;

A set of recommendations and action points for controlling PC, HT and NCC were proposed as presented in section 1.3. The session on the proposed framework generated consensus across different categories of participants, on critical actions notably:

(1) Uphold the One Health approach

The information and knowledge gained from these presentations and discussions did encourage taeniasis/ cysticercosis stakeholders to uphold a One Health approach as a viable option for the control of PC and HT/NCC. This means a multi-sectoral approach and networking by human health, animal health, environment and civil society working, firstly at National then at regional and international levels. Members acknowledged that One Health as a concept is a not so easy but possible. They also noted that there is enough support for a One Health approach, and the challenge was to move from the concept to the practice. They agreed to make CC, HT/NCC a point of focus in the One Health platforms at each country level.

(2) Call for continued interest by International Agencies particularly the UN

UN Agencies such as WHO need to do more because developing countries set priorities according to WHO guidelines. In Latin America, the HT/NCC project stopped when the WHO funding ended! In such countries, UN support is specifically called for

Mass drug administration in human alongside vaccination and anthelmintic treatment in porcine. Pig farmers need relief from the burden of vaccination and treatment of their animals

Continued Research: There is need for countries in Sub Saharan Africa (Uganda, Tanzania, Zambia, South Africa, where the problem has been marked to be endemic, there is need to **map the burden of CC, HT/NCC**. Researchers in various ministries need to continue collecting data for research, surveillance, monitoring and evaluation of CC, HT/NCC control and prevention programs and they are willing to write joint R&D proposals for funding

(3) Innovative and rigorous communication campaigns

Sanitation remains very important for the control of CC, HT/NCC therefore information and education are critical. Members agree to make all effort needed to convince people that CC, HT/NCC is an important disease and designing messaging campaigns will be a focus for the One Health program with all players (artists, scientists, practitioners etc.) taking part. This will require funding and writing proposals to willing partners, just like the USAID funds the "OBULAMU" campaign for HIV/AIDS

(4) Local Champions

All the above three can only be actualized when local Champions at National and regional levels emerge, take the mantle of fighting PC, HT/NCC and to ensure that the International Agencies continued interest and support is effectively exploited. In their first meeting, to be convened by Professor Charles Waiswa, these four national champions will discuss and agree on modalities on how to support the operationalization of the proposed action points and framework.

5.0. Annexes

Annex 1: Meeting Agenda

Table 1: Meeting Agenda

Day 1 - Tuesday 21st November		
Time	Activity	Responsible
0830 - 0900	Registration	GALVmed
0900 - 1000	Welcome & opening <ul style="list-style-type: none"> • Objectives of the meeting by GALVmed • ILRI effort to Porcine Cysticercosis Research & Dev • WHO Country Representative, Uganda • FAO Representative • Cystinet Africa • Commissioner for National Disease Control, representing the Hon. Minister of Health, Uganda • Minister of State for Livestock, MAAIF, Uganda 	<ul style="list-style-type: none"> • Dr. Lois Muraguri • Dr. Ben Lukuyu • Dr. Abdoulay Jack • Dr. Fallou Guèye • Prof. Helena Ngowi • Dr. Tusiime Patrick • Hon. Joy Kabatsi
1000 – 1030	Brief introduction of GALVmed	• Mr. Julius Singoma , GALVmed
1030 – 1100	Health Break & Group Photo	
	Session 1: Cysticercosis control tools	Chair: Dr Angie Colston Galvmed
1100 – 1120	Diagnostic tools to support the control of <i>T. solium</i> taeniasis/cysticercosis	• Dr. Meritxell Donadeu, University of Melbourne
1120-1140	Cysticercosis research activities in Kenya	• Dr. Annie Cook, ILRI
1140-1210	Introducing PC tools	• Dr. Baptiste Dungu, MCI Sante Animale • Dr. Bhargav N S N, IIL
1210 – 1300	Question and answer plenary Discussion	• Facilitator
1300 – 1400	Lunch	
	Session 2: Cysticercosis prevalence & control	Chair: Dr. Ben Lukuyu, ILRI
1400 – 1420	Control of cysticercosis: History, current status, modelling cysticercosis control & the future	• Prof. Marshall Lightowlers, University of Melbourne
1420 – 1430	Introduction of GALVmed activities related to control of Porcine Cysticercosis	• Dr. Angie Colston, GALVmed
1430 – 1530	Field studies <ul style="list-style-type: none"> • Successful control of Porcine Cysticercosis in pigs in Bukedea District in Uganda • Update on the ongoing clinical field trials to evaluate the effectiveness of using the combination treatment of the pig vaccine Cysvax™ and Paranthic™ in Tanzania • Prospects for private good marketing for Porcine cysticercosis control: perspectives from Uganda 	<ul style="list-style-type: none"> • Dr. Chris Ayebazibwe, MAAIF, Uganda • Mwemezi Kabululu, Min. of Livestock & Fisheries Development, Tanzania • Dr. Samuel Adediran, GALVmed
1530-1545	Heath Break	
1545 – 1630	Question and answer plenary discussions	
	End of Day 1	

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Day 2 – Wednesday 22nd November		
Time	Activity	Responsible
0830-0845	Recap of Day 1	• Facilitator
0845-0900	Key findings from the situational analysis study	• Dr. Angie Colston, GALVmed
0900-0915	Socio-economic impact of <i>Taenia solium</i> , cysticercosis & neurocysticercosis in E. Zambia	• Dr. Evans Kabemba Mwape, Ministry of Fisheries and Livestock, Zambia
0915-0930	Madagascar: best practices - national policy on PC control (Projet pilote sur la cysticerose dans le district d'Antanifotsy 2015 -2017)	• Dr. Sylvia Ramiandrasoa Noromanana, Country Coordinator of Human Cysticercosis, Madagascar
0930-0945	Regional perspectives • Pan American Health Organization (PAHO) – Advances in the control of <i>T. solium</i> in Latin America	• Dr. Meritxell Donadeu, University of Melbourne
0945-1000	• Partnerships for effective integrated cysticercosis control	• Bernadette Abela-Ridder WHO Team Leader of the Neglected Zoonotic Diseases
1000-1015	• Prioritizing cysticercosis: Human health perspective	• Dr. Betty Nabatte representing the Executive Director, Schistosomiasis Control Initiative, Imperial College London
1015 - 1030	Health Break	
1030-1100	Question and answer plenary discussions	• Facilitator
1100-1200	Way forward - proposed framework Group work	• All
1200-1315	Group report back & plenary input	• All
1315-1330	Closing	
1330-	Lunch & Departure	

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Annex 2: Participants List

Names	Title	Organisation/institution	COUNTRY
Abela-Ridder Bernadette		WHO	
Ayebazibwe Chrisostom		Consultant/ Researcher Ministry of Animal Industries and Fisheries	Uganda
Baluka Sylvia	President	Uganda Veterinary Association	Uganda
Banga Alice	Director	ERAM Uganda	
Bhargav N S N	Vice President-	Institutions Business; Supply Chain (Logistics) and Public Relations - Indian Immunologicals Limited	
Bisangwa David		Butabika Medical Hospital	Uganda
Busuulwa Henry	President	United Veterinary Paraprofessionals Association (UVPPA)	Uganda
Colston Angie	Assistant Director, Rsearch and Development	GALVMED	
Cook Annie	Post doctoral scientist - Epidemiology	ILRI	
Daniel Ndambisia'	Regulator		Zambia
Dione Michel M.	Scientist, Animal Health & Epidemiology	ILRI	
Donadeu Meritxell	International Development Professional & Visiting Research Fellow	University of Melbourne	
Dungu Baptiste	MCI	MCI Sante Animal	
Elunga David	Rural farmer	Malera Subcounty, Bukedea District.	Uganda
Hamaro Emmanuel Faustine	Chairman	Tanzania Association of Pig Farmers (TAPIFA)	Tanzania
Hameja Grace		Chief CD/NTD, Ministry of Health	Zambia
Hamoonga Raymond			Zambia
Van Damme Inge	DVM, PhD	Dept of Veterinary Public Health and Food Safety, Faculty of Veterinary Medicine,	Zambia
Kabemba Evans Mwape	Lecturer/Researcher	Consultant/ Researcher	Zambia
Kabeterine Narcis	SCIs African Capacity Development Manager	Vector Control Division, Ministry of Health, Uganda	Uganda
Kabilika Swithine	Deputy Director	Ministry of Fisheries and Livestock, Department of Veterinary Services	Zambia
Kagwa Paul	Commissioner Community Health	Ministry of Health, Headquarters, Kampala	Uganda
Kalyebi Peter	Senior Principal Inspector, Environmental Health	Ministry of Health, Headquarters, Kampala	Uganda

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Kanyima Benon	Pig farmer	NangaboSub-county, Wakiso District (Peri-Urban farmer)	Uganda
Kapinga Erick	Pig farmer-Mbeya rural	Mbeya Rural	Tanzania
Kasirye Florence	Registrar	Uganda Veterinary Board (UVB)	Uganda
Kayuni Gibonce	Vet		Tanzania
Lightowers Marshall	Principal Research Fellow with the National Health and Medical Research Council and Professor in the Faculty of Veterinary Science.	University of Melbourne	
Lukuyu Ben	Country Representative for Uganda	ILRI	
Malakalingo Joseph	Quality Assurance Officer in Biotechnology and Molecular Biology		Tanzania
Maseko Alikhadio	Principal Research Scientist	Ministry of Fisheries and Livestock, Central Veterinary Research Institute	Zambia
Masuruli Bedan	Registrar	Veterinary Council of Tanzania	Tanzania
Mboye Anthony	Director General	Ministry of Health	Uganda
Mnyamani Deogratiuous Andrew	Pig farmer	Mkuranga District, Coast Region	Tanzania
Monje Fred	Senior Veterinary Inspector	<u>Ministry of Agriculture, Animal Industry and Fisheries</u>	Uganda
Mshang'a Samora	DVO-Mbeya rural district		Tanzania
Muhereza Mukuuzi	Secretary General UMA		Uganda
Muhindo Bukeka Jeanne	Principal Regulatory Officer and Ag Head Veterinary Products.	National Drugs Authority	Uganda
Mukeki Edridah	Commissioner	Ministry of Health	Uganda
Muraguri Lois	Director for Policy and External Affairs	GALVMED	
Muruta Niyonzima Allan		Ministry of Health (MoH)	Uganda
Mutale Mulenga Francis	Chief Veterinary Officer	Department of Veterinary Services, Ministry of Fisheries and Livestock	Zambia
Mutebe Abby	A trader in pigs	Kamuli Disrict-Bunangwe Kasoigo Village	Uganda
Muuka Geoffrey	Consultant/ Researcher	Central Veterinary Research Institute (CVRI)-BALMORAL ZAMBIA	
Mwaituka Joram Adick	Trader	Mbeya	Tanzania
Mwemezi Kabululu	Consultant/ Researcher	Ministry of Agriculture, Tanzania	
Mwidunde Sylvester	Drug Inspector	TFDA, Tanzania?	Tanzania
Nabatte Betty		SCI, Uganda	Uganda
Naigaga Irene	One Health Central and Eastern Africa (OHCEA)		Uganda

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Nakozi Kabeta Mathews	Principal Public Health Officer	Ministry of Fisheries and Livestock Department of Veterinary Services	Zambia
Nandipha Toyota Ndudane		Tsolo Agriculture and Rural Development Institute for the Department of Rural Development and Agrarian Reform	Zambia
Natukunda Alex		MTK Uganda Limited	
Nkhuwa Elias Davison	General Secretary(Trader)	Small Livestock Association Of Zambia	Zambia
Nonga Hezron Emmanuel	member of the Executive Committee	TVA	Tanzania
Sylvia Ramiandrasoa Noromanana	Country Coordinator of Human Cysticercosis	Madagascar	
Nyirenda Sakala Zanaida	Pig small scale Farmer	Lusaka	Zambia
Rutebarika Chris	Director	ANISOLUTIONS International Limited	Uganda
Samilimo Frank			Zambia
Serugga Joseph	Senior Veterinary Officer		Uganda
Siame Joseph			Zambia
Singoma Kagamba Julius	Manager for Policy and External Affairs	GALVMED	
Waiswa Charles	Director	Vector control MAAIF, Chairman CWGESA-Uganda	Uganda
Zulu Gideon	District Health Director	Consultant/ Researcher	