Ethiopian Medical Laboratory Association (EMLA) 20th Annual Conference and Continuing Professional Development (AC - CPD)

50th Anniversary and Golden Jubilee

‘Laboratory Medicine: The Gate to Better Health’

ABSTRACT BOOK
9 – 10 May 2015
Ghion Hotel
Addis Ababa, Ethiopia
Acknowledgement

The Ethiopian Medical Laboratory association (EMLA) would like to acknowledge the following organizations and institutions with gratitude for their financial support in the preparation and success of the 20th annual conference and continuing professional development (AC - CPD).

1. The Federal Ministry of Health (MOH)
2. Ethiopian Public Health Institute (EPHI)
3. Food, Medicine and Healthcare Administration and Control Authority (FMHACA)
4. World Health Organization-Ethiopia (WHO-Ethiopia)
5. Ethiopian Medical Association (EMA)
6. Centers for Disease Control – Ethiopia (CDC-Ethiopia)
7. Jhpiego, an affiliate of Johns Hopkins University-Ethiopia
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Dear Conference Participants,

On behalf of the Executive Board of Ethiopian Medical Laboratory Association (EMLA), and the 20th annual conference organizing committee, it is with great pleasure to welcome you to our highly anticipated conference of 2015. This conference will take place at Ghion Hotel, Addis Ababa, Ethiopia, from May 09-10, 2015. The theme of this year’s annual conference is ‘Laboratory Medicine-The Gate to Better Health’. Dignitaries’ form FMoH, Laboratory Medicine professionals, development partners and suppliers at all levels are expected to participate. During your stay at the conference, we will celebrate EMLA’s 50th year anniversary and Golden Jubilee in which its contribution in advancing laboratory medicine service, training and research in Ethiopia will be highlighted. As usual, scientific sessions from our esteemed colleagues and exhibitors will make major share of the event. The scientific program will cover a wide range of topics that includes sessions of panel discussion on sub-thematic areas followed by state of the art lecture of Continuing Medical Education and other topics pertaining to Haematology, Medical Microbiology, Virology, Immunology, Public Health Epidemiology, Clinical Chemistry/Biochemistry, Molecular Biology, Health Laboratory Management and Quality Assurance. There will going to be 47 abstracts for presentation: 24 oral and 23 poster presentations. Uniquely, this year there will be parallel oral presentations. You can follow the track of your interest. These scientific presentations are expected to make input to the evidence based practice of patient care. This is an ideal opportunity to share knowledge and gain deeper insight into all aspects of Laboratory Medicine not only by participating in the conference, attending oral and poster presentations, but also by visiting the exhibitions where all the latest technological advances in laboratory medicine will be displayed. I also feel that this annual conference will create an environment where you will make networking with your domestic as well as international peers. I am certain that the program will please all of you. Customary to our annual conference, the event will culminate with business meeting of the general assembly. Please be active participant in all of the events.

With Best Regards,
Gemeda Abebe (PhD)
President, EMLA
Oral Presentations
AB 01: Xpert MTB/RIF Assay for Diagnosis of Pulmonary Tuberculosis in Sputum Specimens in Remote Health Care Facility

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Abstract

Background: Xpert MTB/RIF assay is considered as a great advance over conventional smear and culture in the diagnosis of TB and MDR-TB by simultaneous detection of M. tuberculosis and rifampicin resistance bacilli. However little information regarding the performance characteristics of Xpert MTB/RIF assay is available in Ethiopia.

Objective of the Study: To evaluate the performance of Xpert MTB/RIF assay compared to conventional sputum smear and culture methods for the diagnosis of pulmonary tuberculosis at Karamara hospital, Jigjiga.

Methods: A paired expectorated sputum samples were obtained from 227 consecutively recruited patients with signs and symptoms of suggestive of tuberculosis at Karamara hospital during December to May 2014. Sputum samples were tested directly by Ziehl-Neelsen staining and Xpert MTB/RIF assay without NALC-NaOH decontamination, and sputum samples were cultured for isolation of TB bacilli by conventional methods. Diagnostic performance of Xpert MTB/RIF assay and AFB smear microscopy was calculated against culture as the gold standard.

Results: Overall 25.5% (58/227) samples were positive for Mycobacterium tuberculosis complex (MTBC) by MGIT and /or LJ media of which 36.2 % (21 / 58) and 65.5% (35 / 58) were positive by AFB smear microscopy and Xpert MTB/RIF respectively. The sensitivity, specificity, positive and negative predictive value of Xpert
MTB/RIF assay were 65.5% (95% CI: 53.3-77.7%), 96.3% (95% CI: 93.4-99.2%), 86.4% (95% CI: 76.2-96.5%), and 88.6% (95% CI: 83.9-93.3%) respectively. Eighteen of 58 (31%) cases, that were smear microscopy negative, were positive by Xpert MTB/RIF assay.

Conclusions: Though Xpert MTB/RIF assay demonstrated high sensitivity in detecting MTBC in sputum specimens compared with conventional AFB smear microscopy, it demonstrated suboptimal sensitivity in smear negative patients compared to conventional culture.

Keywords: Xpert MTB / RIF assay, NPV, PPV, Sensitivity, Specificity

AB 02: Evaluation of Light Emitting Diode Fluorescent Microscopy for the Diagnosis of Smear Negative Pulmonary Tuberculosis in Bleach Treated Sputum in High Burden Settings

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Abstract

Introduction: Smear-negative pulmonary tuberculosis (SNPTB) is an increasing problem worldwide. Its diagnosis remains a challenge especially in developing countries like Ethiopia, where majority of SNPTB has been diagnosed only on the basis of clinical and chest radiographic findings which lead to high rate of misdiagnosis. Though not practically implemented for conventional Ziehl-Neelsen method due to Safety issue, little is known about the effect of bleach concentration for the detection of acid fast bacilli by fluorescent microscopy. Thus, this study is intended primarily to determine effect of simple bleach concentration method for the diagnosis of smear-negative tuberculosis by fluorescent microscopy.
**Objective:** To evaluate the diagnostic yield of fluorescent microscopy for the detection of M. tuberculosis in bleach treated smear negative sputum samples.

**Methods:** A cross-sectional comparative study was conducted at Jimma University Specialized Hospital from February 14 to August 1, 2014. A total of two hundred and two patients suspected of having SNPTB were enrolled. The morning sputum was treated with 5% bleach and centrifuged at 3000g for 15 minutes. The concentrated sediment was used for LED-FM. Data was analysed by using SPSS version 20.0. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the assay with 95%CI was calculated by using culture as reference method.

**Results:** Complete data were available for 185 samples. The detection rate of LED-FM was 7.6% (14/185) of the suspected cases. L-J media supported the growth of mycobacteria in 4.9% (9/185) and that of MGIT 960 in 8.6% (16/185) of the cases. Based on the gold standard method (combination of L-J and/or MGIT 960 media), 16(8.6%) cases were confirmed as smear negative tuberculosis. LED-FM on bleach treated specimen had 25% sensitivity, 94.1% specificity, 28.6% PPV and 92.9% NPV.

**Conclusion:** A significant proportion of suspected cases; missed on conventional Ziehl-Neelsen method; were detected on bleach treated LED-FM.

**Keywords:** Smear negative pulmonary tuberculosis, Fluorescence microscopy, Bleach pre-treatment
AB 03: Performance Evaluation of Laboratory Professionals on TB Microscopy; Shashemene and Hawassa Town Southern, Ethiopia
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Abstract
Background: Microscopic diagnosis of Ziehl-Neelsen stained sputum by microscopists has remained the best routine laboratory method for the diagnosis of tuberculosis (TB). However, detection and identification of TB require skilled laboratory personnell.
Objective: The aim of the study was to assess the performance of laboratory professionals in detecting TB bacilli at Shashemene and Hawassa town health institutions.

Methods: A cross-sectional study design was employed to evaluate the quality of TB smear microscopic examination among a total of 81 laboratory professionals working in public and private health facilities. A standardized pre-validated slide panel and questionnaires were distributed to laboratory professionals. Agreement in detecting of TB bacilli Sensitivity, specificity and predictive values of readings were assessed using SPSS version 16.0

Results: Among the 81 participant 11(13.6%) correctly reported all panel slides, 70 (86.4%) missed at least one slides. A total of 29.75 % (241/810) error was reported that include major errors of 2.22 % (13HFN; 5 HFP) and minor errors of27.5 % (25 LFN; 60 LFP, and138QE). The sensitivity, specificity of participants in detecting TB bacilli as compared to the reference reading were 91.97%, 80.00%, and respectively. Overall agreement of participants with the reference reading on TB detection was 95.18% (Kappa = 0.73).

Conclusion: Even though the study revealed only 2.22% major error, the overall 29.75% error made due to minor errors are a great concern for countries like Ethiopia where most of the suspected TB cases may have miss diagnosed at the onset of disease. The country is now
Improved health facilities and better awareness for patients with suspected TB to look for treatment early, however might not be identified by sputum smear microscopy if such errors not solved on time.

**Keywords:** TB microscopy; Performance test; Laboratory professionals; Southern Ethiopia

**AB 04: Molecular epidemiology and drug resistance pattern of Mycobacterium tuberculosis in Northwest Ethiopia: resource limited region**

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**Abstract**

**Background:** Tuberculosis (TB) is an important public health problem in Ethiopia. According the 2013 WHO report, the prevalence and incidence of tuberculosis is 224 and 247 per 100 000 population respectively. Ethiopia is among the 10 high TB, HIV and MDR-TB burden countries of the world. The dominant cause of tuberculosis in Ethiopia is M. tuberculosis. Diversity in M. tuberculosis strains differ in their rate of mutation, immunogenicity and virulence.

**Objectives:** This study is designed with the objectives of determining the genetic diversity and drug resistance profiles of Mycobacterial strains in Benishangul Gumuz Region (BGR) and Awi zone of Amhara region, North West Ethiopia.

**Materials and Methods:** The study areas are Benishangul Gumuz region and Awi zone of Amhara. Health care facilities based cross-sectional study was conducted with a sample size of 112 AFB smear positive cases for drug susceptibility testing and molecular analysis. All newly diagnosed AFB smear positive cases were included conveniently until the sample size is achieved.
AFB microscopy, egg based LJ medium culture, RD9 deletion typing and Spoligotyping for identification and 24 well-plate based 7H10 medium for drug susceptibility testing were laboratory techniques employed during a period of April 2012 to June 2014.

**Results:** Out of 87 isolates eligible for DST 14 (16.1%) isolates became resistant for at least one anti-tuberculosis drugs tested. Two or more drug resistance was observed in 5(5.7%) with MDR-TB prevalence of 2(2.3%).

The highest mono resistance was observed for INH among 6(6.9%) isolates followed by 2(2.3%) ETB and 1(1.15%) STM mono resistance. There was no mono resistance for RIF.

The overall drug resistance was found to be 14/87(16.1%) with 2/12(16.7%) among retreatment and 12/75(16.0%) among new cases

Spoligotyping was done on 75 isolates and 39 distinct spoligotype patterns were identified with 46 (61.3%) isolates formed ten clusters containing 2-11 isolates. Based on comparison on SITVITWEB database 33(44.0%) were “New” and 42(56.0%) “Previously defined” strains. Strains with highest number of isolates clustered were SIT289, SIT53, SIT149, SIT37, SIT134, and SIT47. Lineage level classification revealed that Lineage 4 predominated with 55(73.3%) of the strains identified.

**Conclusion and recommendations:** Although current level of Multidrug resistance tuberculosis seems to be low, the risk for a sudden increase is high because of the relatively higher mono resistance to INH and availability of strains like lineages 2. Therefore, it is essential to maintain high quality DOTS in the area to keep the drug resistance of tuberculosis low in remote settings of the country like Benishangul Gumuz region and its surroundings.

**Key words:** TB, Drug resistance, Mycobacterial diversity, Remote setting, Ethiopia
AB 05: Distribution and availability of essential items for Smear Microscopy in Tuberculosis Diagnosis in Amhara region, Ethiopia

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Abstract

Background: Adequate supplies of tuberculosis laboratory reagents and consumables are necessary for tuberculosis diagnosis and monitoring of treatment response. Objective of the Study: This study was initiated to assess the distribution and stock levels of laboratory reagents and consumables used in tuberculosis control (for smear microscopy in tuberculosis diagnosis and follow up of treatment success) in public health centers of Amhara region, Ethiopia.

Methods: A cross-sectional study was conducted in 82 health centers providing sputum microscopy services from April 28 to May 26, 2014. Stock levels were calculated and distribution of reagents and consumables assessed.

Results: Thirty three (40.2%) health centers were under stocked for at least one of the key items for Ziehl-Neelsen (ZN) smear microscopy at the time of visit. Fifteen (18.3%) health centers had no stocks of at least one of the key items (methylene blue 9 (11%), carbol fuchsin 9 (11%), acid alcohol 7 (8.5%) and sputum cups 3 (3.7%)). Of the 82 health centers, 77 (93.9%) did not fulfill the criteria for effective distribution of ZN smear microscopy reagents and consumables.

Conclusions: There were many health centers that had no or only low stocks of key ZN smear microscopy reagents and consumables as a result of ineffective distribution system. This seriously hinders TB control in the area disrupting early diagnosis and treatment follow up services. It is necessary to strengthen supply chain management to ensure uninterrupted TB diagnostic service.

Keywords: Tuberculosis, stock out, reagents, Ethiopia
AB 06: A Bird’s Eye View on the Availability and Utilization of Hemoglobin A1C (HbA1C) Testing Service in Ethiopia

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Abstract

Background: Hemoglobin A1C is the standard test for monitoring glycemic control among diabetes patients. More recently, WHO has also approved the use of HbA1C for the diagnosis of diabetes mellitus provided that there is stringent quality assurance and assays are standardized to international references. The availability of HBA1C in resource limited countries is however very limited for several reasons. The burden of diabetes in Ethiopia is increasing; however, HBA1C is not easily accessible.

Objective of the Study: To assess the availability of HbA1c test in Addis Ababa and selected university hospitals in other parts of Ethiopia, and identify factors influencing the availability of the service.

Methods: An exploratory interview was conducted in February 2014 in three freestanding laboratories and three hospitals in Addis Ababa. Telephone interview was made to diabetic physicians working in Gondar, Jimma and Mekele university hospitals. Structured questionnaires were administered to heads and/or owners of three freestanding laboratories in Addis Ababa. In depth Interview (IDI) were conducted with senior clinicians providing diabetic care in private and public health facilities in Addis Ababa.

Results: Hemoglobin A1c determination service is not in the test menu of the six tertiary hospital laboratories (three in Addis Ababa and three outside Addis Ababa). The three freestanding laboratories performed 12,000, 2,500, and 1,300 HbA1c tests in the previous 12 months period. The three laboratories used either of Enzyme Immunoassay (EIA) and Immunoturbidimetric assays for the determination of HbA1c. One freestanding laboratory uses Abbott
Architect, and two freestanding laboratories uses Beckman Coulter HbA1C reagents which are all National Glycohemoglobin Standardization Program (NGSP) certified methods and tests which are tractability to the Diabetes Control and Complications Trial (DCCT) reference. Those freestanding laboratories charge 212, 207, and 188 ETB per hemoglobin A1C test. Two of these freestanding laboratories had encountered stock out of reagents in the previous one or two months. Low utilization rate by physicians, delays during importation caused by regulatory and customs and presence of irregularities of supplies availability by importers are the major challenges for delivering uninterrupted HbA1C testing service to clients. Unreliable HbA1C test results and cost of the test are two major factors contributing to underutilization of HbA1c testing service in the monitoring of glycemic control by physicians.

Conclusions: HbA1C level is determined by laboratories in Addis Ababa using NGSP certified methods but it is not known and utilized by clinicians providing diabetic care. A concerted national effort is required to improve the availability and utilization of reliable and affordable HbA1C testing service and quality of diabetic patient care through the active engagement of diabetic patients, clinicians, tertiary university hospitals, freestanding laboratories, importers, and regulatory authorities.

Keywords: Hemoglobin A1c, glycaemia control, Ethiopia

AB 07: New foci for Cutaneous leishmaniasis - Ankesha District, Amhara region, Ethiopia

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Abstract

Background: Cutaneous leishmaniasis (CL) is found in more than 80 countries in the world. It is under reported due to absence of surveillance system in middle and low income countries.
An estimated 0.7 million to 1.3 million new cases occur worldwide annually. Ethiopia is one of the ten high burden countries for CL. It is endemic in the highlands of Ethiopia and more than 99.9% is caused by Leishmania aethiopica. CL is not reported in Ankesha District before.

**Method:** Case control study was done. 37 cases and 74 controls were enrolled. We used WHO case definition to identify cases. Skin slit lesion sample was taken from 25 cases. Identification of Leishmania parasite was done by smear microscopy and culture. PCR; restriction fragment length polymorphism was done for species identification. Structured questionnaire was used to collect socio demographic characteristics and possible risk factors. Bivariate and multi variate analysis was done.

**Result:** The median age of the study participant was 16 years old with a range of 3 to 66. Males and 10-19 years age group were most affected. Two clinical form of CL were observed; 33 (89%) localized Cutaneous leishmaniasis (LCL) and 4 (11%) diffused cutaneous leishmaniasis (DCL). All of CL lesions were observed on the exposed parts of the body such as the face and upper and lower limbs. Number of lesion ranged from 1 to multiple (3 and above). A single lesion was found in 10(27%) of the cases, greater than half 25 (67.5%) of the cases had 2-3 lesions and only 2 (5.5%) cases showed multiple (more than 3) lesion. 16 samples were positive by smear and culture. The proximity of the house to the habitat of hyraxes OR: 17(95% CI: 6.0 - 44.8) and spent evening time outdoor OR: 5.0 (95% CI 2.0-12.5) had significantly associated with developing the disease. The identified parasite isolate is Leishmania aethiopica. The community did not know the cause, transmission and prevention mechanism of CL and there was no local name for the disease.

**Conclusion:** Cutaneous leishmaniasis found in Sositu gimgabet kebele, Ankesha district and it has been appeared in this kebele recently. The causative agent for the disease is Leishmania aethiopica. The presence of hyrax in the kebele was found to be the risk factor. The identified risk factor in the area and the possible cause
of the outbreak need further study. The presence of Cutaneous leishmaniasis in Ankesha, that was not known to be endemic for the disease before indicates the need of leishmaniasis control program in the District to limit its expansion.

**Key words:** Cutaneous leishmaniasis, Ankesha, Ethiopia

**AB 08: Evaluation of non-instrumented nucleic acid Amplification by loop-mediated isothermal amplification (NINA-LAMP) for the diagnosis of malaria in Northwest Ethiopia**

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**Abstract**

**Background:** Malaria is a major public health problem in sub-Saharan African countries including Ethiopia. Early and accurate diagnosis followed by prompt and effective treatment is among the various tools available for prevention, control and elimination of malaria. This study aimed to evaluate the performance of non-instrumented nucleic acid amplification loop-mediated isothermal amplification (NINA-LAMP) compared to standard thick and thin film microscopy and nested PCR as gold standard for the sensitive diagnosis of malaria in Northwest Ethiopia.

**Methods:** A cross-sectional study was conducted in North Gondar, Ethiopia from March to July 2014. Eighty-two blood samples were collected from malaria suspected patients visiting Kola Diba Health Centre and analysed for Plasmodium parasites by microscopy, NINA-LAMP and nested PCR. The NINA-LAMP method was performed using the Loopamp™ Malaria Pan/Pf detection kits for detecting DNA of the genus Plasmodium and more specifically Plasmodium falciparum using an electricity-free heater. Diagnostic accuracy outcome measures (analytical sensitivity, specificity, predictive values, and Kappa scores) of NINA-LAMP and microscopy were compared to nested PCR.
**Results:** A total of 82 samples were tested in the primary analysis. Using nested PCR as reference, the sensitivity and specificity of the primary NINA-LAMP assay were 96.8% (95% confidence interval (CI), 83.2% - 99.5%) and 84.3% (95% CI, 71.4% - 92.9%), respectively for detection of Plasmodium genus, and 100% (95% CI, 75.1% - 100%) and 81.2% (95% CI, 69.9% - 89.6%), respectively for detection of P. falciparum parasite. Microscopy demonstrated sensitivity and specificity of 93.6% (95% CI, 78.5% - 99.0%) and 98.0% (95% CI, 89.5% - 99.7%), respectively for the detection of Plasmodium parasites. Post-hoc repeat NINA-LAMP analysis showed improvement in diagnostic accuracy, which was comparable to nested PCR performance and superior to microscopy for detection at both the Plasmodium genus level and P. falciparum parasites.

**Conclusion:** NINA-LAMP is highly sensitive for the diagnosis of malaria and detection of Plasmodium parasite infection at both the genus and species level when compared to nested PCR. NINA-LAMP is more sensitive than microscopy for the detection of P. falciparum and differentiation from non-falciparum species and may be a critical diagnostic modality in efforts to eradicate malaria from areas of low endemicity.

**Key Words:** nucleic acid, Amplification, diagnosis, malaria

**AB 09: A Comparison of the Sensitivity and Fecal Egg Counts of the Kato-Katz Thick Smear, McMaster Egg Counting Method, and Mini-FLOTAC Technique for the Diagnosis of Soil-Transmitted Helminths**

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**Abstract**

**Background:** In the early 2000s, Giuseppe Cringoli developed the
FLOTAC technique for the detection and quantification of gastro-intestinal parasites in both humans and animals. In public health, this novel technique revealed to be more sensitive for the diagnosis of soil-transmitted helminths (STH; Ascaris lumbricoides, Trichuris trichiura and hookworms) than the Kato-Katz thick smear (Kato-Katz) and McMaster egg counting method (McMaster). However, the FLOTAC is time and labour demanding, and hence it is difficult to perform under field conditions. As a response to this, G. Cringoli has simplified the procedures and recently developed the Mini-FLOTAC. However, there is a lack in empirical data supporting the diagnostic performance of Mini-FLOTAC.

**Objective:** To evaluate the sensitivity of Mini-FLOTAC in comparison to Kato-Katz and McMaster technique for the diagnosis of Soil-transmitted helminths

**Methods:** In the present study, we compared Kato-Katz, McMaster and Mini-FLOTAC for the detection and quantification of STH infections in 200 school age children in Jimma Town, Ethiopia.

**Results:** There was no significant difference in sensitivity across the three methods for the detection of A. lumbricoides (Kato-Katz: 70.4% [60.4; 80.3]; McMaster: 65.4% [55.1; 75.8]; Mini-FLOTAC: 67.9% [57.7; 78.1]) and T. trichiura (Kato-Katz: 70.0% [60.0; 80.0]; McMaster: 75.0% [65.5; 84.5]; Mini-FLOTAC: 83.8% [75.7; 91.8]). For hookworms, Mini-FLOTAC (78.0% [65.4; 90.7]) outcompeted the Kato-Katz thick-smear (46.3% [31.1; 61.6], p = 0.009), and to a lesser extent McMaster (53.7% [38.4; 68.9], p = 0.07). For A. lumbricoides, Kato-Katz (7,623 eggs per gram of stool (EPG) [4,858; 11,233]) smear resulted in higher egg counts compared to McMaster (4,554 EPG [3,059; 6,212], p = 0.002) and Mini-FLOTAC (4,997 EPG [3,455; 6,683], p = 0.01). For T. trichiura (Kato-Katz: 245 EPG [138; 374]; McMaster: 383 EPG [221; 585]; Mini-FLOTAC: 313 [163; 511]) and hookworms (Kato-Katz: 125 EPG [55; 219]; McMaster: 232 EPG [83; 473]; Mini-FLOTAC: 230 [90; 457]) no significant difference in egg counts was observed.
Conclusions: This study indicates that Mini-FLOTAC performance at least as equal as Kato-Katz and McMaster for detection and quantification of STH. However, future research is required to evaluate the performance of Mini-FLOTAC in other groups at risk of morbidity caused by STH, including pre-school age children and women of child bearing, and to estimate the cost of applying this novel technique under field conditions.

Keywords: Sensitivity, Min-FLOTAC, McMaster, kato-Katz, Soil-transmitted helminths

AB 10: GeneXpert MTB/RIF assay for the diagnosis of tuberculous lymphadenitis on concentrated fine needle aspirates in high TB burden settings

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Abstract

Background: In resource poor settings, the diagnosis of tuberculous lymphadenitis (TBL) remains challenging. The routinely used methods (cytology and conventional smear microscopy) are sub-optimal. GeneXpert MTB/RIF assay has been endorsed by the WHO as a replacement for sputum smear microscopy for diagnosis of pulmonary tuberculosis (TB). However, there is still limited information regarding the performance of Xpert for diagnosis of TBL in high TB burden settings.

Objective of the Study: This study was initiated to evaluate the performance of Xpert for the diagnosis of TBL on concentrated fine needle aspirates in Southwest Ethiopia.
**Methods:** Fine-needle aspirate (FNA) was collected from 143 presumptive TBL cases. FNA cytology was done in pathology diagnostic unit and smear microscopy, culture and GeneXpert tests were performed in Jimma University, Mycobacteriology Research Center. The sample was treated with N-acetyl-L-cysteine and centrifuged for 15 minutes at 3000g. The concentrated sediment was used for culture and Xpert test. Culture for M. tuberculosis was considered as the reference standard.

**Results:** Eight cases were excluded from the analysis, since 5 were culture contaminated, 2 were Xpert indeterminate and one was non-tuberculous mycobacteria (NTM) positive. Out of 135 evaluated participants, 67.4% (91/135) were culture confirmed TB cases. Xpert detected M. tuberculosis complex (MTBC) in 61.5% (83/135) of the presumptive TB cases. The sensitivity of the Xpert was 87.4% [95% CI: 80.4-94.3] and specificity 85.4% [95% CI: 75.4-95.4]. Smear microscopy had 25.3% sensitivity and 93.8% specificity. Cytology showed a sensitivity of 80% and specificity of 56.2%. Xpert correctly identified 7 out of 48 culture negative cases, 60 out of 110 smear negative cases and 15 out of 44 cytomorphologically non-TB cases. Among 5 culture contaminated cases, 3 were Xpert positive. Xpert didn’t detect DNA from the NTM isolate. Half of Xpert positive samples were very low grade (28 < Ct < 38). Xpert cycle threshold (Ct) value significantly decreased as AFB smear grade increased. Resistance to rifampicin was identified in 4.9% (4/82) of Xpert positive cases.

**Conclusions:** Xpert test had high sensitivity and specificity for the diagnosis of TBL using concentrated FNA sample. Xpert was also able to identify patients with TBL due to rifampicin resistant TB. In addition, it’s rapid and ease of use makes it suitable for settings where TB is endemic.

**Keywords:** TB lymphadenitis, Xpert, Cytology, Smear microscopy, Fine needle aspirate
AB 11: Phenotypic and Genotypic determination of drug susceptibility and molecular characterization of Mycobacterium tuberculosis isolates at Debre Birhan Referral Hospital, Ethiopia

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Abstract

Background: Globally, Mycobacterium tuberculosis is the leading cause of death from a single infectious disease. Tuberculosis is a major public health problem in Ethiopia, ranking 8th in the list of the world’s 22 high burden countries for tuberculosis in 2012. Multidrug-resistant tuberculosis poses a formidable challenge to control tuberculosis due to its complex diagnostic and treatment challenges.

Objective: To investigate the molecular epidemiology of mycobacterial isolates at Debre Berhan Referral Hospital (DBRH) and to characterize their drug susceptibility pattern phenotypically and genotypically.

Materials and Methods: Sputum samples were collected from smear positive pulmonary tuberculosis patients visiting DBRH from January 2013 to July 2013. The bacteria were isolated on Mycobacterium Growth Indicator Tube liquid media and drug susceptibility was determined phenotypically on this media and genotypically by MTBDRplus. Finally molecular characterization of the isolates was performed by deletion typing and spoligotyping.

Results: A total of 57 smear positive pulmonary tuberculosis patients were included, 46 were new cases. Out of 57 Mycobacterium tuberculosis isolates drug susceptibility was performed only for 45; of which, 14 were resistant to at least one of the four first line drug, isoniazid resistance was predominant (14) followed by streptomycin (5) and ethambutol (5). There were also 3 multi drug resistant cases;
two of them were new cases. There was no any variable which had statistically significant association with resistance at least to one drug. KatG gene, but not inhA gene, responsible for isoniazid resistance and rpoB gene was responsible for rifampicin resistance. There were 40 shared spoligotype and 17 orphan strains; Spoligo International Typing 53 and 149 were dominant strains. The predominant family was T1, which constituting of 21 followed by CAS (10); T3 family (9); LAM 9 (4); T1/H3 (4); family 36 (3); family T1/X1 (3); Beijing (1); family X2 (1) and family 34 (1).

Conclusion: Even though this study was conducted on small sample size, the reported rate of first line drug resistance and the existence of various strain type of Mycobacterium tuberculosis isolate is an indicator for the need of large scale study.

Key words: Drug susceptibility pattern, TB, MGIT, MTBDRplus

AB 12: Genotyping and Molecular Detection of Multi Drug Resistance Mycobacterium Tuberculosis among Tuberculosis Lymphadenitis cases in Addis Ababa, Ethiopia

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Abstract

Background: MDR-TB has emerged as a major public health problem. Worldwide, the proportion of new cases with multidrug-resistant TB (MDR-TB) was 3.5 % and the proportion is higher among people previously treated for TB, at 20.5 % in 2013 and has not changed compared with recent years. Thus a better understanding of drug resistance mechanisms and knowing specific lineages in M. tuberculosis is crucial for the development of rapid methods for drug resistance detection and new anti-TB drugs to treat
MDR-TB / XDR-TB patients.

**Objective:** To analyze the lineages in relation with resistance gene in MDR-TB isolated from Tuberculous Lymphadenitis (TBLN) in Addis Ababa, Ethiopia.

**Methods:** A cross-sectional study design was conducted between July to October, 2014 in Addis Ababa, Ethiopia. Sixty (60) culture positive isolates were taken for analyzing of gene responsible for MDR-TB in relationship with its molecular genotyping. Mycobacterial culture, GenoType MTBDR plus 96 and Spoligotyping were performed. The isolates were characterized using spoligotyping and were compared with the International SpoIDB 4.0 database and SPOTCLUST web based program and the resistance isolates were characterized according to the protocol.

**Result:** Of the total, 5 / 6 (8.3%) of confirmed MDR-TB of TBLN by molecular based GenoType, 3 / 5(60 %) of them complain about cough, the main known classical sign and symptom of TB, in which 3.3 % new cases and 5 % were previously treated cases. This genotype method detected 5 / 60 (8.3 %) MDR, one INH mono resistance among the positive culture isolates from TBLN. Mutation in the rpoB gene encoding β-subunit of RNA polymerase occur in core region RRDR of the rpoB gene as major targets conferring resistance of M. tuberculosis to RIF. Accordingly, mutational pattern analysis of these target gene indicated that, the most common genetic mutation conferring RMP resistance was S531L with the DNA base change TCG(Ser)---TTG (Leu) of the rpoB gene were detected in majority, 4 / 5 (80 %), which shown on the band of MUT3 of our present study. Moreover, the katG gene mutations occur frequently between codons 138 and 328, particularly at codon 315 (katG315) encoding catalase-peroxidase genes as major targets conferring resistance of M. tuberculosis to INH. Thus in the present study, all of the mutation conferring resistance was KatG gene mutants 6/60(100%) which occurred commonly in MDR-strains. Of which most, 4/6 (66.7 %) of MDR-TB confirmed isolates had mutation in the KatG gene S315T1 with codon base change AGC (Ser)---ACC (Thr). Characterization of
MDR-TBLN screened isolates to strain level by spoligotyping lead to the identification of 24 distinct spoligotype patterns shared international types (SIT) with SIT149, SIT53, SIT26 dominant strains identified according to SpolDB4.0.

**Conclusion and Recommendations:** The prevalence of MDR-TB among TBLN patients was relatively high which have great public health impact. Genotyping and molecular detection together have a great contribution in specific MDR drug design and vaccine trial. Hence, we recommend conducting large scale study along with molecular testing such as LPA (Hains) for early detection of the diseases in the community.

**Key Words:** Tuberculosis lymphadenitis, Genotyping MDRTB96plus, Spoligotyping

**AB 13: Multidrug and Heteroresistant Mycobacterium tuberculosis and Associated Gene Mutations in Amhara National Regional state, Ethiopia**

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**Abstract**

**Background:** The prevalence of multidrug resistant tuberculosis among new and retreatment cases in 2011 in Ethiopia were 2.7% and 17.9%, respectively. However, data on heteroresistance and gene mutation profiles of M.tuberculosis were not documented. Objective of the Study: To determine the prevalence of MDR-TB, Heteroresistance and gene mutation profiles of M.tuberculosis isolates found among presumptive MDR-TB cases found in Amhara region, Ethiopia.
Methods: Retrospective cross sectional study was conducted between 2012 -2014. During the study period, 413 tuberculosis positive clinical specimens sent to Bahir dar Regional Laboratory for confirmation to multi drug resistant tuberculosis and all these patients included in our study. Resistance determining genes were analyzed using line probe assay. Susceptibility to anti-TB drugs was defined as hybridization (presence of band) to all the wild type probes and no hybridization (absence of band) to the mutant probes. Absence of hybridization of any WT and/or hybridization of any mutant gene indicate resistance to the respective drugs. Hybridization of WT and mutant gene indicates heteroresistance or mixed infection.

Results: Of 413 M. tuberculosis isolates, 150 (36.3%) were multidrug resistant, 19 (4.6%) were resistant only to rifampicin and 26 (6.3%) resistant to isoniazid. Of 169 rifampicin resistant and 176 isoniazid resistant isolates, only 8 (4.7%) and 2 (1.13%) showed rifampicin and isoniazid heteroresistance, respectively. The possible variables such as gender, age, types of TB and history of TB treatment were not significantly associated with MDR-TB and heteroresistance. Failing of rpoBWT8 gene with correspondingly hybridization of rpoB MUT3 (S531L substitution) accounted for 85 (50.3%) of rifampicin resistant mutations. Among 176 isoniazid resistant isolates, 155 (88.1%) strains had Ser315Thr1 substitution.

Conclusions: High prevalence of drug resistance was found and efforts to reverse the situation should be done. Ser 531 Leu substitution and Ser 315 Thr1 substitution were the highest gene mutation for rifampicin and isoniazid respectively.

Keywords: Multidrug resistance tuberculosis, heteroresistance, gene mutations, Ethiopia
AB 14: Tuberculosis Treatment Restores High Density Lipoprotein Cholesterol (Hdl-C) and Increases Total Cholesterol (Tc) in Patients with Pulmonary Tuberculosis (Tb)

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Abstract

Background: Hypolipidemia is one of the factors contributing in pulmonary TB; cholesterol is an important precursor molecule for synthesis of different hormones and thereby functioning of an immune system and more over for macrophages to uptake and engulf mycobacterium.

Objective: to determine whether TB treatment normalizes the lipid profile strongly affected by pulmonary TB.

Methods: fasting plasma samples of 47 patients with active TB (ATB+), 24 with latent TB infection (LTB+) and 25 healthy controls (LTB-) at baseline again from 47 ATB+ groups after 6 month of treatment visiting Akaki and Kality Health Centers and S. Peter Hospital in Addis Ababa, Ethiopia, were collected and stored for five years at -80 0C. Levels of TC, HDL-C, Low Density Lipoprotein Cholesterol (LDL-C) and Triglyceride (TG) were determined using Cobas Integra 400 Plus. Partial t-test, analysis of variance and student’s t-test were used to compare lipid levels of pre and post treatment, treated TB patients with LTB+ and LTB- groups and to calculate atherogenic indices respectively.

Results: TC, TG, HDL-C, & LDL-C Values were significantly lower in ATB+ as compared to LTB+ and LTB-. But there was no significance difference between LTB+ and LTB- for all lipid profiles. After treatment, the levels of TC, TG and HDL-C (P < .01 for all) and LDL-C (P < .05) remained significantly lower in TB treated patients when compared to healthy controls. However when we compared the
TB treated patients with that of subjects with latent TB infection, there was no significant difference for all lipid profiles between them. The treatment significantly reduced the atherogenic indices TC/HDL-C (P < .05) and log (TG/HDL-C) (P < .01) levels.

**Conclusion**: Our results show that tuberculosis treatment increases TC levels and normalizes HDL-C when compared to subjects with latent TB infection but still lower than healthy controls. Athrogenic indices were reduced after treatment.

**Key words**: Pulmonary Tuberculosis, lipids, anti-TB treatment

**AB 15**: Expired nitric oxide and sputum mycobacterial lipid bodies indicate that pulmonary NO is a double edged sword in tuberculosis

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**Abstract**

**Background**: The variable occurrence of lipid body rich (fat) and poorly replicating (lazy) Mycobacterium tuberculosis bacilli in sputum necessitates an explanation of the environmental signals responsible for these phenotypes. Lipid body rich and poorly replicating Mycobacterium tuberculosis bacilli occur at different frequencies in sputum. In vitro, NO stimulates lipid body (LB) accumulation in M. tuberculosis via the dormancy-associated regulon [DosR (DevR)]. We hypothesized that the percentage of lipid body-positive acid fast bacilli (%LB+AFB) in sputum correlates with fractional expired NO (FeNO) and that greater LB responses to NO might be associated with poorer responses to chemotherapy.

**Methods**: In Gondar, Ethiopia, 73 patients with smear positive tuberculosis were recruited and assessed for sputum %LB+AFB, FeNO and HIV status. Weight gain was determined at 7 months in 9 patients as a measure of treatment response.
Results: %LB+AFB in patients’ sputum significantly associated with Log10FeNO concentration (p<0.001) with a linear relationship (r² = 0.209, p<0.001). Weight gain showed a negative linear association with %LB+AFB at both 2 (r²=0.196) and 7 months (r²=0.445) of treatment. Stronger correlations of Log10FeNO concentration with %LB+AFB were apparent after stratification for HIV status with a shallower negative gradient for HIV positives.

Conclusions: M. tuberculosis LB frequencies in sputum are significantly associated with patient FeNO levels in a manner consistent with bacterial DosR activation by NO in the lung. DosR activation is associated with antibiotic tolerance and may compromise treatment response while bactericidal effects of NO should be beneficial. We suggest that NO is a double-edged sword enabling mycobacterial clearance at high levels but provoking antibiotic tolerance when sub-lethal.

Keywords: Tuberculosis; expired NO; mycobacterial lipid bodies; DosR regulon, treatment response

AB 16: Anemia among pregnant women in Southeast Ethiopia: prevalence, severity and associated risk factors

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Abstract

Background: Anemia is a significant public health problem in developing countries, particularly in pregnant women. It may complicate pregnancy, sometimes resulting in tragic outcomes. There is a lack of information on the magnitude and associated factors of anemia among pregnant women in Southeast Ethiopia.
**Objective of the Study:** The aim of this study to determine the prevalence of anemia and assess associated factors among pregnant women attending antenatal care (ANC) at Bisidimo Hospital in Southeast Ethiopia.

**Methods:** A facility-based cross-sectional study, involving 258 pregnant women attending ANC in Bisidimo Hospital, was conducted from March to June 2013. Socio-demographic, medical and obstetric data of the study participants were collected using structured questionnaire. Hemoglobin was measured using a hematology analyzer (CELL DYN 1800 (Abott Laboratories Diagnostics Division, USA) and faecal specimens were examined using direct and concentration techniques to detect intestinal parasites. Anemia in pregnancy was defined as hemoglobin <11g/dl. Data were analyzed using SPSS version 20 for windows (SPSS, Chicago, IL, USA).

**Results:** A total of 258 pregnant women, age ranging 18 to 37 years (mean age 26.9 ± 4.8), were included in this study. Overall, the prevalence of anemia was 27.9%, of which 55% had mild anemia. Rural residence (AOR =3.3, 95% CI: 1.5-7.4), intestinal parasitic infection (IPI) (AOR =2.5, 95% CI: 1.3-4.8) and history of heavy cycle (AOR =2.7, 95% CI: 1.3-1.7) were predictors of anemia among the study participants.

**Conclusions:** This study showed moderate prevalence of anemia among the pregnant women, with a sizable proportion having severe anemia. Routine testing of pregnant women for IPIs and creating awareness on factors predisposing to anemia is recommended.

**Keywords:** Anemia, Associated factors, pregnant women, Southeast Ethiopia
AB 17: Prevalence of HIV among exposed infants in Amhara Regional state, Ethiopia

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Abstract

Background – HIV /AIDS has been a public health problem since its discovery. Vertical transmission of HIV can occur in utero, during labor or after delivery. The aim of this study was to determine the prevalence of HIV among exposed infants in Amhara National Regional State, Ethiopia.

Method – Facility Based Cross sectional study was designed. 7607 exposed infants in the region were diagnosed for their HIV status by DNA PCR using Dry Blood Spot (DBS) from June, 2008 to January, 2012. Of 6307 exposed infants who had complete registry were included in the study. Secondary data was collected from February –April, 2012 from registry of Bahirdar regional laboratory, where all samples in the region were analyzed. The associated factors were tested for significance using multivariate analysis. The significance level at 5% and the limits of reliability at 95% was used.

Result – Out of 6307 exposed infants, whose mean age was 4.12 ± 3.46 month 9 % were positive for HIV by DNA PCR. No significant association was observed between HIV prevalence with age and sex of infant. Significant association was observed between health facility and HIV prevalence; P = 0.041 (CI; 1.014, 1.944).

Conclusion and recommendation – Prevalence of HIV among exposed infants in Amhara regional state was 9 %. Infants who were born from Hospitals had the highest rate of infection. Strengthen PMTCT service is key for reduction of infection and to attain Millennium development goals.

Key words: HIV, Infant, Amhara
AB 18: Prevalence, possible risk factors and antifungal susceptibility patterns of Candida species from vaginal specimen among pregnant women at Debre Markos Referral Hospital, Northwest Ethiopia

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Abstract

Background: Candida species are the commonest opportunistic fungi in human. Candida species cause diverse types of diseases but vaginal candidiasis is the most common type of fungal diseases in pregnant women. In Ethiopia, there is a scarce data regarding the prevalence of Candida among pregnant women.

Objective: This study aimed to determine prevalence, possible risk factors and antifungal susceptibility patterns of Candida species from vaginal specimens of pregnant women who attended Debre Markos Referral Hospital, Northwest Ethiopia.

Method: A cross-sectional study was conducted from February to May 2014. A total of 384 pregnant women were included using systematic random sampling technique. Vaginal specimens were examined using culture on Candida HiVeg Medium. Species identification was done by using HiChrome agar and germ tube test. Antifungal susceptibility testing was performed using disc diffusion method. Data entry was done using Epi 7. Descriptive statistics and logistic regression was performed to observe the association between vaginal candidiasis and other variables using Statistical Packages for Social Sciences (SPSS) version 21.

Result: Out of the total of 384 study participants, 96 (25 %) were positive for Candida species. The predominant Candida species was
Candida albicans 54(56.25%) followed by Candida krusei 21 (21.9 %), Candida glabrata 17(17.7 %) and Candida tropicalis 1 (1 %) Whereas, 3(3.1%) were other Candida species. Contraceptive and prolonged antibiotic uses were the risk factor for Candida colonization / infection (p < 0.05). All isolates of Candida species except Candida krusei were 100% susceptible to amphotericin-B. Out of the total, 93.8 % and 80.2 % of the isolates were susceptible to amphotericin-B and clotrimazole respectively. Resistance rate was high against itraconazole and Ketokonazole 55 (57.3 %).

**Conclusion:** The prevalence of Candida species among symptomatic pregnant women was significantly higher than asymptomatic pregnant women. The occurrence of Candida significantly associated with the age group 26-40 years of pregnant women. Amphotericin B was the most effective antifungal drug. High rate of multiple drug resistant Candida species was detected. Symptomatic women should be routinely screened and treated. Extensive use of antifungal drugs should be discouraged prior to antifungal susceptibility test.

**Key words:** Candidiasis , HiChrome agar; Pregnant women

**AB 19: Assessment of Clinical Laboratory Service Utilization in the Outpatient Department at Gondar University Hospital, North West Ethiopia**

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**Abstract**

**Background:** Clinical laboratory service is the back bone of health care settings which give valuable information for patient care. Distribution of diagnostic clinical laboratory tests are different in type and quantity of test at different health facilities such as health center, districts hospitals, referral hospitals and specialized hospital for many of the preventable diseases in Ethiopia.

**Objective:** The aim of the present study was to assess clinical Laboratory service utilization in the outpatient department at Gondar
University Hospital laboratory.

**Methods:** A one year laboratory service data were collected from a daily registration book prospectively for analysis of outpatient service consumption of Gondar university hospital laboratory.

**Result:** A total of 59,605 outpatients were visited the laboratory between July 2013 and June 2014. About 57.2% of the outpatients were from outside Gondar Town. In the study period, 31.1 % were not charged for the service due to poverty certificate. Children under 15 years consisted of 6.1% of the service consumers. A total of 235,653 tests were done in the hospital laboratory during the study period. Of these, urinalysis tests (53,125(25.6%)) and clinical chemistry tests (52,497(25.5%)) were frequently requested. Majority of the tests (26.7%) were done in the 3rd quarter of the year especially in the month of March. Tuesday and Friday were the days of the week in which the peaks number of outpatients and tests were recorded.

**Conclusion:** Urinalysis and clinical chemistry tests were the most frequently utilized clinical laboratory tests. The utilization of clinical Laboratory service in the outpatient department at Gondar University Hospital was not equally distributed throughout the week as well as months of the year. Therefore, there is a need to design decentralization strategies of basic laboratory services parallel to expansion of health care facilities to decrease unnecessary workload for referral hospital laboratories.

**Key words:** Clinical laboratory service; registration book; out patient
AB 20: The Comparison between Microhematocrit and Automated Methods for Hematocrit Determination

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Abstract

Background: Hematocrit value is one the essential hematology test parameter to asses’ anemia and other related problems. Although Micro Hematocrit method is a gold standard method for Hematocrit determination, other methods, such as automated Hematocrit machines also used to measure Hematocrit values.

Objective of the study: To assess correlation of Hematocrit results done by Micro-Hematocrit and automated Hematocrit methods.

Methods: A comparative cross sectional study was conducted from 28 April to 28 June, 2014 to assess the analytical performance between microhematocrit and automated methods for Hematocrit determination. A total of 384 blood samples were collected by EDTA tubes from patients attending Yirgalem hospital. The collected blood samples were analyzed for HCT by both methods. The collected Hematocrit values data were expressed as a mean± SD. Furthermore, linear regression and Pearson correlation co-efficient methods were used to assess correlation of test results by the two methods.

Results: The correlation coefficient (R=0.95) indicated the strong correlation between manual and automated methods to determine the hematocrit. The manual HCT and automated HCT were significantly different (p=0.002) at 95% CI. The result indicated higher CV in manual method than automated HCT results, which implicated the percision is good for automated method (mindray 3000 plus) and not good for manual method.

Conclusions: Generally, the study showed the hematocrit value obtained from hematology analyzer (mindray 3000 plus) is different
from that of manual, but it is directly proportional in most cases. The automated method can not replace the manual for hematocrit determination though the result of both methods are close to each other.

*Key words: packed cell volume, microhematocrit, automated method*


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**Abstract**

**Background:** Immunity to tuberculosis is suppressed due to HIV co-infection and this suppression could further be enhanced by pregnancy. However, no study has evaluated tuberculosis specific immune response of pregnant women with HIV and latent tuberculosis co-infection.

**Objective:** To determine M. tuberculosis specific functional immune response in pregnant women with HIV and Latent Tuberculosis Co-Infection

**Method:** A cross-sectional study was conducted in five hospitals and two health centers in Addis Ababa, Ethiopia from April 2013 to July 2014. Blood was collected from 267 women with no active TB (86 HIV positive pregnant, 74 HIV negative pregnant and 107 HIV positive non-pregnant women). TST and QFT-GIT tests were done to screen latent tuberculosis. Peripheral Blood Mononuclear Cells (PBMCs) were isolated and IFN-γ, IL-4 and IL-10 ELISPOT were performed in stimulation with CD3, PPD and ESAT-6/CFP-10. Plasma was separated from latent tuberculosis infected and uninfected women to measure TB specific IgG using ELISA.

**Result:** HIV negative pregnant women had higher proportion of QFT-GIT positivity (29.7%) than HIV positive pregnant (19%) and HIV positive non-pregnant women (23.4%). The agreement between
TST and QFT-GIT ranges between substantial to excellent. The median frequency of IFN-γ secreting cells to PPD and ESAT-6/ CFP-10 were not significantly different between HIV positive and HIV negative pregnant women. However, HIV positive non-pregnant women had significantly higher IFN-γ secreting cells to PPD and ESAT-6/ CFP-10 than HIV positive pregnant women, \( p = 0.0407 \) and \( p = 0.0438 \), respectively while IL-4 response didn’t show significant difference. HIV positive pregnant women had more IL-10 in response to PPD and ESAT-6/CFP-10 than HIV positive non-pregnant control, \( p= 0.0206 \) and \( p=0.0024 \), respectively. The frequencies of tuberculosis specific IFN-γ, IL-4 and IL-10 secreting cells were not significantly related with CD4+ T cells count. The median concentration of IgG was not significantly different between latently infected HIV positive and HIV negative pregnant women.

**Conclusion and recommendation:** Our results support the hypothesis that HIV positive pregnant women are at higher risk of failing to control tuberculosis infection due to suppression of Th1 response. However, their antibody response remains intact. Need more prospective studies to assess risk of HIV positive pregnancy in post partum tuberculosis, evaluate performance of TST and QFT-GIT in HIV positive pregnant women.

**Key terms:** Pregnancy, TST, QFT-GIT, ELISPOT, IFN-γ, IL-4, IL-10, CD4 count

**AB 22: Comparison of Ziehl-Neelsen Staining and Fluorescent Microscopy for Diagnosis of Pulmonary Tuberculosis**

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**Abstract**

**Background:** Tuberculosis (TB) remains world’s leading cause of death from a single infectious agent. Sputum smear microscopy is fast and inexpensive technique for detecting TB in high burden countries
like Ethiopia but it has low sensitivity. Fluorescence microscopy offers well-described benefits, comparing with bright field microscopy, for the evaluation sputum smear samples for tuberculosis diagnosis.

**Objective:** The objective of the study was to compare the performance of Ziehl-Neelsen (ZN) Staining and Fluorescent Microscopy for diagnosis of Pulmonary Tuberculosis (PTB) using culture as golden standard.

**Methods:** A cross sectional study was conducted on presumptive PTB patients (age >18 years old) visiting at Adama Referral Hospital in Eastern Oromia Region from June 2013 to December 2013. Patients having fever, night sweats, cough for more than 2 weeks, loss of appetite, loss of weight, chest pain, hemoptysis and/ or radiological evidence of TB were included. Consecutive sampling technique was used. All samples were stained by Auramine O (AO) and ZN stains and screened for Acid Fast Bacilli (AFB) by light microscopy and convectional fluorescent microscopy, and culture was done using Lowenstein-Jensen (LJ) media as gold standard at Adama Regional Laboratory. Descriptive statistics was computed. Multivariate logistic regression was used for analysis of the result that is statistically significant on unadjusted bi-variate logistic regression. P < 0.05 was considered as statistically significant.

**Results:** 264 presumptive PTB patients were included in the study and 142 (54%) were males. The mean age of the participant was 40.8 with standard deviation of 13.7. Positive samples detected by AO stain were 46 (17.42%) when compared to ZN stain, 32 (12.12%). Fluorescent staining method detected 5.3% which were negative on ZN staining method. Mycobacterial growth was detected in 60 (22.73%) specimens. Using culture as the reference method, the sensitivity of direct smear microscopy was 54.25% for ZN and 72.5% for AO.

**Conclusion:** Compared to ZN stain (7.47%) AO staining was found to be more efficient (14.69%) in detection of AFB from presumptive
PTB patients. Therefore, the national programs in our countries may consider incorporating the technique into their guidelines to improve case finding strategy.

**Key Words:** Pulmonary tuberculosis, Auramine O stain, Ziehl-Neelsen stain, Lowenstein- Jensen medium

**AB 23: Prevalence of Intestinal Parasites, Salmonella and Shigella among Apparently Healthy Food Handlers of Addis Ababa University Students Cafeteria, Addis Ababa, Ethiopia**

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**Abstract**

**Background:** Food contamination may occur at any point during its journey through production, processing, distribution, and preparation. The risk of food getting contaminated depends largely on the health status of the food handlers, their personal hygiene, knowledge and practice of food hygiene. Food borne diseases are a public health problem in developed and developing countries like Ethiopia.

**Objectives:** To assess prevalence of intestinal parasites, Salmonella and Shigella among apparently healthy food handlers of Addis Ababa University Student’s Cafeteria, Addis Ababa, Ethiopia.

**Method:** A cross sectional study was conducted among food handlers in Addis Ababa student’s cafeteria from January to May 2013. Structured questionnaire was used to collect socio demographic data and associated risk factors. Stool specimens were examined for bacteria and intestinal parasites following standard procedures. Biochemical tests were done to identify the species of bacterial isolates. Sensitivity testing was done using Kirby- Baur disk diffusion method.

**Result:** A total of 172 food handlers were enrolled in the study. The majority of study participants were females 134 (77.9%). About 78
(45.3%) of food handlers were found to be positive for different intestinal parasites with the most abundant parasite of Entameoba histolytica/dispar 68 (70.8%) followed by Giardia lamblia 18 (18.8%), Taenia species 5 (5.2%), Ascaris lumbricoides 2 (2.1%), hookworm 2 (2.1%) and Trichuris trichuria 1 (1.1%). Stool cultures revealed 3.5% of Salmonella isolates (Sero-grouping on Salmonella isolate was not done), while Shigella species was not isolated from any of the stool samples obtained from Food handlers. All isolates of Salmonella were sensitive to ciprofloxacin, amikacin and gentamicin but resistant to ampicillin, clindamycin, and erythromycin.

Conclusion: The present study revealed a high prevalence of intestinal parasite in asymptomatic (apparently health) food handlers. Such infected food handlers can contaminate food, drinks and could serve as source of infection to consumers via food chain.

Keywords: Intestinal parasites, Salmonella, Shigella, Food handlers

AB 24: Determinant Factors Associated with Occurrence of Tuberculosis among Adult people Living with HIV after ART Initiation in Addis Ababa, Ethiopia. A Case Control Study

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Abstract

Introduction: Tuberculosis is the leading killer of people living with HIV and the first presenting sign in the majority of AIDS patients. Determinants of active TB among HIV Patients on ART are not well described in resource limited settings.

Objective: To assess determinant factors for the occurrence of TB among people living with HIV after ART initiation in public hospitals and health centers in Addis Ababa, Ethiopia.
Methods: A case control study was conducted on 204 cases and 409 controls from December 2011 to February 2012 in selected 2 public hospitals and 13 health centers in Addis Ababa. Cases were adult people living with HIV who developed TB after ART initiation and controls were adult people living with HIV who did not develop TB after ART initiation. An interviewer administered structured questionnaire was used to collect information.

Results: After adjustment for potential confounders, presence of isoniazid prophylaxis (adjusted odd ratio [AOR] 0.35, 95% confidence interval [CI] 0.125, 0.69) and cotrimoxazole prophylaxis (AOR=0.19; 95%CI: 0.06, 0.62) had an independent protective benefit against risk of tuberculosis. In contrary being bedridden (AOR= 9.36; 95%CI: 3.39, 25.85), having WHO clinical stage III or IV (AOR= 3.40; 95% CI: 1.69, 6.87 and hemoglobin level less than 10 mg/dl (AOR= 7.43; 95% CI; 3.04, 18.31) at enrollment to chronic ART care were independent predictors for increased risk of tuberculosis in people living with HIV after ART initiation.

Conclusion: Increasing coverage of isoniazid preventive therapy and cotrimoxazole preventive therapy reduced the overall risk of TB among HIV patients who initiated treatment. All people living with HIV/AIDS should be screened for TB, especially for patients who have advanced disease condition (WHO clinical stage III or IV disease, being bedridden and having hemoglobin level less than 10mg/dl) intensified screening is highly recommended during follow up of treatment.

Key words: Active TB; case control study; TB-HIV Co-infection; Determinant factors of TB/HIV; risk of TB
Poster Presentations
P 01: Trend Analysis of Malaria Prevalence in Arsi Negelle Health Centre, Southern Ethiopia

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Abstract

Background: Malaria in Ethiopia which still there is no “Magic bullet” no quick or easy solution apart from extensive progress in malaria control over the past many years. Analysis of documents on malaria data from health care system is essentially important to assess achievement or failure of malaria control programmes.

Objective: The aim of this study was to investigate trends of malaria prevalence in the area.

Methods: A retrospective record review was conducted in southern Ethiopia. All malaria cases reported from January 2009 to December 2013 were carefully reviewed and analyzed. Information about laboratory results and Socio demographic futures were collected from patient’s registration book.

Results: A total of 22,025, malaria suspected patients gave blood films for malaria diagnosis in Arsi Negelle health center from 2009-2013. During those period, 2,511 (11.4%) microscopically confirmed malaria cases were reported with a fluctuating trend. Among the identified plasmodium species, P. vivax accounted 74%, P. falciparum was 19.8% and mixed infection was 6.2%. Children in the age range 0-5 years were the most affected by the disease (22.8%), followed by 16-20 age groups (17.8%), which necessitate suitable consideration in the effort of malaria control. Despite the apparent fluctuation of malaria trends in the area, the highest peak of malaria cases was reported during spring seasons.

Conclusion: children less than five years were more affected by the disease implies presumed exposure therefore attention should be given to children under five years of age. The rate of malaria was moderate even though it is not as satisfactory as to malaria control
strategy of the country (strategic plan of FMOH 2010-2015 focus on sustained control and moving towards malaria elimination through an integrated community health approach). This might be due to the likely P. vivax drug resistance to chloroquine. In support of this health planners need further strong malaria control and assessment of drug resistance.

Keywords: Southern Ethiopia, Health service, Malaria trend, Malaria prevalence

P 02: Epidemiology of Hookworm Infection and Hemoglobin Values among School-Age Children in Mirab Abaya District, South Ethiopia

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Abstract

Background: Hookworms are nematode endoparasites that cause worldwide public health problems. In addition, it is the main causes for maternal and child morbidity in the developing countries of the tropics and subtropics. Moreover, it causes severe anemia resulting from iron deficiency due to chronic intestinal blood loss.

Objective of the study: To determine the prevalence of hookworm infection, species identification, risk factors and its contribution to anemia among school-age children in Mirab Abaya District, South Ethiopia.

Methods: A cross-sectional study was carried out among 423 school-aged children between April and June 2013. Pre-tested questionnaires were used to collect demographic and risk factors, stool samples were collected and processed using Kato-Katz technique. Samples positive for hookworm ova were cultured by modified Harada-Mori technique. Capillary blood samples were collected and analyzed by HemoCue photometer for determination of
hemoglobin.

**Results:** Overall prevalence of hookworm infection was 44 (10.4%). Among 44 samples positive for hookworm eggs, 43 were Necator americanus and 1 was Ancylostoma duodenale as identified by modified Harada-Mori culture technique. The prevalence of anemia among the children was 4.5%. Hookworm infection was not significantly associated with anemia (p=0.98), however, lack of footwear showed significant association with hookworm infection (AOR=2.39, 95% CI: 1.172-4.867; p=0.02).

**Conclusions:** Hookworm was found to be relatively the most prevalent soil transmitted helminths and the dominant species was Necator americanus among the school-age children in Mirab Abaya District. Hence, health education on proper environmental and regular wear of the shoe should be recommended.

**Key words:** Necator americanus, Ancylostoma duodenale, hookworm infection, anemia, school-age children

P 03: A Cross Sectional study; on Bacterial profile and antibiotic susceptibility pattern of isolates from blood stream infection at St Paul’s hospital millennium medical college, Addis Ababa, Ethiopia.

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**Abstract**

**Background:** Blood stream infections are one of the major causes of morbidity and mortality. Blood stream infection is lethal if not treated at earlier possible time. Hence rapid identification is important. Because empirical therapy is unavoidable knowing the epidemiology and susceptibility of isolates is necessary.
Objective of the Study: This study was initiated to determine the bacterial etiologic agents and antimicrobial susceptibility pattern of isolates causing blood stream infections in St Paul’s Hospital Millennium Medical College.

Methods: A cross sectional study was conducted on 124 study subjects in St Paul’s Hospital Millennium Medical College. Fifteen to twenty milliliters of Blood was collected and inoculated in to 50 ml Tryptone Soya Broth (TSY) (Oxoid) and incubated at 35-37°C aerobically for 7 days. Identification was made according to colonial characteristics, gram stain property, standard biochemical tests and by using API 20E kit for Enterobacteriaceae. Antimicrobial susceptibility testing was performed for all blood culture isolates according to the criteria of the Clinical Laboratory Standards Institute by disk diffusion method. Data entry and statistical analysis were performed using SPSS for windows version 17.0 software. Statistical test between dependent and independent Variables were done using Chi-squared test (X2). Separate multivariate analyses were performed to Identify risk factors associated with Blood Stream Infections.

Results: A total of 124 subjects were involved in this study. The rate of bacterial isolation in this study was 36/124(29%) in which the commonest isolates were S. aureus 8/36(22.1%), and CoNS 7/36(19.4). Citrobacter freundii is the predominant pathogen among gram negative bacteria constituting 5/36 (13.9%). Non-anthracis Bacillus, E. coli, Acintobacter, Klebsiella spp. and P. aeruginosa constitute 14/36(38.9%) of the total isolates. Age has significant statistical association with BSI unlike sex, ward and antibiotic status. Gram positive isolates were sensitive for Vancomycin, Oxacillin/Methicillin and Erythromycin while gram-negative bacteria were susceptible for Ceftriaxone, Gentamicin and Ciprofloxacin. The most inactive antibiotics in this study against the isolates were Penicillin, Ampicillin, Amoxicillin, Tetracycline and Chloramphenicol.

Conclusions: Staphylococcus aureus, Coagulase Negative Staphylococci, and organisms belonging to Family
Enterobacteriaceae are the leading causes of septicemia in adults in this study. The magnitude of antimicrobial resistance among isolates from blood stream infection to commonly prescribe antimicrobials is high. Emphasis to hospital infection prevention and control practices, and rational prescribing policies are strongly recommended to decrease the antimicrobial resistance. Frequent studies should be performed to know bacterial profile and their antibiotic sensitivity pattern.

*Keywords: Blood Stream Infections, Blood culture, Bacterial Profile, Antimicrobial Sensitivity Pattern, Ethiopia*

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**P 04: Repeated Reuse of Insulin Injection Syringes and Incidence of Bacterial Contamination among Diabetic Patients in Jimma University Specialized Hospital, Jimma, Ethiopia**

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**Abstract**

*Background:* Subcutaneous insulin injection is the most common way of management for type 1 diabetes mellitus. However, reusing injection syringes becomes a problem. In fact insulin injection syringe is sterile, but with repeated reuse there is a potential for needle tips to be contaminated, bend into the form of a hook or break.

*Objective of the Study:* This study, merely, determined the level of bacterial contamination of repeatedly reused insulin injection syringes.

*Methods:* A facility based cross sectional study was conducted among diabetic patients. Data on socio-demographic variables, history of injection syringes reuse, and frequency of reuse of syringes were collected using predesigned questionnaire. Finally, the samples from the syringes were cultured according to the standard microbiological techniques.
Results: eighteen diabetic patients at Jimma University Hospital who have been taking insulin through subcutaneous injection as treatment were included in the study. Most of study subjects were males (61.1%, 11/18), >45 years old (44.4%, 8/18), married (94.1%, 15/18) and farmers (44.4%, 8/18). Majority of them (83.3%, 15/18) had reused a single injection syringe for >30 consecutive injections, while the rest (16.7%, 3/18) reused the insulin injection syringe for 30 injections or less. Our results showed 22.2% of syringes were contaminated with methicillin resistant staphylococcus aureus (MRSA). Indeed, skin lesion at the repeated injection site was observed on 3 study subjects, and their respective injection syringes were found to be positive for MRSA.

Conclusions: We conclude reuse of syringes is associated with microbial contamination. The findings that 4/18 syringes being contaminated with bacteria is an alarming situation. There is a potential of needle tips to bend, break or contaminate with repeated use. Hence, we suggest that needle reuse is not optimal practice. Regardless of the upcoming consequences, insulin injection needles should only be used on one occasion. A mechanism should be designed for patients to get injection syringes with affordable price. If reusing is not avoidable, reducing number of injections per a single syringe and avoiding needle touching with hand or other non-sterile material may be an alternative to reduce the risk of contamination.

Keywords: Diabetes mellitus, subcutaneous insulin injection, syringe reuse, Ethiopia

P 05: Intestinal Parasitosis in Relation to CD4+T Cells Levels and Anemia among HAART Initiated and HAART Naïve Pediatric HIV Patients in Model ART Center, Addis Ababa, Ethiopia

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Abstract

Background: Intestinal parasites (IPs) are major concerns in most developing countries where HIV/AIDS cases are concentrated and almost 80% of AIDS patients die of AIDS-related infections. In the absence of highly active antiretroviral therapy (HAART), HIV/AIDS patients in developing countries unfortunately continue to suffer from the consequences of opportunistic and other intestinal parasitic infections (IPIs).

Objective of the study: The aim of the study was to determine the prevalence of intestinal parasites in relation to CD4+ T cells levels and anemia among HAART initiated and HAART naïve pediatric HIV patients in a Model ART center in Addis Ababa, Ethiopia.

Methods: A prospective comparative cross-sectional study was conducted among HAART initiated and HAART naive pediatric HIV/AIDS patients attending a model ART center at Zewditu Memorial Hospital between August 05, 2013 and November 25, 2013. A total of 180 (79 HAART initiated and 101 HAART naïve) children were included by using consecutive sampling. A structured questionnaire was used to collect data on socio-demographic and associated risk factors. Stool specimen was collected and processed using direct wet mount, formol-ether concentration and modified Ziehl-Neelsen staining techniques. CD4+ T cells and complete blood counts were performed using BD FACS calibur and Cell-Dyn 1800, respectively. The data was analyzed by SPSS version 16 software. Logistic regressions were applied to assess any association between explanatory factors and outcome variables. P values < 0.05 were taken as statistically significant.

Results: The overall prevalence of IPs was 37.8% where 27.8% of HAART initiated and 45.5% of HAART naïve pediatric HIV/AIDS patients were infected (p < 0.05). Cryptosporidium species, E. histolytica/dispar, Hook worm and Taenia species were IPs associated with CD4+ T cell counts <350 cells/µL in HAART naïve patients. The overall prevalence of anemia was 10% in HAART and 31.7% in
non-HAART groups. Hook worm, S. stercoralis and H. nana were helminthes significantly associated with anemia in non-HAART patients [AOR, 95% CI: 4.5(1.3, 15.2), P< 0.05]. The prevalence of IPs in non-HAART patients was significantly associated with eating unwashed/raw fruit [AOR, 95%CI: 6.3(1.2, 25.6), P<0.05], open field defecation [AOR, 95%CI: 9.3(1.6, 53.6), P<0.05] and diarrhea [AOR, 95%CI: 5.2(1.3, 21.3), P<0.05]. IPs significantly increased in rural residents [AOR, 95%CI: 0.4(0.1, 0.9, P<0.05)].

**Conclusion:** The overall prevalence of intestinal parasites significantly differed by HAART status and cryptosporidium species were found only in HAART naïve patients with low CD4+ T cell counts. Anemia was also more prevalent and significantly associated with IPs in non-HAART patients. This study identified some environmental and associated risk factors for intestinal parasitic infections. Therefore, Public health measures should continue to protect HIV/AIDS patients from IPIs and maximize the benefits of HAART.

**Key Words:** Intestinal Parasites, HIV, CD4, Anemia, HAART, ZMH

**P 06: Brucellosis among Patients with Febrile Illness in Four Districts of East Wollega Zone, Western Ethiopia**

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**Abstract**

**Background:** Brucellosis is a zoonotic disease with veterinary, public health and economic significance in most developing countries. Human brucellosis is a severely debilitating disease that results in permanent and disabling sequel, requires prolonged combination therapy with antibiotics, results in considerable medical expense and
loss of working hours. The level of the problem was not well studied in Western Ethiopia.

**Objective of the Study**: this study was designed to determine the prevalence of brucellosis among patients with febrile illness attending selected health institutions in four districts/Woredas of East Wollega Zone, Ethiopia.

**Methods**: A cross-sectional study was conducted among 422 febrile patients attending in randomly selected health institutions (Nekemte referral hospital, Nekemte health center, Getema health center, Arjio Gudatu health center and Sire health center) from August to September, 2014. The serum samples were collected from each study participants by respective health institution laboratory personnel, and stored in deep freezer until transported to Sebeta National Animal Health Diagnostic and Research Center for laboratory test. The screening test was conducted using Rose Bengal plate agglutination test, and those who were reactive on rose Bengal test were confirmed by complement fixation test. A pre tested and structured questionnaire was used to collect data on associated risk factors that are believed to influence the spread of Brucella infection.

**Results**: The prevalence of brucellosis ranges from 1.5 to 4.6 with average 3.3 by Rose Bengal plate screening test and 1.1 to 2.3 with average 1.2 by complement fixation test. The disease was higher among participants attending Nekemte Referral Hospital but lower among participants attending Getema Health centre. Brucellosis occur in higher among study participants own livestock 8(3.5%), share house with livestock 6(5.2%), had contact with - livestock 9(4.2%), participate in cutting part of animal 5(3.8), assist in animal delivery 5(4.9), drink raw milk 8(4.3), participate in milking 7(4.1%), eating fresh cheese 7(4.1%), eating raw meat 10(3.4%), and those lack awareness on brucellosis 13(3.1%). From these, involvement in slaughter of animals [0.24(0.06-0.86)] and lack awareness about brucellosis [7.77(0.81-74.4)] were significantly associated with the disease.
**Conclusions:** The level of brucellosis seroprevalence in the study area cannot be undermined. Therefore, diagnostic test for the disease should be include in the health care system and proper health information should be given on how to handle animal during slaughtering and method of prevention of the disease.

**Keywords:** Brucellosis, Human, Febrile Illness, Wollega, Ethiopia

**P 07: The Prevalence, Severity and Characterization of Anemia in HIV-Infected Adult Individuals after initiation of Highly Active Antiretroviral therapy with and without Zidovudine at St. Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia**

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**Abstract**

**Background:** Antiretroviral treatment (ART) has shown significant clinical importance by suppressing viral replication; however, Hematological complications such as Zidovudine (AZT) associated anemia and neutropenia are among the commonly reported adverse drug reactions. But, little is known about AZT associated anemia in developing countries like Ethiopia.

**Objective of the study:** To assess the prevalence, severity, and characteristics of anemia in adult HIV infected patients after initiation of treatment with antiretroviral drug regimens with and without AZT at St. Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia.

**Methodology:** A comparative retrospective study was conducted on 394 HIV infected adult (age ≥15) individuals from January to February 2013, at St Paul Hospital Millennium medical college. Demographic, clinical and laboratory data were collected at baseline (HAART initiation), six months and twelve months of follow up. The
association between the dependent and independent variables were assessed using chi square test. The Cochran Q and the MacNemar Bowker test were used to compare anemia prevalence at different follow up periods. The Friedman’s test was also used to assess the difference in median hemoglobin concentration values within different drug regimens at different follow up periods at the three follow up periods.

Results: The overall prevalence of anemia at baseline, six months and one year follow up was 32.5%, 25.9% and 12.6%, respectively, which showed a significant improvement. However, after six months of follow up, the prevalence of anemia among non-AZT containing HAART group was significantly declined from 44.2% to 18.3%(P< 0.005), while in AZT containing HAART group the anemia prevalence significantly increased from 20.8% to 33.5%( P< 0.005). After twelve months of follow up the anemia prevalence in AZT containing HAART group and non-AZT containing HAART groups was 12.4% and 12.8% respectively. AZT induced anemia was 32.7% and 11.6% after six months and one year of HAART follow up, respectively. After six months of follow up, about 43% of AZT induced anemia was severe and about 45% was macrocytic anemia type. AZT induced anemia was also a reason for about 39.9% of drug changes after six months of HAART.

Conclusion and Recommendation: In HIV infected patients, anemia prevalence, severity and characteristics were different at baseline (before HAART), six months and one year of HAART follow up. AZT had a significant contribution to severe anemia incidence and anemia worsening; thus, close monitoring is warranted for AZT initiated patients.

Key words: Anemia, HIV/AIDS, HAART, AZT, AZT- induced anemia, HIV associated anemia

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P 08: Bacterial Etiologies, Antibiotic Susceptibility Pattern and Risk Factors among Patients with Ear Discharge at Gondar University Hospital, Northwest Ethiopia

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Abstract

Background: Ear infections are different types with otitis media being the most common and occurring mostly in children. Epidemiological information on the prevalence of various bacterial infections is important to develop appropriate prevention and control measures. Therefore, this study was designed to determine the bacterial etiologies their drug susceptibility pattern and possible risk factors from patients who had ear infection.

Objective of the Study: To assess bacterial isolates, antibiotic susceptibility pattern and possible risk factors among patients with ear discharge at the ear, nose and throat clinic of Gondar University Hospital

Methods: A cross sectional study was conducted from February to June, 2014 among patients with ear discharge. Data was collected using a semi-structured questionnaire. Ear discharge specimens were collected aseptically using sterile swab and each sample was cultured on MacConkey agar, blood agar and chocolate agar plates for 24-48 hours at 37°C. Bacterial isolates were identified by their colony characteristics, Gram reaction and standard biochemical tests. Following identification antimicrobial susceptibility testing was performed to a panel of antimicrobials using the disk diffusion method. Data was entered and analyzed using SPSS version 20 software and P-value of < 0.05 was considered statistically significant.
Result: Of the 167 study participants, 97 (58.1%) were males. The age range of the patients was 4 months to 78 years with mean age of 23.3 years. Of the 167 ear infection case, 68.9% and 31.1% were patients with chronic otitis media (COM) and acute otitis media (AOM), respectively. Overall 153 (91.6%) of the study participants showed bacterial growth where gram negative bacteria constituted 58.4 % of the total bacterial isolates. Age and sex had statically significant association with ear infection (P= 0.013). Multidrug resistances were observed in 100 % and 88.4% gram positive and Gram-negative bacteria isolates, respectively. Ceftriaxone, gentamicin and ciprofloxacin were the most effective drugs when compared to other drugs tested against the gram-positive and gram negative bacteria.

Conclusion: Gram negative bacteria were the predominant cause of otitis media and S. aureus, Proteus and Pseudomonas species were the leading isolates in the study setting. Alarmingly, high rates of multiple drug resistance to majority of the commonly used antimicrobial agents were found. Therefore, we strongly recommend culture and susceptibility test before treatment.

Key words: Ear discharge, bacterial etiologic agents, antibiotic susceptibility patterns, risk factors

P 09: Evaluation of laboratory request forms in St. Paul Millennium Medical College hospital, Addis Ababa, Ethiopia

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Abstract
Background: Most errors in laboratory medicine occur in the preanalytical phase which is mainly the result of human mistakes that can have profound effect on clinical care. The laboratory request form is the first line of communication between the specimen submitting facility, agency or physicians and the laboratory. The request form may be in paper or electronic format. Correctly designed and properly
completed request forms are essential for the performance of all laboratory tests to the benefit of the client.

**Objective:** This study is designed to evaluate the frequency of incomplete laboratory request forms in St. Paul Hospital.

**Methods:** A total of 2,300 laboratory request forms in about five consecutive days were collected from all departments of the laboratory from St. Paul’s Millennium Medical College Hospital for this study. Data on the completeness and correctness of the forms were collected using check list and taking picture of the laboratory request forms. The overall frequency of incompleteness of laboratory requisition forms was tabulated in the different specific laboratory departments regarding client information, clinical information, specimen information, clinician information and other parameters. Microsoft excel software and SPSS-20 were used for data analysis.

**Results:** From the total of 2,300 request forms, client’s name was missing on 0.2% while client’s gender, client’s age, card number, date and ward has been missed in a frequency of 7.6%, 9.5%, 1.1%, 9.3% and 3.3% respectively. The highest incompleteness observed was lack of the physician name (69.4%) and his/her signature (48.4%).

**Conclusion:** This study demonstrates that, the standard of completion of request forms at our study site is poor. The request forms did not contain adequate demographic data and clinical details of the clients. The high report of unreadable handwriting makes available information difficult to be used. We recommend that there should be adequate communication between laboratory personnel and clinicians as to ensure that clinicians would be aware of hazards and financial burden of excessive unnecessary test requests.

**words:** Request forms, specimen information, clinical information, physician’s information
P 10: Laboratory Confirmed Rubella Virus Cases in the Capital of Ethiopia, Addis Ababa, 2009-2013

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Abstract

Background: Rubella is usually a mild rash viral illness. However, when woman contracts rubella early in pregnancy, serious consequences may occur, including birth defects known as congenital rubella syndrome (CRS) if almost every organ of the fetus is affected by CRS, Pancytopenia is one of the typical manifestations. When a woman in first tri-mister pregnancy infected by rubella for the first time, the probability of transmitting the disease to her fetus reach 90% and 110,000 CRS cases occur each year mostly in developing countries where vaccine not yet introduced. Information is limited on the epidemiology of rubella and CRS in Sub-Saharan Africa including Ethiopia. So this study was conducted to see the epidemiology of Rubella infection cases in Addis Ababa, Ethiopia.

Methods: Rubella cases were reported through the measles case-based surveillance system with demographic data and serum/plasma of patients from Addis Ababa City Administration, 2009-2013. Samples were tested for Rubella Virus IgM by ELISA and data was entered and analyzed by Epi-Info 3.5.4.

Results: Out of 1,481 total samples tested for Rubella IgM, 328 (22.1%) cases were laboratory confirmed Rubella cases. The age distribution of rubella patients ranged from a month to 34 years with highest (26.6%) positivity among 1-4 year children and lowest among under one children. The positivity rate and number of lab confirmed cases linearly increased from 10.3% in 2009 to 34.9% in 2012 and dropped to 14.9% in 2013. The highest positivity rate was seen in Addis Ketema, 30.6% and the lowest, 16.5%, in Kolfe-Keranio. Rubella a seasonal infection higher in hot dry season of Ethiopia and reaches its highest peak during April (33.7%) and lowest in October (1%).
Conclusions: Rubella is endemic in Addis Ababa and mainly occurs among 1-4 children and increased year to year. So, determining sero-status of child bearing woman is important and prevalence of CRS among infants should be determined to develop a national strategy for rubella control in Ethiopia.

Key Words: Rubella, Laboratory Confirmed, Cases

P 11: Prevalence of Sputum Positive Pulmonary Tuberculosis among ART Naïve and ART Experienced HIV Seropositive Patients in Motta Health Center and Motta Hospital, Motta, Ethiopia

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Abstract

Background: There is a strong relationship between TB and HIV. Tuberculosis is a leading cause of morbidity and mortality among HIV positive patients, HIV increases susceptibility to infection with mycobacterium tuberculosis. It also plays a great role in the progression of latent tuberculosis to active tuberculosis. Poverty, malnutrition and overcrowded living conditions have been also known to increase the risk of developing the disease.

Methods: A comparative cross- sectional study was conducted among HIV Seropositive individuals on ART and Naive ART collected by systematic sampling technique from ART centers of Motta health center and Motta hospital. Structured questionnaires was used to collect socio-demographic characteristic, history of ART (weather ART naïve or experienced) and CD4 level. Three sputum specimens (spot morning spot) were collected by giving appropriate instruction for the patients. From each specimen ziel nelson staining was performed. The data was entered into Epidata 3.1 and transported to SPPS Version 16 for analysis.

Result: Four hundred eleven HIV positive TB Suspected individuals
(287 females and 124 males) were participated in the study. Out of 411 HIV positive individuals 274 (66.7%) of them were on ART. The remaining 137(33.3%) were pre-ART. Sputum positive Pulmonary tuberculosis were detected in 31 (7.5%) of study participated. From 31 HIV positive individuals with sputum positive pulmonary tuberculosis 17 (54.8%) of them were females. Out of 31 Sputum positive Pulmonary tuberculosis twenty (64.5 %) of them were on the ART. The remaining 11 (35.5%) were pre-ART. Among Sputum positive Pulmonary tuberculosis, CD4 counts of 13 participants were less than 350 cells /μ , 14 of them had CD4 from 350- 500 cells /μl, and 4 of the had greater than 500 cells /μl. In our study slightly higher prevalence rate were detected among pre-ART HIV positive individuals.

Conclusion and recommendation: The prevalence of Sputum positive Tuberculosis in Motta health center and Motta hospital was 7.5. Slightly higher prevalence was detected in the Pre ART HIV positive individuals than on ART HIV positive individuals. Regular Follow UP and screening for Tuberculosis, and early initiation of ART to restore immune response is important to reduce TB burden among HIV positive individuals.

Key words: Sputum positive pulmonary tuberculosis, ART experienced and naïve, HIV/AIDS

P 12: What Are the Determinants of Voluntary Blood Donation in the City of Bahir Dar? A case Control Study

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Abstract

Background: the three types of blood donations are voluntary unpaid blood donation, replacement and paid donors. Voluntary blood donation is the safest type of blood donation. In many countries like Ethiopia voluntary blood donation accounts less than 25% of the
blood donation. According to World Health Organization, voluntary blood donation by 3-5 % of the total population is the ideal rate of maintaining the blood demand of the county. Ethiopia is a country with high demand of blood donation as a result of conditions like traffic accidents, hook worm infection and other chronic diseases that significantly depletes the total volume of blood. Unfortunately the number of voluntary blood donation in Ethiopia is less than 5 per 1000 population much less than the WHO requirement 30-50 donation per 1000 population. There is no study that addressed why peoples are not donating blood voluntarily.

**Objective of the Study:** the objective of this study was to identify determinants of voluntary blood donation in the city of Bahir Dar.

**Methods:** An unmatched case control study design was used. The sample size was calculated using Epi-info using the following assumptions: 95% confidence interval, 80% power, a control to cases ratio of 2:1, an expected frequency of exposure among controls of 50%, minimum detectable odds ratio of 2, a frequency of exposure among cases 66.67% and 10% contingency. In total, 109 cases and 218 controls were included. Data were entered into the computer using Epi-info and were analyzed using SPSS. Adjusted odds ratios and 95% confidence interval were used to identify the determinants.

**Results:** In this study, voluntary blood donation was affected by sex [Adjusted odds ratio (AOR)  2.66; (95% CI, 1.03-6.88)], occupation [AOR 18.56; (95% CI, 6.26-55.09)], negligence [AOR 0.12; (95% CI, 0.05-0.31)], lack of information [AOR 0.24; (95% CI, 0.1-0.58)], a convenient place [AOR 11.36; (95% CI, 3.61-35.73)], fear [AOR 0.26; (95% CI, 0.12-0.61)] and lack of opportunity [AOR 0.23; (95% CI, 0.1-0.52)].

**Conclusions:** The national blood bank should work hard on creating awareness. The ministry of health and the other partners should endeavor to make blood collection locations more convenient.

**Keywords:** determinants, Voluntary Blood Donation, Bahir Dar, Ethiopia
P13: Evaluation of the Effectiveness of Sodium Hypochlorite Against Mycobacterium Tuberculosis Isolate in Ethiopia

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Abstract

Background: Safety is one of the twelve essential quality management systems in public health laboratories. In Ethiopia, the most widely used disinfectant is 5% Sodium Hypochlorite (bleach). However, Ethiopian national health safety and infection prevention guideline recommendation on the use and concentration of bleach is not consistent and varying from 0.1%-4%. Objective of the Study: The main objective of this study was to assess the effective time-concentration relationship of Sodium Hypochlorite against Mycobacterium tuberculosis complex (MTBC) isolates in the absence of any organic load (blood, sputum, tissue).

Methods: This experimental quantitative study was conducted in Bahir-Dar Regional laboratory from February-June 2013. In quantitative methods, after exposing the test bacteria to the tested concentration of bleach for the required exposure time, the number of surviving organisms is counted and compared to the original inoculum size. By subtracting the logarithm of the former from the logarithm of the latter, the decimal log reduction or microbicidal effect (ME) was obtained. A ME of 1 equals to a killing of 90% of the initial number of bacteria, ME of 2 means 99% killed. A generally accepted requirement was a ME that equals or was greater than 5: at least 99.999% of the germs were killed. With this method, Test suspensions of 1.5 X 10^8 CFU/ml prepared using normal saline containing 0.5% between 80. From 5% stock, 0.1%, 0.5%, 1% and 2% bleach was prepared. A 1ml of test strain suspension with 1.5X 108cfu/ml and 1ml of bleach mixed and allowed to stand until 10min, 15 min, 20 min, 30 min and 60 min exposure time was achieved, the action of
bleach was neutralized by 48 ml phosphate buffer solution (PBS), centrifuged and resuspended again with 1ml of PBS. From this resuspended pellet, 100µl were spread on two Lowenstein Jensen media and incubated at 37°C for 8 weeks.

**Results:** In this study, 10 multidrug resistant and 10 sensitive MTBC strains were used for assessing the tuberculocidal effect of the specified concentration of bleach and exposure time. When 1ml of 0.5 McFarland (1.5X 108CFU/ml) of isolates was mixed with 1ml of 0.1% bleach for 10 min, majority 11/20 (55%) of isolates showed 3 x 103 CFU/ml growth (ME=4.4), 6/20 (30%) showed 5 x 103 CFU/ml growth (ME=4.2) and the rest 3/20 (15%) showed 57 CFU/ml growth (ME=5.9). This showed that 0.1% bleach for 10min exposure was ineffective. It was unable to produce more than a 5-log10 (≥5 ME) reduction in all tubes. However, when the time increased (15min, 20 min, 30min and 60 min), the log10 reduction was acceptable, ME >5 and it was effective. The sodium hypochlorite solution containing above 5,000 ppm (0.5%) of available chlorine was effective in all respective times, producing above 5-log10 reduction. Moreover, this study confirmed that there was no difference observed in the tuberculocidal activity of bleach against resistant and sensitive M. tuberculosis strains.

**Conclusions:** Currently, Ethiopian TB laboratories are using 2% bleach for 60 min for decontamination of leftover sputum samples before taking it for incineration. According to this finding, this practice is over use of bleach and lengthy. It is advisable to use the correct and appropriate concentration of bleach. There is no any additional benefit using dilution that is higher than what is recommended. It will only be more expensive as you will be purchasing more chemical. Moreover using highly concentrated bleach result in health risks. Infection Control Committees in health care facilities, made up of doctors, Laboratory personnel and/or decision makers are responsible deciding and approving the effective concentration-time of bleach and cleaning methods to be employed for each component of their medical facilities.

**Key words:** Effectiveness, Bleach, M. Tuberculosis, Ethiopia
P 14: Nutritional Status and Intestinal Parasite in School -Aged Children in Amhara Regional State, Ethiopia

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Abstract

Background: Malnutrition is the cellular imbalance between supply of nutrients and energy and the body demand for them to ensure growth, maintenance and specific functions. More than 870 million peoples are undernourished in the world.

Objective of the Study: This study aimed to assess the nutritional status and intestinal parasitic infection of school age children

Methods: A comparative cross sectional study design was implemented. The sample size was calculated using Epi-info software. Data were collected using 3 methods: interview, anthropometry and collecting the stool and blood samples. Standardized procedures were used in each method. Binary logistic regression was used to identify the determinants of malnutrition or intestinal parasites. Odds ratio and 95 % confidence interval were used to identify the determinants of malnutrition or intestinal parasites. Two independent sample t-tests were used to identify the effect of nutritional status on the educational performance of children.

Results: A total of 2372 students were included with a response rate of 94.54 %. The prevalence of stunting was 9.7 % (95 % CI=8.54 %-10.93 %). Stunting was associated with age [AOR 1.42; 95% CI= 1.01-1.89], sex [AOR 0.34; 95% CI= 0.25-0.46], and intestinal parasite infection [AOR 5.92; 95% CI= 3.9 - 8.98]. 24.8 % of school children’s were underweight. Underweight was associated with sex [AOR 0.61; 95% CI= 0.47- 0.78], age [AOR=0.21; 95 % CI= 0.16 -0.28], intestinal parasitic infection [AOR 2.67; 95 % CI= 2.3-3.55], and family size [AOR 23; 95% CI=17.67-30.02]. The prevalence of intestinal parasite was 61.7 % [95 % CI=60 % - 64 %]. Shoe wearing practice [AOR 0.71; 95% CI=0.58-0.87], personal hygiene [AOR 0.8; 95 % CI=0.65 - 0.99], latrine usage [AOR 0.34; 95% CI= 0.27 - 0.44],
age [AOR 0.58; 95% CI=0.48-0.7], habit of eating raw vegetables [AOR 3.71; 95% CI = 3.01-4.46] and family size [AOR 1.96; 95 % CI= 1.57-2.45] were the predictors of intestinal parasitic infection.

**Conclusions:** Significant proportions of school children’s were wasted, stunted and underweight. High level decision makers in the area of health should give special emphasis to the nutritional intervention of the child and on averting the risk of intestinal parasitic infection.

**Keywords:** nutritional status; intestinal parasite; school children; Amhara; Ethiopia

**P 15: Bacterial Profile and Their Antimicrobial Susceptibility Pattern among Patients with Urinary Tract Infections Referred to Bahir Dar Regional Health Research Laboratory Center, Ethiopia**

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**Abstract**

**Background:** Bacteria that live in the bowel are the most common cause of urinary tract infections.

**Objective of the Study:** The study was aimed to determine the types of bacterial isolates and their antimicrobial susceptibility pattern from patients with urinary tract infections.

**Methods:** Record based retrospective analysis of bacterial Uropathogens was determined at Bahir Dar Health Research Laboratory Center in the period of 2012 to 2014. Midstream urine samples were collected and processed with conventional culture and biochemical tests. Isolates were tested against commonly used antibiotics by Kirby-Bauer disc diffusion methods. Data were analyzed by using SPSS version 20 for Windows. Chi-square test was
calculated to compare the proportion of bacterial isolates between sex and age and p< 0.05 was considered to indicate statistically significant difference.

**Results:** Out of 446 urine samples processed, significant bacteriuria was observed on 136 (30.5%) cultures of which 107 (78.7%) were from females. Age and sex were a predictors of UTI with p<0.046 and p<0.05 respectively. The most commonly isolated bacteria were Escherichia coli, 72 (49 %) followed by Klebshella pneumoniae 20 (13.6%) and Pseudomonas aureginosa 11 (7.5%). The overall antimicrobial susceptibility profile showed that Trimetoprim-sulphamethoxazole, amoxicillin/clavulanate and ampicillin revealed high level of resistance, 66.7%, 79.2%, 91.4% respectively. Conversely, 64.2-100% sensitivity rate was documented for ciprofloxacin, gentamycin and pepracillin.

**Conclusions:** urinary tract infection associated with multiple drug resistant bacteria is a major health concern of the study population. Therefore, continued surveillance of the types of the isolates and their up-to-date antimicrobial resistance profile is crucial to ensure appropriate recommendations for better management of patients.

**Keywords:** UTI, Uropathogens, antimicrobial resistance, Bahir Dar, Ethiopia

**P 16: Anemia and associated factors among school-age children in Filtu Town, Somali region, Southeast Ethiopia**

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**Abstract**

**Background:** Anemia is one of the major public health problems affecting more than half of school-age children in developing
countries. Anemia among children has been conclusively seen to delay psychomotor development, poor cognitive performance, impaired immunity and decrease working capacity.

**Objective of the Study:** To determine the prevalence and associated factors of anemia among school-age children in Filtu Town, Somali region, Southeast Ethiopia.

**Methods:** A community based cross-sectional study was conducted from July to August, 2013 in Filtu Town, Somali region, Southeast Ethiopia. A total of 355 school-age children (mean age 8.51±2.83 years) between 5-15 years old were included in the study. Socio-demographic data were obtained from each participant using structured questionnaire. Hemoglobin concentration was determined by HemoCue 201+ photometer (HemoCue, Angelholm, Sweden) analyzer. Hemoglobin values below 11.5 g/dl and 12 g/dl were considered as anemic for age ranges of 5-11 and 12-15 years, respectively. Anthropometric data were taken from each study participant. Peripheral blood film and stool examination were done for hemoparasite and intestinal parasite screening, respectively. Data were analyzed using SPSS version 16.0.

**Results:** Over all prevalence of anemia among study participants were 23.66 %. The vast majority (73.81 %) of the anemic children had mild anemia. Moderate and severe anemia accounted for 25% and 1.19% of the anemic children, respectively. Being from a family with low income (AOR = 9.44, 95 % CI: 2.88, 30.99), stunted (AOR = 5.50, 95 % CI: 2.83, 10.72), underweight (AOR = 2.07, 95 % CI: 1.06, 4.05) and having intestinal parasite infection (AOR = 2.99, 95 % CI: 1.05, 8.46) were identified as associated factors for anemia.

**Conclusions:** Anemia is a moderate public health problem in school-age children for the study area. Interventions targeting nutritional deficiencies and parasitic infections are recommended.

**Keywords:** Anemia, associated factors, school-age children, Somali Region
P 17: Diagnostic performance of Light Emitting Diode (LED) Fluorescence based Microscope for the diagnosis of Tuberculous Lymphadenitis from Fine Needle Aspirate

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Abstract

Background: Ethiopia contributes the 3rd highest number of Extra Pulmonary Tuberculosis (EPTB) cases, the highest proportion being Tuberculous lymphadenitis (TBLN). In spite of this diagnosis of TBLN still remains a challenge. LED FM with Auramin O staining has been shown 10X sensitive than ZN staining in sputum sample. However, the performance of LED FM from EPTB samples has not been compared. Meantime, the level of drug resistance TB from EPTB isolates is not well known.

Objective of the Study: To determine the diagnostic performance of LEDFM for the diagnosis of TB Lymphadenitis using Auramine O staining and drug susceptibility pattern of MTBC from culture isolates.

Methods: A total of 407 study participants are expected from 2 hospitals in Addis Ababa (ALERT and St. Paul Millenium Medical College). FNA samples were collected and three slide smears were prepared for ZN, AO and Cyto-morphology staining. Left over samples were re-suspended in 1 ml normal saline and inoculated to LJ media. Diagnostic performance will be calculated against culture results. Culture isolates were tested for drug susceptibility using LPA.

Results: So far we have collected FNA samples from 22% (89/407) of study participants. The rate of positivity for LED FM, ZN, Cytomorphology and culture were 50.6%, 18%, 56.2% and 37.1% respectively. Among 26 cultures positive for M. tuberculosis twenty four (92.3%) were susceptible to both first line anti-TB drugs-Rif and INH; whereas two Isolates (2/26) were found to be resistant for first
line anti-TB drugs (one for both Rif & INH and one mono resistant for INH).

Even though the collected number of sample is too small LED FM techniques show comparable result with that of FNA cytology results but the culture result seems lower that the two techniques. This may due to the reasons that the pauci bacillary nature of the sample, the viability of the bacilli in the FNA sample and most patients with HIV coinfection take INH drug as a prophylaxis which may inhibit the growth of the bacilli. For clinical diagnosis of sputum samples, LED FM is 10x sensitive and comparable specificity to ZN. In the present study, a significant proportion of cases were positive by LED FM (50.6%) which is comparable with ZN FNA cyto morphology (56.2%) result.

**Conclusions**: As LED FM has shown comparable result with the cyto morphology result, it can be used as a diagnostic technique for EPTB in the primary health care level where there is no pathologists to improve patient care service.

**Keywords**: EPTB, FNA cytology, LEDFM, LPA, LJ culture

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**P 18: Hemostatic Profile and Associated Factors of Hemostatic Abnormality in Human Immunodeficiency Virus Infected Adults Attending Jimma University Specialized Hospital, Southwest Ethiopia: A Case-Control Study**

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**Abstract**

**Background**: Human immunodeficiency virus infection has been proposed to inflict an insult on hemostatic system which involves endothelium, platelet and coagulation proteins. Information regarding hemostatic profile in human immunodeficiency virus infected patients is limited and contradicting too.

**Objective of the Study**: To determine hemostatic profile and risk
factors of hemostatic abnormality in human immunodeficiency virus infected adults attending Jimma University Specialized Hospital, Chronic Care Center Southwest Ethiopia.

**Methods:** A case control study was conducted from April to May 2014 in Jimma University specialized hospital, involving 96 HIV infected patients and 96 unmatched healthy controls that came consecutively to comprehensive chronic care and training center. Socio demographic and clinical data were obtained using structured questionnaire. For the purpose of hemostasis tests, 2.7ml of venous blood sample was collected in a 3ml citrated (3.2%) vacuum tube. Prothrombin time, activated partial thromboplastin time, fibrinogen level was determined. Platelet count and CD4 count was determined from a 3ml EDTA sample. Mixing study was undertaken for prolonged prothrombin time and activated partial thromboplastin time. Data was analyzed using SPSS, version 20.

**Results:** The mean value of prothrombin time, international normalized ratio, activated partial thromboplastin time and fibrinogen level was significantly higher in case group than control (p< 0.001, 0.01, <0.001 and <0.001) while mean platelet count was significantly lower in case group (p<0.0001). Mixing study showed correction of 35(87.5%) of 40 prolonged prothrombin Time both in immediate and delayed test while 58(95.1%) of 60 prolonged activated partial thromboplastin time fail to correct in both situations. A CD4 count of less than 200 cells/mm3 (AOR=8.8, 95% CI (1.8-42.4)) and HAART (AOR=3.4, 95%CI (1.2-10.1)) use were significantly associated with prolonged Prothrombin Time while a CD4 count of less than 200 cells/mm3 (AOR=11.55, 95% CI (1.25-106)) was significantly associated with activated partial thromboplastin time.

**Conclusions:** There was a significant mean rank difference between case and control groups with respect to prothrombin time, activated partial thromboplastin time, and platelet count and fibrinogen level. Direction of the finding points towards presence of inhibitors and factor deficiency which demands in depth investigation and
corresponding intervention. Confirmatory tests of immediate acting inhibitors, particularly antiphospholipid Antibodies should be undertaken to confirm the exact cause of prolonged APTT. Investigation of specific coagulation factor/s is also warranted to identify the liable factor/s so as to provide rational care for the patient. In this regard, this study can be taken as baseline information for further studies which are aimed at investigating specific markers.

Keywords: Hemostatic profile, associated factor, HIV, Ethiopia

P 19: Prevalence of Undiagnosed Diabetes Mellitus and its Risk Factors in Selected Public Institutions at Bishoftu Town, East Shoa, Ethiopia

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Abstract

Background: Diabetes mellitus (DM) has significant public health importance and its prevalence is rising. Globally half of DM patients are undiagnosed. Undiagnosed DM impose substantial implications because subjects remain untreated and at risk for complications. Therefore, the aim of this study is to determine the prevalence of undiagnosed DM and its risk factors in selected public institutions at Bishoftu town, East Shoa, Ethiopia.

Materials and methods: Cross-sectional study in selected public institutions at Bishoftu town was conducted from December 2012 to February 2013. 422 volunteers with age ranged from 20 to 70 years were selected proportionally from five institutions. World Health Organization stepwise approach was employed to collect data on demographic, behavioral and physical characteristics. Blood sample
after fasting for $\geq 8$ hours was collected and serum was assayed for glucose, total cholesterol and triglycerides. Statistical analysis was performed by using STATA (Version 11 USA).

**Results:** Among the study subjects 62.3% (n=263) were males and 37.7% (n=159) females. The overall prevalence of undiagnosed DM in the study was 5% [95% CI: 3-7%]. Though not statistically significant undiagnosed DM was higher in males (5.7% vs. 3.7%, $P>0.05$). Increased occurrence of undiagnosed DM was observed with increasing age but again not statistically significant ($P>0.05$). Univariate analysis showed undiagnosed DM to be significantly associated ($P<0.05$) with body mass index, waist circumference, alcohol consumption, history of hypertension and high triglyceride level. Predictors for undiagnosed DM in the study were high waist circumference ($P=0.001$, OR: 7.70 95% CI: 2.31-25.67) and history of hypertension ($P=0.009$ OR: 3.7495% CI: 1.39-10.03) after adjusting age, family history of DM, and body mass index.

**Conclusion:** Higher prevalence of undiagnosed DM than the International Diabetes Federation Atlas projected estimate of DM for Ethiopia was observed in the current study. This calls for the necessity of conducting such studies in wider scale and bring more oblivious patients for medical attention.

**Keywords:** Prevalence, Undiagnosed diabetes, Risk factors, Public Institutions, Bishoftu

**P 20: Assessment of Anemia Before and After Initiation of Highly Active Antiretroviral Therapy among HIV Positive Patients in Northwest Ethiopia: A Retrospective Study**

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**Abstract**

**Background:** Human immunodeficiency virus (HIV) associated
anemia is always overseen and it could be a challenge for prognosis of HIV positive patients. It is stated in different literatures that the prevalence of anemia due to HIV before highly active antiretroviral therapy (HAART) initiation is more prevalent than after HAART initiation. Since the information about prevalence of anemia before and after initiation of HAART is limited in our setting, this study is conducted to fill this gap.

**Objective of the Study:** This study aimed to assess prevalence of anemia before and after initiation of HAART among HIV patients attending university of Gondar hospital from 2008 – 2013, Northwest Ethiopia.

**Methods:** A retrospective study was conducted by collecting data from antiretroviral clinic of university of Gondar hospital from January 1, 2008 to December 30, 2013. Data was collected by using data collection sheet which contains age, sex, regimen type, hematological parameters and CD4 count from February to March 2014. The data was cleaned, edited, checked for completeness and entered in to SPSS version 20 for analysis. In order to compare means paired t-test was used. P- Value < 0.05 was considered as significant. The result was presented with tables, graphs and charts

**Results:** Prevalence of anemia before and after HAART initiation was 21.2% and 11.5% respectively. There is a significance difference in CD4 count, Hemoglobin and Hematocrit value on patients before and after HAART initiation (P = 0.000). Opportunistic infection and CD4 count were associated with prevalence of anemia before HAART initiation.

**Conclusions:** There was a decline in the prevalence of anemia and increment of mean CD4 cell count among HIV infected patients after HAART initiation. Thus HAART naïve HIV patients are recommended to check up their CD4 counts regularly and start HAART when it is appropriate with regular follow-up.

**Keywords:** HIV, Anemia, HAART

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Abstract

Background: Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle, but is more prevalent in pregnant women and young children. Anemia is regarded as a major risk factor for unfavorable outcome of pregnancy both for the mother and the fetus. Therefore, this study aimed to determine anemia among pregnant mothers attending ANC, Boditii Health center.

Objective of the Study: To determine anemia among pregnant mothers attending ANC, Boditii Health center, Wolaita Zone, Southern Ethiopia.

Methods: A health center based cross-sectional study was conducted in Boditii health center from April 12 to June 23, 2012. Data were collected using pre tested questionnaire, which contains socio demographic and clinical characteristics of pregnant women assumed to have association with anemia. A total of 125 pregnant mothers were enrolled in this study and hemoglobin (HGB) was measured using the Sahli-Hellinge method of HGB determination. Data was entered and statistical analysis was performed using SPSS version 16, software. Association between variables was done using chi square, and statistical significance was considered at P value < 0.05. Results: The prevalence of anemia obtained in this study was 77/125 (61.6%), based on WHO criterion for the diagnosis of anemia in pregnancy, i.e. hemoglobin <11.0 g/dl (PCV <33%). In terms of severity, mild anemia was 41(53.2%), moderate anemia was 36 (46.8%), and there
was no severe anemia. The prevalence of anemia in this study was 58.4% and 41.5% for primigravida and multigravida, respectively (P<0.05). Anemia was also found to increase as the gestational age increases, showing the highest prevalence in the third trimester (46.7%) than second (45.4%) and first trimester (7.8%), (P<0.001).

**Conclusion and Recommendation:** From our result we can conclude that anemia was highly prevalent in patients attending Boditii Health center. Our study revealed that the prevalence of anemia is higher in primigravida than multigravida. Anemia also increased as the gestational age increases. Intervention including health education about causes of anemia and its risk factors and ANC follow up should be strengthened.

**Key words:** anemia, antenatal care, pregnant women

**P 22: Hepatitis C Virus and Human Immunodeficiency Virus Infections among Voluntary Counseling and Testing Clients of Private Health Facilities In Bahir Dar Town, Northwest Ethiopia**

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**Abstract**

**Background:** Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV) are significant causes of morbidity and mortality worldwide. They share similar transmission routes and have serious health effects on co-infected individuals. Local data on the prevalence and associated factors of HCV and HIV infections among Voluntary Counseling and Testing (VCT) attendants is limited.

**Objective of the Study:** To determine the prevalence and associated factors of HCV and HIV infections among Bahir Dar town private health facilities VCT clinic attendants.

**Methods:** A cross-sectional study was conducted from February to
April 2014. Data on potential risk factors were gathered by structured questionnaire guided interview. Five milliliter of venous blood was collected from each study subject and serum was tested for HIV according to the national test algorithm and HCV antibody using rapid chromatographic test. Logistic regression analysis was employed to examine possible risk factors. All tests with p-value less than 0.05 were considered statistically significant.

**Result:** A total of 382 VCT clients with the mean age of 25.43 years (SD + 6.87) were enrolled. Overall, 14 (3.7%) and 8 (2.1%) VCT clients were positive for HIV and HCV infections, respectively. No co-infection of HCV and HIV was found. All anti-HCV antibody positive (3.8%) individuals were males. Fifty percent of study subjects positive for HCV fell in the age group of 41-50 years of age. HCV sero-positivity was also higher among farmers, divorced/widowed and illiterate study participants. The highest proportion of HIV infection was detected among age group of 41-50 years old (17.6%) and married (13.3%) study subjects.

**Conclusions:** Higher prevalence of both HIV and HCV infections were found in the older age VCT clients of private clinics. Married people also showed much higher prevalence of HIV infections. Targeted public health education and effective prevention programs are highly important to reduce the prevalence of HCV and HIV infections.

**Key Words:** Hepatitis C virus, Human immunodeficiency virus, VCT, Ethiopia

**P 23:** Bacterial isolates, Antimicrobial Susceptibility Pattern, and Associated Risk Factors among Pediatric Patients Suspected Meningitis at Tikur Anbessa and Yekatit 12 Hospitals, Addis Ababa, Ethiopia

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**Abstract**

**Background:** Bacterial meningitis remains a major cause of morbidity and mortality in neonates and pediatrics patients. Information on prevalence of bacterial meningitis, antimicrobial susceptibility pattern of the causative agents and associated risk factors is scarce.
Objective: To determine bacterial profile, antimicrobial susceptibility pattern and associated risk factors among pediatrics patients suspected meningitis at Tikur Anbessa and Yekatit 12 specialized hospitals, Addis Ababa, Ethiopia.

Methodology: A hospital based cross sectional study was conducted at Tikur Anbessa and Yekatit 12 specialized hospitals, from September, 2013 to January, 2014. A convenient sampling technique was used. Three hundred eighty five pediatrics patients were enrolled. Cerebrospinal fluid specimens were collected by an experienced physician and analyzed according to standard microbiological (culture) procedures, antimicrobial susceptibility pattern were determined using disc diffusion technique. Data were double entered with EPI INFO version 3.5.3 and analyzed using SPSS version 21 software. Binary logistic regression was used to identify the association between variables.

Result: Bacterial isolates were isolated from 17 patients showing an isolation rate of 4.4%. Among these, 58.8% were gram-negative and 41.2% were gram positive organisms. The most commonly isolated bacteria were S. pneumoniae (35.3%), followed by Neisseria meningitidis (11.8%). Among all risk factors (way of cooking food, No of house partition, No of people sharing the same room with the child, Day care attendance) assessed, none of them were statistically significant with suspected meningitis cases (p>0.05). The antimicrobial sensitivity remained high for third generation cephalosporin for most of the isolates.

Conclusion: The prevalence of bacterial isolates in this study was 4.4%. Frequency of one drug resistance as well as multiple drug resistance was very high among the bacterial isolates.

Key Words: Bacterial isolates, Antimicrobial Susceptibility, Associated Risk Factors, Pediatric Patients Meningitis.
Ethiopian Medical Laboratory Association, EMLA

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