

ETHIOPIAN PUBLIC HEALTH INSTITUTE



**CONSULTATIVE AND DISSEMINATION WORKSHOP
ON HIV/AIDS AND TB RESEARCH AGENDA AND
RESEARCH FINDINGS**

PROCEEDING

APRIL 22-24, 2015 AXUM HOTEL

MEKELLE, TIGRAI



ETIOPIAN PUBLIC HEALTH
INSTITUTE

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HOTEL, MEKELLE, TIGRAI

Proceeding

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Acknowledgement:

This workshop is organized by the Ethiopian Public Health Institution in collaboration with different stakeholders.

The EPHI would like to thank the following organizations for the support they provided for the successful implementation of this workshop:



We would like to also thank the **Tigray Regional Health Bureau** for hosting this workshop successfully.

Executive Summary

One of the mandates of the Ethiopian Public Health Institute is setting research agenda, by creating venues for sharing research findings, stimulating exchange of ideas and enriching and refining guiding documents for health related activities.

Organizing a session where research findings are shared followed by sessions where associated roadmaps are discussed was only logical. This three-day workshop entertained 35 presentations, ranged across 7 thematic areas with 4 parallel sessions and 1 plenary discussion.

HIV, TB research findings ranging from the HIV/related diseases survey and surveillance findings and other key research findings were shared. The preliminary ANC 2014 surveillance depicted that with HIV prevalence of 1.14, there are 727,000 people living with HIV in Ethiopia. It is also estimated that there are 24,000 new infections and 21,000 deaths in 2014.

The TB/HIV sentinel surveillance found only 8.4 patients who are eligible for INH are put on INH.

The STI sentinel surveillance found that the commonest STI is urethral discharge with 51.4% of the patients having that diagnosis. Urethral discharge syndrome is followed by genital ulcer at 32%. 19.9% of the patients with STI exhibited multiple partnership with 40% admitting not using condoms.

The 4th round early warning indicator survey for ART, found that 49% of the ART providing facilities have experienced ART stock out in the last 12 months.

When it comes to treatment failure and the practice of switching to second line when they fail on the first line; only 23% of those who failed were switched. There was a huge missed opportunity for switching, because 91% of those who failed had a clinic visit 3 months after failure but were never switched.

Molecular research findings on TB showed that the Delhi/CAS lineage is a predominant lineage in Ethiopia. Another research also found that four genes are potentially identified for possible discrimination of TB.

On the research that compared different models of HIV care against retention, found a major discrepancy in retention. Health facilities which implemented retention promoting activities paired by retention promoting activities by community had a much better retention.

The national external quality assurance for AFB smear microscopy found that 6 out of the 13 regional laboratories achieved 100%.

Road Maps: 4 different maps were presented

1. HIV/AIDS research
2. National TB reference laboratory
3. National HIV reference laboratory
4. TB research

All the road maps were developed as part of the SPM of the institute. Each road map was reviewed by teams of more than 50 each and useful inputs provided. The main comments being the proper finalization and timely release of the roadmaps. All comments were given to EPHI by the moderators.

During the conclusion of the workshop, EPHI depicted its decision to move towards generation, synthesis and translation of research.

The schedule:

In general, the duration of the workshop was for three days (April 22-24, 2015)

The approaches and key activities included:

- Presentation and discussion on six national policy relevant surveillance and survey findings conducted in 2014
- HIV/TB national and regional program update and the core function of the EPHI
- Presentation on 20 research findings and quality control evaluation on TB/HIV laboratory
- Consultation on the HIV/TB draft roadmap from 2015-2020

As seen in the table below, the workshop will have the following contents:

- 7 thematic areas
- 35 presentations
- 4 parallel sessions
- 1 plenary session
- General discussion

Date	Thematic area	presentations
April 22, 2015	1. Introduction (HIV and TB programs in Ethiopia)	5
	2. HIV and related diseases survey and surveillance	7
	3. Research findings	1
April 23, 2015	3. Research findings	5
	4. Evaluation of HIV and TB diagnostics	5
	5. External Quality assessment	6
	6. Road maps	6 (3)
Day 3 -April 23, 2015	7. Parallel sessions	4
	Establishing the national HIV/AIDS research advisory committee (HARAC)	
	General discussion	

Background:

This workshop is the second of its kind, which is done following the first workshop held in Bahirdar Town in September 2014. This 2nd national HIV/AIDS, consultative and dissemination workshop on HIV and TB research agenda and research findings held in Mekele, capital of the Tigray Regional State of Ethiopia, 22-24, April 2015.

According to Dr Desta Kassa who gave an overview of the workshop and objectives; this meeting had two parts – DISSEMINATION AND CONSULTATIVE.

The Dissemination part is for spreading information, knowledge and research findings to potential users. The ultimate purpose of the dissemination is to strengthen the link between knowledge production and knowledge utilization. The consultative part seeks advice from the participants on the road maps (strategic documents) developed by EPHI for the coming 5 years including: HIV/AIDS research agenda; TB research agenda; HIV surveillance system; and service upgrading for HIV and TB Reference Labs .

The overall objectives of the workshop include:

1. Disseminate the findings of research done on HIV and TB in 2014
2. Enriching the road maps including:
 - a. HIV Survey and Surveillance
 - b. HIV/AIDS Research
 - c. TB Research
 - d. National TB Reference Laboratory Service Upgrade
 - e. National HIV reference Lab Upgrade
3. Prioritize the research thematic areas and topics
4. Establishment of national HIV/AIDS Research Advisory Committee (HARAC)

In this workshop more than 350 participants representing Federal offices, FMOH, Regional Health Bureaus, Regional Laboratories, Federal and regional Universities, Private universities, research institutions, UN agencies, development partners, NGOs partook. The workshop was organized by Ethiopian Public Health Institute (EPHI) in collaboration with its key partners, UNAIDS, WHO, CDC and ICAP.

Welcome Note:

Hagos Godefay, head Tigray Regional Health Bureau

Started by pointing out that April 22, 2015 is the first day of the 3-day commemoration as declared by the Ethiopian parliament in remembrance of the 30 innocent Ethiopians who were brutally slaughtered by ISIS in Libya.

He reminded the participants that this workshop is being held in the wake of the fact that United Nations has declared Ethiopia's achievements in fulfilling the MDG goals # 4 which was achieved 2 years before the deadline and about the fact that the country is on the right track to achieve MDG goal #5 and #6.

He pointed out to the participants that this workshop focused on the 2 objectives - dissemination of research findings and review of road maps. He mentioned that doing research is a driving force for development. He said our response to HIV/AIDS should be guided by research and a road map that looks 20 years forward.

He expressed his belief that this workshop will be a venue for intellectual deliberations. Wished success.

Key Note Addresses

Dr Alankar Malviya, UNAIDS

Commenced by saying "No words enough to condemn the barbaric act by ISIS."

Congratulated EPHI for organizing the workshop.

He hopes that this workshop will bridge the gap between research and implementation. He emphasised on the fact that generation of evidence per se is futile unless the evidence is used to guide practice. HIV/TB are evolving diseases. He mentioned about the overwhelming evidence that in addition to preventing mortality and morbidity, ART has played significant role in Prevention of HIV. The HIV epidemic in Ethiopia is at generalized state but also heterogeneous across the regions. The Ethiopian gov't has embraced the fast tracking approach to fulfil the three 90's.

There is a need to do more research to improve the implementation strategies on prevention, care and treatment programs related to HIV and TB. Questions such as "Are we doing the right things and are we doing them right?" can be answered through research.

Looking at the current status of Ethiopia, he said that one new infection occurs in 25 minutes in Ethiopia. HIV prevalence among MARPS is high and HIV sero-discordance is as high as 2/3. Most new paediatric HIV infections are hard to locate. There is a 4-year gap between sexual debut and use of condom, and use of condom is not optimal. All these call for more research.

Quality of research and this is the central processing unit of our response. Reminded researchers to think of the costing and sustainability in our research. Remember that resources are shrinking.

Dr. Esther Mary, WHO

Appreciated efforts of EPHI to generate knowledge which will guide practice. She mentioned the achievements the world in general and Ethiopia in particular has registered. She also reminded the participants that though less people are dying from TB/HIV, and fewer people are getting HIV, the world has witnessed 9 million cases of TB and 1.5 million deaths due to TB, of which Ethiopia is one of the countries contributing to these numbers. This is happening despite the efforts so far, thus there is more to be done.

It is highly recommended that use of best evidence to guide policies is crucial in making a difference. She remembered the fact that Ethiopia is one of the signatories of the 2008 African ministerial agreement reached to support and use research to inform practices in health.

She expressed her strong belief that this meeting will explore solid information which will guide our response to HIV/TB to reduce morbidity and mortality. Research is important in directing programs, she asked all participants to harness their knowledge to produce more evidence which guide our activities. She expressed WHO commitment to the cause of the workshop.

Opening Speech:

Dr Yibeltal Assefa, Deputy Director General of EPHI

He started by expressing his grief and asking all participants to stand up for a one minute of silence in remembrance of the innocent Ethiopians who were slaughtered in Libya.

He said “the globe is transitioning from MDG to Sustainable Development Goals (MDG to SDG) and Ethiopia is closing Growth and Transformation plan (GTP)-1 and moving on to GTP-2.” At this junction there is a high need for data. It is essential to generate and synthesize data to inform the health system. EPHI is mandated for health research agenda setting on problem solving for health and nutrition.

Participants of this workshop are purposively selected to be producers as well as consumers of research; thus will discuss research findings and set future research agenda. He expressed his expectation that this gathering will highlight challenges and future directions on HIV and TB.

The 5-year road maps which will be reviewed during this workshop are prepared in line with health sector transformation plan and the GTP-2. He expressed his confidence that the road maps will be enriched to improve translation and utilization of evidence. Using the core values of Health, Partnership, Collaboration and Capacity Building; EPHI will pursue its objectives of generating and synthesizing evidence through survey, research, evaluation and technical validation. Some of the core tools and mechanisms in the coming 5 years shall be collaboration with research institutions and academia as well as building capacity of RHB.

Given the fact that working together is effective, efficient and sustainable; he called for stronger collaboration and declared the official opening of the workshop.

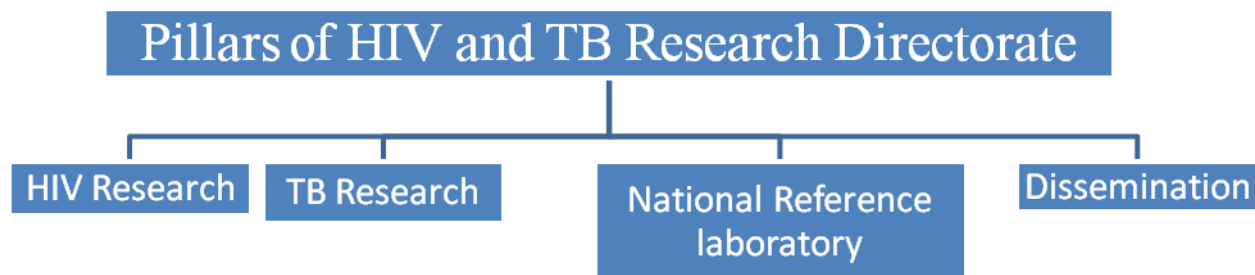
Following the opening speech an overview of the planned activities for the three days was given by Dr Desta followed by activity reports by EPHI and FMOH.

Update on Major Activities:

The activities of the TB and HIV research directorate:

Ato Astebeha started by giving an overview of the pillars of EPHI; which included research and Technology Transfer, public health emergency management, National laboratory system and leadership/governance.

The pillars of the TB and HIV research directorate:



He gave a summary of the staffing of the directorate which includes 2 PhD phd, 4 phd students, 5 MSc msc students, 16 msc, 17 bsc and 6 other staff. The directorate has executed a number of undertakings including 21 HIV/TB surveys/surveillances, 25 biomedical researches, 10 care and treatment researches, and 8 evaluations of new technologies.

The directorate has carried out two dissemination workshops, has put together nine technical reports, has got 25 peer reviewed publications, and four strategic documents. The directorate has also managed to prepare 4 laboratories for accreditation.

The directorate has identified key focus areas including biomedical and translational research, survey and surveillance programs, reference services, regional and institutional capacity building as well as collaboration.

The biomedical focus area emphasizes on: mechanism of human disease, therapeutic interventions, clinical trials, and development of new technologies, epidemiologic and behavioral studies as well as outcome and health services research.

The next steps planned by the directorate includes:

- Develop Roadmap for research and Diagnostics
- Establish national HIV/AIDS Research Advisory committee
- Strengthening and renew collaborations with Academic Institutions, Partners and private sectors
- Working towards HIV Cure
- Working towards TB infection control and elimination

Presentations: Day1 Preliminary ANC 2014 SURVEILLANCE AND SURVEY RESULT and NATIONAL ESTIMATE (not officially released)

The 2014 ANC surveillance survey finding presented with a unadjusted prevalence rate of **2.2%** among the 55,000 pregnant women attended the ANC services. The current finding of the ANC has shown a decline from the 2012 ANC prevalence of 2.6% an unadjusted prevalence. It is recommended to gradually move from ANC based surveillance to the PMTCT program based surveillance following the global direction of WHO and CDC. Therefore, EPHI will take the lead to implement this issue with the technical support from WHO and CDC.

HIV/AIDS Estimation for 2014

- **727,000** Total PLWHIV
- **102,000** <15 children living with HIV
- **1.14%** adult HIV prevalence
- 24,000 New infection
- 21,000 Annual AIDS deaths
- 28,000 Need for PMTCT

Recently, EPHI in collaboration with the national technical working group has produced the country HIV estimation and projection for five years and submitted to the global progress

report. Furthermore, with the financial and technical support from WHO and UNAIDS has conducted regional workshop and estimated and projected data for 11 regions data. This data were presented in the workshop and provided the following key data elements to be officially quoted.

Sentinel Surveillance of STI: Menelik Demisse – [EPHI]

69% of patients with STI fall in the age category of 20-34
40% did not use condoms

51.4% patients have Urethral discharge (UD) followed by genital ulcer (GU) which is 32%. Out of the patients who had STI, 19.9% exhibited multiple partnership and 40% did not use condoms. 18% of the women with STI were pregnant and 30% were positive for HIV (Male 15% and Female 39%).

Out of the patients who were seen for STIs, only 58% had documented HIV testing.

EARLY WARNING INDICATOR SURVEY 4TH ROUND SURVEY: Yimam Getaneh – [EPHI]

The 4th EWIS has been conducted by EPHI with the financial and technical support from WHO. The survey finding clearly indicated the seriousness of the ART stock out to the level of 49% of the health facilities studied was out of stock during the last 12 months, which grew from 36% in the 3rd EWIS in 2014. This is an issue for concern and needs serious attention at higher level. Therefore, EPHI is required to take this issue to the attention of the FMOH and PFSA to alleviate the recurring problem of ART stock out in the country before it affects the adherence level of patients. On the other hand the three indicators of EWIS shows a better improvement compare to the previous study, where 12 months retention has improved with 81% retention rate.

49% of the studied sties (81) had experienced ART stock out in the last 12 months

Rate of Switching to Second Line in the ACM sites: Dr Alula M. Teklu [MERQ PLC]

This study which used the data from the advanced clinical monitoring of ART project intended to determine the degree of switching of patients to second line after they are categorized as treatment failure by any of the three criteria. Assessing the practice of doing CD4 testing was also one of the

Only **23%** of those who failed were switched to 2nd line.

Out of the 311 who failed, **282 (91%)** had a visit to the facility 3 months after their failure to the first line regimen. This is a missed opportunity.

objectives of the study. The definitions of treatment failure included: Virologic treatment failure is defined as a viral load value on/after 6 months on ART of 10,000 RNA copies/ml or higher. Clinical treatment failure is defined as when a patient experiences a new opportunistic infection (OI) that is classified by WHO as a Stage IV disease, and that occurs on/after the patient has been on ART for 6 months and immunologic treatment failure is When a patient has a persistent CD4 count less than 100 (across

two or more consecutive CD4 tests on/after the patient has been on ART for 6 months), at six months, a CD4 count lower than the baseline CD4 value; and/or a drop in the CD4 count of 50% or more from the patient's maximum CD4 value. Out of the 2602 eligible patients, 404 (15.5%) had treatment failure by at least one criterion. Immunological monitoring is at an overall reach of 85% with progressive improvement. Time to switch out of those who switched is a median of 55 days.

Molecular Epidemiology and Transmission Dynamics of Mycobacterium Tuberculosis in Northwest Ethiopia: Dr Belay Tessema [University of Gondar]

A cross-sectional study design was used and 260 M. tuberculosis isolates from smear positive PTB patients were taken from March - July 2009. A highly diverse population structure of M. tuberculosis was observed.

New phylogenetic lineages were found.

Estimates of TB burden in Ethiopia, (WHO, 2014)

- **Incidence: 224/100,000**
- **13% HIV+** new TB cases
- **Mortality: 32/100,000**
- MDR: 2.3% of new cases and 17.8% among previously treated.

The Delhi/CAS lineage was found to be the predominant lineage.

A significant association between Haarlem strain infection and MDR was also observed.

High rate of recent transmission was evident.

This data emphasize the importance of strengthening laboratory diagnosis of TB, intensified case finding and treatment of TB patients to interrupt the chain of transmission.

Presentations Day 2

Biomarkers for TB in the context of HIV/AIDS in Ethiopia: summarizing findings: Dr Desta Kassa [EPHI]

This study was done to identify candidate transcriptomic and immunologic biomarkers for latent and

FCGR1A, TIMP-2, IL-7R and CD8A have the potential to discriminate active TB in HIV patients in Ethiopia.

active TB in the context of HIV infection and therapy in Ethiopia. The main findings is that four genes (FCGR1A, TIMP-2, IL-7R and CD8A) have the potential to discriminate active TB in HIV patients in Ethiopia.

These identified biomarkers may have significant contribution towards TB control in the future; but in order to control for confounders, context-dependent validation studies (comparing findings with different

epidemiological settings and populations) were recommended.

Models of care to improve retention in care in Ethiopia: a mixed methods study: Dr Yibeltal Assefa [EPHI]

This research revealed that, retention in care in the Ethiopian ART program was found to be variable across health facilities. Among hospitals, the poorest performer had 0.46 (0.35, 0.60) times less retention than the reference; among health centers, the poorest performers had

Poorest performer had 0.46 (0.35, 0.60) times less retention than the reference; among health centers, the poorest performers had 0.44 (0.28, 0.70) times less retention than the reference.

0.44 (0.28, 0.70) times less retention than the reference.

Health facilities with higher and improving patient retention were found to implement a comprehensive package of interventions: (1) retention promoting activities by health

facilities, (2) retention promoting activities by community-based organizations, (3) coordination of these activities by case manager(s), and (4) patient information systems by data clerk(s). On the contrary, such interventions were either poorly implemented or did not exist in health facilities with lower retention in care. A framework to improve retention in care was developed based on the evidence found by applying the *positive deviance approach*.

Finding of TB/HIV Sentinel Surveillance in Ethiopia: a one year Report: Menelik Demisse [EPHI]

The surveillance was done to generate information on the seven core indicators and avail more information on TB/HIV co-infection.

IPT coverage is only **8.4%**

CPT uptake in the TB/HIV patients was 78.4%

7.2% of newly enrolled HIV positive patients have TB

Of the total 9,170 newly enrolled HIV infected individuals in pre-ART care, the majorities (95.9%) of them were screened for TB at initial visit and active TB was detected on 7.2% of

them. However, only 8.4% of those with no clinical symptoms for TB received IPT. Of the total TB patients registered during the reporting period, 8,600 (91.7%) were screened for HIV, and 17.2% of them were found positive. Moreover CPT uptake in the TB/HIV patients was 78.4%. The surveillance has also showed 58.6% of TB/HIV co-infected patients have started or continued the previously initiated ART during the course of their TB treatment.

Evaluation of the National External Quality Assessment (EQA) for AFB smear microscopy in Ethiopia. Shewki Moga [EPHI]

Checklist-based onsite assessment and Panel testing was conducted in all Regional Laboratories of Ethiopia from October 2014- January, 2015 to conduct EQA for AFB smear microscopy with the intention of assessing laboratory performance.

Thirteen Regional Laboratories namely: Hawassa, Jigjiga, Afar, Assosa, Gambella, Dire dawa, Harar, Nekemt, Adama, Addis Ababa, Bahir Dar, Tigray and Dessie were involved in the study. A total of 3659 health facilities are found in the Country, of which 2823 (77%) health facilities have fully functional AFB smear microscopy service. Overall Random Blinded Rechecking EQA coverage in the Country is 78% (2191/2823). Eight regional Laboratories have decentralized Random Blinded Rechecking to Selected Hospitals with involvement of additional Health centers in two Regional Laboratories. Acceptable Agreement ($\geq 95\%$) in slide

Six Regional Laboratories (Dire Dawa, Addis Ababa, Bahir Dar, Tigray, Dessie and Assosa) achieved 100% EQA coverage. **Three** regional laboratories documented EQA coverage below 30%.

reading between regional laboratories and microscopy site was observed in Six Regional Laboratories. Three Regional Laboratory additionally used standard onsite evaluation EQA checklist. None of the Regional Laboratories initiated Panel

testing in their regions. Only 368 (13%) Fluorescent TB microscopy was implemented in nine regions at country level. Ten regional laboratories had Separate area for TB sputum smear microscopy. All Regional laboratories had adequate taskforces trained on Zn and FM microscopy. Inadequate and/or poor quality Supply was noticed in six (46%) regional laboratories. All Regional Laboratories scored Panel result above the pass mark (80%) with 10 of them scoring 100%. Low false negative error was detected in three regional laboratories.

Small group discussions and the outputs:

Panel Discussion on the national HIV Survey and Surveillance Road Map

The road map was reviewed by the team. A presentation on the WHO recommendations was made to stimulate the discussion.

The main suggestions are:

- ANC should be changed to PMTCT – from ethical perspectives
- Key populations to be addressed should include MARPs and the Mulu MARPs initiative should be harmonized with this road map.

- The surveillance of sex workers and long distance lorry drivers should be done periodically (every 3-5 years)
- More sites need to be included to have rural sites adequately represented.
- We still need to define key populations since the previous definitions seem to be non-inclusive.
- Inclusion of university students in the surveillance as key population was suggested.
- Focus on the transport corridors including the small cities should be continued
- Mechanisms to reach the development areas like the mega projects is critical.
- Inclusion of the private facilities should be entertained when we shift from ANC to PMTCT
- The military population should also be considered; more over the taxi drivers should be treated separately.
- VCT services should be strengthened in areas where there are mega projects with massive workforce deployed to a particular place.
- The behavioral survey should supplement the other findings and should be done in a synchronized manner.

Panel discussion on the national roadmap for HIV research and HIV reference laboratory

This group had more than 70 discussants. A general background and methodology design of the national HIV/AIDS research and HIV molecular research roadmap was given by Dr. Yonas Kassahun.

The national HIV/AIDS research agenda and the national reference laboratory service upgrade were presented by Dr Desta Kassa and Mr Kissi Yesu respectively. The national HIV/AIDS research agenda depicted the need to guide the country's response with local evidence and outline the scoring of the research questions. The reference laboratory presentation outlined the infrastructural needs based on the gap analysis.

- The objective of the research roadmap is to frame integrated approach and collaborative research at national level. It also intends to Produce a guiding research agenda and make the EPHI's SPM an operational document in the next five years.
- EPHI's SPM was used to identify the major and specific strategies. Gap analysis to outline the current setting and identify the future areas that are relevant was also carried out.
- Research topics were extracted from a systematic review of published documents (published systematic reviews, meta-analysis and other countries HIV/AIDS research roadmaps).

- HIV molecular research with five thematic areas and the number of research topics was outlined.
- The thematic areas were endorsed but review and scoring of the research questions based on the prepared checklist tool was recommended.
- Participants also suggested additional thematic areas where all the national HIV/AIDS documents can be compiled and systematically analyzed.

TB research and service road map

- Since the resource available let alone for research but also for programmatic activities are limited thus it important to consider the resources
- Social determinate is important areas that need to be covered under behavioral studies
- Studying TB transmission in confined environment like public transport is important
- The theme surveillance and epidemiology is overlapping
- Additional research activities should be included like :Early predictor for MDR, Minimizing contamination rate,
- System on the procurement of materials is the area that should be addressed
- The research agenda is broad and compressive, so you need to prioritize-focus on the research agenda which can be achievable within the time frame and focus on applied research rather than basic research
- Focus on research agenda which deals with prevention and curing, basics one can be done on resourceful country
- Basic one need to be done if it have input for the country
- Organize the research agenda according to its relatedness rather than listing them
- Develop Organo gram for execution and guideline for collaborative work

Service upgrade

- The plan have to show how you expand the service with quality
- Show us exact plan that need to be done to reach center of excellence
- The plan have to show the lab network
- Private labs should also considered
- The regional and NRL need to be complement to each other
- You need to have a bigger picture for the labs in the country
- Parallel to scale up you need to think the equipment maintenance requirement
- What your SWOT analysis tells you?
- How do you implement it

Panel Discussion on prepared manuscripts and future topics on ACM:

The advanced clinical monitoring of ART in Ethiopia (ACM) was established by 7 local universities with technical guidance from Johns Hopkins University and funding from PEPFAR made available through CDC.

The main objectives of its establishment was to look at the effectiveness of ART in Ethiopia. It was prematurely discontinued because of funding.

It is being discussed to find ways to optimally use the available data and to find ways to re-initiate the activities.

The ACM team deliberated on the following issues:

1. Potential research questions that can be answered using the ACM data
2. Options to collaborate and changes that we need
3. Fate of ACM and options to re-initiate the project

The potential research questions/areas were looked at in terms of priority, feasibility and need for additional data.

Out of the total of total of 27 potential research questions forwarded by different researchers, the following were selected:

Thematic Area	Research questions	Responsible	Description
Care and Treatment	Long terms effects of ART	Dr Alula M. Teklu, Saro Abdela, Henok, Esayas, Waktola	This needs additional data and updating the database
	Trends of clinical, anthropometry and immunohematological values on follow up	Dr Tesfalem, Dr Loko, Henok, Dr Workabeba, Prof Abreham	
	Survival and determinants of Survival of pediatric patients	Professor Abreham, Henok, Workabeba	Needs updating the database
	IRIS: predictors and outcomes on adult patients	Dr Esayas, Dr. Alula M, Saro, Melak and Dr Ermias	Will benefit from updating the database
Clinical	Elucidating LTFU – magnitude and predictors, real outcomes of LTFU	Dr Alula M, Dr Yibeltal, Dr Desta	Will be more informative if the database is updated
	Rate of restarters among patients lost to follow up and outcomes	Dr Yibeltal, Alula, Saro, Henok and Waktola	Will be more informative if the database is updated
	Pharmacokinetic interactions of ART and anti-TB drugs	Dr Desta, Astbeha, Dawit, Dr Yibeltal	Additional lab investigations needed
	Inflammation and immune function patterns in HIV patients on HAART over time	Dr Desta, Astbeha, Dawit, Dr Yibeltal	Additional lab investigations needed
	Prevalence of cryptococcal antigenemia and serological and clinical outcomes in newly enrolled HIV patients on ART	Dr Solomon Ahmed	Additional lab investigations needed. Database should also be updated.
Diagnosis	Trends and incidence of NCDs in the ART population	Dr Alula M, Esayas, Daniel, Waktola, Wonde	Additional lab investigations needed. Cardiovascular disease trends included
	Performance evaluation of CD4 count in comparison to viral load measurement to monitor HAART outcomes	Nugussie Gzahegn, Dawit Asefa, Melake, Getnet Mesfin, Atsbeha, WAKTOLA, Wonde	VL for all specimens should be done

The team has agreed on the need to call a meeting of all stakeholders to determine the fate of ACM. The team also strongly proposed proceeding with the publication of the manuscripts which are already ready. Making sure CDC is informed about the publications is vital.

The team strongly believed that it is wasteful and unethical to terminate the study and recommended identification of a local source of funding to resume data and specimen collection.

EPHI has agreed to call a meeting to answer the question of fate of ACM.

HARAC:

EPHI argued that a committee that advises the country in terms of research priorities for HIV and AIDS, major undertakings and others is of paramount importance.

Hence at the final day of the workshop EPHI – has established a National Research Advisory Committee comprised mainly from government institutes and key private public health institutes which includes; EPHI, FMOH, FHAPCO, Addis Ababa, Hawassa , Jimma, Mekele, Godar Universities, EPHA, Addis Continental Public Health Institute representing Private Public Health Institutes and NEP+ representing PLWHIV.

The advisory committee will play a key role in terms of advising the EPHI in conducting annually the HIV/AIDS conference in Ethiopia. However, terms of reference and responsibilities of the HARAC will be determined in the future.

Some suggestions given for HARAC were – multilateral organizations like WHO should be added and addition of some of the professional association and societies was proposed. Resource mobilization should be one of the roles of the committee. Inclusion of Haramaya University and EMA was also strongly recommended. The other suggestion was that the chair position should be given to non-EPHI institution and EPHI should assume the role of the secretary.

Key comments:

Before the closing of the workshop, the participants were given the chance to reflect and here are the reflections:

- Policy relevant research should be done through guidance from EPHI
- Some of the researches presented can serve as PHD papers, thus there has to be a way to link the researches with academic institutions
- Strengthening of inter-sectoral collaboration including key sectors, RHB and universities will make researches and other activities more comprehensive
- The TB road map needs to be harmonized with the TRAC road map – to prevent possible duplication of efforts.

- There should also be ways to link the HARAC with the TB advisors committee to synergize their roles and responsibilities while avoiding duplication.
- Clarifying roles and responsibilities between EPHI and other partners.
- Building the capacity of the RHBs so they can take some of the responsibilities that EPHI has taken
- Strengthen and upgrade the national level responsibilities by availing state-of-the-art equipment, human resources as well as infrastructure.

Summaries:

Six policy relevant surveillance and surveys findings presented and discussed in the meeting including, **Findings from preliminary ANC-2014**, Round **IV Early Warning Indicator** Survey in Ethiopia⁵, **TB/HIV** national survey 2014, **National Sentinel surveillance of sexually transmitted infections** based on syndromic case reporting, **National and Regional HIV estimation and projection** (2014/15), national assessment of the **HIV survey and surveillance system** in Ethiopia.

More than 20 research findings presented on HIV/TB/STI programs which were conducted by local universities and private institutes. Furthermore, consultation and discussion has been made on the draft national **Road Map for HIV Surveillance and TB/HIV in Ethiopia** (2015-2020). Finally, lively discussion which was held for two days and key concerning issues were pin pointed out and the following recommendations were made for EPHI, FMOH, regional health bureaus and the various actors in the country.

- EPHI and the directorate should strengthen the initiative and finalize the draft roadmaps
- Device effective strategy to involve institutions to make the final documents operational
- The lab service upgrade document presented needs further review and should exhaustively outline the national referral lab needs and specify the level of standards that the current laboratory wishes to achieve in the next five years.
- The documents should indicate an effective management strategies to conduct monitory and evaluation that monitors the implementation of the planned milestones until 2020.
- Document should have clear guidance on implementation strategies
- Lab service upgrade roadmap should indicate more clearly the exiting infrastructures
- All the proposed research topics should take into account the national research needs
- ACM project should be re-initiated with local resources
- Drug resistance monitoring should be harmonized with what is recommended on the WHO guidelines

The deputy general director, Dr Yibeltal closed the workshop by stating the following:

1. Appreciated all the comments given and said the feedbacks given to the enrichment of the road maps and pointing at the priority areas and areas of improvement will be carefully examined and optimally used.
2. Expanding to other research areas in addition to the biomedical research
3. Eliminate or reduce the low attention given to the social aspects of health in the country
4. Research collaboration – think beyond the traditional boundaries and involve regional health bureaus and research institutions.
5. In the coming five years, EPHI will expand its laboratory infrastructure and Human Resource development – the institution has allocated 45 million dollars for that.
6. Just doing research per se is not going to help the country – thus EPHI will move towards generation, synthesis and translation of research.
7. He concluded his speech by inviting all stakeholders to be meaningfully involved in being part of EPHI's intentions to generate, synthesis and translate research.

Annex I: Post Conference Feedback

Your inputs will be used carefully. Please take a few minutes and give us your feedback.

1. How did you find the workshop?

- Highly relevant
- It was time
- It is very informative
- It is good. We learn more from this workshop. Please keep it up.
- Organization – very good; Timing – sometimes overstretched without the schedule; Content – sessions should have been given in parallel so that attendees will stick to their areas of interest
- It was well arranged. I hope it has accomplished the intended plan.
- The workshop was interesting except the time management
- It's very targeted
- It is very informative & constructive workshop
- It was interesting but the Research paper was presented repeatedly
- Excellent
- The workshop was highly informative and I think it has involved wide specialty and people contributing to the respective diseases (HIV & TB)
- It was well organized, except that it was started late because of the electricity problem, In addition, the schedule reached late to the participants
- It is very fine
- I found it interesting. It was very informative and I found ideas to apply to the academia I give
- Overall, good
- I have seen in this current issue workshop that show us the current status the implementation of it about HIV/AIDS and TB which is the crucial issue for globally and nationally. So for me it is the current issue in the side of research funding
- From the conference I saw I think the new generation take over Ethiopians health problem. So appreciate EPHI job. Please continue with this effort.
- I can grade it as good.
- Excellent – a learning forum in all sense of the term
- The workshop is very interesting and wonder for workshop of capacity building. Keep it up.
- I found the workshop very interesting, informative, and engaging
- 1) The workshop is good, especially in arranging it at Mekelle, but the hotel service is very bad – for example, light interruptions, mic arrangement; 2) I expected from the organizer to show the city and historical places in the city but not done.
- Goods: 1) Participants from diverse institutions 2) Active participation and enthusiasm for change 3) Strategic thinking 4) Inception of advisory committee. Limitations: 1) Fragmented presentations 2) Time keeping / management 3)

2. What are the important findings you found interesting?

- The research findings -> the findings of Genexpert performance assessment; The TB research roadmap; The TB service upgrading roadmap
- Presentations, discussions, etc.
- Patterns of treatment failure / drug resistance in HIV care
- Research finding; National EQA status and trends
- Resistance patterns for HIV/TB; The sentinel surveillance report even though it was not the final one
- Research output were disseminated so that new information that education. They probably provoke research agenda
- Almost all were interesting
- Most of the findings are interesting but it should be resolve the problem of the community
- All findings were very interesting
- The research paper presented by Dr. Solomon with the title of TB among Ethiopian inmates
- Generally I get future plan of Ethiopia in relation to health
- The fact that the researches have addressed wide range of disciplines was interesting
- All the biomedical researches & researches on the TB & HIV
- Everything that were transferred from stage & participants very excellent and I got a lot of experience
- The survey outcomes; The national roadmaps; The establishment of the advisory committee
- Composition of professionals; Diversity of papers presented
- The important finding in the case study about non-microbium TB
- With this conference to show HIV sensitive area & who to solve the problem of that area for example truck & public drivers are HIV victims
- Familiarizing with the activities that are ongoing on the TB/HIV research and surveillance around the country
- Researches are almost exclusively doing biomedical research, little or none as far as clinical epidemiological, social science research; Presenters did not rehearse before coming, including those from EPHI; They need (most presenters) communication skills (spoken English)
- The important findings about TB and HIV target a lot of technical skill
- The declining trend in HIV infection; The participation of the regional and sub-regional centers in tackling the problem; The molecular level research findings
- The idea that was forwarded to incorporate other parties in research in the future direction; I am happy to hear that ACM is about to survive
- EQA – sometimes worrying (TB, mostly satisfactory; HIV prevalence reduction; Tigray an exemplary practice in HIV & TB program; Prevalence of TB worrisome (in prison); Poor ART adherence; Biomarker for TB

3. Please tell us important findings of policy relevance from this workshop.

- The findings of the Genexpert performance assessment
- HIV presentations may be crucial. There are few studies on it.

- HIV drug resistance
- EQA status and the future plan to incorporate and align it with laboratory accreditation
- Resistance pattern of MTB resistance as reported from SW Ethiopia
- The information on patient care and treatment outcome; Survey outcomes which only serve to improve the subsequent surveillance in more aggregated way; Information on TB resistance has also mostly information that could help to design better ways for monitoring
- The findings were very important & highly relevant for improvement of policy & current practice of HIV/AIDS & TB
- Mental health is important for ART patient
- Method evaluation that seeks decision making
- The findings showing the need to harmonize TB and HIV
- In order to bring this in to policy relevance we need to synthesize
- Survey outcomes; Evaluating point of care technology
- The high INH resistance; ART retention strategy
- Important finding for the issue of TB drug resistance which is having diet taken like that of Tigray Azmud
- If you work your future plan implement you must get political decision
- It emphasize that not to ignore HIV as most of the policy makers think HIV prevalence is very low in the country; To forward to new approach & research from the ordinary way
- Research findings should inform policy; Recommendations should clearly state so (relevance to policy, programs), that was not evident in many of the presentations
- All finding is important
- Focus on the use of molecular biology to identify and determine the problem; Integrated laboratory management; Partnership with all stakeholders including academic institutions
- Community awareness raising on communicable diseases; TB worrisome health problem and need for focus on presentation; The need for selection of point of care tools for promotion (national interest not promotion by companies)

4. How do you intend to use / share the findings and issues discussed?

- As I am a university instructor, I will share to the university community (students, teachers)
- Through internet; conference, etc
- Further research; improve patient care
- Actual this finding used individual or as the system through the program implementing as a whole
- Share the information with my colleagues and students; Use some of the information in my research undertakings
- I can share the information through a brief report on the deliveries, recommendation point and other issues of the workshop
- If the finding will be published in the known article
- I use on my daily work activities

- Research paper shall include on all regions and university and other participants outside EPHI
- As a university staff, I will use the information I got from the workshop 1) in adjusting the researches I can do related to field to be geared to the information 2) I can disseminate the information to my students
- I will share this to my colleagues
- I will share all things to my staff and discuss it in adherence that will help again for the EPHI
- To integrate it in teaching and learning activities; To make a possible references for development of other research proposals
- Report to my institution; Present at my institution
- The service / surveillance of the HIV/AIDS and TB
- With you and the partners together
- As an academician, I intend to use the finding by incorporating in my future work
- I represent health research institution of Tigray and have contact with Tigray health research institute. I will advise them organization to learn from the strength of EPHI (biomedical research) and not learn from its weaknesses
- We discuss a lot of things about issue that is very important it is about community health to improve the community health
- I would like to use the issues discussed at my university
- In the class to my students, to my research colleagues
- The need for information and harmonization for research on HIV & TB must be replicated at all health research academia and lab services; Responsibilities of the advisory committee must mainly be shouldered by EPHI; Similar workshops need to be conducted by other directorates / thematic fields in EPHI

5. What are the things the country should consider in the road map? (please specify thematic area when you recommend)

- TB Laboratory capacity building
- HIV & NCD
- Decentralization of activity to the regional; Capacity building of the regional lab in every direction; Inter-collaborative work of the stakeholder
- Survey and surveillance – due focus should be given to the identification of the MARPS in our context. Eg. University students extent of MSM in the country; Identify hotspot areas – Eg. Drug shops like Khat, shisha shops
- This was already raised and discussed which support is to share the draft dissemination research agenda through emails and later to all concerned participants of collaboration to enrich it to make it complete
- I agree with what we have discussed in the morning about the thematic areas and it is better if some health problems related to HIV & TB are considered
- Already mentioned by the target group
- Evaluation; Supply

- The cascading of HIV chronic care to HF to reduce the loss to follow up of ART clinics and to decrease stigma and discrimination as well as to introduce normalization of HIV as like other diseases
- I think the HIV/TB roadmap should also include nutrition and intestinal parasitosis as the problem is quadrupled and inter-related, for the benefit of patients
- Involving all stakeholders
- Building capacity for regional labs in TB lab & molecular labs as well
- I have incorporated it in the TB roadmaps where I have participated
- Feasibility; Problem based; Holistic approach
- The roadmap which is identified the by Global level of WHO of three levels which our country fell under generalized population, the key population which is forgotten in this workshop like that of flower culture / horticulture laborer
- To coordinate the surveillance with other communicable and non-communicable diseases
- Institutional transformation; Leadership (health system) research
- To involve the social researchers in HIV and TB coinfections; To regularly monitor the activities of the regional, sub-regional and academic research laboratories participating in HIV/AIDS research and surveillance
- Almost all things presented were about infectious diseases, nothing has been indicated about non-communicable diseases such as cancer, diabetes, etc.
- Available human and material resources as well as infrastructure; Coordination on HIV & TB research as well as harmonization; Diabetes is important; Establish community awareness system from up to bottom

6. If you have any suggestions to make the workshop better, let us know.

- Better coordination
- Preplanning; improve organization; Abstracts should be pre-reviewed
- It is better to appreciate the previously done activity and work to strength/improve for future as whole; EPHI directorates should work together, communicate on national laboratory system
- Inform participants earlier so that they are prepared for the conference
- It would have been nice if the notification information is shared to all possible participants; Invitation for abstract should be also notified earlier
- Continuous
- The research paper shall include current findings; It should include all participants; It should include all regions
- I share with all the comment given by the participants
- You can make parallel sessions even for the research papers so that we can have more time and details comments from interested experts can be obtained
- Poor communication of documents; Professional associations involvements
- I have one comment only that the decision makers / leaders of MOH absent from participant on the workshop
- Don't stop this good things for your people the Ethiopians

- Participants composition should be mentioned during the introduction and their purpose of being here
- Produce the timeline one week before the conference; Publish abstracts / proceedings (draft); Make sure the electricity system works (back up); Rehearse
- Workshop is very interesting because it is life issue. It is community issue, capacity building
- Please use the human and material resources available at universities through strong collaborations. If possible try to consider mechanisms of making links with these potential collaborative institutions for fruitful results
- Presentations need more time so better to arrange them in a concurrent session so that more time is given for all presentations
- Let papers be prepared and presented in thematic manner (avoid fragmentation); Presented number of papers must consider number of days; Progress change made during consecutive workshop revealed

Annexes II: Abstracts

Models of care to improve retention in care in Ethiopia: a mixed-methods study

Yibeltal Assefa, Lut Lynen, Edwin Wouters, Freya Rasschaert, Koen Peeters, Wim Van Damme

Background: Patient retention, defined as a continuous engagement of patients in care, is one of the crucial indicators for monitoring and evaluating the performance of antiretroviral treatment (ART) programs. It has been identified that suboptimal patient retention in care is one of the challenges of ART programs in many settings. ART programs have, therefore, been striving hard to identify and implement interventions that improve their suboptimal levels of retention. The objective of this study was to develop a framework (model of care) for improving patient retention in care.

Methods: A mixed-methods study, based on the *positive deviance approach*, was conducted in Ethiopia in 2011/12. Quantitative data were collected to estimate and compare the levels of retention in care in nine health facilities. Key informant interviews and focus group discussions were conducted to identify a package of interventions implemented in the health facilities with relatively higher or improving levels of retention.

Results: Retention in care in the Ethiopian ART program was found to be variable across health facilities. Among hospitals, the poorest performer had 0.46 (0.35, 0.60) times less retention than the reference; among health centers, the poorest performers had 0.44 (0.28, 0.70) times less retention than the reference. Health facilities with higher and improving patient retention were found to implement a comprehensive package of interventions: (1) retention promoting activities by health facilities, (2) retention promoting activities by community-based organizations, (3) coordination of these activities by case manager(s), and (4) patient information systems by data clerk(s). On the contrary, such interventions were either poorly implemented or did not exist in health facilities with lower retention in care. A framework to improve retention in care was developed based on the evidence found by applying the *positive deviance approach*.

Conclusion: A framework for improving retention in care of patients on ART was developed. We recommend that health facilities implement the framework, monitor and evaluate their levels of retention in care, and, if necessary, adapt the framework to their own contexts.

HEPATOPROTECTIVE ACTIVITY OF AQUEOUS SEED EXTRACT OF *NIGELLA SATIVA* AGAINST HIGHLY ACTIVE ANTIRETROVIRAL THERAPY INDUCED HEPATOTOXICITY IN RATS

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Background: Liver is a metabolically active organ responsible for many vital life functions. It performs many activities that are critical for survival. Due to its important activities, the liver is exposed to a number of insults and is one of the body's organs most subject to injury. In spite of tremendous advances in modern medicine, there are hardly any reliable drugs that protect the liver from damage and/or help in regeneration of hepatic cell. It is, therefore, necessary to search for effective and safe herbal drugs for the treatment of liver disease to replace currently used drugs of doubtful efficacy and safety.

Aim of the study: to investigate the hepatoprotective activity of aqueous extract of *Nigella sativa* seed in highly active antiretroviral therapy (Lamivudine, Zidovudine and Efavirenz) administered rats.

Materials and Methods: sixty rats weighed between 150-200g were randomly divided into six groups and each group comprised of ten rats. Rats in group I were administered with distilled water. Rats in group II were administered with highly active antiretroviral therapy only. Rats in groups III - VI were administered 100, 200, 400 and 800 mg/kg *Nigella sativa* plus highly active antiretroviral therapy respectively. The treatments were given orally for 28 consecutive days.

On the 29th day, all rats were sacrificed under light diethyl ether anaesthesia; blood samples were collected for the assessment of biochemical parameters, while liver tissue was used for histopathological assessment.

Results: Serum levels of liver enzymes ALT, AST, ALP, and GGT were significantly ($p < 0.05$) increased and albumin concentration was significantly decreased in animals treated with highly active antiretroviral therapy as compared to the normal control. Histopathological observations also revealed severe damage in the structure of liver tissue in animals administered with highly active antiretroviral therapy. Treatment of highly active antiretroviral therapy exposed animals with *Nigella sativa* showed marked improvement in both biochemical and histopathological findings. Rise in liver enzymes was almost restored to normal in animals treated with *Nigella sativa*.

Conclusion: *Nigella sativa* through its antioxidant activity effectively protects highly active antiretroviral therapy induced liver toxicity.

Key Words: HAART, Nigella sativa, Liver enzymes, hepatoprotective

Title: Biomarkers for TB in the context of HIV infection in Ethiopia

Abstract

Tuberculosis remains to be one of the severe infectious diseases, especially in developing countries. Universal and specific biomarkers for TB could accelerate the development of novel diagnostics and therapies for TB, which are urgently needed to control the epidemic effectively. In the series of several studies we executed, several candidate biomarkers for latent and active TB in the context of HIV infection have been identified

Our study design for testing novel *Mtb* antigens, revealed combined measurement of specific cytokines (IFN- γ , TNF- α , IL-6 and IL-10) in response to a subset of antigens (Rv0081, Rv2629, Rv1733c, Rv2006) could be a promising path to develop immunodiagnostics.

We also presented data, which suggest combined measurement of IFN- γ , IFN γ -17, and IP-10 in response to ESAT-6/CFP-10 could be useful immune markers for the diagnosis LTBI; IL-2 and IP-10 for the diagnosis of active TB; and IFN- γ , IL-17, MIP-1 α , and IL-10 to discriminate latent and active TB. In addition, FCGR1A, TIMP-2, IL-7R and CD8A whole blood genes could be useful to classify active TB in HIV patients

We showed that IL-2, IFN- γ and IP-10 in response ESAT-6/CFP-10; and the leukocyte subsets (TLC, WBC, neutrophil) to be useful markers to monitor treatment in HIV negative TB patients. Similarly, IL-10 and MIP-1 α in response to ESAT-6/CFP-10 may assist to monitor TB treatment and HAART.

In summary, whereas we feel that these identified biomarkers will have significant contribution towards TB control in the future, the effects of other potential confounding factors including endemic infections such as malaria and helminthes, granulomatous disease, host genetics, and *Mtb* lineages need to be addressed before these new biomarkers are moving to clinical practices.

Thus, we propose context-dependent validation studies by comparing findings from prospective cohorts from different epidemiological settings and populations with samples and data collected in a standardised way. The ideal approach for this will be the GC-6-74 TB consortium repository samples which consists of five African countries including Ethiopia, Uganda, South Africa, The Gambia and Malawi.

We suggest further biomarker research by including extrapulmonary TB patients and children where the need of better TB diagnostics is enormous; and from other easy to access specimens including urine, saliva and sputum. To increase the efficiency of biomarker discovery and consecutively to deliver novel clinical tests, there is a need of better understanding of the TB biomarker research process (from study design to validation). Nonetheless, research aimed to understand host-pathogen interactions, the interplay between innate and adaptive immune responses, and the complex cytokine interplay need to be continued.

Key words: Tuberculosis, HIV/AIDS, Biomarkers, Immunologic, Transcriptomic

Prevalence of depression and associated factors in people living with HIV/AIDS; Tigray, north Ethiopia:

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Introduction: Mental disorders associated with HIV/AIDS can result from the psychological impact of having a fatal disease, or stem from the effects of psychosocial stressors associated with the illness. They can also result from actual neurological changes in the physical and chemical structures of the central nervous system that occur as a result of the HIV virus, opportunistic infections, or related treatments. Most HIV positive psychiatric patients actually suffer from multiple disorders and Depression is the most frequently observed disorder among HIV/AIDS patients (1-5). However, the magnitude of depression and associated factors among PLWHA was not adequately addressed in our context. Therefore, our study was intended to fill this research gap there by help clinicians and other stakeholders be aware of and plan appropriate strategies and prevent the high suicidal rate as a result of depression related to HIV/AIDS.

Methodology

Study Design and Area: Institution based cross-sectional study was conducted from November, 2011 to July, 2012 among patients attending HIV/AIDS (PLWHA) at selected zonal Hospitals in Tigray region.

Study Population: People living with HIV/AIDS attending in the six zonal hospitals were the source and people living with HIV/AIDS who had been attending the HIV/AIDS clinics in the selected zonal hospitals were the study population. Sample size was calculated to be 269 using single population proportion formulas: considering 95% confidence interval, prevalence of depression 20%, and 5% precision with 10% contingency. This number was proportionally distributed to the three zonal hospitals. Eligible patients were those 18 years and older, HIV-positive & attended the HIV clinics for 6 months and stable enough to complete the study interview. Patients with a major problem of cognition and/or communication difficulties were automatically excluded. Ethical clearance was secured from the Tigray region health bureau.

Data collection: Patients were interviewed using the 21 item Hamilton's depression scale Questionnaire. Six data collectors and three supervisors were involved in the data collection after three days training on the data collection tool.

Analysis: The collected data was entered, cleaned and analyzed using SPSS, version 19.0. Levels of depression were calculated among various subgroups of patients. The possible associations of the presence and severity of depression with socio-demographic variables was explored.

Result and Discussion: In this study, 269 subjects were participated & 142 (52%) were females, 213 (79.2%) from urban area. one hundred twenty nine, 129 (48%) were married, majority

(80.4%), 60(22.3%) were unemployed. and 229(85.2%) had a minimum of primary education. In addition, out of 109 respondents whose age range was b/n35-44:59 were normal while 42 and 8 had mild and moderate status of depression respectively (Table-1).

In this study the 118(43.9%) of the total respondents were depressed. This is in line with studies from Jamaica (43%), Mali (45.8%), and India (51.1%) (6, 7, 8) In addition, a statistical significant association was found between depression and residence in this study, that is, urban participants were found to be more depressed than rural. This is in contrast with a study conducted in Coastal South India (8). This could be because of the difference in living standard and cultural view of the society.

Lower class participants were found to be depressed and this is in line with a study from India (8). Furthermore; we found that those who were unemployed and governmental employed had depression than the self-employed ones. This might be because of worrying of insecurity by the unemployed ones and stigma and discrimination from the working environment for the governmental employees.

Table1: Depression status versus socio-demographic characteristics among PLWHA in zonal hospitals, Tigray, Ethiopia, 2012, (n=269)

Variables	Depression		
	Normal	Mild	Moderate
Age(n=269)			
18-24	7	2	2
25-34	50	22	7
35-44	59	42	8
45-54	27	21	3
55-64	8	9	2
Sex(n=269)			
Male	66	49	12
Female	85	47	10
Maritalstatus(n=269)			
Single	35	14	4
Married	82	43	4
Separated	5	11	1
Divorced	14	15	8
Widowed	15	13	5
Address(n=269)			
Urban	108	86	19
Rural	43	10	3
Income(n=269)			
<200ETB	6	11	4
200-400ETB	19	5	1
401-600ETB	40	18	4
600-1000ETB	37	28	8
>1000ETB	49	34	5
Educationalstatus(n=269)			

Illiterate	20	8	2
Literate(Basic)	7	2	1
Primary	49	30	7
Secondary	37	19	5
Diploma	11	17	4
Bachelors'	27	20	30
Occupational status(n=269)			
Unemployed	26	23	11
Employed by governmental	32	38	4
Employed by private sector	9	3	2
Self employed	84	32	5
Religion(n=269)			
Orthodox	137	84	17
Islam	14	12	5

Table 2: Binary logistic regression analysis result of depression status among PLWHA in Zonal hospitals, Tigray, Ethiopia, 2012.(n=269)

Variable	Depression		Crude OR(95%C.I)	Adjusted OR(95%C.I)
	Normal	Depression		
Age(n=269)				
18-24	7	4	0.57(0.28,11.85)	
25-34	50	29	0.58(0.035,9.627)	
35-44	59	50	0.085(0.052,13.89)	
45-54	27	24	0.89(0.053,15.0)	
55-64	8	11	1.00	
Sex(n=269)				
Male	66	61	1.38(0.85,2.24)	
Female	85	57	1.00	
Address(n=269)				
Urban	108	105	3.2(1.6,6.32)*	3.19(1.5,6.65)*
Rural	43	13	1.00	
Marital status n =269				
Single	35	18	0.43(0.18,1.04)	
Married	82	47	0.48(0.22,1.04)	
Separated	5	12	2.0(0.57,6.96)	
Divorced	14	23	1.37(0.53,3.55)	
Widowed	15	18	1.00	
Income(n=269)				
<200ETB	6	15	3.14(1.12,8.85)*	4.43(1.35,14.58)*
200-400ETB	19	6	0.397(0.15,1.089)	0.96(0.299,3.06)
401-600ETB	40	22	0.69(0.35,1.35)	1.40(0.63,3.12)
600-1000ETB	36	36	1.26(0.67,2.35)	2.40(1.14,5.05)
>1000ETB	49	39	1.00	

Education status(n=269)				
Illiterate	20	10	0.59(0.23,1.50)	
Literate(Basic)	7	3	0.50(0.12,2.17)	
Primary	49	37	0.89(0.44,1.78)	
Secondary	37	24	0.76(0.36,1.62)	
Diploma	11	21	2.24(0.89,5.61)	
Bachelor	27	23	1.00	
Occupation(n=269)				
Unemployed	26	34	2.97(1.56,5.63)*	2.74(1.34,5.57)*
Gove Employed	32	42	2.98(1.63,5.43)*	3.56(1.73,7.30)*
Private Employed	9	5	1.26(0.39,4.02)	1.49(0.44,5.00)
Self employed	84	37	1.00	

CONCLUSION: In summary, our study attempted to elicit information of depression among PLWHA. The magnitude of depression in PLWHA on ART was found to be 43.9%. It was positively associated with urban dwellers, with lower socio-economic class, un- employed, and government employees. Hence, depression is highly prevalent among PLWHA on ART which is still under diagnosed and under treated. Thus, there is a need to incorporate mental health service as an integral component of HIV care.

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Annex IV: power point presentations