A Double Blind Randomised Controlled Trial to Evaluate the Efficacy of Pre/probiotic Enhanced Ready-To-Use Therapeutic Food (RUTF) in the Treatment of Severe Acute Childhood Malnutrition

Materials and Methods

Severe Acute Malnutrition (SAM) was defined as a mid-upper arm circumference (MUAC) <23 cm, or weight-for-height (Z-score) ≥ -3. This was confirmed using weight-for-height Z-score (ZW-H) which was ≥ -3. Patients were randomised to receive either RUTF with or without Synbiotic2000 Forte TM, which was a synbiotic containing 1x10^8 CFU lactic acid bacteria per gram RUTF. The control group received RUTF without any additional synbiotic.

Results

Baseline:

Groups were well balanced with no significant differences (p>0.05) in:

Mean age: 29.3 months (synbiotic) vs 28.4 months (control)
Male sex: 53.3% (synbiotic) vs 55.0% (control)
HIV positive: 42.7% (synbiotic) vs 48.6% (control)
Weight-for-height Z-score: -2.19 (synbiotic) vs -2.33 (control)

Outcomes:

Synbiotic had no effect on major outcomes from SAM (p>0.05):

Cure(%): 56.5% (synbiotic) vs 53.6% (control)
Death(%): 20.2% (synbiotic) vs 23.5% (control)

Synbiotic also had no effect on secondary, clinical outcomes (p>0.05):

2-week period prevalence/day: 1.73 (synbiotic) vs 1.80 (control)

No adverse effects and in particular no cases of probiotics-associated sepsis were noted.

Conclusions

PRONUT is one of the biggest ever probiotics studies; one of few set in a high mortality/high morbidity developing country setting; one of few looking at hard outcomes (death/nutritional improvement). Safety profile was good, but no effects on improving outcomes were observed in the MOYO setting. An effect using a higher dose of probiotic cannot be excluded.

A “Rescue Protocol” for Patients with Endemic Burkitt’s Lymphoma who Failed Primary Chemotherapy

EM Molyneux, T Israels, K Banda, S Kamiza, E Borgstein, P Hessling
Paediatric Department College of Medicine, Blantyre, Malawi

Introduction

Endemic (African) Burkitt’s Lymphoma (BL) is the most common childhood cancer in central Africa. Cure rates of 25-35% are recorded with combination chemotherapy schedules like COMP or CVA. High dose combination chemotherapy with optimal supportive care, cures ≥ 90% of children. This therapy is neither affordable nor available to many children. In 2 studies ≥ 50% event free survival was achieved in BL with high frequency cyclophosphamide plus intra-vascular methotrexate, at a drug cost of < 50 US$. We wished to assess the efficacy and safety of a “Burkitt’s Rescue Protocol” in patients who failed primary treatment on this protocol.

Methods

Children with confirmed BL at QECH who did not achieve a complete clinical response after 3 x CPM + it MTX treatment or who relapsed after a complete response to treatment. Patients were treated with day 1,8,15 Cyclophosphamide 60mg/kg IV on day 1, and IV or oral on days 8 and 15 and Vincristine sulphate 1.5mg/m² IV Day 1,8,15 and Methotrexate 12.5mg IT + Hydrocortisone 12.5 mg IT, in patients treated for a relapse

Results

28 patients were enrolled 19 (68%) had a complete response(CR) 4 (14%) a partial response (PR), 4 (14%) a poor response and 1 (4%) absconded. One child with a PR achieved a CR after resection of a residual small ovarian tumour. 20 completed treatment. 82% of patients had ≥ stage III disease

Conclusion

One third of resistant/relapsed patients remain in remission 406 - 712 days after rescue treatment. One half of patients remained in continuous remission >1 year after primary treatment with the Malawi BL protocols. A total of ≥ two thirds of children with endemic BL can therefore be cured with simple, safe & affordable treatment strategies.

An Audit of How Patients Get on to Antiretroviral Therapy in Malawi, and the Weight Gain They Experience in the First Six Months

TB Tererera, M Hochgesang, SD Makombe, K Kamoto, AD Harries, ME Molyneux, M Kerac, J Bunn, A Seal, M Thindwa, P Bahwere, K Sadler, A Tomkins, S Collins

1Valid International, UK
2Departments of Community Health & Paediatrics, College of Medicine, Blantyre, Malawi
3Centre for International Health & Development, University College London, UK
4Blantyre District Health Office, Malawi

Objectives

Aims include: To determine the drop-out rates during the referral process of patients to ART and how they get on to ART. To determine the amount of weight gained during the first 6 months in patients who were alive and on ART at that time.

Methods

Retrospective data were collected using patient’s master card and register among patients started ART between January to June 2006 in six ART SITES in southeast region of Malawi selected by stratified simple random sampling. Data was entered and analyzed using Microsoft excel spread sheet.

Results

There were 738 adult HIV-infected eligible patients booked for group counseling, of whom 550 (74.5%) subsequently attended individual counseling and start ART. Of those who dropped out, 16% dropped out between booking and group counseling and 9.5% between group counseling and start of ART, with no significant differences found between men and women. In patients who started on ART and were alive and on therapy 6 months later, there was a gradual increase in weight with a mean gain of 6.0 Kg in men and 5.0 Kg in women at 6 months, which was more than 10% of baseline body weight. There was a slight increase in weight gain in patients in WHO Clinical Stage 3 and 4 compared with those in Stage 1&2, although this was only significant at 6-months between women in Stage 4 compared with women in Stage 1&2 (p <0.05).

Conclusions and Recommendations

We need to know more about why patients drop out of the counseling process before starting ART, and whether weight gain is a marker for survival in the early months of ART.

Antibody to Non-typhoidal Salmonella (NTS) in Malawian Children: A Cross-sectional Community Study in Ndirande Township Investigating Acquisition of Immunity to NTS with Age. EN Gondwe, CA MacLennan, J Msefula, SM Graham, 1Malawi/Liverpool Wellcome Trust Clinical Research Programme, College of Medicine, University of Malawi, Blantyre, Malawi.

Objectives

To determine the development of humoral immunity and bactericidal activity to NTS with age in Malawian children.

Setting

Ndirande Community Health Centre and MLW Research Programme.

Materials And Methods

Between 2005 and 2006 a cross-sectional study was conducted in Ndirande at The Ndirande Community Health Centre where serum was collected from 462 healthy and individuals aged 0 to 80 years. Serum killing of Salmonella typhimurium strain D23580 was assessed by serum bactericidal assay.
IgG, IgM and IgA to D23580 and respiratory burst activity against D23580 were measured by flow cytometry.

Results
The bactericidal activity of sera to D23580 was donor-age dependent. Sera from individuals >2 years able to effect a 1.2log kill at 3 hours (designated ‘normal kill’) whereas sera from children <2 years old (51%) were impaired. All sera with specific IgG and IgM to D23580 were able to effect normal killing and normal respiratory burst function. IgG presence in sera was correlated with normal respiratory burst function.

Conclusion And Recommendations
These results suggest that antibody is playing an important role in protective immunity to NTS. The high prevalence of NTS bacteremia in younger children may be due to children lacking specific antibody against NTS are rendered susceptible to NTS bacteremia.

Characteristics of Staphylococcus Aureus at Kamuzu Central Hospital
M Makoka

Background
Staphylococcus aureus continues to be a major pathogen causing various diseases worldwide. Antibiotic resistance in S. aureus, especially to penicillin and vancomycin, is an emerging global public health threat. In Malawi, S. aureus has not been closely followed. This study was undertaken to determine the antibiotic profile of S. aureus at Kamuzu Central Hospital in Lilongwe.

Methods
Specimens from blood, wounds, joints and abscesses were collected from patients presenting with signs of an infectious disease from July 2006 to April 2007. Culture was performed using standard techniques and antibiotic susceptibility tests were performed using approved guidelines. Polymerase chain reaction tests were also performed on some isolates for mec, agr and PVL genotyping.

Results
A total of 84 S. aureus were isolated. 15.5% and 11.9% were resistant to penicillin and vancomycin, respectively. Trimetrexop/searchamethoxazole, clindamycin and erythromycin showed 20.2%, 57.1% and 51.2% susceptibility, respectively. 38.9% of the Clindamycin resistant (MRSA) isolates tested showed the same genotypes, i.e., mec type I, agr type IV and no PVL genes.

Conclusion
The prevalence of MRSA is lower than is reported in most developed countries. There is high resistance to the common antibiotics used regularly in Malawi to treat S. aureus infections. Resistance to vancomycin is alarming. There is one clone causing infections and is hospital- rather than community-associated.

Diagnosing Fast Acid-Fast: The Applicability of Using Less Sputum Samples in the Diagnosis of PTB
E Demetria, D Chiloimo, M Massaquoi, C Foncha, R Zachariah
1MSF-Thyolo
2Ministry of Health, National TB Control Programme
3MSF-OCB, Operational Research Department

Background
WHO recommends an abbreviated way of diagnosing TB among HIV or suspected HIV patients. One sputum smear positive result is enough to make a diagnosis of smear positive TB. Two sputum smear negative result is enough to warrant radiographic investigation.

Objective
To determine the applicability of WHO recommendation of diagnosing TB among HIV patients.

Method and Setting
Records of sputum smear for AFB from October 2005 to July 2007 in Thyolo District Hospital laboratory were reviewed. Entries were noted but only those with 3 sputum samples were considered. All positive results were noted as well as sample number (Sample 1, 2 or 3). The corresponding screening test result for HIV among diagnosed TB cases was reviewed from ART-TB clinic record.

Result
In the 22 months period, a total of 7620 entries were recorded. 5782 submitted samples were considered. All positive results were noted as well as sample number (Sample 1, 2 or 3). The corresponding screening test result for HIV among diagnosed TB cases was reviewed from ART-TB clinic record.

Result shows that 84.4% of sputum smears are positive in all 3 sputum samples. The 1st specimen is able to detect 93.3% of all smear positive samples. This means that the WHO recommendation of considering 1 positive sputum sample is enough to make a diagnosis of PTB applicable at least in Thyolo district experience.

Does Antiretroviral Treatment Reduce Case Fatality among HIV-positive Patients with Tuberculosis in Malawi?
R Zachariah, M Fitzgerald, M. Massaquoi, A Acabu, D Chiloimo, FML Salamoni, AD Harries
1MSF-OCB, Operational Research Department
2MSF-Thyolo
3Ministry of Health, National TB Control
4Ministry of Health, HIV Unit

Setting
Thyolo district, Malawi.

Objectives
To report on 1) case fatality among human immunodeficiency virus (HIV) positive tuberculosis (TB) patients while on anti-tuberculosis treatment and 2) whether antiretroviral treatment (ART) initiated during the continuation phase of TB treatment reduces case fatality.

Design
Retrospective cohort analysis.

Methods
Comparative analysis of treatment outcomes for TB patients registered between January and December 2004.

Results
Of 983 newly registered TB patients receiving diagnostic HIV testing, 658 (67%) were HIV-positive. A total of 132 (20%) patients died during the 8-month course of anti-tuberculosis treatment, of whom 82 (62%) died within the first 2 months of treatment when ART was not provided (cumulative incidence 3.0, 95%CI 2.5– 3.6 per 100 person-years). A total of 576 TB patients started the continuation phase of anti-tuberculosis treatment, 180 (31%) of whom were started on ART. The case-fatality rate per 100 person-years was not significantly different for patients on ART (1.0, 95%CI 0.6–1.7) and those without ART (1.2, 95%CI 0.9–1.7), adjusted hazard ratio 0.86, 95%CI 0.4–1.6, P < 0.6

Conclusions
ART provided in the continuation phase of TB treatment does not have a significant impact on reducing case fatality. Reasons for this and possible measures to reduce high case fatality in the initial phase of TB treatment are being discussed.

Dynamic Changes in TNF Production during the Intensive Phase of Treatment for Pulmonary Tuberculosis
C Waitt1,2, S Nyirongo1, P Banda1, SA White1, B Kampmann1, RS Heyderman1, SB Squire2, M Firmohamed1
1Malawi-Liverpool-Wellcome Clinical Research Programme, Blantyre, Malawi
2Dept. of Medicine, College of Medicine, University of Malawi, Blantyre, Malawi
3Dept. of Pharmacology and Therapeutics, University of Liverpool, UK
4Dept. of Paediatric Infectious Diseases, Imperial College, London, UK
5Liverpool School of Tropical Medicine, UK

Objectives
To test the hypothesis that deterioration following the start of treatment for tuberculosis results from an increased pro-inflammatory response to mycobacterial antigens.

Setting
Tuberculosis ward and outpatients, Queen Elizabeth Central Hospital

Methods
Consecutive adult patients presenting with their first episode of pulmonary tuberculosis were invited to participate, excluding those already on ART. Detailed review was conducted on enrolment and on days 3, 7, 28 and 56 following the introduction of treatment (intervals determined during a pilot study). In addition to HIV status, haematological and biochemical indices, the response to endotoxin and mycobacterial antigens was assessed using a whole blood assay and with intracellular cytokine staining. Published data have enabled us to calculate a sample size of 300.

Results
As part of an ongoing study, 70 patients have completed the 56 days of follow-up. 59% of these were sputum smear positive and 41% sputum smear negative. From these, positive mycobacterial cultures were obtained from 92% and 58% respectively. HIV positive patients (81%) had a median CD4 count of 228 (range 2-897). Four patients (5.7%) died during the study period, with 75% dying on the first day of TB treatment. There was a significant (p<0.05) increase in TNF response to heat killed mycobacterium tuberculosis strain H37Rv from...
Effect of Maternal HIV on the Immune Response of HIV-Uninfected Infants

DJC. Miles1, L Gadama1, B Makaman1, R Heyderman2,3
1Department of Obstetrics and Gynaecology, Queen Elizabeth Central Hospital, Blantyre, Malawi
2Department of Anatomy, University of Malawi, College of Medicine, Blantyre, Malawi
3Wellcome Trust Research Centre, Blantyre, Malawi

Objectives
To establish whether HIV infection during pregnancy affects infants’ CD4 T-cell response to vaccination.

Materials and Methods
A total of 20 healthy infants born to HIV-mothers and 25 to HIV+ mothers were recruited at birth. All infants were vaccinated with BCG and OPV at birth in accordance with the expanded program of immunisation. At two weeks of age, the differentiation state of the CD4 T-cell population was assessed by differential counts and immunophenotyping, and functional effector response was assessed by IFNy response to BCG and polio antigens. At ten weeks of age, a second sample will be collected to assess the formation of T-cell memory by tracking CD4 T-cell division in response to BCG and polio antigens.

Results
At two weeks, the CD4 T-cells of infants born to HIV-infected mothers are more differentiated than those born to HIV-uninfected mothers but there is no discernable difference in the IFNy response to vaccine antigens. Ten week samples have yet to be collected.

Conclusions and Recommendations
Exposure to HIV during pregnancy does not impair the early-stage immune response to vaccine antigens, but information on immune memory formation from the ten-week samples will be necessary to evaluate the study hypothesis.

Excess Mortality Risk Associated with HIV in Severely Malnourished Children Admitted to a Large Malawian Nutritional Rehabilitation Unit (NRU)

J. Bunn1, M. Kere2,3
1Departments of Community Health & Pediatrics, College of Medicine, Blantyre, Malawi
2Malaria Alert Centre, College of Medicine, University of Malawi.
3Malawian HIV/AIDS Research Project, University of Malawi.

Objectives
To evaluate major outcomes from an episode of severe acute malnutrition (SAM) in children admitted over a 10-month period to a large Malawian Nutritional Rehabilitation Unit (NRU), with the specific aims of describing the impact of HIV serostatus on outcome, and providing information on the characteristics of those dying whilst admitted to the NRU.

Methods
Children admitted to the NRU over a 10-month period were classified as HIV+ve or HIV-ve on the basis of the availability of serological results. A total of 984 children were admitted over the study period, of whom 356 (36%) were HIV+ve and 628 (64%) were HIV-ve. The study was approved by the Research Ethics Committee of the College of Medicine, University of Malawi.

Results
In HIV+ve children, the odds of mortality and lower odds of cure were at home, following successful initial treatment. In children with SAM, being HIV positive is strongly associated with higher odds of mortality and lower odds of cure. In HIV prevalent settings such as Malawi, new/improved approaches to SAM treatment are needed:

- Better tools for assessing feeding centre performance--e.g. an updated “Prudohn” index of expected mortality
- Better interventions to improve outcomes, especially for HIV+ve SAM.

Factors affecting the Expanded Program on Immunization (EPI) in Lilongwe District, Malawi

A Chibwana1, D Mathanga1,2, K Bizumungh1, G Malenga3
1Malaria Alert Centre, College of Medicine, University of Malawi.
2Malawian HIV/AIDS Research Project, University of Malawi.
3The Department of Communication and Community Health, College of Medicine, University of Malawi.

Objective
To explore caregivers’ knowledge, attitudes, and perceptions towards Expanded Program on Immunizations (EPI) and explore factors affecting implementation in Lilongwe district, Malawi.

Methods
Information was collected through community group interviews with caretakers, focus group discussions with health workers and in depth interviews with prominent DHMT members. Qualitative data was analyzed thematically and quantitative data obtained from this study was analyzed by means of frequencies and percentages.

Results
A total of 147 women and 70 health workers were interviewed. Knowledge of vaccine preventable diseases (VPDs) is high although Diphtheria, Hemophilus influenzae Type B and Hepatitis B were not mentioned. Instead, diseases not covered by EPI program like diarrhoea, asthma and malaria were mentioned as VPDs. Despite high knowledge of the importance of immunizations, only 41% of caretakers in the interviews had their last child fully immunized, 32% had children that had dropped out and 16% did not take their children for vaccination at all. Fever resulting from immunization was frequently mentioned as a major reason for dropping out, while lack of perceived value of immunization, lack of motivation, religious beliefs and negative perceptions about immunization were the most frequently mentioned reasons for non-immunization. Health facility access, socio-economical and cultural factors were mentioned as barriers affecting vaccination uptake.

Conclusions and Recommendations
Caregivers appreciate the value of immunizations despite a number of community misconceptions regarding immunizations. There is need for intensive community mobilization and sensitization with vaccine safety messages to clear cultural barriers and misconceptions regarding immunizations.

Fundus Fluorescein Angiography in Cerebral Malaria [An Interim Report]

SJ Glover1, N Beare2, ME Molyneux1, T Taylor1, SP Harding2
1Department of Anatomy, University of Malawi, College of Medicine, Blantyre, Malawi.
2St. Paul’s Eye Unit, Royal Liverpool University Hospital, Liverpool, UK

Objectives
To investigate the retinal perfusion in comatose children with cerebral malaria

Setting
Malaria project ward, Queen Elizabeth central hospital, Blantyre.

Materials and Methods
We performed fundus fluorescein angiography on 38 comatose children with clinically diagnosed cerebral malaria during the Blantyre malaria high transmission season of 2007 [Jan – May].

Results
We found 4 had significant areas of non perfusion in their retinas [we defined this as an area greater than 5 optic disc areas either confluent or closely associated]. 1 had areas of small leaking from the mid peripheral retina and one massive leak in the macula [central area of the retina]. 1 had multiple areas of leakage including serous retinal detachments [large fluid blisters in/below the retina].

Conclusions and Recommendations
The massive fluid leaking may represent a pre fatal change. This has not been observed before. The non perfusion may be a change that is associated with a long length of coma.
Frequency of Gastroenteritis and Gastroenteritis-associated Mortality with Early Weaning in HIV-1-infected Children Born to HIV-infected Women in Malawi

G Kafalafala1, DR Hoover2, TE Tahar1, M Thiggen1, Q Li1, MG Fowler3, Nl Kunwenda1, K Nkanana4, L Mipando1, L Mofenson5

1Department of Obstetrics & Gynaecology, College of Medicine, University of Malawi, Blantyre, Malawi
2Department of Epidemiology, Division of HIV/AIDS Prevention, Surveillance, and Epidemiology National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, GA
3Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD
4Epidemiology Branch, Division of HIV/AIDS Prevention, Surveillance, and Epidemiology National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, GA
5Mulago Hospital, Makerere University, MU-JHU Research House, Kampala, Uganda
6College of Medicine-Johns Hopkins University-Ministry of Health Research Project, Blantyre, Malawi

Results
The probability of an infant having at least one gastroenteritis event in PEPI Vs NVAZ between ages 0-6 weeks, 7-3 weeks, 4-6 months, 7-9 months, and 10-12 months was (0.7 Vs 0.3%), (1.6 Vs 1.9%), (5.1 Vs 6.4%), (14.6 Vs 9.2%, p<0.0001) and (10.0 Vs 8.0%), respectively. The frequency of at least one gastroenteritis hospitalization in PEPI Vs NVAZ between ages 4-6 months, 7-9 months and 10-12 months was (1.1 Vs 0.3% p=0.03), (4.3 Vs 0.1%, <0.0001), and (2.5 Vs 0.2%, p<0.0001), respectively. Cumulative gastroenteritis-associated mortality at ages 3 months, 6 months, 9 months, and 12 months was 4.6, 23 and 28 per 1,000 infants in PEPI and in NVAZ was 1, 3, 7, and 12 per 1,000 infants (p=0.003).

Conclusions
Gastroenteritis frequency and hospitalization in PEPI was highest in infants between the ages of 7-9 months, immediately following weaning. Gastroenteritis-related mortality was higher in PEPI with early weaning than in NVAZ with delayed weaning. Strategies to allow safe breastfeeding by HIV-infected mothers for more prolonged periods and to assist such mothers in safe preparation of weaning foods in low-resource settings are urgently needed.

Gastroenteritis, Dehydration and Severe Acidosis in Malawian Infants: How is this Best Managed?

R Mlotha, S Ahmad, J Ellis, EM Molyneux

Pneumonics Department, College of Medicine

Methods
Data on breastfeeding and gastroenteritis visits were collected at scheduled and non-scheduled visits. Gastroenteritis frequency through age 12 months among infants who were HIV-uninfected at the reported visit was evaluated. Cumulative probabilities of overall and gastroenteritis-related mortality were estimated using Kaplan-Meier analysis.

Results
HAART to Prevent MTCT in Malawi. The DREAM Program

L Palombi1, P Germano2, J Haswell3, L Narciso4, R Luanga1, P Bestagini5, G Liotta4, C Sekani6, MC Marazuela7

1Community of Sant’Egidio - DREAM program Malawi
2Dept. of Public Health – University of Tor Vergata, Rome – Italy
3LUMSA University, Rome – Italy
4National Institute of Infectious Diseases “L. Spallanzani”, Rome – Italy
5University of Piemonte Orientale, Novara - Italy

Background
Prevention of Mother-to-Child transmission is probably the weakest area in the field of the fight against AIDS in limited-resource settings. Main difficulties are both the low access of pregnant women to the prevention program and the high drop-out rate. Aim of this paper is to analyze the preliminary results of an approach to MTCT based on administering of HAART to all HIV+ pregnant women irrespective the level of CD4 count.

Methods and Population
Since August 2006, in Malawi, the DREAM program is proposing HAART to the HIV+ pregnant women to prevent Mother-to-Child transmission. The programme is operating in the Dowa district (Muengo wa Nthena Hospital) and in the DREAM center in Blantyre. HAART is administered since the 25th week of pregnancy, through delivery and breastfeeding, until the weaning of the baby, possible within the sixth month of life. Triomune is offered to the women qualified for long-life treatment while Duovir plus nevirapine is offered to the pregnant women who will stop treatment at the weaning of the baby. The programme has been accessed by 398 pregnant women (mean age 26 years). Viral load (bDNA technique) is performed on the newborn’s blood at one and six month of age.

Results
Out of 398 pregnant women 51 refused (35%) or abandoned (16) before delivery, 44 are still pregnant and 3 died (3/300, 0.99%). Out of 300 women who gave delivery, 14 abandoned after delivery. The total drop-out rate is 16.3%. The one-month HIV transmission rate is 1.1% (2/184) and neonatal mortality rate is the same (2 deaths out of 184 newborns, 1.1%). The average birth weight is 3.1 Kg, 13% of the newborn weighted under 2.5 Kg at birth. The prematurity rate is 21.3% (54/254). Severe drug toxicity (grade 3-4) in the pregnant women is limited to less than 5% without major consequences. No evidence of drug toxicity has been observed in the baby at one month of age.

Conclusion
The preliminary findings of the study indicate that HAART to the pregnant women seems to be safe for both mother and child, effective in prevention of MTCT and feasible in resource-limited setting where caesarean section and formula feeding cannot be widely accessed by the clients.

HIV-1 Envelope Diversity during HIV-1 Subtype C Vertical Transmission in Malawian Mother-Infant Pairs

JJ Kwiek1,2, ES Russell1, KK Dang1, CL Burch1, V Mwapasa3, SR Meshnick1,2, R Swanstrom1

1Department of Epidemiology, University of North Carolina at Chapel Hill, USA
2Dept. of Microbiology and Immunology, University of North Carolina at Chapel Hill, USA
3Dept. of Biomedical Engineering, University of North Carolina at Chapel Hill, USA
4Dept. of Biology, University of North Carolina at Chapel Hill, USA
5UCNC for AIDS Research, University of North Carolina at Chapel Hill, USA
6Department of Community Health, Malawi College of Medicine, Blantyre, Malawi
7Center for Microbial Interface Biology, The Ohio State University, Ohio, USA

Objective
To study the relationship between HIV-1 genetic diversity and mother-to-child transmission and to determine if vertical HIV-1 transmission occurs stochastically.

Study Methods
Case-case-control study of Malawian mother-infant pairs consisting of 32 non-transmitting women, 25 intrauterine (IU) transmitters and 23 intrapartum (IP) transmitters enrolled into the Malawia and HIV in Pregnancy Study at Queen Elizabeth Central Hospital from 2000-2004. A heteroduplex tracking assay against the highly variable HIV env V1/V2 region was used to characterize the relationship between HIV diversity and HIV-1 MTCT. The V1/V2 region was sequenced from two mother-infant pairs and a phylogenetic tree was built.

Results
No relationship was found between transmission and overall maternal HIV diversity. Infants had less diverse HIV-1 populations than their mothers, and IU-infected infants had fewer V1/V2 variants and were more likely to harbor a homogeneous V1/V2 population than infants infected IP. V1/V2 sequences from the two mother-infant pairs support multiple env variant transmission when multiple variants are detected, rather than single variant transmission followed by diversification. Almost 50% of the HIV-infected infants contained V1/V2 env variants that were not detected in maternal plasma samples, and, transmission of env variants was not related to their abundance in

a large study to properly assess.
Hyperlactatemia and Lactic Acidosis after ART
C Foncha1, E Demetrius1, IY Zulu1, M Massaquoi1, R Zachariah1
1 MSF-OCB, Operational Research Department

Background
In April 2003, MSF introduced ART in Thyolo District. By August 2007, the ART programme has initiated 10,000 patients in need of treatment using Triomune®. However, Triomune® use over long period can result in symptomatic hyperlactatemia that may be life threatening.

Setting
Thyolo District Hospital

Design
Short retrospective analytical review

Objectives
To review the outcome of cases reporting with symptoms of hyperlactatemia.

Methods
Patients on Triomune® reporting with symptoms suggestive of hyperlactatemia are bed rested for minimum of two hours, then blood collected by finger prick and tested using an acutrend® machine. Treatment is discontinued for patients with severe symptoms and high lactate level. Lactate levels are checked regularly until normal and an alternate HAART regimen restarted.

Results
30 (24 females and 6 males) had symptoms suggestive of hyperlactatemia (lactate levels above 5mmol/l). 15 had lactate levels above 5mmol/l (high risk) of which five died. 12 had lactate levels below 2.5mmol/l (no risk ).

Conclusion and Recommendation
Hyperlactatemia, though uncommon, has a high case fatality (33.3% in our cohort). In resource- limited settings, acutrend® machine is a valuable tool for quick diagnosis.

Kaposi’s Sarcoma Palliative Care – A Review of Tyianjane Clinic Patient Care, Process and Outcomes
H Francis, J Bates
Tyianjane Clinic, Queen Elizabeth Hospital, Blantyre, Malawi

Objectives
To describe protocols of selection criteria for use of vincristine.

Methods
To review the documented clinical data of patients seen in the Tyianjane clinic since 2005.

Study methods
This was a retrospective descriptive study. Current protocols for selection and treatment with vincristine are described by means of an algorithm. Demographic data, treatment regimes and outcomes were reviewed by data collected from patient files using Microsoft excel.

Results
Those selected for vincristine treatment have a clinical diagnosis of KS, are HIV+ve and are recommended to have been on ARVs for a minimum of 3 months. High, medium and excluded categories are described. Pain and symptom control options are included. Dosing schedules consist of sequences of six doses, weekly, fortnightly and monthly with sequential review. 232 patient files were reviewed, which included 79 women and 153 men. The average age was 34 years.

Conclusion and Recommendations
Kaposi’s Sarcoma Palliative Care – A Review of Tyianjane ClinicPatient Care, Process and Outcomes
H Francis, J Bates
Tyianjane Clinic, Queen Elizabeth Hospital, Blantyre, Malawi

Objectives
To describe protocols of selection criteria for use of vincristine.

Methods
To review the documented clinical data of patients seen in the Tyianjane clinic since 2005.

Study methods
This was a retrospective descriptive study. Current protocols for selection and treatment with vincristine are described by means of an algorithm. Demographic data, treatment regimes and outcomes were reviewed by data collected from patient files using Microsoft excel.

Results
Those selected for vincristine treatment have a clinical diagnosis of KS, are HIV+ve and are recommended to have been on ARVs for a minimum of 3 months. High, medium and excluded categories are described. Pain and symptom control options are included. Dosing schedules consist of sequences of six doses, weekly, fortnightly and monthly with sequential review. 232 patient files were reviewed, which included 79 women and 153 men. The average age was 34 years. 90% were known to be HIV positive when first seen, however only 44% were taking ARVs. Of the 140 patients receiving vincristine therapy, 24% were considered high priority, 38% medium priority, and 2% excluded. 69% required analgesia (31% step 3 analgesics, 14% adjuvants). 62% were documented to have received counseling on disease understanding/HIV.

Conclusion and Recommendations
KS is Malawi’s most common cancer and often presents late. Protocols are needed to select patients suitable to receive palliative chemotherapy as part of a holistic care package including counseling and suitable analgesia. Development of suitable tools to enable routine collection of outcome data is recommended particularly as this is poorly described since the introduction of antiretroviral therapy.

Maternal Depression and Infant Growth – A Cross-sectional Study from Malawi
RC Stewart1, E Umar1, F Kauye2, J Bunn1, M Vokhiwa1, M Fitzgerald1, B Tomenson1, A Rahman1, F Creed2
1 Department of Community Health, College of Medicine, Blantyre, Malawi.
2 Zomba Mental Hospital, Zomba, Malawi.
3 Medicine Sans Frontieres (Belgium), Thyolo, Malawi.

Objective
To investigate the association between maternal depression and infant growth in rural Malawi.

Setting
Under 5’s clinic in Thyolo District Hospital, Malawi, Africa.

Materials and Methods
Across-sectional study Subjects: Consecutive infants due for measles vaccination, and their mothers. Outcome measures: Mean weight-for-age and height-for-age z-scores were compared between infants of mothers with probable depression versus non-depressed, measured using a translated and validated screening measure for depression, the Self-Reporting Questionnaire (SRQ).

Results
501 infants and mothers were recruited. Median infant age was 9.9 months. 29.9% of mothers scored SRQ >7 indicating probable depression. Mean height-for-age z-score for infants of mothers with probable depression (-1.50 (SD 1.24)) was significantly lower than for infants of non-depressed mothers (-1.11 (SD 1.12), p=0.001). This association was confirmed in multivariate analysis including potential confounding variables. Mean weight-for-age z-score for infants of mothers with probable depression (-1.77 (SD 1.16)) was lower than for infants of non-depressed mothers (-1.59 (SD 1.09)) but this difference was not significant (p=0.097), and was not significant after multivariate analysis.

Conclusion and Recommendations
The study demonstrates an association between maternal depression and infant stunting (but not underweight) in a rural sub-Saharan African setting.

The direction of association cannot be determined, but the results support calls for maternal mental health to be included in programmes tackling infant undernutrition.

Natural History and Risk Factors associated with Early and Established HIV-1 Infection among Reproductive Age Women in Malawi
JJ Kumwenda1, B Makanani1, F Tauol1, C Nkhoma1, G Kafalafula1, Q Li1, N Kumwenda1, TE Taha2
1 College of Medicine, University of Malawi, Private Bag 360 Chichiri, Blantyre, Malawi
2 Johns Hopkins University-University of Malawi College of Medicine Research Project, Blantyre, Malawi
3 Bloomberg School of Public Health, Johns Hopkins University, 615 N. Wolfe Street, Baltimore, MD. USA

Background
Data evaluating the biological events and determinants of early HIV infection are limited in Sub-Saharan Africa. We examined plasma viral levels and trends during early and established HIV among reproductive age women who previously participated in a randomized clinical trial of treatment of genital tract infections in Malawi. We also assessed the association of injectable hormonal contraceptive (HC) use with HIV infection.

Methods
Three groups of HIV-1 infected and uninfected women were studied: seroconverters, seroprevalent and seronegative. Questionnaires and blood samples were collected at baseline and every 3 months for the duration of the study. The virus set-point in seroconverters and levels and trends of viral load over time were determined. The associations of injectable HC use with HIV infection and viral load were assessed using conditional logistic regression and mixed-effect models, respectively.

Results
In the original clinical trial, 844 HIV-1 infected and 842 HIV-1 uninfected women were enrolled. Of 31 women who seroconverted during 12 months, 29 were matched with 54 seroprevalent and 54 seronegative women. The estimated median plasma virus set-point was 4.45 log10 copies/ml (interquartile range 4.32-5.14). Injectable HC use was significantly associated with HIV seroconversion (adjusted odds ratio 10.42; p=0.03) but not with established HIV infection. There was a statistically significant interaction between the linear association of viral load and time of injectable HC use among the seroconverters (regression coefficient -0.14; p=0.02).

Conclusion
Knowledge of virus set-point and trends of viral load in HIV seroincident and seroprevalent asymptomatic women could assist in antiretroviral treatment management activities.
Randomized Controlled Trial Comparing the Impact of Supplementary Feeding with Either Ready-To-Use Food or Corn-Soy Blend among Malnourished Anti-Retroviral Therapy Clients in Malawi.

M Ndekha, J van Osthorst, M Manary

1Dept Community Health, College of Medicine, Blantyre, Malawi
2Dept Internal Medicine, College of Medicine, Blantyre, Malawi
3Department of Pediatrics, Washington University in St. Louis School of Medicine

Objective
To compare the effectiveness of 2 supplementary foods, the ready-to-use therapeutic food (RUTF) and the corn/soy blend (CSB), given to wasted patients beginning the standard ART protocol, in improving the nutritional and clinical outcomes after 3.5 months of intervention.

Study methods
490 wasted (Body Mass Index, BMI < 18.5) adults starting ART were randomized to receive isonenergetic amounts of RUTF or CSB as dry rations. Weight, Fat-Free Body Mass measured by bioelectrical impedance, CD4 count measured by FACS count machine and significant clinical events (hospitalizations + deaths) were measured at the monthly clinic visits. The primary outcomes were BMI and fat free body mass, while some of the secondary outcomes were CD4 count and significant clinical outcomes. Outcomes were compared with a Student’s t-test for continuous parameters and with a Chi-Square test for dichotomous outcomes.

Result
On enrollment subjects in the CSB (n=245) and the RUTF (n=245), had mean BMI, Fat-Free mass % of body composition, and the CD4 Count Cells, 16.5±1.5 vs. 16.5±1.4, 94.4±4.5 vs. 94.4±5.0, and 13±1±40 cells x 106/L vs. 140±162 cells x 106/L, respectively. After 3.5 months of study participation, patients receiving RUTF had significantly higher weight and BMI gains, than patients receiving CSB, 5.6±4.6 vs. 4.0±5.6g (p value <0.01), and 2.2±1.8 vs. 1.7±1.6 (p value <0.01), respectively, while the Fat-free mass % of body composition, the Loss of Fat-free body mass % of body composition and the CD4 Count cell gains, were fairly consistent between the two treatment groups, 89.0±6.8 vs. 90.0±6.8 (p value 0.23), 5.2±9.4 vs. 4.8±7.1 (p value 0.64) and 290±179 cells x 106/L vs. 298±201 cells x 106/L, in the RUTF and CSB, respectively. Mortality was high in both the RUTF and the CSB patient groups, 27% vs. 23%, respectively, and both treatment groups had some drop-outs, 9% vs. 7%, respectively.

Conclusion
Supplementary feeding with specially formulated RUTF was associated with more increase in weight and BMI, but there were no differences in the survival of the wasted HIV-infected patients on ART Program in the short term.
**Scaling up of PMTCT in Research Setting**

LA Nyondo Mipando1, Nl Kunwenda2, GE Kafulafula1
1College of Medicine- Johns Hopkins Research Project, Blantyre, Malawi
2Department of Obstetrics and Gynecology, University of Malawi, College of Medicine, Blantyre, Malawi

**Background**

HIV is a major public health problem in Malawi. The MOH developed a PMTCT programme which was launched in 2004. The goal is to reduce MTCT of HIV among child bearing women by 50% by end of 2010. The availability of support from the Global Fund in 2002 increases the expectation for scaling up of PMTCT activities. However until recently most Health facilities have not been providing the services for a number of reasons such as lack of human and financial resources and space.

**Objective**

To determine feasibility of PMTCT in Health Centres within Blantyre in the context of a research project.

**Method**

As part of an HIV prevention of MTCT trial all pregnant women attending antenatal clinic in the health Centres in Blantyre and those in the Labour ward were counseled and screened for HIV after obtaining informed consent. HIV screening was done as per guideline using two rapid tests. All women found HIV positive and their babies were offered NVP tablet/syrup as per standard of care (HVNET 012 protocol). Relevant data such as age was collected and indicated in the Health Passport book. HIV infected women were also counseled on the infant feeding options as per national and WHO guidelines.

**Results**

Between April 2004 and June 2007 a total of 44,051 women were screened for HIV infection. Of these 9329 (21 %) were found to be HIV Infected, 5315 (56%) received NVP tablet and about 6000 babies received the intervention for PMTCT. The total number of pregnant women screened for HIV was 34 889 and 7040 (20%) were HIV infected. Out of the total number, 9162 women were screened for HIV in the labour ward and 2289 (25%) were HIV infected. The coverage for screening has increased from 0% (2004) to 99% (2007) in pregnant women. The number of women screened in the Labour Ward has remained at 45%. The number of women screened during pregnancy and were seen in the labour ward has increased from 37% (2005) to 81% (2007). A total of 500 determine and 100 oraquick test kits have been used since 2004 and 5315 tablets of NVP have been dispensed. This translated into 130 women/nurse/month of Counseling and Testing

**Conclusion**

Scaling up of PMTCT in a health facility is feasible. With minimal additional qualified staff coverage for VCT (PMTCT) increased to 81% in 27 months. Scale up of PMTCT is feasible with minimal additional resources.

**Source, Usage and Bacteriological Quality of Water Used in the Markets, Streets, and during Social Gatherings in Blantyre City**

EG Denbro1, K Kaleya2, RS Mkwakosya2
1Malawi Bureau of Standard
2Department of Physics and Biochemical Sciences, University of Malawi, Polytechnic, Blantyre, Malawi
3Department of Microbiology, University of Malawi, College of Medicine, Blantyre, Malawi

**Objectives**

To determine the source, practical usage and background quality of water (at different times of the day) of the water used by merchants selling green vegetables and fruits and vendors in some markets and streets of Blantyre. The microbiological quality of water used to wash hands and cleansing foods during social gatherings was also assessed.

**Study Methods**

To find out the source and the practical usage of the water a questionnaire was prepared and administered to participants who gave consent to the study. The participants were also asked to explain what they knew about water borne diseases. Water samples were collected from the participants at different times (morning, noon and late afternoon) of the day using sterile bottles and sent to the microbiology laboratory of the Polytechnic where a bacteriological assay was carried out. Availability of bacteria in the water samples was determined using fermentation test, culture, coliform enumeration and the most probable number (MPN).

**Results**

Many participants could not reveal the source of the water but an observation around the markets indicated that most taps and water kiosks for the markets were dry. Many people in the markets use one bucket of water for the whole day. Most participants showed to have knowledge on water borne diseases. The water samples collected showed high levels of bacterial contaminations. The contamination levels varied according to the time of the day. Higher contamination levels were observed in the water samples collected in the late afternoon.

**Conclusion**

There is no definite source for the water used in the markets of Blantyre city. Despite a higher knowledge level on water borne disease people still use microbiologically unclean water in the markets and during social gatherings.

**Recommendations**

Relevant authorities need to set up safe and affordable water sources in the proximity of the markets. There is a need to intensify civic education on the burden and dangers of water borne diseases.

**Statistics: Getting Them Right (Ten Steps to Help Achieve Statistical Excellence)**

M Makaka, SA White, VB Nyirongo
Malawi-Liverpool-Wellcome Trust Clinical Research Programme and Division of Community Health, College of Medicine, University of Malawi, Blantyre

**Objectives**

To provide insights into how researchers can make better use of statistical resources.

**Study Methods**

We draw on our experience as statistical collaborators or advisors, and in management of data processing, to provide and illustrate ten essential statistical issues in quantitative research.

**Results**

To achieve statistical excellence in research the following are important: seek statistical input early in trial design; careful selection of parameter values for sample size calculation; an analysis plan; carefully designed data forms and database; systematic and accurate data collection; secure and systematic storage of data forms; appropriate handling of any missing data; rigorous data processing procedures; a data audit trail; objective reporting.

**Conclusion And Recommendations**

Statistical issues are integral to the design and conduct of any study involving the collection of numerical data. Appropriate statistical input is needed in a planned way. Data processing should be secure and rigorous.

**Sustainable Self-care for the Prevention of Leprosy-associated Disability in Karonga District**

AM Molesworth, LK. Sichali, DT Mwafulirwa, N French
Karonga Prevention Study, PO Box 46, Chilumba, Malawi

**Introduction**

Leprosy has been eliminated from Malawi but disability as a consequence of the disease continues to exist. Karonga Prevention Study (KPS) has recently reviewed the scale of this problem in Karonga District, to establish a sustainable care plan for treated leprosy patients and prevention of their disabilities (POD).

**Methods**

Over 650 leprosy patients in Karonga district who had ever had a leprosy reaction were identified by KPS were followed-up through household visits by two leprosy control assistants (LCAs). Disabilities were assessed and care administered.

**Results**

A total of 250 of the 650 patients were still alive and living within the district by February 2007. Of these, 150 were placed on the care register, including 50 with current ulcers and or a leprosy-associated secondary infection who were eligible for patient-initiated clinic-based active care, and 100 patients with other leprosy-attributable conditions (eg. dryness, anaesthesia, including people requiring protective clothing) - assigned to home-based self-care. About 25 patients required ophthalmic referrals, and a very small number (<5) patients with severe difficulty walking required some further specialist advice.

**Conclusion**

Disability from leprosy remains a care issue in Malawi despite its official elimination. Strategies to address issues of coverage of self-care and access to footware have been identified as a key research priority in POD. Annual follow-up of leprosy patients will confirm whether this self-care strategy is effective and sustainable.

**The Impact of HIV Infection in Pregnant Women on Variant Specific Immunity to Malaria**

EG Denbro, V Mwapasa1, J Montgomery1, AG Craig1, SR Mleshnick2,4, ME Molyneux1,3, SJ Roberston1,5
1Malawi-Liverpool-Wellcome Trust Clinical Research Programme, College of Medicine, University of Malawi, Blantyre, Malawi
2Department of Community Health, College of Medicine, University of Malawi, Blantyre, Malawi
3Liverpool School of Tropical Medicine, University of Liverpool, Liverpool, UK;
4Department of Epidemiology, UNC School of Public Health, Chapel Hill, North Carolina, USA, and
5Department of Medicine, University of Melbourne, Royal Melbourne Hospital, Parkville Victoria, Australia.

**Background**

HIV increases susceptibility to malaria infection, and this has been most clearly
demonstrated in pregnant women using laboratory isolates. Variant surface antigens (VSA) on the surface of erythrocytes infected with Plasmodium falciparum are major targets of protective immunity. Given the importance of immunity to VSA in protection from clinical malaria and our previous observation that HIV impairs immunity to pregnancy-associated VSA, we further examined the impact of HIV infection on immunity.

**Methods**

Using a single panel of sera from HIV- and HIV- women, prevalence and relative quantity of antibody to VSA expressed by isolates from the placenta, and isolates from children with symptomatic malaria were compared to discover whether impairment of immunity to VSA was restricted to pregnancy-associated malaria, or a more general defect in immunity to VSA existed. Antibody binding to VSA was determined using flow cytometry.

**Results**

Sera from HIV-infected pregnant women more frequently lacked antibodies to these antigens than did HIV-uninfected pregnant women; this difference was more prominent for paediatric (OR = 7.43; 95% CI = 2.84 – 19.46, p < 0.0001) than for placental isolates (OR = 5.29; 95% CI = 0.46 – 61.03, p = 0.18). Relative quantity of antibodies was lower in HIV infected pregnant women than uninfected pregnant women to both paediatric (36.03 units; IQR 17.07–52.83 vs 66.59; (38.99–80.31), p=0.035) and placental isolates (38.95; (31.57–48.09) vs 58.35; (43.62–73.02), p=0.005).

**Conclusion**

Lack of immunity to variants causing severe disease in children living may translate into susceptibility of expectant mothers to these parasite strains. HIV infection has a broad impact on variant specific immunity, which may explain the susceptibility of infected individuals to clinical malaria episodes. Malaria prevention in HIV-infected pregnant women (and, perhaps, other HIV-infected groups) may minimise the burden of malaria caused by HIV-related lack of variant specific immunity.

**Utilization of ARV Services at David Gordon Memorial and Embangweni Hospitals**

**Objectives**

This was part of a comprehensive study that was aimed at assessing clients’ satisfaction of VCT, ARV and PMTCT services provided by Embangweni and David Gordon Memorial (DGM) Hospitals in the northern region of Malawi.

**Setting**

Embangweni and David Gordon Memorial hospitals.

**Materials and Methods**

A total of 182 clients on ARV drugs were interviewed as they were coming out of the service rooms using a well designed questionnaire. Ninety-nine (99) clients were interviewed at Embangweni while 83 were interviewed at DGM Hospitals’ ARV clinics when they came for their routine pill pick up. Levels of clients’ satisfaction were determined using Epi Info 6.

**Results**

There were 182 ARV clients interviewed. Their ages ranged from 4-78 years, with an average of 39.7 and a standard deviation of 11.6 years. 119 clients were females while 62 were males (1 did not indicate sex). Ninety-nine (99) clients were married and 96.9% of them disclosed to their spouses that they were accessing ARV services. Health workers (93.4%) radios (39.6%) and friends (15.4%) were found to be the main sources of ARV information for clients from both Embangweni and DGMH. Strengths reported by more clients were good attitude of service providers (40.7%), availability of ARV drugs (33%), skills and knowledge of service providers on HIV/AIDS counseling (30.2%). Challenges encountered were no provision of foodstuffs to clients (25.8%), inadequate space (40.7%), availability of ARV drugs (33%), skills and knowledge of service providers on HIV/AIDS counseling (30.2%).

**Conclusion and Recommendation**

Clients were quite satisfied with ARV services offered by both Embangweni and David Gordon Memorial Hospitals. However, there are still some things that need to be improved in order to gain full satisfaction from the service consumers.

**Who is Accessing Antiretroviral Therapy in Malawi? A Study in the South Region on the Occupation Category ‘other’**

**Objectives**

To document the specific occupation of patients taking ARV in Malawi whose...
Effect of Nitrate and Phosphate from Agricultural Fertilisers on Malaria Vectors.

D Pemba

Chancellor College Biology Department Email: pembahd@yahoo.com.unima.mw

Objectives

Establish the effects of supplemented nitrate and phosphorus on growth success of Anopheles gambiae larvae in relation to parameters affecting malaria transmission in adult stage.

Methodology

10 larvae were placed in buckets with 3.0 kilograms soil. Solutions of phosphate and nitrate were prepared in with distilled water, prepared phosphate concentrations. 0.0 1.1, and 1.9 parts per million (ppm) while nitrate concentrations were 0.0, 1.3, and 2.7 ppm. Both phosphate and nitrate solutions were prepared from potassium salts, namely potassium phosphate (KH2PO4), monobasic anhydrous (99.8%) and potassium nitrate (KNO3) (97.7%). Mass, sex, and development duration were the study parameters.

Results

At 1.3 ppm NO3 supplementation the average mass for both males and females is 0.16 mg and 0.07±0.01mg at 2.7 ppm supplementation. This is a total body weight loss of 81.5% and 62% in females and males respectively at maximum NO3 supplementation of 2.7 ppm. At 1.1 ppm PO4 supplementation the average female and male body masses increased by 135.7% and 70% respectively. At 1.9 ppm PO4 supplementation the increase in body mass is only by 14.2% and 10% in females and males respectively. At 1.1 ppm PO4 supplementation 32.15% of the males and 27.27 % female larvae developed to adult and as supplementation is increased to 2.7 ppm development to adulthood decreased to 4.86%. At 25 degrees Celsius PO4 supplementation at 1.9 ppm increases development duration to 16.95 days as where NO3 reduces it to 8.63 days at 2.7 ppm.

Conclusion

Agricultural Fertilizer containing nitrates are likely to make mosquitoes good malaria vectors, since females with reduced body mass require numerous blood meals for egg production, thus biting many people as opposed to fewer blood meals required by mosquitoes with higher body mass. Also increased nitrates is likely to result in increased mosquito population as development duration to adult is reduced.

Resistance profile among patients failing first line ART in Malawi

M Hosseinipour1, J van Oosterhout2, J Eron1, R Weigel1, J Nelson3, S Fiscus4, S Phiri1, J Kumwenda2

1University of North Carolina, Lilongwe and USA
2Department of Medicine, College of Medicine, Blantyre
3Lighthouse clinic, Lilongwe

Background

Patients failing first line ART (Triomune®, a fixed dose combination of d4T/3TC/NVP) in Malawi are started on ZDV/3TC/Tenofovir/Lopinavir/ritonavir. Failure is based either on clinical or immunological grounds. Viral load testing is rarely available and the duration of virologic failure at clinical or immunological failure is not known. The degree of accumulation of resistance mutations and the appropriateness of the current second line NRTI are uncertain.

Methods

Among the meeting the Malawi National ART definitions of ART failure (immunological: CD4 decline of >50% from peak or to below pre-treatment value; clinical: new Stage 4 condition) from December 2005 to July 2007 were evaluated. Among a random subset of those with HIVRNA >1000 copies/ml genotyping was performed.

Results

22 samples were sequenced. Median (IQR) CD4 count, HIVRNA, and duration on ART was 64 cells (19-205), 40426 (6075-100891), and 27 months (20-39), respectively. 21/22 samples had the M184V mutation. 21/22 samples had at least one NRTI mutation, Y181C, G190A, and K103N most commonly. Broad and unpredictable NRTI resistance accompanied NNRTI and 3TC resistance in 15 of 22 analyzed samples. 5/22 had one additional TAM (all at codon 215). 6/22 had 2 or more TAMs. At least 6 (27%) would be predicted to have TDF resistance (5 with K65R and 1 with 70R) and 4 of these had broad NRTI resistance due to the presence of the accompanying 151-mutation complex. No major PI mutations were detected.

Conclusions

Among patients failing Triomune® identified by clinical or immunologic definitions, resistance to 3TC and NNRTI drugs was nearly universal and NRTI compromising mutations were common. The decision to include 3 NRTI (ZDV, TDF, and 3TC) in the second line regimen seems therefore justifiable, although some variants may be resistant to all NRTI's. Further study is required concerning the efficacy of the current second line ART regimen in Malawi.
and mean duration on therapy was 28 months. Only ninety patients (59%) were confirmed to have ART failure (Clinical 68% and Immunologic 58%). Confirmed failures were on ART longer (40 months vs. 25 months, p<0.0001) but CD4 counts were similar (162 cells vs. 212 cells, p<0.08). On multivariate analysis, confirmed failure was associated with ART >3 years (OR = 4.64 [2.4-13.3]) and KS (OR 0.24 [0.095-0.62]). Active TB and Chemotherapy for Kaposi’s sarcoma were identified as reasons for misclassification of immunological failure. Excluding KS cases improved correct identification of ART failure to 76% for clinical and 66% for immunological definitions.

Conclusions
Both immunological and clinical failure definitions misidentified patients as failures in approximately 40% of cases. Although ART failure definitions may be improved by including the duration of ART and excluding KS cases, confirmatory HIVRNA testing appears essential to prevent misclassification of ART failure in resource poor settings.

Malaria Vector Breeding Sites and Assessing Their Impact on Local Malaria Risk: Preliminary Data on the Risk Factors for Malaria Infection

T Mzilahowa1, B Nyoni1, IM Hastings2, M Mukaka1, PJ McCall1
1Malawi-Liverpool Wellcome Trust Clinical Research Programme, Chichiri, Blantyre 3, Malawi
2Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA, UK

Objective
The study aims to investigate the importance of different vector breeding site types on malaria infection risk.

Setting
The study was carried out in 3 villages (Nkhwazi, Nkata and Kela) in Chikwawa District in the Lower Shire Valley

Materials and Methods
A standard questionnaire was used to collect baseline information on socio-economic indicators, education attainment and use of treated bed nets in the respective study villages. In an on-going process, longitudinal surveys of malaria parasitemia, anaemia levels and mosquito abundance were later carried out in the three study villages every 4 months beginning August 2006. Parasitemia was determined using microscopy of field collected thick films and a HemoCue 201+ Analyser was used to detect anaemia levels in children less than 10 years of age. Adult mosquitoes were collected by pyrethrum knockdown (PKD) which is a standard procedure used to determine mosquito abundance/density.

Results
Here we present preliminary results from the first two surveys carried out in September 2006 (dry season) and April 2007 (end of wet season). The odds ratio of having malaria was 27.79 higher in April 2007 (end of wet season) than in September 2006 (p<0.001). The finding was as expected since malaria transmission peaks towards the end of the wet season. The odds ratio of having malaria was 0.08 higher for children living at Nkata village than those living at Nkwazi (p=0.14). No significant differences were found in children living either at Nkata or Kela (p=0.411). The difference in malaria prevalence between the study sites despite the short distance between them could be explained by heterogeneities in malaria transmission but also socio-economic factors. The odds ratio of having malaria was 6.69 higher for children not sleeping under an insecticide treated bed net (p<0.001) compared to children that were sleeping under a treated net. These results were also expected since treated nets have been shown to reduce all cause mortality and morbidity in children and communities using them. Parent education, child age or sex and mosquito abundance were not significant risk factors to malaria infection (p>0.5). It is too early to say that these are not risk factors to malaria infection as the results here are indeed only preliminary.

Conclusions and Recommendations
This study has shown that time of survey (season), site or location (village) and use of ITNs were important factors to malaria infection.

Survey of the Management and Complications of Diabetes Mellitus in Adults attending the Diabetes Clinic at QECH

DB Cohen, TJ Allain, HWC Hofland, D Chimbayo, HE Dzamalala, AC Houston, PN Banda, EE Zijlstra
College of Medicine, Blantyre, Malawi

Objectives
To assess the demographic and clinical characteristics of patients attending the Diabetes Clinic at Queen Elizabeth Central Hospital (QECH). To assess patients’ knowledge about diabetes.

To provide baseline data which can be used to improve service provision and standards of care through regular audit.

Methods

Results
471 patients were enrolled. Median age 55 years (range 15-90 years), 283/471 (60.1%) female. 79.4% had Type II, 17.2% had Type 1 and 0.4% had other types of diabetes (missing data n=12). Hypoglycaemic agents prescribed were glibenclamide (63.5%), metformin (28.0%) and insulin (29.3%). 6.0% of those prescribed metformin and 3.6% of those on insulin reported not having taken the drug within the preceding week. 76.2% reported drug non-availability in the hospital pharmacy during the previous year. The mean HbA1c was 9.3%, range 5.0-19.6%. 32.7% of patients had HbA1c in the target range (<7.5%). 83/275 patients (30.2%) had HbA1c 7.6-9.9% (moderate control) and 101/275 (36.7%) had HbA1c >9.9% (poor control). There was a high rate of hypertension (59.2%) and hypertensive control was poor- 36% of patients had systolic blood pressure >140mmHg. 31 (6.6%) reported a previous stroke and 9 (1.9%) had documented heart disease. Symptoms consistent with peripheral neuropathy were common (45.2%). 10 (2.1%) patients had had lower limb amputation and 30 (6.4%) patients had evidence of foot ulceration at the time of examination. Patients’ knowledge about diabetes was generally poor. Only 53.5% reported following a diabetic diet. Anonymous HIV testing revealed that 18.8% of the diabetic clinic population have HIV infection. Only 4.8% were aware of this diagnosis.

Conclusions and Recommendations
Diabetes is a common problem among outpatients at QECH. Amongst these people, glycaemic control is poor and rates of complications are high. Adherence with treatment (diet and medication) is not good- due to a combination of lack of patient education and difficulty obtaining drug supplies. The monitoring, treatment and education of patients with Diabetes in Malawi needs to be improved if complications are to be reduced.

Parent and Child Communication on Sexual and Reproductive Health Matters in Malawi

TM Maleta, A Chimbi
Community Health Department, College of Medicine

Objectives
The objective was to determine the current systems and levels of parent-child communication on SRH matters. Specifically the study assessed the extent to which traditional sex education for young people is practiced in urban areas, ascertained any changes in the system, establish if parents discuss sexual and reproductive health matters with their own children, identify the content of the discussions and determine factors affecting the health communication.

Study methods
Quantitative and qualitative study designs were utilized comprising of self administered questionnaires and focus group discussions with male and female parents. Data was collected in two randomly selected urban locations of Ndirande and Chinyonga in Blantyre district. Participants were male and female parents with children aged between 12 and 24 years.

Results
Key findings in the study were as follows; 96% of the parents exposed their children to sex education at puberty. The sex education providers were largely parents themselves in 40% of the participants; 31% used extended parents; 6.3% sent children to traditional camp sites and parents’ significant friends substituted relatives in 18% of the participants. Seventy four percent of parents including those that delegated sex education to relatives and friends at puberty admitting having had an SRH discussion with their children recently (over the past twelve months). Recent SRH discussions were mainly in reaction to some unsatisfactory sexual behaviors. The SRH topics mostly discussed were abstinence; HIV & AIDS; and sexually transmitted infections. The least discussed topics were sexual partners; condoms and family planning. Factors that were significantly associated with direct parent-child SRH communication were parents’ level of education; satisfaction with the sex education session at puberty; knowledge of the severity of HIV & AIDS and their children’s risk level; dissatisfaction with adolescents behaviors of data not available; level of education of the child and involvement of parents in groups promoting open discussions with young people and loss of close relatives to AIDS related infections. The study made the following conclusions; parents with higher levels of education and those aware of the severity of HIV and risk in young people are more likely to communicate SRH messages with their children. General and less obscene SRH topics are more ably discussed than topics that seem to convey sexual relationships. Satisfaction with exposure of their children to previous sex. education, exposure of parents to groups promoting open discussions with young people, and loss of close relatives from AIDS related infections have a catalyst effect to increasing levels of parent-child communication on SRH matters in subsequent parent child discussions.

Recommendations
The following recommendations be implemented:

The need to recognize parents as partners in communicating SRH messages to young people as a risk reduction strategy. The need to promote basic education

The need for awareness campaigns on modern parent-child SRH communication.

Further research on bridging interventions that facilitate SRH communication between parents and children and foster mutual understanding on the need for}

MMJ 19(4) 2007 www.mmj.medcol.mw
Adherence to WHO Guidelines in the Diagnosis of Smeared Negative Pulmonary Tuberculosis

P Watt1, G Double1, E Mitchell1, G Musowa1, C Watt1,2
1Department of Medicine, College of Medicine, University of Malawi, Blantyre 2Malawi-Liverpool-Wellcome Clinical Research Programme, Blantyre, Malawi

Objectives

1. To determine whether WHO guidelines for the diagnosis of smear negative pulmonary tuberculosis (PTB) are adhered to at QECH (cough >3 weeks duration; negative sputum direct microscopy, failure of response to adequate antibiotics for LRTI and CXR that is consistent with PTB).  
2. To compare these figures to a similar audit performed nationally by Harries and colleagues in 2000.

Results

Of 81 patients, 98.8% of patients had a cough; this had been present for >3 weeks in 81.5% and was productive in 74.1%. This compares with 96% of patients presenting with cough in the Harries series (93% >3 weeks and 81% productive.) 90.1% of our patients received an adequate trial of antibiotics; none were given in 1% and low dose cotrimoxazole in 8.9%. This compares to 95% of patients who received adequate antibiotics in 2000. Sputum had been submitted for direct microscopy in 91.4% of cases, which is similar to the 92% in the Harries audit. All patients in our study had a chest radiograph carried out.

Conclusion and Recommendations

We have improved in the number of chest radiographs performed, maintained the level of sputum submission from 7 years ago, and have a greater number of patients presenting with prolonged cough. However, our use of adequate antibiotics appears lower than 7 years ago, largely due to misunderstanding of what drugs are considered adequate. This area can be targeted by the increased education of medical students and clinical officers, and repeat audit should show improvement.

The Bangwe Project Final Cohort Analysis

N Gondwe, C Bowie
Division of Community Health, College of Medicine, Blantyre, Malawi.

Background

Careful assessment and follow up of patients receiving home based care in a defined population from Bangwe, Malawi provide details of the frequency and severity of common symptoms and the survival of patients. This information can be used to assess the impact of antiretroviral therapy in a continent where clinical controlled trials have not been used.

Methods

Mortality and the incidence, duration and severity of common symptoms of patients in a defined population receiving home based care were measured over a 54 month period. Two cohorts were constructed from the data, one starting in January 2005 when ART became available, and the other preceding the advent of ART and used to provide “historical controls”.

Results

1107 patients, of whom 531 (48%) died, were studied. A quarter of patients died within two months of being first seen. About a third of the patients were unable to care for themselves on first assessment and over half (55%) had stage 4 AIDS disease. Over half (58%) were malnourished with a Body Mass Index (BMI) < 18.5kg/m2. Most patients had a mix of symptoms at presentation.

Discussion

Home based care, the treatment of opportunistic infections and advice about positive living, may have a positive effect on survival which is hardly less effective than ART. The cost-benefit of home based care may be greater than previously thought. Indeed, delaying referral for ART may be appropriate in patients who respond to home based care. The advantage of delaying the start of ART is that durability of first line ART is thought to be about 5 years in developing countries and any way to prolong the need to start ART may prolong survival.

Management and Outcome of Stroke Patients In Queen Elizabeth Central Hospital (QECH)

TJ Heikinheimo-Connell, TJ Allain

Objectives

To describe the long term (6 month) clinical outcomes of patients who present to QECH with acute stroke. 

To relate outcomes to etiology of stroke and HIV status.

To audit current practice in stroke management and short term (in-patient) outcomes.

Setting

QECH medical wards

Materials and Methods

We intend to set up a prospective observational study of outcome of stroke in patients presenting acutely with stroke to QECH. To help in the design of the study we conducted a clinical audit on current practice in stroke care and in-patient outcomes. Consecutive stroke patients admitted between 10.9.2007 and 14.10.2007 were included. Investigations, medications and rehabilitation input were recorded. Stroke severity was described using the National Institute of Health Stroke Scale (NIH-SS). Discharge destination and clinical outcome, using the modified Rankin scale (mRs), were recorded.

Results

30 patients were included in the audit, 2 were subsequently excluded due to alternative diagnoses (brain tumour, cerebral toxoplasmosis). The mean age was 58 years (range 22-90 years). 16 (57%) were women. Most patients were independent functionally before the onset of stroke. 6 (21%) were known hypertensive, 2 had had previous stroke. 2 (7%) had diabetes mellitus. 4 (14%) were on ARV’s. One patient used aspirin. At least one BP-value and temperature were recorded from each patient. Random blood sugar was done for 16 (57%).

ECG was done in 7. 13 patients were known or tested for HIV. 6 were HIV positive. Brain CT was done for 6 (21%) patients. NIH-SS was not done for 5 patients. 6 patients had mild or rapidly reversible symptoms (NIH-SS 0-6). 9 patients had severe symptoms (NIH-SS 7-17) and 8 very severe stroke symptoms (NIH-SS 18-29). Most patients started aspirin during admission.16 patients had physiotherapy/occupational therapy. 6 patients continued inpatient rehabilitation at Kachere Rehabilitation Centre (all with severe disability mRs 4), one continued out patient rehabilitation. 10 patients went home without continuing rehabilitation, (one discontinued), one of them had moderate disability (mRs 3) and 4 severe disability (mRs 4-5). 9 (32%) patients passed away when inpatients.

Conclusions

The number of patients admitted with stroke was greater than that suggested by retrospective in-patient record review, suggesting that some strokes are currently mis-coded. Investigations relevant to stroke management were inadequately used and the use of CT scanning was low. Inpatient mortality was high and the level of moderate or severe disability on discharge also high. Among stroke survivors use of inpatient rehabilitation services was good and half of patients with severe stroke continued to institutional rehabilitation.

Adjunctive Oral Glycerol Therapy in Adults with Bacterial Meningitis in Malawi

KJ Aldashevik1,2, KE Cartwright3, ME Molyneux3, EE Zijlstra1, DG Laloo3
1Dept of Medicine, Queen Elizabeth Central Hospital (QECH), Blantyre, Malawi. 2Dept of Tropical Medicine, Hospital for Tropical Diseases, London, UK 3Malawi-Liverpool-Wellcome Trust, Blantyre, Malawi 4Liverpool School of Tropical Medicine, Liverpool, UK

Objectives

To determine the tolerability of adjunctive glycerol therapy, and identify whether it is effective at reducing mortality and neurological deficit in Malawian adults with bacterial meningitis.

Phase 1

Methods

45 patients admitted to QECH, Blantyre, with clinical and CSF findings suggestive of bacterial meningitis were recruited. 15 patients each received diluted glycerol orally dosed at 50ml, 75ml or 100ml qds for 4 days respectively, as well as Ceftriaxone 2G iv bd. Tolerability and adverse events were recorded. One quarter of patients experienced nausea or vomiting, although determining whether attributable to glycerol was difficult. Patients found the biggest 100ml dose difficult to swallow. 22% had one or more elevated blood glucose levels. 30 patients (66.7%) died.

Phase 2

Methods

Using the same inclusion and exclusion criteria as phase 1, patients were randomised to receive either 75mls diluted glycerol qds or equivalent volume of 50% sugar solution. A sample size of 450 patients was calculated on the basis of a 30% reduction in mortality.

Results

The number of patients admitted with stroke was greater than that suggested by retrospective in-patient record review, suggesting that some strokes are currently mis-coded. Investigations relevant to stroke management were inadequately used and the use of CT scanning was low. Inpatient mortality was high and the level of moderate or severe disability on discharge also high. Among stroke survivors use of inpatient rehabilitation services was good and half of patients with severe stroke continued to institutional rehabilitation.
Among the efforts made to stem the tide of the AIDS epidemic in sub-Saharan Africa there has been the promotion of HIV counseling and testing. It is generally assumed that those who are tested, learn their test results—whether positive or negative—then are counseled and are more likely to change their sexual behavior than those who do not participate in counseling and testing. In this paper, I focus on data from two rounds (2004 and 2006) of a longitudinal survey in rural Malawi to examine whether the results of the HIV test in 2004 matter for prevention strategies in 2006. I focus on the acceptability of condom use in marriage, because in rural Malawi the options for protecting oneself against HIV open to married couples are largely limited to divorce and condom use. I focus on the acceptability of condom use in marriage, rather than actual use, because of concerns about the validity of reported condom use. I find that those who learned in 2004 that they were HIV positive are more likely to approve of condom use within marriage than those who learned that they were negative.

Fertility in Times of Crisis: The Case of the AIDS Epidemic

S Yeatman
University of Texas at Austin, Population Research Center, Department of Sociology, Doctoral Candidate, email: yeatman@prc.utexas.edu

Despite the centrality of religion and fertility to life in rural Africa, the relationship between the two remains poorly understood. We use unique individual and congregational level data from rural Malawi to test new and old hypotheses about how religion shapes fertility in this context. Specifically, we propose an initial framework to integrate the dominant theories of religious influence on fertility. In a sample of Christian and Muslim women, we find that religion does matter for women’s fertility behavior but that denomination and religiosity are relatively poor ways of examining its importance. The particular characteristics of a congregation—specifically positive attitudes toward family planning on the part of the leader—and participation in women-centered religious activities are, however, associated with increased likelihood of contraceptive use.

Sexual Network Structure and The Spread of HIV in Africa: Evidence from Likoma Island, Malawi

S Helleringer, HP Kohler
University of Pennsylvania, Population Studies Center

Background
Whereas sexual relationships among low-risk individuals account for the majority of HIV infections in sub-Saharan Africa, limited knowledge exists about the structure and characteristics of sexual networks among the general population in sub-Saharan Africa.

Objectives
To investigate the population-level structure of sexual networks connecting the young adult population of several villages on Likoma Island (Malawi), and analyse the structural position of HIV-positive individuals within the sexual network.

Design and methods
A cross-sectional sociocentric survey of sexual partnerships and biomarkers of prevalent HIV infections.

Results
The study documents the existence of a large and robust sexual network linking the young adult population of several villages on Likoma Island (Malawi), and analyse the structural position of HIV-positive individuals within the sexual network.

Conclusion
Contrary to claims that sexual networks in rural sub-Saharan Africa are too sparse to sustain generalized HIV epidemics, the structure of the networks observed in Likoma appears compatible with a broad diffusion of HIV among lower-risk groups. The non-homogeneous distribution of HIV infection within the network suggests that network characteristics are an important determinant of the dynamics of HIV spread within a population.

Migration and HIV Infection: Findings from The Malawi Diffusion and Ideational Change Project

P Anglewicz
University of Pennsylvania, Population Studies Center

Research on migration and HIV infection in sub-Saharan Africa typically shows that migrants are at higher risk of HIV infection because they are more likely to engage in risk behavior than non-migrants and tend to move to areas of higher HIV prevalence. Instead of focusing on ways in which migration is an independent individual risk factor of HIV infection, I examine the possibility that
HIV infection leads to migration. Using a longitudinal dataset of rural residents and migrants from Malawi, I find that migrants originating from rural areas are indeed more likely than non-migrants to be HIV positive and to have engaged in HIV risk behavior. However, HIV positive individuals are also more likely to migrate than HIV negative individuals. The explanation for this phenomenon appears to be marital instability, which occurs more frequently among HIV positive individuals and leads to migration after marital dissolution.

Demographic Determinants and Utilization of Voluntary Counseling and Testing (VCT) in Rural Malawi
P Fleming, S Yeatman, S Lungu, W Chilonga

Voluntary HIV counseling and testing (VCT) has been promoted as a key effort to stem the tide of the AIDS epidemic in sub-Saharan Africa. Although VCT has expanded rapidly in the region, surprisingly little is known about the social and behavior dimensions of testing and its ability to act as the gateway to treatment, care, and prevention. In this paper, we describe the preliminary results of a study we developed to investigate the characteristics of VCT attendees through the collection of survey data from eight VCT clinics in rural Malawi. The data contain information on demographic characteristics, HIV testing history, sexual behavior, and serostatus for each consenting individual tested in one district over a period of six months. We also examine the utilization of VCT by linking survey data with Global Information System (GIS) data containing the location of the VCT clinics and each client’s home village. We observe how education, HIV risk perception, gender, and sexual behavior are associated with one’s likelihood of HIV infection and examine geographic patterns in VCT usage. Our research suggests that valuable data can be collected from established VCT clinics to increase our knowledge about the use of testing services and local responses to the AIDS epidemic.

Job Satisfaction in Health Professionals at Queen Elizabeth Central Hospital
E Nkosi, T Mzumara

Evaluating Factors Influencing Time of Presentation of Sexually Transmitted Infection Clients at Kamuzu Central Hospital Sexually Transmitted Infection Clinic (7C)
E Nkosi, T Mzumara

The research was done to evaluate factors influencing the time of presentation of STI clients at KCH STI Clinic.

Study Design
The study was a descriptive cross-sectional study in which one-to-one interviews were conducted from July 1 to 10 August 2007 using a structured questionnaire which comprised of 30 open and closed ended questions.

Methodology
The research study was conducted at KCH STI Clinic which is a wing in the Central Hospital. The clinic offers care to the entire city of Lilongwe (Capital city of Malawi) including peri-urban populations. The study subjects comprised all STI clinic patient aged 18 years and over.

Results
More women than men presented to the STI clinic but men presented earlier. Urban dwellers, those with single status, and those who were HIV negative and had unstable partners tended to present earlier. Other factors such as level of education, first sign of infection, diagnosis and first health care seeking behaviour also affected the time of presentation of the clients.

Conclusions
Distance to the clinic, gender and marital status influence clients decision to seek care when they have STIs. The time of presentation depends on the symptoms experienced. The factors need to be addressed in any initiative to improve timely treatment of STIs.

Exploring Reasons Why The Female Condom is less Commonly Used Compared to The Male Condom
T Katangwe

MBBS IV Student, College of Medicine, University of Malawi

Rationale, Aim and Objective
The use of the female condom (FC) could contribute towards the prevention of HIV infection in Malawi. We therefore assessed the use of the FC by women living with HIV and AIDS in Thyolo District, Southern Malawi.

Methods
Design: A cross sectional study describing characteristics of HIV positive women that use the FC, the availability of the FC, the frequency of and factors affecting FC use.
Setting: A government health facility providing HIV care to people living with HIV and AIDS in Thyolo District.
Study populations: All married women living with HIV and AIDS that use the FC in a marriage context and access care at the health facility.
Data Collection: Individual interviews using a questionnaire.

Results
The majority (42.5%) of participants was aged between 15-29 years and 84.2% of the women had attended only primary school. 99.1% of the women said that the FC is only found at the district hospital and NAPHAM offices. 15% of participants stopped using the female condom to conceive. Knowledge of the importance of protection from HIV and AIDS influenced a woman’s decision to use the FC in her marriage (P value=0.001). Socio-demographic factors of a woman did not influence whether her partner accepted the use of the female condom.

Conclusion
The FC is not readily available in Thyolo although it has potential to contribute in the fight against HIV and AIDS in Malawi as part of the HIV prevention strategy. Its use in the HIV prevention strategy requires improved accessibility, and a multisectoral approach.

An Analysis of the Malawi HIV Prevention Strategy
C Bowie
Division of Community Health, College of Medicine

Background
Despite the presence of an active and well-established prevention programme, the prevalence of human immunodeficiency virus (HIV) infection in Malawi has not yet shown any sign of decline. Of central and southern African countries only Uganda has seen a significant reduction in HIV prevalence. To understand the factors underlying such a paradox, this study considers the progress that has been made so far in the prevention of the HIV epidemic in Malawi and compares our progress with that made in Uganda. The sexual behaviour changes which preceded the dramatic slowing of Uganda’s HIV epidemic are compared to the results of sexual behaviour research in Malawi.

Methods
HIV seroprevalence in Kampala and Blantyre are compared using antenatal sentinel site surveillance data. Estimates of incidence rates are considered using modelling methods and data from clinical trials. Changes in sexual behaviour are analysed using demographic health surveys and other studies of sexual behaviour in Uganda and Malawi. The results of demographic modelling are reviewed to assess HIV prevention approaches which are most likely to reduce HIV transmission. Features of Malawian culture are identified which are likely
Results
Kampala saw a dramatic reduction in prevalence following a hard hitting behaviour modification campaign which focused on concurrent sexual partnerships and openness about AIDS. High risk sexual behaviour halved. Prevalence rates remain at or below 5% in the 15-49 age group. Blantyre prevalence rates have remained above 20% and incidence rates about 4% per year despite a well established behaviour modification strategy. Estimates of concurrent sexual partnerships derived from the Malawi Diffusion and Ideation Change (MDIC) Project suggest that half of men and a quarter of women have extramarital sexual partners. Evidence from the Likomo sexual network study supports these estimates. Lifetime risks of HIV infection calculated by the MDIC research team for a range of potential sexual behaviour changes demonstrate the relative importance of abstinence, faithfulness (a drop from 30% to 6% in one scenario) and condoms.

Conclusions
Traditional beliefs about sexuality and the importance of fertility will undermine efforts to increase faithfulness unless behaviour change campaigns are powerful, village based and supported by community leaders. The national HIV prevention strategy will need to focus on faithfulness to be as effective as the “Zero Grazing” campaign in Uganda.