

**ETHIOPIAN PHARMACEUTICAL  
ASSOCIATION**

**XXIX ANNUAL CONFERENCE**

**August 27-29, 2009**



**Program  
and  
Abstracts**

*Venue: Global Hotel, Addis Ababa*

# **ETHIOPIAN PHARMACEUTICAL ASSOCIATION**

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# **ETHIOPIAN PHARMACEUTICAL ASSOCIATION (EPA)**

## **XXIX ANNUAL CONFERENCE**

**August 27-29, 2009**

**Program & Abstracts**

**Addis Ababa, Ethiopia**

**ETHIOPIAN PHARMACEUTICAL ASSOCIATION (EPA)**  
**29<sup>th</sup> ANNUAL CONFERENCE PROGRAM**

**THEME: “TRANSFORMING PHARMACY PRACTICE IN RESPONSE TO THE  
HEALTH REFORM IN ETHIOPIA”**

**VENUE: GLOBAL HOTEL, ADDIS ABABA-ETHIOPIA**

**DATES: 27-29 AUGUST 2009**

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<b>1. DAY ONE</b>	<b>THURSDAY</b>	<b>27 AUGUST 2009</b>
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**1.1. MORNING SESSION**

<b>08:30 – 09:00</b>	Registration	Organizers
<b>09:00 – 09:05</b>	Program Introduction	Ato Hailu Tadege, Chairman, RPD
<b>09:05 - 09:15</b>	Welcoming Address	Ato Bruck Messele, V/President, EPA
<b>09:15 - 09:35</b>	Opening Speech	His Excellency Dr Tedros Adhanom, Minister, Ministry of Health
<b>09:35 - 09:55</b>	Briefing by Steering Committee	
<b>09:55– 10:25</b>	Tea Break	Organizers

**PANEL DISCUSSION**

<b>Moderator</b>	<b>Ato Meskele Lera, HIV/AIDS prevention&amp; control office/ Ato Mengesteab W/Aregay, Drug Administration &amp; Control Authority</b>	
<b>10:25 – 10:55</b>	Health Reforms in Ethiopia and its Impact on Pharmacy Practice <b>Dr Yibeltal Assefa, FMOH</b>	
<b>10:55 – 11:25</b>	Addressing the Quality and Number of Human Resource Needs in Pharmacy Practice in Ethiopia <b>Dr Ephrem Engidawork, School of Pharmacy, AAU</b>	
<b>11:25 – 12:15</b>	<b>Discussion</b>	
<b>12:15 – 13:15</b>	<b>Lunch Break</b>	<b>Organizers</b>

**1.2 AFTERNOON SESSION**

<b>Moderator</b>	<b>W/rt Ejigayehu Hailu, MSH/SPS/ Ato Fikru Worku, School of Pharmacy, Jimma University.</b>
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<b>13:15 – 13:45</b>	Transforming Hospital Pharmacy Practice to Meet Changing Needs in Pharmacy Services <b>Dr Negussu Mekonnen, MSH/SPS</b>
<b>13:45 – 14:15</b>	Reshaping Community Pharmacy Practice to Respond to Current Health Trends <b>Ato Bruck Messele, School of Pharmacy, AAU</b>
<b>14:15 – 14:45</b>	<b>Discussion</b>
<b>14:45 – 15:15</b>	<b>Tea Break</b> <b>Organizers</b>
<b>Moderator</b>	<b>Ato Abrham G/Giorgis, UNODC/Ato Abenet Denberu, CAROGA Pharma</b>
<b>15:15– 15:45</b>	Drugs Manufacturing in Ethiopia: Transformation to Respond to Local Needs and Become Internationally Competent <b>Mr Solomon G/Amanuel, EPHARM</b>
<b>15:45- 16:15</b>	Impacts of the Health Reform on Pharmaceutical Import, Wholesale and Distribution <b>Mr Mukemil Abdella, PFSA</b>
<b>16:15 – 16:45</b>	Regulatory Challenges in the Pharmacy Sector and Need for Changes in the Current Practice <b>Mr Dawit Dikasso, DACA</b>
<b>16:45 – 17:15</b>	<b>Discussion</b>

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## 2. DAY TWO      FRIDAY      28 AUGUST 2009

### SCIENTIFIC SESSION

#### 2.1. MORNING SESSION

<b>Moderator</b>	<b>Professor Eyassu Makonnen, Medical Faculty, Addis Ababa University/Ato Alemu Tekewe, School of Pharmacy, Addis Ababa University</b>
<b>08:30 – 08:50</b>	Prevalence and Antibiotic Susceptibility Pattern of <i>Staphylococcus Aureus</i> Strains from Inpatients and Outpatients in Jimma University Specialized Hospital, Jimma, Southwest Ethiopia. <sup>1</sup> Befikadu Legesse, <sup>1</sup> Hailemeskel Mekonnen, <sup>1</sup> Fetene Deribe, <sup>1</sup> Jimma University
<b>08:50 – 09:10</b>	Performance Assessment of Clinical Microbiology Laboratories in Ethiopia; bacterial identification and antibiotic susceptibility testing Surafel Fantaw <sup>1, 2</sup> , Negga Asamene <sup>1, 2</sup> , Firehiwot Mulu <sup>1</sup> , Theodros Girmay <sup>2</sup> , Asaye Birhanu <sup>1</sup> , Dawit Ferede <sup>1</sup> , Kassu Desta <sup>1</sup> and Samuel Kinde <sup>1</sup> <sup>1</sup> Faculty of Medicine, Addis Ababa University, <sup>2</sup> Ethiopian Health and Nutrition Research Institute [EHNRI]

<b>09:10 – 09:30</b>	Antimicrobial susceptibility patterns of respiratory tract pathogens isolated from sheep Legesse Garede <sup>1</sup> (DVM), Hailu Tade <sup>2</sup> (BPharm, MSc), <sup>1</sup> University of Gondar, Faculty of Veterinary Medicine, <sup>2</sup> Strengthening Pharmaceutical Systems/MSH
<b>09:30 – 09:50</b>	Assessment of Consumption Pattern of Antimicrobial Drugs in Food Producing Animals at Veterinary Clinic of Jimma University, Agriculture and Veterinary Medicine College, Jimma, South West Ethiopia <sup>1</sup> Birhanu Damtew, <sup>1</sup> Biniyam Girma, <sup>1</sup> Jimma University
<b>09:50 – 10:30</b>	<b>Discussion</b>
<b>10:30 – 10:45</b>	<b>Tea Break</b> <b>Organizers</b>
<b>Moderator</b>	<b>Dr Degu Jenere, HIV/AIDS Team, WHO/Ato Shimeles Endailalu, MSH/SPS</b>
<b>10:45 – 11:05</b>	Relationship between Total Lymphocyte count (TLC) and CD4 count among peoples living with HIV, Southern Ethiopia: a retrospective evaluation Deresse Daka and Eskindir Loha
<b>11:05 – 11:25</b>	Discordance between Providers Estimated and Caregivers Self Reported Adherence to HAART and Immunological Response among HIV Infected children in Ethiopia. Sibhatu Biadgilign (Bsc.PH, MPHE), Amare Deribew (MD, MPHE), Alemayehu Amberbir (Bsc.PH, MPH, PhD candidate), Kebede Deribe (Bsc.PH, MPH), Adugaw Berhane (Bsc.PH, MPH)
<b>11:25 – 11:45</b>	Switches between HAART Regimens among Paediatric Patients in University of Gondar Teaching Hospital, Northwest Ethiopia: Challenges of Limited Resources <sup>1</sup> Martha Tibebe, <sup>1</sup> Yeshambel Belyhun, <sup>2</sup> Kassahun Alemu, <sup>3</sup> Sisay Yifru, <sup>4</sup> Kahsay Huruy, <sup>1</sup> Moges Tiruneh <sup>1</sup> University of Gondar, College of Medicine and Health Sciences, Department of Microbiology and Parasitology, Gondar, Ethiopia, <sup>2</sup> University of Gondar, School of Public Health, <sup>3</sup> University of Gondar, Department of Paediatrics and Child Health, <sup>4</sup> University of Gondar, Department of Laboratory Technology
<b>11:45 – 12:05</b>	Adherence to Highly Active Antiretroviral Therapy and its Correlates among HIV Infected Pediatric Patients in Ethiopia Sibhatu Biadgilign (Bsc.PH, MPHE), Amare Deribew (MD, MPHE), Alemayehu Amberbir (Bsc.PH, MPH, PhD candidate), Kebede Deribe (Bsc.PH, MPH)
<b>12:05 – 12:45</b>	<b>Discussion</b>
<b>12:45 – 13:45</b>	<b>Lunch Break</b> <b>Organizers</b>

## 2.2. AFTERNOON SESSION

<b>Moderator</b>	<b>Dr Ariaya Haymete, School of Pharmacy, Addis Ababa University/Ato Hailemeskel Mekonnen, School of Pharmacy, Jimma University</b>
<b>13:45 – 14:05</b>	Comparative Quality Assessment of Different Brands of Efavirenz Found in Ethiopian Market Mebruka Mohammed Amin <sup>1</sup> , Henok Baye <sup>2</sup> , <sup>1</sup> Central University College, <sup>2</sup> School of Pharmacy, AAU

<b>14: 05- 14:25</b>	Evaluation of the <i>in vivo</i> Antihypertensive and <i>in vitro</i> Vasodepressor Activities of the Leaves Extract of <i>Syzygium Guineense</i> (Willd) DC Yohannes Ayele <sup>1</sup> , Ephrem Engidawork <sup>1</sup> , Kelbesa Urga <sup>2</sup> <sup>1</sup> Department of Pharmacology, School of Pharmacy, Addis Ababa University <sup>2</sup> Department of Drug Research, Ethiopian Health and Nutrition research Institute
<b>14:25– 14:45</b>	Antimicrobial Effects of the Extracts of Some Selected Aromatic Medicinal Plants Chalachew Teshale <sup>a</sup> , Jemal Hussien <sup>a</sup> , Awol Jemal <sup>b</sup> and Lucy mimano <sup>c</sup> ; (a) Department of Pharmaceutical Chemistry, School of Pharmacy, Jimma University; (b) Department of Pharmaceutics, School of Pharmacy, Jimma University; (c) Department of microbiology, School of laboratory technology, Jimma University
<b>14:45 – 15:15</b>	<b>Discussion</b>
<b>15:15 – 15:45</b>	<b>Tea Break</b> <b>Organizers</b>
<b>Moderator</b>	<b>Ato Berhanemeskel W/Gerima, School of Pharmacy, University of Gondar/ Ato Mussie Gezu, School of Pharmacy, Mekele University</b>
<b>15:45 – 16:05</b>	Assessment of Effectiveness of DOT Implementation in Tigray, Ethiopia. <i>Seid Ali Sani<sup>1</sup>, Teferi Gedif<sup>1</sup>, Zerihun Tadesse<sup>2</sup>, Samuel Zemariam<sup>1</sup>, School of Pharmacy, Addis Ababa University, P.O.Box 1176, Addis Ababa, Ethiopia, <sup>2</sup>Federal Ministry of Health, Addis Ababa, Ethiopia, <sup>3</sup>Tigray Regional Health Bureau, Mekelle, Ethiopia</i>
<b>16:05 – 16:25</b>	An Observational Study on Medication Administration Error in Pediatric Inpatient Ward of Jimma University Specialized Hospital, Jimma Town, Southwest Ethiopia. <sup>1</sup> Yemisirach Feleke, <sup>1</sup> Biniyam Girma, <sup>1</sup> Jimma University
<b>16:25 – 16:45</b>	Assessment of Supply Management Current Status for Antiretroviral Therapy (ART) in Oromia National Regional State, Ethiopia Alemayehu Lemma Wolde
<b>16:45 – 17:05</b>	Comparative retrospective drug use evaluation of ceftriaxone injection in Police and Black Lion hospitals <sup>1</sup> Michael Mulugeta and <sup>1</sup> Mulugeta Tarekegn, <sup>1</sup> Jimma University
<b>17:05 – 17:45</b>	<b>Discussion</b>

### 3. DAY THREE

SATURDAY

29 AUGUST 2009

### CONTINUING EDUCATION & BUSINESS MEETING

#### 3.1. MORNING SESSION

#### CONTINUING EDUCATION

<b>Moderator</b>	<b>Dr Negussu Mekonnen, MSH/SPS/ Dr Teferi Gedif , School of Pharmacy, Addis Ababa University</b>
<b>8:30 – 9:15</b>	The Role of Pharmacists in Chronic Disease Management <b>Ato Ephrem Abebe, School of Pharmacy, AAU</b>

<b>9:15 – 10:00</b>	The Role of Pharmaceutical Supplies and Logistics in Improving Quality of HIV/AIDS Related Services <b>Mrs Hany Abdallah, SCMS</b>
<b>10:00 – 10: 45</b>	Comparative Effectiveness in health care <b>Dr Eskinder Tafesse, AstraZeneca Pharmaceuticals</b>
<b>10:45 – 12:00</b>	<b>DISCUSSION</b>
<b>12:00 – 13:00</b>	<b>LUNCH      BREAK</b>

### **3.2. AFTER NOON SESSION      BUSINESS MEETING**

<b>13:00 – 13:30</b>	Executive Committee Report, <b>Ato Bruck Messele, V/President, EPA</b>
<b>13:30 – 14:00</b>	Audit Report, <b>Ato Abdulmejed Abda, Chairman, Audit Committee</b>
<b>14:00 – 14:30</b>	Editorial Board Report, <b>Dr Kaleab Asres, Chairman, Editorial Board</b>
<b>14:30 – 15:00</b>	Steering Committee Report, <b>Ato Yohannes Jorgie, Chairman, Steering committee</b>
<b>15:00 – 16:00</b>	Discussion on Reports
<b>16:00 – 17:00</b>	General Discussion and Elections

### **3.3 EVENING SESSION**

<b>18:30 – 21:30</b>	<b>Reception and Award</b>
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# **PREVALENCE AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF STAPHYLOCOCCUS AUREUS STRAINS FROM INPATIENTS AND OUTPATIENTS IN JIMMA UNIVERSITY SPECIALIZED HOSPITAL, JIMMA, SOUTHWEST ETHIOPIA.**

<sup>1</sup>Befikadu Legesse, <sup>1</sup>Hailemeskel Mekonnen, <sup>1</sup>Fetene Deribe

<sup>1</sup>Jimma University

*Staphylococcus aureus* (*S. aureus*) is one of the most serious gram-positive bacteria causing several nosocomial and community acquired infections. Because of its intrinsic ability to develop resistance to many antimicrobial agents with in a relatively short period of time, we are in the era where only few drugs can be confidentially mentioned for the treatment of *S. aureus* infections.

The study was conducted to determine the prevalence and antibiotic susceptibility pattern of *S. aureus* isolated from patients in Jimma University Specialized Hospital, February 12 to April13, 2008.

A cross sectional study was conducted on prevalence and antibiotic susceptibility pattern of *S. aureus* among patients (inpatients and outpatients) of Jimma University Specialized Hospital, from February 12 to April13, 2008. A total of 323 wound swab and nasal swab specimens were collected by the principal investigator using systematic sampling technique. Collected specimens were inoculated on mannitol salt agar (Oxoid and HIMEDIA) and incubated at 37°C for 18 to 24 hours. For those primary cultures that showed bacterial growth, Gram-staining and specific biochemical tests (catalase and coagulase) were used to identify the study organism. Sensitivity of the isolates to twelve commonly used antibiotics was determined by modified Kirby-Bauer antibiotic sensitivity testing method(43).

In this study, the overall prevalence of *S. aureus* was found to be 25.08%. An *S. aureus* prevalence of 20.25% and 26.64% was obtained for outpatient and inpatient isolates respectively. The isolates were found to be highly resistant to the antibiotics penicillin and cephalothin (98.77%; each), ampicillin (90.12%), methicillin (81.48%), oxacillin (79.01%) and chloramphenicol (79.01%).

There was higher *S. aureus* prevalence and resistance pattern for inpatient isolates than outpatients. High multidrug resistance pattern was observed to several combinations of the tested antibiotics. Since a high *S. aureus* resistance pattern is observed for most of the tested antibiotics, further large scale studies should be conducted in the hospital.

## **PERFORMANCE ASSESSMENT OF CLINICAL MICROBIOLOGY LABORATORIES IN ETHIOPIA; BACTERIAL IDENTIFICATION AND ANTIBIOTIC SUSCEPTIBILITY TESTING**

Surafel Fantaw <sup>1, 2</sup>, Negga Asamene <sup>1, 2</sup>, Firehiwot Mulu <sup>1</sup>, Theodros Girmay<sup>2</sup>, Asaye Birhanu<sup>1</sup>, Dawit Ferede<sup>1</sup>, Kassu Desta <sup>1</sup> and Samuel Kinde<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Addis Ababa University <sup>2</sup> Ethiopian Health and Nutrition Research Institute [EHNRI]

Bacterial identification and antibiotic susceptibility testing is performed in the clinical microbiology laboratories to guide clinicians and to accumulate reliable epidemiological data on the emergence of resistance pattern of microorganisms. But, many antibiotic agents are prescribed without sufficient laboratory background because prescribers are uncertain of the lab diagnosis. Use of antibiotics other than first-line drugs increases the treatment cost and probability of emerging antibiotic resistance strains.

The objective of the present study was to assess the performance of the clinical microbiology laboratories and identify gaps of the diagnostic procedures.

Out of 20 laboratories, which were volunteered to participate in this study, only 12(60%) laboratories had responded. Of these 12 participant laboratories, five (41.6%) had standard operational procedure,

none of them (0%) had standard control organism and only four (33%) of them had standard biological safety cabinet (safe exhaust outlet). With regard to inoculum preparation, all laboratories were standardizing the inoculum “by eye” only. Zone of inhibition was measured by different methods: five (36%) of the laboratories were using caliper and the rest 7(58%) were using plastic ruler. Eleven (92%) and six (50%) of the laboratories were unable to identify *V. cholera 01* and *S.flexneri*, respectively. One laboratory had correctly identified gram negative test organism (*S.flexneri*) but inappropriately selected penicillin for antibiotic susceptibility testing. Compared with the antibiotic susceptibility test profile of NCCLS for the overall test organism, one laboratory had 100% agreement, four laboratories 85%, one laboratory 81%, and two laboratories 58-65% agreement These bacterial strains, *Escherichia coli* (ATCC 25922), *Staphylococcus aureus* (ATCC 25923), *Pseudomonas aeruginosa* (ATCC 27853), *Vibrio cholera 01 Inaba* (ATCC 49627) and *Shigella flexneri* (clinical isolate), were dispatched using general purpose transport media; Trypton soya yeast (TSY) broth and glycerol (anti-freezer) inside cold box. Questionnaires were also used to collect data on the important aspects of diagnostic procedures. The antibiotic susceptibility test results of the participating laboratories were compared with the susceptibility profile obtained from the NCCLS guidelines for each test organism. It is evident that there is a problem with regard to willingness to participate in external quality assessment scheme, bacterial identification as well as choosing antibiotics for the targeted organism and adherence to quality assurance measures. To alleviate these problems, clinical microbiology laboratories in the country should be continuously assessed, technically supported and networked. These initiatives could build clinicians trust on the laboratory diagnostic procedures and frame the emergence of antibiotic resistance strain.

## **ANTIMICROBIAL SUSCEPTIBILITY PATTERNS OF RESPIRATORY TRACT PATHOGENS ISOLATED FROM SHEEP**

Legesse Garedew<sup>1</sup> (DVM), Hailu Tadege<sup>2</sup> (BPharm, MSc), <sup>1</sup>University of Gondar, Faculty of Veterinary Medicine, <sup>2</sup>Strengthening Pharmaceutical Systems/MSH

Respiratory diseases have been identified as an important problem of sheep in the highlands of Ethiopia for the last two to three decades. It may account for up to 54% of the over all mortality of sheep in the central highlands of Ethiopia. Respiratory diseases in sheep are reported to be caused by infections of microbial origins including bacteria, viruses and parasites. This study is undertaken to establish the prevalence of bacterial respiratory tract infections in the lungs of dead and slaughtered sheep and its susceptibility to commonly used antimicrobial agents. Pure and fresh isolated colonies of bacteria were taken and subjected to *in-vitro* susceptibility test using disc diffusion method. A total of 80 sheep lung samples were bacteriologically investigated and 87.5% of the samples yielded bacteria out of which 54.3% indicated mixed infections. The most commonly isolated organism is *Staph. epidermidis* (13.16%) followed by *E. coli* (11.41%), *Staph. aureus* (9.65%), *M. haemolytica* (7.89%), *Citrobacter* spp. (7.89%) and *P. multocida* 8 (7.02%). Out of the total isolates 44.74% were gram negative. Antimicrobial sensitivity test revealed that *Str. pyogenes*, *Staph. epidermidis*, *Neisseria* spp and *Str. pneumoniae* were strongly sensitive to all antimicrobials used in this study. The highest resistances were observed in *Str. uberis* and *E. faecalis*, which showed resistance for six and five types of antimicrobials tested respectively. All bacterial isolates were sensitive to amikacin and chloramphenicol. In conclusion, this study indicated that amikacin and chloramphenicol are effective against all isolates examined compared to high level of resistance observed in penicillin G, tetracycline and clindamycin. Therefore, selection of antimicrobial agents should be guided by results of antimicrobial susceptibility tests when ever possible. It is also recommended that the rational use of antimicrobial therapy should be promoted in order to minimize further development of antimicrobial resistance.

## **ASSESSMENT OF CONSUMPTION PATTERN OF ANTIMICROBIAL DRUGS IN FOOD PRODUCING ANIMALS AT VETERINARY CLINIC OF JIMMA UNIVERSITY AGRICULTURE AND VETERINARY MEDICINE COLLEGE, JIMMA, SOUTH WEST ETHIOPIA**

<sup>1</sup>Birhanu Damtew, <sup>1</sup>Biniyam Girma, <sup>1</sup>Jimma University

Antimicrobials are chemical agents used for treatment and/or prevention of diseases caused by microorganisms. These agents can be used as therapy, metaphylactics, prophylactics and growth

promoters. In the treatment of food producing animals using antibiotics; the risk of resistance should be considered.

The study was to assess consumption pattern of antimicrobial drugs for food producing animals at JUAVMC.

A cross sectional study was conducted retrospectively using case paper records of food producing animal patients registered at JUAVMC in 2007/8.

In this study it was found out that among a total of 443 prescribed drugs 443 (97.36%) were antimicrobials among which 310 (70.65%) were antibacterials and 133 (29.35%) were antiprotozoals. The result of antimicrobial drugs consumption by individual food producing animals showed that poultry 228 (51.47%) followed by cattle 175 (39.50%), sheep 35 (7.90%) and goat 5 (1.13%). It was also found that antimicrobials used as therapy accounted the greater percent 386 (87.13%), and 41 (9.26%) and 16 (2.71%) for growth promotion and prophylactic purposes respectively but no antimicrobials were used for metaphylactics. In terms of dosage forms solutions 317 (71.56%) accounted for the larger proportion followed by boluses 90 (20.32%), powder 29 (6.55%) and suspension 7 (1.58%).

There is a high use of antimicrobials for food producing animals in the study area. Poultry were found to be the largest consumers of antimicrobials. Also there is very low use of antimicrobials for growth promotion. Solutions and boluses were the most common dosage forms in which drugs are administered. Generally to judge the over all prescribing practice rationality of the prescriptions should be determined besides their respective consumption.

It is important to conduct epidemiological and detailed prescription reviews of antimicrobials as it may greatly influence the general public health. Therefore, due attention must be given by all professionals with a stake and government.

## **RELATIONSHIP BETWEEN TOTAL LYMPHOCYTE COUNT (TLC) AND CD4 COUNT AMONG PEOPLES LIVING WITH HIV, SOUTHERN ETHIOPIA: A RETROSPECTIVE EVALUATION**

Deresse Daka and Eskindir Loha

CD4 count is a standard measure of immunodeficiency in adults infected with HIV to initiate and monitor highly active antiretroviral therapy; however, it may not be feasible in resource poor countries. There is a need to have another marker of immunodeficiency that is less resource demanding. This study was to assess the relationship between total lymphocyte count and CD4 count in one of the resource poor countries, Ethiopia.

A total of 2019 cases with total lymphocyte and CD4 counts from three hospitals (Yirgalem, Hossana and Arba-Minch) were included in the study. Pearson correlation, linear regression and Receiver Operating Characteristic (ROC) were used.

For adults, the sensitivity, specificity, positive and negative predictive values of  $TLC < 1200$  cells/mm<sup>3</sup> to predict  $CD4$  count  $< 200$  cells/mm<sup>3</sup> were 41%, 83.5%, 87.9% and 32.5%, respectively. For subjects aged less than 18 years, these values were 20.2%, 87%, 82% and 27.1%, respectively. A  $TLC \leq 1780$  cells/mm<sup>3</sup> was found to have maximal sensitivity (61%) and specificity (62%) for predicting a  $CD4$  cell count of  $< 200$  cells/mm<sup>3</sup>. Meanwhile, a  $TLC \leq 1885$  cells/mm<sup>3</sup> would identify only 59% of patients with  $CD4$  count of  $< 350$  cells/mm<sup>3</sup> (sensitivity, 59%; and specificity, 61%). The combined sensitivity and specificity for patients above 40 years of age was greater.

Data revealed low sensitivity and specificity of TLC as a surrogate measure for  $CD4$  count and it is recommended that further explanation of available data to ameliorate such disparities of sensitivities and specificities of TLC as proxy for  $CD4$  count or else keep on expansion of access to  $CD4$  counts. It

is also recommend that inclusion of white blood cells, red blood cells, hemoglobin, hematocrite and platelets in such analysis and also separate analysis for pregnant women, which we considered as the limitations of this manuscript.

## **DISCORDANCE BETWEEN PROVIDERS ESTIMATED AND CAREGIVERS SELF REPORTED ADHERENCE TO HAART AND IMMUNOLOGICAL RESPONSE AMONG HIV INFECTED CHILDREN IN ETHIOPIA.**

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Adherence to HAART medications is crucial to effective therapy. In clinical practice, the physician often renders adherence assessments. Poor concordance between patient and physician reports of adherence might lead to inappropriate decisions regarding therapy. This study determines the rate of discordance between caregivers and physicians on adherence to Highly Active Antiretroviral Therapy (HAART).

A cross sectional study, was conducted in five hospitals in Addis Ababa from February 18- April 28, 2008. Agreement between self-reported adherence and providers' estimate of adherence was compared using kappa (k) statistic. The association between the current CD4 cells counts and measure of adherence were evaluated using a receiver operating characteristic (ROC) curve.

A total of 390 children respondents were included in the study. Caregivers reported dose adherence was 87% in the last 7 days and physician estimated 84% of the children as adherent based on their judgment. Fair agreement was observed between caregivers-reported dose adherence and providers' estimate adherence with (Kappa = 0.27, P=0.0001). In a receiver operating characteristic (ROC) curve, the association between a Current CD4 count slope and physician estimated was poor (area under the curve = 0.57 (95%CI=0.48-0.65); sensitivity = 87.0%; specificity = 37.2%; positive predictive value = 90.2% and Negative predictive value =30.1%). The test efficiency was 82.5%.

There is fair agreement and high rate of discordance (18%) were found between physicians estimated and caregivers reported adherence. This recalls an intervention to augment better mutual understanding between physicians and caregivers on the issue of adherence to HAART under clinical care Programme.

## **SWITCHES BETWEEN HAART REGIMENS AMONG PAEDIATRIC PATIENTS IN UNIVERSITY OF GONDAR TEACHING HOSPITAL, NORTHWEST ETHIOPIA: CHALLENGES OF LIMITED RESOURCES**

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Even though highly active antiretroviral therapy (HAART) was launched ever since 2003, the knowledge in pediatric HIV/AIDS care and treatment in Ethiopia is limited. This study aimed to assess proportions of and common reasons for switches between antiretroviral drugs among HIV/AIDS paediatric patients on care and treatment in Gondar teaching hospital.

The medical records of all cases that were on HAART from January 2005 to February 2007 were reviewed. A total of 158 children (<15 years) were started with HAART, at a median age of 6.6 years (range: 0.33-14). Ninety seven percent started AZT based first line antiretroviral therapy regimen. After a mean duration of therapy of 49.2 weeks (SD: 30.9 weeks), the number of patients who had a switch between available antiretroviral drugs was 17 (10.8%). Switches between HAART regimens were primarily owing to ARV related toxicity in 94.11%, with severe anemia secondary to presumed AZT toxicity being the commonest. Patients who took AZT for < 12 weeks were more likely to experience AZT associated anemia compared to those who took the drug for more than 36 weeks (OR: 6.6, 95% CI: 1.25-35.95). Only one case (5.9%) had ARV regimen change for a non toxicity reason which is clinical treatment failure.

There was a predilection to the use of AZT based HAART regimens. Suspected AZT associated severe anemia is the main cause of switching between the available ARV drugs. Lack of optimal investigations during the course of treatment with HAART makes the identification of exact culprits to manifestations difficult, hence influencing decision making. Stringent clinical and laboratory follow up investigations should be undertaken as per schedule, because confirmation of causes of toxic manifestations prevents unnecessary switches between HAART regimen, sensitization of HIV virus and the possible drug resistance.

## **ADHERENCE TO HIGHLY ACTIVE ANTIRETROVIRAL THERAPY AND ITS CORRELATES AMONG HIV INFECTED PEDIATRIC PATIENTS IN ETHIOPIA**

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The introduction of combination antiretroviral therapy (ART) has resulted in striking reductions in HIV-related mortality. Despite increased availability of ART, children remain a neglected population. This may be due to concerns that failure to adhere appears to be related to continued viral replication, treatment failure and the emergence of drug-resistant strains of HIV. This study determines the rates and factors associated with adherence to Antiretroviral (ARV) Drug therapy in HIV-infected children who were receiving Highly Active Antiretroviral Therapy (HAART) in Addis Ababa, Ethiopia in 2008.

A cross-sectional study was conducted in five hospitals in Addis Ababa from February 18 – April 28, 2008. The study population entailed parents/caretaker and index children who were following ART in the health facilities. A structured questionnaire was used for data collection.

A total of 390 children respondents were included in the study with a response rate of 91%. The majority, equaling 205 (52.6%) of the children, were greater than 9 years of age. Fifty five percent of the children were girls. A total of 339 children (86.9%) as reported by caregivers were adherent to antiretroviral drugs for the past 7 days before the interview. Numerous variables were found to be significantly associated with adherence: children whose parents did not pay a fee for treatment [OR = 0.39 (95%CI: 0.16, 0.92)], children who had ever received any nutritional support from the clinic [OR = 0.34 (95%CI: 0.14, 0.79)] were less likely to adhere. Whereas children who took co-trimoxazole medication/syrup besides ARVs [OR = 3.65 (95%CI: 1.24, 10.74)], children who did not know their sero-status [OR = 2.53 (95%CI: 1.24, 5.19)] and children who were not aware of their caregiver's health problem [OR = 2.45 (95%CI: 1.25, 4.81)] were more likely to adhere than their counterparts.

Adherence to HAART in children in Addis Ababa was higher than other similar setups. However, there are still significant numbers of children who are non-adherent to HAART.

## **COMPARATIVE QUALITY ASSESSMENT OF DIFFERENT BRANDS OF EFAVIRENZ FOUND IN ETHIOPIAN MARKET**

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Huge demand and high cost of antiretroviral medications in developing countries make these drugs likely target for counterfeiters. Efavirenz is one of first line antiretroviral drugs which is HIV 1 specific non nucleoside reverse transcriptase inhibitor, is widely used for naive patients and post exposure prophylaxis. Reports show that in addition to its high cost, Efavirenz is abused for its hallucinogenic activity and hence more liable to counterfeiting. The aim of the present study was to investigate the physicochemical equivalence of four brands of Efavirenz tablets and two brands of Efavirenz capsules from different health institutions in Addis Ababa, Ethiopia with respect to the USP, BP and IP requirements using WHO guidelines. This evaluation study provides a means of identifying counterfeited products and determining quality difference between same products obtained from various manufacturers.

The quality and physicochemical equivalence of four brands of tablets and two brands of capsules were assessed. The assessment included the evaluation of uniformity of weight, identification, assay, hardness, disintegration and dissolution (together with f1 and f2 values of the dissolution profiles). In addition t50% and t90% for drug release were determined for all the tablets and capsules. The identity test, the assay for content, disintegration test, dissolution test and uniformity of weight results of all investigated products was within the limits recommended by USP and IP. So all the Efavirenz products in this study irrespective of whether they are generic or brand versions met pharmacopoeial requirements.

This study will be of paramount importance provided further in vivo bioavailability evaluation of the indicated brand and generic products are performed and correlated with the in vitro findings. Stability studies and impurity tests of products should also be investigated to quantify degraded products.

## **EVALUATION OF THE *IN VIVO* ANTIHYPERTENSIVE AND *IN VITRO* VASODEPRESSOR ACTIVITIES OF THE LEAVES EXTRACT OF *SYZYGIUM GUINEENSE* (WILLD) DC**

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Hypertension is a common global health problem with potential cause of other disorders. Most cases of hypertension have no organic causes but certain disorder of the renal, endocrine, and vascular systems could cause it. Many plant preparations have claimed activity and traditional use for hypertension. *Syzygium guineense* (Willd) DC is traditionally used to lower blood pressure elsewhere in Ethiopia. The aim of this work was to evaluate the antihypertensive activity of the hydroalcoholic extract of the leaves of *S. guineense* in 1K1C rat models and its vasorelaxant effect on isolated aorta. The extract reduced the blood pressure in a dose and time dependent fashion. Single oral daily dose of 50, 100 and 150 mg/kg caused overall reduction of systolic blood pressure (SBP) by 6.9 mmHg (4.4%), 34.0 mmHg (22.0%), and 40.8 mmHg (26.0%), respectively, after three days of treatment. The diastolic blood pressure (DBP) was reduced by 10.3 mmHg (10.0%) and 18.4 mmHg (17.8%) by 100 and 150 mg/kg doses, respectively, but no significant reduction of DBP was caused at 50 mg/kg dose level during the period. The mean blood pressure (MBP) was reduced by 5 mmHg (4.0%), 18.3 mmHg (15.1%) and 25.9 mmHg (21.3%) by the respective doses during same period. The extract caused dose dependent relaxation of aorta precontracted with KCl at concentration of 5 to 70 mg/ml with maximum relaxation of 56.22 % achieved at 70mg/ml concentration. No significant effect was observed at 2.5 mg/ml concentration. The relaxation mechanism was found to be independent of endothelium. In addition muscarinic receptors, histamine receptors, ATP dependent K<sup>+</sup> channels, nonspecific COX enzyme and cGMP/ NO pathway were not involved in the mechanism of vasorelaxation of the extract. Therefore, the extract had antihypertensive effect most likely caused by dilation of the blood vessels, a confirmation for folkloric use of the plant by societies.

## ANTIMICROBIAL EFFECTS OF THE EXTRACTS OF SOME SELECTED AROMATIC MEDICINAL PLANTS

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The plants *Ocimum gratissimum* Linn, *Coriandrum sativum* Linn and *Thymus shimperi* Linn are known in Ethiopian traditional medicine for their use in the treatment of various illnesses like *Mitch*, taeniasis, ascariasis, eye diseases, tooth ache, etc.

The study was conducted to evaluate inhibitory effects of the extracts of selected aromatic medicinal plants against selected bacterial and fungal strains.

An *in vitro* screening of the antimicrobial effects of the essential oils and gradient solvent extracts of selected aromatic medicinal plants was conducted from January to May, 2009 using agar disc diffusion technique. Preliminary mode of action of the extracts was also assessed. Result: *S.aureus* *P. aerogenosa* and *E.coli* were inhibited by the petroleum ether extract of *O. gratissimum* at the minimum dose of 500, 1000 and 1500µg/disc respectively. Acetone fraction of *O. gratissimum* was also exhibited inhibitory effect against *S.aureus* and *P. aerogenosa* at 500µg/disc. *Candida* was sensitive only at higher (4000 µg/disc) concentration of petroleum ether and acetone fractions. On the other hand, the methanol extract showed superior antibacterial activity against *S.aureus*, ( $\geq 500$  µg/disc) and *P. aerogenosa* and *E.coli* (1000µg/disc), but devoid of activity against *Candida* at the test doses used. Flavonoids, alkaloids and phytosterols detected in the various fractions could be responsible for the observed activity. Regarding the activity of the essential oils, the oils from *Thymus shimperi* and *Ocimum gratissimum* were active against the entire microorganisms at 5, 10 and 15µL/disc. Similarly, coriander oil showed inhibitory activity against *P. aeruginosa*, *E. coli* and *S.typhi* at 5, 10 and 15µL/disc and only at higher 15µL/disc against *S.aureus* Essential oils of *Thymus schimperi* showed lethal effect against *E. coli* and *S.typhi* at all test concentrations used while that of *Corriander sativum* was static against *S.typhi* below 15µL.

In line with the traditional medicinal claim, the plant extracts were active against most of the microorganisms in a dose dependent manner. The methanol fraction and the essential oils investigated showed comparable activity with that of the positive control gentamicin (10 µg/disc), which was active against all the bacterial strains. Accordingly, further work is recommended to elucidate the active principle(s) and to formulate phytopharmaceuticals from these plants.

## ASSESSMENT OF EFFECTIVENESS OF DOT IMPLEMENTATION IN TIGRAY, ETHIOPIA.

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*Mycobacterium tuberculosis* infects one third of the world's population. Ethiopia ranks 7<sup>th</sup> in the world & 3<sup>rd</sup> in Africa with TB prevalence. TB is the leading cause of morbidity, the 3<sup>rd</sup> cause of hospital admission and the 2<sup>nd</sup> cause of hospital death in Ethiopia. TB patients take multiple drugs for very long period of time. Hence, patient adherence is a major problem. To resolve this issue, WHO recommends the strategy of Directly Observed Treatment-Short Course which includes directly observed treatment (DOT) to ensure a better patient adherence. The DOT observer may be a health worker or a trained community member. Studies indicated that Community Based DOT (CBDOT) is convenient, reduced costs and workload in health services and saved time of patients since it is practiced at patients' home or in their village. It also reduced the long distance traveled daily for Health facility DOT (HBDOT).

The objective of this study was to compare effectiveness of DOT implementation in HBDOT versus CBDOT in Tigray. A total of 378 patients, 118 from HintaloWajirat (CBDOT) and 266 from Enderta (HBDOT) Woredas, registered from September 2005 to February 2008 treatment outcome were reviewed retrospectively from Unit TB registers. Effectiveness was measured by success rate. Treatment success rate for all new TB cases were 101 (88.6%) and 181 (87.4%) in CBDOT and HBDOT respectively ( $p>0.05$ ). The transfer out rate for HBDOT was 6.8%; however, CBDOT was able to bring down the transfer out rate to zero. There was no significant difference in success rate between the two DOT options. Hence, CBDOT is a viable option to complement HBDOT especially in areas where people live faraway from health facilities.

## **AN OBSERVATIONAL STUDY ON MEDICATION ADMINISTRATION ERROR IN PEDIATRIC INPATIENT WARD OF JIMMA UNIVERSITY SPECIALIZED HOSPITAL, JIMMA TOWN, SOUTHWEST ETHIOPIA.**

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Medication errors are defined as any preventable events that occur in the process of ordering or delivering a medication regardless of whether an injury or potential for injury was present. They may reach as being fatal beyond patient's discomfort or prolonged hospitalization. The study was to assess the type and frequency of MAEs in pediatric inpatient ward of JUSH, Jimma, Oromia region, South West Ethiopia.

A prospective case based observational study. The necessary data was collected by observing the health professionals and attendants in charge of administering medications to pediatric inpatients in the three units of pediatric inpatient ward of JUSH, Jimma town, Ethiopia from February 18 to March 2, 2009.

A total of 196(89.9%) MAEs were identified from 218 observations made. From these, 178(90.81%) occurred on IV bolus medications while 16(8.16%) of them were detected on oral medications. The most frequent of the MAEs observed was wrong time error (55 of 196 or 28.06%); there were 52(26.53%) wrong dose errors and 42(21.42%) were omitted drug administration errors. The observed wrong administration technique errors were 41 (20.92%) and 6(3.06%) were unauthorized drug errors. The drug mostly associated with error was gentamicine 29(76.3%).

During the study high frequency of error was observed. Though the study doesn't determine the clinical significance of the errors, errors being on pediatrics and mostly through the intravenous route still indicate the seriousness of the problem.

Possible MAEs reducing programs should be designed and further studies should be conducted to fully understand the problem and factors associated with it.

## **ASSESSMENT OF SUPPLY MANAGEMENT CURRENT STATUS FOR ANTIRETROVIRAL THERAPY (ART) IN OROMIA NATIONAL REGIONAL STATE, ETHIOPIA**

Alemayehu Lemma Wolde

The launching of the free ARV treatment initiative was characterized with a large infusion of commodities which require high logistics capacity. The success of this expanded HIV/AIDS program is dependent on ability to reliably and consistently supply of the essential commodities. In many cases HIV/AIDS products are new and the public sectors have never managed. These items also require continuous availability. The issue was; does the current supply management system able to support the success of the scale up of ART services in Oromia National Regional State? The main purpose of this study is to determine the current status of pharmaceutical supply chain management system to support the scale up plan of the ART services at Oromia National Regional State owned ART service sites.



Descriptive cross sectional survey supported by qualitative approach was conducted in Oromia National Regional State. ART Sites were selected by stratified random sampling. Structured and non-structured in depth interview questionnaires, formats and observations were used to collect the data. Data was analyzed using SPSS version 12; Microsoft Excel and open code soft ware.

The study result showed that, current supply chain management activities for ART were centralized, vertical approached, dominated by partners with little government ownership. In most of the cases centralized procurement, distribution and LMIS activities had been managed by huge involvement of partners than the government. Availability of first line ARV drugs were 100% and 95% at HC and Hospitals respectively. Facility levels OI drugs availability were poor as 41% and 45% in HC and Hospitals respectively. Inventory control tools and Standard Operating Procedures and guidelines were barely used in both levels. It was only few of the visited health facilities had budget line for logistic operation at facility level. Availability of expired OI drugs in store was 12% and 11% in health centers and hospitals respectively on the day of the visit.

Oromia National Regional State public health ART sites supply management status is alarmingly weak to shoulder the burden of the scale up Plan. The ART supply system was vulnerable to stock out and expiry. Oromia National Regional State has to work with partners for the improvement at facility level ART supply management in line with Pharmaceutical Logistics Master Plan (PLMP) of FMOH. Partner support shall focus on the system strengthening and knowledge transfer to the existing health workers at facility level.

## **COMPARATIVE RETROSPECTIVE DRUG USE EVALUATION OF CFTRIAXONE INJECTION IN POLICE AND BLACKLION HOSPITALS**

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Antimicrobial agents are among the most commonly used and misused of all drugs. The inevitable consequence of the widespread use of antimicrobial agents has been associated with the emergence of antibiotic-resistant pathogens, fueling an ever-increasing need for new drugs. It is obvious that ceftriaxone is overused in some of the 'poor' countries but the emphasis is not on money. As a general 'rule of thumb', the more frequently an antibiotic is used, the higher the rate of bacterial resistance.

To comparatively evaluate the rational use of ceftriaxone injection in inpatient wards of Black Lion and Police Hospitals as per to standard treatment guideline of Ethiopia using drug use evaluation criteria of WHO.

A retrospective drug use evaluation was conducted based on patient medical history records (PMHRs) using WHO drug use evaluation criteria based on standard treatment guidelines for Ethiopia. Ceftriaxone was correctly prescribed for 45 and 46 cases out of the 63 PMHRs in Black Lion and Police Hospital respectively. Majority of patients who were placed on ceftriaxone were having pneumonia and meningitis with a frequency of 26.6% and 24.4% in BLH and 40% and 22.2% in PH respectively. Among the drugs coadministered with ceftriaxone, ringer lactate IV comprises 40.9% and 44.4% possible potential for interaction in BLH and PH respectively. Ceftriaxone was also inappropriately prescribed for some diseases, bronchitis taking the majority of percentages 37.5% and 6.6% in BLH and PH respectively.

The comparative drug use evaluation of ceftriaxone in Black Lion and Police Hospitals indicates that there is misuse of ceftriaxone as seen by the incorrect indication, presence of drug interaction, absence of lab diagnosis, inappropriate duration of treatment and incorrect dosage regimen. In order to improve the rational use and to prevent the development of resistance of ceftriaxone injection; the prescribers should adhere to the standard treatment guideline of Ethiopia concerning indications, contraindications and drug interactions.; a continuous and ongoing drug use evaluation should be undertaken to ensure the ration use of drugs.