

The Achievement of WOAAH rabies twinning project and Benefit of AHI

Animal Health Institute is under ministry of agriculture, which has been nominated to be a national referral and reference laboratory, has 16 BSL 2 Microbiological laboratories and one BSL 3 laboratory with full laboratory high tech calibrated equipment which are capable of testing samples with high accurate test result. It also has genomic laboratory with facility of Next Generation Sequencing /Bioinformatics. AHI implementing quality management, accredited for 12 serological and 3 Molecular diagnostic tests as of 2011 based on ISO 17025. It coordinates and runs different national and international research projects,

AHI mandated for the following major national and international activities:

- Generating an internationally acceptable laboratory diagnostic test results for the certification of export animals, animal products and by products
- Coordinating and performing national surveillances and outbreak diagnosis of trans boundary animal diseases of economic and public health importance zoonosis diseases
- Conducting researches on major animal health problems like drug resistance, toxicity and others to improve the wellbeing of animals
- Coordinating national Tse Tse control and build the technical capacity of the regional veterinary laboratories, which can address the poor farming and pastoral community.

Even though AHI has advanced virology laboratory, rabies confirmatory diagnosis is not being performed yet. It is because, the lack of diagnostic capacity for rabies at AHI and poorly organized laboratory facility and lack of technical knowledge and experience of expertise to diagnose rabies.

Rabies is one of the most endemic diseases of suspected animals in Ethiopia and has to public health significance. Thus, rabies is selected one of the notifiable and priority zoonosis disease in Ethiopia. In Ethiopia, it is estimated that up to 2700 human deaths occur annually due to rabies.

One of the gaps included in the national rabies strategic plan is inadequate laboratory capacity: Lack of diagnostic capacity of rabies at national and regional level in the animal sector and lack of capable vet laboratory diagnostic knowledge and skill for experts. In addition, Inadequate Research on Rabies and Inadequate inter-sectoral collaboration and partnerships.

The Opportunity to improve rabies diagnosis in Ethiopia / AHI

Ministry of agriculture has initiated the establishment of diagnostic capacity at Animal health institute in collaboration with WOAAH. As a global program, WOAAH **established Twinning Project** between Agricultural research council (WOAH rabies reference center, South Africa) as a parent institute and Animal Health Institute (Ethiopia) as a candidate institute with the objective of building capacity and scientific expertise to improve diagnostic and research capacity of Rabies at AHI. This twinning project run for a total of two years and signed MOU between AHI and ARC in December 2020

Achievements on the objective of rabies twinning project and benefit for AHI /Ethiopia -

1. **Advanced training** - Capacity building through **providing advanced Training** for AHI experts on major protocols of rabies diagnosis. The training was conducted in **South Africa /ARC** in two rounds

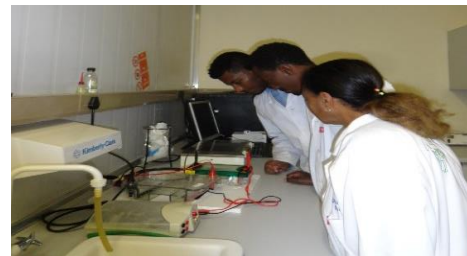
➤ **First round (June 11- 29 /2022)**

- Theoretical and practical training provided with the introduction of different types sample collection techniques, sample transportation, submission storage and disposal, preparation of SOPs and test protocols and diagnostic protocols for direct fluorescent antibody test (dFAT).



➤ **Second round (February 27 - March 17/2023)**

- A detailed and advanced training on protocols of diagnosis of rabies given such as: - The direct fluorescent antibody test (dFAT), Direct Rapid Immunohistochemistry Test (DRIT) and Reverse-transcriptase polymerase chain reaction (PCR) .



• **Competence-evaluation**

Six blind samples panel was received from EPHI tested by the standard protocol of dFAT. All the participants performed well (results were 100% agreement with the expected results). Which were declared as competent to carry out dFAT during the assessment.

2. **Providing supply** - Capacity building through providing Reagents and consumables

- ARC - OVR has provided some Reagents and consumables for diagnosis of Rabies on protocols dFAT , DRIT and PCR . Rabies laboratory experts verified the reagents - as a quality management system requirement.
- Some reagents and consumables delayed during the procurement process and have not yet been delivered to AHI but promising to be sent when procured.

3. ARC team visit - ARC experts visited Animal Health institute (Two rounds)

➤ **First round** visit (10 to 21 October 2022) - Visited based on their plan.

- Assessed the quality management system of the new organized Rabies Laboratory at the AHI,
- Provided theoretical and practical training on the main tests used for rabies diagnosis and focused on the direct fluorescent antibody test(dFAT)
- Assessed the inventory of the Rabies laboratory at AHI (Based on the prepared check list)
- Comment and suggestion on the SOPs and test protocols which is prepared by AHI rabies laboratory team
- Conducted audit and evaluation of the available resources to perform rabies diagnosis
- The visit was successfully completed with providing comments and recommendations based on the observation



➤ **The second round ARC - OVR** visiting AHI (2-13 Oct / 2023)

- Focused mostly on the laboratory activity (PCR , FAT and DRIT)
- Evaluated the newly organized rabies laboratory at AHI
- Conducted inter laboratory comparison, The blinded samples provided by EPHI and tested FAT Protocol found the expected result
- Assessed the Quality management systems (QMS) - Discussed with Quality manager And the team evaluated the implementation of the QMS in the newly established rabies laboratory at AHI. Standard operating procedures (SOPs) for the direct fluorescent antibody test (dFAT), direct rapid immunohistochemistry test (dRIT) and reverse transcriptase polymerase chain reaction (RT-PCR) were compiled and controlled according to ISO 17025:2017.
- Checked the completeness of a **bio risk assessment** of lyssaviruses to be confirmed in the new facility and the document has been controlled as per QMS requirements
- The visit was successfully completed with providing valuable comments and suggestions on the new established rabies laboratory AHI.

Photos- ARC team visiting AHI





➤ Closing of the twining project

- WOAH rabies twining project successfully completed in December 2023 and the closing workshop and the launching of the new rabies laboratory held on 23th -25th January 2024 at AHI in the presence of the state minister of ministry of agriculture Ethiopia, the director of ARC/OVR, and guests from national and international organizations
- **The objectives of the workshop was-**
 - To establish of the Rabies laboratory will be officially launched, signifying the beginning of its operations and activities.
 - To close the WOAH twining project of rabies and to provide an opportunity to reflect on the accomplishments and outcomes of the collaboration.
 - To acknowledge the efforts of ARC/OVR through the WOAH funded twining project.
- During the time of closing workshop, the team ARC experts provided **Proficiency Testing (PT)** on dFAT . And AHI laboratory team successfully completed PT.



*H,E Dr Fikru Regassa
State minister Ethiopian
Ministry of Agriculture*

*Dr Mulumba .M
DG ARC*

*Dr Tesfaye.R
DG AHI*

*Delegate from ARC
South Africa*

Photo Workshop Participant for Closing twining project and launching rabies lab AHI



4. Conclusion

- According to the objective of **WOAH**, rabies twining project has achieved the establishment of new rabies laboratory through capacity building and scientific expertise,
- Establishing a new rabies laboratory through a WOAHA twining project can have significantly positive impacts and will play a crucial role in controlling and preventing the spread of rabies disease in Ethiopia. Here are some expecting key functions: -
 - **Diagnosis** - It enables the development of a highly skilled workforce equipped with the expertise to effectively diagnose, monitor and control rabies cases, this helps in early detection and prompt response to outbreaks. Provides the necessary infrastructure and tools for accurate and timely diagnosis of rabies cases in animals. The availability of reliable diagnostic services also will help us in reducing misdiagnosis and unnecessary intervention.
 - **Surveillance** - The laboratory can contribute to rabies surveillance effort by analyzing samples from suspected animals of being infected with the virus , This data helps in monitoring the disease's prevalence ,identifying high risk areas and developing targeted control strategy
 - **Quality Assurance and accreditation** - AHI has implemented QMS and as part of this system in new rabies laboratory, quality assurance process and work towards obtaining accreditation for the laboratory will be established, this includes implementation of standard operating procedures, quality control measure and participating in external quality assessment programs
 - **Research activity** – A dedicated rabies laboratory can conduct research to improve the understanding of the virus, its transmission, dynamics and effectiveness of existing control method. This research can lead to development of new vaccines diagnostic tools and treatment options.
 - **Training and capacity building** – The laboratory can serve as a center for training and capacity building, equipping professionals with the necessary skills and knowledge for effective diagnosis and management of rabies, which includes training for veterinarians and regional laboratory experts .
 - **Collaborations and networking:** Foster collaborations with local and international organizations, research institutions and public health agencies involved in rabies prevention and control. Collaboration with one health approach can help sharing knowledge, resources, and exchange of expertise, as well as participating in a joint outbreak investigation, surveillance programs and research projects.
 - The combined efforts of capacity building and a dedicated rabies laboratory can contribute to the **overall goal of rabies elimination in the implementation of national and global rabies controlling strategy plan.**

Photo – New rabies laboratory



Visiting New rabies lab by higher officials



5. Next step to sustainable collaboration between ARC/OVR and AHI

Sustainable collaboration requires ongoing effort and commitment from both sides . By implementing a strong strategy, we can increase the chance of maintaining successful and long-lasting collaboration beyond the completion of a twining project will be enhanced through: -

- **Maintaining communication channel:** - It is important to maintain open line communication with ARC regular virtual meeting, email updates or utilizing project management tools to facilitate collaboration. By staying connected, sharing of knowledge, exchange ideas and support will be continued.
- **Share best practice** – One of the main benefits of twining project is the opportunity to learn each other’s experience. After completion of the project sharing best practice, lessons learned and success stories of each other will be continued. This can be done through reports, case studies, organizing joint workshops or conference to disseminate knowledge.
- **Capacity building** - Sustainable collaboration often requires capacity building efforts. An identified area where support is needed and offer short term or long term (MSC, PHD) training to enhance and upgrade skill and knowledge experts. This can be help strengthen our capability and ensure the long-term success of the collaboration.
- **Explore new opportunities** – Look for new opportunities to expand and diverse the collaboration. Explore different areas of corporation, initiate joint research projects.
- **Establish formal agreements-** Consider establishing formal agreements (MOU) to defined the term collaboration beyond the twining project. These agreements can outline the objective, responsibilities and expectations of both of sided, providing a framework for continued collaboration.
- **Identify common goal** - Identify shared goals and interest between the organizations involved. This alignment will help to sustain collaboration beyond the twining project.



Photo- South African delegate and Ethiopian officials



Rabies lab team Ethiopia and South African rabies lab team

6. Acknowledgment

- I would like to thank for WOAHP for the given opportunity to establish rabies twinning project and providing fund to improve diagnostic and research capacity for diagnosis of rabies and able to establish new rabies laboratory at AHI.
 - We are expecting an usual collaboration with WOAHP to support preventing and controlling transboundary animal and zoonosis disease .
- Thanks for Agricultural research council (ARC- OVR) to support us providing advanced training and other related capacity for diagnosis of rabies as a parent institute.
- Thanks for ministry of Agriculture Ethiopia the initiation and support for realized the establishment of twinning project
- Thanks for Animal health institute management for their commitment for this success to organize the setup of rabies laboratory.



Dr Redeat Belaineh - Coordinator Twinning project in side of candidate institute

and Coordinator new established rabies laboratory AHI

