Laboratory Medicine
A Hidden Treasure in the Healthcare Management System and Critical for SDGs Success
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Editorial Note

Dear EMLA Members and Distinguished Professionals in the Fields of Laboratory Medicine!

It is with great pleasure that we invite you to participate in the 21\textsuperscript{th} Annual Conference and Continuing Professional Development of Ethiopian Medical Laboratory Association (EMLA) to be convened at Ghion Hotel in Addis Ababa, Ethiopia, from 01 – 02 April 2016.

EMLA is striving for better quality medical laboratory service in the country not only by convening such conferences but also focusing on touchy thematic and sub-thematic areas to impact policy. The main theme of this year’s conference is ‘Laboratory Medicine: A Hidden Treasure in the Healthcare Management System and Critical for SDGs Success’.

One the most delighting activity of EMLA is its scientific abstract book preparation, publication and dissemination to members, policy makers, academia, development partners and the scientific community at large. Over the last couple of years, the number of abstracts submitted for possible presentations has substantially been increasing. For EMLA 2016 annual conference, a total of 65 abstracts were submitted and 54 were selected for presentations.

For this year’s conference among the 54 scientific papers 30 oral and 24 poster abstracts have been selected by peer reviewers. The topic that will be covered includes a wide range of subjects such as communicable diseases (TB, HIV, Malaria, Viral Hepatitis and others), Haematology, Immunohaematology, Clinical Chemistry and Chemical Pathology, Immunology, Parasitology, Virology, Medical Microbiology and Management and quality assurance.

In addition, presentations and discussions will be conducted in the plenary session on the sub-thematic areas of this year’s conference that includes (1) Boosting Medical Laboratory Services Integration into Healthcare System through Quality Education, (2) Sustainable Development Goals - The Path to better Clinical Laboratory Service and Test Utilization, Benefits of Health Laboratories from Improved and Integrated Diagnostic Approaches, (3) Strengthening Clinicians Test Selection and Result Interpretation for Improved Patient Care, and (4) Strengthening the Public Health Laboratory Workforce and the need to Re-Shape Health Laboratories to Meet HSTP.

EMLA would like to thank all those who make this conference possible through financial as well as material support. The panelists, CME presenters, distinguished researchers who share their research findings and the reviewers are all gratefully acknowledged.

I hope all deliberations of EMLA 2016 Annual Conference would be memorable.

Gizachew Tadesse (BSc, MSC)
Executive Director, EMLA
Oral Presentations
AB 01: Evaluation of the diagnostic performance of MTBDRplus VER 2.0 Line Probe Assay for the detection of MDR-TB in sputum samples referred to National TB Reference Laboratory, Addis Ababa, Ethiopia

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Abstract

Background: Multi drug resistant tuberculosis (MDR-TB) is both a diagnostic and treatment challenges especially, in low income countries. Accurate and rapid detection of MDR-TB is critical for timely initiation of treatment. Therefore, evaluating the diagnostic performance of new drug resistance diagnostic tools such as Genotype MTBDRplus VER 2.0 assay for the detection of MDR-TB in sputum samples referred to National TB Reference Laboratory (NTRL) at Ethiopian Public Health Institute (EPHI) is vital to scale up drug susceptibility testing (DST) capacity.

Methods: A cross sectional study was conducted between April 2015 and August 2015 on presumptive MDR-TB patients referred to the NTRL. Analysis of 72 smear positive and 197 smear negative sputum samples was done with Genotype MTBDRplus VER 2.0 assay and compared with the reference, BACTEC MGIT 960 culture and DST. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the MTBDRplus VER 2.0 assay was calculated, comparing the results with the reference method. Subsequently, results were interpreted based on 95% confidence interval, statistical significant was taken at p-value <0.05.

Results: The sensitivity, specificity, PPV and NPV of Genotype MTBDRplus VER 2.0 assay were 96.4%, 100%, 100% and 96.9%, respectively, for the detection of MDR-TB from direct smear positive sputum samples. The sensitivity, specificity, PPV and NPV of Genotype MTBDRplus VER 2.0 assay were 77.8%, 97.2%, 82.4% and 97.2%, respectively, for the detection of M. tuberculosis from direct smear negative sputum samples. Only 14(54%) samples had valid results with line probe assay (LPA) among the 26 smear negative culture positive samples. The remaining 8(30.6%) and 4(15.4%) were invalid and negative with LPA, respectively. The sensitivity and specificity of Genotype MTBDRplus VER 2.0 assay was 100% for the detection of MDR-TB among 14 direct smear negative and culture positive sputum samples. The most common mutations associated with RMP and INH resistance was S315L and S315TL, respectively. A single rare mutation (C157T/A166G) was also detected in this study.

Conclusion and recommendation: Genotype MTBDRplus VER 2.0 assay is highly sensitive and specific for early detection of MDR-TB in direct smear positive sputum sample. However, the diagnostic performance of Genotype MTBDRplus VER 2.0 assay in direct smear negative sputum sample is low. Thus, it is unlikely to implement Genotype MTBDRplus VER 2.0 assay for the detection of MDR-TB in direct smear negative sample in our routine settings until the method is optimized. Further comprehensive study is required to complement the present study.

Key words: performance, Genotype MTBDRplus VER 2.0, MDR-TB.
AB 02: In vitro generation of insulin producing beta cell like clusters from Adipose tissue derived stem cells

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Abstract
Background: Recently stem cells are an attractive starting source for producing pancreatic lineage derivatives to be used in treatment of DM as a form of cell replacement therapy. Adipose tissue derived stem cells (ADSC) display multipotency and generated interest in their potential therapeutic value for regenerative medicine. Differentiation of these cells can be directed by the addition of specific cocktails of chemical inducers. The present study is aimed at to differentiate ADSCS in to insulin producing beta cell like clusters following simple protocols modified from previous studies in short time

Methods: Rat ADSCs (DS Pharma Biomedical Co. Ltd, Japan.) differentiation into insulin producing cells (IPCs) was carried out using a modified differentiation cocktail by addition of 10% of fetal bovine serum, vitamin C during early stage of differentiation, and HDACi, valproic acid (VPA) during late stage. To investigate the effect of VPA, first we checked insulin packaging ability of differentiated β-like clusters treated with VPA by dithizone staining and later the effect of VPA on the expression of β-cell developmental and endocrine markers were investigated by quantitative real-time polymerase chain reaction (RT-PCR). In addition, at the end of differentiation, β-cell like clusters were evaluated by immunofluorescence staining for expression of pancreatic endocrine proteins, and release of insulin in response to increasing glucose challenge by ELISA.

Result: We found that modifications of culture conditions, including addition of VPA at late stage of differentiation could induce ADSC differentiation into IPCs. Addition of 10 mM of valproic acid to the modified differentiation cocktail resulted change in cell morphology, dithizone positive β-cell like clusters as well as about more than 1.5 fold increase in NeuroD1 and insulin1 mRNA expression compared with cells differentiated without valproic acid. Moreover, further immunohistochemical analysis confirmed that differentiated β-cell like clusters were expressed relevant pancreatic endocrine markers, including insulin, somatostatin and pancreatic poly peptides. We found that differentiated IPCs secreted insulin, and insulin secretion was further increased in the presence of high glucose challenge.

Conclusion: Addition of VPA in to other differentiation cocktails indicates an efficient chemical protocol for differentiating ADSC in to IPCs. Based on these results, we conclude that inhibition of histone deacetylase could enhance β-cell like cell differentiation from ADSC and that differentiated IPCs might be an alternative beta cell source for diabetes treatment.

Key words: adipose tissue-derived stem cell, diabetes, insulin-producing cells, valproic acid.
AB 03: Hematological indices and their correlation with fasting blood glucose level and anthropometric measurement in type 2 Diabetes Mellitus patients in Gondar, Northwest Ethiopia

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Abstract

Background: Diabetes mellitus is a global public health problem and a complex disease characterized by chronic hyperglycemia that leads to long term macro-vascular and microvascular complications. Recent studies have reported the role of hematological indices in diabetics contributing to the vascular injury. Thus, the aim of this study was to determine hematological indices and their correlation with fasting blood glucose level and anthropometric measurement in type 2 Diabetes Mellitus patients in comparison with healthy controls.

Methods: A comparative cross-sectional study was conducted at Gondar University Hospital chronic illness clinic from February to April, 2015. A total of 296 participants (148 case and 148 healthy controls) were selected using systematic random sampling technique. Data were collected using pre-tested structured questionnaire. Fasting blood glucose determination and hematological indices were processed by Bio Systems A25 and by Sysmex-KX 21N respectively. Independent sample t-test, Man Whitney U test and correlation statistics were used. A P-value < 0.05 was considered as statistically significant.

Result: There was significant difference in red blood cell distribution width (47.3fl ±2.6 vs 45.2fl ±3) in diabetic patients compared with controls. Total white blood cell in 10³/µl (6.59±1.42 vs 5.56±1.38), absolute lymphocyte count in 10³/µl (2.60±0.70 vs 2.04±0.63), absolute neutrophil count in 10³/µl (3.57±1.46 vs 3.11±1.04) increased significantly in diabetics when compared with controls respectively. Among platelet indices, mean platelet volume (10.4fl ±1.1 vs 9.9fl ±1.1) and platelet distribution width (14.5fl ±2.1 vs 13.4fl ±2.1) were found significantly increased in diabetic patients (p<0.05) compared to control group. Significant correlation has been observed between anthropometric measurements and white blood cell indices, platelet indices.

Conclusions: The study showed statistically significant difference in some hematological profile of diabetic patients compared to controls. It is considered that alterations in hematological profile were associated with pathological processes and increased risk of vascular complications in patients with type 2 diabetes.

Key words: Ethiopia, fasting blood glucose, Gondar, hematological indices, Type 2 diabetes mellitus.
AB 04: Performance Assessment of Reagent strip and Microscopy for Diagnosis of Urinary Tract Infection Among Pregnant Women at University of Gondar - Hospital, North West Ethiopia

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Abstract
Background: Urinary tract infections are among the most common bacterial infections in humans. Therefore, routine screening for bacteriuria is advocated. The decision about how to screen pregnant women for bacteriuria has always been a balance between the cost of screening versus the sensitivity and specificity. This study was designed to evaluate the diagnostic accuracy of the rapid dipstick test and microscopy to predict urinary tract infection during pregnancy.

Method: A total of 282 midstream urine sample were collected and inoculated to CLED media. If significant bacteria found in CLED media sub cultured to MacConkey, Chocolate agar and Blood agar incubated at 37°C overnight. Specimens were classified as “positive” for urinary tract infection (UTI) if the growth of the pathogen(s) was significant based on the standard (> 10⁵ colony forming units (CFU/ml) and classified as “negative” with non-significant growth related to the standard. Simultaneously Urine samples were tested for the presence of nitrite and leukocyte esterase using dipstick rapid test in accordance to the manufacturer’s instructions and for white blood cells and bacteria using microscopy. Urine culture is the reference standard in this case.

Result: The sensitivity, specificity, positive predictive value and negative predictive value of leukocyte esterase for the detection of urinary tract infection is 39.39%, 73.38%, 16.45% and 90.10% respectively and the sensitivity, specificity, PPV, NPV of nitrite for the detection of urinary tract infection is 18.18%, 96.77%, 42.86% and 89.90% respectively. The sensitivity, specificity, PPV, NPV of bacteria in microscopy for the detection of urinary tract infection is 36.36%, 78.25%, 18.20% and 90.30% respectively. The sensitivity, specificity, PPV and NPV of microscopic white blood cells for the detection of urinary tract infection is 27.27%, 89.5%, 31.57% and 90.20% respectively.

Conclusion: This study revealed that with many false positive and negative results of urine dipstick and microscopy when it was compared against the reference standard, culture method. The low sensitivity and positive predictive value of urine dipstick and microscopy test proved that culture should be used for the diagnosis of urinary tract infection. But in our setup it is very difficult to apply culture as a routine test therefore we recommend combination use of dipstick, & microscopy.

Key words: UTI, Nitrite, Leucocyte Esterase, White Blood Cells, Bacteria, Culture.
AB 05: Pulmonary tuberculosis and associated factors among Bedele Woreda prisoners, Southwest Ethiopia

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Abstract
Background: Tuberculosis (TB) remains one of the leading causes of morbidity and mortality mainly, in resource limited countries. Ethiopia ranks 8th among the world’s top 22 countries severely affected by TB. TB is one of the major public health problems in prisons of sub-Saharan Africa in which Ethiopia is not an exception. However, data on prevalence of pulmonary tuberculosis (PTB) among prisoners is very limited. Therefore, the present study was conducted to determine the prevalence and associated risk factors of PTB among Bedele Woreda prisoners, Southwest Ethiopia.

Methods: Institution based cross-sectional study was conducted in Bedele woreda prison in the year 2012. In this study, a total of 196 consented prisoners were enrolled. All PTB suspected prisoners who had cough for two weeks and more were included. Sputum samples (spot, morning, and spot) were collected with leak proof screw caped plastic containers. Sodium hypochlorite technique was used to concentrate the tubercle bacilli. Then, smears were stained with Ziehl-Neelsen staining technique as per the standard protocol. Data was cleaned and analyzed using SPSS version 20. Logistic regression model was used to assess the statistical association between variables. A p-value < 0.05 was considered statistically significant.

Results: Out of 196 prisoners screened for PTB, 43(21.9%) were positive for Acid Fast Bacilli (AFB). The minimum and maximum age of the participant was 18 and 80 years, respectively. Most of the AFB positive prisoners were male. In multivariate binary logistic regression analysis associated risk factors like cough ≥2 weeks (AOR=0.016, 95% CI: 0.002-0.114, P value <0.05) and previous history of TB in the group (AOR=0.003, 95% CI: 0.001-0.033, P value <0.05) had significant association with PTB.

Conclusion and recommendation: The prevalence of PTB in the prison is higher than the general population. Having cough for ≥2 weeks and previous history of TB are statistically associated with PTB. Strong emphasis should be given in prevention and control of PTB in prison settings.

Keywords: Pulmonary tuberculosis, associated factors, prisoners, Southwest Ethiopia
AB 06: Prevalence, trend and associated factors of tuberculosis among University students in Central Ethiopia

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Abstract

Background: Despite availability of antituberculosis drugs for the last 50 years, tuberculosis (TB) is responsible for 1.5 million deaths every year. TB outbreaks emerge occasionally in long-term care facilities, including various educational establishments. Boarding schools are sites where adolescents are concentrated in conditions of relative overcrowding predisposing to TB outbreaks. Therefore, this study was designed to determine the prevalence, trend and associated factors of TB among students at Adama Science and Technology University and Addis Ababa University, Central Ethiopia.

Methods: A five years record review was conducted between September 2009 and July 2014 on records obtained from students’ clinic. The proportion of smear positive, smear negative and extra pulmonary cases were determined in each year and in five years period to indicate the overall prevalence and the trend. Odds ratio with 95% C.I was calculated for categorical variables using Logistic Regression model to assess the strength of association. Furthermore, in-depth assessments of AFB sputum smear examination practices of lab staffs were conducted using WHO’s standard checklist.

Results: A total of 375 TB cases were recorded in the last five years in both Addis Ababa University 6 kilo campus and Adama Science and Technology University. The majority (89.9%) of the cases were male. 203 (54.1%) were from Adama Science and Technology University. There was a statistically significant difference in occurrence of cases between the study Universities [AOR: 2.881, 95% CI (1.763-4.707)]. The overall prevalence of TB cases of all types per 100,000 populations ranges from 348.4 to 1814.1, which showed a considerable increment in comparison with the national prevalence for the respective year. The majority of the cases, 142 (37.9%), were extra pulmonary TB cases, followed by smear negative and smear positive TB cases each accounting 120 (32.0%), and 113 (30.1%), respectively. The trend of tuberculosis in this study showed a steady decrement of cases from the beginning to the end of the study year. An in-depth interview, using WHO’s TB lab assessment tool with chiefs of the respective University Clinic laboratories revealed that the TB laboratories in the study universities were detached from the national TB program, which is indicated by non-existence of any external quality assessment schemes undertaken by any responsible agency.

Conclusion and recommendation: The number of TB cases registered in the studied Universities was high. University administrations should work together with other responsible bodies to reduce the high burden of TB in higher education institutions.

Key words: Tuberculosis, higher education institutions, Addis Ababa University, Adama Science and Technology University, quality of sputum smear microscopy
AB 07: Antimicrobial Susceptibility pattern of Bacterial isolates from Post-operative surgical site Infections at Two Referral Hospitals, Addis Ababa, Ethiopia

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Abstract

Background: The emergence of multi-drug resistant bacterial pathogens in hospitals is becoming a challenge for surgeons to treat nosocomial infections. Identification of microbes, and determining antimicrobial susceptibility pattern is beneficial to the patient care and appropriate selection of antimicrobials. Therefore, the aim of this study was to determine bacterial pathogens and drug susceptibility pattern of isolates from post-operative surgical site infections at St. Paul specialized Hospital Millennium Medical College and Yekatit 12 Referral Hospital Medical College.

Methodology: A cross-sectional prospective study was conducted between October 2013 and March 2014. Conveniently, a total of 107 patients who fulfilled the criteria of post operative surgical site infection according to CDC definition were included in this study. Patient specific socio demographic characteristics and medical histories were collected using pre-structured questionnaire from patients medical record. Wound specimens were collected by trained data collectors using sterile cotton swab on a separate sterile test tube and processed as per standard operative procedures in appropriate culture media; and susceptibility testing was done using Kirby-Bauer disc diffusion technique. The data were analyzed by using SPSS version 20.

Result: A total of 107 swabs were collected. From these, 90 (84.1%) were culture positive and 104 organisms were isolated. Escherichia coli (23.1%) was the most common organism isolated followed by Multi-drug-resistant Acinetobacter species (22.1%). The result of the antibiotic susceptibility testing showed that Gram-positive isolates mainly Staphylococcus aureus strains were resistant to Penicillin 94.7%, Cefoxitin 89.5%, Sulfamethoxazole-Trimethoprim and Erythromycin each 78.9%. The Gram-negative isolates showed high resistance (65-100%) to Ampicillin, Cephalozine, Ceftriaxone, Cefuroxime/Sodium, Amoxicillin/Clavulnic acid, Cefotaxime, Cefazidime. More than 75% of the Gram negative isolates demonstrated evidences of multiple antibiotic resistance (resistance ≥ 5 drugs). Pan-antibiotic resistance was noted among 34.8% Acentobacter species and 12.5% E. coli.

Conclusion: Gram negative bacteria were the most frequent isolates form SSI in our study. Ampicillin, Amoxicillin, Penicillin, Cephalozine and Tetracycline were found to be less effective while Gentamicin, Ciprofloxacin and Vancomycin were relatively effective antimicrobials.

Key words: Post-operative infections, Surgical site, Antibiotic sensitivity.
AB 08: Drug resistance conferring mutations in Mycobacterium tuberculosis from pulmonary tuberculosis patients in Southwest Ethiopia

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Abstract

Background: Drug resistance in Mycobacterium tuberculosis is due to particular genomic mutations in specific genes. The nature and frequency of mutations in rifampicin (RIF) and isoniazid (INH) resistance M. tuberculosis isolates vary considerably according to the geographic locations. However, data regarding specific mutational patterns in Ethiopia remains limited.

Objective: To determine the magnitude and mutation profile of RIF and INH resistant M. tuberculosis strains in Southwest Ethiopia

Methods: A cross-sectional study was conducted among confirmed pulmonary TB (PTB) patients in Southwest Ethiopia between October 2013 and September 2014. Mutations associated with RIF and INH resistances were studied by GenoType MTBDRplus line probe assay in 112 M. tuberculosis isolates. Culture (MGIT960) and identification tests were performed at Mycobacteriology Research Center of Jimma University, Ethiopia. Resistance to RIF (mutation in rpoB gene) was also investigated by Xpert MTB/RIF test for 76 M. tuberculosis isolates.

Results: Mutations conferring resistance to INH, RIF and multidrug resistance (MDR) were detected in 41 (36.6%), 34 (30.4%) and 31 (27.7%) of M. tuberculosis isolates, respectively. The retreatment category ‘treatment failure’ is associated with a high rate of mutations associated with drug resistance (p = 0.004). Among 34 rifampicin resistant isolates, 28 (82.4%) had rpoB gene mutations at codon 531, 1 (2.9%) at codon 526 and 5 had mutations only at wild type probes. The later isolates were depicted as unknown. Of 41 INH resistant strains, 36 (87.8%) had mutations in the katG gene at Ser315Thr1 and 4 (9.8%) of strains had mutation in the inhA gene at C15T. Mutations in inhA promoter region were strongly associated with INH mono-resistance. Out of 30 RIF resistant strains by Xpert MTB/RIF, 26 were MDR, 2 were RIF mono-resistance and 2 were sensitive to RIF and INH by LPA. Mutation at probe E was the most frequent causes of RIF resistance with Xpert MTB/RIF test in Southwest Ethiopia.

Conclusion and recommendation: High rate of drug resistance, including MDR, was commonly observed among failure cases. The most frequent gene mutations associated with the resistance to INH and RIF were observed in the codon 315 of the katG gene and codon 531 of the rpoB gene, respectively. Further studies on mutations in different geographic regions using DNA sequencing techniques are warranted to improve the kit by including more specific mutation probes in the kit.

Keywords: drug resistance, gene mutation, Mycobacterium tuberculosis.
AB 09: Impact of HIV status on treatment outcome of tuberculosis patients registered at Arsi Negelle Health Center, Southern Ethiopia: A six year retrospective study.

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Abstract

Background: Despite implementation of different strategies, still the burden and mortality of human immunodeficiency virus (HIV)-associated tuberculosis (TB) remains a challenge in Ethiopia. The aim of this study was to assess the impact of HIV status on treatment outcome of tuberculosis patients registered at Arsi Negele Health Center, Southern Ethiopia.

Methods: A six-year retrospective data (from September 2008 to August 2014) of tuberculosis patients (n = 1649) registered at the directly observed therapy short-course (DOTS) clinic of Arsi Negele Health Center was reviewed. Treatment outcome and tuberculosis type were categorized according to the national tuberculosis control program guideline. Data were entered and analyzed using SPSS version 20. Multinomial logistic regression analysis was used to examine the effect of HIV status separately on default/failure and death, in relation to those who were successfully treated. Odds ratios with 95% confidence intervals were used to check the presence and strength of association between TB treatment outcome and HIV status and other independent variables.

Results: Out of 1649 TB patients, 94.7% (1562) have been tested for HIV of whom 156 (10%) were HIV co-infected. The mean age of the patients was 28.5 +/- 15.5 years. The majority were new TB cases (96.7%), male (53.7%), urban (54.7%), and had smear negative pulmonary TB (44.1%). Overall, the treatment success rate of TB patients with or without HIV was 87.3%. Using cure/completion as reference, patients without known HIV status had significantly higher odds of default/failure [AOR, 4.26; 95% CI, 1.684-10.775] and transfer-out [AOR, 2.92; 95% CI, 1.545-5.521] whereas HIV positive patients had significantly higher odds of death [AOR, 6.72; 95% CI, 3.704-12.202] and transfer-out [AOR, 2.02; 95% CI, 1.111-3.680].

Conclusion: Overall, treatment outcome and HIV testing coverage for TB patients is promising to reach the WHO target in the study area. However, default/failure among patients without known HIV status, and higher rate of mortality among HIV positive TB patients and transfer-out cases deserves concern. Therefore further prospective studies on quality of services, socioeconomics and psychology of this group should be conducted.

Key words: Treatment outcome, tuberculosis, human immunodeficiency virus, Ethiopia
AB 10: Molecular epidemiology and drug sensitivity patterns of *Mycobacterium tuberculosis* isolated from pulmonary tuberculosis patients in and around Ambo Town, Central Ethiopia

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Abstract

**Background:** Tuberculosis (TB) remains a major global public health problem. The epidemic remains a threat to sub-Saharan Africa, including Ethiopia, with further emergence of drug resistant TB. This study investigated the drug sensitivity pattern and molecular epidemiology of mycobacterial strains isolated from pulmonary TB patients in and around Ambo town, Central Ethiopia.

**Methods:** A cross-sectional study design was employed. The study involved 105 consecutive new smear positive pulmonary TB (PTB) patients diagnosed at Ambo Hospital and surrounding Health Centers between May 2014 and March 2015 upon informed consent. Sputum samples were cultured on LJ media using standard techniques to isolate mycobacteria. Region of difference 9 (RD9)-based polymerase chain reaction (PCR) and spoligotyping were employed for the identification of the isolates at species and strain levels, respectively. The spoligotype patterns of strains were entered into the SITVIT database to determine Octal and SIT numbers for each strain. The sensitivity of the isolates to first line anti-TB drugs was evaluated on LJ-medium with the indirect proportion method.

**Results:** Cultures were positive in 86 (82%) of the 105 newly diagnosed smear positive pulmonary TB patients. All of the 86 isolates were confirmed as *M. tuberculosis*. The majority (76.7%) of them were clustered into seven groups while the rest (23.3%) appeared unique. The most predominant strains were SIT53 and SIT149, consisting of 24.4% and 20.9% of the isolates, respectively. Assigning of the isolates to family using SPOTCLUST software revealed that 43.3% of the isolates belonged to T1, 23.3% to T3 and 13% to CAS family. The majority (76.7%) of the *M. tuberculosis* isolates were susceptible to all the four first line drugs. Mono resistance to any one of the four drugs was observed in 23.3% of the isolates. The highest proportion of mono resistance was observed against INH (4.7%). There was a single case of multidrug resistant TB (MDR-TB) (1.2%).

**Conclusion:** The most predominant strains of *M. tuberculosis* in the study area were SIT53 and SIT149. The majority of the isolates were clustered suggesting on-going active TB transmission in the study area. Mono resistance is relatively prevalent. The prevalence of MDR-TB was low compared to previous similar studies.

**Key Words:** Molecular epidemiology, drug sensitivity, *Mycobacterium tuberculosis* pulmonary tuberculosis, Central Ethiopia
AB 11: Treatment of human visceral Leishmaniasis restores specific immune response

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Abstract
Background: Leishmaniasis is a group of diseases caused by protozoan parasites of the genus Leishmania. Leishmania are obligate intracellular kinetoplastid protozoan parasites that are transmitted through the bite of a vector called sandy fly. The disease ranges from self-healing cutaneous to visceral leishmaniasis (VL), which is severe and can causes death when untreated.

Objective: To assess the effect of Ethylene diamyn threta acetct (EDTA) and heparin anticoagulants on the survival of Low Density Granulocytes (LDGs) in Peripheral blood mononuclear cells (PBMCs) and the release of interferon-γ and Interleukin (IL-10) in the Whole Blood Assay (WBA).

Methods: A cross-sectional study was conducted on clinically and laboratory confirmed VL patients from December 2014 to May 2015 at University of Gondar Hospital. Convenience sampling technique was used to select study participants and all consecutive VL cases that came to the hospital during the study period and controls were included. 6 ml of blood using EDTA and 6 ml using heparin was collected from all study participants before and after treatment and from controls to assess the effect on LDGs using Fluorescent Activated Cell Sorter (FACS) caliper, arginase activity using enzymatic assay and production of IFN-γ and IL-10 using Enzyme Linked Immuno Sorbent Assay (ELISA). Data were evaluated using GraphPad Prism 6 and differences were considered statistically significant at p < 0.05. FACS data were analyzed using Summit v4.3 software.

Results: The frequency of LDGs is significantly lower when the blood is collected with heparin as compared to EDTA. EDTA and Heparin does not have an impact on the levels of arginase released. And results show that EDTA prevents the production of IFN-γ. In response to antigen-specific and polyclonal activation cells from active VL patients produce no or low levels of IFN-γ and IL-10, however, after successful treatment, these cells gradually regain their capacity to produce IFN-γ, but not IL-10.

Conclusion: These results suggest that, in contrast to VL patients from Bihar, India, VL patients from Gondar, Ethiopia, have lost their ability to mount a Th1 response during active VL and this active disease is not associated with sustained levels of IL-10.

Keywords: VL, Heparin, EDTA, LDGs, PBMCs, IFN-γ, IL-10
AB 12: Combined antibacterial effect of essential oils from three most commonly used Ethiopian traditional medicinal plants on selected multidrug resistant bacteria

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Abstract

Background: An alarming increase of emerging and re-emerging of multidrug resistance (MDR) cause serious difficulties in treatment and continued to be public health problem globally. As a result, searching for bioactive with chemical diversity and broad spectrum from medicinal plants is priorities in curb life threaten infectious agents. Those properties made them candidate for treat Enterobacteriaceae and/or methicillin resistance Staphylococcus aureus. However, they have not been screened for their combined effect on MDR bacteria. The aim of this study was to evaluate single and combined antibacterial effect of essential oils obtained from three commonly used Ethiopian traditional plants against selected multidrug resistant bacteria.

Methodology: Essential oils obtained by steam distillation from aerial parts of twelve plants were evaluated for antibacterial effect. They were adsorbed to antibiotic discs and placed on MHA seeded with five MDR and reference strains. Only three of them, having greater than 14 mm inhibition zone (IZ) were selected and evaluated for their combined effects. Then, their minimum inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were measured in 1:1 ratio. Their interaction was determined by fractional inhibitory concentration index.

Results: Combined essential oil obtained from Blepharis cuspidata and Thymus schimpperi had inhibition zone (39 mm), MIC and MBC values (0.39 mg/ml) against MRSA. This combination was also potent against gram negative MDR bacteria. They had inhibition zone ranging from 28-35 mm and MIC and MBC were ranging (0.39-6.25 mg/ml), (0.78-12.5 mg/ml) respectively. Moreover, combined effect of essential oils from Blepharis cuspidata and Boswellia ogadenis had inhibition zone (22-29 mm). Their MIC value ranges 0.78-6.25 mg/ml for Enterobacteriaceae (Escherichia coli (R), Klebsiella pneumonia (R) and Acinetobacter species (R). It had also potent against MRSA.

Conclusion: Combined essential oils were found to have more antibacterial effect than using alone and even it has better inhibition zone than tested modern drugs. Hence, it can be applied to a pharmaceutical composition as modulators or adjuvant or precursors for synthesis of new antibiotics in future activities.

Key words: Blepharis cuspidate, Thymus schimp, fractional inhibitory concentration index, multidrug resistance, Boswellia ogadenis
AB13: Utility of urine as a clinical specimen for the diagnosis of pulmonary tuberculosis in people living with HIV in Addis Ababa, Ethiopia

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Abstract

Background: Tuberculosis (TB) is an opportunistic infection that increases mortality and morbidity in human immunodeficiency virus (HIV) infected individuals. Despite the increased dissemination of TB among HIV infected patients, the diagnosis of pulmonary tuberculosis (PTB) by the conventional Ziehl-Neelsen (ZN) stained smears examination shows negative smear results. Due to low bacterial load in sputum specimen of HIV patients, using alternative specimens for increasing the detection rate of tubercle bacilli is very important. Therefore, this study was conducted to evaluate the utility of urine as clinical specimen for the diagnosis of pulmonary tuberculosis in people living with HIV.

Method: A cross-sectional study was conducted on PTB suspected patients infected with HIV from November 2013 to January 2015. A total of 260 specimens (117 sputum & 143 urine) were collected from 143 PTB suspected cases. Samples were processed for culture using Lowenstein-Jensen medium and the remaining were subjected to PCR using RD9 primers. All Culture positive samples (sputum and urine) were subjected to spoligotyping to check whether the isolated strain from both samples were the same or not.

Results: Out of 117 suspected individuals who gave both specimens, sputum culture alone detected more mycobacterial isolates, 33 (28.2%) than the urine specimen alone, 17 (14.5%). The detection rate of M. tuberculosis from urine in patients those couldn’t produce sputum was 9/26 (34.6%). Of the 84 sputum culture-negative cases, 4 (4.8%) were urine culture-positive. Among patients whose pulmonary samples were negative by all bacteriological methods, the urine PCR was positive in 5.2% of the patients. The combination of urine culture and PCR result was comparable with the results of sputum culture with the sensitivity and specificity of 87.9% and 100%, respectively. Out of 13 M. tuberculosis isolated from both sputum and urine of the same patients, 7 (53.8%) showed differ in their family.

Conclusion: PCR and culture examination of urine for diagnosis of suspected PTB in HIV infected patients were significantly improved the detection rate of M. tuberculosis. Even if 53.8% isolates showed strain variation, further work with enough sample size might be needed to indicate strain variation of M. tuberculosis among urine and sputum specimen of suspected pulmonary tuberculosis in people living with HIV.

Key words: Diagnosis; PCR; Pulmonary tuberculosis; TB HIV infected; Tuberculosis; Urine.
AB 14: Detection and Quantitation of Leishmania DNA by real time PCR in whole blood and skin lesion biopsy of Ethiopian Cutaneous Leishmaniasis (ECL) patients presenting with varied skin lesion types

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Abstract

Background: Cutaneous Leishmaniasis (CL) is a vector-borne parasitic disease endemic in many regions of the World. Conventional diagnostic methods are not sensitive enough for leishmaniasis parasite detection and reported as positive or negative, with no indication of parasite density for the diagnosis of Ethiopian cutaneous leishmaniasis. Moreover, the CL diagnosis is depending on clinical specimen types in terms of sensitivity and noninvasiveness.

Objective: To detect and quantify Leishmania parasite DNA by real time PCR in peripheral blood and skin lesion biopsy material obtained from patients suspected to suffer from ECL, and to examine the association between parasite load and clinical presentation.

Methods: A prospective study was conducted from March 2014 to October 2015. Structured questionnaires were employed to collect clinical information from study participants. Specimens: whole blood, buffy coat, skin scrap, biopsy and cotton swab samples were collected from 27 Localized cutaneous leishmaniasis and 21 Muco-cutaneous leishmaniasis patients and Novy-MacNeal-Nicolle (NNN) culture, smear and kinetoplast DNA real time PCR were performed. Data was entered and analyzed by SPSS version 20. The association between median parasite load in qPCR and categorical variables were measured by Kruskal-Wallis test and Mann-Whitney U test. The correlation between parasite load measurements in qPCR & clinical manifestation & parameters was computed by using Spearman’s rank correlation test. McNemar chi-square was used to compare the sensitivity of real time-PCR with other methods and the agreement between them was measured by Cohen’s kappa coefficients (κ). Values less than 0.05 and 95% CI were taken as significant level.

Result: Of 27 LCL patients; 74.1% 81.5% 66.7% 40.7% 25.9% and 29.6% tested positive by PCR in biopsy, PCR in cotton swab, culture in biopsy, culture in skin scrap, smear in biopsy and smear in skin scrap specimens respectively. Of 21 MCL patients; 71.4% 90.3% 57.1% 19.0% 9.5% and 28.6% using PCR in biopsy, PCR in cotton swab, culture in biopsy, culture in skin scrap, smear in biopsy and smear skin scrap specimens respectively.

Dq due to lack of an ideal gold standard, three reference schemes were used for determination of sensitivity as follows: parasitological methods only (scheme 1), combination of parasitology and PCR (scheme 2), and clinical diagnosis (scheme 3). The sensitivity of PCR in biopsy of LCL patients were 89.5% (scheme 1), 87.0% (scheme 2) and 74.1% (scheme 3). Similarly, sensitivity of PCR in cotton swab were 94.5% (scheme 1), 95.7% (scheme 2) and 81.4% (scheme 3). In MCL, the sensitivity of PCR in biopsy was 73.3%, 75.0% and 71.4% and in cotton swab, 93.3%, 95.0% and 71.4% respectively for schemes 1, 2 and 3. In both PCR and parasitological methods, NNN culture of biopsy was the most sensitive method as compared to NNN culture of skin scrap, smear of biopsy samples and smear of skin scrap methods. Concerning qPCR, biopsy and cotton swab samples were also better sampling methods as compared to blood and buffy coat samples.

Conclusion: Cotton swab showed higher sensitivity than biopsy specimens in kDNA real time PCR based diagnosis of Ethiopian LCL and MCL but this was not statistically significant. There was higher parasite load in LCL than MCL in biopsy and swab specimens but this difference was not significant. We found no leishmaniasis parasite in blood and buffy coat specimens of LCL and MCL patients in smear preparations, NNN cultures and kDNA real time PCR. For the most sensitive diagnosis of ECL using kDNA PCR and NNN cultures, biopsy specimens are recommended. For a very sensitive diagnosis of ECL by kDNA real time PCR with less invasive sampling, swabs are recommended.

Key words: Ethiopian Cutaneous Leishmaniasis, qPCR, biopsy, sensitivity, parasite load

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Abstract

Background: HSV-2 is a DNA virus that belongs to Alphaherpesvirinae, a subfamily of the Herpesviridae family. It is typically infects the genital area and is transmitted sexually or from mother to newborn. The risk of transmission is significantly higher among women who acquire genital infection with HSV-2 during pregnancy than among women with long-standing. Therefore the aim of this study was to determine the sero-plevalence of Herpes Simplex Virus-2 (HSV-2) infection and associated risk factors in pregnant women attending ANC in selected health centers of Gulele subcity of Addis Ababa, Ethiopia, from May to October 2014.

Methods: A cross-sectional study was conducted among 422 pregnant women attending ANC in selected health centers. Serum samples were collected using cryovials tube and information on the risk factors were collected using structured questionnaire. Serum samples were screened for anti HSV-2 Ig G antibodies specific for glycoprotein using commercially available ELISA Kit. Data were coded, entered and analyzed using Epi-info version 3.5.4 and SPSS-16 for windows statistical packages.

Results: A sero-prevalence of HSV-2 in our study was 21.1%. HSV-2 Seropositivity was maximum in age group 25-29 years (48.31 %), followed by 20-24 years (29.2 %), 30-34 years (12.36 %), ≥ 35 years (7.86 %) and < 20 years (2.2 %). The frequency of asymptomatic and unrecognized infections was found to be high; only 0.2 % seropositive cases had a history of genital herpes. Larger HSV-2 seropositivity (37.1%) were felt among pregnant women with elementary educational status. High prevalence of HSV-2 was observed between gestational age of 13-28 weeks (48.3%) followed by 42.7% in the first tri-mester. Over all in this study, all of the risk factors analyzed showed that there is no significant association with HSV-2 seropositivity.

Conclusion: A relatively low prevalence of HSV-2 seropositivity was found in our study, with high frequency of unrecognized and asymptomatic infections. To prevent transmission to fetus or for better management, institutional delivery is mandatory. In addition, pregnant mothers should use condom during sexual intercourse to prevent HSV-2 transmission.

Keywords: HSV-2, sero-plevalence, pregnant mothers, ELISA
AB 16: Prevalence *Schistosoma mansoni* Infection and Therapeutic Efficacy of Praziquantel among School Children in Mana District, Jimma Zone, Southwest, Ethiopia.

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**Abstract**

**Background:** Intestinal Schistosomiasis is one of the neglected tropical parasitic diseases caused by *Schistosoma mansoni*. Currently, the control measures for the disease is mainly based on mass drug administration (MDA) with praziquantel (PZQ) targeting the school age children. In Ethiopia, the potential foci for Schistosomiasis and therapeutic efficacy of PZQ among school age children remain poorly explored. Therefore, we determined both the prevalence and intensity of *S. mansoni* infections and the therapeutic efficacy of PZQ among school children in Manna District (new foci for *S. mansoni*), Jimma Zone, Southwest, Ethiopia.

**Methods:** A school based cross-sectional study was conducted from March to April 2014. In screening phase, microscopic examination of stool were undertaken and eggs of *S. mansoni* were quantified in a single stool sample from 500 school children in three primary schools in the district by applying a single Kato-Katz thick smear. Study participants excreting *S. mansoni* eggs were administered with 40 mg/kg of PZQ and re-examined after three weeks of the treatment. The therapeutic efficacy of PZQ against *S. mansoni* was evaluated by cure rate and egg reduction rate using group arithmetic mean. The therapeutic efficacy of PZQ was considered to be sufficient when the cure rate is between 60% and 90% and when the egg reduction rate is at least 90% based on group arithmetic mean.

**Results:** The overall prevalence of *S. mansoni* among the school children in the district was 24.0% (120/500). The higher prevalence was recorded among males 25.6% (61/238) than females 22.5% (59/262). The infection intensity was light in the 27.5% of the study participants; among infected children with mean fecal egg count (FEC) 202 egg per gram (EPG). The therapeutic efficacy of PZQ was highly efficacious (cure rate: 99.1% and egg reduction rate: 99.9%) among the School children in the study area.

**Conclusion:** The school children in the study area were at moderate risk of the morbidity caused by *S. mansoni* (prevalence > 10% and < 50% according to WHO threshold), and hence a biannual MDA with PZQ is required. PZQ available on the local market revealed efficacious and can be recommended for individual treatment in absence of MDA.

**Key words:** Schistosoma mansoni, Kato-Katz, Praziquantel, Prevalence, Intensity, Cure Rate, Egg Reduction rate
AB 17: Usefulness of Estimation of Glycated Albumin and Glycosylated Haemoglobin in Diabetic Chronic Kidney Disease Patients

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Abstract

Background: It is unclear whether the glycosylated hemoglobin (HbA1c) assay accurately reflects glycemic control in patients with chronic kidney disease (CKD).

Aim: To evaluate the usefulness of glycated albumin (GA) in diabetic CKD population with reference to glycemic control in comparison to HbA1c.

Materials and Methods: Totally 194 Diabetic CKD (Male: 126, Female: 68) patients who attended a private nephrology clinic, Tiruchirappalli, India, were taken for the study. The age ranged between 18 to 87 years. Blood samples were collected in fasting state in all the patients and all biochemical estimations were done using fully automated analyzer. The study was approved by local ethics committee and informed consent has been obtained from all the study population prior to the study.

Results: The mean estimated GFR levels were 82.47, 44.32, 24.13 and 10 ml/min/1.73 m² in Group I, II, III & IV respectively. The GA levels were significantly increased when the eGFR levels have been decreased. Also the GA: HbA1c ratio differed significantly when compared between the groups I & II, I & III and group I & IV of CKD patients.

Conclusion: GA estimation is a useful marker in assessment of short term glycemic control in stage III & IV (< 30 ml/min/1.73 m²) diabetic CKD patients. GA: HbA1c ratio if routinely done may also become a useful marker in Diabetic CKD population in future.

Keywords: Glycated Albumin, Glycosylated Haemoglobin, Diabetic Chronic Kidney Disease.
AB 18: Prevalence of Methicillin resistant *Staphylococcus aureus* colonization among HIV positive patients at four HIV care and service centers, Mekelle, Ethiopia

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**Abstract**

**Background:** HIV-positive individuals are at higher risk of Methicillin Resistant Staphylococcus aureus (MRSA) colonization and its related infection, which necessitate rapid and aggressive antimicrobial treatment. Our Objectives was to determine the prevalence and risk factors for S. aureus and MRSA colonization among HIV patients.

**Methods:** Cross sectional study was carried out from September 2014 to February 2015 in four selected health facilities giving HIV care services in Mekelle city such as Mekelle Hospital, Kasech Health Center, Mekelle Health Center and Semen Health Center. A standardized questionnaire was developed for collection of socio-demographic and clinical data. From total of 249 participants, nasal and throat swab samples were collected, inoculated into the Stuart’s Transport media and transported to the Ayder referral hospital medical microbiology laboratory within 3 to 4 hours. Swabs were inoculated on to Mannitol Salt Agar (MSA) and incubated at 37°C aerobicly for 24 h. After incubation, yellowish colonies from the MSA plate were sub-cultured to Nutrient Agar for further biochemical characterization. MRSA isolates were identified using Cefoxitin disc by the Kirby-Bauer disk diffusion method. Data was analyzed using Chi square (X2) test to determine for associated risk factors. P-value < 0.05 was considered statistically significant.

**Results:** Out of 249 study participants, 81(32.5%) and 6(2.4%) were colonized with S. aureus and MRSA respectively. Presence of percutaneous device in the past one year and recent CD4 count less than 200/mm3 were found to have statistically significant association with MRSA colonization (AOR:0.33(0.12-0.91). The antimicrobial susceptibility pattern of MRSA isolates from hospital participants were resistant to more than one antimicrobial class than isolates from the health centers which were sensitive to all the antimicrobial tested. Resistance pattern of MRSA was 16.7% for both Ciprofloxacin and Trimethoprim Sulphamethoxazole, 33.3% for Clindamycin and 50% for Erythromycin. All isolates were however 100% sensitive for Amikacin. Multidrug resistance was shown in 3(50) of the MRSA isolates which were from the hospital participants.

**Conclusions:** Prevalence of MRSA colonization was low; however, S. aureus colonization was high. HIV positive persons with previous history of hospitalization (past six month), hospital visit in the past 12 months, percutaneous device in the past 12 months and CD4 count less than 200/mm3 were more at risk of S. aureus and MRSA colonization even though it was not statistically significant for MRSA colonization except for the presence of percutaneous device in the past 12 month and CD4 count less than 200/mm3. In this study detection rate of S. aureus and MRSA was increased with addition of throat swab. MRSA isolates from hospital participants were more resistant as compared to MRSA isolates from health centers. Amikacin was found the most effective antimicrobial to the MRSA isolates with 100% sensitivity. Regular screening of S. aureus and MRSA colonization among HIV patients may help to improve the health of HIV patients.

**Key words:** HIV patients, S. aureus, MRSA, Prevalence, Risk factors, Drug Resistance.
AB 19: Immunogenicity of Leishmania Candidate Vaccine Antigens in Peripheral Blood Mononuclear Cells of Previously Treated Visceral Leishmaniasis Patients from South west Ethiopia.

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Abstract

Background: Visceral leishmaniasis is a public health problem and it is fatal if untreated. Disease burden is associated with poverty, lack of effective, affordable, and minimally toxic treatments. An effective vaccine is needed to combat this disease. This was to determine the immunogenicity of leishmania derived antigens by ex vivo peripheral blood mononuclear assay.

Method: Peripheral blood mononuclear cell-based assays were set-up in blood samples obtained from drug-cured VL patients (DC-VL), who are putatively immune to re-infection. DC-VL patients were those treated at least six months prior to sampling. Nine Leishmania derived antigens were selected, and together with whole lysate antigen and Phytohaemagglutinin (PHA), assessment of immunogenicity was carried out by cytokine assays using ELISA kit. The assay aimed at measuring IFN-gamma, TNF-alpha, IL-10 and IL-5 in culture supernatants of PBMCs stimulated in vitro.

The association of cytokine production with groups and immunogenicity difference of antigens was determined by using non-parametric tests (Mann Whitney & Tukey's Multiple Comparison tests) found in Graph Pad Prism version 6.

Result: Drug-cured visceral leishmaniasis patients develop protection mediated by Th1-type cellular responses against new infections. We evaluated cytokine responses against 9 candidate vaccine antigens including PHA and LSA in PBMCs of 18 drug-cured VL subjects and 5 healthy controls. IFN-gamma, TNF-alpha and IL-10 production were higher in drug-cured groups, but neither drug-cured nor healthy controls produce IL-5. The data suggest the mounting of Th1 type responses upon cure from visceral leishmaniasis, while small amounts of IL-10 were also measurable. NS, S, PNS and NSL were more immunogenic than other antigens as determined by levels of IFN-gamma, TNF-alpha and IL-10.

Conclusion: This study indicates that T cell recall ability of humans cured from VL by chemotherapy was conspicuous and related to Th1 type immune response. Further, the data confirm that high levels of IFN-gamma and TNF-alpha in the presence of low levels of interleukin-10 (IL-10) could be proxy indicators of protective immunity in drug-cured visceral leishmaniasis patients. Among tested antigens NS, NSL, PNS and S were more immunogenic and elicit high level of IFN-gamma and TNF-alpha in PBMCs of drug-cured with the range of (16-1826 mg/ml).

Key Words: Immunogenicity, Cytokines, Candidate vaccines, Leishmaniasis.
AB 20: Stool Antigen Test for the Detection of Helicobacter pylori and Risk Factors among Dyspepsia and Non Dyspepsia Adults at Assosa General Hospital, West Ethiopia: a Comparative Study

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Background: Helicobacter pylori causes’ gastritis, peptic ulcer disease and it is also an important risk factor for the development of gastric cancer and mucosal associated lymphoid tissue lymphoma. Studies revealed that the prevalence of H. pylori infection varies with geographical region, socio-demographic characteristics and environmental conditions. The objective of this study was to assess the prevalence of Helicobacter pylori and related risk factors among dyspeptic and non-dyspeptic adults at Assosa General Hospital.

Methods: A comparative cross-sectional study was conducted among 230 (115 dyspeptic and 115 non-dyspeptic) study participants at Assosa General Hospital selected consecutively from March to October 2015. Stool sample was collected and the presence of stool antigen against anti H. pylori pre-coated antibody was determined. A structured face to face interview was conducted to assess some potential risk factors. Logistic regression was used to estimate odds ratios at 95% CI and P-values less than 0.05 were taken as significant level.

Results: Of a total of 230 stool samples, an overall 112 (47.4%) were reactive for H. pylori antigen. The prevalence of H. pylori among dyspeptic and non-dyspeptic subjects was 67(58.3%) and 45(39.1%) respectively. Females 69(61.6%) had a higher isolation rate of H. pylori than males 42 (38.4%). The rate of H. pylori positivity was significantly associated with gender [AOR=0.36, 95% CI: 0.19- 0.68, p = 0.002]. The prevalence of H. pylori was significantly higher [AOR=0.37, 95% CI: 0.20- 0.70, p= 0.002] in dyspepsia patients than non-dyspepsia subjects. Being illiterate has a higher chance of acquiring H. pylori [COR=0.14, 95% CI: 0.02-0.79, p=0.026], but it was confounded by different factors as it was manifested by its adjusted odds ratio [AOR=0.37, 95% CI: 0.10-1.40, p=0.151]. Behavioral factors like alcohol drinking, cigarette smoking and khat chewing did not have significant association with H. pylori infection (p>0.05). Personal hygiene factors like toilet use and hand washing habit after toilet had a significant association (P<0.05) with prevalence of H. pylori.

Conclusion: The prevalence of H. pylori infection was high among dyspeptic patients. Higher rate of H. pylori was associated with sex, residence area, toilet use and hand washing habit after latrine.

Key words: Prevalence of H. Pylori, Dyspepsia, Non-dyspepsia

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Abstract

Background: Managing HIV/AIDS and TB laboratory commodities through the Integrated Pharmaceutical Logistics System (IPLS) are common strategies to enhance smooth flow of commodities and prevent frequent stock out of critical items which might hinder the provision of quality diagnostic services on continuous basis at the point of care. However, data on IPLS implementation status at health facility level are scarce in Ethiopia.

Methods: A descriptive cross-sectional study was conducted in 33 public health facilities in Addis Ababa, Ethiopia. Seventeen health centers, 6 hospitals, 3 referral laboratories and 7 sub-city pharmaceutical and medical supplies pharmacy unit were included in the study. Information on selected indicators of IPLS implementation was collected using structured questionnaires customized from Logistics Indicator Assessment Tool (LIAT). In addition, in-depth interviews with key informant were conducted to obtain information which was difficult to obtain using quantitative methods. Data obtained through structured questionnaires were entered into Excel spreadsheet and exported to the Statistical Package for the Social Sciences version 20 (SPSS 20) for analysis. The data from the in-depth interview was summarized in narrative form.

Result: Availability of IPLS recording and reporting formats (bin cards, internal facility report and resupply and report resupply form) were reported in 25 (92.6%) of facilities. Regular update of bin cards was reported in 16 (61.5%) of the facilities, while IFRR and RRF were completed by 22 (84.6%) and 24 (92.6%) of health facilities respectively; furthermore; 25 (96%) of the facilities reported stock out at least one or more reagents during the last six months. While 10 (41.6%), 12 (54.5%) and 11 (46.7%) of facilities were stock out for SGPT, EDTA test tube and 1% Carbol Fuchsine, were found stock out on the day visit respectively. Furthermore management supports on IPLS implementation was significantly associated with acceptable data quality, chi-square (X²) = 22.2, p < 0.00) and utilization of IFRR (X² = 5.71, p < 0.042). Utilization of bin cards was higher at health centers 76.5% (13/17) comparing to hospitals 33.3% (2/6).

Conclusion: Majority of the facilities reported the availability and utilization of IPLS tools to manage HIV/AIDS and TB laboratory commodities. However, the majority of the facilities experienced stock out of one or more HIV/AIDS and/or TB laboratory commodities during the last six months which could be in part are due to the failure to implement IPLS in full scale. PFSA, RHBs and supply chain partners should continue their collaborative effort to realize the full implementation of IPLS at all health facilities for the management of HIV/AIDS and TB Laboratory Commodities.

Keywords: IPLS implementation, stock out, laboratory commodities, health facilities.
AB 22: Hematological Profile of Pregnant Women at St. Paul’s Hospital Millennium Medical College, Addis Ababa, Ethiopia

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Abstract

Background: In pregnancy, the hematological system undergoes changes in order to meet the demands of the developing fetus and placenta, with major alterations in blood volume. Abnormal hematological profiles affect pregnancy and its outcome. Anemia is the most common hematological problem during pregnancy, followed by thrombocytopenia. We aimed to assess hematological profiles of pregnant women at St. Paul’s Hospital Millennium Medical College, Addis Ababa, Ethiopia.

Methods: A facility-based cross sectional study was conducted in St. Paul’s Hospital Millennium Medical College from June to August 2014. A total of 284 pregnant women (48 1st trimester, 66 2nd trimester, and 170 3rd trimester) were involved for the study. Blood specimens were examined for complete blood count and peripheral blood morphology. Socio-demographic characteristics and clinical data of the participants were collected using pretested questionnaire. Statistical analysis of the data (Chi-square, ANOVA, logistic regression) was done using SPSS V-16. P value <0.05 was considered as statistically significant.

Results: The overall value (mean ± SD) hematological parameters of the study participants were: WBC count, 7.93 ± 2.68; RBC count, 4.58 ± 2.34; Hb level, 13.01 ± 1.64; HCT level, 40.07 ± 4.15; MCV, 90.60 ± 6.59; MCH, 29.32 ± 2.72; MCHC 32.33 ± 1.35; and mean PLT 249.36 ± 80.08. The differences in mean WBC count between 1st and 3rd trimesters, Mean Hb between 1st & 2nd and 1st & 3rd trimesters, Mean HCT between 1st & 2nd trimesters, mean RDW between 1st & 2nd and 1st & 3rd trimesters, and mean neutrophil and lymphocyte count between 1st & 2nd and 1st & 3rd trimesters were statically significant (p < 0.05). The prevalence of anemia and thrombocytopenia was 11.62% and 7.7 %, respectively. The commonest type of anemia was microcytic hypochromic (51.5 %) and normocytic hypochromic (27.3%), which are mostly characteristic of iron deficiency anemia. In multivariate logistic regression Gestational age (trimester) and iron folic acid supplementation were statically associated with anemia.

Conclusion: Pregnant women should be monitored for their hematological parameters at any stage of the pregnancy to avoid adverse outcomes.

Key words: Pregnant women, hematological profile, anemia, thrombocytopenia
AB 23: Prevalence, HIV co-infection and Multi-drug resistance of pulmonary tuberculosis in prison settings of North Gondar Zone, Northwest Ethiopia

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Abstract

Background: Tuberculosis (TB) in correctional settings is a public health concern. Incarcerated population contains a high proportion of people at greater risk for tuberculosis than the general population but often neglected reservoirs for the concentration and dissemination of TB including Multi-drug resistance TB (MDR-TB) and threatens those in the outside community. The aim of this study was to determine the prevalence, HIV co-infection and Multi-drug resistance of pulmonary tuberculosis in prison settings of North Gondar zone, Northwest Ethiopia.

Methods: A cross-sectional study was conducted among prisoners of North Gondar zone from March - May, 2015. All prison inmates who had history of cough for ≥ 2 weeks were included in the study. Socio-demographic characteristics and potential risk factors were assessed using structured questionnaire. Spot-morning-spot sputum samples were collected and smears prepared then stained with Auramine O stain and examined through light emitting diode fluorescence microscopy (LED-FM). All samples positive for acid-fast bacilli were further examined by Gene Xpert MTB/RIF assay for MDR-TB. Data was analyzed using SPSS version 20 and P-value < 0.05 was taken as statistically significant.

Results: A total of 282 prison inmates suspected for pulmonary tuberculosis (PTB) infection were enrolled in the study. The overall prevalence of smear-positive PTB infection was 5.3% (15/282) but none of the smear positive TB cases were resistant to rifampicin. The prevalence of HIV infection among TB suspected prisoners was 6%. Among smear positive PTB infected prisoners, 27% were co-infected with HIV virus. Moreover, smear positive pulmonary tuberculosis infection was significantly associated with smoking, malnutrition, number of prison inmates per cell, poor ventilation in a cell and history of contact with TB patients.

Conclusion: The prevalence of smear-positive pulmonary tuberculosis infection among north Gondar prisoners can be graded as higher and significant numbers of prisoners were also co-infected with HIV. Reducing the number of prison inmates within a particular cell, prevention of malnutrition, establishing ventilation system can possibly minimize the transmission of tuberculosis among prisoners.

Keywords: Prison, Pulmonary tuberculosis, Human immunodeficiency virus
AB 24: Renal function impairment and associated factors among HAART naïve and experienced adult HIV positive individuals in southwest Ethiopia: A comparative cross sectional study

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Abstract

Background: Human immunodeficiency virus (HIV) infection and its treatment is a common cause of renal diseases. Renal disease is associated with an increasing cause of morbidity and mortality in HIV positive individuals than in the general population. It has been also associated with adverse outcomes, such as complications of decreased renal functions and progression to renal failure. Here we need determine the prevalence and factors associated with renal function impairment among highly active antiretroviral therapy (HAART) naïve and HAART experienced adult HIV positive individuals.

Methods: A facility based comparative cross - sectional study was conducted in Jimma University Specialized Hospital (JUSH) from June to September 2014. A total of 446 HIV positive individuals who came to JUSH during the study period were included in the study. Sociodemographic and clinical data were collected using structured questionnaire. Blood specimen was analyzed for renal function tests. Descriptive statistics, independent T- test and logistic regression analysis were done using SPSS version 16 software.

Results: The overall prevalence of renal function impairment was 18.2 % (81 /446). The prevalence of renal impairment in HAART naïve and HAART experienced persons was 28.7 % (64 /223) and 7.6 % (17/223), respectively. Age ≥ 50 years (AOR =3.6; 95% CI: 1.4 - 9.6), advanced WHO stage (AOR = 2.3; 95% CI: 1.1- 4.7), and CD4 count <199 (AOR = 6.9; 95% CI: 3.3-14.2) were independent risk factors among HAART naïve study participants. On the other hand, female gender (AOR=6.6; 95 CI % 1.2- 34), age ≥ 50 years (AOR=12.1; 95 % CI: 1.7- 84) and CD4 count < 199 (AOR=17; 95% CI: 5.2- 58) were independent risk factors among HAART experienced study participants.

Conclusion: The prevalence of renal function impairment was higher among HAART naïve than HAART experienced study participants. Renal function impairment is associated with advancement of diseases and old age.

Key words: HIV, Renal function impairment, HAART experienced, HAART naive, Ethiopia.
AB25: GeneXpert MTB/RIF® assay for the diagnosis of smear-negative pulmonary tuberculosis: Can bleach-concentration increase detection of M. tuberculosis?

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Abstract

Background: Recently, the number of registered smear-negative tuberculosis (SNTB) cases exceeded the smear-positive cases, particularly in Ethiopia. Despite this, the diagnosis of SNTB remains challenging. In 2010, WHO endorsed Xpert MTB/RIF test as the initial diagnostic tool in people suspected of HIV-associated or drug-resistant TB. However, information regarding the performance of Xpert MTB/RIF test for diagnosing SNTB in high burden settings remains limited.

Objective: To evaluate the diagnostic accuracy of Xpert MTB/RIF test and the impact of bleach-concentration on the performance of Xpert MTB/RIF test using smear-negative samples from HIV-negative patients at Jimma University Specialized Hospital, Southwest Ethiopia.

Methods: In this study, a total of 185 consecutive adults with presumptive pulmonary TB and negative sputum smears were prospectively enrolled. One spot and one morning smear-negative sputum samples per patient were examined using Xpert MTB/RIF and cultured at Mycobacteriology Research Center of Jimma University, Ethiopia. The sputum culture on both Löwenstein-Jensen (LJ) and/or Mycobacteria Growth Indicator Tube (MGIT) was the gold-standard.

Results: Out of 185 smear-negative presumptive pulmonary TB cases, 19 (10.3%) of them had culture-proven TB. The sensitivity of Xpert MTB/RIF on spot and morning sputum was similar (63.2%). Testing two specimens per patient insignificantly increased the sensitivity of Xpert MTB/RIF. Bleach-concentration and pelleting improved sensitivity of Xpert over unprocessed sputum in paired samples (73.8% vs 63.2%) without affecting the specificity (95%). Bleach-concentration and pelleting allowed an additional 7 cases of TB (missed on the first and second direct Xpert tests) to be detected, 5 of which were from culture-negative cases. There was no rifampicin resistance detected in any of the sputum samples tested by Xpert.

Conclusion and recommendation: Xpert MTB/RIF test establishes a rapid diagnosis in a large proportion of patients with smear-negative TB. Testing of single sputum by Xpert can reach reasonable sensitivity and results would be available on the same day, avoiding loss of patients and treatment delay. The sensitivity of Xpert MTB/RIF is improved after bleach-concentration and pelleting, though its added value needs further study on a larger scale.

Keywords: Smear-negative tuberculosis, Xpert MTB/RIF test, bleach-concentration
AB 26: Prevalence of Influenza B and its lineages in Ethiopia from 2014-2015 Epidemiological Calendar

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Abstract

Introduction: Influenza B viruses formed a homogenous group and started to diverge into two antigenically distinguishable lineages since in the 1980s. Ethiopia launched influenza surveillance in 2008 and currently there are 3 ILI sites, which are health centers and 5 SARI sites which are hospitals. The National Influenza Laboratory (NIL) is responsible for testing of specimens collected from all influenza surveillance sentinel sites. Hence we aimed to determine the distribution of influenza B and its subtypes among influenza virus suspected samples referred to NIL.

Methods: out of 2336 respiratory specimens received at the NIL in 2014 and 2015 epidemiological calendar year from all sites 125 (47.71%) were positive for influenza B using RT-PCR. All flu B positive samples were subtyped by RT-PCR using CDC protocol. The test results were reported weekly to WHO AFRO influenza laboratory network and data from the 2014 and 2015 report on Influenza viruses by NIL is used as a source of data.

Results: Of the 125 Influenza B positive specimens, 39 (31.20%) were positive for influenza B / victoria and 84 (67.2%) for influenza B / yamagata. Among the influenza B’s, 2 (1.6%) were non sub typed neither for Victoria nor yamagata. When we see the results in the age categories during the two year period ≤ 14 years of age were 56 (44.8 %), 15-39 years 48 (38.4 %), 40-64 years 17(13.6 %) and ≥ 65 years 4 (3.2%). The number of flu B positives in males were 50 (40 %) and females were 75(60 %). The SARI sites were 4 (3.2 %) while ILI 121 (96.80 %).

Conclusions: The data indicated that both influenza B / Victoria and yamagata viruses circulated during the two years and the predominant subtype circulated was Influenza B / yamagata. The positivity rate is higher in females than males. Influenza B virus circulation is more common in children ≤ 14 years of age and decreases as the age category increases. Positivity rate at SARI was found to be low compared to the ILI positivity rate. The two flu B lineages should be considered in vaccine production programmes.

Keywords: Influenza B, RT-PCR, National Influenza Laboratory


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Abstract

**Background:** Cervical cancer is a preventable disease affecting an estimated 530,000 women each year & leading to nearly 275,000 deaths. Human papillomavirus has been recognized as an important cause of cervical cancer and it is implicated in 99.7% of cervical squamous cell cancer cases worldwide. In Ethiopia, every year around 7095 women are diagnosed with cervical cancer and 4732 die from the disease. Very low screening practice & inadequate screening coverage in Ethiopia makes cervical cancer as one of the major public health concern. This study was aimed to assess the prevalence & genotype distribution of High Risk Human papillomavirus (HR HPV) & Cervical Cytology abnormalities at selected Obstetrics and Gynecology clinics in Addis Ababa, Ethiopia.

**Methods:** Institutional based cross sectional study design was used from June to October 2015. Cervical samples were collected using Abbott cervi-cyt collection material for HR HPV DNA and cytobrush for Pap smear screening. A total of 366 participants were enrolled based on the set inclusion criteria. HR HPV DNA was analyzed using Abbott Real Time PCR and cervical cytology screening was made using conventional Pap smear techniques. Data entry & analysis was made using Epi-data version 3.1 and STATA version 11.0 respectively.

**Results:** The overall HR HPV prevalence was 13.7% (50 /366), with 76% (38 /50) of “other HR HPV” genotypes. Abnormal cytology was observed in 13.1% (48/366) with 81.3%, 12.5%, and 6.3% were shown LSIL, ASCUS and HSIL respectively. The highest frequency of HR HPV positives was observed in women without cervical cytology abnormality. The overall percent agreement was between the two methods was 78.96% with Kappa value 0.12, 95% CI (0.00-0.243), P=0.01.

**Conclusion and Recommendation:** In this study, Non-16/18 HR HPV genotypes contributed the largest proportion of the overall HR HPV. The highest frequency of HR HPV positives was among women without cervical cytology abnormality. The HR HPV with Pap smear co-screening in women whose age is >30 years shall be in place. Further evaluation between the two screening methods against a perfect reference method shall be needed.

**Key Words:** High Risk Human Papilloma Virus, Cervical Cytology, Obstetrics and Gynecology, Genotype distribution
AB 28: Comparison of Creatinine clearance test with Modification of Diet in Renal Disease study equation, Cockcroft-Gault equation, and chronic kidney disease epidemiology Collaboration equation; hospital based study, Addis Ababa, Ethiopia

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Abstract
Background: Chronic kidney disease (CKD) is a leading cause of morbidity and mortality in both developed and developing countries. Appropriate staging of CKD enables for early detection and deciding appropriate options, and thereby dialysis or transplantation services shall be provided for only focused patients. With a very limited resource setting such as Ethiopia, it is timely to assess equations used for detecting and managing chronic kidney disease like creatinine clearance and estimated glomerular filtration rate (eGFR) equations. These equations which we use in country are derived from Afro-American and Caucasian population which is not validated in Ethiopian population.

Objective: To assess the comparability of creatinine clearance with Modification of Diet in Renal Disease Study (MDRD) equation, Cockcroft-Gault (CG) equation, and Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation among patients across all stages of chronic kidney disease.

Methods: A hospital based cross sectional study was conducted from August to September 2015 at Tikur Anbesa specialized hospital in Addis Ababa. Convenience sampling method was used to include 100 patients across all stages of chronic kidney disease. Whole blood and 24 hour urine specimen were collected for determination of serum creatinine and urine creatinine and volume respectively. Comparability of these different equations for determination of estimated glomerular filtration rate was statistically assessed using Statistical Package for Social Sciences (SPSS) version 21.0.

Results: The mean age and BMI of study participants were 50.3±16.9 year and 24.02±4.7 kg/m² respectively. Most of the study participants were females (57%) and the creatinine clearance of all the study participants (n=100) were from 9.1 to 185.2 ml/min/1.73m². Mean eGFR (ml/min/1.73m²) and the 95% CI for CrCl, MDRD, CKD-EPI and CG were 56.9 (49.58 - 64.24), 81.1 (71.39 - 90.87), 75.4 (66.96 - 83.84), and 68.33 (60 - 76.66) respectively. When the factor for black race was omitted, the mean eGFR for MDRD, CKD-EPI and 95% CrCl were found to be [66.94 (58.91-74.98), and 65.4 (58.07-72.73) respectively] closer to CrCl. All eGFR equations were significantly (p<.0001) different from CrCl and Limits of agreement between CrCl and CKD-EPI without race factor are narrower (-43.37 to +26.39) than for other equations such as MDRD (-72.67 to +24.23), MDRD without race factor (-48.97 to +28.91), CKD-EPI (-57.53 to +20.55), and CG (-52.59 to +29.75). In both male and female population, all eGFR equation were significantly different from CrCl except CG equation which was significantly (d = -1.89, p = 0.283) closer to CrCl in male population.

Patients categorized under the CKD stages 3-5 (GFR<60 ml/min/1.73 m²) were found 58% by CrCl, 41% (MDRD), 46% (MDRD without factor for black race), 41% (CKD-EPI), 45% (CKD-EPI without factor for black race), and 48% by Cockcroft-Gault.

Conclusion and recommendations: In overall study population, though all eGFR equations significantly overestimated GFR, in relative to other eGFR equations, CKD-EPI without adjustment for race factor provided less bias and higher precision with creatinine clearance but among male population, Cockcroft-Gault was with the least bias. Thus, we recommend CKD-EPI equation without the adjustment for black race in a general population but we suggest using Cockcroft-Gault in male population as a replacement for creatinine clearance.

Keywords: Chronic kidney disease, CKD-EPI, Cockcroft-Gault, creatinine clearance, MDRD, eGFR.
AB 29: Improving the Diagnosis of Bloodstream Infections: ‘Better Tests, Better Care’

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Abstract

Background: Bloodstream infections (BSIs) are associated with high mortality and increased healthcare costs. Optimal management of BSI depends on several factors including recognition of the disease, laboratory tests and treatment. Rapid and accurate identification of the etiologic agent is crucial to be able to initiate pathogen specific antibiotic therapy and decrease mortality rates. Among critically ill patients, the diagnosis of bloodstream infection poses a major challenge. This review summarizes and to present the currently available technologies, their strengths and limitations and different strategies to improve the conventional laboratory diagnostic steps for blood stream infection.

Methods: A computerized based potentially relevant literature search was conducted in the databases of PubMed, MEDLINE, EMBASE, Google scholar, national medical journals and Web of Science. The search criteria used as key word were Blood stream infection and its diagnosis, new approach in the diagnosis of blood stream infection, improving conventional method for diagnosis of blood stream infection, advanced method for blood stream infection.

Result: Articles published after 2005 on blood stream infection were reviewed. The review understood that, despite dramatic advances in diagnostic technologies in the forms of molecular techniques and biomarkers, many patients with suspected blood stream infections receive empiric antimicrobial therapy rather than appropriate therapy dictated by the rapid identification of the infectious agent. Current standard bacterial identification based on blood culture which still considered to be the "gold standard" is still the only method used for identification of causative agents and antimicrobial susceptibility patterns. This conventional workflow is extremely time-consuming and can take up to several days. Furthermore, fastidious and slow-growing microorganisms, as well as antibiotic pre-treated samples can lead to false-negative results. New tests are needed that can identify a specific pathogen or at a minimum, distinguish between bacterial and viral infections, and also provide information on susceptibility to antimicrobial agents.

Conclusion: A promising alternative rapid, sensitive diagnostic technology is crucial for diagnosis of blood stream infection in decreasing morbidity and mortality of patients, as it leads to the administration of an appropriate empiric antimicrobial therapy. The review observed that the need of research for the transitional selection of new technology which consider resource limitation.

Keywords: Blood Stream Infection, diagnosis, new technology
AB 30: Production of Microbiological Peptone Agar from *Milletia ferruginea* and *Moringa stenopetala* seed proteins through enzymatic hydrolysis

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Abstract

**Background**: Nitrogen is the most expensive sources of microbial culture media which is often termed peptone. Peptone (protein hydrolysate) is the products of protein hydrolysis. Each peptone has its own biological character and it is not full fill the entire requirement needed for microbial growth. The use of legumes as sources of protein hydrolysates in microbial culture media is limited and thus we were using *M. ferruginea* and *M. stenopetala* seed for the production of protein hydrolysate through enzymatic hydrolysis using alkaline protease (locally produced).

**Objective**: To investigate and optimize microbial media that substitute peptone agar using *M. ferruginea* and *M. stenopetala* seed flour hydrolysate using locally produced alkaline protease.

**Methods**: In this study we were used different methods/techniques such as defatting, protein isolation, BACC-15 alkaline protease production, enzymatic protein hydrolysis, proximate analysis of protein hydrolysate, inoculums preparation, preparation of media without and with supplements, and evaluation of bacterial growth. Data were analyzed using SPSS 20.

**Results**: Hydrolysis conditions [E], pH, temperature, and time) were optimized. The optimum conditions to reach the highest degree of hydrolysis were: [E] = 0.10%, pH=10, 50 °C, and 6:00 h for *M. ferruginea* and [E] = 0.12%, pH=10, 50 °C, and 4:30 h for *M. stenopetala*. The lyophilized *M. ferruginea* and *M. stenopetala* protein hydrolysates had high protein (70.37 ± 0.42 % and 67.57 ± 0.10 %), respectively and low bulk density (1.50 ± 0.07 and 1.95 ± 0.40 g protein/cm3) compared to others proximate contents. Both *M. ferruginea* and *M. stenopetala* peptone agar were found to be suitable media for the growth of pathogenic bacteria such as Shigella B (WHO), Salmonella typhi (ATCC 6539) (S. typhi), Escherichia coli (ATCC 25922) (E.coli), Proteus vulgaris (ATCC 13315) (P. vulgaris) and Pseudomonas aeruginosa (ATCC 27853) (P. aeruginosa). Colony counts were significantly (p<0.05) greater in *M. ferruginea* peptone agar without and with supplements than *M. stenopetala* and commercial peptone agar for Shigella B [(3.17×10⁹) CFU/mL], S. typhi [(2.82×10⁹) CFU/mL] and E.coli [(2.49×10⁹) CFU/mL] and colony counts were significantly (p<0.05) greater in *M. stenopetala* peptone agar with supplements than commercial peptone agar for P. vulgaris [(1.68×10⁹) CFU/mL], E.coli [(1.45×10⁹) CFU/mL] and S. typhi [(1.46×10⁹) CFU/mL].

**Conclusion and recommendation**: The protein hydrolysate agars were found to be better microbial media or comparable with peptone agar. Shigella B was showed highest growth on both *M. ferruginea* and *M. stenopetala* peptone agars. Thus, Pilot and scale up of the peptone production especially from *M. ferruginea* seed flour should be carried out in the future to commercialize the peptone.

**Key words**: Enzymatic hydrolysis; Protein hydrolysate; Peptone agar; proximate analysis.
Poster Presentations
AB 31: Assessment of Transfusion Utilization and Patient Outcomes at the Largest Referral and University Hospital in Addis Ababa, Ethiopia

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Abstract

Background: Assessment of blood and blood components utilization is an important tool to reduce inappropriate transfusions and to identify the frequency of blood and blood component utilization. However in Ethiopia, the regular audit and assessment of transfusion practice is not routinely performed.

Objective: To characterize blood transfusion practices and monitor blood expiration and patient improvement status as an outcome at Black Lion Specialized Hospital (BLSH), Addis Ababa Ethiopia.

Methods: A one year hospital based audit was conducted to analyze utilization of blood components and patient outcomes at the Black Lion Specialized Hospital blood transfusion service. The study was conducted between October 2010 and January 2011 on data of patients transfused from September 2009 to August 2010. Information on blood and components utilization was collected from the blood bank log book on 373 subjects. Data was analyzed for descriptive statistics, univariate and multivariate analysis using SPSS version 15.0 software (SPSS INC Chicago IL, USA).

Results: Of 361 transfused study subjects 856 units of blood were transfused with the mean of 2.37 units per recipient. Whole blood was most commonly transfused to 307 (85%) patients and the combination of two blood products was administered to 27(7.5%) patients. Plasma was transfused only for a single patient (0.3%). Of patients who had no improvement clinically, 45 (66.2%) were patients transfused with whole blood. Significant associations were found between the overall improvement status of patients and the health professional who ordered the transfusion and the type of blood and blood product administered.

Conclusion: Transfusion of blood components was very low and there was a high rate of whole blood transfusions. When component therapy was used, the rate of patient improvement status after transfusion was high. Therefore, blood transfusion service programs in Ethiopia should focus on component transfusion and the need to strengthen guidelines for the appropriate use of blood and blood components as clinical therapy.

Key words: blood usage, blood component, blood expiration rate, patient improvement.
AB 32 Preliminary implementation report on GeneXpert MTB/RIF assay at Felege Hiwot Referral Hospital, Northwest Ethiopia

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Abstract

Background: The GeneXpert MTB/RIF (Xpert) is a novel automated real-time PCR based assay which considered as a great advance over conventional smear and culture in the diagnosis of pulmonary tuberculosis (PTB) and rifampicin resistant TB. The technique simultaneously detects Mycobacterium tuberculosis (MTB) and rifampicin (RIF) resistance associated mutations of the rpoB gene. RIF resistance is commonly considered as a surrogate marker of MDR-TB. However, there is very limited information regarding its utilization in Ethiopia. Therefore, the present study was aimed to describe the implementation of GeneXpert MTB/RIF assay to the diagnosis PTB at Felege Hiwot Referral Hospital (FHRH), Northwest Ethiopia.

Methods: Data was collected from patients record between January 2015 and November 2015 at FHRH. All patients with complete required data were included. Demographic and clinical data of patients such as age, sex, HIV status, presumptive DR- TB and Xpert assay results were extracted for analysis. Data were entered, cleaned, and analyzed using SPSS version 20. Descriptive statistics was used to present data. Chi square test was employed to assess statistical association between variables. Level of statistical significance was set at p value less than 0.05.

Results: A total of 544 patients were included. Of which, 307 (56.4%) were male. The mean age of patients was 31.2 years. 223 (41%) study subjects were HIV positive. Of all PTB suspected patients, Xpert result showed that 94 (17.3%) were positive for MTB. Of which, 59 (62.8%), 30 (31.9%) and 39 (41.5%) PTB positive patients were male, found in the age group of 25-34 years and HIV positive, respectively. Xpert results had statistical significant difference among the different age groups (p= 0.010). Similarly, among the total 94 PTB positive patients, Xpert detected only 11 (11.7%) RIF resistance patients. However, the report of presumptive MDR-TB was 279 (51.3%).

Conclusion and recommendation: Large proportion of PTB suspected patients are wrongly diagnosed for MDR-TB. Therefore, using validated GeneXpert MTB/RIF assay improves rapid TB diagnosis and proper TB treatment in health facilities.

Key Words: TB, GeneXpert MTB/RIF assay, Felege Hiwot Referral Hospital.
AB 33: Assessment of abnormal liver function tests and associated risk factors among diabetic patients attending diabetes clinic of Jimma University Specialized Hospital, Jimma, Ethiopia

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Abstract

Background: Patients having metabolic disorder like diabetes are more likely susceptible to liver diseases that cause the release of hepatic biomarkers. Determining those biomarkers will help in the early management of potential liver diseases; however, such studies are scarce in the present study areas. Thus, we aimed at assessing the prevalence of abnormal liver function tests and associated risk factors among diabetic patients.

Methods: An institution based cross-sectional study was conducted. 376 diabetic patients who fulfilled the inclusion criteria were participated. 5ml venous blood was collected for liver function tests and anti-hepatitis C-virus (HCV) antibody detection from each diabetic patient. Descriptive statistics, bi-variate and multivariate logistic regression were performed using SPSS version 20 software. p-value less than 0.05 was considered as statistically significant.

Results: Among 376 diabetic patients, 57.7% of them were found to have one or more abnormal liver function test results while 26.9% of them had at least two or more abnormal liver function test results. Out of 57.7% of diabetic patients, who had one or more abnormal liver function tests, 23.9%, 20.5%, 12.0%, 10.1%, 9.3% and 3.2% of them had abnormal serum concentration for aspartate amino-transferase (AST), both alanine amino-transferase (ALT) and alkaline phosphatase (ALP), total bilirubin, albumin, direct bilirubin and gamma glutamyl-transferase (GGT), respectively. Out of 376 diabetic patients, 1.6% of them were found to be positive for HCV. Out of 1.6% diabetic patients who were positive for HCV, 16.0% of them had abnormal serum concentrations for AST, ALT and ALP. Elevated ALT test result had statistically significant association (p < 0.05) with increasing body mass index (BMI).

Conclusions: High prevalence of one or more abnormal liver function test results was indicated among diabetic patients. Assessment of liver function tests results and associated factors among diabetic patients during early onset of diabetes and then follow up is necessary to control and properly manage liver diseases. Health education about the potential risk of liver diseases and way of prevention shall be provided to diabetic patients as well.

Key words: liver function tests, diabetes, hepatitis C-virus.
AB 34 Prevalence of pulmonary tuberculosis and intestinal parasitosis among HIV patients on anti-retroviral therapy in Kombolcha Health Centre, Northeast Ethiopia

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Abstract
Background: Human immunodeficiency virus (HIV) infection leads to development of acquired immuno deficiency syndrome (AIDS). The primary immune defect in AIDS results from the reduction in the number and effectiveness of CD4+ T lymphocytes. This causes an extensive array of viral, bacterial, fungal, and parasitic infections. Hence, determining the prevalence of pulmonary tuberculosis and intestinal parasitosis among HIV patients on anti-retroviral therapy (ART) is crucial.

Methods: A cross sectional study was conducted among HIV patients who were on ART between June 2015 and August 2015 in Kombolcha Health Centre, Northeast Ethiopia. LED smear microscopy technique was used to diagnose tubercle bacilli. Wet mount preparation and concentration techniques were also used to examine intestinal parasites. Data were cleaned and analysed using SPSS version 20. Logistic regression model was used to evaluate the statistical association between dependent and independent variables. P-value less than or equal to 0.05 was considered statistically significant.

Results: A total of 223 study subjects were participated in this study. Out of these, 153 (68.61%) were female and 205 (91.93%) were urban dwellers. The overall prevalence of intestinal parasitosis was 27(12.11%). Seven different types of intestinal parasite species were identified. The most dominant species identified was Entameoba histolytica, accounted 16 (7.17%), and followed by Gardia lamblia, 3(1.35%). Forty (17.94%) patients had sign and symptoms of Mycobacterium tuberculosis. Tubercle bacilli was detected only in 1 (0.45%) patient.

Conclusion and recommendation: The dominant intestinal parasite identified is Entameoba histolytica. Further broader study should be conducted in order to complement the current study.

Key words: Kombolcha, HIV/AIDS, ART, parasite, TB.
AB 35: Clinical profile of adult tetanus patients at Felege Hiwot Referral Hospital, North West Ethiopia
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Abstract
Background: Tetanus is a neurologic disorder, characterized by increased muscle tone and spasms, which is linked with tetanospasmin, a powerful protein toxin released by Clostridium tetani. It remains a major health problem in developing countries like Ethiopia. The aim of this study was to describe the clinical presentation, complications and outcome of tetanus patients.
Methods: In this retrospective cross sectional study, patients (aged > 15 years) who were admitted at Felege Hiwot Referral Hospital (FHRH) in the period of 30 Sep 2012 to 30 Sep 2015 were included. Tetanus was diagnosed primarily based on clinical grounds. Demographic and clinical data of patients including age, sex, residence, tetanus toxoid (TT) immunization status, antecedent cause of tetanus, type, severity, complications, and treatment outcomes were retrieved for analysis. All data were entered, cleared, and analyzed using SPSS version 20. Descriptive statistics was used to present data and chi square test was employed to assess association between tetanus treatment outcomes with relevant variables. Level of statistical significance was set at p value less than 0.05.
Results: Data from 110 patients were analyzed (84 males, 26 females, mean age 43.4 years) with rural dwellers constituting the majority. Trauma was the most common antecedent cause of tetanus. Most of the patients had no history of TT immunization and TAT (tetanus antitoxin) prophylaxis following antecedent trauma. Majority of cases were diagnosed to have generalized tetanus during the time of admission and 50% had severe form of tetanus at presentation. Aspiration pneumonia (34.5%) and dysautonomia (11.8%) were the most frequently observed complications. About 36 (32.7%) patients were died and the most common immediate cause of death was respiratory failure. Patients’ area of residence (p=0.004), type of complications (p=0.00) and severity of tetanus (p=0.00) were statistically associated with type of treatment outcomes.
Conclusion: The case-fatality was high like in most other studies. Therefore, there is a need for universal tetanus immunization with appropriate boosters and TAT prophylaxis for those who have acute injury. Stakeholders should educate the community to seek medical care early to combat this fatal disease.
Key words: Tetanus, case fatality, Immunization, Bahir Dar.
AB 36: Prevalence of *Hook worm* infection and its association with anemia, and possible risk factors among outpatient children at Jimma health center, Jimma southwest Ethiopia

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Abstract

Background: Hook worm infection is among the major causes of anemia in children. Studies investigating magnitude of hookworm infections and anemia and also their association are scarce in this study area. Hence, the present study was undertaken to assess the prevalence of hookworm infections and anemia and also measure their association among children.

Methods: A health center facility based cross-sectional parasitological and hematological study was conducted on 163 children at Jimma health center, Jimma, southwest Ethiopia. Stool samples were collected and processed for direct microscopic examination. Blood sample was examined using Hematocrit to determine the hemoglobin level. Some Socio-demographic and risk factor data were also collected from every study participant using structured questionnaire.

Results: The overall prevalence of hookworm infection and anemia were found to be 18 (13.48%) and 43 (33.07%), respectively.

Conclusion: prevalence of Hook worm infestation and anemia was somewhat low among children of the study area. But the prevalence of anemia as compared to hookworm is too high. Hook worm infection had statistically significant association with anemia and predisposing factor like shoes wearing habit and method of disposal of excreta (P<0.05).

Key Words: Hook worm, anemia, outpatient children, Jimma.
AB 37: Clinical Utility of Red Cell Distribution Width in the investigation of Non-Hematological Disorders at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Case Control Study.

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Abstract

Background: Red cell distribution width (RDW) is a measurement of the degree of anisocytosis, or the degree of red cell size variability present in a blood sample. RDW has been reported as a significant diagnostic as well as prognostic lab marker for many non-hematological disorders.

Objective: Describe the clinical utility of RDW in the investigation of non hematological disorders at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia.

Methods: A Case-control and questionnaire based study was conducted at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. A convenient sampling technique was employed and a total sample size of 150 (100 cases and 50 apparently healthy controls) and 100 clinicians were included from May to August, 2015. Cases were adult patients diagnosed with heart, liver and kidney diseases. RDW was determined using Sysmex XT-2000i Automated Hematology Analyzer. Frequency, mean, paired t test and chi square were calculated P values less than 0.05 were considered statistically significant.

Result: Half of the clinicians had the knowledge that elevated RDW could be an indication of non hematological diseases. However, 68% (68/100) of them rated that they rarely or never use RDW in the investigation or follow up of patients having non hematological diseases. The clinical laboratory method course for medicine students was rated as inadequate by the majority of them. Paired t test revealed mean difference of 2.53± 4.3 existed between the cases and control groups with a confidence interval of 1.314-3.76 (p<0.001). The association between the three diseases and elevated RDW was found to be statistically significant (P<0.05) with 95% confidence interval (0.000-0.030).

Conclusion: RDW’s clinical utility by clinicians at TASH in the investigation or follow up of patients with non hematological diseases was insufficient indicating that awareness should be created. Half of the clinicians had the knowledge that elevated RDW could be an indication of non hematological diseases yet failed to utilize it. Reason behind it is yet to be identified but the habit of utilizing RDW in the investigation of diseases other than anemia should be encouraged.

Key words: Red cell distribution width, non hematological diseases, clinical utility.
AB 38: Comparison of analytical performance of Sensocard glucometer with photometric technique

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Abstract
Background: Diabetes mellitus is a cause of morbidity, disability and mortality worldwide. Some countries use 40% of their health care budget for Diabetes mellitus. Glucose measurement by glucometer is one of the diagnosing and monitoring tools of diabetic mellitus. However, the accuracy of this instrument is in question.
Objective: To compare the analytical performance of Sensocard glucometer with the routinely used photometric technique

Methods: A prospective cross-sectional study was conducted in March, 2014 at University of Gondar Hospital. Diabetic mellitus patients who had come to the hospital for follow up were involved in the study. A total of 122 patients were selected by consecutive sampling technique. Socio demographic information was collected by questionnaire. Glucose value was determined by Sensocard glucometer and A25 biosystem spectrophotometer analyzer. The data were entered and analyzed using SPSS version 20 and Analyze-it version 3.76.1 software. Correlation coefficient and bias were calculated to observe the agreement of the glucometer result with the comparative method. T-test was also used to compare the glucose concentration among various groups and categories of participants. P-value < 0.05 was used as statistically significant.

Results: A total of 122 DM patients were included in this study. Of these, 51.6 % (n=63) were females. The mean age was 46.16±15.5 (range 17 -77 years). Half (50%) of the study participants were type 1 DM and the other half were type II DM patients. The mean serum glucose value measured by routine method (photometric technique, A25 biosystem analyzer) was 164.78±86.33 mg/dl (range 42-533) and the mean capillary blood glucose value measured by Sensocard glucometer was 161.19±78.1 mg/dl (range 65-491). There was no statistically significant difference between the means of Sensocard glucometer and photometer glucose value (p-value =0.052). The correlation coefficient between the two methods was 0.975. The Sensocard glucometer underestimated the overall glucose value from the routine photometric glucose value by a bias of 3.59.

Conclusion: The Sensocard glucometer has a good correlation with the comparative photometric method in determining blood glucose value. If the bias is understood and constant for the scale that is being used, the Sensocard can be used for monitoring of blood glucose in diabetes patients.
Nasal colonization and drug susceptibility pattern of Staphylococcus aureus among preschool children in Debre Markos town, Northwest Ethiopia, 2015

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Abstract

Background: Staphylococcus aureus is one of the bacterium that can asymptptomatically colonize the human upper respiratory tract (i.e. nose and throat). Carriage of S. aureus, including methicillin resistant Staphylococcus aureus, is common in children. This study aimed to determine the nasal colonization and antimicrobial susceptibility patterns of Staphylococcus aureus isolates among pre-school children in Debre Markos town.

Methods: Institution-based cross sectional study was conducted. A total of 400 nasal swabs were collected from pre-school children from April to June, 2015. Specimen collection and Laboratory methods should be described here. Methicillin resistant Staphylococcus aureus was detected using both Cefoxitin (30μg) and Oxacillin (1 μg) (Oxoid Ltd. England) discs in combination.

Results: A total of 52 Staphylococcus aureus strains were isolated from 400 nasal swap samples. The prevalence of S. aureus among pre-School children was 13 %. The susceptibility patterns of these isolates were different for different antibiotics tested (84.62% to Chloramphenicol, 69.2% to Doxycycline and Tetracycline, 92.3% to Kanamycin, 7.7% to Ampicillin and Penicillin, 86.6% to Ceftriaxone, and 76.9 % to Augmentin). All the isolates were sensitive to Oxacillin (what about cefoxitin?). There was no methicillin resistant Staphylococcus aureus isolated. All isolates were sensitive to Gentamycin, Erythromycin and Clindamycin.

Conclusion: This is the first study among Ethiopian pre-school children below six years of age studying nasal colonization of S. aureus and antimicrobial susceptibility pattern of the isolates and showed that attending pre-school was associated with nasal colonization of S. aureus.

Key words: Antimicrobial susceptibility pattern, Staphylococcus aureus, Nasal colonization, pre-school children.
AB 40: In vitro Anti-mycobacterial activity of selected medicinal plants against *Mycobacterium tuberculosis* and *Mycobacterium bovis* Strains

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Abstract

**Background:** Tuberculosis (TB) is a global burden with one-third of the world’s population infected with the pathogen *Mycobacterium tuberculosis* complex and annually 1.4 million deaths occur due to the disease. This high incidence of infection and the increased rate of multi-drug resistant and extensively-drug resistant strains of the organism further complicated the problem of TB control and have called for an urgent need to develop new anti-TB drugs from plants. In this study, the in vitro activity of root of *Calpurnia aurea*, seeds of *Ocimum basilicum*, leaves of *Artemisia abyssinica*, *Croton macrostachyus*, and *Eucalyptus camaldulensis* were evaluated against *M. tuberculosis* and *M. bovis* strains.

**Methods:** Five Ethiopian medicinal plants, root of *Calpurnia aurea*, seeds of *Ocimum basilicum*, leaves of *Artemisia abyssinica*, *Croton macrostachyus*, and *Eucalyptus camaldulensis* used locally for the management of TB. They were investigated for in vitro antimycobacterial activity against *M. tuberculosis* and *M. bovis* strains. 80% methanolic extracts of the plant materials were obtained by maceration. The antimycobacterial activity was determined using 96 wells of microplate with the help of visual Resazurin Microtiter Assay.

**Results:** The crude 80% methanolic extracts of the root of *C. aurea*, seeds of *O. basilicum*, and leaves of *A. abyssinica*, *C. macrostachyus*, and *E. camaldulensis* had anti-mycobacterial activity with minimum inhibitory concentration (MIC) ranging from 6.25 – 100 µg/mL. The MIC of 80% methanol extracts in the order mentioned above ranged 25-100 µg/ml and 12.5-75 µg/mL, 25 – 100 µg/mL and 25 – 50 µg/mL, 6.25-50 µg/mL and 12.5-50 µg/mL, 12.5-100 µg/mL and 18.25-50 µg/mL and 6.25-50 µg/mL and 12.5-50 µg/mL, respectively for *M. tuberculosis* and *M. bovis* strains.

**Conclusions:** The results support the local use of these plants in the treatment of TB and it is suggested that these plants may have therapeutic value in the treatment of TB. However, further investigations are needed on isolating chemical constituents responsible for eliciting the observed activity in these plants.

**Keywords:** Antimycobacterial activity, Medicinal plants, MIC, REMA, *M. tuberculosis* & *M. bovis* strains, Ethiopia.
AB 41: Intestinal helminth infections among inmates in Bedele prison with emphasis on soil-transmitted helminths

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Abstract
Background: Intestinal helminths infect more than two billion people worldwide. They are common in developing countries where sanitary facilities are inadequate. There is scarcity of documented data on the magnitude of intestinal helminths among inmates in Ethiopia. The aim of this study was to determine prevalence of intestinal helminth infections among inmates in Bedele prison, south-western Ethiopia.

Methods: A cross-sectional study involving 234 inmates in Bedele prison was conducted in April 2012. Socio-demographic data was collected from each study participant using semi-structured questionnaire. Fresh stool specimens were collected and processed using modified McMaster technique.

Results: At least one species of intestinal helminth was identified in 111 (47.4%) of the inmates. Ascaris lumbricoides was the most predominant parasite isolated, followed by the hookworms. Most of the cases of soil-transmitted helminths (STHs) were light infections. Untrimmed hand fingernails were significantly associated with A. lumbricoides infection (AOR 0.383, 95% CI 0.200–0.731).

Conclusion: Intestinal helminths are common among the inmates in Bedele prison. Health information should be given to the inmates on proper personal hygiene practices with emphasis on trimming of hand fingernails. Monitoring helminth infections in the inmate population is required.

Keywords: Intestinal helminths, Inmates, Bedele, Ethiopia.
AB 42: Epidemiology of Rubella virus Cases in South Wollo District of Amhara Region, Ethiopia, 2010-2014

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Abstract

Background: Rubella, commonly known as German measles, is usually a mild rash viral illness caused by Rubella virus. The virus is transmitted by the respiratory route and replicates in the nasopharynx and lymph nodes. Infection of the mother by Rubella virus during pregnancy can be serious; the child may be born with congenital rubella syndrome (CRS). Information is limited on the epidemiology of rubella and CRS in Sub-Saharan Africa including Ethiopia. Hence this study was initiated to determine the epidemiology of Rubella infection cases in South Wollo district of Ethiopia.

Methods: Rubella cases were reported through the measles case-based surveillance system. Demographic data and serum/plasma samples of subjects were collected from South Wello, during 2010-2014. Samples were tested for Rubella Virus IgM by ELISA methods and data was entered and analyzed by Epi-Info 3.5.4.

Results: Out of 2,420 samples tested for Rubella IgM from Amhara Region, 420 (17.4%) subjects were from South Wello district and among 472 confirmed rubella cases of the region, 103 (21.8%) were from South Wello district. The rubella positivity rate in the district was high (24.5%, 103/420). Females were more affected (59%) than males. Rubella detection was increased from year to year with the highest number of cases, 67, was seen in 2013 (67/155, 43% positivity). Rubella was endemic throughout the year with higher number of cases (22) was reported in April and affect all age groups and mainly children 5-9 years (43.7%).

Conclusion: Rubella is endemic in the district and mainly occurs among 5-9 year children and increased year to year. So, determining sero-status of child bearing age woman and the prevalence of CRS among infants is important to develop appropriate control strategy.

Keywords: Epidemiology, Rubella virus, South Wollo, Ethiopia.
AB 43: Bacterial Load and Antibiotic Susceptibility Pattern of Isolates in Operating Rooms at Hawassa University Referral Hospital, Southern Ethiopia

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Abstract

Introduction: Microbial contamination of air in the operating room (OR) is considered to be a risk factor for surgical site infections and quality of air can be considered as a mirror of the hygienic condition of these rooms. This study intended to determine the bacterial load and antibiotic susceptibility pattern of isolates from indoor air in operating room at Hawassa University Referral Hospital.

Methods: A cross sectional study was conducted to measure indoor air microbial load of operating room from Nov 2014 to January 2015 on 120 indoor air samples collected from six sites in ten rounds using purposive sampling technique by Settle Plate Method (Passive Air Sampling following 1/1/1 Schedule). Sample processing and antimicrobial susceptibility testing was done using standard microbiological methods of Clinical and Laboratory Standards Institute (CLSI). The data was analyzed using SPSS version 16.0 and was inferred based on baseline values recommended by Fisher.

Result: The mean bacterial load of major operating room 85.6 CFU/dm² and 8.6 CFU/dm² were recorded at active and passive time respectively. Samples from intermediate zones revealed that the female closing room (FCR) of the OR had the highest bacterial counts 654 CFU/dm². Likewise, in the non-critical zone of OR, 387.05 CFU/dm² and 373.3 CFU/dm² were observed in sterilization room and sterilized material store respectively. The finding was under acceptable range based on standard set by Fisher. Among the isolated five bacteria, S. aureus 54 (43%) and CNS 45 (37.5%) were the predominant species and highly resistant to penicillin, tetracycline; 83.3%, 81.5% respectively.

Conclusion: Even though the mean of each sites CFU lied under the acceptable range. Almost 65% of 120 samples were under the unsatisfactory level of bacterial load. In regard to timing 63.3% of the morning time samples were unacceptable level when compared with standard set by Fisher. The finding implies that the high bacterial load as a risk factor for SSI. Therefore to reduce the load of bacterial contamination at critical area as well in the hospital environments, the hospital infection prevention and patient safety (IPPS) should be improved.

Key words: Indoor air, Hospital environment, Southern Ethiopia.
AB 44: Prevalence of HIV, HBV and HCV among blood donors in North Gondar blood bank, Northwest Ethiopia

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Abstract

Background: It is a well known fact that transfusion of blood and blood components as a specialized modality of patient management and it save millions of lives worldwide each year. The high prevalence of HIV, HBV and HCV has heightened the problems of blood safety in Ethiopia. Thus, continuous monitoring of the magnitude of transfusion-transmissible infections in blood donors is important for estimating the risk of transfusion and optimizing donor recruitment strategies to minimize infectious diseases transmission. Hence we determined the magnitude and associated risk factors of HIV, HBV and HCV infection among blood donors at North Gondar Blood Bank, Northwest Ethiopia.

Methods: Institutional based cross sectional study design was conducted from March to April 2015. The entire donors sample was screened for HIV, HBV, HCV using the fourth generation sandwich ELISA method. Statistical analysis was done using SPSS version 20. Data was summarized using frequency tables. Variables was analyzed and the strength of association was measured by using binary logistic regression and p-value <0.05 were considered as statically significant.

Results: The present study was included a total of 558 adult blood donors. The mean age of donors was 24.3±6.6 years (range: 18-64) and 99.6 % of them were urban residents and 58.4 % of them were student at university of Gondar. From a total of the study participants 73.7 % were first time donors. The prevalence of HIV, Hepatitis B surface antigen (HBsAg) and Hepatitis C virus (HCV) infections were 1.4% (95%CI: 0.5-2.5), 3.9% (95% CI: 2.5-5.6) and 1.8% (95% CI: 0.9-3.0), respectively. The overall discard rate of donated blood because of these viral markers was 16.3%.

Conclusion: The prevalence of transfusion transmissible viral infections among blood donors is low when compared with previous study. The majorities of blood donors are voluntary donors with one or more of the risk factors for transfusion transmissible viral infections implying that blood transfusion is unsafe. These findings call for the urgent implementation of the national strategy for safe blood transfusion in Ethiopia. As the utilization of advanced technology and skilled-personnel-based screening of blood are not in the immediate perspective, establishing stringent selection criteria of donors and setting clinical indications for transfusion would be indispensable and cost-effective interventions to minimize the risk of transfusion transmissible viral infections to blood recipients in the study site.

Key words: prevalence, HIV, HBV, HCV, Transfusion.
AB 45: The rate of exposure to hepatitis B and C viruses among medical waste handlers in three government hospitals in Southern Ethiopia

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Abstract

Introduction: Exposure to hepatitis B virus (HBV) and hepatitis C virus (HCV) is among the major occupational hazards to health care workers (HCW) and medical waste handlers (MWHs) in most developing nations where there is lack of policies for pre-employment screening and interventions against these infections. The aim of this study was to assess the rate of and risk factors for exposure to hepatitis B virus (HBV) and hepatitis C virus (HCV) among medical waste handlers.

Methods: A cross-sectional study was conducted from December 2014 to January 2015. A total of 152 medical waste handlers (MWH) and 82 non-medical waste handlers (NMWH) were studied. Serum samples were collected from participants and screened for Hepatitis B surface antigen (HBsAg), hepatitis B core antibody (anti-HBc) and anti-HCV using rapid immunochromatography assay. MWH were also screened for hepatitis B surface antibody (anti-HBs).

Results: The respective prevalence of HBsAg, anti-HBc and anti-HCV was 1.3%, 39.4%, and 0.7% in MWH, compared to 2.4%, 17.1%, and 1.2%, respectively, in NMWH. Among MWH, 58.6% were susceptible to HBV infection. There was a significant difference in the rate of lifetime exposure to HBV in MWH compared with NMWH [OR = 3.16; 95% CI = 1.63-6.134]. However, there was no significant difference between participant groups with respect to current HBV infection [OR = 0.53; 95% CI = 0.07-3.858] or anti-HCV [OR = 0.53; 95% CI = 0.03-8.689]. Age older than 40 years and working in a hospital laundry were independent predictors of lifetime exposure to HBV infections. Eleven (7.2%) respondents were vaccinated against HBV.

Conclusion: Lifetime exposure to HBV infection was significantly higher in MWH than in NMWH. The majority of MWH was not vaccinated against HBV and thus remains susceptible to contracting the infection. Screening upon hire followed by vaccination of MWH is recommended to reduce the transmission of HBV.

Keywords: Hepatitis B virus; Hepatitis C virus; Medical waste handlers; Vaccination.
AB 46: Magnitude of Adverse Drug Reaction and Associated Factors among HIV-Infected Adults on Antiretroviral Therapy in Hiwot Fana Specialized University Hospital, Eastern Ethiopia

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**Abstract**

**Background:** Human immunodeficiency (HIV) virus infected patients did not adhere correctly to their Antiretroviral Therapy because of its adverse effects. Thus, continuous evaluation of the adverse effect of Antiretroviral Therapy will help to make more effective treatment. The aim of this study was to assess the prevalence of Adverse Drug Reaction and associated factors among adult HIV patients on Antiretroviral Therapy at Hiwot Fana Specialized University Hospital, Eastern Ethiopia.

**Methods:** A hospital based retrospective study was conducted among 358 of adult HIV patients from April to June 30, 2014. Clinical records including antiretroviral therapy, and adverse reaction conditions were collected using checklists. The collected data were double entered, cleaned and analyzed by using SPSS soft-ware Version16.

**Results:** The overall prevalence of Adverse Drug Reaction among Human immunodeficiency virus infected patients on antiretroviral Therapy was 17.0 %. Of reported Adverse Drug Reaction, 80.3%, 18% and 1.7 % occurred in patients on Stavudine, Zidovudine and Tenofovir based regimens respectively. The common Adverse Drug Reaction were lipodystrophy (fat change) (49.2 %), numbness/tingling (27.9 %), peripheral neuropathy (18 %) and (8.2 %) anemia. Patients on Stavudine containing regimens were more likely to develop Adverse Drug Reaction compared to Zidovudine (AOR = 0.212, 95% CI: 0.167- 0.914, p < 0.001) and Tenofovir (AOR=0.451, 95% CI: 0.322- 0.948, p< 0.001).

**Conclusion:** The overall prevalence of Adverse Drug Reaction among Human immunodeficiency virus infected patients in this study was 17 % and more common on those patients taking Stavudine based regimen. Lipodystrophy and peripheral neuropathy were significantly associated with stavudine-based regimens, while anaemia was significantly associated with zidovudine based regimens. Thus regular clinical and laboratory monitoring of patients on Antiretroviral Therapy should be strengthened.

**Key words:** Adverse Drug Reaction, Human Immuno deficiency virus, Adults, Antiretroviral Therapy, Eastern Ethiopia.
AB 47: Microbiological and Physico-chemical quality of drinking water in north Gondar zone: a cross sectional study

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Abstract

Statement of objective: Assessing the microbiological and physico-chemical quality of drinking water sources is important to protect public health. Therefore, this study was aimed to assess the microbiological and physico-chemical quality of drinking water sources in North Gondar Zone, Northwest Ethiopia.

Methods: A cross-sectional study was conducted from April-May 2014 in seven districts in North Gondar zone. The physico-chemical and microbiological quality of 71 drinking water samples were determined following the standard procedure. Turbidity, pH, and temperature were measured using turbidity meter, pH meter and thermometer respectively. Arsenic, Cr₆⁺, NO₂⁻, NO₃⁻ and residual chlorine were determined by the colorimetric methods and rapid kits using DPM apparatus (Kyoritsu chemical-check Lab., Corp. Japan). Coliforms and Vibrio parahemolyticus were tested by rapid microbiological test strips (Sankori coliform and Sankori/ Vibrio parahaemolyticus) following appropriate standard procedure. Consumers assessment was also conducted using questionnaire about the water sources. Data were entered and analyzed using SPSS version 20 software.

Results: The physico-chemical and microbiological quality of 71 water samples (tap n=29, spring n=15 and well n=27) were assessed. The mean turbidity of water samples was 19.35 ± 5.75SD nephelometric turbidity unit (NTU), temperature 21.34±3.68 °C, pH 6.88±0.6, nitrate 10.02 ± 8.72 mg/l, nitrite 0.33±0.64 mg/l, residual chlorine 0.01 ± 0.06 mg/l, arsenic 0.2±0.00 mg/l and chromium 0.51±0.01 mg/l. Almost all samples were complying with the WHO acceptable range for nitrate arsenic and chromium among the physico-chemical parameters. However, turbidity was found to be unacceptably high in 21 (29.6%) samples, pH was unacceptably low in 26 (36.6%) of the samples and residual chlorine was unacceptably low in 69 (97.2%) of the samples. The majority of samples (n=46; 64.8%) had coliforms and 12 (16.9%) had Vibrio parahemolyticus.

Conclusion: Most of the physical and chemical parameters measured were within the recommended range except turbidity and residual chlorine. However, the majorities of drinking water samples were found to be contaminated and are potential risk to public health. Therefore, regular quality monitoring and frequent water treatment in the study area is mandatory.

Key words: Drinking water, microbiological, physicochemical, quality.
AB 48: Repeated Rubella Virus Outbreaks in Addis Ababa, the Capital city of Ethiopia, 2010-2014

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Abstract

Background: Rubella is a common childhood illness caused by the Rubella virus. Transplacental infection leads to a serious foetal disorder called Congenital Rubella Syndrome (CRS). Worldwide, more than 110,000 infants are born with CRS each year; most of these occur in developing countries where information is limited on the epidemiology of the virus and vaccine not yet introduced. This study was conducted to describe the epidemiology of rubella virus infection in Addis Ababa from January 2010- December 2014.

Methods: Rubella cases were reported through the measles case-based surveillance system by using the case definition, any febrile illness with rash and cough, or coryza, or conjunctivitis. Samples were collected from patients in the capital of Ethiopia during 2010-2014 and transported through the cold chain system to National Measles and Rubella Laboratory for rubella antibody (IgM) testing by ELISA technique. Case based surveillance data was entered using epi-info version 3.5.4.

Results: A total of 1772 samples were tested for rubella specific immunoglobulin M (IgM), and 372 (21%) of them were found positive, 253 (14.3%) were equivocal and 1147 (64.7 %) were negative. Rubella infection was found in all sub-cities in each year (48 % in 2012) and the highest seroprevalence peak was reported between the months of March to June. Most (84 %) rubella cases occurred among children 1-9 years of age (a month to 34 years affected). There were at least 51 unnoticed rubella outbreaks in the five year period. Most (30) of them occurred in the year 2012 with at least one outbreak in each sub-city occurred from January to July. Outbreak never occurred between August and September in each year.

Conclusions: Based on our findings, Rubella was endemic in Addis Ababa with repeated outbreaks and affecting mainly children in the age groups of 1-9 years. To better understand the burden of rubella virus infection and to develop a national strategy for rubella control in Ethiopia, CRS surveillance and appropriate studies should be in place before the introduction of rubella vaccine.

Key words: Case based surveillance, Congenital Rubella Syndrome, Addis Ababa, outbreak.
AB 49: Assessment of renal function and electrolytes in patients with thyroid dysfunction, in Addis Ababa, Ethiopia: a Cross sectional study

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Abstract

Background: Studies demonstrated that abnormal thyroid functions may result in decreased or increased kidney size, kidney weight, and affect renal functions. In this regard, studies on the association of abnormal thyroid functions and renal function tests are scarcely found in Ethiopia.

Objective: To assess renal function and electrolytes in patients with thyroid dysfunction, in Addis Ababa, Ethiopia.

Methodology: Cross sectional study was conducted from March 21/2015-May 27/2015 at Arsho Advanced Medical Laboratory. During the study period, 71 patients with thyroid dysfunction were eligible, and socio demographic data collected by structured questionnaire. Then blood sample was collected for thyroid function tests, renal function and blood electrolyte analysis. The collected data was analyzed by SPSS version 20. ANOVA and binary logistic regression were employed to evaluate the mean deference and associations of thyroid hormone with renal function and electrolyte balances.

Result: Among the renal function tests, serum uric acid, and creatinine mean values were significantly decreased in hyperthyroid patients; whereas, eGFR mean value was significantly increased in hyperthyroid study patients (P<0.05). Meanwhile, from the electrolyte measurements made, only the mean serum sodium value was significantly increased in hyperthyroid study participants. Binary logistic regression analysis on the association of thyroid dysfunction with electrolyte balance and renal function tests indicated that serum sodium, creatinine, eGFR values and hyperthyroidism have a statistical significant association at AOR 95% CI of 0.141(0.033-0.593, P=0.008); 16.236(3.481-75.739, P=0.001), and 13.797(3.261-58.67, P=0.001) respectively.

Conclusion: The current study reveals, thyroid abnormalities may lead to renal function alterations and also may disturb electrolyte balance. Knowledge of this significant association has worthwhile value for clinicians, to manage their patients’ optimally.

Key word: Thyroid dysfunction, renal function tests, blood electrolyte.
AB 50: Correlation of Fasting and Postprandial Plasma glucose with HbA1c in Assessing Glycemic Control; Systematic Review and Meta-Analysis

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Abstract

Background: Glycemic control in diabetes mellitus is a cornerstone in reducing morbidity and mortality of the disease. Achieving glycemic control or reducing hyperglycemia significantly decreases the microvascular and macrovascular complications of diabetes. Even though measurement of glycated hemoglobin (HbA1c) remains the gold standard for assessment of glycemic control, there is no consensus whether fasting or postprandial plasma glucose (PPG) is a better predictor of glycemic control in resource-poor settings when HbA1c is not available. The aim of this systematic review and meta-analysis was to summarize evidences on the significance of fasting and postprandial plasma glucose, and their correlation with HbA1c.

Methods: Relevant studies were identified through systematic search of online databases (e.g. EMBASE, MEDLINE/PubMed and Cochrane library) and manual search of bibliographies of the included studies. Original research papers describing the correlations or associations of fasting and postprandial plasma glucose with HbA1c were included. The MedCalc software was used for data entry and analysis. We used the random effect model to estimate the pooled correlations of fasting and postprandial plasma glucose with HbA1c. Heterogeneity assessment and robustness analysis was also performed.

Result: From total 126 articles identified, 14 articles were eligible for systemic review. Eleven of these eligible studies evaluated the correlations of fasting and postprandial plasma glucose to the standard HbA1c values and used in meta-analysis. Seven of these studies (63.5\%) found better or stronger correlations between PPG and HbA1c than fasting plasma glucose (FPG). In all the studies that estimated the relative contribution PPG and PPG to the overall hyperglycemia, decreases in PPG was accounted for greater decrease in HbA1c compared with decreases in FPG value. PPG also showed a better sensitivity, specificity and positive predictive value than FPG. The pooled correlation coefficient\textit{(r)} between PPG and HbA1c was 0.68 (\textit{P}<0.001, 95\% CI: 0.56 to 0.75) slightly higher than pooled correlation coefficient of FPG \textit{(r}= 0.61(\textit{P}< 0.001, 95\% CI; 0.48 to 0.72)).

Conclusion: PPG has a closer association with HbA1c than FPG. Hence, PPG is better in predicting overall glycemic control in the absence of HbA1c.

Key words: Diabetes mellitus, Glycemic control, HbA1c, Fasting plasma glucose, postprandial plasma glucose, correlation.
AB 51: Pre-donation Deferrals among Whole Blood Donors in North Gondar Blood Bank

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Abstract

Background: Blood transfusions form an important and irreplaceable part in management of many diseases. Availability of safe blood and blood products is a critical component in improving health care service. Pre-donation donor selection is done for the safety of the blood donor and recipient. Therefore, the aim of the study was to determine the rate and reason of pre-donation deferrals among whole blood donors of North Gondar Blood Bank.

Method: A cross-sectional study was conducted from May to August 2014 on whole blood donors who come to donate blood at North Gondar Blood Bank. A total of 401 donors were selected by simple random sampling. The donor selection was done by pre-donation screening tests like questionnaire followed by physical examination and hemoglobin estimation, and the deferred donor’s data was analyzed by using MedCalc® version 14.10.2 software program.

Result: of the 401 blood donors, majority were male (70.3; n=282) and replacement donors (60.8%; n=244). The total pre donation deferral rate was 24.9% (n=100). Temporary deferrals (86%; n=86) were common than permanent deferrals (14%; n=14). The top three reasons of deferral were anemia (25%; n=25), hypotension (16%, n=16) and malaria (9%; n=9).

Conclusion: The most common causes of deferral were temporary deferrals, which can be minimized or prevented through awareness creation and education of blood donors.
AB 52: Prevalence and Trends of Major Transfusion Transmissible Infections among Blood Donors in Dire Dawa Blood Bank, Eastern Ethiopia

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Abstract
Background: Blood serves as a vehicle for transmission of blood borne pathogens such as Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV) and Syphilis. Acquisition of these infections in the process of therapeutic blood transfusion is a major global health challenge in transfusion medicine. This study aimed to determine the prevalence and trends of major transfusion transmissible infections among blood donors over a period of three years at Diredawa blood bank, Eastern Ethiopia.

Method: A retrospective analysis of consecutive blood donors’ records covering the period between July 2010 and June 2013 was conducted at Diredawa Blood bank, Eastern Ethiopia. The records were analyzed to determine the prevalence of HIV, HBV, HCV and Syphilis. Data analysis was performed using STATA software Version 11.

Result: A total of 6376 blood donors were tested, out of which 5647(88.57%) were replacement donor and 729(11.43%) were voluntary donors. Majority of them were male 5430 (85.16%) and aged between 18–32 years (70.45%). A total of 450 (7.06 %; 95% CI 6.45–7.71%) donors had serological evidence of infection with at least one pathogen. The overall positivity rates of HBV, HIV, HCV, and syphilis were 4.67% (95% CI 4.18-5.22%), 1.24% (95% CI 0.99-1.54%), 0.96% (95% CI 0.75-1.23%), and 0.44% (95% CI 0.30-0.64%) respectively. Trend analysis for transfusion-transmissible infections showed a significant decrease from 9.51% in 2010 to 6.95% in 2013 with a least prevalence in 2012(5.90%) (P = 0.004). The prevalence of transfusion-transmissible infections was significantly higher among male blood donors (p=0.003) compared to female donors, among age group 25-32 years (p=0.013) and 33-40 years (p=0.013) compared to age group 18-24 years old, and among unemployed (P=0.034) and private workers (p=0.004) compared to students.

Conclusion: Transfusion-transmissible infections are prevalent in our blood donors. Hence, stringent donor selection and strict pre-screening of donors using standard methods are highly recommended to ensure the safety of blood for recipient. Furthermore, efforts on motivating and creating awareness in the community are required to increase voluntary blood donors.

Keywords: Transfusion Transmissible Infections, Blood Donors, Dire Dawa.
AB 53: Improve detection, confirmation and treatment of children with tuberculosis in Southern Ethiopia

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Abstract

Background: Tuberculosis (TB) is one of the leading causes of adult death and hospitalization. It could be expected that many cases occur in children although, only 5% of the reported cases are children.

Methods: A cross-sectional study design was employed. A total of 340 children < 15 years of age and who had signs and symptoms of tuberculosis (PTB) and who were brought to seek diagnostic services or reached contacts of known TB cases that have TB symptoms from November 2014- January 2015 in Sidama Zone, Southern Ethiopia were included in the study. Sputum or gastric aspirate sample were collected and examined by Zn microscopy and GeneXpert MTB/RIF. Socio-demographic and clinical data were collected using structured and pre-tested questionnaire. Data entry, cleaning and analysis was done using SPSS version 20.

Result: From a total of 1020 samples analysed, 38(3.7%) were positive for Xpert MTB/RIF and 8(0.8%) were positive for smear microscopy. There was a 13.2% incremental yield obtained due to testing of pooled samples compared to either of the first or second samples, collected one hour interval, using Xpert MTB/RIF assay. Agreement on detection of TB on the 1st and 2nd sample to pooled sample were 99.6% (Kappa=0.80) and 100% (Kappa=1.00) for sputum sample and 97.9% (Kappa=0.74) and 96.8% (Kappa=0.56) for gastric aspirate sample, respectively.

Conclusion: The same-day approach of testing multiple samples of a single child using a single cartridge of Xpert MTB/RIF reduce the number of visits required for diagnosis, save resources for the health system and the patient and ultimately improve case detection in poorer countries. Because of viscous nature of sputum, sometime it was difficult to pool sample using narrow pore size pipette. Xpert MTB/RIF should be investigated for large scale for testing pooled sample to increase the detection, confirmation and treatment of children with TB.

Keywords: TB, Children, Xpert MTB/RIF, Pooled sample.
AB 54: Common Uropathogens, Antibiotic Susceptibility Patterns and Associated Factors among Adult Diabetic Patients at St. Paul Specialized Hospital, Millennium Medical College, Addis Ababa, Ethiopia

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Abstract

Background: Urinary tract infection (UTIs) is a significant health problem in diabetic patients. Proper investigation and prompt treatment are needed to prevent morbidity and serious outcomes and diabetic complications secondary to urinary tract infections. This study aimed to determine common Uropathogens, antibiotic susceptibility patterns and associated risk factors among adult diabetic patients.

Methods: A hospital based, cross-sectional study was conducted from April - July 2015. A total of 248 diabetic patients with asymptomatic UTI (n=184) and symptomatic UTI (n=64) were investigated for common Uropathogens. Clean catch mid-stream urine specimens were collected from each study subjects. Uropathogens were isolated and identified by using conventional microbiological tests. Samples were cultured on blood agar, MacConkey agar and Sabouraud Dextrose Agar. An antibiotic Susceptibility testing was performed on Muller-Hinton agar following Kirby–Bauer disc diffusion method.

Result: The overall prevalence of Uropathogens among diabetic patients was 22.6%. From this 11.4% were asymptomatic and 54.68% were symptomatic. E. coli (23.2%), Coagulase negative staphylococci (CONS) (12.5%), S. aureus (7.1%), Candida albicans (17.9%) and Non-albicans Candida Spp. (9.16%) were the most commonly isolated Uropathogens in both groups. Significant Uropathogens was significantly associated with blood glucose level. Both gram positive and negative bacteria showed high level of resistance to most antibiotics tested. Multiple drug resistance to two or more drugs was observed in 81.1% of bacterial isolates.

Conclusion: High prevalence of Uropathogens and increased rate of Multi-drug resistance was shown among diabetic patient in this study. Continued surveillance and follow up of Uropathogens might be required in similar other situations to minimize the impact this agents impose on the care of these group of patients.

Key words: Urinary tract infection, Diabetes mellitus, Uropathogens, Antimicrobial resistance.
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