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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

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Objectives
To determine the clinical and nutritional efficacy of pre/probiotic (Synbiotic2000 Forte™) enhanced Ready-to-Use Therapeutic Food (RUTF) for the treatment of Severe Acute Child Malnutrition (SAM).

Methods
Randomised, double blind, placebo controlled efficacy study. We recruited 792 children with severe acute malnutrition (SAM) admitted to MOYO nutrition ward from 12thJuly2006~8thMarch2007. To maximise study generalizability, all children admitted with SAM were enrolled. After inpatient stabilization with F75milk-based feeds, they were randomised to Ready-to-Use Therapeutic Food (RUTF) either containing or not containing a pre/probiotic mixture (Synbiotic2000 Forte™). Probiotic dose was $\geq 1 \times 10^8$ CFU lactic acid bacteria per gram RUTF. Control was standard RUTF without any added synbiotic. Primary outcome was cure, defined as achieving >80%weight-for-height on two consecutive outpatient visits.

Results

Baseline:				
Groups were well balanced with no significant differences (p>0.05) in				
Mean age:	29.3months(synbiotic)	vs	28.4months(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):				
2week period prevalence(μdays)	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

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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 $\geq$ 90% of children. This therapy is neither affordable nor available to many children. In 2 studies a $\geq$ 50% event free survival was achieved in BL with high frequency cyclophosphamide plus intra-thecal 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 $\geq$ 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

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Objectives
a) To determine the drop-out rates during the referral process of patients to ART and
b) 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.

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Objectives
To establish 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. Specific

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 >2years were able to effect a 1.2log kill at 3 hours (designated 'normal kill') whereas sera from children <2years 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 bacteraemia in younger children may be due to children lacking specific antibody against NTS are rendered susceptible to NTS bacteraemia.

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 preventing 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. Trimethoprim/sulfamethoxazole, clindamycin and erythromycin showed 20.2%, 57.1% and 51.2% susceptibility, respectively. 38.9% of the Clindamycin resistance was inducible. Ten of the 13 methicillin 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

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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 3 samples. The total number of smear positive sputum was 870 (pick-up rate of 15%) disaggregated into: 734 (84.4%) positive sputum smear in all 3 samples, 89 (10.2%) positive sputum smear in 2 of the 3 samples, and 47 (5.4%) positive smear in 1 out of the 3 sputum sample. 823 of the 870 smear positive patients had available HIV results: 624 (75.8%) were HIV seropositive while 199 (24.2%) were seronegative.

Recommendation

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?

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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 discussed.

Dynamic Changes in TNF Production during the Intensive Phase of Treatment for Pulmonary Tuberculosis

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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

Day 0 to Day 7 of treatment, which returned to pre-treatment levels by Day 14; similar kinetics were seen for the response to LPS, showing that this is not a mycobacteria-specific response. Intracellular cytokine staining has demonstrated the major TNF producing cells to be monocytes, with a lesser contribution from lymphocytes. Associated with this rise, there was a transient increase in fever and decrease in haemoglobin concentration, both of which returned to baseline by Day 28 of treatment.

Conclusions and Recommendations

Our data show that the innate immune response to mycobacterial antigens is activated following the initiation of anti-TB treatment. Continued work in the whole cohort will delineate the clinical and laboratory end points which determine early mortality after the start of anti-TB treatment and thereby guide further work to improve treatment strategies for patients at high risk of early deterioration.

Effect of Maternal HIV on the Immune Response of HIV-Uninfected Infants

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Objectives

To establish whether HIV infection during pregnancy affects infants' CD4 T-cell response to vaccines.

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 IFNγ 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 IFNγ 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)

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Objectives

To evaluate major outcomes from an episode of severe acute malnutrition(SAM) disaggregated by HIV status.

Methods

This was a prospective cohort study set in MOYO Nutritional Rehabilitation Unit, QECH, Blantyre. Admission details and outcomes were followed for 984 children admitted from 12th July 2006 to 9th March 2007. This encompassed both dry and rainy (hungry) seasons. All children were admitted and stabilized as inpatients following standard WHO protocols. All were offered HIV testing as routine standard of care. Nutritional rehabilitation was completed at home, using RUTF(Ready-to-Use Therapeutic Feeds) according to Community-Based Therapeutic Care protocols. "Cure" was defined as achieving weight-for-height of >80%median on two consecutive outpatient visits. Defaulters were followed up at home.

Results

Of 984 children admitted: 437(44.4%) tested HIV positive. 448(45.5%) tested negative. Status was unknown for 99(10.1%) – mostly because they died prior to testing. Odds of cure in HIV+ve children were significantly lower than in HIV-ve children~0.24(95%CI~0.18-0.33). Absolute cures were 35.5% amongst HIV+ve, 69.2% amongst HIV-ve children. Odd of death were significantly higher in HIV+ve children~4.42(95%CI~3.10-6.31). Absolute deaths were 38.2% amongst HIV+ve, 12.3% amongst HIV-ve children. Of the HIV+ve deaths, ¼ were at home, following successful initial treatment.

Conclusions

In children with SAM, being HIV positive is strongly associated with higher odds of mortality and lower odds of cure.

Recommendations

In HIV prevalent settings such as Malawi, new/improved approaches to SAM treatment are needed:
a) Better tools for assessing feeding centre performance–e.g. an updated 'Prudohn' index of expected mortality
b) Better interventions to improve outcomes, especially for HIV+ve SAM.

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

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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 Diptheria, Hemophilus Influenza 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]

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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-uninfected Children Born to HIV-infected Women in Malawi

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Background

Exclusive breastfeeding with early weaning is recommended for HIV-exposed infants in low resource settings when replacement feeding is not safe or acceptable. We assessed gastroenteritis burden in two trials of infant antiretroviral prophylaxis of postnatal HIV transmission conducted in Blantyre, Malawi: the Post-Exposure Prophylaxis to the Infant (PEPI) trial which enrolled 1792 infants between 2004 to present, where weaning is recommended at age 6 months; and the Nevirapine/AZT (NVAZ) trial, which enrolled 1810 infants between 2000 to 2003, where early weaning was not recommended.

Methods

Data on breastfeeding and gastroenteritis 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

The probability of an infant having at least one gastroenteritis event in PEPI Vs NVAZ between ages 0-6 weeks, 7 weeks-3 months, 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=0.001) 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%, p< 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 Children: How is this Best Managed?

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Introduction

Diarrhoea and vomiting are common paediatric problems in Malawi. Infants are difficult to manage as gastrointestinal symptoms have subsided by time of presentation but still have severe dehydration, shock and acidosis. In resource constraint situations this problem has to be treated without laboratory aid.

Objective

To assess blood gases and electrolytes in a small series of children with this presentation and correlate the clinical and lab findings to see if a clinical pattern could be identified which would help direct management and fluid therapy.

Methods

Study conducted at Queen Elizabeth Central Hospital, recruited all children with a clinical picture of deep rapid breathing, dehydration and history of diarrhoea and /or vomiting from mid January to mid May 2005. Obtained detailed history and clinical judgement of hypernatraemic or hyponatraemic dehydration. Blood was taken for gases, electrolytes, HIV spot test, salicylate and blood culture. Fluid therapy commenced urgently.

Results

30 children enrolled, 9 of whom died. 80% were <1 yr. All had received ORS. All were shocked, 60% compensated, 40% decompensated shock. 15(50%) were considered hypernatraemic clinically and 10(33.3%) hyponatraemic and this was confirmed in 10 and 4 respectively. The serum sodium varied and did not predict outcome but potassium was low in 7 out of 9 children who died.

Conclusion

In these 30 patients with severe dehydration, acidosis and shock, no clear clinical pattern emerges which allows for accurate assessment of electrolyte imbalance to direct fluid management, nor which predicts outcome. This problem requires a large study to properly assess.

HAART to Prevent MTCT in Malawi. The DREAM Program Preliminary Results

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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 (Mtengo wa Nthenga 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 will stop treatment at the weaning of the baby. The programme has been accessed by 398 pregnant women (mean age 26 years). Viral load (b-DNA 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 (3/303, 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

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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 Malaria 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 cloned from two mother-infant transmission 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

maternal blood.

Conclusions and Recommendations

These data suggest that the predominant mechanism(s) of HIV-1 subtype C MTCT differs by the timing of transmission and is unlikely to be explained by a simple stochastic model.

Hyperlactatemia and Lactic Acidosis after ART

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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 lactate® 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 between 2.5 and 5mmol/l (low risk). No death and treatment continued. 3 had lactate levels below 2.5mmol/l (no risk). The most common presenting symptoms were shortness of breath and vomiting. The mean weight was 76kg amongst those with high lactate levels and the mean duration on ART before the onset of symptoms was 12 months.

Conclussion and Recommendation

Hyperlactemia, 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 Tiyanjane Clinic Patient Care, Process and Outcomes

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Objectives

To describe protocols of selection criteria for use of vincristine.
To review the documented clinical data of patients seen in the Tiyanjane 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

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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

A cross-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

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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.

Phenotypic Characterization of B Cells in Malawian Adults with and without HIV Infection

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Objective

To describe B cell immune dysfunction by the study of cell surface markers indicative of B cell activation, immaturity, loss of memory and naïve resting B cells during HIV infection in Malawian adults.

Methods

Using three colour flow cytometry, we phenotypically characterized B cell populations from 20 HIV negative adults, 10 HIV infected adults with low CD4 count of less than 250 cells/mm3, and 10 HIV infected adults with high CD4 count of more than 350 cells/mm3, attending the Pneumonia vaccine trial clinic at the Queen Elizabeth Central Hospital.

Results

We found that HIV infected adults have low absolute number of naïve resting B cells, $p<0.05$; reduced memory (CD27+) B cells, $p<0.05$; express low levels of mature(CD21+) B cells, $p<0.05$; when compared to healthy controls but did not show an increase in levels of activated (CD38+) B cells, $p>0.05$. HIV infected adults did not show a CD4 count-dependent change in absolute numbers of B cells, $r2=0.01$, $p>0.05$, nor was there any difference in the other B-cell populations expressing the other cell markers by CD4 count.

Conclusion

HIV infected Malawian adults experience impaired humoral response due to B-cell apoptosis induced by virus envelope glycopeptides. In our study subjects this was manifest by low absolute numbers of B-cells including low numbers of memory and mature B-cell subsets. The failure to see CD4 dependent differences within our HIV groups may be a consequence of the small study numbers or HIV viral load may have a greater association with B-cell losses and needs further investigation.

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.

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Objective

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 isoenergetic 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 events. Outcomes were compared with a Student's t-test for continuous parameters and with a Chi-Square test for dichotomous outcomes.

Results

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±5.4 vs. 94.4±5.0, and 131±140 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± 5.6kg (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.

Responsibilities and Practicalities of Processing and Analysing Data Collected in Developing Countries

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Objectives

To describe ethical and legal issues regarding the processing and analysis of data collected in developing countries; and to describe practical issues arising in developing these capabilities.

Study Methods

Relevant literature is reviewed; practical requirements for the development of data processing and analysis capabilities are described.

Results

Two important ethical principles are that the community from which data were derived should be able to benefit from the findings and individuals should be protected from misuse of their data. For this to be achieved data need to be accessible to the scientific community in the host country, and safeguards on the processing of an individuals data are needed. The legal framework for achieving this in Malawi is weak, but is being reviewed. A substantial initial investment in technology and infrastructure, together with sustained investments in personnel and their training are necessary to establish data processing capabilities and the breadth of statistical skills that are required to support the diversity of research needs in Malawi.

Conclusion and Recommendations

Support is required for the development of data processing, storage and analysis expertise for sustainable scientific research in developing countries. In the last decade progress has been made in Malawi in the development of capacity to provide data processing services and to conduct statistical analyses to international standards in research.

Risk factors for Nevirapine Hypersensitivity in Malawi

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Objectives

To assess the frequency and risk factors associated with nevirapine drug hypersensitivity reaction (HSR) in Malawi.

Setting

Anteretroviral clinic, Queen Elizabeth Central Hospital

Materials and Methods

We prospectively recruited 400 antiretroviral naive patients commencing Triomune and followed these individuals for 26 weeks from March 2007 to September 2007. We monitored clinical ad laboratory parameters including CD4 and Liver function tests as well as Body Mass Index (BMI). Careful clinical assessment of all patients defined the HSR phenotype with severe rash requiring treatment interruption or Liver function tests 5 times the upper limit of normal.

Results

400 patients were recruited. Eighteen individuals (5%) developed HSR. Of these, 16 (88%) had severe rash whilst 2 (11%) had hepatotoxicity. CD4>250 was not an independent risk factor (Relative Risk 1.1) with 60 individuals overall who had CD4>250 on starting Triomune. BMI<18.5 was also not associated with the occurrence of HSR (Relative Risk 1.4) with 103 patients having low BMI. However, male patients were 3.4 times more likely to develop HSR than female patients (C.I 1.34-8.1) with 10 out of 110 males in the study that developed HSR compared to 8 out of 290 females. Overall there were 35 deaths due to opportunistic infections. 1 patient died from fulminant liver failure caused by nevirapine

Conclusions and Recommendations

High CD4 count>250 and female gender are known risk factors for nevirapine HSR. In our cohort male gender is an independent risk factor whereas low BMI and CD4>250 do not show a predisposition. Simple but accurate clinical or laboratory biomarkers of nevirapine hypersensitivity need to be identified.

Scaling up of PMTCT in Research Setting

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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 (HIVNET 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

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Objectives
To determine the source, practical usage and microbiological quality (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)

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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

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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 related disability recorded 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 footwear 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

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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 58.55; (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.

Tuberculoisis after ART Initiation

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Background

Thyolo district has approximately 575,000 inhabitant, adult prevalence of HIV at 14%. The HIV epidemic has a major influence on TB epidemiology; HIV strongly increases the risk of contracting TB, making TB the most common opportunistic infection amongst HIV positive persons. The TB/HIV co-infection rate in Malawi is estimated at 66% (81% in Thyolo District Hospital).TB is a leading cause of death among HIV patients.

Setting

Thyolo District Hospital

Design

Short, retrospective analytical review

Objective

To evaluate the prevalence of TB IRIS amongst patients put on ART in TDH

Method

Retrospective review of TB ward registers over a 12 months period (July 2006 to June 2007)

Results

Of a total of 1222 patients admitted into the TB ward during the study period, 978 tested positive for HIV,(TB/HIV co-infection rate of over 80%). These 978 patients are clinically WHO III, thus eligible for ART. Of these 978, 518(52%) were on ART depending on the CD4 levels. Of these 518 on ART, 173 (33.4%) were diagnosed with TB after ART initiation.

Conclusion

A significant number (173) of patients develop TB after ART initiation. 23 (13.3%) of these died due to the severity of the disease. 13 of these deaths (56%) were due to IRIS. We believe that these lives could have been saved if these patients were screened for TB prior to ART initiation, hence, the importance of TB screening before commencement of ART.

Recommendations

Intensify active case findings by screening all patients for TB prior to ART initiation.

Universal Access to Antiretroviral in A Rural District, Malawi. Can It Be Done?

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Background

About 6.8 million of the people living with HIV in low- and middle-income countries urgently needing this life-saving ARV medication. Of these only 1.65 million - one in four - were accessing the drugs by June 2006. Malawi national scale-up plan (2006-2010) is to scale up access to care, prevention and antiretroviral therapy focusing on accelerating the number of people accessing antiretroviral drugs. It plans to reach about 250,000 patients by the end of 2010. Thyolo, located in the south of Malawi, has an estimated 575,000 people and an estimated HIV prevalence among general population at 10%. About 57,500 adults and children living with HIV/AIDS of whom more than 11,500 have advanced HIV/AIDS disease and therefore are in need of antiretroviral treatment.

Objectives

To describe the processes, results, challenges and lessons learnt to achieving universal access in a rural district.

Methods, Design and Setting

Descriptive study, Thyolo, Malawi

Results

From April 2003 to July 2007, a total of 9816 people in need treatment had ever been started on antiretroviral treatment. Of these, 7861 are active and alive on ARVs with and overall death amongst the cohort at 10.6% and defaulter rate at 7.6%.

Conclusions

It is both feasible and safe to offer ART to more than 80% of those in need in a rural district like Thyolo. This can be achieved with satisfactory outcomes under routine programme conditions.

Utilization of ARV Services at David Gordon Memorial and Embangweni Hospitals

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Objective

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 for service provision (12.6%), long distance to ARV clinics (7.7%), inadequate service providers (2.7%) and lack of confidentiality (2.7%). About 90% of the clients knew that ARVs reduce the multiplication of HIV, although 25 clients (13.8%) admitted that there was something that could cure HIV/AIDS such as prayer (40%) and others. ARV services were rated as Excellent (47.8%), Very good (46.1%) and Good (4.4%).

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``

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Objectives

To document the specific occupation of patients taking ART in Malawi whose

occupation is categorized under ``other``

Methods

Retrospective data were collected among patients started ART between January to June 2006 in six ART delivering health facilities in southeast region of Malawi selected by stratified simple random sampling using patient's master card and register

Data was entered and analyzed using Microsoft excel spread sheet

Results

Between January and June 2006, there were a total of 1326 patients (1239 adults and 87 children) who started antiretroviral therapy in the six sites. Of these, there were 126 patients (44 female and 82 male, mean age 37 years) started on ART between January to June 2006 with an occupation termed "other". Nearly one third (38) of the patients were recorded as unemployed with no work, with the remainder having a variety of different jobs including :administrative jobs23.8%, laborer 11.1%, builder 10.3%, tailor 8.7%, driver 7.1%, domestic work 4.9%, member of parliament ,surveyor, pastor, forester and author 0.8% each

Conclusion

The study shows that a wide range of people with different jobs are accessing ART, and this should help in improving the economy of the patients as well as the country at large

Who Stage 3 Disease Conditions and their Outcomes in Patients Started on Antiretroviral Therapy in Malawi

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Background and Objectives

In Malawi, WHO stage 3 is the commonest reason for HIV-infected patients to be started on antiretroviral therapy (ART). The aim of the study was to document disease conditions with which patients are classified in Stage 3 and their relationship to 6-month treatment outcomes.

Methodology

A retrospective survey was carried out examining ART patient treatment cards and ART registers of 6 public-sector ART health facilities in the Southeast of Malawi.

Results

There were 490 adult patients in Stage 3 who were started on ART, of whom 458 (93.5%) were started due to one disease condition. Of these patients, symptomatic conditions (unexplained weight loss or chronic/intermittent fever > 1 month or chronic diarrhea > 1 month) were documented in 216 (47.2%) patients, and active and previous tuberculosis in 148 (32.3%) patients. There were no patients with oral hairy leukoplakia, severe mouth ulceration or haematological abnormalities. At 6 months, 75% of patients were alive on ART, 14% were dead, 6% were lost to follow-up and 4% were transferred out. Adverse outcomes of death and lost to follow-up were more common in the group with a symptomatic condition (24.9%) compared with the group with a specific disease condition (17.6%) – OR 1.55 [95% CI 0.95-2.53].

Conclusions and Recomendations

Nearly half the ART patients in Stage 3 started therapy due to a symptomatic condition, with outcomes inferior to those starting with a specific diagnosis. A better assessment of patients is needed so that serious, unrecognized diseases such as tuberculosis are not missed before starting ART.

Effect of Nitrate and Phosphate from Agricultural Fertilisers on Malaria Vectors.

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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 (KH_2PO_4, monobasic anhydrous (99.8%) and potassium nitrate (KNO_3) (99.7%) . 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 2.7ppm 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 1.1ppm PO_4 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 PO_4 supplementation 32.15 % reach adulthood , but decreases as phosphate supplementation is increased to 1.9 ppm with only 16.78 % reaching adult stage. When 1.3ppm NO_3 is supplemented 22.77 % larvae developed to adult and as supplementation is increased to 2.7 ppm development to adulthood decreased to 4.86 %.At 25 degrees Celsius PO_4 supplementation at 1.9 ppm increases development duration to 16.95 days where as NO_3 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

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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

Patients 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 NNRTI 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.

Validating Clinical and Immunological Definitions of Antiretroviral Treatment Failure in Malawi

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Introduction

Malawi has successfully scaled up first line therapy (D4T/3TC/NVP). Patients who have been adherent on treatment > 6 months, presenting with a new WHO stage 4 condition, or a > 50% decline from peak CD4 count or decline to before ART value, fulfill criteria for clinical or immunological ART failure respectively according to National ART guidelines. Second line treatment (AZT/3TC/TDF/ LPV/RTV) is limited to the Lighthouse Clinic in Lilongwe and the Queen Elizabeth Central Hospital in Blantyre.

Methods

Patients meeting criteria for ART failure from December 2005 to January 2007 were evaluated. Blood was drawn for HIVRNA. ART failure was confirmed if HIV-RNA was > 400 copies/ml.

Results

152 patients were identified as failures (75% immunological, 21% clinical, 4% both). Mean age was 39 years, 51% were female, mean CD4 was182 cells/ml

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

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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 wet season. The odds ratio of having malaria was 0.08 higher for children living at Nkata village than those living at Nkhwazi (p<0.002). Similarly children living at Kela showed a higher odds ratio (0.14) of having malaria than those living at Nkwazi (p<0.013). 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<0.020) 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 Recommendaions

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

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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

Cross sectional observational survey in the adult Diabetes Clinic, QECH, March – June 2007.

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 I 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 glibenclamide, 30% 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 of <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

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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 admitted 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 SRH behaviors of the children; level of obscenity of the SRH topics; 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 condone 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 findings have the following policy and service implications:
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 communication. Further research on bridging interventions that facilitate SRH communication between parents and children and foster mutual understanding on the need for

this health communication.

Adherence to WHO Guidelines in the Diagnosis of Smear Negative Pulmonary Tuberculosis

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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.

Patient Selection
Ambulant patients registering at QECH TB office with smear negative PTB during August 2007.

Methods
1.   Scrutiny of health passport
2.   Interview of patient
3.   Examination of CXR

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 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

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Background
Careful assessment and follow up of patients receiving home based care in a defined population of 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.
212 patients were on ART. There was improved survival of the 2005-2006 cohort for whom ART was more readily available but the difference was small (19%). This was related to the survival of a third of the early cohort despite the unavailability of ART in the first two years of their disease, and whose response to ART when available was good. This survivor group in the first cohort had no identifiable characteristics to distinguish them from those who died.

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 overall survival.

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

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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 recorded 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 absconded). 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

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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.

Results
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

116 patients were recruited in 11 months. 60 (51.7%) had culture positive cerebrospinal fluid: 30 Strep.pneumoniae, 15 cryptococcus, 3 N.meningitidis, 8 other organisms. 96/116 (83%) were HIV positive. 74/116 (63.8%) died, slightly more than anticipated. 66 had reduced conscious level at admission. 38/42 survivors were followed up at day 40. 23% had abnormal neurology.

Conclusions and Recommendations
The 75mls glycerol qds dosing regime was well tolerated and carried forward into the randomised controlled trial of effectiveness. Recruitment will continue, with safety reviews, until 450 patients have been recruited.

Knowledge Attitudes and Practices of Kamuzu College of Nursing Students towards Voluntary Counselling and HIV Testing

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Objectives
To assess knowledge, attitudes and practices of Kamuzu College of Nursing student nurses towards Voluntary Counseling and HIV testing (VCT); and acceptability of introducing VCT services for students at the college.

Study Methods
The study employed a combination of quantitative and qualitative data collection techniques. The quantitative component comprised a self-administered questionnaire which was administered to all 348 nursing students at the college, and the qualitative component comprised of three focus group discussions of 10 students in each group.

Results
Based on the data that was collected through both self-administered questionnaire and focus group discussions, the following are some of the findings: first, that almost all student nurses were aware of VCT. Secondly, that fear of stigmatization, discrimination and disclosure of one's sero status were the main barriers for students' access to VCT services. Third, most student nurses were worried about acquiring HIV infection during the course of their nursing career development in the clinical area due to lack of protective wear in the hospitals. Fourth, a good proportion (68%) had ever been tested prior to the study and 79 % had the desire to be tested. Lastly, the majority of the student nurses indicated that the college, KCN, should provide VCT services.

Conclusions
The following conclusions were made based on the findings: Firstly, student nurses at KCN have knowledge on VCT. However, the study did not establish how much knowledge the students had and whether that knowledge influenced their decision to go for VCT. Secondly, stigma and discrimination are the greatest barriers for student nurses to access VCT. Thirdly, student nurses demonstrated acceptance of VCT services at the college.

Recommendations
Kamuzu College of Nursing management should provide VCT services to the student nurses and should also endeavour to fight stigma and discrimination at the college. In addition, KCN management should provide a safe and supportive work environment that protects the student nurses from occupational hazards such as exposure to HIV and AIDS.

HIV/AIDS Risks, Marriage and Sexual Relations in Malawi: Findings from the Malawi Diffusion and Ideational Change Project

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The Malawi Diffusion and Ideational Change Project (MDICP) is a longitudinal panel of 4000 adults and adolescents interviewed in 1998, 2001, 2004 and 2006. This study is a multidisciplinary effort by demographers, sociologists, economists, political scientists, and physicians that includes household surveys, randomized experiments, biomarkers for HIV, qualitative data collection, and ethnographic field surveys. This paper provides broad findings from the project on network effects on AIDS risk perception, sexual behaviors and partnership types among adolescents, expectations about marriage among unmarried women, and sexual behaviors during the transition from adolescence to marriage. We find that; 1) rural Malawians are not silent, in denial or fatalistic, 2) social networks influence risk perceptions and prevention strategies, 3) rural Malawians are overly pessimistic about HIV infection at single intercourse, and 4) the transition into marriage may be a critical transition point to focus on to better understand HIV risk among unmarried and married couples.

Acceptability of Condom Use in Marriage After Learning HIV Test Results among Ever-married Men and Women in Rural Malawi

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Among the efforts made to stem the tide of the AIDS epidemic in sub-Saharan Africa 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—and 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

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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

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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 a substantial fraction of the island's young adult population: half of all sexually active respondents were connected in a giant network component, and more than a quarter were linked through multiple independent chains of sexual relationships. This high network connectivity emerges within short time frames. The prevalence of HIV also varied significantly across the network, with sparser regions having a higher HIV prevalence than densely connected components. Several risk factors related to sexual mixing patterns help explain differentials in HIV prevalence across network locations.

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

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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 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

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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

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Introduction

Malawian health system faces a shortage of health professionals. The doctor-patient ratio is 1: 57, 000 placing Malawi in the lowest position ranked by country according to WHO. Despite a Ministry of Health human resources emergency plan there seems to be no change in this shortage of health workers. A few studies have addressed the subject but none has tried to find out what will encourage health workers to stay in Malawi. The purpose of this study is to evaluate the job satisfaction of the countries' health professionals and record their suggested interventions to improve staff retention in Malawi.

Methods

A cross-sectional qualitative study using in-depth interviews was carried out at the Queen Elizabeth Central Hospital in Blantyre. The study participants were selected by random stratified sampling according to their professional title and included 5 doctors, 8 clinical officers, 18 nurses, 5 medical assistants and 1 hospital administrator. All were Malawian with more than two years work experience. Each study participant was interviewed using a semi-structured questionnaire.

Results

The majority of the health professionals are not satisfied with their job at Q.E.C.H. Most felt that improving their working conditions was the most important change they would like to see. They also suggested providing further training opportunities and increasing salaries as other interventions that would encourage most health workers to stay in the country. The health workers reported that government has not done much in addressing the health professionals' needs as a whole. The results are compared to studies from elsewhere.

Conclusions

Job satisfaction among the health workers of the Queen Elizabeth Central hospital is poor. This is as a result of poor working conditions at the hospital, lack of a career structure and lack of recognition. This has resulted in a failure to retain staff leading to the current shortage of the health workers. There is need to involve the health workers in prioritising the interventions which are likely to improve job satisfaction.

Evaluating Factors Influencing Time of Presentation of Sexually Transmitted Infection Clients at Kamuzu Central Hospital Sexually Transmitted Infection Clinic (7C)

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Objective

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

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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

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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

to support and frustrate these approaches.

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.